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March, 2017

To our lovely parents Oleg P. Ledenyov and Tamara V. Ledenyova.

Contents

Introduction

A financial capital investment in the global capital markets creates a solid foundation for the active dynamic prosperous life by the private and institutional investors in the modern society. In this book, the authors clearly and persuasively explain the modern investment theories and practices, solving a problem on the optimal investment of the financial capital in the capital markets with the aim to get an increased return premium in the short and long time periods. We easily create an investment mindset among the interested readers by discussing the advanced research findings on the modern investment techniques application in the capital markets in the finances. Chapter 1 discuses the capital markets history from the ancient time to the present time, using the academic literature. Chapter 2 formulates the main problem on the financial capital investment in the capital markets with the aim to get an increased return premium in short and long time periods. Chapter 3 provides a possible solution to the problem on the financial capital investment in the capital markets with an aim to get the increased return premium in the short and long time periods, using the different investment products, investment vehicles and investment mediums. Chapter 4 focuses on the land, real estate, bonds, stocks, stock options, financial securities, foreign currencies, commodities as the investment products for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Chapter 5 considers the investment banks, investment funds, hedge funds, pension funds, venture capital funds, investment boutiques firms, private investment offices as the investment vehicles for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Chapter 6 researches the land exchange, real estate exchange, companies stocks exchange, foreign currencies exchange, financial securities exchange, commodities exchange, precious metals exchange, intellectual properties exchange as the investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Chapter 7 discusses the investment portfolio, the financial assets valuation, and the financial risk evaluation and mitigation during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Chapter 8 confers the quantum winning virtuous investment strategies creation and execution, using the inductive, deductive, abductive, quantum logics during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Conclusion summarizes all the important research findings and discusses their theoretical and practical implications, using the general-audience language.

Chapter 1

Financial capital markets from ancient time to present time

The capital comprises all the forms of stock-wealth, which can be used by the human to create the new wealth with application of human labour, aiming to satisfy the man's basic and extended needs, education requirements, professional interests, cultural necessities toward the high social status achievement in a prosperous harmonious society in Marx (1867, 1893, 1894), von Böhm-Bawerk (1884, 1889, 1921), Hirsch (1896).

The first capital markets were established with the goal: to make it possible to conduct the basic financial value exchanges between the economic agents in the economies of the scales and the scopes since around 7th C.B.C. In these capital markets in the economies of the scales and the scopes, the new wealth synthesis process have been realized, using the three main objects: the Matter/Land, Labour and Capital in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Smith (1776, 2008), Ricardo (1817, 1821), Bentham (1839), Mill (1862), Hirsch (1896)).

Fig. 1 shows the new wealth creation by means of the synthesis process, using the three objects: Matter, Labour and Capital (the Land, Labour and Capital in the Political Economy).

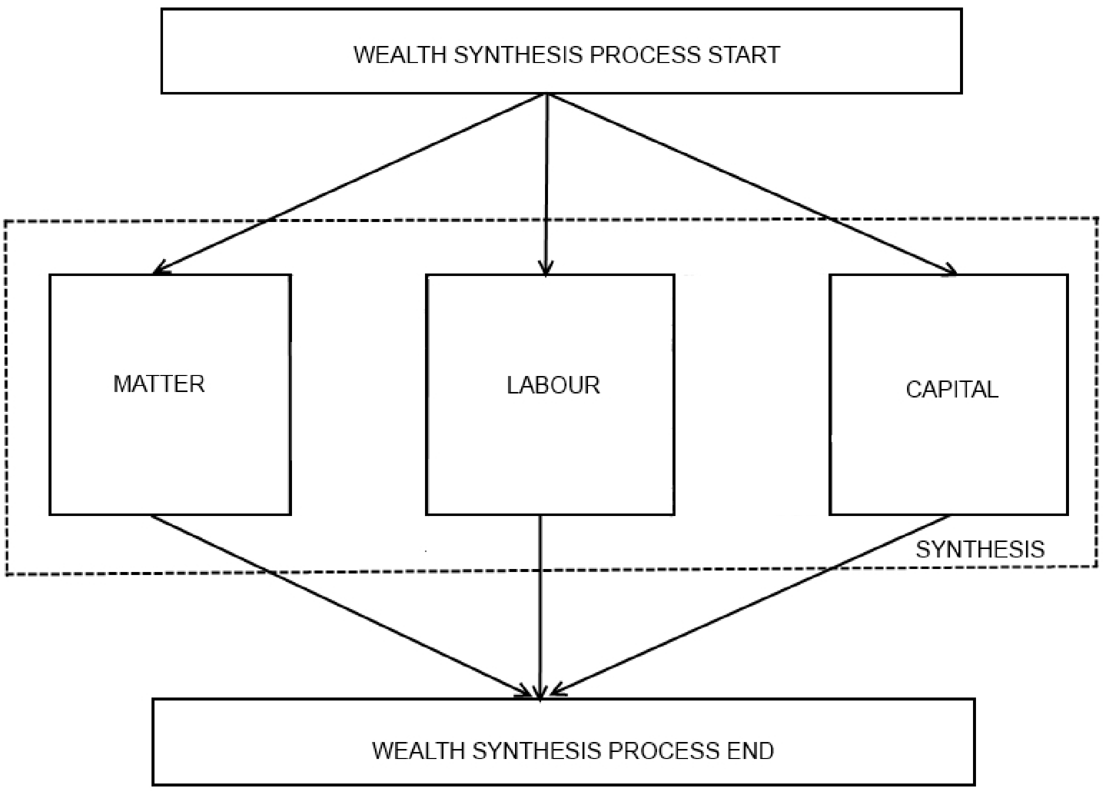

Fig. 1. New wealth creation synthesis process with three objects: Matter, Labour and Capital.

The value of the capital can be measured with an application of the money in frames of the proposed capital pricing theories in the finances/economics sciences. The money represents a legally-established measure of wealth's value, a freely-exchangeable unit of wealth's value equivalent storing, a mean of wealth's value equivalent payment and a media of wealth's value equivalent exchange, enabling to perform the wealth exchange operations during its free circulation process among the economic agents in the economies of the scales and the scopes. The money is one of the central subjects of research in the capital theory in the political economy science in Smith (1776, 2008), Marx (1867; July, 1893; October, 1894), Bagehot (1873, 1897), von Böhm-Bawerk (1884, 1889, 1921), Hirsch (1896), von Mises (1912), Keynes (1936), Piketty (August 2013, August 15 2014), Dodd (2014), Stiglitz (2015, 2016).

Fig. 2 pictures the money definition as the unit of payment and the medium of exchange.

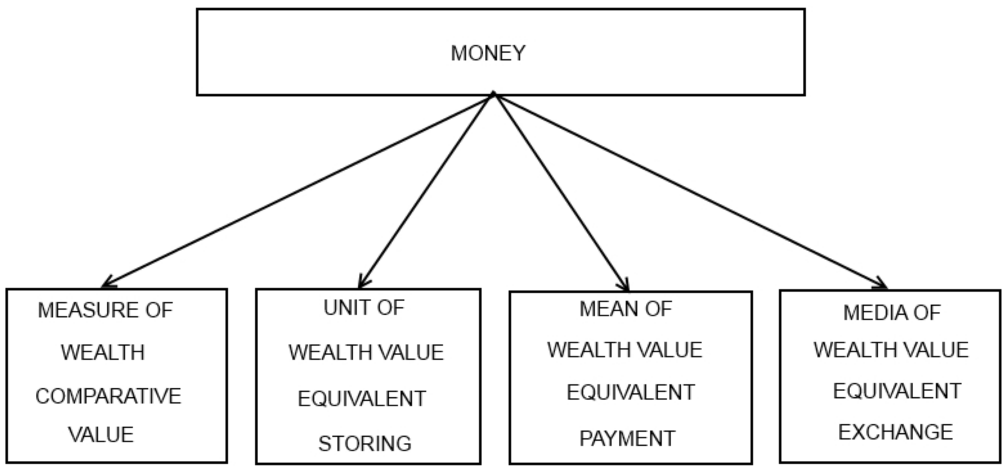

Fig. 2. Money definition.

Over the centuries, the money in the form of the paper money, paper notes and metal coins served mainly as the means of payments exchange in the capital markets in Del Mar (1894), Cook (1958), Carson (1962), Crawford (1970), Balmuth (1971), Thompson, Kraay, Morkholm (editors) (1973), Kagan (1982), Price (1983), Wallace (1987, 1989), Howgego (1990), Karwiese (1991), Thiveaud, Sylvain (1995), Davies (2002), Moroz V S, Moroz V S (September 2014), Yeoman (2014). The multiple historical findings confirm the fact that the financial transactions with the paper money, paper notes, and metal coins began to be introduced in mainland China since the time of the Song and Yuan dynasties. Presently, they are being used in all the economies of the scales and the scopes, facilitating the domestic/international trade by the goods and services in various countries in Del Mar (1894), Cook (1958), Carson (1962), Crawford (1970), Balmuth (1971), Thompson, Kraay, Morkholm (editors) (1973), Kagan (1982), Price (1983), Wallace (1987, 1989), Howgego (1990), Karwiese (1991), Thiveaud, Sylvain (1995), Davies (2002), Moroz V S, Moroz V S (September 2014), Yeoman (2014).

In the course of practical money use, the money's design has been improved due to the multiple inventions of the writing, arithmetic, chemistry, physics, astronomy and philosophy during the historical evolution of mankind in the organized societies over the centuries in Landes (1998), Thiveaud, Sylvain (1995). The contemporary money design, meaning and impact on the value payments cycles in the classic economies of the scales and the scopes were researched in Smith (1776, 1991), Ricardo (1816, 1951), Fisher (1933), Keynes (1936), Redlich (1951), Baumol (1952), Butlin (1953), Tobin (1956), Tobin (1963), Friedman, Jacobson, Schwartz (1963), Hayek (1974, 1976a, b, 1978), Checkland (1975), Galbraith (1976), McKinnon (1979), Fama (1980), Suhr (1989), Kennedy (1989), Whitesell (1989, 1992), Woodford (2003), King (August 27 1999, November 1999), Berk (September 2002), Williams, Anderson (March 2007).

A measurement accuracy of the financial capital value depends on a number of (un)objective factors: the payment unit, the monetary system, the financial system, the financial arithmetic, the mathematics principles in the capital market in the economy of the scale and the scope. In fact, a measurement accuracy of the financial capital value may slightly differ in various financial systems in the economies of the scales and the scopes.

The central banks played a pivotal regulatory role in the financial capital evaluation, accumulation and distribution processes in the debt and equity capital markets in the economies of the scopes and the scales, including the Bank of Amsterdam (1609) in The Netherlands, Sveriges Riksbank (1664) in Sweden, Bank of England (1694) in England, since XVI century until present time in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Bagehot (1873, 1897), Roseveare (1991), Capie, Fischer, Goodhart, Schnadt (1994), Quinn, Roberts (2006). The fundamentals on the financial capital evaluation, accumulation and distribution processes in the debt and equity capital markets in the economies of the scopes and the scales were researched by the eminent scientists over the recent centuries in Smith (1776, 2008), Marx (1867; July, 1893; October, 1894), Bagehot (1873, 1897), von Böhm-Bawerk (1884, 1889, 1921), Hirsch (1896), von Mises (1912), Keynes (1936), Piketty (August 2013, August 15 2014), Dodd (2014), Stiglitz (2015, 2016). The modern financial systems at the national/global levels have been strongly influenced by the Austrian school of the financial/economic thinking, namely by the Austrian economists from the Chicago school of financial/economic thinking in Chicago, USA in von

Böhm-Bawerk (1884, 1889, 1921). Regulating a capital market through the monetary and financial policies in the modern financial systems, the central bank focuses on the two main functional tasks in Owen (1919), Willis (1923), Meltzer (2003, 2009a, b), Fox, Alvarez, Braunstein, Emerson, Johnson, Johnson, Malphrus, Reinhart, Roseman, Spillenkothen, Stockton (2005), Bernanke (2013), Ledenyov D O, Ledenyov V O (December 11-12 2015), Ledenyov D O, Ledenyov V O (2016s):

1. The financial liquidity provision;

2. The financial liquidity regulation.

The central bank fulfills its principal mission by regulating the three main sorts of the money in the capital market in the economy of the scale and the scope in Selgin, White (1994):

1. The natural money based on a single commodity;

2. The multiple commodity money;

3. The no base money.

The central bank issues/distributes/regulates a wide range of the value payments means in the capital market in the economy of the scale and the scope in Goodhart (1989, 2000):

1. The metal coins, made of precious metals;

2. The paper currencies, made of multiple layers of paper/cotton;

3. The paper checks, made of multiple layers of paper/cotton;

4. The wired payment orders, existing in the form of electronic signals;

5. The electronic money, appearing in the form of electronic signals;

6. The network money, existing in the form of electronic signals;

7. The Bitcoin/Ethereum blockchains, existing in the form of electronic signals.

The Bitcoin/Ethereum are classified as the digital crypto currencies/the money exchanges with the blockchain secure encryption/decryption/arbitration technologies in a form of the executable software code in the distributed decentralized data network such as the Internet of Things. The digital currencies introduction results in a pervasive lowering of transaction cost. The following digital currencies system definitions are accepted in Antonopoulos (2014, 2016):

1. The Bitcoin/Ethereum are the digital currencies;

2. The blockchain is a distributed relational database with the blocks of code;

3. The smart contract is a small software program to represent the financial products;

4. The proof of work is a security concept for the digital currencies;

5. The proof of stake is a security concept for the digital currencies;

6. The miner is a group of users with the biggest computer power;

7. The blockchain scaling is a methodology to scale the blockchain.

Fig. 3 provides the information on various sorts of the existing money in connection with the money bases in the modern financial systems in the economies of the scales and scopes.

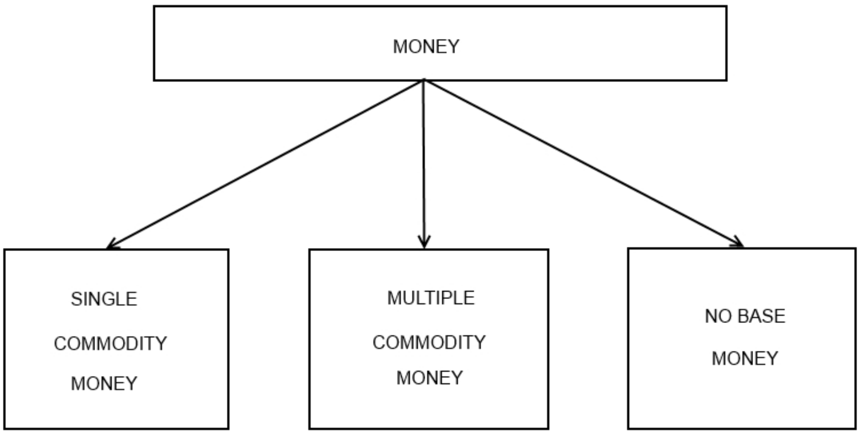

Fig. 3. Money types in financial system.

Fig. 4 shows the possible means of value payment in the modern financial systems in the economies of the scales and scopes.

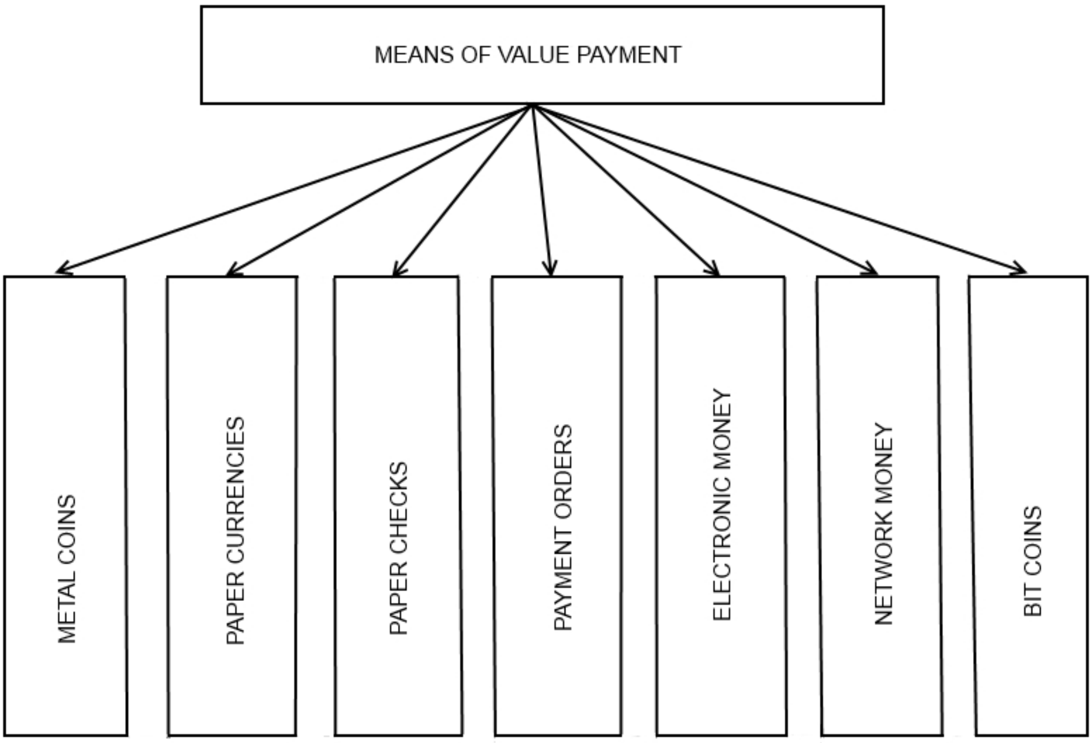

Fig. 4. Means of value payment in financial system.

In addition to central bank's goal to facilitate a sustainable development of the economy of the scale and the scope, it constantly changes the interest rates on the money loans to the commercial/investment banks, as well as, it adjusts the foreign currencies exchange rates between the national currency and the major foreign currencies in the frames of the following central bank's policies in Ledenyov D O, Ledenyov V O (2016s):

1. The monetary stability policy;

2. The financial stability policy.

As we know, the quantum physics has had the three major development stages, including the light quantum theory creation in Planck (1900c, d, 1901, 1914); the atom quantum theory development in Bohr (1922); and the wave equation derivation in Schrödinger (1926 a, b). Discussing the nature of money together with its econophysical properties, we would like to use this opportunity to propose the Ledenyov quantum theory on the dual nature of the money in the financial system in the economy of the scale and the scope. It makes sense to explain that the Ledenyov quantum theory on the dual nature of the money in the quantum econophysics is formulated in an analogy with the Planck quantum theory on the light in the quantum physics in Planck (1900c, d, 1901, 1914).

The Ledenyov quantum theory on the dual nature of the money postulates that the money has the dual econophysical nature in the financial system in the capital market in the economy of the scale and the scope:

1. The money can be treated as a particle in frames of the particle theory of the money. The money particles could only be emitted in the quantized forms (the certain money nominal) by the treasure. The treasure on the central bank request could add/subtract these money particles to/from the financial system in the economy of the scale and the scope. The money particles of different values in the financial system in the economy of the scale and the scope could be filtered with an application of the particle filters and statistically analyzed with an application of the statistical distributions in the mathematic science;

2. The money can be considered as a wave in the frames of the wave theory of the money. These money waves with the certain wavelengths (the certain money nominal) could only be emitted in the quantized forms (the certain money nominal) by the treasure. These united waves could create the money flows in the financial system in the economy of the scale and the scope. The central bank could adjust the level of the liquidity in the financial system by adding/subtracting the money flows to/from the financial system during the corresponding regulatory policies introduction in the case of the quantitative easing/restricting policies implementations. The real mechanisms of the central bank's regulatory policies introduction towards the quantitative easing/restricting policies implementations could be realized through: *1)* the low-interest-rates money loans provision to the commercial banks by the treasury as ordered by the central bank, aiming to add the liquidity to the real/speculative sectors of the economy of the scale and the scope; or *2)* the treasure bills selling to the commercial banks by the treasury as ordered by the central bank, aiming to subtract the liquidity and decrease the inflationary expectations from/at the real/speculative sectors of the economy of the scale and the scope.

Presently, the necessary infrastructure for the electronic financial transactions realization at the financial data processing centers includes the computer servers, the remote terminals and the data communication networks. Thus, the interconnected remote terminals, including the ATM terminals, desktop computers, laptops, mobile phones and mobile bracelets complete the financial transactions by connecting to the computer servers via the software programs with the implemented communication protocol stacks, using the optical/wireline/wireless data networks with the high speed data rates transfer capabilities. More specifically, we can higlight the following hardware/software technological advancements in the information communication technologies (ICT) to implement the electronic financial transactions in the banking industry in Gabor (1946), Shannon (1948), Oppenheim, Schafer (1989), Simon, Hinedi, Lindsey (1995), Proakis, Manolakis (1996), Prisch (1998), Wanhammar (1999), Sklar (2001), Rice (2008), Ledenyov D O, Ledenyov V O (2015a):

1. Hetero-Junction Bipolar Transistors (HBT), High Electron Mobility Transistors (HEMT), Field Effect Transistors (FET), Metal Semiconductor Field Effect Transistors (MESFET), Metal Oxide Semiconductor Transistors (MOSFET), which are made of the Silicone Carbide (SiC), Gallium Arsenide (GaAr), Germanium Nitride (GeN) wide energy band semiconductor junctions, operating from the low frequencies to the ultra high frequencies range;

2. Very Large Scale Integrated (VLSI) circuits with the high density of the transistors, which operate at the ultra high frequencies range (GHz range);

3. The Digital Signal Processors (DSP), which can be designed in the forms of the standard DSP chipsets as well as the Field Programmable Gate Arrays (FPGA) chipsets;

4. The real-time operational systems like the VxWorks, QNX, Android, iOS, which execute the compiled real-time software programs at the microprocessors/microcontrollers in the radio-transceivers and remote wireless/wireline terminals;

5. The near real-time software programs made in the Assembly and C languages, which can be compiled to encode/decode the headers and the data payload envelops in the protocol stacks at the information transmission process in the wireline/wireless/optical data links as well as to make functional automatisation of electronic devices in the electronics;

6. The high stable operation systems like the Windows, Linux, Unix, which execute the compiled software programs at the big computer servers / the desktop computers fast enough;

7. The object oriented software programs in the C++, Java++, which can be compiled to operate with the distributed relational databases at the operation systems at the big computer servers and the desktop computers reliably;

8. The high speed optical communication networks, which can function at the synchronous transfer mode (SONET) and the asynchronous transfer mode (ATM), transferring the encoded data at the long distances at the high data rates over the short time;

9. The in-fiber optical devices and components: the optical amplifiers, optical couplers, optical circulators, optical splitters, optical phase shifters, optical phasars, optical dense wave division (de)multiplexers (WDM), made of the in fiber Brag gratings, the LiNbO crystals, the Si ultrasonic transducers and the single/multiple filaments optical fibers;

10. The wireless communication networks such as the Latest Technology Evolution (LTE)/Universal Mobile Telecommunication System (UMTS)/Wideband Code Division Multiple Access (WCDMA), which may transfer the encoded data over the wireless channel at the short/long distances at the high data rates over the short time;

11. The quantum cryptography for the quantum data communication protocols for the quantum optical/space/wireless/wireline/ communication networks, based on the quantum encryption techniques in the quantum mechanics, allowing the secure quantum data communications over the long distances in the space domain over the certain time periods;

12. The quantum random number generators in the quantum processors, which can allow to perform the very accurate supercomputer modeling, the very accurate quantum computer modeling and the quantum secure data communications over the long distances in the space domain at the selected time periods.

Continuing our formidable voluminous research, let us say that the modern progress in the information communication technologies made it possible to formulate and implement a concept on the electronic money in the modern financial systems in the economies of the scales and the scopes in 1986. The electronic money (e-money) is financially defined as the electronic store of monetary value on a technical device to make payments without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument in European Central Bank (August 1998). More clearly, the electronic money is based on a complex system of the electronic payments instruments (the digital cash, digital purse, stored-value/debit/credit cards), the financial processes (the debit, credit calculation), the information processing (the mathematical numbers computing and the storing of information at the data centers) and the communication networks (the multilayered data communication protocols and the virtual/physical data networks) in Wallace (1986), Bauer (1995), US Treasury September (1996), Hitachi Research Institute (1997), European Central Bank (August 1998), Organization for Economic Cooperation and Development (OECD) (2002), Bank for International Settlements (BIS) (2004), Bank of Japan (2008, 2009), Ledenyov V O, Ledenyov D O (2016s).

In the quantum physics, the authors invented the magnetic flux qubit; and then, designed a chipset of the quantum random number generator on the magnetic flux qubits (1024 QRNG_MFQ) for the first time Kharkiv, Ukraine in 1991, working to improve the 1024 QRNG_MFQ chipset design at Technical University of Denmark in Lyngby, Denmark in 1996-1997. We frequently discussed the 1024 QRNG_MFQ chipset at the international conferences, including the seminars at Leiden University in The Netherlands in 1998, and the University of Toronto in Canada in 1998. At later date, we discovered that the magnetic knot of vortex is in an extreme quantum limit in the quantum physics for the first time in Kharkiv, Ukraine in 1998. We designed a chipset of the quantum memory on the magnetic vortices knots in Kharkiv, Ukraine in 1999, making a report on a chipset of the quantum memory on the magnetic vortices knots at a Marconi seminar at Birmingham University in the United Kingdom in 2000, contributing to a new era of the intensive research and development (R&D) programs in the field of the quantum computing in the quantum physics in Ledenyov D O, Ledenyov V O (2015a).

In the finances, we expressed a general idea on a possible creation of the quantum money in 2000. At later date, we decided to formulate a detailed concept on the quantum money, introducing the quantum money (q-money) as a newest value storing/not storing unit, a mean of payment and an exchange medium for the first time in Ledenyov D O, Ledenyov V O (2015m). Of course, the quantum money (q-money) can be considered as a more convenient, financially innovative, technologically attractive and user/issuer friendly value storing/not storing unit, mean of value payment, and exchange medium in the advanced financial systems within the quantum economies of the scales and the scopes in Ledenyov D O, Ledenyov V O (2015m). The main financial idea behind the quantum money (q-money) is to establish a value storing/not storing q-money, which is most innovative, technologically advanced, financially efficient, economically sustainable, socially equitable, politically democratic in the financial systems within the economies of scales and scopes, aiming to achieve the millennium development goals in Ledenyov V O, Ledenyov D O (2015m, 2016s).

The introduction of the electronic money and the quantum money in the capital markets in the finances creates a strong necessity for the national governments, central banks and the international regulatory bodies to introduce a new regulatory international policies framework with the aim to govern the processes of the emission, distribution, storing, and evaluation of the new money by the treasures in the financial systems in the economies of scales and scopes in Ledenyov V O, Ledenyov D O (2016s).

Fig. 5 depicts the money design evolution in financial system over the time.

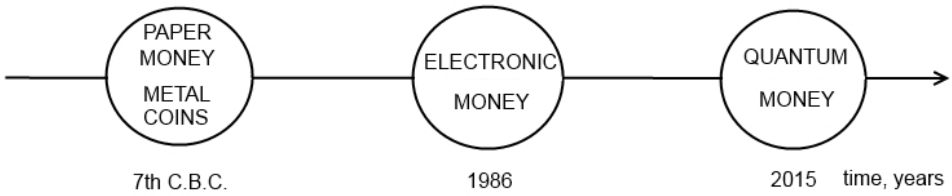

Fig. 5. Money design evolution in financial system in time.

Once again, the money emission, distribution, storing, and evaluation is normally conducted by the national treasures and governed by the central banks, which create and implement the monetary stability policy, financial stability policy, and other regulatory policies. Indeed, the central bank can implement its policies by adjusting the interest rates on the money lending as well as by adding/subtracting the money flow (the liquidity) to/from the financial system in the selected economy of the scale and the scope, going from the macroeconomic indicators. The commercial and investment banks can lend the money on the interbank market, depending on the corresponding macroeconomic and microeconomics indicators. The macroeconomics indicators are uniquely defined by the economic output fluctuations in the time. There are several business cycles, which are distinguished by the financiers/economists:

1. The Juglar economic cycle in Juglar (1862);

2. The Kondratiev economic cycle in Kondratieff (1922, 1925, 1926, 1928, 1935);

3. The Kitchin economic cycle in Kitchin (1923);

4. The Kuznets economic cycle in Kuznets (1973a, b);

5. The Ledenyov economic cycle in Ledenyov DO, Ledenyov VO (2015e, f, 2016s).

Most importantly, aiming to complete the monetary and financial regulatory missions, all the central banks use an accumulated knowledge base in the social sciences and natural sciences:

1. Knowledge base in the finances, the economics and the social sciences in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Smith (1776, 2008), Menger (1871), Bagehot (1873, 1897), von Böhm-Bawerk (1884, 1889, 1921), Hirsch (1896), Bachelier (1900), Schumpeter (1906, 1911, 1933, 1939, 1961, 1939, 1947), Slutsky (1910, 1915 1923), von Mises (1912, 1949), Keynes (1919, 1936, 1992), Hayek (1931, 1935, 1948, 1980, 2008), Hazlitt (1946), Ellis, Metzler (1949), Friedman (1953), Baumol (1957), Debreu (1959), Rothbard (1962, 2004), Landes (1969, 1998), Krugman, Wells (2005), Stiglitz (2005, 2015, 2016), Dodd (2014), Ledenyov D O, Ledenyov V O (2016s).

2. Knowledge base in the econometrics/econophysics in Schumpeter (1906, 1933), Bowley (1924), Fogel (1964), Box, Jenkins (1970), Grangel, Newbold (1977), Van Horne (1984), Taylor S (1986), Tong (1986, 1990), Judge, Hill, Griffiths, Lee, Lutkepol (1988), Hardle (1990), Grangel, Teräsvirta (1993), Pesaran, Potter (1993), Banerjee, Dolado, Galbraith, Hendry (1993), Hamilton (1994), Karatzas, Shreve (1995), Campbell, Lo, MacKinlay (1997), Rogers, Talay (1997), Hayashi (2000), Durbin, Koopman (2000, 2002, 2012), Ilinski (2001), Greene (2003), Koop (2003), Davidson, MacKinnon (2004), Cameron, Trivedi (2005), Iyetomi, Aoyama, Ikeda, Souma, Fujiwara (2008), Iyetomi, Aoyama, Fujiwara, Sato (editors) (2012), Vialar, Goergen (2009), Ledenyov D O, Ledenyov V O (2016s).

The innovative research in the modern finance science by the central banks continues intensively, aiming to understand the nature of complex processes in the economics and finances with the theories, experiments and computer modeling in the field of econophysics. The research groups at the leading universities/institutions/banks make numerous attempts to re-define the research boundaries in the finances, applying the econophysics principles to solve the complex financial problems. The most recent scientific contributions by the econo-physicists have been summarized in Mantegna, Stanley (1999), Ilinski (2001), Bouchaud, Potters (2003), Sornette (2003), Yakovenko, Rosser (2009), Sinha, Chatterje, Chakraborti, Chakrabarti (2010), Chakrabarti B K, Chakrabarti A (2010), Aoyama, Fujiwara, Iyetomi, Sato (2012).

Finalizing all the above introductory philosophical discussions on the capital markets history, let us focus precisely on the problem of the capital investment in the capital markets in the finances. We will prefer to continue our breathtaking learning journey in the finances by formulating the central problem on the financial resources investment in the capital markets with the aim to get an increased return premium in the short and long time periods in Chapter 2.

Chapter 2

Formulation of problem on financial capital investment in capital markets

In the finances, the investment means an act of allocation of the financial capital in order to gain a certain profit in the form of the increased investment return premium, advantage or interest. A problem on the investment of the financial capital in the capital markets was formulated in the early research books in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Bagehot (1873, 1897). However, on that time, the prevailing scientific opinion was that a highly volatile nature of capital markets makes it quite difficult to accurately analyze, predict and calculate the investment return premium, advantage or interest.

A set of practical questions was raised by the investors on that time: What is the meaningful definition of the financial capital in the finances? What are the financial/economic variables suitable for the accurate characterization of the financial capital changes dynamics in the capital markets in the scale-frequency-time domains? What are the most appropriate measurement units to measure the financial/economic variables suitable for the accurate characterization of the financial capital changes dynamics in the capital markets in the scale-frequency-time domains? How can the process on the investment of the financial capital in the capital markets in the in the scale-frequency-time domains be optimized? How can the optimal investment decisions on the financial capital allocation in the capital markets be taken from the financial, economic and legal points of view? How can the investment return premium on the invested financial capital in the capital markets be calculated? What is the accuracy of calculation of the investment return premium on the invested financial capital in the capital markets? How successful is the investment of the financial capital in the capital markets? There were no the straightforward clear answers on the above challenging financial questions on the financial capital investment in the capital markets on that time. A general way of thinking on the investment of the financial capital in the capital markets was not based on the scientific grounds, but rather on the investors' intuition and basic mathematical skills. One of the main reasons of existed state of matters was a lack of understanding of an important fact that the problem on the investment of the financial capital in the capital markets can only be solved, using the advanced theoretical models with the differential equations in the econophysics.

Let us write a list of the financial/economic variables for the accurate characterization of the financial capital changes dynamics in the capital markets in the scale-frequency-time domains:

1. Finances science (the financial capital value; the return premium value; the profit-to-earnings value; the total risk value; the EBITDA value);

2. Economics science (the amplitude, frequency, period, phase of the business cycle; the number of the economic events; the probability of the occurring economic events; the distributions of the occurring economic events in the scale, frequency, time domains);

3. Mathematics science (the the number of the occurring events; the probability of the occurring events; the distributions of the occurring events in the scale, frequency, time domains; direction of vector in the multidimensional space, vector absolute magnitude, coordinate space);

4. Econometrics science (the number of the economic events; the probability of the occurring economic events; the distributions of the occurring economic events in the scale, frequency, time domains; the direction of the capital flow vector in the multidimensional coordinate space; financial liquidity level; interest rates; total risk level);

5. Physics science (the amplitude, frequency, period, phase of the continuous- and discrete- time signals; the central frequency of the of the continuous- and discrete- time signals; the dynamic range of the continuous- and discrete- time signals);

6. Econophysics science (the amplitude, frequency, period, phase of the continuous- and discrete- time economic signals; the central frequency and the dynamic range of the particular continuous- and discrete- time economic signals);

7. Psychology science (the deductive, inductive, abductive logics values; intellect level; decision making level; logical analysis level);

8. Computer science (the computer model input and output values; simulation time; simulation accuracy; simulation quality; random number sequence quality; random number sequence length; operating system stability).

9. Biology science: (the structure of the digital DNA of the economy of the scale and the scope).

10. Telecommunications science: (the information generation, coding, transmission and storing between the economic agents in the economy of the scale and the scope; the asymmetric information flows between the economic agents in the economy of the scale and the scope; the bit error rate during the information transmission between the economic agents in the economy of the scale and the scope).

Fig. 6 shows the financial variables to characterize an investment of financial capital in the capital markets in the short and long time periods.

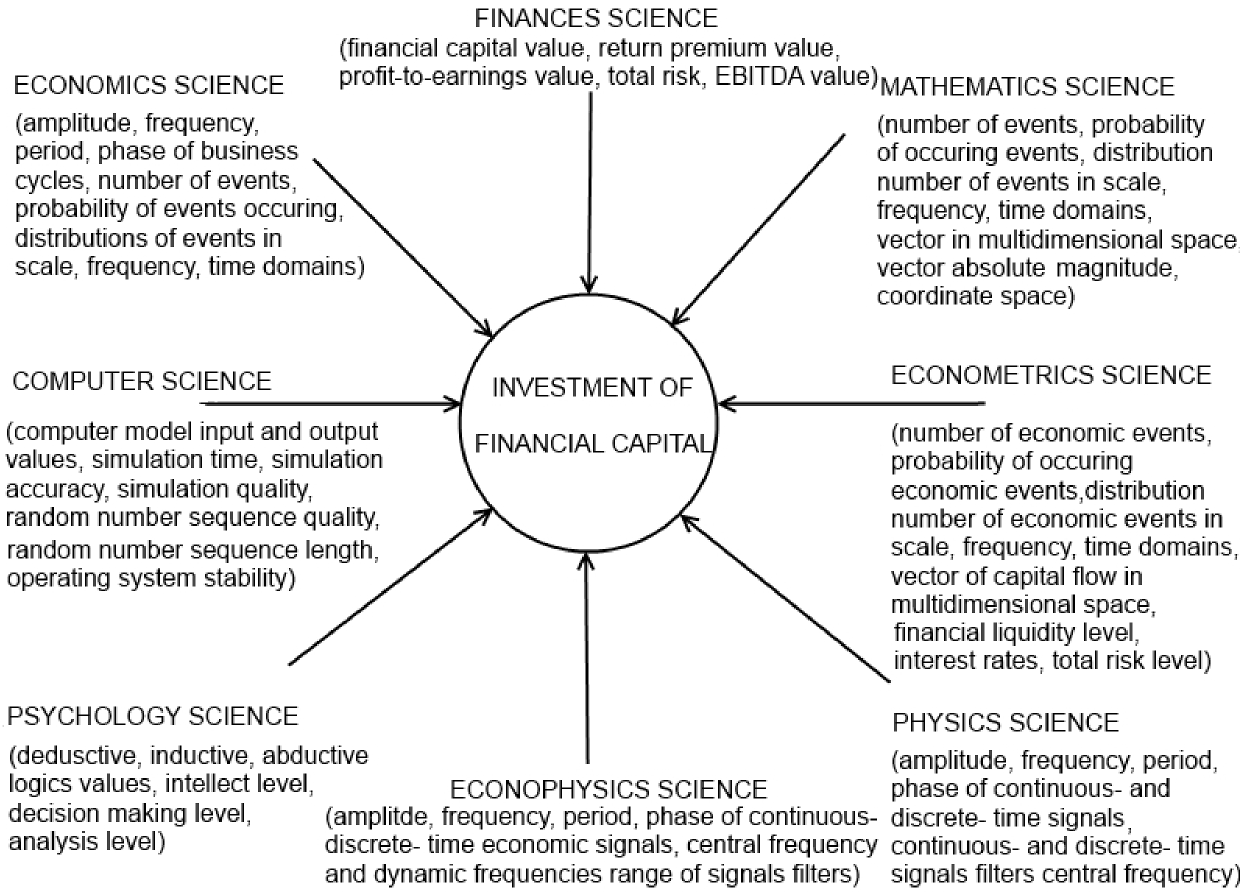

Fig. 6. Financial variables to characterize investment of financial capital in capital markets in short and long time periods.

Let us focus on the two most important developments, which have greatly contributed to the clarification of the problem on the investment of the financial capital in the capital markets:

1. The creation of the econometrics, including the statistical distributions theories and the probability theory, which have been developed in the research works in De Laplace (1812), Bunyakovsky (1846), Chebyshev (1846, 1867, 1891), Markov (1890, 1899, 1900, 1906, 1907, 1908, 1910, 1911, 1912, 1913), Bachelier (1900, 1914, 1937, 19 May 1941) Slutsky (1922a, b, 1925a, b, 1927a, 1937a, b), Courtault, Kabanov, Bru, Crépel, Lebon, Le Marchand (2000), Bachelier, Samuelson, Davis, Etheridge (2006).

2. The creation of the econophysics, including the heat transfer theory (the thermal conductivity theory), the Brownian motion theory, and the probability theory in Bunyakovsky (1825), Bachelier (1900, 1914, 1937, 19 May 1941), Einstein (1905, 1956), Einstein, Smolukhovsky (1936), Brush (1968, 1977).

Fig. 7 shows the illustration of the Gauss normal distribution of the probability of events.

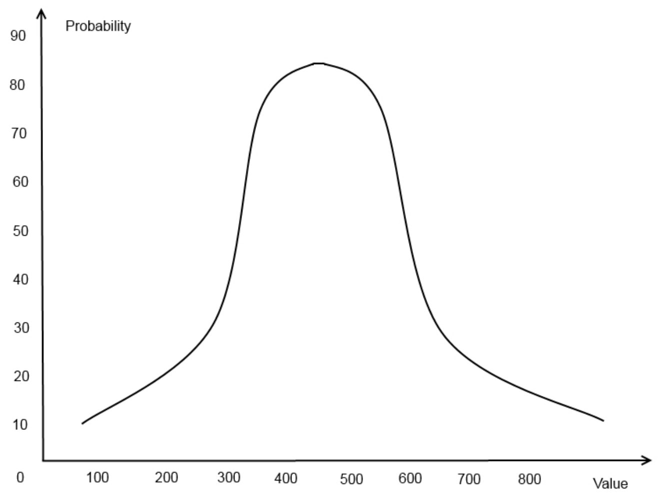

Fig. 7. Gauss normal distribution of probability of occurring events.

Fig. 8 provides an illustration of the valuable financial papers prices evolution estimation with the probability theory in the finances in Bachelier (1900, 1914, 1937, 19 May 1941).

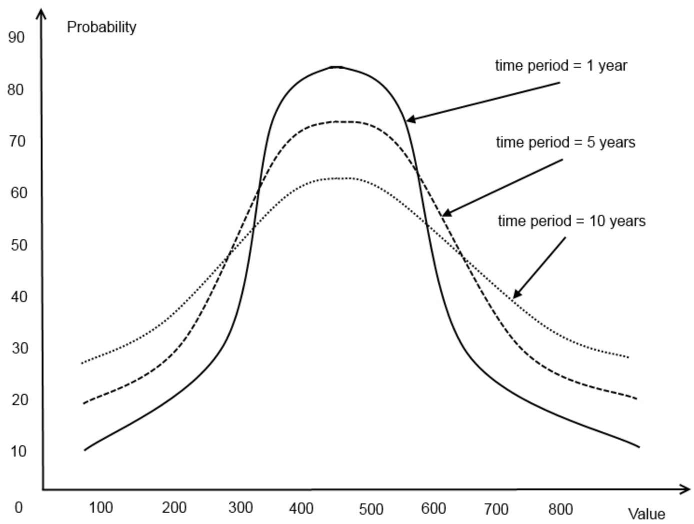

Fig. 8. Illustration of the valuable financial papers prices evolution estimation with the probability theory in the finances in Bachelier (1900, 1914, 1937, 19 May 1941). The three Gauss normal distributions of the probabilities of the valuable financial papers prices at various time periods of 1, 5, 10 years are depicted.

In the econophysics, we can pretend to precisely characterize the money in the capital markets by comparing the money in the finances to the small particles in the physics:

1. The money in the finances can be compared to the small particles in the physics;

2. The money can spread randomly in the financial system over the time in analogy to the case, when the small particles can spread randomly in the gas/liquid/condensed matter over the time;

3. The money movement in the financial system over the time can be characterized as the fractional Brownian movement similarly to the case, when the small particles displacement in the gas/liquid/condensed matter under the potentials difference over the time can be characterized as the fractional Brownian movement;

4. The money movement in the financial system over the time can be ballistic or diffusive or captivated. In the diffusion case, the money can diffuse in the financial system over the time in analogy to the case, when the small particles can diffuse in the gas/liquid/condensed matter over the time in agreement with the classic diffusion principles in the chemistry/physics;

5. The money can be characterized by the discrete-time signals with the discretely changing money's parameters in the diffusion-type financial systems over the time similarly to the case, when the small particles can be characterized by the discrete-time signals in the diffusion-type gas/liquid/condensed matter systems with the discretely changing chemical/physical parameters over the time;

6. The money can exhibit the discrete-time multi-fractal properties in the diffusion-type financial system in the scale-time domains over the time in analogy to the case, when the small particles can demonstrate the fractal properties in the diffusion-type gas/liquid/soft-condensed matter systems in the scale-time domains over the time.

Let us take a minute and explain that, in the physics, all the existing electromagnetic signals in our nature can be conditionally classified in the two broad categories:

1. The continuous-time signals, which can be studied with the continuous-time signals filtering theory and the continuous-time signals processing theory in the electrodynamics science; the physics science; the electrical, electronics, computer engineering science in Maxwell (1890), Ledenyov D O, Ledenyov V O (2015a);

2. The discrete-time signals, which can be researched with the discrete -time signals filtering theory and the discrete -time signals processing theory in the electrodynamics science; the physics science; the electrical, electronics, computer engineering science in Wiener (1923, 1930, 1949), Ito (1944, 1951a, b, 2000), Pugachev (1944, 1956a, b, 1960, 1961, 1962, 1971, 1973, 1974, 1975, 1974, 1978, 1979a, b, 1980a, b, 1981, 1982a, b, 1984, 1985, 1986), Pugachev, Sinitsyn (1986, 1989, 1990, 1999, 2004), Pugachev, Sinitsyn, Shin (1986a, b, 1987a, b, c), Bartlett (1954), Tukey (1957), Stratonovich (1958, 1959a, b, 1960a, b, 1961, 1964, 1965, 1966, 1967a, b, 1968, 1975), Stratonovich, Kuznetsov, Tikhonov (1965), Kalman, Koepcke (1958, 1959), Kalman, Bertram (1958, 1959), Kalman (1960a, b, 1963), Kalman, Bucy (1961), Oppenheim, Schafer (1989), Simon, Hinedi, Lindsey (1995), Proakis, Manolakis (1996), Prisch (1998), Wanhammar (1999), Sklar (2001), Rice (2008), Ledenyov D O, Ledenyov V O (2015a).

Let us clarify that, in the finances, the continuous- and discrete- time signals can be generated by the oscillating economic/financial variables over the time:

1. The continuous-time signals have been researched with the continuous-time signals filtering theory and the continuous-time signals processing theory in application to the business cycles of GDP(t), GNP(t), GIP(t), PPP(t) in the economics science in Juglar (1862), George (1881, 2009), Kondratieff (1922, 1925, 1926, 1928, 1935, 1984, 2002), Kitchin (1923), Schumpeter (1939), Burns, Mitchell (1946), Dupriez (1947), Samuelson (1947), Hicks (1950), Inada, Uzawa (1972), Kuznets (1973a, b), Ledenyov D O, Ledenyov V O (2013c, 2015d);

2. The discrete-time signals have been researched with the discrete-time signals processing theory in application to the business cycles in the economics science and the foreign currencies exchange rates in the finances science in Ledenyov V O, Ledenyov D O (2016s).

Fig. 9 shows the two signals groups by the oscillating financial variables in the finances.

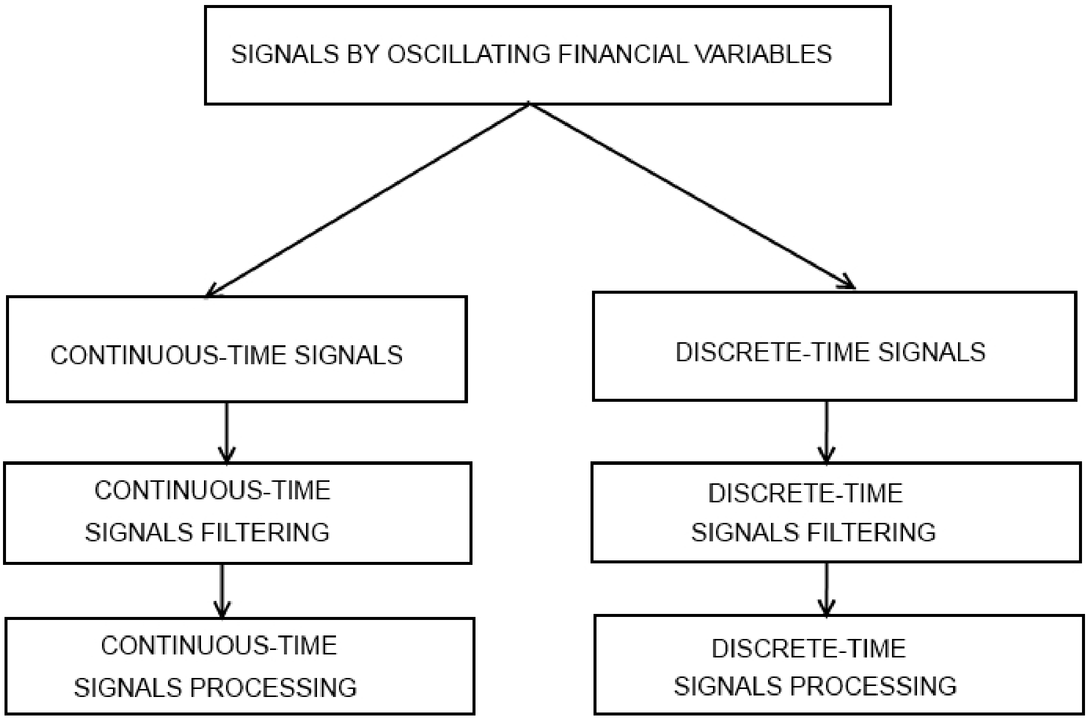

Fig. 9. Classification of signals by oscillating financial variables in finances.

Continuing our research discussion, we would like to demonstrate the continuous- and discrete- time signals waveforms in the time domain, $S_1(t)$ and $S_2(t)$.

Fig. 10 shows the continuous-time signal in the finances in Maxwell (1890), Ledenyov D O, Ledenyov V O (2015a). Fig. 11 demonstrates the discrete-time signal in the finances in Wanhammar (1999), Ledenyov D O, Ledenyov V O (2015a).

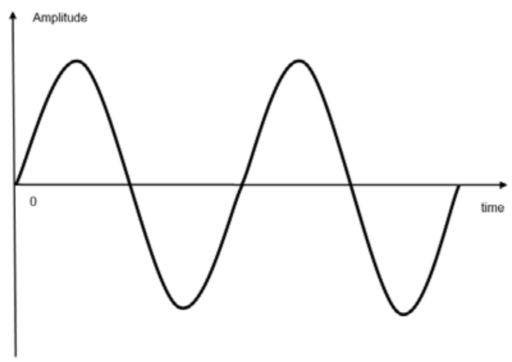

Fig. 10. Continuous-time signal by oscillating financial variables in finances.

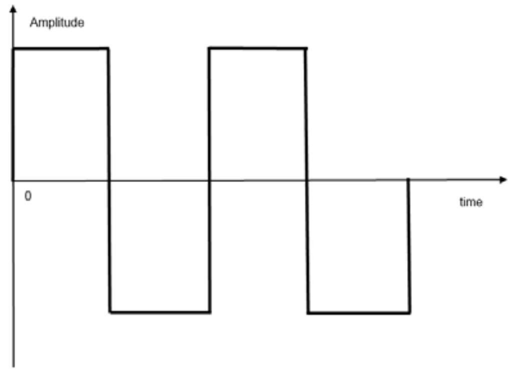

Fig. 11. Discrete-time signal by oscillating financial variables in finances.

The continuous time signals can be filtered out by the continuous-time filters; and the discrete-time digital signals can be filtered by the discrete-time digital filters.

Fig. 12 shows an illustration of the function of the continuous-time signal filter in Ledenyov D O, Ledenyov V O (2015a). Fig. 13 demonstrates an illustration of the function of the discrete-time signal filter in the finances in Wanhammar (1999), Ledenyov D O, Ledenyov V O (2015a).

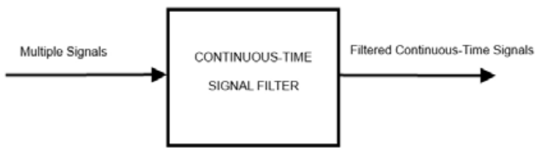

Fig. 12. Continuous-time signal filter in finances.

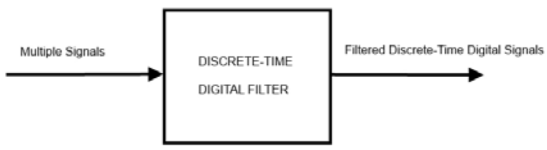

Fig. 13. Discrete-time digital signal filter in finances.

In the frames of the discrete-time signal processing theory, the discrete-time events can also be analyzed from their scaling properties point of view. More clearly, it was found that a mathematical set of valuable financial papers prices may exhibit a repeating pattern that displays at various scales over the time, then it was defined as a fractal in Mandelbrot (1975a, 1977). Therefore, it was assumed that the fractal theoretical model can be used to predict an evolution of the valuable financial papers prices in the scale-time domains in Mandelbrot (1997), Mandelbrot, Hudson (March 7 2006). Indeed, the scaling properties by the discrete-time events in finances, physics, electronics have been studied with an application of the chaos science by a number of famous scientists over recent decades in Mosekilde (1996-1997), Demenok (2011).

The multi-fractals scaling theory was formulated in Mandelbrot (1960, 1963a, b, 1965, 1965, 1967a, b, 1969, 1971, 1972, 1975a, b, 1977, 1982, 1997, May 7 2006), Mandelbrot, Taylor H M (1967), Mandelbrot, van Ness (1968), Mandelbrot, Wallis (1969). The multi-fractals theory intended to surpass the critical limitations of the classical theoretical models like the fractional Brownian motion in Mandelbrot (1997), Mandelbrot, Hudson (March 7 2006). In a multi-fractal theoretical model, the continuous spectrum of exponents (the fractal dimensions) is applied to characterize the complex systems in Mandelbrot (1960, 1963a, b, 1965, 1965, 1967a, b, 1969, 1971, 1972, 1975a, b, 1977, 1982, 1997), Mandelbrot, Taylor H M (1967), Mandelbrot, van Ness (1968), Mandelbrot, Wallis (1969), Harte (2001), Ausloos (2000), Harte (2001), Kantelhardt, Zschiegner, Koscielny-Bunde, Havlin, Bunde, Stanley (2002), Norouzzadeh, Rahmani (2006), Kim, Yoon (2004), Jiang, Ma, Cai (2007), Jiang, Zhou (2009), Liu, Qian, Lu (2010), Wang, Yu, Suo (2012), Trenca, Plesoianu, Căpusan (2012).

Speaking about the precise characterization of the money during the financial capital investment in the capital markets, we think that it can certainly be done in terms of the fractal and multi-fractal theories by observing, registering and analyzing the scaling properties of the discrete-time events (the money properties), characterized by the discretely changing parameters in the time-scale domains. For example, the prices of various investment assets in the capital markets can exhibit the repeating patterns that appear at various scales over the different time periods. It happens, because the prices of various investment assets depend on a big number of the discretely changing financial/economic variables in the economies of the scales and scopes. Therefore, the multi-fractals theory in the chaos science can help the private/institutional investors to make their accurate assumptions on the dynamics of changes of the prices of various investment assets in the capital markets in the finances in Mandelbrot (1960, 1963a, b, 1965, 1965, 1967a, b, 1969, 1971, 1972, 1975a, b, 1977, 1982, 1997, May 7 2006), Mandelbrot, Taylor H M (1967), Mandelbrot, van Ness (1968), Mandelbrot, Wallis (1969).

Fig. 14 shows an illustration of the fractal in form of Cantor set.

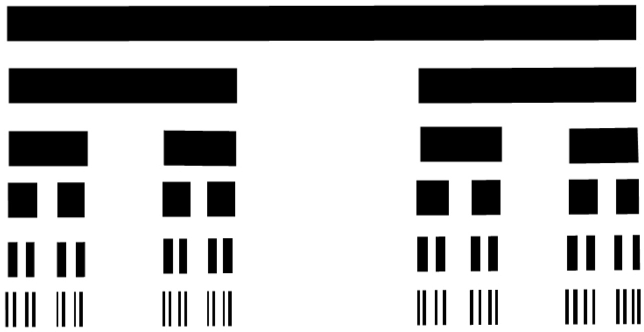

Fig. 14. Fractal in form of Cantor set.

Fig. 15 shows an illustration of the fractal in form of Koch snowflake.

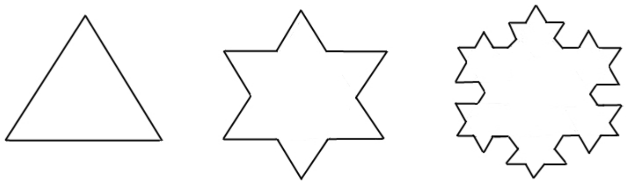

Fig. 15. Fractal in form of Koch snowflake.

Let us discuss, at this point, our new research proposal on the quantum diffusion of the money in the capital markets in the finances. As we know, the classic diffusion of the money occurs discretely as a result of the Brownian motion of the money in the capital markets in the economies of the scales and the scopes at the gradient of the financial/economic potentials application in Shiryaev (1998a, b). It is similar to the small particles classic diffusion in the gas/liquid/(soft)condensed matter at the gradient of the electro-chemical potentials application in accordance with the classic diffusion principles in the physics in Bunyakovsky (1825), Brown (1828, 1829), Einstein (1905, 1956), Einstein, Smolukhovsky (1936), Brush (1968, 1977), Ledenyov V O, Ledenyov D O, Ledenyov O P (2006, 2012).

We formulate the Ledenyov theory on the quantum diffusion of the money in the capital markets in the economies of the scales and the scopes at the gradient of the financial/economic potentials application. It means that the money can experience the quantum diffusion in the capital markets. It is similar to the small particles quantum diffusion through the potential barriers in the gas/liquid/(soft)condensed matter or the multilayered junctions at the gradient of the electro-chemical potentials application in accordance with the quantum diffusion principles in the quantum physics in Andreev (February 1976).

The Ledenyov theory on the quantum diffusion of the money in the capital markets can be expressed in terms of the modified Schrödinger wave function in Schrödinger (1926a, b)

$$\psi = \psi_0 \exp\left[\frac{\boldsymbol{i}\left(\boldsymbol{pr} - \varepsilon \boldsymbol{t}\right)}{\boldsymbol{\ell}_{QD}}\right],$$

where **p** is the impulse; **r** is the distance; **t** is the time; $\ell_{QD} = \frac{l_{QD}}{2\pi}$ – the Ledenyov constant with the quantum diffusion index (QD).

The Ledenyov theory on the quantum diffusion of the money in the capital markets can also be described in terms of the modified Schrödinger wave function, using the Feynman paths representation in Feynman, Hibbs (1965), Kleinert (2004)

$$\psi_i = \psi_0 \exp\left[\frac{\boldsymbol{i}\left(\int \boldsymbol{p}_i \boldsymbol{dr}_i - \int \varepsilon_i \boldsymbol{dt}\right)}{\boldsymbol{\ell}_{QD}}\right],$$

where $\boldsymbol{S}_i = \int \boldsymbol{p}_i \boldsymbol{dr} - \int \varepsilon_i \boldsymbol{dt}$ is the action on the money (the quantum particle) during its transposition along the trajectory **i**; $\boldsymbol{p}_i$ is the propagator of the money (the quantum particle); $\boldsymbol{P} = \sum \boldsymbol{p}_i$ is the full propagator of the money (the quantum particle), $\ell_{QD} = \frac{l_{QD}}{2\pi}$ – the Ledenyov constant with the quantum diffusion index (QD) in analogy with the Plank constant $\hbar = \frac{\boldsymbol{h}}{2\pi}$ in the physics.

Feynman proposed to order all the basic events in the form of the Feynman paths in the quantum system, using the Feynman paths representation in Feynman, Hibbs (1965)

$$\sum_{\boldsymbol{i}}^{\infty}\left\{\prod_{\boldsymbol{k}}^{\infty} \bullet \psi_k(\boldsymbol{i})\right\}_{\boldsymbol{p},\boldsymbol{x}}.$$

We suggest to order all the basic events in the form of the cross-sections of Feynman paths in the quantum system, using the Feynman paths representation in Feynman, Hibbs (1965)

$$\prod_{\boldsymbol{k}}^{\infty} \cdot \left\{\sum_{\boldsymbol{i}}^{\infty} \cdot \psi_i(\boldsymbol{k})\right\}_{\boldsymbol{m},\boldsymbol{D}}.$$

Then, we can derive the following equation, going from the commutation principle

$$\sum_{i}^{\infty}\left\{\prod_{k}^{\infty}\bullet\psi_{k}\left(\boldsymbol{i}\right)\right\}_{p,x}=\prod_{k}^{\infty}\cdot\left\{\sum_{i}^{\infty}\cdot\psi_{i}\left(\boldsymbol{k}\right)\right\}_{m,D}.$$

We can also write a set of the uncertainty principle expressions as

$$\Delta \boldsymbol{p} \Delta \boldsymbol{x} \geq \frac{\hbar_{QD}}{2}, \quad \Delta \varepsilon \Delta \boldsymbol{t} \geq \frac{\hbar_{QD}}{2}, \quad \Delta \boldsymbol{m} \Delta \boldsymbol{D} \geq \frac{\hbar_{QD}}{2},$$

where $\Delta \boldsymbol{p}$ is the uncertainty of the money momentum; $\Delta \boldsymbol{x}$ is the uncertainty of the money location; $\Delta \varepsilon$ is the uncertainty of the money energy; $\Delta \boldsymbol{t}$ is the uncertainty of the time; $\Delta \boldsymbol{m}$ is the uncertainty of the money mass; $\Delta \boldsymbol{D}$ is the uncertainty of the money diffusion.

The probability of the money (the quantum particle) presence in the given point of the capital markets space at the certain time moment in the econophysical state with the corresponding econophysical impulse is equal to

$$\boldsymbol{W} = \left|\psi * \psi\right|,$$

where * is the mathematical operation of complex conjugation.

Fig. 16 depicts the quantum diffusion of money at the cross-sections (CS) of the Feynman paths in the capital markets in the finances.

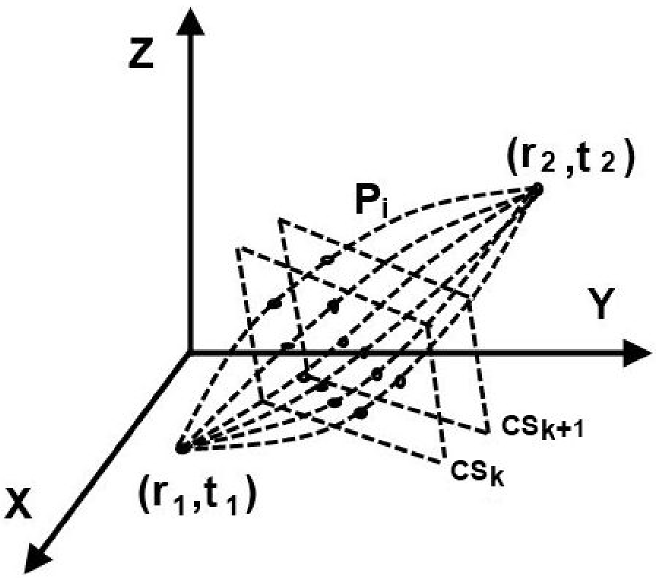

Fig. 16. Quantum diffusion of money at cross-sections of Feynman paths in capital markets.

In Chapter 3, we will search for an optimal solution to the problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, using various investment products, vehicles and mediums.

Chapter 3

Solution of problem on financial capital investment in capital markets, using various investment products, vehicles and mediums

A research on the optimal investment of the financial capital in the capital markets began in the early research books in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Bagehot (1873, 1897). Despite the numerous proposed ideas, the optimal solution was not found on that time, because the problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods is a quite challenging task to think about from all the points of view. One of the reasons to believe so is hidden in the fact that there is a big number of the changing financial/economic variables to characterize the financial capital investment in the capital markets. Paradoxically, the small short-term changes as well as the big long-term changes of the financial/economic variables may have the multiple unpredictable impacts on the performance of the financial capital in the capital markets.

Making a philosophical observation on our modern life, we can say that the humans live in the modern information societies in the environment, consisting of the multiple layers such as the atmosphere, ionosphere, stratosphere and cyber-sphere. These modern information societies can be precisely identified by the unique digital DNA(s) in Ledenyov V O, Ledenyov D O (2016p, s) in an analogy with the biological objects identification in the medicine by the DNA(s) in Miescher (1871), Kol'tsov (December 12 1927), Watson, Crick (1953), Watson (2002, 2004), Gamow (1954a, b), Library of Congress (2015), DeVinne (1985), Dahm (2008), Wikipedia (2015i). In the modern information societies, the humans like to interact with the quantum/electronic/photonic devices, designed with the application of the hardware/software components in the complex quantum/electronic/photonic systems. The hardware includes all the mechanical, electronic, photonic, quantum devices, which are made of the multilayered thin films of the metals, superconductors, semiconductors, insulators and (non)organic compounds, for the automatisation/communication purposes mainly. The software includes the multilayered protocol stacks such as the TCP/IP protocol stack for the text/audio/video communications over the Internet. Therefore, it is quite natural for the engineers to design the complex quantum/electronic/photonic systems made of the multiple layers in the electrical, electronics and computers engineering, physics, chemistry, and mathematics in Oppenheim, Schafer (1989), Simon, Hinedi, Lindsey (1995), Proakis, Manolakis (1996), Prisch (1998), Wanhammar (1999), Sklar (2001), Rice (2008), Ledenyov D O, Ledenyov V O (2015a).

In the finances, we think that the financial capital investment in the capital markets with an aim to get the increased return premium in the short and long time periods can be characterized much more accurately, researching the multiple layers in the financial capital investment process with an application of the advanced theories with the differential equations with many oscillating financial/economic variables:

1. Finances science (the general finances, accounting theories);

2. Economics science (the macro-, micro-, and nano- economics theories);

3. Business administration science (the business administration theory);

4. Management science (the governance theory);

5. Mathematics science (the statistic, probability, differential equations theories);

6. Econometrics science (the financial/economic risks, signals filtering theories);

7. Physics science (the continuous- and discrete-time signals theories);

8. Econophysics science (the quantum macro-, micro-, nano- economics theories);

9. Philosophy science (the philosophical thinking with scientific reasoning theory));

10. Psychology science (the logics, logical analysis, decision making theories);

11. Computer science (the computer modeling theory);

12. Engineering science (the financial engineering theory);

13. Biology science (the DNA theory);

14. Sociology science (the investor behaviour, the customer behaviour theories).

However, the multiple financial/economic variables can change nonlinearly in the nonlinear diffusion-type financial system in the time domain, making it difficult to predict their magnitudes precisely in Ledenyov V O, Ledenyov D O (2016s). In addition, the multiple financial/economic variables can change discretely in the nonlinear diffusion-type financial system in the time domain, making it challenging to forecast their values accurately in Ledenyov V O, Ledenyov D O (2016s). Therefore, the theoretical knowledge bases in many sciences must be beneficial for the creation of the optimal investing models, aiming to get the increased return premium at the financial capital investment in the capital markets in the short and long time periods in Ledenyov V O, Ledenyov D O (2016s). Summarizing all the above statements, we think that the multidisciplinary approach in tackling of the problem on the financial capital investment in the capital markets with the aim to get the increased return premium in the short and long time periods can be regarded as a most fruitful and optimal one from the scientific point of view.

Fig. 17 shows the sciences with the theories, which can be used to solve the problem on the investment of the financial capital in the capital markets.

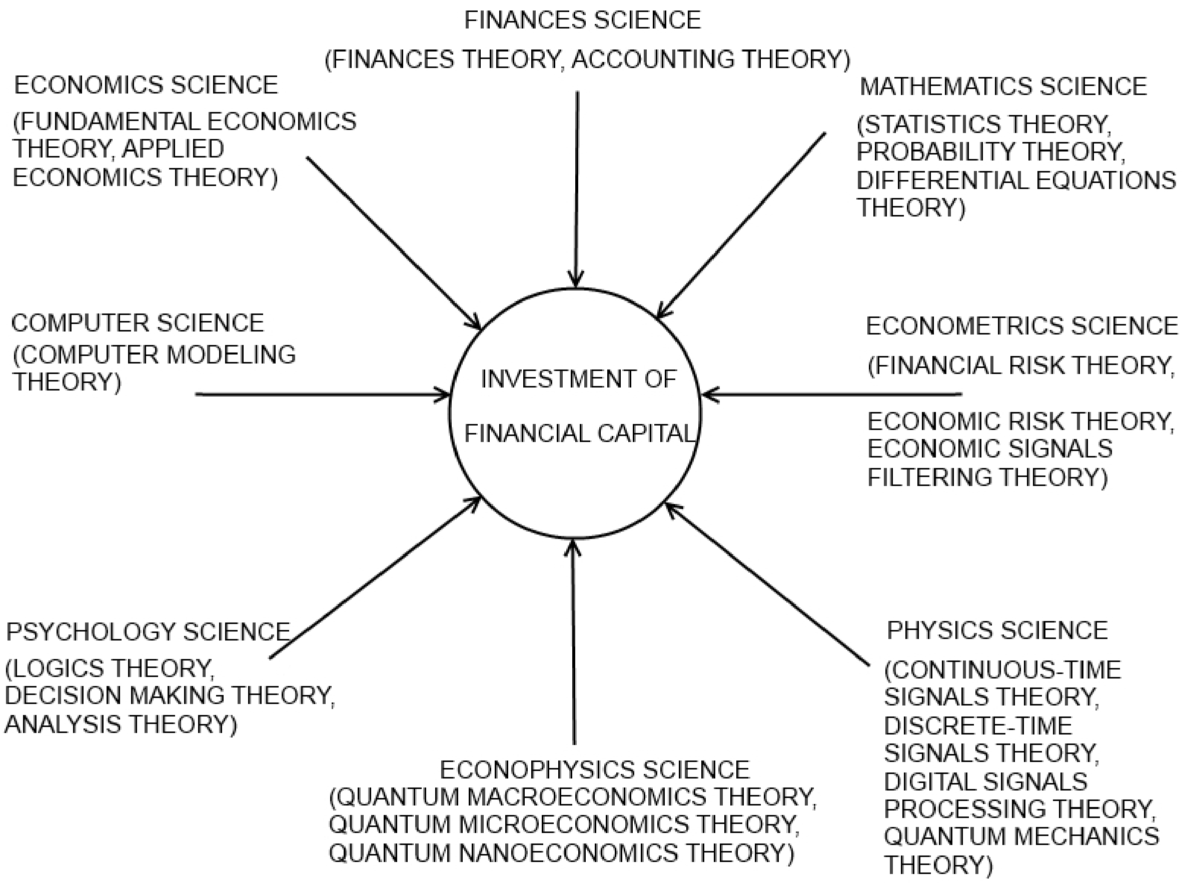

Fig. 17. Sciences to solve problem on investment of financial capital in capital markets.

Of course, an overall successful development of the investment economy of the scale and the scope critically depends on a created/implemented set of the regulatory policies by the state governments, aiming to encourage the financial capital investment into the real sector of the economy of the scale and the scope rather than into the speculative sector of the economy of the scale and the scope. The set of refined regulatory policies may represents a legislative base, which has to be introduced before the moment, when:

1. The additional emission of the money in the frames of the financial liquidity adding policies to finance the state budget will be introduced;

2. The additional financial resources from the international capital markets to finance the new business development programs will be attracted;

3. The additional financial resources from the national capital markets to finance the new business programs will be collected.

The solution of problem on the investment of the financial capital in the capital markets can be derived as a result of completion of the following research stages:

1. The investment problem formulation;

2. The financial capital modeling;

3. The investment process modeling;

4. The financial system modeling;

5. The investment problem solution.

Fig. 18 shows the block scheme on the optimal solution search for the problem on the investment of the financial capital in the capital markets.

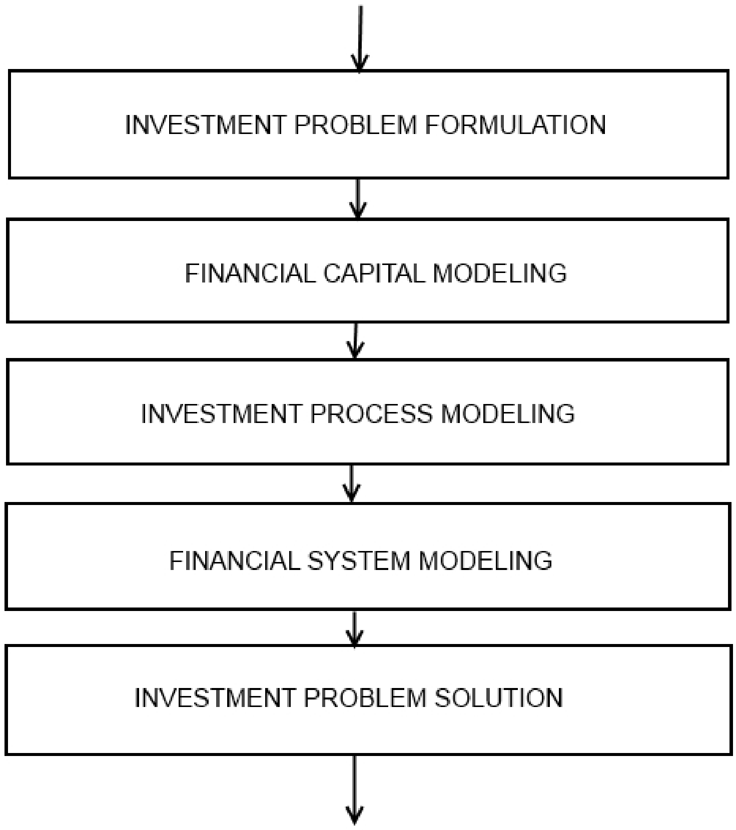

Fig. 18. Multilayered theoretical modeling to find solution of problem on investment of financial capital in capital markets.

Considering the investment process modeling, we would like to explain that the investment process can be viewed as a process of the financial capital investment in the capital markets with the goal to get an increased return premium in the short and long time periods. The investment process generally includes the following nine phases, which can be complemented by the additional phases, depending on the considered case of the research interest:

1. The investment process start;	***6.*** The investment risk calculation;
2. The investment strategy creation;	***7.*** The investment capital allocation;
3. The investment product selection;	***8.*** The return premium generation;
4. The investment vehicle selection;	***9.*** The investment process end.
5. The investment medium selection;	

Fig. 19 shows the block scheme of the investment process with the main stages explained.

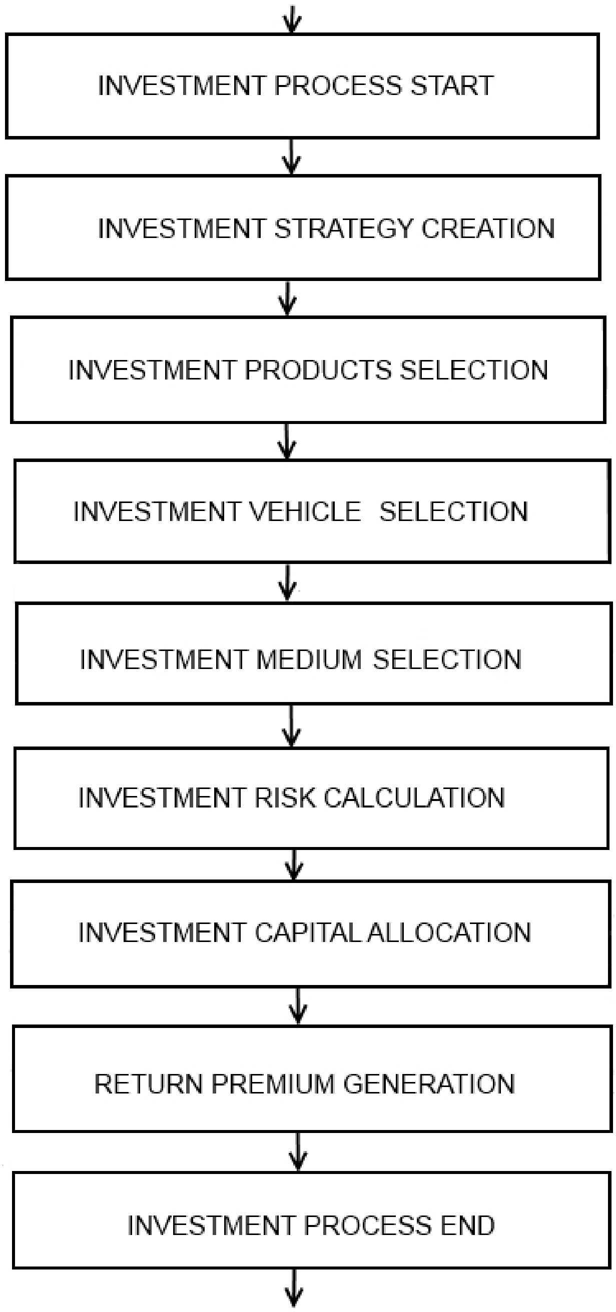

Fig. 19. Block scheme of investment process with main stages.

At this point, we can clearly see that there are the three main activities at the core of any investment process in the capital markets in the finances:

1. The selection of the investment products;

2. The selection of the investment vehicles;

3. The selection of the investment mediums.

Let us conditionally draw the investment star planetary system in our abstract philosophical imagination with the purpose to make it easy to memorize all the three important components of the financial capital investment process in the capital markets in the finances.

Fig. 20 shows the investment star planetary system in the finances galaxy.

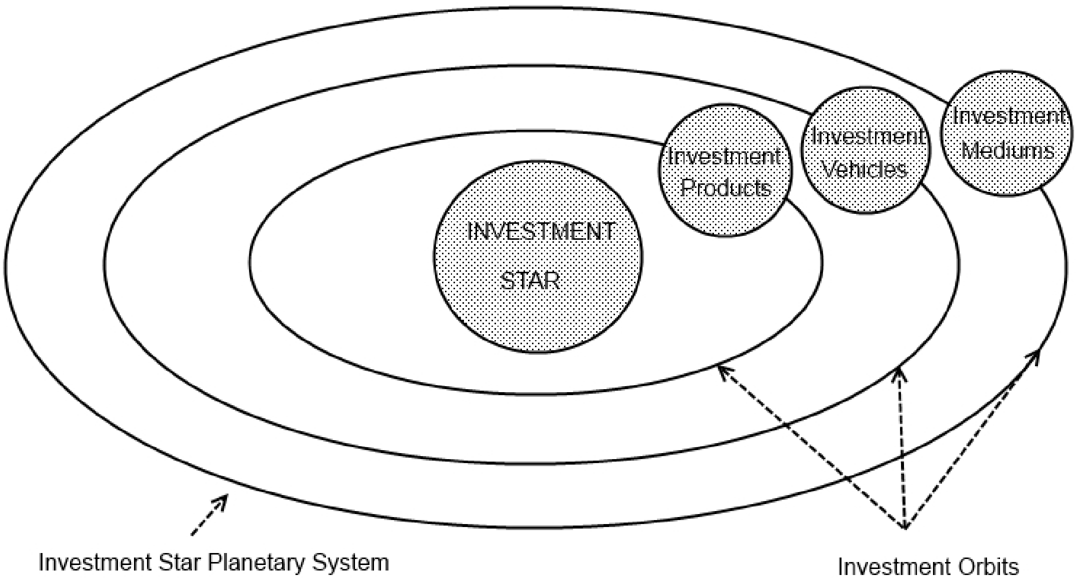

Fig. 20. Investment star planetary system in finances galaxy.

In general, the problem on the investment of the financial capital in the capital markets can be approximately solved, using the theoretical modeling with the mathematical differential equations with a number of the interdependent financial/economic variables at the specified boundary conditions in the econometrics and econophysics sciences. The final result can only be obtained with a certain accuracy, which is a sum of the following accuracies: the accuracy of the financial capital modeling, the accuracy of the investment process modeling; and the accuracy of the nonlinear dynamical financial system modeling.

Let us focus our attention on the **investment products/asset classes/instruments**, which are being sold to the prospective investors by the financial firms/institutions in the capital markets at present time. We would like to give an example on the investment products by listing a certain number of the possible investment products such as the land, real estate, government bonds, companies stock, companies options, financial securities, foreign currencies, commodities, and antique/modern arts. We can continue this short list with many more entries, because a number of the innovative financial products increases every day exponentially.

All the investment products/asset classes/instruments can be classified into the two broad categories:

1. The real investment products/asset classes/instruments, which include the real financial products like the land, real estate, commodities;

2. The imaginary investment products/asset classes/instruments, which include the synthesized financial securities and other derivatives.

Fig. 21 depicts the investment products/instruments in the capital markets.

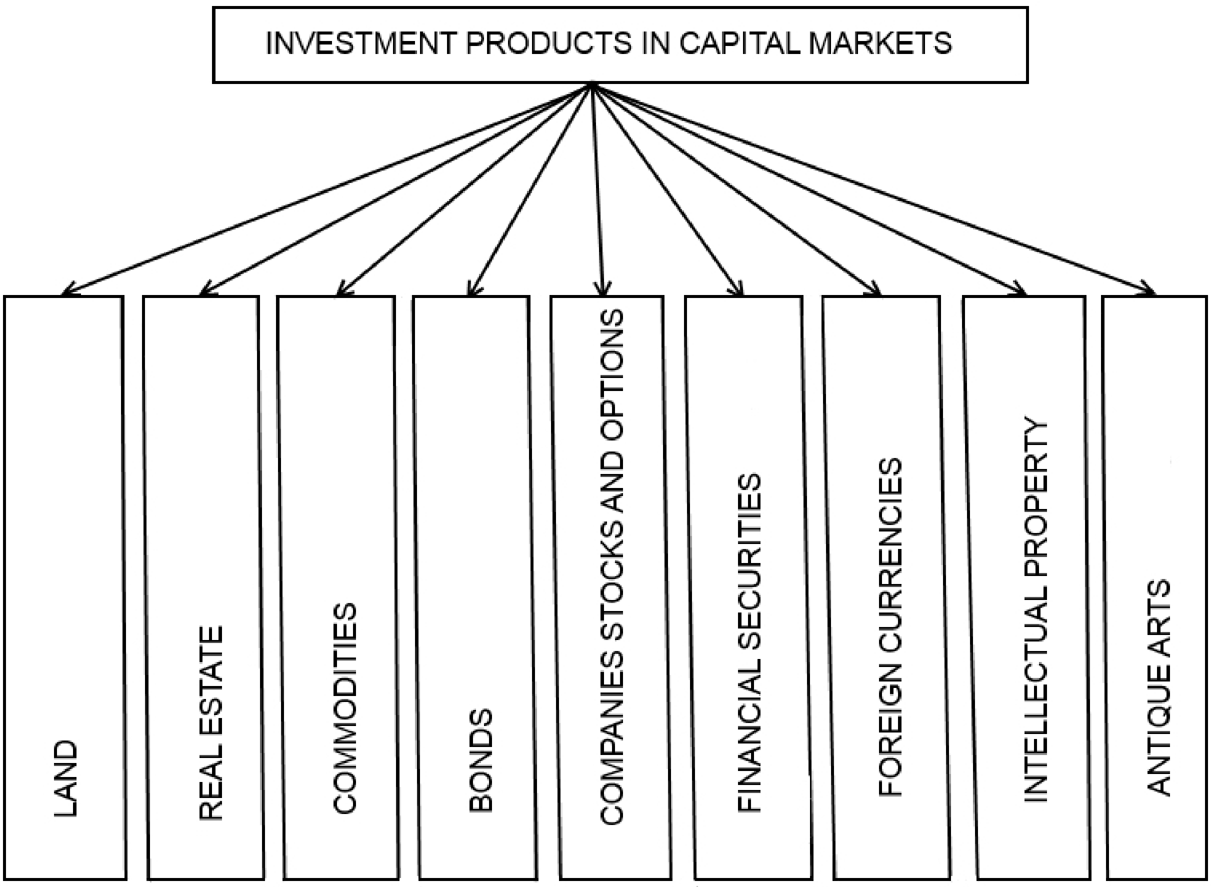

Fig. 21. Investment products in capital markets.

Let us concentrate on the **investment vehicles/intermediary** , which can be used by the prospective private/institutions investors in the capital markets in the finances. We would like to give an instance of the investment vehicles, presenting a certain number of the investment vehicles such as the investment banks, investment funds, hedge funds, pension funds, investment boutiques, investment firms, investment corporations, investment groups, investment angels.

All the investment vehicles can be classified into the two broad categories:

1. The real investment vehicles, which include the real financial institutions like the banks, funds, firms;

2. The virtual investment vehicles, which include the virtual financial institutions like the structured investment vehicle (SIV).

The investment vehicles can be rated by the rating agencies, depending on the financial performance indicators demonstrated by the investment vehicles in the capital markets.

Fig. 22 shows the investment vehicles in the capital markets.

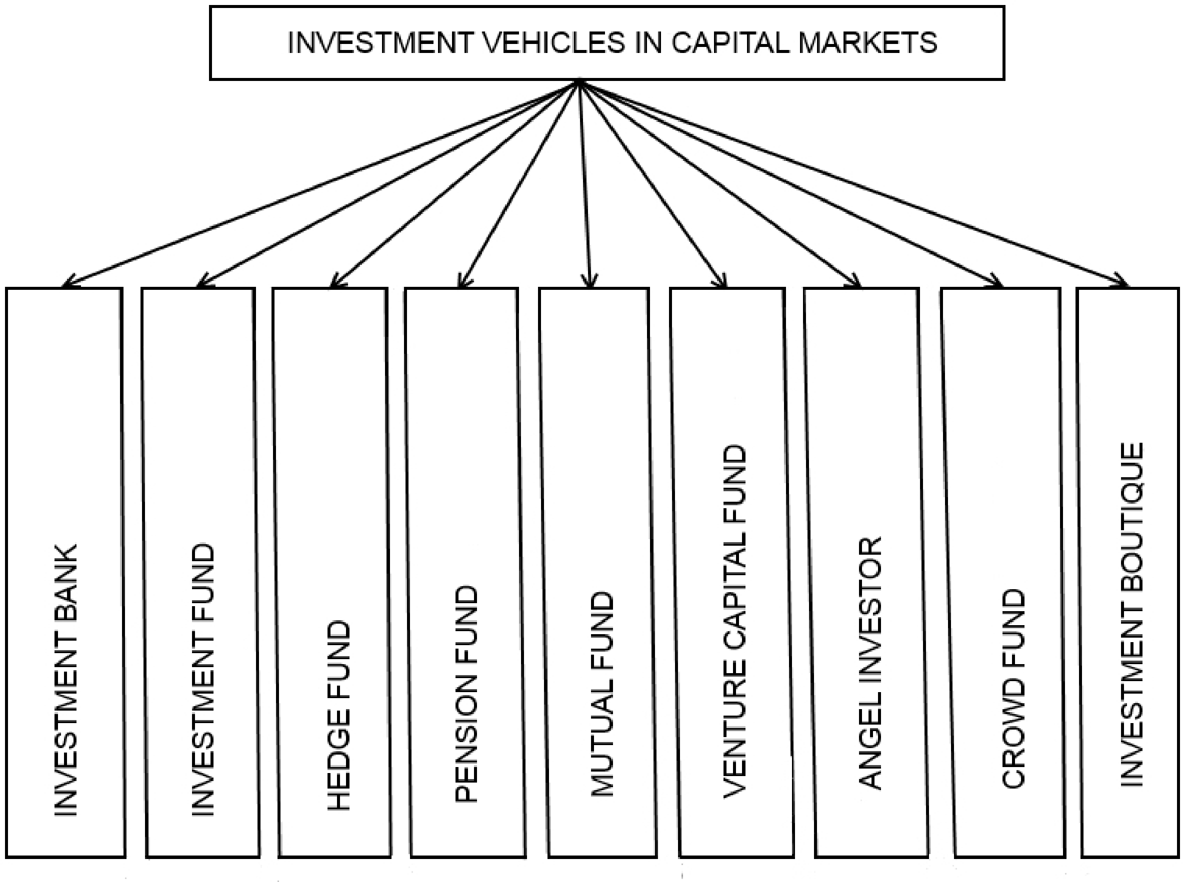

Fig. 22. Investment vehicles in capital markets.

Let us focus on the **investment mediums**, which are present in the capital markets. We prefer to define the investment medium as the medium of the investment products exchange in the capital markets. We would like to give an example on the investment mediums, providing a certain number of the investment mediums such as the land exchange, real estate exchange, stock exchange, foreign currencies exchange, financial securities exchange, commodities exchange, precious metals exchange, patents exchange, antique arts exchange.

Fig. 23 provides information on the investment mediums in the capital markets.

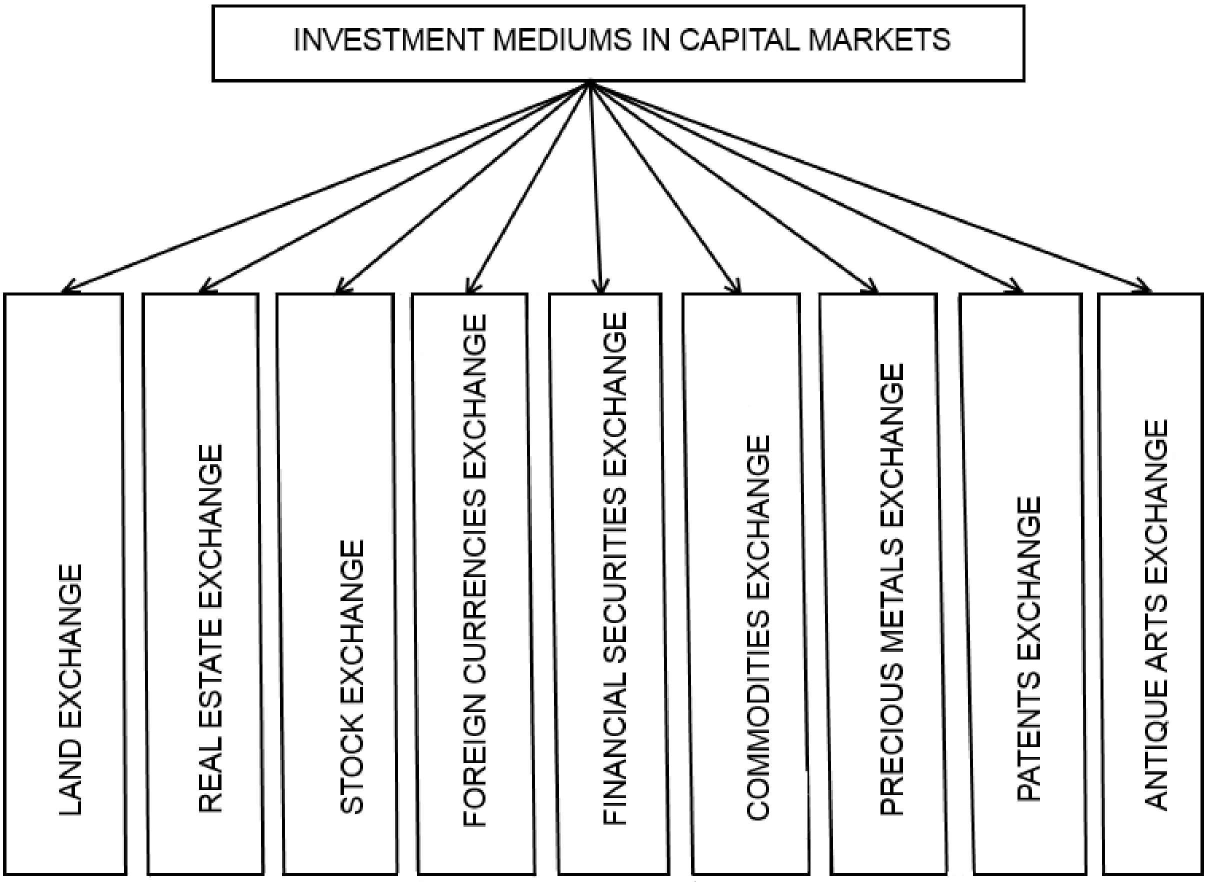

Fig. 23. Investment mediums in capital markets.

In Chapter 3, we decided to divide the investment process on the multiple layers and shortly discussed a possible practical application of the investment products, the investment vehicles, the investment mediums in the investment process at the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. In the forthcoming research chapters, we will comprehensively discuss an application of the investment products (Chapter 4), the investment vehicles (Chapter 5), the investment mediums (Chapter 6) in the investment process at the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 4

Investment products for financial capital investment in capital markets

The investment product (the investment asset class / investment instrument) is something, which is synthesized by the natural process or developed by the human efforts process with the purpose of the value estimation, the value storing and the value incrementing by the way of financial capital investment with the aim to get an increased return premium in the capital markets in the short and long time periods. There are many different types of investment products with the natural or artificial properties, created by the financial organizations in the capital markets in the finances.

Fig. 24 shows the investment products in the capital markets in the finances.

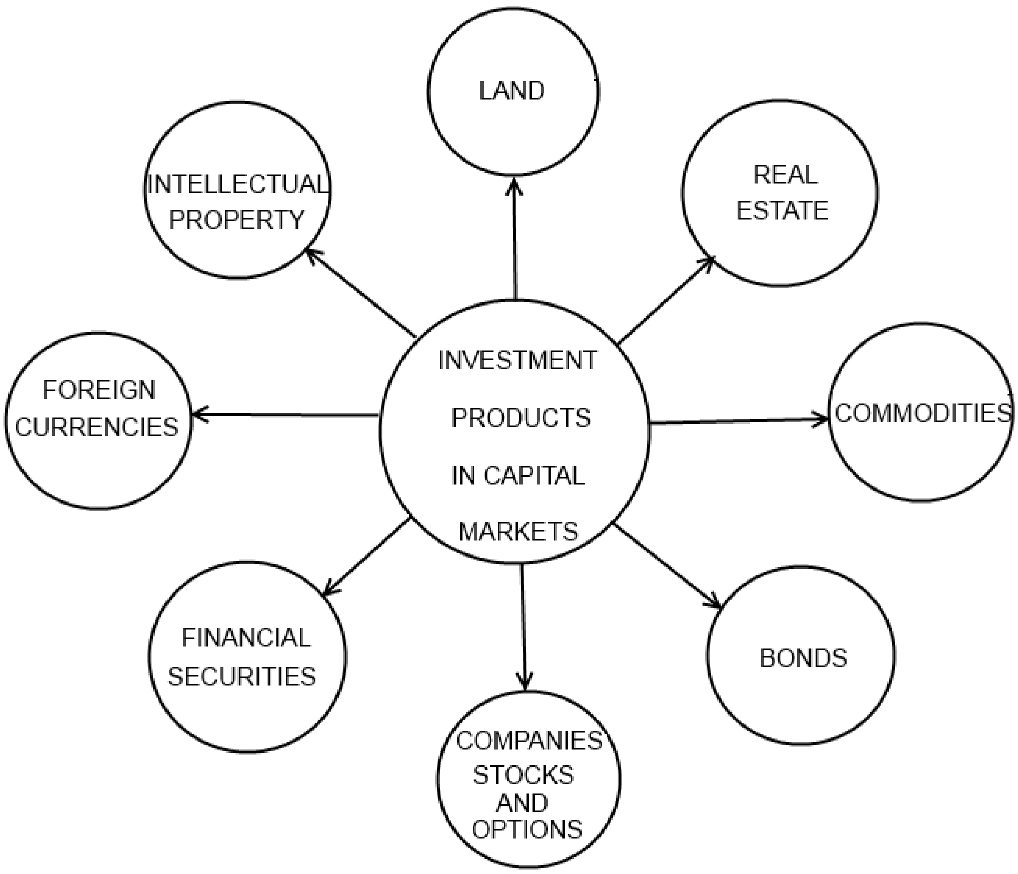

Fig. 24. Investment products in capital markets in finances.

Illustrating the investment product conception in Fig. 22, we decided to draw a marvelously simple picture of the star with the multiple beams of the radiating light. In our imagination, we can conditionally associate this image in the astrophysics with the researched topics in the finances by thinking abstractly and cognitively about the two things:

1. The star, consisting of the numerous investment products in the capital markets galaxy; and

2. The radiating beams of the light with the different wavelengths, corresponding to the specific investment product in the capital markets galaxy.

4.1 Land as investment product.

Now, let us consider the numerous investment products in the capital markets in the finances in details, conducting our research discussion in order of investment attractiveness of the investment products. We would like to begin with the consideration on the land, which is a scarce natural resource of limited availability on our planet. In the finances, the **land** can be classified as an investment product (an investment asset class and an investment instrument) for the financial capital investment with the aim to get an increased return premium in the short and long time periods, because the land can be freely traded at the land markets in the economies of the scales and the scopes.

The straightforward investment idea by the investor is to forecast the land prices changes dynamics; then to invest the financial capital into the selected land at a certain time moment; after that moment to wait for some time period, and finally to sell the land at the certain time, obtaining an increased return premium at the land market in the short/long time periods.

There may be many classifications of the land types in the economics, including the agricultural, urban, industrial lands, which can be evaluated, sold and purchased on the land markets. The land pieces can be situated at the various locations, for instance, in the central districts in the city or in the suburban areas far away from the downtown. Therefore, the land valuation depends on a number of the land properties, which uniquely characterize the selected land site in the land market.

The land is freely traded at the certain prices at the land exchanges in the land markets worldwide, however the big landlords with a lot of the privately owned land can keep the land sites for the re-selling purposes only for the long time, restricting the development projects realization in the big cities and elsewhere. In agreement with the reputable economists' opinions, the land trade / exchanges can be further stimulated by the adaptation of the progressive single tax in the frames of the land value taxation theory in George (1879, 1881, 2009), Hirsch (1896), Morris, Heathcote (2007).

The land investment theories and practices have been researched in Ricardo (1817, 1821), Denman (1956), Silberberg (1975), Veenman, Zonen (1961), Elvin, Ervin (1982), Mills, Hoover (1982), McFarlane (1983), Eaton (December 1984), Phipps (1984), Kaplan (Winter 1985), Fiske (October 7-8 1986), Wiltshaw (1986), Guzhvin (1987), Eaton (1988), Mercier (1988), Reeve (1988), Asako, Kuninori, Inoue, Murase (1989), Asako, Kuninori, Inoue, Murase (1997), Feder, Onchan (1989), Phillips, Bauer, Mercier, Mumey (1989), Phillips, Bauer, Akabua (1993), Roth, Barrows, Carter, Kanel (1989), Schnitkey, Taylor, Barry (1989), Barrett (1991), Kanemoto (1991), Lins, Hoffman, Kowalski (September 23-24 1991), Yoshida (1991), Butler, DeBraal (1993), Miller, Andrews (February 9 - 11 1993), Capozza, Yuming Li (1994), Werner (1994), Nieuwoudt (1995), Ogawa, Suzuki (1995), Ogawa Kazuo, Shin-Ichi Kitasaka, Hiroshi Yamaoka, Yasuharu Iwata (1996), Grepperud (February 1996), Echevarria (1997), Deininger, Feder (2001), Kiyotaki, West (2004), Sekine, Tachibana (March 2004), Feinerman, Peerlings (2005), Hennings, Sherrick, Barry (2005), Ray (2005), Turnbull (2005), Kiyotaki, West (2006), Holden, Deininger, Ghebru (2007), Sekine, Tachibana (2007), Głuszak (2008), Von Braun, Meinzen-Dick (April 2009), Cotula, Vermeulen, Leonard, Keeley (2009), Cotula (2012), Fakton, van der Post (2010), Fischer, Shah (2010), Zoomers (2010), Abdulai, Owusu, Goetz (2011), Arezki, Deininger, Selod (December 2011), De Schutter (2011), Hui-Wen Koo (2011), Palyanychko (2011), Zagema (September 22 2011), Di Corato, Hess (September 26-28 2012), Domeher, Abdulai (2012), Van der Kr Pasmans, Van der Heijden (2012), Todorovic, Vasiljevic, Rajic (2012), Oya (2013), Xianlei Ma, Heerink, van Ierland, van den Berg, Xiaoping Shi (2013), Zolin, Luzi (2013), Boehlje, Baker, Langemeier (January 3-5 2014), Malashchuk (2014), Palenychak (2014), Arezki, Deininger, Selod (2015), Busha (2015), Szreder (2015), Bochco (2016), Borghesi, Giovannetti, Iannucci, Russu (2016).

4.2 Real estate as investment product.

The **real estate** can also be considered as one of the investment products (a fixed tangible investment asset class and an investment instrument) for the financial capital investment with the goal to get an increased return premium in the short and long time periods, because the real estate is freely traded at the real estate markets on a global scale.

In fact, the real estate can be considered as a largest category of the residential, commercial, and industrial properties assets to make the investments in (see Johnson (2006)). There are the two most frequently used ways to invest in the real estate:

1. The direct investment in the real estate by buying the real property;

2. The indirect investment in the real estate, using the private equity investment in the real estate asset class in the financial investment portfolio in Friedman (March 1971).

In the case of the seasoned private/institutional investors, the main investment idea is to predict the real estate prices dynamics; then to invest (in)directly the financial capital into the selected real estate at a certain time moment; after that to wait for some time period, and finally to sell the real estate at the certain time moment, obtaining an increased return premium at the real estate market in the short or long time periods.

In our days, the real estate industry can be regarded as one of the most sophisticated industries in Europe, USA and Asia. The real estate investment products in the real estate industry have been comprehensively discussed in Grebler (1954), Taylor G S, Bailey (1963), Wendt, Wong (December 1965), Friedman (December 1970, March 1971), Roulac (1976, 1996), Smith, Shulman (September–October 1976), Lusht (1978), Pellatt (1972), Chapman Findlay III, Hamilton, Messner, Yormark (September 1979), Ibbotson (Fall 1979), Ibbotson, Sinquefield (1982), Ibbotson, Siegel (1983, 1984), Ibbotson, Siegel, Love (Fall 1985), Penny (1980), Rystrom (1980), Burns, Epley (Winter 1982), Miles, Estey (Winter 1982), Miles, McCue (Summer 1982), Miles, McCue (1984), Brueggeman, Chen, Thibodeau (1984), Fogler (1984), Webb (1984), Webb, McIntosh (1986), Gau (1985), Gau, Wang (1990), Hartzell, Mengden (August 27 1986), Hartzell, Hekman, Miles (Spring 1987), Hartzell, Webb (1988), Hartzell, Liu, Kallberg (2004), Kuhle, Walther, Wurtzebach (1986), Kuhle (1987), Titman, Warga (Fall 1986), Haight, Fort (1987), Chen, Tzang (1988), Chinloy (1988), Firstenberg, Ross, Zisler (1988), Gyourko, Linneman (1988), Gyourko, Keim (1992), Hines (March 1988), Lusht (1988), Miller, Sklarz, Ordway (1988), Mooney S, Mooney K (1988), Wittner (Fall 1988), Geltner (1989), Goebel, Kim (1989), Rubens, Bond, Webb (1989), Sweeney (1989, 1993), Chan, Hendershott, Sanders (Winter 1990), Colwell, Park (September 1990), Giliberto (Summer 1990), Goetzmann, Ibbotson (1990), Howe, Shilling (1990), Liu, Hartzell, Grissom, Wylie (1990), McMahan (1990), Sagalyn (1990), Wheaton, Torto (1990), Asabere, Kleiman, McGowan (1991), Martin, Cook (1991), McIntosh, Liang, Tompkins (Spring 1991), Ross, Zisler (1991), Ziobrowski A J, Boyd (1991), Ziobrowski A J, Curcio (1991), Ziobrowski A J, Ziobrowski B J (1993), Ziobrowski B J, Ziobrowski A J (1995), Ziobrowski A J, McAlum, Ziobrowski B J (1996), Ambrose, Ancel, Griffiths (Spring 1992), DiPascuale, Wheaton (1992), Kleiman, Farragher (1992), Liu, Mei (1992), Brueggeman, Fisher (1993), Newell, MacFarlane (March 1994), Worzala (1994), Worzala, Newel (1997), Zumpano, Elder (1994), Baum (1995, 2009), Corgel, McIntosh, Ott (1995), Jun Han, Youguo Liang (1995), Mueller (Spring 1995), Barkham, Ward, Henry (1996), Geurts, Jaffe (1996), Han (1996), Newell (1996), Newell, Webb (1996), Seck (1996), Solnik (1996), Bers, Springer (1997), Brueggeman, Fisher (1997), Farrell (1997), Hoesli, MacGregor, Matysiak, Nanthakumaran (1997), Mei, Saunders (1997), Redman, Manakyan, Liano (1997), Ball, Lizieri, MacGregor (1998), Chun, Shilling (1998), D'Arcy, Keogh (1998), Martens (1998), Svensson (1998), Adair, Berry, McGreal, Syacutekora, Ghanbari Parsa, Redding (Spring 1999), Keogh, D'Arcy (1999), Liao, Mei (1999), Moshirian, Pham (2000), Brounen, Cools, Schweizer (Summer 2001), Lee (2001, 2005, 2006a, b), McGreal, Parsa, Keivani (2001), Thrall (2002), Blazenko, Pavlov (2004), Deqing Diane Li, Yung (2004), Engelberts, Suarez (2004), Hoskin, Higgins, Cardew (Spring 2004), Loo Lee Sim, Xing Quan Zhang, Jieming Zhu (2004), Pi-Ying, Lai Peddy (2004), Hardin, Liano, Gow-Cheng Huang (2005), Laposa, Lizieri (April 13 – 16 2005), Holsapple, Ozawa, Olienyk (2006), Johnson (2006), Lim, McGreal, Webb (2006), Adlington, Grover, Heywood, Keith, Munro-Faure, Perrotta (December 6-8 2008), Chan, Hardin III, Liano, Zheng (2008), Lambie-Hanson (Fall 2008), Minye Zhang, Yongheng Deng (July 9 2008), Falkenbach (2009), Kurzrock, Rottke, Schiereck (2009), Edelstein, Qian, Tsang (2010), Lieser, Groh (2010, July 2011), Peralta-Alva (2011), Chaney, Sraer, Thesmar (2012), Baker, Chinloy (editors) (September 4 2014, September 8 2014), Cunat, Cvijanovic, Yuan (2014), Gauder, Houssard, Orsmond (2014), Lieser, Groh (2014), Anderson, Rottke, Krautz (2015), Hazama, Uesugi (October 2015), Maksimov, Bachurinskaya (2015), Papastamos, Matysiak, Stevenson (2015).

4.3 Commodity as investment product.

We have already discussed the land and the real estate as the investment products. The land and the real estate are also frequently regarded as the commodities. In the academic literature, the **commodity** can be described as an investment product (an investment asset class and an investment instrument) for the financial capital investment with the aim to get an increased return premium in the short and long time periods, because the fact that the commodities are freely traded at the global commodities markets.

In general, the commodity investment products (the commodity investment asset classes) may include, but not limited to: the extracted natural resources, the processed row materials and some other transportable products, which are freely exchanges and traded at the global commodities markets. For example, the following things can be classified as the commodities in Gilbert (March 2010):

1. The precious metals (the gold, silver, platinum, palladium);

2. The industrial metals (the copper, aluminum, steel);

3. The extracted minerals (the potassium, calcium, iron ore);

4. The extracted energy sources (the crude oil, heating oil, gasoline, natural gas);

5. The generated energy (the nuclear, solar, wind energies);

6. The harvested agricultural products (the wheat, corn, cocoa, coffee, cotton, sugar);

7. The produced livestock (the feeder cattle, live cattle).

The investment into the commodities has been considered as a sensible thing to do among the professional seasoned investors during the time of high volatility in the capital markets. The prime investment idea is to forecast the commodities indexes values changes dynamics; then to invest the financial capital into the selected commodities at a certain time moment; after that, to wait for the investment expectation realization for some time period; and finally, to sell the commodity investment products at the commodities market, obtaining the increased return-on-investment (ROI) in the capital markets in the short or long time periods.

The commodities indices are regularly published and updated by the investment rating agencies and the investment firms in Yamori (September 7 2009):

1. The Tokyo Commodity Exchange's Nikkei-TOCOM Commodity Index;

2. The Goldman Sachs Commodity Index (GSCI);

3. The Dow Jones AIG Commodity Index;

4. The (DJ-AIGCI) Deutsche Bank Liquid Commodity Index;

5. The Rogers International Commodity Index;

6. The Standard & Poor's Commodity Index;

7. The Reuters Commodity Research Bureau Index

8. The Deutsche Bank Liquid Commodities Index.

There are the three most applicable ways to invest the financial capital into the commodities in Demidova-Menzel; Heidorn (August 2007):

1. The direct investment into the physical commodities indices, which are freely traded at the commodities exchanges in the commodities markets;

2. The direct investment into the commodity futures, which are freely traded at the commodity futures markets. The futures are defined as the valid business contracts to buy a definite quantity of the selected commodity at a certain price at a future delivery date. The backwardation situation occurs in the case, when the futures prices of commodities are below the spot prices of commodities. The contango situation has place in the case, when the futures prices of commodities are above the spot prices of commodities;

3. The direct/indirect investment into the commodity producing companies stocks, which are freely traded at the stock exchanges in the capital markets.

It may be interesting to note that the prices changes dynamics of the global commodity derivatives such as the oil, copper and some other commodity futures derivatives may have the fractal nature in Mykhailovska (2014). Presumably, the prices changes dynamics of both the physical commodities indices and the commodity futures derivatives in the capital markets can be more accurately characterized in the frames of the chaos science in Baumol, Benhabib (1989), Blank (1991), DeCoster, Labys, Mitchell (1992), Yang, Brorsen (1993), Chatrath, Adrangi, Dhanda (2002).

In this context, we would like to express our research opinion that the prices changes dynamics of both the physical commodities indices and the commodity futures derivatives in the capital markets may be much better characterized, using the recently proposed theories in the quantum chaos science, the quantum microeconomics science and the quantum macroeconomics science in Ledenyov D O, Ledenyov V O (2015h, i, j).

The commodities and the commodities derivatives for the financial capital investment with the aim to get an increased return premium in the short and long time periods have been researched in Keynes (1923, September 1938, 1942, 1980, 1943), Hotelling (1931), Graham (1937), Kaldor (1939), Working (February 1948, 1949, 1960), Brennan (1958, 1991), Brennan, Schwartz (1985), Sharpe (1964), Sharpe, Alexander, Bailey (1995), Telser (1968), Dusak (1973), Lovell, Vogel (1973), Merton (1973), Stoll (1979), Stoll, Whaley (2009, 2010), Bodie, Rosansky (May June 1980), Breeden (1980), Spraos (March 1980), Newbery, Stiglitz (1981), Wright, Williams (1982), Abel (1983), Abel, Blanchard (1986), Abel, Mankiw, Summers, Zeckhauser (1989), Abel, Eberly (1994), Bernanke (1983), Carter, Rausser, Schmitz (April 1983), Garbade, Silber (1983), Edwards, Freebairn (1984), Kanbur (1984), Cox, Rubinstein (1985), Gilbert (September 1985, 1996), Jagannathan (1985), Taylor (1985), Fama, French (January 1987, December 1988), Hartzmark (1987), Chinloy (1988), Gyourko, Linneman (1988), Hirshleifer (1988, 1989, 1990), Lichtenberg, Ujihara (1988), Paddock, Siegel, Smith (1988), Baumol, Benhabib (1989), Frank, Stengos (1989), Jaffee (1989), Rubens, Bond, Webb (1989), De Gorter, Zilberman (1990), De Gorter, Tsur (1991), De Gorter, Nielson, Rausser (1992), De Gorter, Swinnen (1998), Gibson, Schwartz (1990), Kaminsky, Kumar (1990), Pindyck, Rotemberg (1990), Shleifer, Summers (1990), Siegel D R, Siegel D F (1990), Blank (1991), Brennan (1991), Chan K, Chan K C, Karolyi (1991), Subrahmanyam (1991), Williams, Wright (1991), Bessembinder (1992), Bessembinder, Chan K (1992), Bessembinder, Seguin (1992, 1993), Bessembinder, Coughenour, Seguin, Smoller (1995, Winter 1996), Deaton, Laroque (January 1992, 1996), DeCoster, Labys, Mitchell (1992), Edwards, Ma (1992), Kolb (1992, 1996, 1997), Maizels (1992), Ankrim, Hensel (May/June 1993), Bleaney, Geenaway (July 1993), Brueggeman, Fisher (1993), Lummer, Siegel (Summer 1993), Yang, Brorsen (1993), Dixit, Pindyck (1994), Satyanarayan, Varangis (March 1994), Litzenberger, Rabinowitz (December 1995), O'Hara (1995), Sachs, Warner (1995a, b, 1997, 1999, 2001, Chambers, Bailey (1996), Duffie (1996), Hamilton (1996, 2005, Spring 2009a, b), Hamilton, Jing Wu (2013a b), Hamilton, Wu(2014), Sanders, Irwin, Leuthold (1996), Sanders, Irwin (2010a b, 2011a, b, 2013), Sanders, Irwin, Merrin (2010), Hoesli, MacGregor, Matysiak, Nanthakumaran (1997), Kocagil (1997), Schneeweis, Spurgin (1997), Schwartz (July 1997), Schwartz, Smith (July 2000), Mabro (1998), Pilipovic (1998), Cashin, McDermott, Scott (1999), Greenaway, Morgan (1999), Hielscher (1999), Irwin, Yoshimaru (1999), Irwin, Holt (2004), Irwin, Sanders, Merrin (April 20-21 2009a, August 2009b), Irwin, Sanders (February 2011 2012a, b), Labys, Achouch, Terraza (1999), Becker, Finnerty (2000), Borenstein, Bushnell, Stoft (2000), Cashin, Liang, McDermott (2000), Cashin, McDermott (2002), Christie-David, Chaudry, Koch (2000), De Roon, Nijman, Veld (2000), De Roon, Szymanowska (2010), Greer (2000), Jensen, Johnson, Mercer (2000, Summer 2002), Routledge, Seppi, Spatt (2000), Swinnena, De Gorterc, Rausserd, Banerjeea (2000), Till (Fall 2000a, September 1 2000b, April 2003, 2006), Till, Eagleeye (May 2003, Fall 2005), Cochrane (2001), Fabozzi (2001), Kogan (November 2001, 2004), Kogan, Livdan, Yaron (2005), Richards, Padilla (August 5 - 8 2001), Barsky, Kilian (May 2002, 2004), Chatrath, Adrangi, Dhanda (2002), Cremer, Laffont (2002), Cremer, Gasmi, Laffont (2003), Ederington, Lee (2002), Weiner (2002), Bower, Kamel (June 2003), Sorenson (2003), Vrugt (2003), Wang (2003), Weiser (2003), Greer (Summer 2004), Greer (April 2005), Gorton, Rouwenhorst (2004, 2006), Gorton, Hayashi, Rouwenhorst (2013), Longstaff, Wang (2004), Beenen (2005), Casassus, Collin-Dufresne (2005), Casassus, Collin-Dufresne, Routledge (December 2005), Erb, Harvey (May 2005, 2006), Haigh, Hranaiova, Oswald (2005), Lautier (Summer 2005), Lewis (April 2005), Micu (December 2005), O'Connell (December 2005), Taylor (2005), Brown (January February 2006), Bryant, Bessler, Haigh (2006), Campbell, Orskaug, Williams (Spring 2006), Feldman, Till (2006), Frankel (2006), Fusaro, Vasey (September 2006), Holmes (2006), McNee (July 2006), Upperman (2006), Blanchard, Gali (2007), Demidova-Menzel, Heidorn (August 2007), Domanski, Heath (March 2007), Kat, Oomen (2007a, b), Miffre, Rallis (2007), Chong, Miffre (2010), Basu, Miffre (2013), Miffre, Brooks (2013), Röthig, Chiarella (2007), Worthington, Pahlavani (2007), Adams, Füss, Kaiser (2008), Bachmeier, Qi Li, Liu (2008), Bhardwaj, Gorton, Rouwenhorst (2008), Büyükşahin, Haigh, Harris, Overdahl, Robe (2008), Büyükşahin, Haigh, Robe (2010), Büyükşahin, Robe (2010, 2011, 2014), Büyükşahin, Brunetti, Harris (2010), Büyükşahin, Harris (2011), Caballero, Farhi, Gourinchas (2008), Carney (2008), Fabozzi, Füss, Kaiser (2008), Johnson Matthey Plc (2008), Khan, Khoker, Simin (2008), Kilian

(2008a, b, 2009, 2010, 2014), Kilian, Park (2009), Kilian, Vega (2011), Kilian, Vigfusson (2011), Kilian, Murphy (2013, 2014), Kilian, Hicks (2013), Kolos, Ronn (March 2008), Reisen (July 18 2008), Roache (September 2008), Roache, Rossi (July 2009), Scherer, He (2008), Woodward (2008), Attié, Roache1 (April 2009), Bose (2009), Du, Yu, Hayes (2009), Frankel, Rose (2009), Kaufmann, Ullman (2009), Korniotis (2009), Mayer (2009, 2012), Reitz, Slopek (2009), Smith (2009), Smith, Thompson, Lee (2013), Yamori (September 7 2009, May 20 2011, 2011), Yung, Liu (2009), Alquist, Kilian (2010), Alquist, Kilian, Vigfusson (2013), Anzuini, Lombardi, Pagano (2010), Aulerich, Irwin, Garcia (2010), Baffes, Haniotis (July 2010), Baker (2012), Baker, Routledge (2012), Basak, Pavlova (2012), Blanchard, Gali (2010), Calvo-Gonzalez, Shankar, Trezzi (2010), Cifarelli , Paladino (2010), Fuertes, Miffre, Rallis (2010), Elder, Serletis (2010), Etula (2010), Gilbert (March 2010, 2010), Hailu, Weersink (2010), Hernandez, Torero (2010), Nissanke (December 2010), Silvennoinen, Thorp (2010), Tang, Xiong (2010), Tang, Wei Xiong (2012), Tang, Zhu (2015), Wong, Smith (July 25 - 27 2010), Basu, Gavin (2011), Cárdenas, Ramírez, Tuzemen (December 2011), Connolly, Orsmond (2011), Daskalaki, Skiadopoulos (2011), Dwyer, Gardner, Williams (2011), Dwyer, Holloway, Wright (2012), Fattouh (2011), Ghosh (2011), G20 Study Group on Commodities (November 2011), Hong, Yogo (2011), Inamura, Kimata, Kimura, Muto (March 2011), Lombardi, Robays (2011), Mou (2011), Peñaranda, Micola (2011), Reichsfeld, Roache (2011), Tilton , Humphreys, Radetzki (2011), Yiuman Tse, Williams (December 20 2011), UNCTAD (2011), Arbatli, Vasishtha (2012), Cespedes, Velasco (2012), Fattouh, Kilian, Mahadeva (2012), Gasmi, Oviedo (October 2012), Girardi (January 2 2012), Girardi (October 9 2012), Gruber, Vigfusson (2012), Henderson, Pearson, Li Wang (2012), Hong, Yogo (2012), Juvenal, Petrella (2012), Nissanke (2012), Rouwenhorst, Ke Tang (2012), Sockin, Wei Xiong (2012), Sockin, Wei Xiong (2013), Varadi (March 2012), Acharya, Lochstoer, Ramadorai (2013), Anghelache, Dincă, Sacală, Lixandru (2013), Aulerich, Irwin, Garcia (2013), Baumeister, Peersman (2013), Baumeister, Kilian (2014, 2016), Chevallier, Ielpo, Ling-Ni Boon (2013), Creti, JoÎts, Mignon (2013), Fattouh, Kilian, Mahadeva (2013), Heumesser, Staritz (October 2013), Hurduzeu, Hurduzeu (2013), Ing-Haw Cheng, Wei Xiong (2013, November 2013, 2014), Ing-Haw Cheng, Kirilenko, Wei Xiong (2014), Jovanovic (2013), Kang, Rouwenhorst, Ke Tang (2013), Le Pen, Sévi (2013), Marshall, Nguyen, Visaltanachoti (2013), Grimes, Hyland (2013), Santos (2013), Van Robays (2013), Venditti (2013), Adams, Glück (June 2014, August 2015), Basak, Pavlova (2014), Daskalakis, Kostakis, Skiadopoulos (2014), Fornero, Kirchner, Yany (2014), Gruss (2014), Jo (2014), Mykhailovska (2014), Sadorsky (2014), Bonato, Taschini (November 2015), Henderson, Pearson, Wang (2015), Novotný (2015), Novotný, Polach (2016), Joëts, Mignon, Razafindrabe (November 2016).

4.4 Bond as investment product.

The **bond** can also be related to the investment products (an investment asset class and an investment instrument) for the financial capital investment with the aim to get an increased return premium in the capital market in the short and long time periods, because the various types of bonds are constantly and freely exchanged at the global bonds markets.

Actually, there are many possible types of the inflation linked/protected callable/(non)callable bonds, which are issued by different market agents in the financial systems in the economies of the scales and scopes:

1. The sovereign bonds;
2. The treasury bonds;
3. The municipal bonds;
4. The corporate bonds;
5. The bank bonds.

The basic investment idea behind the investment deal with the bonds is to predict the bonds prices fluctuation dynamics; then to invest the financial capital into the selected bonds at a certain time moment; after that to wait for some time period, and finally to sell the bonds at the increased prices at the certain time moment, obtaining the increased return premiums at the bonds markets in the short or long time periods.

The bond(s) as one of the most attractive investment products in the capital markets in the finances have been researched in Macaulay (1938), Dougall (1953), Burrell (1953), Hickman (1957), Fisher (June 1959), Francis, Archer (1971), Barro (l974), Merton (1974), Ederlngton (December 1974), Fischer (June 1975), Black, Cox (1976), Black (1980), Jackson (1976), Khang (December 1979), Ibbotson, Sinquefield (1982), Bodie, Kane, McDonald (March 1983), Brennan, Schwartz (1983), Kaufman, Bierwag, Toevs (editors) (1983), Blume (1987), Blume, Keim, Patel (March 1991), Fons (March 1987, 1990), Levy, Lerman (1988), Altman (September 1989, Summer 1993), Asquith, Mullins, Wolff (September 1989), Tucker (Fall 1989), Varma (1989), Ambarish, Subrahmanyam (1990), Chance (June 1990), Rosengren (May 1990), Litterman, Iben (March-April 1991), Shreve, Soner, Xu (1991), Leland (November 1994), Merrill (January 1994), Morgan (1994), Babbel, Merrill, Panning (September 1995), Whittingham (Winter 1997), Zatti (1998), Narayan (August 1999), Bolton, Freixas (2000), Brennan, Xia (2000), Canterbery (2000), Hong, Warga (2000), Landen (2000), Campbell, Viceira (2001), Campbell, Taksler (2003), Elliott, Van Der Hoek (2001), Elliott, Nishide (2013), Schultz (2001), Livingston, Zhou (2002, 2010), Jacoby (2003), Hunter, Simon (2004), Cochrane, Piazzesi (2005), Koijen, Nijman, Werker (2005), Pu Shen (2005), Alderson, Betker, Stock (2006), Anghelache (2006), Harris, Piwowar (2006), Pilotte, Sterbenz (2006), Bierman (2007, 2010), Chen, Lesmond, Wei (2007), Connolly (2007), Edwards, Harris, Piwowar (2007), Goldstein, Hotchkiss (2007), Green, Hollifield, Schurhoff (2007a, b), Bessembinder, Maxwell (2008), Hanson, Liljeblom, Löflund (2008), Rosengren (2008), Santos, Winton (2008), Beber, Brandt, Kavajecz (2009), Dejun Xie (2009), Drut (March 2009), Webb (2009), Banko, Lei Zhou (2010), Chulho Jung, Shambora W, Kyongwook Choi (2010), Grasso, Linciano, Pierantoni, Siciliano (2010), Güntay, Hackbarth (2010), Răscolean, Szabo (2010), Schneider, Ciobanu (2010), Chang, Krueger (2011), Ibarra-Ramirez (June 2011), Puzyrewicz (2011), Fabozzi (January 16 2012), Kovner, Chenyang Wei (March 2012), Prewysz-Kwinto (2012), Prewysz-Kwinto, Voss (2014), Zhiguo He, Milbradt (January 13 2012), Compton, Kunkel, Kuhlemeyer (2013), Hung-Gay Fung, Derrick Tzau, Jot Yau (2013), Janska (2013), Mazurek (2013), Booth, Gounopoulos, Skinner (2014), Morellec, Valta, Zhdanov (2015), Coletta, Santioni (October 2016), Ranosz (2016), Yu-Sheng Lai (2016).

4.5 Company stock and stock option as investment products.

The **firm's preferred/common stock** (the company's shares) can be regarded as an investment product (an investment asset class and an investment instrument) for the financial capital investment with the aim to get an increased return premium in the short and long time periods, because the company's stock is freely exchanged at the stock exchange in the capital market.

The simple investment idea is to foresee the firm's stock prices changes dynamics; then to invest the financial capital into the selected company's stock at a certain time moment; after that to wait for some time period, and finally to sell the company's stock at the certain time moment, obtaining an increased return premium at the stock market in the short or long time periods.

Discussing the company's stock, let us explain that the theory of the firm (the company) in the classic microeconomics science investigates the firm's organizational structure, the firm's functional performance, the firm's economic variables change forecast, and the firm's operation financing schemes. A big number of the research articles, reports, chapters and books on the theory of the firm in the classic microeconomics science have been written by the academicians and the practitioners in Babbage (1832), Ueda (1904, 1937), Marshall (1923), Berle, Means

(1932a, b), Ohlin (1933), Coase (1937), Barnard (1938, 1948, 1949, 1958), Solow (August 1957), Modigliani, Miller (June 1958), Baumol (1959, 1962), Penrose (1959), Marris (May 1963), Telser (1963), Williamson (1964, 1975, 1988), Cyert, March (1963, 1992), Fogel (1964), Manne (1965), Stigler (1968), Mano (1968-1969, 1970-1971, 1972-1973 1975-1976, 1978, 1980-1981, 1987, 1994, 1995), Black, Scholes (1973), Black, Cox (1976), Merton (1973, 1974), Crew (1975), Lee (1975), Jensen, Meckling (1976), Jensen, Ruback (1983), Jensen (1986, September-October 1989, 1993, 2007), Jensen, Murphy (1990), Fama (1980), Fama, Jensen (1983, 1985), Demsetz (1983, 1997), Wernerfelt (1984, 1995), Lode Li (1986), Perrow (1986), Hart, Moore (1990), Hart (2011), Sterman (2000), Williamson (2002), Kantarelis (2007), Spulber (2009), Ledenyov D O, Ledenyov V O(2013b, 2015c).

In recent years, the quantum theory of the firm in the quantum microeconomics science has been proposed in Ledenyov D O, Ledenyov V O (2015k). The quantum theory of the firm in the quantum microeconomics theory in the quantum econophysics science takes to an account the premises that there may be the quantum economic processes in the nonlinear dynamic economic system over the certain time period, which have to be discovered, described and considered in details. In this context, the quantum theory of the firm postulates that the discrete-time transitions from one level of the firm's economic performance to another level of the firm's economic performance will occur in the nonlinear dynamic economic system at the time moment, when in Ledenyov D O, Ledenyov V O (2015k):

1. The present land, labour and capital resources are (added and absorbed) / (released and radiated) in the form of quanta, decreasing or increasing the general energy entropy in the nonlinear dynamic economic system (the nonlinear medium);

2. The disruptive scientific/technological/financial/social/political innovation(s) is/are introduced into or withdrawn from the nonlinear dynamic economic system (the nonlinear medium), creating the resonance conditions to amplify/attenuate the value of the firm's economic performance, during the evolution process of the economy of scale and scope in the time domain (Note: the resonance can result in the increase/decrease of the energy of the electromagnetic wave in the electrodynamics science);

3. The firm's business processes population inversion mechanism is present, when a) the every business process in the firm can be conditionally compared to the electron in the atom, b) the discrete increase of business process value in the firm can be conditionally associated with the discrete increase of electron's energy in the atom during the energy pumping process in the laser, c) the land, labour and capital resources release at the population inversion mechanism realization in the firm can be conditionally regarded as the light radiation at the population inversion mechanism action in the laser;

4. The derived formula to describe the discrete-time EBITDA changes during the firm's economic performance variations in terms of the quantum theory of the firm is

$$\bar{\lambda}_{micro}\omega_{m,n} = \triangle \boldsymbol{EBITDA}(\boldsymbol{t}) = \boldsymbol{EBITDA}(\boldsymbol{t})_{\boldsymbol{m}} - \boldsymbol{EBITDA}(\boldsymbol{t})_{\boldsymbol{n}} \quad (1)$$

$$\bar{\lambda}_{micro}\omega_{m,n} = \triangle \boldsymbol{firm's\ \ value}(\boldsymbol{t}) = \boldsymbol{firm's\ \ value}(\boldsymbol{t})_{\boldsymbol{m}} - \boldsymbol{firm's\ \ value}(\boldsymbol{t})_{\boldsymbol{n}} \quad (2)$$

where: $\bar{\lambda}_{micro}$ – Ledenyov constant,

ω – cyclic velocity,

t – time,

EBITDA – the Earnings Before Interest Tax Depreciation Amortization,

Firm's value – the firm's market capitalization minus the firm's long term investments and debt.

5. The Ledenyov distribution of a number of excited firms' business processes of certain value at the selected level (state) in the economy of scale and scope in terms of the quantum microeconomics theory is

$$\frac{\boldsymbol{N}_m}{\boldsymbol{N}_n} = \exp\frac{-\left(\boldsymbol{EBIDTA}(\boldsymbol{t})_m - \boldsymbol{EBIDTA}(\boldsymbol{t})_n\right)}{\bar{\lambda}_{micro}\boldsymbol{T}}, \quad (3)$$

$$\frac{\boldsymbol{N}_m}{\boldsymbol{N}_n} = \exp\frac{-\left(\boldsymbol{firm's\ \ value}(\boldsymbol{t})_m - \boldsymbol{firm's\ \ value}(\boldsymbol{t})_n\right)}{\bar{\lambda}_{micro}\boldsymbol{T}}, \quad (4)$$

where: $\bar{\lambda}_{micro}$ – Ledenyov constant,

$\boldsymbol{N}_m$ – number of firms' processes of certain value at the state (m),

$\boldsymbol{N}_n$ – number of firms' business processes of certain value at the state (n),

$\boldsymbol{N} = \boldsymbol{N}_m + \boldsymbol{N}_n$ – general number of firms' processes of certain value in the economy of scale and scope,

t – time,

T – temperature of the economy of scale and scope, which corresponds to the level of entropy of the economy of scale and scope (the level of information/business activities by the firms),

EBITDA – the Earnings Before Interest Tax Depreciation and Amortization,

Firm's value – the firm's market capitalization minus the firm's long term investments and debt.

In other words, let us emphasis the fact that the quantum theory of the firm states that there may be the discrete-time induced transition(s) between the different levels of the firm's EBITDAs (the firm's values) in the nonlinear dynamic economic system at the time, when the following things are present in Ledenyov D O, Ledenyov V O (2015k):

1. The land, labour and capital, which can be added and absorbed / released and radiated in the form of quanta in the nonlinear dynamic economic system (the nonlinear medium);

2. The discrete-time fluctuational processes, which can appear in the form of the disruptive scientific/technological/financial/social/political innovation(s) that absorb or release the available land, labour and capital resources, creating the resonance, in the nonlinear dynamic economic system (the nonlinear medium) during the evolution process of the firm in the economy of scale and scope in the time domain;

3. The firm's business processes population inversion mechanism, which occurs at the following condition: $N_2/N_1 > 1$.

Most importantly, the firm can be classified as the private company or the public company, going from the company ownership rights. In the case of the public company, the company's stock is issued at the stock exchange at the initial public offering process (IPO), traded freely among the investors at the stock exchange, and valued by the open market at the stock exchange. The main reason for the private company to become the public company is to get an access to the financial capital, which is needed to finance the company's present/further business processes towards both the sustainable effective operation and/or the new products/services introduction in the selected markets in Ledenyov D O, Ledenyov V O (2014b).

The Initial Public Offering (IPO) process, including: the company initial valuation by an independent established audit firm, the IPO valuation at the stock exchange, the emission of the shares of the company's stock at the stock exchange, the company's stock re-evaluation by the open market at the stock exchange, has been researched in Ledenyov D O, Ledenyov V O (2014b). In general, it is necessary to remember that the initial listing requirements for the public companies at the stock exchanges on the various capital markets are different. The IPO techniques, including: the fixed-price offerings, the auctions, the book-building, depend on many economic factors in Ledenyov D O, Ledenyov V O (2014b). The IPO initial underpricing, the long-run performance and the after-market liquidity existing problems may have many different origins in Ledenyov D O, Ledenyov V O (2014b). The cost of acquiring capital at the stock exchange for the company can be calculated, using the techniques in Ideas At Work (2006), Ledenyov D O, Ledenyov V O (2012d), Schnoor (2006) (see Chapter 8).

The valuation of the initial public offering of the company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities is a complex task from all points of view. The Discounted Cash Flow (DCF) is a most widely used model of the direct valuation of the IPOs. Cogliati, Paleari, Vismara (2010) propose an equation to value the IPO with the DCF model:

$$\boldsymbol{EV_{IPO}} = \boldsymbol{FCFF_{IPO}}\left[\sum_{i=1}^{T}\left(\frac{1+g_1}{1+WACC}\right)^{i} + \left(\frac{1+g_1}{1+WACC}\right)^{T}\sum_{i=1}^{\infty}\left(\frac{1+g_2}{1+WACC}\right)^{i}\right]$$

Cogliati, Paleari, Vismara (2010) suggest an equation to estimate the expected growth rates, implied in the IPO prices:

$$P_{IPO} = \frac{FCFF_{IPO}}{WACC \bullet NSH_{pre}}\left[\frac{(1+g_1)\bullet\left[(1+WACC)^{T} - 1 + (1+g_2)\bullet(1+g_1)^{T-1}\right]}{(1+WACC)^{T}}\right] - \frac{D_{IPO}}{NSH_{pre}}$$

The valuation of the initial public offering of the company equity at the stock exchanges has been researched in Logue (1973), McDonald, Jacquillat (1974), Kim, Ritter (1999), Ritter, Welch (2002), Amihud, Mendelson (1986), Titman, Trueman (1986), Koh, Walter (1989), Welch (1989, 1992, 1996, 2002), Cotter (1992), Mauer, Senbet (1992), Chemmanur (1993), Michaely, Shaw (1994), Chowdhry, Nanda (1996), Datta, Iskandar-Datta, Patel (1997), Ljungqvist (1997), Ljungqvist, Nanda, Singh (2001), Ljungqvist, Wilhelm (2003), Ljungqvist, Nanda, Singh (2003, 2006), Nanda, Youngkeol Yun (1997), Poon, Firth, Fung (1998), Aggarwal, Conway (2000), Kooli (2000), Lowry, Schwert (2001), Deloof, de Maeseneire, Inghelbrecht (2002), Fishe (2002), Giudici, Roosenboom (2002), La Porta, Lopez-de-Silanes, Shleifer (2002), Sanders, Boivie (2004), Cassia, Paleari, Vismara (2004), Cassia, Vismara (2009), Sanders, Boivie (2004), Corwin, Schultz (2005), Derrien (2005), Roosenboom, van der Goot (2005), Aussenegg, Pichler, Stomper (2006), Damodaran (2006), Gajewski, Gresse (2006), Paleari, Vismara (2007), Penman (2007), Roosenboom (2007), Thomas (2007), An, Chan (2008), Khurshed, Pande, Singh (2008), Rossetto (2008), Deloof, De Maeseneire, Inghelbrecht (2009), Jiang, Leger (2009), Bonardo, Paleari, Vismara (2010), Cogliati, Paleari, Vismara (2010), Adesoye, Atanda (2012), Jacob (2012), and by some other authors.

Another point of special interest is the underpricing of the initial public offering of the company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities.

The underpricing the initial public offering of the company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities in the IPO process can be written as in Pennacchio (2013)

$$\boldsymbol{Underpricing} = \left[\frac{\boldsymbol{P} - \boldsymbol{P_{IPO}}}{\boldsymbol{P_{IPO}}} \right] \bullet 100,$$

where P is the closing price in the first day of trading, and P_{IPO} is the offer price of the stocks.

We propose the Ledenyov theory on the origins of the underpricing and long term underperformance effects in Ledenyov D O, Ledenyov V O (2014b), which states that the underpricing and long term underperformance can be explained by the changing information absorption capacity by the investors on the company equity value in the conditions of the asymmetric information flows, depending on both:

1. The internal factors:

a) The investor's ability to conduct the creative imperative integrative intelligent conceptual co-lateral adaptive logarithmic thinking with an application of the inductive, deductive and abductive logics analysis as far as the fundamental value of company equity is concerned;

b) The ultra fast decoding of acquired information on the fundamental value of company equity;

c) The ultra fast processing of acquired information on the fundamental value of company equity.

2. The external factors:

a) The presence of the asymmetric information on the fundamental value of company equity between the investors and the underwriters (issuers);

b) The agency problems in relation to the fundamental value of company equity.

The underpricing of the initial public offering of the company equity at the stock exchanges has been researched in Beatty, Ritter (1986), Rock (1986), Balvers, McDonald, Miller (1988), Johnson, Miller (1988), Allen, Faulhaber (1989), Barry (1989), Muscarella, Vetsuypens (1989a, b), Muscarella, Vetsuypens (1990), Uhlir (1989), Levis (1990), Hughes, Thakor (1992), Aggarwal, Krigman, Womack (2002), Affleck-Graves, Hegde, Miller, Reilly (1993), Dhatt, Kim, Lim (1993), Drake, Vetsuypens (1993), Hanley (1993), Leleux (1993), Leleux, Muzyka (1997), Loughran (1993), Loughran, Ritter (1995), Loughran, Ritter (2003, 2004), Ruud (1993), Rydqvist (1993), Vos, Cheung (1993), Jog, Srivastava (1994), Jog, McConomy (1999), Kunz, Aggarwal (1994), Schultz, Zaman (1994), Degeorge (1995), Gerstein (1995, 1996), Booth, Chua

(1996), Lee, Taylor, Walter (1996), Pettway, Kaneko (1996), Aussenegg (1997), Brennan, Franks (1997), Page, Reyneke (1997), Rydqvist (1997), Spiess, Pettway (1997), Asquith, Jones, Kieschnick (1998), Mok, Hui (1998), Reese (1998), Theoh, Welch, Wong (1998a), Lee, Taylor, Walter (1999), Arosio, Giudici, Paleari (2000), Brav, Geczy, Gompers (2000), Kiymaz (2000), Smart, Zutter (2000), Chan, Wang, Wei (2001), DuCharme, Rajgopal, Sefcik (2001), Francis, Hasan (2001), Field, Sheehan (2001), Field, Sheehan (2002), Habib, Ljungqvist (2001), Hahn, Ligon (2004), Hoffmann-Burchardi (2001), Purnanandam, Swaminathan (2001), Rehkugler, Schenek (2001), Van Frederikslust, Van der Geest (2001), Bradley, Jordan (2002), Cheng, Mak, Chan (2002), Derrien, Womack (2002), Filatotchev, Bishop (2002), Kiss, Stehle (2002), Khurshed, Mudambi (2002), Lowry, Shu (2002), Schiereck, Wagner (2002), Sherman, Titman (2002), Derrien, Womack (2003), Ellul, Pagano (2003), Goergen, Khurshed, McCahery, Renneboog (2003), Gounopoulos (2003), Manigart, de Maeseneire (2003), Pham, Kalev, Steen (2003), Smart, Zutter (2003), Arugaslan, Cook, Kieschnick (2004), Cassia, Giudici, Paleari, Redondi (2004), Chahine (2004b), Chiang, Harikumar (2004), Cliff, Denis (2004), Griffith (2004), Hahn, Ligon (2004), Houston, James, Karceski (2004), Keloharju, Nyborg, Rydqvist (2004), Kremer, Nyborg (2004b), Lee, Wahal (2004), Lubig (2004), Peggy, Wahal (2004), Pritsker (2004, 2005, 2006), Purnanandam, Swaminathan (2004), Jagannathan, Gao (2005), Li, Zheng, Melancon (2005b), Nounis (2005), Pandey (2005), Pons-Sanz (2005), Aussenegg (2006), Ellul, Pagano (2006), Gajewski, Gresse (2006), Ljungqvist (2006), Hopp, Dreherdo (2007), Kerins, Kutsuna, Smith (2007), Leite (2007), Zheng, Stangeland (2007), Khurshed, Pande, Singh (2008), Yongyuan Qiao (2008), Coakley, Hadass, Wood (2009), Arikawa, Imad'eddine (2010), Elston, Yang (2010), Pennacchio, Del Monte, Acconcia (2010), Acconcia, Del Monte, Pennacchio (2011), Pennacchio (2013), Ferretti, Meles (2011), and by some other authors.

One of the most intriguing questions to understand is: What would be the long term performance of the initial public offering of the company equity at the stock exchanges in the conditions of the imperfect highly volatile global capital market with the induced nonlinearities? The aftermarket performance is measured, using the Buy-and-Hold Abnormal Returns (BHAR), which are calculated for the stock i over a time period T as in Loughran and Ritter (1995), Cogliati, Paleari, Vismara (2010)

$$\boldsymbol{BHR}_{i,T} = \left[\prod_{t=1}^{T}\left(1+\boldsymbol{R}_{i,t}\right)\right]-1,$$

$$\boldsymbol{BHAR} = \frac{1}{\boldsymbol{N}}\sum_{i=1}^{N}\left[\left(\prod_{t=1}^{T}\left(1+\boldsymbol{R}_{i,t}\right)-\prod_{t=1}^{T}\left(1+\boldsymbol{R}_{M,t}\right)\right)\right],$$

where $R_{i,t}$ is the return of stock i at the time t, and N is the number of stocks in the portfolio.

The long term performance of the initial public offering of company equity at the stock exchanges has been researched in Ibbotson (1975), Ritter (1991), Carter, Dark, Singh (1998), Dhatt, Kim, Lim (1993), Levis (1993), Keloharju (1993), Leleux (1993), Leleux, Muzyka (1997), Gerstein (1995, 1996), Kim, Krinsky, Lee (1995), Spiess, Affleck-Graves (1995), Barber, Lyon (1996a, 1997), Barber, Lyon (1996b), Barber, Odean (2008), Kothari, Warner (1996), Kothari, Warner (1997), Lee, Taylor, Walter (1996), Aussenegg (1997), Brav, Gompers (1997), Brav (2000), Steib, Mohan (1997), Su, Fleisher (1997), Sapusek (1998), Theoh, Welch, Wong (1998b), Spiess, Affleck-Graves (1999), Brown (1999), Dechow, Hutton, Sloan (1999, 2000), Khurshed, Mudambi, Goergen (1999), Lyon, Barber, Tsai (1999), Reuschenbach (2000), Sapusek (2000), Stehle, Ehrhardt, Przyborowsky (2000), Chan, Wang, Wei (2001), Degeorge, Derrien (2001a), Eckbo, Norli (2001), Eckbo, Norli (2002, 2005), Gerke, Fleischer (2001), Gompers, Lerner (2001, 2003a, b), Jakobsen, Sørensen (2001), Severin (2001), Van Frederikslust, Van der Geest (2001), Blondell, Hoang, Powell, Shi (2002), Gao, Mao, Zhong (2002), Kutsuna, Okamura, Cowling (2002), Barondes, Nyce, Sanger (2003), Clarke, Dunbar, Kahle (2003), Goergen, Khurshed, McCahery, Renneboog (2003), Gounopoulos (2003), Kraus, Burghof (2003), Neuhaus, Schremper (2003), Schultz (2003), Chahine (2004a), Kooli, Suret (2004), Lubig (2004), Alvarez, Gonzalez (2005), Drobetz, Kammermann, Wälchli (2005), Jaskiewicz, Gonzàlez, Menéndez, Schiereck (2005), Pandey (2005), Gajewski, Gresse (2006), Pastor-Llorca, Poveda-Fuentes (2006), Arnold, Fishe, North (2007), Cassia, Vismara (2009), and by some other authors.

Summarizing our general discussion on the investment in the shares of the publicly traded stock of the public company, we would like to say that the research problem on the initial public offering of the company equity at the stock exchanges has been researched in Fama, Fisher, Jensen, Roll (1969), Fama (1970, 1998), Fama, French (1992, 1993, 1996), Fama, Hansen, French (2013), Akerlof (1970), Stoll, Curley (1970), Logue (1973), Logue, Rogalski, Seward, Foster-Johnson (2001), Reilly (1973), McDonald, Jacquillat (1974), Ibbotson, Jaffe (1975), Ibbotson (1975), Ibbotson, Sindeler, Ritter (1988, 1994), Benston, Smith (1976), Jensen, Meckling (1976), Jensen (1986), Miller (1977), Leland, Pyle (1977), Weinstein (1978), Kahneman, Tversky (1979), Wilson (1979), Brown, Warner (1980), Buckland, Herbert, Yeomans (1981), Milgrom (1981), Milgrom, Weber (1982), Myerson (1981), Baron (1982), Dretske (1983), Myers, Majluf (1984), Ritter (1984, 1987, 1991, 1998a, b, 2002, 2003a, b, 2005), Beatty, Ritter (1986), Loughran, Ritter (1995, 2002), Hamao, Packer, Ritter (1998), Kim, Ritter (1999), Chen, Ritter (2000), Ritter, Welch (2002), Ritter, Warr (2002), Kyle (1985), Amihud, Mendelson (1986), Amihud, Mendelson, Uno (1999), Amihud, Hauser, Kirsh (2001, 2003), Beatty, Ritter (1986), Beatty, Zajac (1994), Beatty, Welch (1996), Booth J, Smith (1986), Ridder (1986), Rock (1986), Shleifer, Vishny (1986), Shleifer, Wolfenzon (2002), Titman, Trueman (1986), Bernheim, Peleg, Whinston (1987), McAfee, McMillan (1987), Miller, Reilly (1987), Balvers, McDonald, Miller (1988), Johnson, Miller (1988), Tinic (1988), Allen, Faulhaber (1989), Barry (1989), Barry, Muscarella, Peavy, Vetsuypens (1990), Benveniste, Spindt (1989), Benveniste, Wilhelm (1990), Benveniste, Busaba, Wilhelm (1996), Benveniste, Busaba (1997), Benveniste, Wilhelm (1997), Benveniste, Erdal, Wilhelm (1998), Benveniste, Ljungqvist, Wilhelm, Yu (2003), Grinblatt, Hwang (1989), Koh, Walter (1989), Maskin, Riley (1989), Muscarella, Vetsuypens (1989a, b, 1990), Uhlir (1989), Welch (1989, 1992, 1996), Welch, Ritter (2002), Carter, Manaster (1990), Carter, Dark, Singh (1998), Clarkson, Thompson (1990), Husson, Jacquillat (1990), Levis (1990), Lucas, McDonald (1990), Sahlman (1990), Allen (1991), Hasbrouck (1991), Lee Ch M C, Shleifer, Thaler (1991), Megginson, Weiss (1991), Megginson, Smart (2009), Menon, Williams (1991), Spatt, Srivastava (1991), Cotter (1992), Hughes, Thakor (1992), Mauer, Senbet (1992), Aggarwal, Leal, Hernandez (1993), Aggarwal (2000), Aggarwal, Conway (2000), Aggarwal, Prabhala, Puri (2002), Aggarwal, Krigman, Womack (2002), Aggarwal (2003), Affleck-Graves, Hegde, Miller, Reilly (1993), Choe, Masulis, Nanda (1993), Back, Zender (1993), Back, Zender (2001), Chemmanur (1993), Chemmanur, Fulghieri (1997), Chemmanur, Fulghieri (1999), Chemmanur, Liu (2003), Chemmanur, Hu (2007), Chemmanur, Yan (2009), Chemmanur, He, Hu (2009), Chemmanur, He, Nandy (2010), Chemmanur, Krishnan (2012), Chemmanur, He (2012), Conrad, Kaul (1993), Dhatt, Kim, Lim (1993), Drake, Vetsuypens (1993), Figlewski, Webb (1993), Hanley (1993), Hanley, Wilhelm (1995), Hebner, Hiraki (1993), Jegadeesh, Weinstein, Titman (1993a), Jegadeesh, Weinstein, Welch (1993b), Keloharju (1993), Keloharju, Kulp (1996), Keloharju, Nyborg, Rydqvist (2004), Leleux (1993), Leleux, Muzyka (1997), Levis (1993), Levis (2004), Loughran (1993), Loughran, Ritter, Rydqvist (1994), Loughran, Ritter (1995), Loughran, Ritter (1997), Loughran, Ritter (2000), Loughran, Ritter (2002), Loughran, Ritter (2003), Loughran, Ritter (2004), Ruud (1993), Rydqvist (1993), Rydqvist, Högholm (1995), Vos, Cheung (1993), Friedlan (1994), Jain, Kini (1994), Jog, Srivastava (1994), Jog, McConomy (1999), Kunz, Aggarwal (1994), Lerner (1994), Michaely, Shaw (1994), Michaely, Womack (1999), Schultz, Zaman (1994), Schultz (2003), Degeorge (1995), Degeorge, Derrien, Womack (2005), Gerstein (1995), Gerstein (1996), Gompers (1995), Gompers, Lerner (1997), Gompers, Lerner (2001), Gompers, Lerner (2003a), Gompers, Lerner (2003b), Kim, Krinsky, Lee (1995), Spiess, Affleck-Graves (1995), Spiess, Pettway (1997), Spiess, Affleck-Graves (1999), Zingales (1995), Barber, Lyon (1996a), Barber, Lyon (1996b), Barber, Lyon (1997), Barber, Odean (2008), Booth J R, Chua (1996), Booth J R, Booth L (2003), Borggreve, Dobrikat (1996), Brealey, Myers (1996), Brennan, Subrahmanyam (1996), Chowdhry, Sherman (1996), Chowdhry, Nanda (1996), Easley, Kiefer, O'Hara, Paperman (1996), Hazen (1996), Houston, James (1996), Houston, James, Karceski (2004), Kogut, Zander (1996), Kothari, Warner (1996), Kothari, Warner (1997), Kothari (2001), Lee P J, Taylor, Walter (1996a), Lee P J, Taylor, Walter (1996b), Lee P J, Taylor, Walter (1999), Nyborg, Sundaresan (1996), Pettway, Kaneko (1996), Périer (1996), Aussenegg (1997), Brav, Gompers (1997), Brav (2000), Brav, Geczy, Gompers (2000), Brav, Gompers (2002), Brav, Gompers (2003), Brennan, Franks (1997), Cai, Wei (1997), Carhart (1997), Datta, Iskandar-Datta, Patel (1997), Dechow, Sloan (1997), Dechow, Hutton, Sloan (1999), Dechow, Hutton, Sloan (2000), Ehrhardt (1997), Firth (1997), Gande, Puri, Saunders, Walter (1997), Gande, Puri, Saunders (1999), Gregg (1997), Huang, Stoll (1997), Kooli (2000), La Porta, Lopez-de-Silanes, Shleifer, Vishny (1997), La Porta, Lopez-de-Silanes, Shleifer, Vishny (1998), La Porta, Lopez-de-Silanes, Shleifer (2002), La Porta, Lopez-de-Silanes, Shleifer (2006), Lee I (1997), Ljungqvist (1997), Ljungqvist, Nanda, Singh (2001), Ljungqvist, Wilhelm (2002), Ljungqvist, Wilhelm (2003), Ljungqvist, Jenkinson, Wilhelm (2003), Ljungqvist, Marston, Wilhelm (2003), Ljungqvist, Nanda, Singh (2003), Ljungqvist, Nanda, Singh (2006), Ljungqvist (2006), Mikkelson, Partch, Shah (1997), Nanda, Youngkeol Yun (1997), Page, Reyneke (1997), Rajan, Servaes (1997a), Rajan, Servaes (1997b), Stehle (1997), Stehle, Ehrhardt (1999), Stehle, Ehrhardt, Przyborowsky (2000), Steib, Mohan (1997), Su, Fleisher (1997), Arkebauer (1998), Asquith, Jones, Kieschnick (1998), Ausubel, Cramton (1998a), Ausubel, Cramton (1998b), Black, Gilson (1998), Daniel, Hirshleifer, Subrahmanyam (1998), Goergen (1998), Goergen, Renneboog (2002), Helwege, Kleiman (1998), Helwege, Liang (2001), Helwege, Liang (2004), Kahn, Winton (1998), Malvey, Archibald (1998), Mello, Parsons (1998), Mok, Hui (1998), Pagano, Panetta, Zingales (1998), Pagano, Röell (1998), Paudyal, Saadouni, Briston (1998), Poon, Firth, Fung (1998), Rangan (1998), Reese (1998), Sapusek (1998), Stoughton, Zechner (1998), Taylor, Whittred (1998), Theoh, Welch, Wong (1998a), Theoh, Welch, Wong (1998b), Ansotegui, Fabregat (1999), Arcas, Ruiz (1999), Baker, Gompers (1999), Baker, Wurgler (2000), Baker, Gompers (2001), Baker, Nofsinger, Weaver (2002), Brown (1999), Cornelli, Goldreich (1999), Cornelli, Goldreich (2001), Cornelli, Goldreich (2002), Cornelli, Goldreich (2003), Cornelli, Goldreich, Ljungqvist (2006), Field (1999), Field, Hanka (2001), Field, Sheehan (2001), Field, Karpoff (2002), Field, Sheehan (2002), Field, Lowry (2009), Kandel, Sarig, Wohl (1999), Khurshed, Mudambi, Goergen (1999), Khurshed, Mudambi (2002), Krigman, Shaw, Womack (1999), Krigman, Shaw, Womack

(2001), Lyon, Barber, Tsai (1999), Olson, Nelson (1999), Short, Keasey (1999), Stulz (1999), Stulz (2005), Stulz (2009), Subramanyam, Titman (1999), Thomas, Zhang (1999), Arosio, Giudici, Paleari (2000), Arosio, Giudici, Paleari (2001), Aussenegg (2000), Berkman, Bradbury, Ferguson (2000), Binmore, Swierzbinski (2000), Boehmer, Fishe (2000), Boehmer, Fishe (2001), Boehmer, Fishe (2005), Brailsford, Heaney, Powell, Shi (2000), Brailsford, Heaney, Shi (2004), Chen, Firth, Kim (2000), D'Mello, Ferris (2000), Draho (2000), Dunbar (2000), Dunbar, Foerster (2008), Duque, Almeida (2000), Eckbo, Masulis, Norli (2000), Eckbo, Norli (2001), Eckbo, Norli (2002), Eckbo, Norli (2005), Eckbo (2008), Ellis, Michaely, O'Hara (2000), Ellis, Michaely, O'Hara (2002), Fabrizio (2000), Foerster (2000), Gilbert, Klemperer (2000), Jain, Kini (2000), Kiymaz (2000), Koskie, Michaely (2000), Lewis, Seward, Foster-Johnson (2000), Löffler (2000), Reuschenbach (2000), Sapusek (2000), Schultz (2000), Schultz (2001), Schultz, Zaman (2001), Sinclair (2000), Sherman (2000), Sherman (2001), Sherman, Titman (2002) Sherman (2003), Smart, Zutter (2000), Stehle, Ehrhardt, Przyborowsky (2000), Westerholm (2000), Von Eije, de Witte, van der Zwaan (2000), Bernardo, Welch (2001), Bradley, Jordan, Ha-Chin Yi, Roten (2001), Bradley, Jordan (2002), Bradley, Jordan, Ritter (2003), Bradley, Jordan, Ritter (2008a), Bradley, Chan, Kim, Singh (2008b), Busaba, Benveniste, Guo (2001), Certo, Covin, Daily, Dalton (2001), Chan, Wang, Wei (2001), Cooney, Singh, Carter, Dark (2001), Daines, Klausner (2001), Danielsen, Sorescu (2001), Degeorge, Derrien (2001a), Degeorge, Derrien (2001b), Derrien, Womack (2002), Derrien (2005), Derrien, Kecskés (2006), Derrien (2007), DuCharme, Rajgopal, Sefcik (2001), Francis, Hasan (2001), Gerke, Fleischer (2001), Habib, Ljungqvist (2001), Hahn, Ligon (2004), Hansen (2001), Heaton (2001), Hoffmann-Burchardi (2001), Holmén, Högfeldt (2001), Houge, Loughran, Suchanek, Yan (2001), Jakobsen, Sørensen (2001), Jenkinson, Ljungqvist (2001), Jenkinson, Jones (2004), Jenkinson, Morrison, Wilhelm (2006), Jenkinson, Jones (2007), Killian, Smith, Smith (2001), Lowry, Schwert (2001), Lowry, Schwert (2002), Lowry, Shu (2002),Lowry (2003), Mager (2001), Maksimovic, Pichler (2001), Purnanandam, Swaminathan (2001), Rehkugler, Schenek (2001), Schatt, Roy (2001), Schatt, Broye (2003), Sentis (2001), Sentis (2002), Sentis (2004), Severin (2001), Stoughton, Wong, Zechner (2001), Torstila (2001), Torstila (2003), Van Bommel, Vermaelen (2001), Van Frederikslust, Van der Geest (2001), Vayanos (2001), Zhang (2004), Biais, Bossaerts, Rochet (2002), Biais, Faugeron-Crouzet (2002), Blondell, Hoang, Powell, Shi (2002), Brau, Francis, Kohers (2002), Brounen, Eichholtz (2002), Bulow, Klemperer (2002), Cheng, Mak, Chan (2002), Deloof, de Maeseneire, Inghelbrecht (2002), Easton, Taylor, Shroff, Sougiannis (2002), Easton (2004), Easton (2006), Easton, Sommers (2007), Faugeron-Crouzet, Ginglinger (2002), Filatotchev, Bishop (2002), Fishe (2002), Gao, Mao, Zhong (2002), Giudici, Roosenboom (2002), Giudici, Roosenboom (2005), Houge, Loughran, Suchanek, Xuemin Yan (2002), Kim, Kitsabunnarat, Nofsinger (2002), Kiss, Stehle (2002), Kutsuna, Okamura, Cowling (2002), Logue, Rogalski, Seward, Foster-Johnson (2002), Martimort (2002), Moerland (2002), Schiereck, Wagner (2002), Schuster (2002), Schuster (2003), Wang, Zender (2002), Xie (2002), Baginski, Wahlen (2003), Barondes, Nyce, Sanger (2003), Bartlett, Shulman (2003), Binay, Pirinsky (2003), Bourjade (2003, 2008), Clarke, Dunbar, Kahle (2003), Derrien, Womack (2003), Doeswijk, Hemmes, Venekamp (2005), Ellul, Pagano (2003), Goergen, Khurshed, McCahery, Renneboog (2003), Gounopoulos (2003), Gulati, Higgins (2003), Higgins, Gulati (2003), Hoberg (2003), Hong, Kubik (2003), Huyghebaert, Van Hulle (2003), Jelic, Briston (2003), Kaneko, Pettway (2003), Karolyi, Stulz (2003), Kraus, Burghof (2003), Lemmens (2003, 2007), Lemmens (2004, 2007), Manigart, de Maeseneire (2003), Neuhaus, Schremper (2003), Nounis (2003), Ofek, Richardson (2003), Peristiani (2003), Pham, Kalev, Steen (2003), Roosenboom, Van der Goot (2003), Roosenboom, Van der Goot, Mertens (2003), Roosenboom, Van der Goot (2005), Roosenboom (2007), Smart, Zutter (2003), Van Bommel, Vermaelen (2003), Van der Goot (2003), Weber, Willenborg (2003), Arugaslan, Cook, Kieschnick (2004), Bodnaruk, Kandel, Massa, Simonov (2004), Burrowes, Jones (2004), Cassia, Giudici, Paleari, Redondi (2004), Cassia, Paleari, Vismara (2004), Cassia, Vismara (2009), Chahine (2004a), Chahine (2004b), Chiang, Harikumar (2004), Cliff, Denis (2004), Corwin, Harris, Lipson (2004), Durnev, Morck, Yeung (2004), Fernando, Gatchev, Spindt (2004), Foerster (2004), Griffith (2004), Ganor (2004), Hahn, Ligon (2004), Hao (2004), Hoberg (2004), Kooli, Suret (2004), Kremer, Nyborg (2004a), Kremer, Nyborg (2004b), Kutsuma, Smith (2004), Lamont (2004), Lee M, Wahal (2004), Levy (2004), Lubig (2004), Mayhew, Mihov (2004), Mayhew, Mihov (2005), Mira (2004), Peggy, Wahal (2004), Pollock, Porac, Wade (2004), Pollock, Chen, Jackson, Hambrick (2005), Pritsker (2004), Pritsker (2004, 2005), Pritsker (2006), Purnanandam, Swaminathan (2004), Rath, Tebroke, Tietze (2004), Reuter (2004), Rice (2004), Rice (2006), Rindermann (2004), Sanders, Boivie (2004), Schenone (2004), Serve (2004), Alti (2005, 2006), Alvarez, Gonzalez (2005), Benninga, Helmantel, Sarig (20050, Berg, Neumann, Rietz (2005), Butler, Grullon, Weston (2005), Choo (2005), Corwin, Schultz (2005), Dolvin (2005), Drobetz, Kammermann, Wälchli (2005), Forestieri (2005), Hess (2005), Hurt (2005), Hurt (2006), Jagannathan, Gao (2005), Jain, Kini (2005), Jaskiewicz, Gonzàlez, Menéndez, Schiereck (2005), Khanna, Noe, Sonti (2005), Khanna, Noe, Sonti (2008), Li, McInish, Wongchoti (2005a), Li, Zheng, Melancon (2005b), LiCalzi, Pavan (2005), Malloy (2005), Nounis (2005), Pandey (2005), Parlour, Rajan (2005), Pastror, Veronesi (2005), Pastor, Taylor, Veronesi (2009), Pons-Sanz (2005), Sherman (2005), Yan (2005), Anand (2006), Aussenegg (2006), Aussenegg, Pichler, Stomper (2006), Boot A W A, Gopalan, Thakor (2006), Das, Guo, Zhang (2006), Damodaran (2006), Ellul, Pagano (2006), Gajewski, Gresse (2006), Goergen, Renneboog, Khurshed (2006), Hong (2006), Jagannathan, Sherman (2006), James, Karceski (2006), Pastor-Llorca, Poveda-Fuentes (2006), Tirole (2006), Trauten, Schulz (2006), Yung, Colak, Wang (2006), Zhang (2006), Arnold, Fishe, North (2007), Berkeley (2007), Doran, Jiang, Peterson (2007, 2009), Hopp, Dreherdo (2007), Jog, Sun (2007), Kerins, Kutsuna, Smith (2007), Leite (2007), Paleari, Vismara (2007), Paleari, Pellizzoni, Vismara (2008), Paleari, Ritter, Vismara (2010), Penman (2007), Thomas (2007), Toniato (2007), Zheng, Stangeland (2007), An, Chan (2008), Casotti, Motta (2008), Farina (2008), Hale, Santos (2008), Hild (2008), Kaustia, Knupfer (2008), Khurshed, Pande, Singh (2008), Khurshed, Paleari, Pande, Vismara (2011), Rossetto (2008), Kim, Weisbach (2008), Poudyal (2008), Yongyuan Qiao (2008), Yung, Colak, Wang (2008), Colak, Gunay (2011), Bouis (2009), Coakley, Hadass, Wood (2009), Deloof, De Maeseneire, Inghelbrecht (2009), Jiang, Leger (2009), Zhang (2009), Arikawa, Imad'eddine (2010), Bonardo, Paleari, Vismara (2010), Bonardo, Paleari, Vismara (2010), Caglio, Weiss-Hanley, Marietta-Westberg (2010), Cogliati, Paleari, Vismara (2010), Chod, Lyandres (2010), Deb, Marisetty (2010), Elston, Yang (2010), Guo, Brooks, Shami (2010), Hsu, Reed, Rocholl (2010), Hussinger (2010), Hussinger (2012), Jagannathan, Jirnyi, Sherman (2010), Pennacchio, Del Monte, Acconcia (2010), Acconcia, Del Monte, Pennacchio (2011), Pennacchio (2013), Sahoo, Rajib (2010), Shao, Wu, Qin, Wang (2010), Yao-Min Chiang, Hirshleifer, Yiming Qian, Sherman (2010), Adesoye, Atanda (2012), Boissin (2012), Cumming, Hass, Schweizer (2012), Datar, Emm, Ince (2012), Jacob (2012), Rodrigues, Stegemoller (2012), Saturnino, Saturnino, Lucena, Caetano, dos Santos (2012), Chang-Yi Hsu, Jean Yu, Shiow-Ying Wen (2013), Zhiqiang Hu, Yizhu Wang (2013), Lakicevic, Shachmurove, Vulanovic (2013), and by some other researchers.

Now, let us shortly discuss the **firm's stock option**, which can be considered as an investment product (an investment asset class and an investment instrument) for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, because the firm's stock options are constantly issued, traded and exercised at the stock options market.

Let us make a clear general definition of the option by saying that the option is a financial contract to buy/sell the underlying financial security at a predetermined price on a specified date. There may be a big number of different types of the options in the finances:

1. The traded firms' stock options;

2. The allocated employee's/executive's firms' stock options;

3. The traded equity options: Asian Options, Barrier Options, Compound Options, Look-back Options, Vanilla Stock Options, Vix Options.

In general, we can say that the call/put traded options can be issued for the different asset classes in the capital markets in the finances. However, in this research discussion, we would like to focus on the firm's stock options trading at the stock exchanges in the capital markets in particular in Investopedia (2016). The firms' stock options trading at the stock options exchanges can gain some financial profit or bring some unexpected financial losses to the trader/investor, depending on the concrete circumstances in the capital markets at the certain time moment in Black (1975), Lakonishok, Inmoo Lee, Pearson, Poteshman (2007), Investopedia (2016).

The option pricing models in the capital markets in the finances has been researched in Bierman (1967), Black, Scholes (1973), Merton (1973), Cox, Ross, Rubinstein (1979), Hull (1997), Scott (1997), Taylor (December 2007). The firm's stock option value depends on various factors, including the firm's stock price, the firm's characteristic microeconomic / macroeconomic variables in the economy of the scale and the scope within which the firm operates in Baule, Tallau (2013).

There may be observed the certain financial variables interdependencies between:

1. The firm's stock options price/volume traded at Chicago Board Options Exchange (CBOE) and the firm's stock price/volume traded at New York Stock Exchange (NYSE);

2. The firm's stock options price/volume traded at Chicago Board Options Exchange (CBOE) and the firm's market valuation;

at the selected stock exchange(s) in the capital market(s) in Easley, O'Hara, Subrahmanya Srinivas (1998), Kalok Chan, Peter Chung, Wai-Ming Fong (2002), Timraz, Al-Shubiri (2012), Baule, Tallau (2013).

Going to the next topic, let us comment that, in some cases, the executives/employees can be compensated by the employee/executive stock options, which represent a right to buy a share of stock at a fixed price (an exercises/strike price) before a specified date after the vesting period and they cannot be sold to the outside investors in Lewellen (1968), Saly (1994), Heath, Huddart, Lang (May 1999), Hall, Murphy (2000, 2003), Uchida (2006), Campbell (Winter 2007), Babenko, Lemmon, Tserlukevich (2011), Perobelli, de Souza Lopes, Da Silveira (2012).

Considering the next subject, let us say that there may be issued the equity options in the capital markets. More information on the equity options will be presented in next sub-chapter.

The company stock options have been researched in Weinberg, Patton (1963), James Boness (April 1964), Bierman (September 1967), Lewellen (1968), Hirshleifer (1970), Black, Scholes (1973), Black (1975), Merton (1973, 1997), Fisher (March 1978), Klemkosky (1978), Margrabe (March 1978), Cox, Ross, Rubinstein (1979), MacBeth, Merville (1979), Bookstaber (1981), Brown, Rainbow (1981), Hite, Long (1982), Whaley (1982), Geske, Roll (1984), Leland (1985), Rubinstein (1985), Barone-Adesi, Whaley (1987), Hull, White (1987, January-February 2004), Hull (1997, 2005 – 2006), Blomeyer, Johnson (1988), Detemple, Jorion (1989), Jorion, Stoughton (1989), Lambert, Lanen, Larker (1989), Defusco, Johnson, Zorn (1990), Vijh (1990), Zivney (1991), Boyle, Vorst (1992), French, Maberly (1992), Harvey, Whaley (1992), Bizjak, Brickley, Coles (1993), George, Longstaff (1993), Heston (1993), Dawson (1994, 2000), Diz, Finucane (1994), Fleming, Whaley (March 1994), Huddart (1994), Huddart, Lang (February 1996), Saly (1994), Sheikh, Ronn (1994), Kamara, Miller (1995), Mas-Colell, Whinston, Green (1995), Rubinstien (Fall 1995), Sung (1995), Abken, Madan, Buddhavarapu Sailesh Ramamurtie (1996), Aboody (1996), Bergman, Grundy, Weiner (1996), Chicago Board Options Exchange (1996), Corrado, Miller (1996), Ikenberry, Vermaelen (1996), Scott (1997), Easley, O'Hara, Subrahmanya Srinivas (1998), Alexander, Veronesi (1999), Bates (1999), Campbell, Canlin Li (1999), Heath, Huddart, Lang (May 1999), Chance, Kumar, Todd (2000), Etling, Miller (November 2000), Hall, Murphy (May 2000a, b, 2002, 2003), Johnson, Tian (2000), Lee, Nayar (2000), McMurray, Yadav (2000), Core, Guay (August 2001), Coval, Shumway (2001), Dueker, Miller (2002), Kalok Chan, Peter Chung, Wai-Ming Fong (2002), Poteshman, Serbin (2002), Sahlman (December 2002), Taylor (2002), Utsunomiya (2002), Bliss (April 2003), Bodie, Kaplan, Merton (March 2003), Campbell (June 2003), Cassano (2003), Craig, Glatzer, Keller, Scheicher (2003), Guay, Kothari, Sloan (May 2003), Haubrich (November 2003), Raupach (2003), Barenbaum, Schubert, O'Rourke (December 16-20 2004), Battalio, Hatch, Jennings (2004), Calomiris, Glenn Hubbard (January 2004), Arnold, Gillenkirch (September 2005), Bulow, Shoven (Fall 2005), Ciccotello, Terry Grant, Mark Wilder (September 2005), Dahlgren, Korn (2005), Eberhart (2005), Lie (May 2005), Manzon (2005), Oyer, Schaefer (April 2005), Ross, Westerfield, Jaffe (2005), Sundaram (2005), Sautner, Weber (2005), Cetin, Jarrow, Protter, Warachka (2006), Chongwoo Choe, Xiangkang Yin (2006), Deshmukh, Howe, Luft (Spring 2006), Macminn, Page (January 2006), Pan, Poteshman (2006), Rhee (2006), Sharma (2006), Tirole (2006), Uchida (2006), Campbell (Winter 2007), Lakonishok, Inmoo Lee, Pearson, Poteshman (2007), Taylor (December 2007), Hurtt (2008), Ni, Pan, Poteshman (2008), Ye (2008), Cuny, Martin, Puthenpurackal (2009), Gârleanu, Pedersen, Poteshman (2009), Chen, Bong Soo Lee (2010), Engle, Neri (2010), Hallock, Olson (2010), Babenko, Lemmon, Tserlukevich (2011), Børsum (2011), Schürhoff, Ziegler (2011), Yang, Carleton (2011), Zhongjin Yang, Cassidy Yang (2011), Korn, Paschke, Uhrig-Homburg (2012), Morikawa (2012), Perobelli, de Souza Lopes, da Silveira (2012), Timraz, Al-Shubiri (2012), Baule, Tallau

(2013), Cao, Bing Han (2013), Aldatmaz, Ouimet, Van Wesep (2014), An, Ang, Bali, Cakici (2014), Boyer, Vorkink (2014), Câmara, Popova, Simkins (2014), Karakaya (2014), Sonika, Carline, Shackleton (2014), Christoffersen, Goyenko, Jacobs, Karoui (2015), Goyenko, Ornthanalai, Shengzhe Tang (2015), Choy, Wei (2016), Investopedia (2016), Kanne, Korn, Uhrig-Homburg (2016).

4.6 Financial security as investment product.

The **financial security** can also be treated as an investment product (an investment asset class and an investment instrument) for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, because the financial securities are constantly traded at the financial securities market.

The most popular investor's idea is to foresee the financial securities values changes dynamics; then to invest the financial capital into the selected financial securities at a certain time moment; after that to wait for some time period, and finally to sell the financial securities at the financial securities market, having made an increased return premium in the short or long time periods.

In general, the financial securities may include the structured credit products such as the financial derivative with the changing value, which depends on the values of other basic financial variables. The financial derivative is regarded as an insurance contract frequently. There are many types of derivatives, which give the fixed income investors a fully rated and leveraged exposure to the main credit derivatives indices in Ledenyov D O, Ledenyov V O (2013a):

1. Credit Derivatives: Collateralized Debt Obligations (CDO), Constant Proportion Debt Obligations (CPDO), and investment protection mechanisms such as the Synthetic Collateralized Debt Obligations (SCDO), Credit Default Swaps (CDS), Credit Default Swap Index (CDSI), Loan only Credit Default Swaps (LCDS), Credit Default Swaps of ABS (ABCDS), Variance Swaps (VS), Constant Proportion Portfolio Insurance (CPPI), Contracts for Difference (CFD).

The credit derivative makes it possible to transfer the credit, interest rate, price, currency, liquidity risks of a financial loan to other financial investor without the real sale of the financial loan in Lucas, Goodman, Fabozzi (2006, 2007). The Collateralized Debt Obligations (CDO) are based on the pool of bonds: 1) the corporate bonds, secured against the company's balance sheet, or 2) the covered bonds, secured against the pools of mortgages or public-sector loans. The structure of the pool of bonds consists of both the riskiest slice and the conservative slice. The pieces of the pool of bonds are sold to the financial investors in the form of the CDOs. The

Synthetic Collateralized Debt Obligations (Synthetic CDO) replaces the pools of bonds with the Credit Default Swaps (CDS). The swaps insure against a bond default. Owners of bonds can buy CDS on their bonds to protect themselves.

2. Equity Derivatives: Futures, Asian Options, Barrier Options, Compound Options, Look-back Options, Vanilla Stock Options (put and call options), Vix Options.

The futures contract is an agreement to buy or sell an asset for a certain price at a specified time moment. The Call Option is an option to buy a certain asset by a certain date for a certain price (the Strike Price), and the Put Option is an option to sell a certain asset by a certain date for a certain price (the Strike Price), and the Stellate Option is a double option to buy or sell a certain asset by a certain date for a certain price (the Strike Price). It is necessary to distinguish the American Options vs. European Options: the American option can be exercised at any time during its life and the European option can be exercised only at maturity. Also, it is necessary to remember the distinction between the Options vs. Futures/Forwards Contracts: the Futures/Forward Contract gives the holder the obligation to buy/sell at a certain price, and the Option gives the holder the right to buy or sell at a certain price.

3. Other Derivatives: Interest Rate Swaps.

The financial securities, including the financial derivatives, have been researched intensively, beginning from the pioneering research works in Knight (1921), Fisher, Tippett (1928), Working (1948), Modigliani, Miller (1958), Borch (1960, 1961, 1962), Sharpe (1964), Akerlof (1970), Cox (1972), Black, Scholes (1973), Black, Cox (1976), Fama, MacBeth (1973), Merton (1974a, b), Jaffee, Russel (1976), Leland, Pyle (1977), Leland (1994), Stiglitz, Weiss (1981, 1983), Diamond (1984, 1991), Diamond, Rajan (2000), Fama (1985), Blazenko (1986), James (1987), Rudolph (1987, 1994), Berger, Udell (1990), Hellwig (1991), Berlin (1992), Heath, Jarrow, Morton (1992), Dewatripont, Tirole (1993), Froot, Scharfstein, Stein (1993), Froot, Stein (1998), Cocheo (1994), Figlewski (Summer 1994), Hull, White (1994a, b, 1996, 2000, 2001, 2004, 2005a, b, 2008), Hull, Predescu, White (2004), Hull (2013, January 25 2014), Jarrow, Lando, Turnbull (1994), Jarrow, Turnbull (1995, 2000a, b), Jarrow, Lando, Turnbull (1997), Jarrow (2001), Jarrow, Yu (2001), Jarrow, Yildirim (2002), McAllister, Mingo (May 1994), Neuberger (1994), Das (Spring 1995, 1998a, b, 2000), Das, Hanouna, Sarin (2009), Edwards (August 1995), Gorton, Pennacchi (1995), Gorton, Winton (1998), Gorton, Souleles (2005), Hasbrouck (1995), Longstaff, Schwartz (June 1995a, b), Longstaff, Mithal, Neis (August 2003), Longstaff, Mithal, Neis (2005), Longstaff, Rajan (2008), Whittaker, Kumar (1995), Whittaker, Frost (May 1997), Altman (September 1996), Duffee (1996), Duffee, Zhou (February 1997, November 1999, 2001), Duffie (1996a b, 1999, July 2008), Duffie, Singleton (1999, 2002), Duffie, Pan, Singleton (November 2000), Duffie, Gârleanu (2001), Duffie, Lando (2001), Duffie, Gârleanu (2003), Duffie, Filipovic, Schachermayer (2003), Hattori (1996), Hyder, Bolger, Leung (July 1996), Neal (May 1996), Neal, Rolph (1999), Reoch, Masters (March 1996), Schönbucher (August 1996, 1997, Fall 1999, 2000a, b, 2003, 2006), Smithson, Holappa, Rai (June 1996), Drzik, Kuritzkes (July 1997), Freixas, Rochet (1997), Géczy, Minton, Schrand (1997), Hill (1997), Hüttemann (1997, 1998), Joe (1997), Kaufman (1997), Mahtani (August 23 1997), Ogden (1997), Wilson (September 1997a, October 1997b), Burghof, Henschel (1998), Burghof, Henke, Rudolph, Schönbucher, Sommer (2005), Henke, Burghof, Rudolph (1998), Fabozzi (January 1998), Fabozzi, Davis, Choudhry (October 20 2006), Fabozzi, Kothari (2007), Lancaster, Schultz, Fabozzi (April 25 2008), Fabozzi (January 16 2012), Lando (1998, 2004), Scott–Quinn, Walmsley (1998), Steinherr (1998), Tavakoli (1998, 2001, 2003), Arvanitis, Gregory, Laurent (Spring 1999), DeMarzo, Duffie (1999), DeMarzo (2005), Gauvin (September 8 1999), Heidorn (1999), Embrechts, McNeil, Straumann (1999), Embrechts, Lindskog, McNeil (2001), Master, Bryson (1999), Nelken (1999), Rappoport (1999), Staehle, Cumming (1999), Allen, Gale (2000), Allen , Carletti (2006), British Bankers' Association (2000), Brewer, Minton, Moser (2000), Kiff, Morrow (Autumn 2000), Kiff, Michaud, Mitchell (2002, June 2003a, b), Li (2000), Müller (2000), Saunders (2000), Wahl, Broll (2000), Arvantis, Gregory (Jon 2001), Bomfim (July 11 2001), Cossin, Hricko (May 2001), Collin-Dufresne, Goldstein, Martin (2001), Craddock, Platen (June 28 2001), Delianedis, Geske (2001), Elton, Gruber, Agrawal, Mann (2001), Giesecke (2001, 2002, 2003, 2004, 2006), Giesecke, Weber (2003), Giesecke, Goldber (2004), Goodman (2001), Lopez (2001), Lucas, Klaassen, Spreij, Staetmans (2001), Mashal, Naldi (2001), Ranciere (2001), Rehm (2001), Rule (June 2001), Schmidt (März 2001), Amihud (2002), Angelini (2002), Arping (May 2002), Aunon-Nerin, Cossin, Hricko, Huang (2002), Batten, Hogan (2002), Bielecki, Rutkowski (2002, 2004), Broll, Welzel (2002), Broll, Pausch, Welzel (July 2002), Broll, Schweimayer, Welzel (2003), Di Graziano, Rogers (2002), Dunne, Moore, Portes (2002), Grill, Perczynski, Int-Veen, Muthig, Platz (2002), Jobst (2002), Läger (2002), Prato (November 2002), Ranciere (April 2002), Skinner, Townend (2002), Albanese, Campolieti, Chen, Zavidonov (2003), Albanese, Chen (2005), Albanese, Vidler (October 9 2007), Amato, Remolona (December 2003), Amato (December 2005), BIS (2003), Blanco, Brennan, Marsch (2003, 2004), Codogno, Favero, Missale (2003), Fage (November 24 2003), Francis, Kakodkar, Martin (April 2003), Galiani (2003), Grundke (2003), Haas (June 2003), Li Chen, Filipović (July 4 2003), MacKenzie, Millo (2003), Packer, Suthiphongchai (December 2003), Schmidt (2003), Xu, Wilder (May 2003), Blanco, Brennan, March (2004), Cebenoyan, Strahan (2004), Chan-Lau, Kim (2004), Edwards, Morrison (2004), Eller, Markus

(2004, 2005), Ericsson, Jacobs, Oviedo (2004), Ericsson, Reneby, Wang (2006), Favero, Von Thadden (2004), Favero, Pagano, Von Thadden (2009), Felsenheimer (June 2 2004), Felsenheimer (September 2004), Felsenheimer, Gisdakis, Zaiser (2005), Garcia, Maghakian, Sharma (2004), Gibson (2004 , May 22 2007), Madan, Konikov, Marinescu (2004), Meneguzzo, Vecchiato (2004), Norden, Weber (2004a, b, March 26 2007), Olléon-Assouan (June 2004), Pagano, Von Thadden (2004), Pausch, Schweimayer (March 2004), Puffer (2004), Shelton (August 2004), Shimko (2004), Tavares, Nguyen, Chapovsky, Vaysburd (2004), Verdier (2004), Zhu (2004), Abid, Naifar (2005, 2006a, b), Acharya, Pedersen (2005), Acharya, Schaefer (2006), Acharya, Johnson (2007), Acharya, Schaefer, Zhang (May 2007), Albrecht (2005), Bielecki, Crepey, Jeanblanc, Rutkowski (March 2005), Bielecki, Vidozzi A, Vidozzi L (May 2006), Blanco, Brennan, Marsh (2005), Bomfim (2005), Brigo (January 2005), Brigo, Alfonsi (2005), Brigo, Cousot (2006), Brigo, El-Bachir (2006), Brigo, Pallavicini, Torresetti (June 2007), Burtschell, Gregory, Laurent (2005, 2008), Chiesa (2005), Cossin, Lu (June 2005), Cousseran, Rahmouni (June 2005), Franke, Krahnen (2005), Franke (2005), Greenspan (May 5 2005), Heinrich (2005), Houweling, Vorst (2005), Instefjord (2005), Jorion (2005), Jortzik (2005), Joshi, Stacey (2005), Kalemanova, Schnid, Werner (2005), Kim, Lucey, Wu (2005), Kim, Moshirian, Wu (2006), Lucas, Goodman, Fabozzi (2006, 2007), Lucas, Goodman, Fabozzi, Manning (2007), Minton, Stulz, Williamson (August 2005, June 2006), Morrison (2005), Nési (March 2005), Neske (2005), Nicolò, Pelizzon (October 17 2005), Parlour, Plantin (2005), Posthaus (2005), Pelizzon, Schaefer (2005), Skinner (2005), Stamicar, Finger (2005), Allen, Carletti (2006), Beitel, Dürr, Pritsch, Stegemann (2006), Beck, Lesko, Schlottmann, Wimmer (Ausgabe 14 2006), Chilcote (2006), Cremers (2006), Cremers, Walzner (June 2007, 2009a, b), De Wit (2006), Felsenheimer, Gisdakis, Zaiser (2006a, b), Geithner (May 16 2006), Gikhman (July 2006, February 4 2008, July 2008, 2008, November 2011), Goderis, Marsh, Castello, Wagner (2006), Gruber J, Gruber W, Braun (2005), Huault, Rainelli-Le Montagner (2006, 2008), Joshi, Stacey (July 2006), Juselius (2006), Ludovici (November December 2006), Marsh (2006), Martin, Reitz, Wehn (2006), Minton, Stulz, Williamson (June 2006), Mortensen (2006), Nicolò, Pelizzon (November 2006), Papenbrock (2006), Partnoy, Skeel (2006), Predescu (2006), Pugachevsky (2006), Sircar, Zariphopoulou (2006), Zhu (2006), Wagner, Marsh (2006), Ammer, Cai (2007), Ashcraft, Santos (July 2007), Baba, Inada (2007), Boulier, Brière, Viala (2007), Byström (2007, 2008, 2010), Chen, Lesmond, Wei (2007), Davydenko, Strebulaev (2007), Dötz (2007), Drucker, Puri (2007), Fathi, Nader (2007), Fulop, Lescourret (2007), Henrard (2007, 2009), Hirtle (February 2007, March 2008), In, Kang, Kim (2007), Mengle (2007), Nashikkar, Subrahmanyam (2007), Nashikkar, Subrahmanyam, Mahanti (2009), Pan, Singleton (2007), Papageorgiou, Sircar (2007), Pausch (2007), Pykhtin, Zhu (July August 2007), Rajan, McDermott (2007), Schulz, Wolf (2007), Summer (2007), Tang, Yan (2007), Thompson (2007), Truslow (March 22 2007), Weithers (Fourth Quarter 2007), Yan, Zivot (2007), Abid, Naifar (2008), Alexander, Kaeck (2008), Arnsdorf, Halperin (2008), Chen, Cheng, Liu (2008), Claes, De Ceuster (2008), Cont, Minca (2008), Coudert, Gex (2008), Cserna, Imbierowicz (2008), Curto, Nunes, Oliveira (2008), Jankowitsch, Pullirsch, Veža (2008), Le Roux (October 2008), Li, Zou (2008), Morgan (May 2008), O'Kane (2008), Peng, Kou (2008), Sougné, Heuchenne, Hübner (2008), Ametrano, Bianchetti (2009), Ametrano (January 18 2011), Bayraktar, Yang (2009), Elizalde, Doctor (2009), Elizalde, Doctor, Saltuk (2009), Forte, Peňa (2009), Fujii, Shimada, Takahashi (2009a, b), Fujii, Shimada, Takahashi (2010a, b), Fujii, Takahashi (2011), Mayordomo, Peña, Romo (September 2009, 2012), Rey (2009), Panchenko, Wu (2009), Rey (November 20 2009), Varga (May 2009), Buraschi, Porchia P, Porchia F (2010), Ciolpan, Adam (2010), Coudert, Gex (2010), Courtney (2008, May 19 2010), De Wit (2006), Gómez (2010), Gregory (2010), Fries (2010), Tsui (2010, May 18 2010), Piterbarg (2010a, b), Bianchetti (October 31 2011), Bianchetti M, Mattia C (March 28 2012), Calice, Ioannidis, Williams (2011), Coşkun (2011), Lahusen, Speyer (2011), Lijun Bo, Ying Jiao, Xuewei Yang (December 13 2011), Ojo (May 24 2011, April 30 2012), Rennie, Lipton (2011), Avino, Lazar (2012), Heller, Vause (2012), Roman, Şargu (2012), Tim Leung, Peng Liu (October 2 2012), Yildirim, Coskun, Caglar, Yildirak (2012).

4.7 Foreign currency as investment product.

The **foreign currency(s)** can be qualified as an investment product (an investment asset class and an investment instrument) for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, because the foreign currencies are constantly indexed, traded and exchanged between the traders/investors in the foreign currencies exchange markets in Ellis, Metzler (editors) (1949), Machlup (1949), Robinson (1949).

We can easily describe an investment process scenario by the private/institutional investors by saying that the increased return premium can be generated by introducing a selected investment product by means of a selected investment vehicle into a preferred investment medium, pursuing an investor’s expectation to obtain an increased return premium in the foreign currencies exchange markets in the short or long time periods in Ledenyov V O, Ledenyov D O (2016s). In other words, in a practical case, the basic investment idea by the private/institutional investors is to make a best possible assumption on the foreign currencies exchange rates change dynamics in the time; then to invest the financial capital into the selected foreign currency(s) at a certain time moment; after that to wait for ultra short/short/long time period, and finally to sell the foreign currency at the electronic trading process, deriving an increased return premium in the foreign currencies exchange markets (FX) in the short and long time periods in Ledenyov V O, Ledenyov D O (2016s).

Let us write a formula for the spot exchange rate S_t^{t+m} of the Currency[1] in relation to the Currency[2] in FX markets in Morgenegg (1990), Müller, Dacorogna, Olsen, Pictet, Schwarz, Morgenegg (1990), Dacorogna, Müller, Nagrel, Olsen, Pictet (1993), Peters (1994), Ghysels, Jasiak (1995), Schnidrig, Würtz (1995), Mantegna, Stanley (1995), Guillaume, Dacorogna, Dave, Muller, Olsen, Pictet (1997), Shiryaev (1995, 1998a, 1999), Ledenyov V O, Ledenyov D O (2016s):

$$S_t^{t+m} = \left[\frac{Currency^1}{Currency^2}\right]_t^{t+m}, \quad t \geq t_0, \quad m > 0,$$

where S_t^{t+m} is the spot exchange rate,

Currency1 is the currency no 1,

Currency2 is the currency no 2,

m - the month,

t - the time.

Let us introduce a formula for the change of the spot exchange rate in the time domain in FX markets, ΔS_t in Ledenyov V O, Ledenyov D O (2016s):

$$\Delta S_t \equiv S_t - S_{t-1} \equiv \left[\frac{Currency1}{Currency2}\right]_t - \left[\frac{Currency1}{Currency2}\right]_{t-1},$$

where ΔS_t is the change of spot exchange rate over time,

Currency1 is the currency no 1,

Currency2 is the currency no 2,

t - the time.

Let us show a formula for the calculation of the electronic trading frequency in FX markets and explain that the electronic trading in FX markets can be performed at the ultra high frequencies (UHF) in Ledenyov V O, Ledenyov D O (2016s)

$$f = \frac{Number \quad of \quad ticks}{Time \quad period}.$$

where f is the frequency.

Finally, we would like to comment that an accurate characterization of the foreign currencies exchange rates at the ultra high frequencies electronic trading in the FX markets can be achieved, using in Ledenyov V O, Ledenyov D O (2016s):

1. The mathematical analysis methods (the probability and statistics distributions formulas);

2. The financial analysis methods (the macroeconomics and microeconomics formulas);

3. The electronic analysis methods (the Stratanovich-Kalman-Bucy filtering algorithm in the Stratanovich – Kalman – Bucy filter formulas), and

4. The quantum analysis methods (the Ledenyov quantum econophysical wave equation formula).

The foreign currencies investment in the foreign currencies exchange markets have been researched in Ellis, Metzler (editors) (1949), Machlup (1949), Robinson (1949), Friedman (1953), Baumol (1957), Debreu (1959), Fama (1965, 1970, 1984, 1998), Fama, Blume (1966), Fama, French (1988, 1996), Fama, Hansen, Shiller (2013), Demsetz (1968), Radner (1968), Bates, Granger (1969), Akerlof (1970), Arrow (1970), Black (1971, 1986), Black, Scholes (1973), Merton (1973), Newbold, Granger(1974), Fleming (1975), Shapiro (1975), Dooley, Shafer (1976), Dornbusch (1976, 1987), Frankel (1976, 1979, 1982a, b, 1983, 1992, (editor) 1993), Frankel, Froot (1987, 1990a, b, c), Frankel, Goldstein, Mason (1991), Frankel, Rose (1994, 1995), Frankel, Galli, Giovannini (editors) (1996), Frankel, Poonawala (2004), Garman (1976), Grossman (1976), Grossman, Stiglitz (1980), Grossman, Miller (1988), Kouri (1976), McKinnon (1976), Mussa (1976, 1979, 1981, 1984), Williamson (1976), Branson (1977), Branson, Halttunen, Masson (1977), Branson, Henderson (1985), Clark, Logue, Sweeney (editors) (1977), Girton, Henderson (1977), Cornell, Dietrich (1978), Cornell (1982), Stoll (1978, 1985, 1989, 1995, 1998, 2006), Huang, Stoll (1996, 1997), Stoll, Schenzler (2005), Blanchard (1979), Brunner, Meltzer (editors) (1979), Deardorff (1979), Goodman (1979), Aliber (1980, 2002), Allen, Kenen (1980), Amihud, Mendelson (1980), Amihud, Ho, Schwartz (editors) (1985), Amihud (1994a, b, c) Amihud, Levich (editors) (1994), Hansen, Hodrick (1980), Hellwig (1980, 1982), Krugman (1980, 1984, 1991, 1999), Krugman, Miller (1993), Callier (1981), Cohen, Maier, Schwartz, Whitcomb (1981), Cox, Ingersoll, Ross (1981), Diamond, Verrecchia (1981), Diamond (1982), Fieleke (1981), Ho, Stoll (1981, 1983), Loosignian (1981), Stigum (1981, 1990), Dooley, Isard (1982), Hansen (1982), Hodder (1982), Milgrom, Stokey (1982), Taylor D (1982), Bigman, Taya (editors) (1983), Copeland, Galai (1983), Dooley, Shafer (1983), Edwards (1983), French (1983), Garman, Kohlhagen (1983), Meese , Rogoff (1983a, b,

1988) Rogoff (1984, 1985, 1996), Meese (1986, 1990), Obstfeld, Rogoff (1995, 1998), Robinson (1983), Adler, Dumas (1984), Backus (1984), Bilson, Marston (editors) (1984), Booth (1984), Engel, Frankel (1984a, b), Engel, Hamilton (1990), Engel (1992, 1995, 1996, 1999), Devereux, Engel (1999, 2002), Devereux, Shi (2005), Engel, West (2004a b, 2005, 2006), Engel, Mark, West (2007), Garner, Shapiro (1984), Loopesko (1984), Roll (1984), French, Roll (1986), Roll (1988), White, Domowitz (1984), Bahmani-Oskooee, Das (1985), Cohen, Conroy, Maier (1985), Glosten, Milgrom (1985), Glosten, Harris (1988), Glosten (1989, 1994), Hakkio, Pearce (1985), Hardouvelis (1985), Jones, Kenen (editors) (1985), Kearney, Macdonald (1985), Kyle (1985, 1989), Kyle, Xiong (2001), Levich (1985), McInish, Wood (1985), Dominguez (1986, 1990, 1992, 1993, 1998, 2003a, b), Dominguez, Frankel (1993a, b, c), Bollerslev (1986, 1990), Baillie, Bollerslev (1989 1990, 1991), Bollerslev, Chou, Jayaraman, Kroner (1990), Bollerslev, Domowitz (1991, 1993), Bollerslev, Melvin (1994), Andersen, Bollerslev (1994, 1998), Bollerslev, Engle, Nelson (1995), Bollerslev, Cai, Song (2000), Andersen, Bollerslev, Diebold, Labys (2000, 2001, 2003), Andersen, Bollerslev, Diebold, Vega (2001, 2003), Andersen, Bollerslev, Diebold (2007), Engle (1982) Engle, Bollerslev (1986), Engle, Granger (1987), Engle, Rodriguez (1989), Engle, Ito, Lin Wen-Ling (1990), Engle, Russell (1995), Engle, Gallo (2006), Evans (1986), Flood, Lessard (1986), Grammatikos, Saunders, Swary (1986), Harris (1986, 1990), Hart, Kreps (1986), Lyons (1986, 1988, 1990, 1991, 1992, 1993a, b, c, 1994, 1995, 1996a, b, 1997a, b, c, 1998a, b, 2001, 2002a, b, 2003, 2006), Baldwin, Lyons (1994), Lyons, Rose (1995), Fan, Lyons (2001, 2003), Killeen, Lyons, Moore (2001), Killeen, Hau, Moore (2001), Killeen, Lyons, Moore (2006), O'Hara, Oldfield (1986) , Burdett, O’Hara (1987), O'Hara (1995, 1998), Shleifer (1986), Shleifer, Summers (1990), Sweeney (1986), DeLong, Shleifer, Summers, Waldmann (1990), Bilson, Hsieh (1987), Glassman (1987), Gerlach (1987), Hasbrouck, Ho (1987), Hasbrouck (1988, 1991), Hasbrouck, Sofianos (1993), Hasbrouck, Seppi (2001), Hodrick (1987), Ito, Roley (1987, 1990), Canova, Ito (1991), Ito, Engle, Lin (1992), Ito, Lin (1992), Ito, Isard, Symansky, Bayoumi (1996), Ito, Lyons, Melvin (1998), Ito (2002, 2005a, b), Ito, Hashimoto (2006), Mendelson (1987), Newey, West (1987), Rubinstein, Wolinsky (1987), Taylor (1987, 1989, 1995, 2005), Allen, Taylor (1989), Taylor, Allen (1992), Sarno, Taylor (2000, 2001a, b), Sager, Taylor (2005, 2006, 2008), Reitz, Taylor (2006), Schulmeister (1987), Melvin, Taylor (2009), Newey, West (1987), Wolff (1987), Admati, Pfleiderer (1988, 1989), Boothe (1988), Choi, Salandro, Shastri, Clinton (1988), Goodhart (1988, 1989, 1992), Goodhart, Demos (1990, 1991a, b), Goodhart, Curcio (1991), Goodhart, Figliuoli (1991), Goodhart, Hall, Henry, Pesaran (1993), Goodhart, Hesse (1993), Goodhart, Ito, Payne (1995, 1996), Goodhart, O'Hara (1995), Goodhart, O’Hara (1997), Goodhart, Love, Payne, Rime

(2002), Hardouvelis (1988), Lewis (1988, 1995), Baldwin, Krugman (1989), Baxter, Stockman (1989), Dooley, Lizondo, Mathieson (1989), Giovannini (1989), Golub (1989), Humpage (1989), Leach, Madhavan (1989), Leahy (1989), Miller, Eichengreen, Portes (editors) (1989), Van Hagen (1989), Allen, Taylor (1990), Allen, Karjalainen (1999), Courakis, Taylor (1990), Diebold, Nason (1990), Flood, Hodrick (1990), Flood, Rose (1995), Flood, Taylor (1996), Flood, Marion (2001), Foster, Viswanathan (1990), Foster, Viswanathan (1993), Holthausen, Leftwich, Mayers (1990), De Long, Shleifer, Summers, Waldmann (1990), Domowitz (1990, 1993), Domowitz, Steil (1999), Johansen, Juselius (1990), Johansen (1991, 1992), Jorion (1990, 1991, 1996), Lo, MacKinley (1990), Melino, Turnbull (1990, 1995), Mishkin (1990), Müller, Dacorogna, Olsen, Pictet, Schwarz, Morgenegg (1990), Müller, Dacorogna, Dave, Pictet, Olsen, Ward (1993), Müller, Dacorogna, Dave, Olsen, Pictet, von Weizsäcker (1995), Roell (1990), Seppi (1990), Bali (1991), Bhattacharya, Spiegel (1991), Black (1991), Bossaerts, Hillion (1991), Burnham (1991), Campbell, LaMaster, Smith, Van Boening (1991), Campbell, Lo, MacKinlay (1997), Chinn (1991), Chinn, Meese (1995), Chowdhry, Nanda (1991), Edwards (1991), Froot, Obstfeld (1991), Froot, Rogoff (1995), Froot, Ramadorai (2002), Froot, Donohue (2004), Froot, Ramadorai (2005), Georg, Kaul, Nimalendran (1991), Grabbe (1991), Harvey, Huang (1991), Khonry (editor) (1991), Kim, Verrecchia (1991, 1994, 1997), Klein (1991), Klein, Rosengren (1991), Lease, Masulis, Page (1991), LeBaron (1991), Lee, Ready (1991), Messe, Rose (1991), Subrahmanyam (1991), Spiegel, Subrahmanyam (1992, 1995), Williamson (1991), Bekaert, Hodrick (1992), Choi, Elyasiani, Kopecky (1992), Choi, Elyasiani (1997), Curcio, Goodhart (1992), Curcio, Goodhart, Guillaume, Payne (1997), De Grauwe, Decupere (1992), De Grauwe, Grimaldi (2006a, b), Edison (1992, 1993, 2003), Edison, Liang (1999), Flood (1992, 1994), Flood, Rose (1995), Flood, Huisman, Koedijk, Mahieu (1996, 1998), Gosh (1992), Guillaume, Dacorogna, Dave, Muller, Olsen, Hamon, Jacquillat (1992), Guillaume, Pictet, Dacorogna (1995), Guillaume, Dacorogna, Dave, Muller, Olsen, Pictet (1997), Hansen (1992), Holden, Subrahmanyam (1992), Neal (1992), Pesaran, Samiei (1992), Rhee, Chang, Svensson (1992, 1993), Bertola, Svensson (1993), Rose, Svensson (1994), Taylor S J (1992), Zhou (1992a, b, 1997), Bank for International Settlements (1993, 1999a, b, 2001, 2002, 2004 2005, 2007, 2010), Bertola, Svensson (1993), Biais (1993), Chan, Weinstein (1993), Cheung (1993), Cheung, Ng (1996), Cheung, Chinn (1998, 2001), Cheung, Wong (1999, 2000), Cheung, Chinn, Marsh (2004), Cheung, Chinn, Pascual (2004, 2005), Dacorogna, Muller, Nagrel, Olsen, Pictet (1993), Dacorogna, Muller, Pictet, de Vries (1995), Dominguez, Frankel (1993), Dominguez (1998, 2006), Dominguez, Panthaki (2006), Ederington, Lee (1993), Edin, Vredin (1993), Goldstein, Folkerts-Landau, Garber, Rojas-Suarez, Spencer (1993), Griffiths, White

(1993), Grimes (1993), Harris, Raviv (1993), Klein (1993), Levich, Thomas (1993), Matsuyama, Kiyotaki, Matsui (1993), Romer (1993), Schmidt, Iversen, Treske (1993), Schmidt, Iversen (1993), Schmidt, Oesterhelweg, Treske (1996), Wolinsky (1990), Ammer, Brunner (1994), Andrew, Broadbent (1994), Bakker, Boot, Sleijpen, Vanthoor (editors) (1994), Bartov, Bodnar (1994, 1995), Berry, Howe (1994), Bessembinder (1994), Ball, Roma (1994), Brousseau, Czarnecki (1994), De Jong (1994), De Jong, Nijman, Röell (1995), De Jong, Nijman, Röell (1996), De Jong, Mahieu, Schotman (1998), De Jong, Ligterink, Macrae (2006), De Jong, Verschoor, Zwinkels (2010), Degryse, de Jong, van Kervel (2011), Dini (1994), Fialkowski, Petersen (1994), Glass (1994), Grünbichler, Longstaff, Schwartz (1994), Hansch, Naik, Viswanathan (1994), Hirschleifer, Subrahmanyam, Titman (1994), Hogan, Melvin (1994), Jones, Kaul, Lipson (1994), Jones, Lipson (1999), Kraus, Smith (1994), Massib, Phelps (1994), Mendelson, Peake (1994), Naidu, Rozeff (1994), Nieuwland, Verschoor, Wolff (1994), Pictet, Dacorogna, Muller, De Vries (1994), Sharpe (1994), Silber (1994), Slezak (1994), Szpiro (1994), Yadav, Pope, Paudyal (1994), Walsh (1994), Wei (1994), Watanabe (1992), Watanabe, Harada (2004), Watanabe, Yabu (2007), Almekinders (1995), Chiang, Jiang (1995), Dumas, Solnik (1995), Ederington, Lee (1995), Evertsz (1995), Faruqee (1995), Frino, McCorry (1995), Frino, McInish, Toner (1998), Ghysels, Jasiak (1995), Grossman, Rogoff (1995), Havrilesky (1995), Hong, Wang (1995), Isard (1995), Kandel, Pearson (1995), Lewis (1995), Lin, Sanger, Booth (1995), Mantegna, Stanley (1995), Mark (1995, 2001, 2009), Mark, Wu (1998), Obstfeld, Rogoff (1995, 1998), Osler (1995, 1998, 2000, 2003, 2005, 2006, 2008, 2009, 2012), Carlson, Osler (1999, 2005), Kevin, Osler (1999), Osler, Vandrovych (2009), Osler, Yusim (2009), Osler, Mende, Menkhoff (2011), Osler, Savaser (2011), Dahl, Carlson, Osler (2011), Peiers (1995), Prasad, Rajan (1995), Schnidrig, Würtz (1995), Schwartz (editor) (1995), Shyy, Lee (1995), Shyy, Vijayraghavan, Scott-Quinn (1996), Vivex (1995), Zaheer, Zaheer (1995), Bonser – Neal, Tanner (1996), Claassen (1996), Danker, Haas, Henderson, Symanski, Tryon (1996), Dukas, Fatemi, Tavakkol (1996), Dwyer, Locke, Yu (1996), Easley, Kiefer, O'Hara, Paperman (1996, 1997a, b), Easley, O'Hara, Srinivas (1998), Flemming, Ostdiek, Whaley (1996), Gagnon (1996), Ghashghaie, Breymann, Peinke, Talkner, Dodge (1996), Hsieh, Kleidon (1996), Ingersoll (1996), Kaminsky, Lewis (1996), LeBaron (1996), MacDonald, Marsh (1996), Madrigal (1996), Mosekilde (1996), Pirrong (1996), Rosenberg (1996), Tsang (1996, 1998, 1999a, b), Tsang, Sin, Cheng (1999), Tsang, Yue (2002), Vermeiren, Ková (1996), Balke, Fomby (1997), Balke, Wohar (1998), Bhattacharya, Weller (1997), Campbell, Lo, MacKinlay (1997), Campbell, Viceira (2002), Chamberlain, Howe, Popper (1997), Clarida, Taylor (1997), Clarida, Sarno, Taylor, Valente (2003), Copejans, Domowitz (1997), DeGennaro, Shrieves (1997), Dewachter

(1997, 2001), Dewachter, Lyrio (2005), Embrechts, Klueppelberg, Mikosch (1997), Evans (1997, 2001, 2002, 2005, 2009, 2010, 2011), Evans, Lyons (1999, 2001a, b, c, 2002a, b, c, d, 2003, 2004a, b, 2005a, b, c, d, 2006, 2007, 2008, 2009), Cao, Evans, Lyons (2003), Evans, Hnatkovska (2005), Fleming, Remolona (1997, 1999), Fleming (2002, 2003), Franke, Hess (1997), Goldberg, Tenorio (1997), Gosh, Ostry, Gulde, Wolf (1997), Harris, Schultz (1997), Hartmann (1997, 1998a, b, 1999), Hung (1997), Kirilenko (1997), Lamoureux, Schnitzlein (1997), Madhavan, Smidt (1991, 1993), Leach, Madhavan (1993), Keim, Madhavan (1996), Madhavan, Cheng (1997), Madhavan, Richardson, Roomans (1997), Madhavan, Sofianos (1997), Madhavan (2000a, b, c), Martens (1997), Montiel (1997), Pagano, Roell (1997), Peiers (1997), Reiss, Werner (1997), Sweeney (1997, 2000), Szakmary, Mathur (1997), Vogler (1997), Wei, Kim (1997), Werner (1997), Wren-Lewis (1997), Abhyankar (1998), Abrams, Beato (1998), Anthony, MacDonald (1998, 1999), Bjønnes, Rime (1998, 2001, 2005), Bjønnes, Rime, Solheim (2005), Bjønnes, Osler, Rime (2011), Blennerhasset, Bowman (1998), Bodnar, Hayt, Marston (1998), Caramazza, Aziz (1998), Chang, Taylor S (1998), Choi, Hiraki, Takezawa (1998), Chow, Chen (1998), Clark, Macdonald (1998), Covrig, Melvin (1998), Eddelbuttel, McCurdy (1998), Edison (1998), Fleming, Kirby, Ostdiek (1998), Garfinkel, Nimalendran (1998), George (1998), Hansch, Naik, Viswanathan (1998), Hau (1998), Hau, Killeen, Moore (2000, 2002a, b), Hau, Rey (2002, 2003), He, Ng (1998), Helpman, Sadka (1998), Hong Kong Monetary Authority (1998), Isard, Faruqee (1998), Isard, Faruqee, Kincaid, Fetherston (2001), Kanas (1998), Lee (1998), Litterman, Winkelmann (1998), Lui, Mole (1998), Menkhoff (1998, 2010), Gehrig, Menkhoff (2000, 2004), Mende, Menkhoff (2003, 2006), Menkhoff, Taylor (2007), Frömmel, Mende, Menkhoff (2008), Menkhoff, Schmeling (2008, 2010), Miller, Reuer (1998), Miville, DiMillo (1998), Nagayasu (1998), Neely (1998, 2000a, b, 2004, 2005), Pesaran, Hasem, Smith (1998), Portes, Rey (1998), Rey (2001), Reiss, Werner (1998), Sarkar, Tozzi (1998), Viswanathan, Wang (1998, 2000), Vitale (1998, 1999, 2000, 2003, 2004, 2006) Yao (1998), Alberola, Cervero, Lopez, Ubide (1999), Bos, Fetherstone (1999), Carrera (1999), Chaboud, LeBaron (1999, 2001), Chaboud, Humpage (2005), Chaboud, Chernenko, Wright (2008), Chaboud, Chiquoine, Hjalmarsson, Vega (2009), Chaboud, Chiquoine, Hjalmarsson, Loretan (2009), Fiess, MacDonald (1999, 2002), Fleming, Lopez (1999), Freihube, Kehr, Krahnen, Theissen (1999), Grammig, Schiereck, Theissen (1999), Isard, Razin, Rose (1999), Jeanne, Rose (1999), Kandel, Marx (1999), LeBaron (1999), Marks (1999), Macey, O'Hara (1999), Naik, Neuberger, Viswanathan (1999), Naik, Yadav (1999), Payne (1999, 2003), Payne, Vitale (2003), Moore, Payne (2011), Love, Payne (2004, 2008), Rigobon (1999), Saar (1999), Scalia, Vacca (1999), Scalia (2004, 2008), Shapiro, Varian (1999), Theissen (1999), Vayanos

(1999, 2001), Wang (1999), Aliber, Chowdhry, Yan (2000), Ausloos (2000), Baillie, Humpage, Osterberg (2000), Carlson, Osler (2000), Carlson (2002), Ebrahim (2000), Eichengreen, Mathieson (2000), Greenspan (2000), Hüfner (2000), Franke, Hess (2000), Fujiwara (2000), Kanas (2000), Kaul, Mehrotra, Morck (2000), Kim, Kortian, Sheen (2000), Kim, Sheen (2002), Kim (2003), Lane, Milesi-Ferretti (2000), Lo (2000), Lee, Swaminathan (2000), Ma, Kanas (2000), Ma, Tsang, Yiu, Wai-Yip Alex Ho (2010), Martin (2000), Martin, Mauer (2003, 2005), McCallum (2000), Melvin M, Yin (2000), Melvin M, Melvin B P (2003), Melvin M, Taylor (2009), Naranjo, Nimalendran (2000), Ng (2000), Ramaswamy, Samiei (2000), Rime (2000, 2001, 2003), Akram, Rime, Sarno (2005), Rime, Sarno, Sojli (2006, 2007, 2010), Schwartz (2000), US General Accounting Office (2000), Allayannis, Ofek (2001), Anderson, Vahid (2001), Brandt, Edelen, Kavajecz (2001), Brown (2001), Cai, Cheung, Lee, Melvin (2001), Claessens, Forbes (2001), Clark, McCraken (2001), Collins, Rodrik (2001), Corsetti, Pesenti, Roubini (2001), Coval, Shumway (2001), Croushore, Stark (2001), Dacorogna, Gencay, Mueller, Olsen, Pictet (2001), D'Souza (2001), Duarte, Stockman (2001), Fischer (2001), Galati (2001), Griffin, Stulz (2001), Guembel, Sussman (2001), Hong (2001), Lane (2001), Montgomery, Popper (2001), Moore, Roche (2001, 2002), Rey (2001), Sato, Hawkins (2001), Sinn, Westermann (2001), Tse, Zabotina (2001), Williamson (2001), Yamaguchi (2001), Aguiar (2002), Beine (2002), Cavallo, Perri, Roubini, Kisselev (2002), Chari, Kehoe, McGrattan (2002), Chari (2006), Chordia, Roll, Subrahmanyam (2002), Covrig, Melvin (2002), Daníelsson, Payne (2002, 2011), Danielsson, Payne, Luo (2002), Daníelsson, Love (2006), Deutsche Bundesbank (2002), Doyne, Joshi (2002), Fatum, Hutchison (2002), Fatum, King (2005), King, Sarno, Sojli (2010), King, Rime (2010), King, Mallo (2010), King, Osler, Rime (2011a, b, 2012), Kantelhardt, Zschiegner, Koscielny-Bunde, Havlin, Bunde, Stanley (2002), Galati (2002), Girardin, Horsewood (2002), Huang, Cai, Jeanne, Rose (2002), Kaul, Mehrotra (2002), Obadan (2002), Ryan, Worthington (2002), Abreu, Brunnermeier (2003), Aliber, Chowdry, Yan (2003), Bacchetta, van Wincoop (2003), Bergsten, Williamson (2003), Bodnar, Wong (2003), Burstein, Neves, Rebelo (2003), Carpenter, Wang (2003), Derviz (2003), Dominguez (2003), Dominguez, Panthaki (2006), Doukas, Hall, Lang (2003), Fatum, Hutchison (2003), Fatum, Hutchison (2006), Faust, Rogers, Wright (2003), Gordon (2003), Humpage (2003), Koutmos, Martin (2003), Laurenceson, Chai (2003), Mathisen (2003), Okunev, White (2003), Peng, Shu, Chow (2003), Rogers, Siklos (2003), Spiegel (2003), Westerhoff (2003), Wright (2003), Aitken, Frino, Hill, Jarnecic (2004), Anwar (2004), Bacchetta, van Wincoop (2004, 2006), Bartram (2004), Bartram, Bodnar (2004), Bartram, Brown, Minton (2005), Bartram, Karolyi (2006), Bhanumurthy (2004), Brandt, Kavajecz (2004), Breedon, Vitale (2004), Cashin, Cespedes, Sahay (2004), Choi, Baek (2004), De Wet, Gebreselasie (2004), Dunne, Hau, Moore (2004), Fratzscher (2004), Hahm (2004), Hui, Neely, Higbee (2004, 2007), Hui, Yeung, Fung, Lo (2007), Hui, Fong (2007), Hui, Genberg, Chung (2009), Kim, Yoon (2004), Nagayasu (2004), National Bank of Poland (2004, 2007), Reinhart, Rogoff (2004), Rigobon, Sack (2004), Simatele (2004), Akram, Rime, Sarno (2005), Ates, Wang (2005), Bauwens, Omrane, Giot (2005), Campa, Goldberg (2005, 2006a, b), Chui, Gerlach, Yu (2005), DeGrauwe (editor) (2005), Dueker, Neely (2005), Eichengreen (2005), El-Shagi, Rübel (editors) (2005), Fung, Lien, Tse, Tse (2005), Hau, Rey (2005), Inoue, Kilian (2005), Marsh, O'Rourke (2005), Newsome (2006), Vaubel (2005), Yu, Fung, Hongyi (2005), Alexander, Barbosa (2006), Bacchetta, van Wincoop (2006), Bayoumi, Lee, Jayanthi (2006), Boyen, Van Norden (2006), Cai, Howorka, Wongswan (2006), Cai, Howorka, Wongswan (2008), Cao, Evans, Lyons (2006), Carlson, Lo (2006), Charlebois, Sapp (2006), Chu, Mo, Wong, Lim (2006), Gilbert, Rijken (2006), Jeon, Oh, Yang (2006), Escribano, Pascual (2006), Kaul, Sapp (2006), Killeen, Lyons, Moore (2006), Kim, Lee, Shin (2006), Kočenda, Valachy (2006), Kočenda, Kutan, Yigit (2008), Kočenda, Poghosyan (2009), LeBaron (2006), Mende (2006), Mende, Menkhoff (2006), Muller, Verschoor (2006), Norouzzadeh, Rahmani (2006), Pelham (2006), Rodrik (2006), Sager, Taylor M P(2006), Starks, Wei (2006), Tabak, Cajueiro (2006), Taylor A, Farstrup (2006) Taylor J B (2006), Tesfatsion, Judd (editors) (2006), Wong (2006), Adebiyi (2007), Barker (2007), Bhansali (2007), Broz, Frieden, Weymouth (2007), Burnside, Eichenbaum, Rebelo (2007, 2009), Burnside (2012), Canto, Kräussl (2007), Chi, Tripe, Young (2007), Christodoulou, O'Connor (2007), Dreher, Vaubel (2007), DuCharme (2007), Egstrup, Fischer (2007), Fleming, Mizrach (2007), Fung, Yu (2007), Genberg, He, Leung (2007a, b), Genberg, Hui (2009), Hong Kong Monetary Authority (2007), Jiang, Ma, Cai (2007), Leung, Ng (2007, 2008), Mitchell, Pedersen, Pulvino (2007), Pasquariello (2007), Sahminan (2007), Scarlat, Stan, Cristescu (2007), Van Wincoop, Tille (2007), Wong J, Wong E, Fong, Choi (2007), Wong E, Wong J, Leung (2008), Yu, Fung, Tam (2007), Acemoglu, Rogoff, Woodford (editors) (2008), Baglioni, Monticini (2008), Barndorff-Nielsen, Hansen, Lunde, Shephard (2008), Bartram (2008), Beaupain, Durré (2008), Berger, Chaboud, Chernenko, Howorka, Wright (2008), Brunnermeier, Nagel, Pedersen (2008), Burnside (2008), Burnside, Eichenbaum, Kleshchelski, Rebelo, Hall L, Hall H (2008), Chinn, Moore (2008, 2011), Gagnon, Chaboud (2008), Lam, Fung, Yu (2008), Lien (2008), Lindley (2008), Liu, Tsang (2008), Liu, Fung, Tse (2008), Lo, Sapp (2008, 2010), Ramadorai (2008), Sebastião (2008), Terada, Higashio, Iwasaki (2008), Adrian, Etula, Shin (2009), Bacchetta, Mertens, Van Wincoop (2009), Baba, Packer (2009), Brunnermeier, Nagel, Pedersen (2009), Brunnermeier, Crockett, Goodhart, Persaud, Shin (2009), Bubák, Zikes (2009), Bubák, Kočenda, Žikeš (2010), De Zwart, Markwat, Swinkels, van Dijk (2009), Ding (2009), Gallardo, Heath (2009), Gençay, Gradojevic (2009), Jiang, Zhou (2009), Hattori, Shin (2009), He, Zhang, Wang (2009), Heath, Whitelaw (2011), McGuire, von Peter (2009), Meyers (2009), Muller, Verschoor (2009), Nolte I, Nolte S (2009, 2011), Serban (2009), Simwaka, Mkandawire (2009), Breedon, Vitale (2010), Breedon, Rime, Vitale (2011), Dunne, Hau, Moore (2010), Fukuda, Kon (2010), Liu, Qian, Lu (2010), Maurer, Schäfer (2010), Nightingale, Ossolinski, Zurawski (2010), Pasquariello (2010), Yiu, Ho, Ma, Tsang (2010), Diamond (2011), Durčáková (2011), Heimer, Simon (2011), Marzo, Zagaglia (2011), Moore, Payne (2011), Plantin, Shin (2011), Rafferty (2011), Wang, Wu, Pan (2011), Banti, Phylaktis, Sarno (2012), James, Marsh, Sarno (editors) (2012), Mancini, Ranaldo, Wrampelmeyer (2012), Sheng (2012a, b, 2014), Trenca, Plesoianu, Căpusan (2012), Wang, Yu, Suo (2012), Lassmann (2013), Ledenyov V O, Ledenyov D O (2016s).

4.8 Intellectual property as investment product.

The **intellectual property** can be characterized as an investment product (an investment asset class and an investment instrument) for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, because the intellectual property can be traded and licensed at the foreign currencies exchange markets.

The protection of the intellectual property rights was legally introduced at the 1883 Paris Convention in Paris, France in Schmitt (2016). Presently, the intellectual property should be considered as an important investment product (a strategic asset class) in Kite (2009), Palfrey (October 2011), including the patents, trade secrets, copyrights, and trademarks in Blair, Cotter (June 2005), Holland, III, Reed, Lee, Kimmel, Peterson (2007), Palfrey (October 2011). Indeed, the intellectual property is a key determinant in the processes of the wealth creation and the wealth management by the firms in Schmitt (2016).

The intellectual property is regulated by the intellectual property law in Howe, Griffiths, Sherman, Pottage, Gangjee, Bently, Hudson, Dreier, Breakey, Balganesh, Carrier, Burrell, Hudson, Lametti, Dussollier (September 2013). The nature of the juridical rights, which can be considered as the intellectual property rights, has been debated in Templeman (1998).

The intellectual property valuation, exploitation and infringement damages have been researched in Smith, Parr (2005), Holland, Benedikt (2014). The intellectual property licensing has been discussed, to some extent, in Parr (2007).

The intellectual property has been comprehensively researched in Plant (1934a, b), Callmann (1947), Penrose (1951), Prager (1952), Arrow (1962), Scherer (1965, 1984), Baxter (1966), Hurt, Schuchman (1966), Barzel (1968), Nordhaus (1969), Bowman (1973, 1977), Taylor C, Silberston (1973), Roffe (1974), Adelman (1977), Loury (1979), Cheung (1982), Gilbert, Newbery (1982, 1984), Gilbert, Shapiro (1990), Mackaay (1982, 1985a, b, 1986, 1989, 1990a, b, 1991a, b, c, 1992a, b, 1994), Sieghart (1982), Ashford, Heaton (1983), Ashford et al (1985), Baird (1983), Beck (1983), Fudenberg, Gilbert, Stiglitz, Tirole (1983), Wright (1983), Mossinghoff (1984), Adelstein, Peretz (1985), Cave (1985), David (1985, 1993), Farrell, Saloner (1985, 1989), Gallini, Winter (1985), Gallini (1992), Judd (1985), Lehmann (1985, 1989, 1990), Pendleton (1985), Samuelson (1985), Department of Trade and Industry (1986), Hay (1986), Mansfield (1986), Priest (1986), Evenson, Putnam (1987), Menell (1987, 1989, 1994, 1998), Rozek (1987), Sirilli (1987), Tullock (1987), Feinberg (1988), Feinberg, Rousslang (1990), Hughes (1988a, b), Merges (1988, 1992, 1994a, b, 1995a, b, 1996a, b), Merges, Menell, Lemley, Jorde (1997), Von Hippel (1988), Walker, Bloomfield (editors) (1988), Beier, Shricker (1989), Besen, Kirby (1989a, b), Besen, Raskind (1991), Besen, Kirby, Salop (1992), Braga (1989), Centner (1989), Centner, White (1989), Davis (1989), Krauss (1989), Palmer (1989, 1990), Brenner (1990), Chin, Grossman (1990), Easterbrook (1990), Gilbert, Shapiro (1990), Klemperer (1990), Rushing, Brown (editors) (1990), Caves, Whinston, Hurwitz (1991), Coombe (1991), Heald (1991), Scotchmer (1991), Segerstrom (1991), Teijl, Holzhauer (1991), Deardorff (1992), Gallini (1992), Gordon (1992a, b, 1993), Grady, Alexander (1992), Quaedvlieg (1992), Aoki (1993-1994, 1996a, b), Becker (1993), Brennan (1993), Carter (1993),Chou Chien-Fu, Shy (1993), Helpman (1993), Kay (1993), Lanjouw (1993), Lanjouw, Pakes, Putnam (1998), Lanjouw, Schankerman (2001a, b), Nelson (1993, 1994), Barlow (1994), Dam (1994, 1995), Japan Institute of Intellectual Property (1994), Karjala (1994), Lerner (1994, 1995, 2002), Chang (1995), Lemley (1995), Gould, Gruben (1996), Matutes, Regibeau, Rockett (1996), Brousseau, Bessy (September 19 - 21 1997), Ginarte, Park (1997), Grindley, Teece (1997), Park, Ginarte (1997), Besen (1998), Maskus (1998), Schankerman (1998), Templeman (1998), Reilly, Schweihs (1999), Reilly (2013), Gallini, Scotchmer (2001), Hall, Zeidonis (2001), McCalman (2001), Sakakibara, Branstetter (2001), Scotchmer (2001), Shapiro (2001), Boldrin, Levine (2002, 2004a, b, 2005, 2006, February 6 2007), Grossman, Lai (2002, 2004), Lasinski (2002), Maskus (2000a, b), Deli Yang (2003), Menell (2003), Anson, Suchy, Ahya (2005), Anson, Noble, Samala (2014), Blair, Cotter (June 2005), Ramello (2005), Smith, Parr (2005), Andersen (editor) (January 1 2006), Hisamitsu Arai (2006), Kamiyama, Sheehan, Martínez (2006), Kanwar (2006), Kumar (2006), Lakdawalla, Philipson, Wang (October 2006), Moerman, Laan

(2006), Aoki, Schiff (2007), Bittelmeyer (2007), Holland, III, Reed, Lee, Kimmel, Peterson (2007), Holland, Benedikt (2014), Malackowski, Cardoza, Gray, Conroy (2007), Menell, Scotchmer (2007), Parr (2007), Siegel, Wright (2007), Van Caenegem (May 2007), Ruder (2008), Kite (2009), Blakeney, Ullrich, Stauder, Llewelyn, MacQueen, Jacob, Laddie, Chisum, Benyamini, Straus, Llewellyn, McCarthy, Dworkin, Soltysinski, Lahore, Dufty, Ricketson, Ginsburg, Christie, Goldstein, Tapper, Kamina (December 2010), Flanagan, Montagnani (editors) (January 2010), Baker, Pak Yee Lee, Mezzetti (2011), Bryer, Lebson, Asbell (2011), Cottier, Veron (2011), McCoy, Barton, McDermott (2011), Palfrey (October 2011), Bouchoux (2012), George (2012), Rüther (2012), Boldrin, Levine (2013), Frey (2013), Howe, Griffiths, Sherman, Pottage, Gangjee, Bently, Hudson, Dreier, Breakey, Balganesh, Carrier, Burrell, Hudson, Lametti, Dussollier (September 2013), Buchanan, Wilson (2014), Fawcett (2014), Gervais (editor) (2014), Guellec, Ménière (2014), Sople (2014), Schmitt (2016), Searle, Brassell (August 2 2016).

Finalizing our research polemics on the investment products in the capital markets in the finances, we would like to add a short comment that a full list of possible investment products is not limited to the above listed investment products, asset classes and the investment instruments. More clearly, the financial capital investment can be done by the private/institutional investors into the antique/modern arts, the rare/modern books, the old/modern Swiss mechanical watches, the retro/modern automobiles, the retro/modern yachts, and many other valuable things, which constitute the wealth from the economic point of view.

Looking forward, we would like to express our research opinion that the **digital currencies**, including the Bitcoin and the Ethereum, can be considered as one of the perspective investment products, asset class and the investment instrument for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. Presently, the Bitcoin and the Ethereum can be traded/exchanged at the digital currencies exchange markets, exhibiting the increasing valuation trend in the global capital markets.

In Chapter 4, we have discussed a big number of the most attractive investment products for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. We began our consideration with the oldest well known investment products, moving forward to the newest and perspective investment products.

In Chapter 5, we will consider the investment vehicles for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, providing the terms definitions with the brief research discussions.

Chapter 5

Investment vehicles for financial capital investment in capital markets

The investment vehicle is a real/virtual financial firm, which is established to administer the allocated financial capital by making the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. There are many types of investment vehicles with the various financial resources, distinctive organizational structures and different investment strategies, which aim to obtain the increased return premiums in the capital markets in the finances in the short/long time periods.

Fig. 25 shows graphically the investment vehicles in the capital markets in the finances.

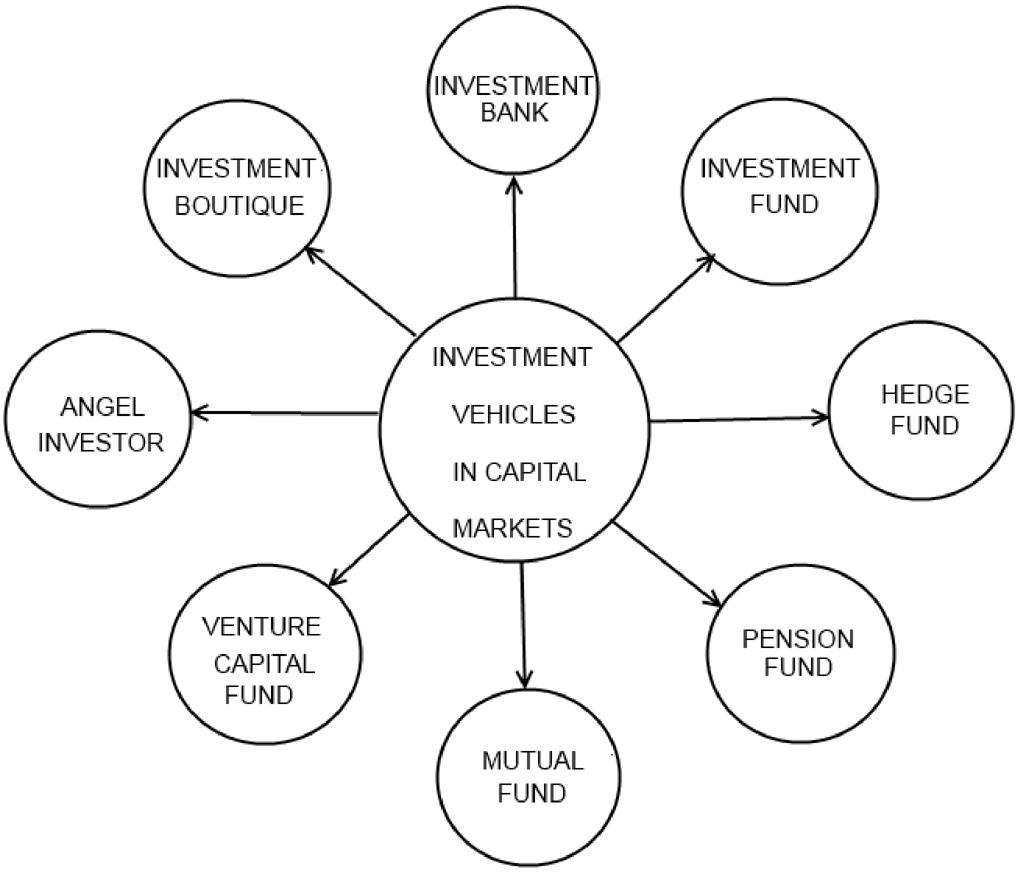

Fig. 25. Investment vehicles in capital markets in finances.

Using our cognitive thinking, let us imagine a new star with the multiple radiating beams of light in the finances galaxy. In this case, we make the two simple assumptions that:

1. The star is created by the numerous investment vehicles;

2. The radiating beam of the light with the different wavelength corresponds to the certain investment vehicle in the capital markets.

5.1 Investment bank as investment vehicle.

The **investment bank** is an investment vehicle, which is founded to collect, borrow, administer, invest, increase the customers' financial capital by making the financial capital investments in the capital products in the capital markets with the aim to get an increased return premium in the short and long time periods. In other words, the investment bank is a classic example of the financial organization, which operates with the main goal to invest the financial capital in the numerous investment projects and to maximize the return-on-the-investment in the capital markets in the selected time periods.

The theory of investment banking closely describes the investment bank operation principles Morrison, Wilhelm (2007, November 15 2008). The investment bank has an organization structure with many departments, including the investment department, actions department, fixed income instruments department, financial management department in Corovai (2015). A presence of the investment fund management capability within the investment bank is an important characteristics of investment bank in Ferguson (1996). Hence, the investment bank can create, promote and sale a number of the investment products, including the securities and the credit derivatives in Ferguson (1996). The investment banks compete for both the lucrative investment opportunities realization and the capital market share with other investment banks (the internal competition) as well as the investment funds (the external competition) in the capital markets in Ferguson (1996). However, in practice, some investment banks can be considered as relatively inefficient investment vehicles due to various objective/subjective reasons. Therefore, the private investors may also be interested to invest their financial resources, using some other investment vehicles in the global capital markets. Summarizing our discussion on the investment banking, we would like to comment that the investment banks as an investment vehicle for the financial capital investment in the capital markets with the aim to get increased return premium in the short and long time periods have been researched in Howell (1953), O'Donnell (1957), Pontecorvo (1958), Mandelker, Raviv (1977), Beatty, Ritter (1986), Smith (1986), Keeley, Pozdena (June 19 1987), McDonough (1987), Walter, Smith (1989), Carter, Dark (1992), Chemmanur, Fulghieri (1994), Sussman (1994), Clark (April 1995), Brockman (1996), Ferguson (1996), Grant (1999), Parkan, Ming-Lu Wu (1999), Fleuriet (2000), Anand, Galetovic (July 01 2001), Smith (2001), Perez (2002), Benveniste, Ljungqvist, Wilhelm, Xiaoyun Yu (2003), Ritter (2003), Sirri (2004), Abor (Summer 2005), Morrison, Wilhelm (2007, November 15 2008a, b) Brambilla, Piluso (2008), Chindris-Vasioiu (2008), Jaffee Dwight, Perlow (2008), Bodnaruk, Massa, Simonov (2009), Bao, Edmans (2011), Blundell-Wignall (2011), Rubinton (June 17 2011), Ziman (2011), Berzins, Liu, Trzcinka (2013), Clare, Gulamhussen, Pinheiro (2013), Erkan Celik, Hacioglu, Dincer (2013), Bonin (2014), Grullon, Underwood, Weston (2014), Balluck (2015), Corovei (2015), Mishra (2016).

5.2 Investment fund as investment vehicle.

The **investment fund** is an investment vehicle, which is usually established to collect and to administer the financial capital by making the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. There may be many possible types of the investment funds, including:

1. The private equity fund (it focuses on the startups);

2. The venture capital fund (it invests in the startups);

3. The focus fund (its manager has to own the shares of fund);

4. The aggressive fund (it focuses on the shareholder value maximization);

5. The special situations fund (it invests in the selected companies);

6. The "alpha" fund (the "alpha" is a term for the added-value by a top manager);

7. The covered call fund (it uses the derivatives to reduce the investment risk);

8. The mezzanine fund (it is a fund of the funds);

9. The mutual fund (it pools the financial resources and invests in the stocks);

10. The index fund (it invests in the indices');

11. The pension fund (it specializes in the pension investment in various companies);

12. The sovereign wealth fund (it is created by the state-backed investors).

Among all the existing types of the investment funds, the private equity funds deserve a special attention, because they focus on the early stage financing and the growth capital investing in the startup companies, playing a considerable role in both the search for a chairman of the board of directors and the development of a sustainable business model of the startup company. We can say that the private equity fund model relies on the loading up a startup company with the financial debt. More clearly, the private equity fund invests the financial equity into the startup company, forcing the startup company to use an optimal business model, to change the management team and to accept the implied financial obligations. The private equity fund continues to administer all the product/service development phases by the startup, monitoring all the meetings by the board of directors and discussing all the business process developments. The private equity fund creates the necessary leverage for the startup company by presenting the abundant financial capital to the startup at the cheapest rates for the certain time periods and by optimizing the startup's business model. We can certainly higlight a fact that the private equity fund does the financial engineering, focusing on the shareholder value maximization as opposed to the quarterly earnings increase.

Tab. 1 displays the financial parameters to characterize the private equity fund.

Specialization by Segment	**Private Equity Model**	**Investment Strategy**	**Private Equity Managers**	**Private Equity Investors:**	**Profit Split**
Venture Capital	Raising Capital	Fund Size	General Partners	Limited Partners	20%Gen Partners
Growth Capital	Investing Capital	Commit Period			80%Lim Partners
Large BuyOuts	Providing Capital	Fees			

Tab. 1. Financial parameters to characterize private equity fund.

Fig. 26 shows the private equity investment scheme.

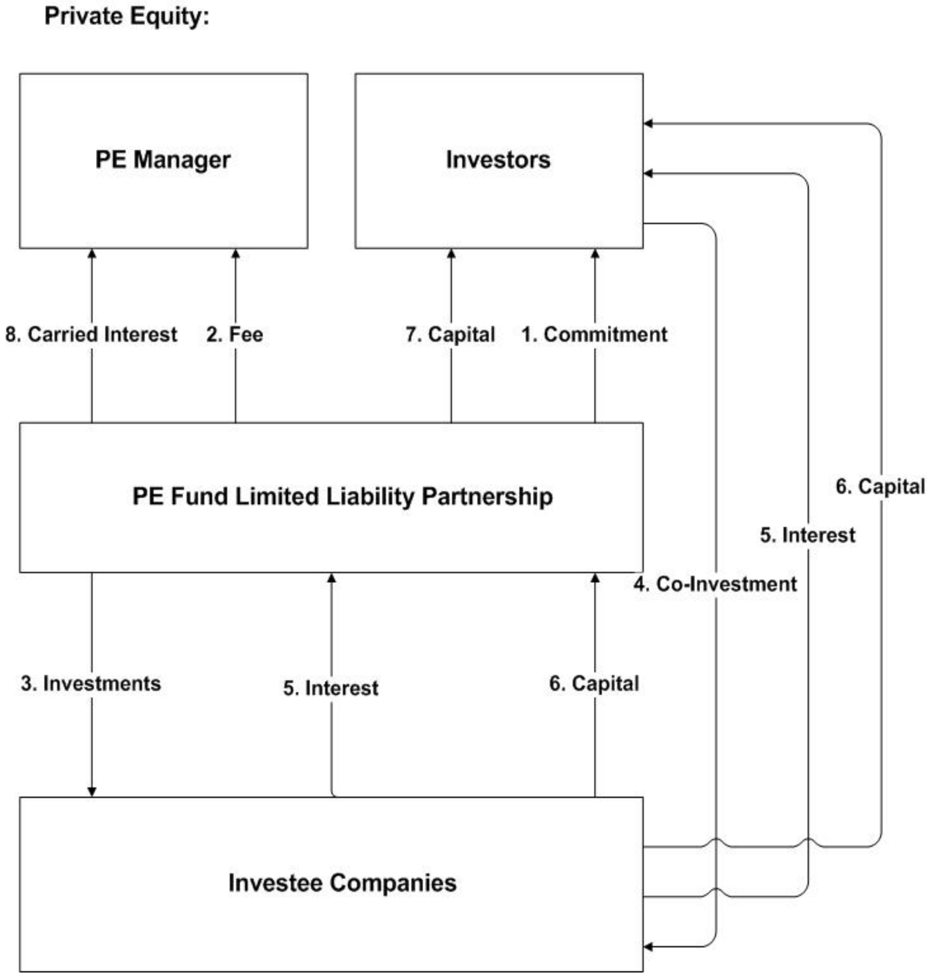

Fig. 26. Private equity investment scheme.

Aiming to maximize the return-on-investment (ROI), the investment banks/funds/firms frequently attempt to sell the hedge fund replication products to the investors, providing the private/institutional investors with an access to the hedge funds' high return premiums at the significantly lower costs in Takahashi, Yamamoto (2008), Ledenyov D O, Ledenyov V O (2013h).

Roncalli, Weisang (2008) proposed a theoretical representation for the procedure of the hedge fund investment portfolio strategies replication to capture the nonlinear return on investments, which can be decomposed into the following two stages:

$$r_k^{HF} = \sum_{i=1}^{m_1} w_k^{(i)} r_k^{(i)} + \sum_{i=m_1+1}^{m_1+m_2} w_k^{(i)} r_k^{(i)} + \eta_k,$$

$$r_k^{Clone}(d) = \left(1 - \sum_{i=1}^{m} \hat{w}_{k+d+1|k+d}^{(i)}\right) r_k^{(0)} + \sum_{i=1}^{m} \hat{w}_{k+d+1|k+d}^{(i)}\ r_k^{(i)}.$$

In this case, the investment banks/funds/firms must have the technical capabilities to track the hedge funds' investment strategies, applying the so called Bayesian filters in Javaheri, Lautier, Galli (2002), Roncalli, Weisang (2008), Takahashi, Yamamoto (2008), Ledenyov D O, Ledenyov V O (2013g):

1. The Stratanovich – Kalman – Bucy filters;

2. The Particle filters.

The Stratonovich – Kalman - Bucy filters with the embedded Stratonovich – Kalman - Bucy filtering algorithm in the frames of the Stratonovich optimal non-linear filtering theory have been researched in the numerous scientific articles, technical research reports and books in the physics and the electronics engineering sciences in Mandel'shtam (1948-1955), Wiener (1949), Bode, Shannon (1950), Zadeh, Ragazzini (1950), Booton (1952), Davis (1952), Bartlett (1954), Doob (1955), Franklin (1955), Pugachev (1956a, b), Solodovnikov, Batkov (1956), Laning, Battin (1956), Lees (1956), Newton, Gould, Kaiser (1957), Tukey (1957), Rytov (1957), Bellman, Glicksberg, Gross (1958), Blum (1958), Darlington (1958), Davenport, Root (1958), Sherman (1958), Shinbrot (1958), Smith (1958), Merriam (1959), Stratonovich (1959a, b, 1960a, b), Kalman, Koepcke (1958, 1959), Kalman, Bertram (1958, 1959), Kalman (1960a, b, 1963), Kalman, Bucy (1961), US Air Forces Office of Scientific Research (1960 – 2013), Friedman (1962), Kushner (1967, 2000), Bryson, Ho (1969), Bucy, Joseph (1970), Jazwinski (1970), Sorenson (1970), Wright-Patterson Air Forces Base (1970 – 2013), Chow, Lin (1971, 1976), Maybeck (1972, 1974, 1990), Willner (1973), Leondes, Pearson (1973), Akaike (1974), Dempster, Laird, Rubin (1977), Griffiths (1977), Schwarz (1978), Falconer, Ljung (1978), Anderson, Moore (1979), Bozic (1979), Priestley (1981), Lewis (1986), Proakis, Manolakis (1988), Caines (1988), de Jong (1988, 1989, 1991), de Jong, Chu-Chun-Lin (1994), Bar-Shalom, Maybeck (1990), Franklin, Powell, Workman (1990), Brockwell, Davis (1991), Jang (1991), Brown, Hwang (1992, 1997), Xiao-Rong Li (1993), Gordon, Salmond, Smith (1993), Farhmeir, Tutz (1994), Grimble (1994), Lee, Ricker (1994), Ricker, Lee (1995), Fuller (1996), Hayes (1996), Haykin (1996), Golub, van Loan (1996), Schwaller, Parnisari (1997), Julier, Uhlmann (1997), Babbs, Nowman (1999), Ljung (1999), Wanhammar (1999), Ito, Xiong (2000), Kushner, Budhiraja (2000), Welch, Bishop (2001), Haykin (editor) (2001), Arulampalam, Maskell, Gordon, Clapp (2002), Doucet, Tadic (2003), Litvin, Konrad, Karl (2003), de Jong, Penzer (2004), Ristic, Arulampalam, Gordon (2004), van Willigenburg, De Koning (2004), Voss, Timmer, Kurths (2004), Cappé, Moulines (2005), Capp´e, Moulines, Ryd´en (2005), Poyiadjis, Doucet, Singh (2005a, b), Misra, Enge (2006), Frühwirth-Schnatter (2006), Gamerman, Lopes (2006), Rajamani (2007), Olsson, Cappé, Douc, Moulines (2008), Rajamani, Rawlings (2009), Francke, Koopman, de Vos (2010), Xia, Tong (2011), Matisko, Havlena (2012), Durbin, Koopman (2012), Ledenyov D O, Ledenyov V O (2013g).

The numerous applications of the Stratonovich – Kalman - Bucy filters with the embedded Stratonovich – Kalman - Bucy filtering algorithm within the Stratonovich optimal non-linear filtering theory in the finances have been researched in Athans (1974), Fernandez (1981), Geweke, Singleton (1981), Litterman (1983), Meinhold, Singpurwalla (1983), Engle, Watson (1983), Harvey, Pierse (1984), Harvey (1989), Engle, Lilien, Watson (1985), de Jong (1991), Doran (1992), Tanizaki (1993), Bomhoff (1994), Venegas, de Alba, Ordorica (1995), Roncalli (1996), Roncalli, Weisang (2008), Wells (1996), Hodrick, Prescott (1997), Krelle (1997), Pitt, Shephard (1999), Cuche, Hess (2000), Durbin, Koopman (2000), Javaheri, Lautier, Galli (2002), Morley, Nelson, Zivot (2002), Bahmani, Brown (2004), Broto, Ruiz (2004), Fernàndez-Villaverde, Primiceri (2005), Fernàndez-Villaverde, Rubio-Ramirez (2005, 2007), Fernàndez-Villaverde (2010), Ozbek, Ozale (2005), Proietti (2006, 2008), Luati, Proietti (2010), Proietti, Luati (2012a, b), Ochoa (2006), Horváth (2006), Cardamone (2006), Pasricha (2006), Bignasca, Rossi (2007), Dramani, Laye (2007), Paschke, Prokopczuk (2007), Andreasen (2008), Osman, Louis, Balli (2008), Gonzalez-Astudillo (2009), Bationo, Hounkpodote (2009), Mapa, Sandoval, Yap (2009), Chang, Miller, Park (2009), Theoret, Racicot (2010), Winschel, Kratzig (2010), Lai, Te (2011), Jungbacker, Koopman, van der Wel (2011), Moghaddam, Haleh, Ebrahimijam (2011), Creal (2012), Darvas, Varga (2012), Hang Qian (2012), Ledenyov D O, Ledenyov V O (2013g).

5.3 Hedge fund as investment vehicle.

The **hedge fund** is also an investment vehicle in the form of an unregulated/weekly regulated/self regulated investment fund, which is created for the financial capital investment in the capital markets with an aim to get the increased return premium and to achieve the positive absolute returns in the short and long time periods, using various active investment strategies in Mitra (2009), Ledenyov D O, Ledenyov V O (2013h).

The first hedge fund was established by Albert Wislow Jones in 1949, implementing the main investment strategy towards the hedged equity investments in the capital markets. Winslow attempted to eliminate the market risks, introducing the hedging technique in the finances. The hedging is an act of the market risk mitigation at the financial capital investment by making an investment in the weakly related investment products in Fung (1999a), Mitra (2009), Ledenyov D O, Ledenyov V O (2013h). Presently, the hedge funds improve the efficiency and liquidity of the global financial markets, however they may also create the certain risks to financial stability in view of possible volatility increase as a result of the risky investments in Papademos (2007).

Let us consider the problem on the hedge fund's investment return premium calculation, which is the measurable investment return. Takahashi, Yamamoto (2008) write the following formula to evaluate the hedge fund's investment return premium

$$R_i = \alpha_i + \sum_k \beta_{ik} F_k,$$

where

- R_i is the return of fund i;
- F_k is the return of factor k;
- β_{ik} is the exposure of fund i to factor k;
- α_i is the rest of return R_i.

The investment return premium by the hedge funds can also be written as in Freed, McMillan (2011)

$$R^f = \alpha^f + B^f X_T + \epsilon^f,$$

where

$$B^f = \left[\beta_1^f, \beta_2^f, \ldots, \beta_n^f\right],$$

$$X_T = \left[X_T^1, X_T^2, \ldots, X_T^n\right].$$

In the case of the portfolio of hedge funds, the investment return premium of a portfolio of the hedge funds is

$$\sum_{i=1}^{n} w_i R_i = \sum_{i=1}^{n} \alpha_i + \sum \left(w_1 \beta_{1k} + \ldots + w_n \beta_{nk} \right) F_k ,$$

where

• w_i is the weight on fund i.

Gibson, Wang (2010) write the formula for the hedge fund portfolio return as

$$\begin{aligned} r_{i,t} &= \alpha_{i,0} + \alpha'_{i,1} z_{t-1} + \beta'_{i,0} f_t + \beta'_{i,1} \left(f_t \otimes z_{t-1} \right) + \epsilon_{i,t} , \\ f_t &= \alpha_f + A_f z_{t-1} + \epsilon_{f,t} , \\ z_t &= \alpha_z + A_z z_{t-1} + \epsilon_{z,t} , \end{aligned}$$

where

• $r_{i,t}$ is the return of hedge fund i in excess of riskless rate in month t;

• zt is the vector of M business cycle variables observed at the end of month t;

• ft is a vector of K zero-cost benchmarks;

• $\beta_{i,0}$ is the fixed component of fund risk loadings;

• $\beta_{i,1}$ is the variable component of fund risk loadings;

• $\epsilon_{i,t}$ is fund-specific event, which is assumed to be uncorrelated across hedge funds and over time, and normally distributed with mean zero and variance Ψ_i.

Gibson, Wang (2010) note that the problem of the optimal hedge fund investment portfolios formation can be solved by the optimization of the investment portfolio, namely each investor forms his/her portfolio by maximizing the conditional expected value of a quadratic utility function

$$U\left(W_t , R_{p,t+1} , a_t , b_t \right) = a_t + W_t R_{p,t+1} - \frac{b_t}{2} W_t^2 R_{p,t+1}^2 ,$$

where

• W_t denotes the time t invested wealth;

• b_t reflects the absolute risk aversion parameter;

• $R_{p,t+1}$ is the realized excess return on the optimal of hedge funds computed as

$$R_{p,t+1} = 1 + r_{ft} + w'_t r_{t+1}$$

where

• r_{ft} being the risk-free interest rate;

• r_{t+1} denoting the vector of excess fund returns;

• w_t denoting the vector of optimal hedge fund allocations.

The optimization problem reduces to the equation

$$w_t^* = \arg\max_{w_t \geq 0} \left\{ w_t' \mu_t - \frac{1}{2\left(1/\gamma_t - r_{ft}\right)} w_t' \Lambda_t^{-1} w_t \right\},$$

where

• $\gamma_t = (b_t W_t)/(1 - b_t W_t)$ is the relative risk-aversion parameter,

• $\Lambda_t = [\Sigma t + \mu_t \mu'_t]-1$,with μt and Σt being respectively mean vector and variance matrix of future hedge fund returns;

• the possibility of leveraging and short selling is excluded when forming optimal hedge funds' portfolios.

Let us continue with the statement that the ultimate hedge fund goal is to reach as higher investment returns as possible, using the dynamic and leveraged trading strategies after accounting for all the types of risks, including the most important market risk and liquidity risk, which are present in the nonlinear diffusion-type financial system. The prediction of hedge fund operational performance is a quite complex financial problem in the finances, which is usually solved with an application of the assets valuation and risk modeling techniques in Avramov (2004), Avramov, Wermers (2006), Avramov, Chordia (2006), Gibson, Wang (2010). However, as we know the change dynamics of the investment products/assets/instruments prices in the capital markets is difficult to predict in Fama (1970, 1991), Caporin, Ranaldo, Santucci, de Magistris (2011). The new empirical methods to accurately determine the investment products/assets/instruments prices were proposed in Fama (1963, 1965, 1970, 1976, 1984, 1991, 1998), Fama, Blume (1966), Fama, Fisher, Jensen, Roll (1969), Fama, MacBeth (1973), Fama, Schwert (1977), Fama, Bliss (1987), Fama, French (1988a, b, 1989, 1992, 1993, 1995, 1996, 1998, 2004, 2010), Davis, Fama, French (2000), Fama, Litterman (2012), Shiller (1979, 1981a, b, 1982, 1984, 1987, 1988, 1989, 2000, 2008), Shiller, Campbell, Schoenholtz (1983), Shiller, Perron (1985), Shiller, Pound (1989), Hansen, Sargent (1980), Hansen, Hodrick (1980), Hansen (1982, 1985), Hansen, Singleton (1982, 1983, 1984), Hansen, Richard (1987), Hansen, Heaton, Ogaki (1988), Hansen, Jagannathan (1991, 1997), Hansen, Scheinkman (1995), Hansen, Heaton, Yaron (1996), Hansen, Sargent (2001), Hansen, West (2002), Hansen, Heaton, Li (2008), Hansen, Sargent (2008).

The advanced research works on the estimation of the hedge fund returns, depending on the hedge fund's organizational structures, investment portfolio strategies and possible exposures to some risk factors were conducted in Brown, Harlow, Starks (1996), Brown, Goetzmann, Park (1997), Brown, Goetzmann, Ibbotson (1998), Brown, Goetzmann, Ibbotson (1999), Brown (2001), Brown, Goetzmann, Park (2000, 2001), Brown, Goetzmann (2001), Brown, Goetzmann (2003), Brown, Fraser, Liang (2008), Brown, Goetzmann, Liang, Schwarz (2008), Brown, Goetzmann, Liang, Schwarz (2010), Fung, Hsieh (1997a, b, 1999a, b, 2000a, b, 2001, 2002a, b, c, 2003, 2004a, b, 2006a, b, 2007), Fung, Hsieh, Naik, Ramadorai (2006, 2008).

In general case, the problem on the optimization of the investment portfolio return premiums by the hedge funds can be solved with an application of the Probabilistic Global Search Lausanne (PGSL) algorithm, Multi-level Co-ordinate Search (MCS) algorithm, Matlab Direct Search algorithm, Matlab Simulated Annealing algorithm, Matlab Genetic algorithm in the case of a Fund of the Hedge Funds ("FoHF") in Minsky, Obradovic, Tang, Thapar (2009).

In Fig. 27, the dependence of the investment return premiums on the different investment strategies implementation by the hedge fund over a certain time period is shown. This dependence is created, going from the research in Boyson, Stahel, Stulz (2008), Ledenyov D O, Ledenyov V O (2013h).

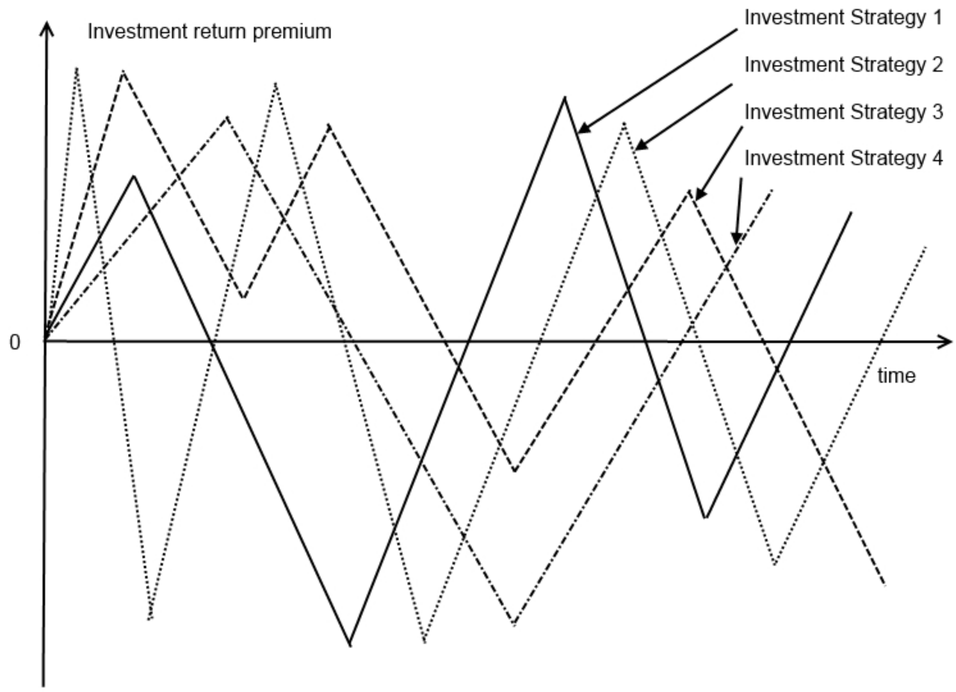

Fig. 27. Dependence of investment return premiums on different investment strategies by hedge fund over selected time period.

Let us make a plausible explanation on the modern hedge fund organization structures in details. The hedge funds maximize the investment return premium by optimizing the internal operations efficiency due to in Ledenyov D O, Ledenyov V O (2013h):

1. The optimization of internal organizational expenses, connected with the internal operations, by outsourcing the trading transactions to the prime brokers (the investment banks);

2. The optimization of external organizational expenses, connected with the taxation, by minimizing the taxes due to the registration in the tax heavens with the low income taxation level.

There are many possible hedge fund organization structures models with the certain advantages and disadvantages in Mitra (2009), Cao, Ogden, Tiu (2011), Ledenyov D O, Ledenyov V O (2013h):

1. The traditional investment bank model;

2. The inside-only hedge fund model;

3. The straddling hedge fund model;

4. The straddling "feeder" fund of funds model;

5. The stand-alone outside hedge fund model;

6. The outside "feeder" fund of funds model.

Most importantly, the hedge funds create and implement a big number of the dynamic leveraging trading strategies in Gilroy, Lukas (2005), Fung, Hsieh (2006), Boyson, Stahel, Stulz (2008), Mitra (2009), Sabrina Khanniche (2009), Gibson, Wang (2010), Piluso, Amerise (2011), Ledenyov D O, Ledenyov V O (2013h):

1. The convertible arbitrage: An investment in the investment products such as the convertible fixed income securities (the bonds) for the long time and to company common stock (the stock) for the short time to get an increased investment premium over the time;

2. The distressed securities: An investment in the investment products such as the financial securities, impacted by a distressed situation, to get an increased investment premium over the time;

3. The long/short equity hedge: An investment in the investment products such as the long/short equity to get an increased investment premium over the time;

4. The equity market neutral: An investment in the investment products such as the financial securities with a total net exposure of zero to get an increased investment premium over the time;

5. The event driven: An investment in the investment products such as the financial securities with the significant transactional activity, including the spin-offs, mergers and acquisitions, industry consolidations, liquidations, reorganizations, bankruptcies, recapitalizations and share buybacks, to get an increased investment premium by predicting the price movement over the time;

6. The global macro: An investment in the investment products such as the interest rates, foreign exchange rates and physical commodities with the extreme price valuations in stock markets, predicting their price movements, to get an increased investment premium over the time;

7. The merger arbitrage: An investment in the investment products such as the companies securities with the extraordinary corporate transaction activities: the acquisition or merger proposals, exchange offers, cash tender offers and leveraged buy-outs, to get an increased investment premium over the time;

8. The relative value arbitrage: An investment in the investment products such as the financial securities to make the spread trades to get an increased investment premium from a relationship between the two related securities instead of from the market direction over the time.

9. The emerging markets: An investment in the investment products such as fixed income securities in emerging markets around the world to get an increased investment premium over the time.

10. The fixed income arbitrage: An investment in the investment products such as the interest rate swap arbitrage, US and non-US government bond arbitrage, forward yield curve arbitrage, and mortgage-backed securities arbitrage to get an increased investment premium over the time.

11. The managed futures: An investment in the investment products such as the listed financial and commodity futures markets and currency markets around the world to get an increased investment premium over the time.

12. The diversified debt: An investment in the investment products such as the diversified debt to get an increased investment premium over the time.

13. The multi-strategy: An investment in the different investment products, dynamically allocating the financial capital among the selected investment strategies to get an increased investment premium over the time.

14. The fund of funds: An investment in the investment products such as the other hedge funds to get an increased investment premium over the time.

The hedge funds organization, investment strategies, investment return premiums and related research topics in the finances have been researched in Brown, Harlow, Starks (1996), Brown, Goetzmann, Park (1997), Brown, Goetzmann, Ibbotson (1998), Brown, Goetzmann, Ibbotson (1999), Brown (2001), Brown, Goetzmann, Park (2000, 2001), Brown, Goetzmann (2001), Brown, Goetzmann (2003), Brown, Fraser, Liang (2008), Brown, Goetzmann, Liang, Schwarz (2008), Brown, Goetzmann, Liang, Schwarz (2010), Fung, Hsieh (1997a, b, 1999a, b, 2000a, b, 2001, 2002a, b, c, 2003, 2004a, b, 2006a, b, 2007), Fung, Hsieh, Naik, Ramadorai (2006, 2008), Ackermann, Ravenscraft (1998), Ackermann, McEnally, Ravenscraft (1999), Eichengreen, Mathieson, Chadha, Jansen, Kodres, Sharma (1998), Mathieson, Chadha, Jansen, Kodres, Eichengreen, Sharma (1998), Edwards (1999, 2000a, b, 2003, 2004a, b, 2006), Edwards, Caglayan (2001), Edwards, Gaon (2003), Liang (1999, 2000, 2003, 2004), US President's Working Group on Financial Markets (1999), Stonham (1999a, b), Tatsaronis (2000), Agarwal, Naik (2000, 2004), Aggarwal, Jorion (2010), Asness, Krail, Liew (2001), Braga (2001), Brealy, Kaplanis (2001), Brooks, Kat (2001), Amin, Kat (2001, 2003a, b), Kat (2003), Kat, Menexe (2003), Kat, Palaro (2005, 2006), Kat (2007, 2010), Capocci, Hübner (2001), Capocci, Corhay, Hübner (2003), Capocci, Hübner (2004), Kramer (2001), Goetzmann, Ingersoll, Ross (2001), Anson (2002), Favre, Galeano (2002), Gimbel, Gupta, Pines (2002), Ineichen (2002), Kao (2002), Locho (2002), Weismann (2002), Schneeweis, Kazemi, Martin (2002, 2003), Bacmann, Scholz (2003), Bares, Gibson, Gyger (2003), Geman, Kharoubi (2003), Gregoriou (2003), Gregoriou, Gueyie (2003), Gregoriou, Sedzro, Zhu (2005), Gregoriou, Kooli, Rouah (2008), Goetzmann, Ingersoll, Ross (2003), Gulko (2003), Ennis, Sebastian (2003), Popova I, Morton, Popova E (2003, 2006), Morton, Popova E, Popova I (2006), Amenc, El Bied, Martellini (2003), Amenc, Géhin, Martellini, Meyfredi (2007), Amenc, Géhin, Martellini, Meyfredi, Ziemann (2008), Bacmann, Gawron (2004), Baquero, ter Horst, Verbeek (2004a, b), ter Horst, Verbeek (2007), Boido, Riente (2004), Brunnermeier, Nagel (2004), Feiger, Botteron (2004), Hedges (2004), Posthuma, van der Sluis (2004), Getmansky, Lo, Mei (2004), Getmansky, Lo, Makarov (2004), Lhabitant (2004), Nguyen-Thi-Thanh Huyen (2004, 2006), Huber, Kaiser (2004), Al-Sharkas (2005), Alexander, Dimitriu (2005), Carretta, Mattarocci (2005), Chan, Getmansky, Haas, Lo (2005, 2006), Chan, Getmansky, Lo, Haas (2007), Cremers, Kritzman, Page (2005), Danielsson, Taylor, Zigrand (2005), Do, Faff, Wickramanayake (2005), Eling, Schuhmacher (2005), Garbaravičius (2005), Garbaravičius, Dierick (2005), Gilroy, Lukas (2005), Gupta, Lang (2005), Kaiser, Kisling (2005), Malkiel, Saha (2005), Hodder, Jackwerth (2005), Jaeger, Wagner (2005), Azman-Saini (2006), Baba, Goko (2006), Boyson, Stahel, Stulz (2006, 2008), Ding, Shawky (2006), Izzo (2006), Jackwerth, Hodder (2006), Jagannathan, Malakhov, Novikov (2006), Heidorn, Hoppe, Kaiser (2006a, b), Sadka (2006), Adrian (2007), Becker, Clifton (2007), Goltz, Martellini, Vaissié (2007), Kambhu, Schuermann, Stiroh (2007), King, Maier (2007), Kosowski, Naik, Teo (2007), Li Sh, Linton O (2007), Hakamada, Takahashi, Yamamoto (2007), Hasanhodzic, Lo (2007), Papademos (2007), Smedts K, Smedts J (2007), Stulz (2007), Weber (2007), Carlson, Steinman (2008), Billio, Getmansky, Pelizzon (2008), de los Rios, Garcia (2008), Lo (2008), McGuire, Tsatsaronis (2008), Takahashi, Yamamoto (2008), Jackwerth, Kolokolova, Hodder (2008), Gray (2008), Gray, Kern (2008), Gupta, Szado, Spurgin (2008), Kazemi, Tu, Li (2008), Nahum, Aldrich (2008), Roncalli, Teiletche (2008), Roncalli, Weisang (2008), Hedge Fund Working Group & Hedge Fund Standards Board (2008), Bollen, Pool (2009), Brophy, Ouimet, Sialm (2009), Füss, Kaiser, Strittmatter (2009), Heidorn, Kaiser, Roder (2009), Jaeger (2009), Khanniche (2009), Minsky, Obradovic, Tang, Thapar (2009), Mitra (2009), Xiong, Idzorek, Chen, Ibbotson (2009), Gibson, Wang (2010), Heidorn, Kaiser, Voinea (2010), Maillard, Roncalli, Teiletche (2010), Ramadorai (2010), Titman (2010), Sadka (2010), Wallerstein, Tuchschmid, Zaker (2010), Ang, Gorovyy, van Inwegen (2011), Cao, Ogden, Tiu (2011, 2012), Freed, McMillan (2011), Eychenne, Martinetti, Roncalli (2011), Piluso, Amerise (2011), Chakravarty, Deb (2012), Chen, Tindall (2012), Roncalli, Weisang (2012), Bruder, Roncalli (2012), Hassine, Roncalli (2013), Agarwal, Vikram, Sugata (2013).

5.4 Pension fund as investment vehicle.

The **pension fund** is an investment vehicle, which is founded to collect, borrow, administer, and most importantly increase the financial capital by making the financial capital investment in the capital markets with the goal to get an increased return premium in the short and long time periods.

A main purpose of the pension fund is to make the retirement income provision for the beneficiaries. Speaking clearly, the public/private pension funds provide the employer-sponsored pension benefits to the beneficiaries in the frames of the defined benefit plan, the defined contribution plan and the hybrid scheme plan in Evans, Orszag, Piggott (editors) (January 1 2008). The private/public pension fund makes the centralized financial capital contributions collection, then it invests the collected financial capital into the various investment products (the investment asset classes) with the help of the experienced fund managers, and after some time it expects to get the positive return-on-the-investment (ROI) in Clark (July 13 2000, March 27 2003, 2008), Evans, Orszag, Piggott (editors) (January 1 2008). Most importantly, the pension fund investment policy is usually directed toward the beneficiary’s wealth maximization, depending, to a certain extent, on the type of the selected plan: the defined contribution plan, the defined benefit plan, the hybrid scheme plan in Bodie (October 1988), Bodie, Kane, Marcus (1989). The Boards of Trustees oversees all the financial capital investments by the pension fund managers, having the statutory authority over the pension fund investment activities in Kakabadse N, Kakabadse A, Kouzmin (2003).

The public/private pension funds compete with other investment vehicles in the capital markets, however they are considered to be relatively inefficient in view of the following reasons: the weak control over the selected plans by the pension fund managers, the high operating costs by the public/private pension funds and the existing difficulties with finding of the highly skilled/experienced pension fund managers in Impavido (2008). The public/private pension funds are not immune from the high volatility in the capital markets, which is caused by the economic variables fluctuations in the economies of the scales and the scopes in Antolin (2008).

The pension fund in the finances has been researched in MacIntosh (1976), Sharpe (June 1976), Treynor (May 1977), Winklevass (1977), Bulow (1979, August 1982), Bulow, Morck, Summers (1987), Bodie (Fall 1980, October 1988), Bodie, Light, Morck, Taggart (1987), Bodie, Shoven, Wise (editors) (1987), Bodie, Kane, Marcus (1989), Black (September—October 1980), Black, Dewhurst (Summer 1981), Feldstein, Seligman (1981), Feldstein (1982), Feldstein, Morck (1983), Frankfurter, Hill (1981), Tepper (March 1981), Harrison, Sharpe (1983), Friedman (1983), Kotlikoff, Smith (1983), Warshawsky (1987, November 1988, 1989, 1990), Bernheim, Shoven (1985), Ang, Tsong-Yue Lai (1988), Bernheim, Shoven (1988), Coggin, Fabozzi, Rahman (1993), Haberman, Joo-Ho Sung (1994), Mitchell, Smith (1994), Davis (1995), Dyson, Exley (1995), Wahal (1996), Brown, Draper, McKenzie (March 1997), Cairns, Parker (1997), Blake (1998), Blake, Lehmann, Timmermann (1999), Cangiano, Cottarelli, Cubeddu (1998), Hemming (1998), Mitchell (1998), Clark (July 13 2000, March 27 2003, 2008), Sinn (2000), Srinivas, Whitehouse, Yermo (2000), Whitehouse (2000), Chapman, Gordon, Speed (2001), Head, Adkins, Cairns, Corvesor, Cule, Exley, Johnson, Spain, Wise (2001), Thomas, Tonks (2001), Tonks (2002), Besley, Prat (2003), Kakabadse N, Kakabadse A, Kouzmin (2003), Bateman, Mitchell (2004), Bergstresser, Desai, Rauh (2004), Eaton, Nofsinger (2004), Munnell, Sundén (2004), Owadally, Haberman (2004), Sundén (2004), Cowling, Gordon, Speed (2005), Diamond (2005), Dobronogov, Murthi (2005), Franzoni, Marin (January 25 2005), McCarthy, Neuberger (2005), Greco (2006), Miao Jerry, Wang (2006), Sweeting (2006), Perotti, Schwienbacher (2007), Antolin (2008), Evans, Orszag, Piggott (editors) (January 1 2008), Impavido (2008), Adam, Moutos (2009), Inderst (January 1 2009), Kleinow (2011), Munnell, Aubry, Quinby (2011), Bovenberg, Mehlkopf (2014), Rossi, Blake, Timmermann, Tonks, Wermers (2015), Garon (2016), Dahlquist, Setty, Vestman (2016), Mitsel, Rekundal (2016).

5.5 Mutual fund as investment vehicle.

The **mutual fund** is a pooled investment vehicle, which is founded to collect, borrow, pool together, process, and increase the borrowed financial capital by making the financial capital investment into the selected investment products in the chosen investment mediums in the capital markets with the goal to get an increased return premium in the short and long time periods.

The mutual fund's distinctive features for the prospective investor, comparing to other investment vehicles, include in Sharpe (January 1966), Prather, Bertin, Henker (2004), Anderson, Ahmed (2005):

1. The professional management by fund managers;

2. The professional marketing by fund managers;

3. The professional distribution by fund managers;

4. The small-medium-big investments acceptance;

5. The investment assets classes diversification;

6. The investment transaction cost savings;

7. The total investment risk reduction.

In fact, the family of mutual funds can be created within the main mutual fund in Ciamarra, Hornstein (2015). The mutual fund as an investment vehicle can be described in terms of the following economical parameters in Sharpe (January 1966):

1. The small/medium/big investors clientele;

2. The financial capital value under the management;

3. The investment strategies;

4. The former/present financial performance;

5. The management fee level.

The various financial metrics can be applied to analyse the mutual fund performance over the time in Soongswang, Sanohdontree (2011):

1. The traditional fund performance evaluation measures;

2. The data envelopment analysis (DEA) measure;

3. The Pearson's correlation coefficients;

4. The cover of six different investment horizons.

In real life situation, the mutual funds, generally, like to invest the financial resources into the large firms shares, assuming to reach the high return-on-investment at the low market risk. However, it is necessary to remember that the mutual fund's performance depends on a number of discretely changing macroeconomic/microeconomic factors in the financial system in the selected economy of the scale and the scope in Sharpe (January 1966), Jensen (June 1968), Arditti (1971), Fama (June 1972), Scott, Klemkosky (1975), Kon, Jen (April 1979).

The mutual funds operation objectives, organization structure, and generated return-on-investment in the capital markets in the finances has been researched in Sharpe (January 1966), Treynor , Mazuy (1966, July-August 1996), Allerdice, Farrar (1967), Jensen (June 1968), Arditti (1971), Fama (June 1972), Maurice Joy, Burr Porter (1974), Scott, Klemkosky (1975), Fabozzi, Francis (March 1978, December 1979, 1980), Kon, Jen (May 1978, April 1979), Kon (1983), Kim (1978), Gatto, Geske, Litzenberger, Sosin (1980), Miller, Gressis (1980), Eckardt, Bagamery (1983), Cowen, Kroszner (1990), Cook, Hebner (1992), Grinblatt, Titman (1992, 1993), Grinblatt, Titman, Wermers (1995), Hendricks, Patel, Zeckhauser (1993), Mack (November 1993), Wohlever (1993), Dickson, Shoven (1995), Dickson, Shoven, Sialm (2000), Malkiel (1995), Neely (1995), Chordia (1996), Droms, Walker (1996), Elton, Gruber, Blake (1996), Livingston, O'Neal (1996, 1998), Livingston, Lei Zhou (2015), Lockwood (1996), Brown, Goetzmann (1997), Carhart (1997), Carhart, Carpenter, Lynch, Musto (2002), Cortez, Armada (1997), Cortez, Paxson, Armada (1999), Daniel, Grinblatt, Titman, Wermers (1997), Goetzmann, Peles (1997), Goetzmann, Brown (1998), Goetzmann, Ivkovic, Rouwenhorst (2001), Malhotra, McLeod (1997), Tufano, Sevick (1997), Barclay, Pearson, Weisbach (1998), Blake, Timmermann (1998, 2003), Fortune (1998), Sirri, Tufano (1998), Bogle (1999), Chevalier, Ellison (1999), James, Ferrier, Smalhout, Vittas (1999), Khorana, Servaes (1999), Kulldorff, Khanna (1999), Latzko (1999), Blake, Morey (2000), Chen, Jegadeesh, Wermers (2000), Kim, Shukla, Tomas (2000), Wermers (2000, 2003), Bollen (2001), Kothari (2001), Teo, Woo Sung-Jun (2001), Bergstresser, Poterba (2002), Chan, Hsiu-Lang Chen, Lakonishok (2002), Otten, Bams (2002), Pastor, Stamburgh (2002), Sengupta (2003), Berk, Green (2004), Kosowski, Timmermann, White, Wermers (April 2004), Mahoney (2004), Mamaysky, Spiegel, Zhang (2004), Nanda, Wang, Zheng (2004), Prather, Bertin, Henker (2004), Anderson, Ahmed (2005), Barber, Odean, Zheng (2005), Bollen, Busse (2005), Cuthbertson, Nitzsche, O’Sullivan (February 2005), Kacperczyk, Sialm, Zheng (2005, 2008), Nitzsche, Cuthbertson, O'Sullivan (2005), Raychaudhuri (2005), Busse, Irvine (2006), Gaspar, Massa, Matos (2006), Morey, O’Neal (2006), Alves, Mendes (2007), Bollen (2007), Cohen, Frazzini, Malloy (2007), Chen, Goldstein, Jiang (2008), Chen, Goldstein, Jiang (2009), Ferris, Yan (2007), Khorana, Tufano, Wedge (2007), Khorana, Servaes, Tufano (2008), Meschke (2007), Haslem, Baker, Smith (2008), Jans, Otten (2008), Jin-Li Hu, Tzu-Pu Chang (2008), Kacperczyk, Sialm, Zheng (2008), Kacperczyk, van Nieuwerburgh, Veldkamp (2014), Kempf, Ruenzi (2008), Kong, Tang (2008), Palmiter, Taha (2008), Sophie Xiaofei Kong, Dragon Yongjun Tang (2008), Bergstresser, Chalmers, Tufano (2009), Coggins, Beaulieu, Gendron (2009), Cremers, Driessen, Maenhout, Weinbaum (2009), Karoui, Meier (2009), Khorana, Servaes, Tufano (2009), Koehler, Mercer (2009), Kuhnen (2009), Lilian Ng, Qinghai Wang, Zaiats (2009), Qiang Bu, Lacey (2009), Sialm, Starks (2009), Evans (2010), Hsuan-Chi Chen, Lai (2010), Jin Zhang, Maringer (2010), Soongswang, Sanohdontree (2011), English, Demiralp, Dukes (2011), Adams, Mansi, Nishikawa (2012), Bhojraj, Young Jun Cho, Yehuda (2012), Cashman (2012), Gottesman, Morey (2012), Sialm, Starks (2012), Christensen (2013), Eisele, Nefedova, Parise (2013), Vidal-García (2013), Agarwal, Gay, Ling (2014), Jingjing Yang, Jing Chi, Martin Young (2014), Simutin (2014), Berk, van Binsbergen (2015), Chuprinin, Massa, Schumacher (2015), Gallaher, Kaniel, Starks (2015), Kopsch, Han-Suck Song, Wilhelmsson (2015), Meifen Qian, Bin Yu (2015), Ortiz, Ramírez, Vicente (2015), Panda, Mahapatra, Moharana (2015), Sisli-Ciamarra, Hornstein (2015), Grinblatt, Ikäheimo, Keloharju, Knüpfer (2016), Matallín-Sáez, Soler-Domínguez, Tortosa-Ausina (2016).

5.6 Venture capital fund as investment vehicle.

The venture capital (VC) is considered to be an important source of corporate financing in the economy of the scale and the scope. The venture capital concept on the startup firms funding by venture capital from the venture capital funds was created by George Doriot, General, Harvard Business School, Harvard University and by Karl Comptom, President, Professor, Massachusetts Institute of Technology in the USA in 1946 in Allen (2012).

Thus, the **venture capital fund** is an investment vehicle, which is created for the wealth management by making the venture capital investment in the startup companies with the aim to get an increased return premium in the capital markets in the short and/or long time periods. The American Research and Development (ARD) fund was a first VC fund in Allen (2012). The VC fund typically operates in the capital markets, which are impacted by various types of nonlinearities due to the asymmetric information flows between the economic agents in Jaffee, Russell (1976), Leland, Pyle (1977), Stiglitz, Weiss (1981), Stiglitz (1988), Zhang (2007b), Diaconu (2012). The VC fund can manage the financial capital from many venture capital firms by investing it into the selected startups, which are working on the entrepreneurial ideas to deliver the product/services to the certain customers at selected markets and contributing to an overall growth of national economies in Kirzner (1973), Lucas (1978), Audretsch, Keilbach (2004), Samila, Sorenson (2011). The founders and owners of the successful startup firm are called as the unicorn(s), if the total valuation of the startup is above one billion US dollars.

Discussing the early research results on the venture capital investments in the USA, let us explain that the rise/fall of venture capital was described in Gompers (1994). The optimal investment of venture capital was discussed in Gompers (1995, 1996). The empirical analysis of venture partnership agreements was done in Gompers, Lerner (1996). The various types of risks at the venture capital investing were reviewed in Gompers, Lerner (1997). The various investment strategies in the corporate financing, using the venture capital, have been analyzed in Gompers, Lerner (1998a, b). The analysis of compensation in the US venture capital partnership and business interests has been completed in Gompers, Lerner (1999a, b). The full venture capital funding cycle has been described in Gompers, Lerner (1999c). The various determinants of corporate venture capital success have been provided in Gompers, Lerner (2000a). The possible impact of fund inflows on private equity valuation has been reflected in Gompers, Lerner (2000b). The venture capital revolution has been described in Gompers, Lerner (2001). The new ventures funding has been studied in Gompers, Lerner, Scharfstein (2005). The venture capital investment practices have been discussed in Gompers (2007). The venture capital investment cycles have been precisely characterized in Gompers, Kovner, Lerner, Scharfstein (2008). The allocation of venture capital to the successful companies has been shown in Gompers, Kovner, Lerner (2009), Gompers, Lerner, Scharfstein, Kovner (2010). The syndication of VC investments has been investigated in Lerner (1994a, b). The investment practices by the venture capitalists have been researched in Lerner (1995). The selected research topics on the government as source of venture capital funding in the frames of the SBIR program have been considered in Lerner (1999). Kortum, Lerner (1998) proposed that the venture capital can increase the level of innovation in the society. Kortum, Lerner (2000) assessed the contribution by the VC to the innovation in the hi-tech industry. Lerner, Schoar, Wongsunwai (2007) researched some organizational aspects of the venture capital firm. Lerner (2008) made a few thoughtful research comments on the impact by the economic crisis on the venture capital funding dynamics in the USA. The empirical analysis of venture capital contracts has been performed in Kaplan, Strömberg (2000, 2002, 2003). The advanced researched on the of venture capital contracts has been continued in Kaplan, Strömberg (2004). The private equity returns on investments have been investigated in Kaplan, Schoar (2005). The annualized returns of venture-backed public companies, categorized by stage of financing, have been researched in Shachmurove Y (2001). The annualized and cumulative returns on venture-backed public companies, categorized by industry, have been investigated in Shachmurove A, Shachmurove Y (2004). The annualized returns of ventured-backed public companies, stratified by decades and by stage of financing, have been considered in Shachmurove E, Shachmurove Y (2004). The entrepreneurship, innovation, trade and the growth mechanism of the free-enterprise economies in Shachmurove Y (2007a). The venture capital distribution over the various geographical regions have been analyzed in Shachmurove Y (2007b). The investment activity of venture capital in the United States in the years 1996 through 2005 has been summarized in Shachmurove Y (2007). The access to venture capital and the performance of venture capital-backed star-ups in Silicon Valley have been analyzed in Zhang (2007). The influences by the legal differences and experience on the financial contracts have been researched in Kaplan, Martel, Strömberg (2007, 2009). The different stages of financing through the evolution of firms from early business plans to public companies have been analyzed in Kaplan, Sensoy, Strömberg (2009). The past, present, and future of venture capital has been described in Kaplan, Lerner (2010). Orman (2008) developed a theoretical model to study the effectiveness of various possible organizational arrangements for the innovative startups and some issues in the startups activities financing by the VC funds in the USA. The effect of the current financial crisis on the venture capital investments in the US Internet firms has been analyzed in Block, Sandner (2009). The decline of the United States venture capital industry, including some propositions on what the federal government should do about it, has been analyzed in Aberman (2009).

Researching the venture capital investments in Canada, the convertible preferred equity puzzle in Canadian venture capital finance has been found in Cumming (2000). The determinants of venture capital portfolio size have been described in Cumming (2001). The venture capital exits in Canada and the United States have been analyzed in Cumming, MacIntosh (2000). The venture capital investment duration in Canada and the United States has been calculated in Cumming, MacIntosh (2001). The private equity investments in Canada have been overviewed in Cumming, MacIntosh (2002a). The cross-country comparison of full and partial venture capital exits has been done in Cumming, MacIntosh (2002b). The extent of venture capital exits in Canada and the United States has been analyzed in the frames of the venture capital contracting and the valuation of high-tech firms research in Cumming, MacIntosh (2002c). The economic and institutional determinants of venture capital investment have been identified in Cumming, MacIntosh (2002d). The law and finance analysis of venture capital exits in emerging markets has been investigated in Cumming, Fleming (2002). A cross-country comparison of full and partial venture capital exits has been completed in Cumming, MacIntosh (2003). The liquidity risk and venture capital finance in Cumming, Fleming, Schwienbacher (2005). The venture capitalist value-added activities, fundraising and drawdowns have been analyzed in Cumming, Fleming, Suchard (2005). The legality and venture capital exits have been discussed in Cumming, Fleming, Schwienbacher (2006). The crowding out private equity in

Canada has been analyzed in Cumming, MacIntosh (2006). The contracts and exits in venture capital finance have been researched in Cumming (2008). The preplanned exit strategies in venture capital have been discussed in Cumming, Johan (2008). The style drift in private equity has been considered in Cumming, Fleming, Schwienbacher (2009). The private equity returns and disclosure around the world have been studied in Cumming, Walz (2010).

Considering the venture capital investments in Europe, it is worth to point out that the chronological history of the VC capital market in Germany has been surveyed in Franzke, Grohs, Laux (2003), making a comparative analysis between the VC capital market in Germany and the VC capital markets in the US, UK and France. The implication of the VC on the VC funded companies in Germany has been researched in Keilbach, Engel (2003), analyzing the 50,000 German firms of which roughly 1% is venture funded. Keilbach, Engel (2003) found the multiple evidences that the companies with the higher innovative output (measured by patent applications, corrected for size) and with the higher educated management have a larger probability of being venture funded. The venture capital, ownership structure, accounting standards and IPO underpricing in the cases of German companies have been investigated in Elston, Yang (2010). The underpricing, wealth loss for the pre-existing shareholders and the cost of going public for the venture capital backed startups has been extensively researched in Ferretti, Meles (2011). The first comprehensive comparative analysis between the success of European and American VC-backed portfolio companies has been provided in Kraeussl, Krause (2011). The survival of venture capital backed companies in France has been researched in Pommet (2012). The causal effect by the venture capital backing on the underpricing of the Italian IPOs has been investigated in Pennacchio (2013).

Reviewing the venture capital investments in Asia, it should be noted that the venture capital in Japan has been analyzed in Clark (1988). The venture capital, bank shareholding, and IPO underpricing in Japan have been studied in Packer (1996). The Japanese IPOs have been researched in Pettway, Kaneko (1996). The investment and operating performance of Japanese IPOs have also been investigated in Cai, Wei (1997). The role by the venture capital in the IPOs in Japan has been researched in Hamao, Packer, Ritter (1999), who made the following comment: "In Japan, most of the major venture capital firms are subsidiaries of securities firms and banks." Hamao, Packer, Ritter (1999) made the interesting observation on the role of VC during the IPO process in Japan, writing that the venture capital plays a certification role in alleviating informational uncertainty about the IPO at the time of issue. The venture capital industries of East Asia have been described in Kenney, Han, Tanaka (2002). The venture capital industry in Singapore has been overviewed in Koh F C C, Koh W T H (2002). Baygan (2003) analyzed the trends in South Korean VC markets and examined the VC policies in South Korea, stating that the Korean venture capital market has grown dramatically in recent years, starting from a negligible base in the early 1990s and almost tripling between 1998 and 2001. Korea now ranks among the leading OECD countries in venture capital investment as a share of GDP and third in the share of venture capital being channeled to start-up enterprises (after the United States and Canada). Venture capital contributed to a proliferation of start-ups in the high - technology sectors such as the information and communications technology (ICT), which accounted for 64% of venture investments in 2001. Baygan (2003) also highlights an interesting fact that the government created the venture capital market in 1998 through a direct injection of the equity capital, a creation of the generous tax incentives and an establishment of the equity guarantees, and a designation of the certain small firms as the venture businesses. The R&D networks of the small and medium size companies in Japan have been researched in Motohashi (2006). The comparative analysis of the biotechnology startups funding by the venture capitalists between the State of Japan and the USA has been completed in Motohashi (2010). The venture capital affiliation with the underwriters and the underpricing of the initial public offerings in Japan has been researched in Arikawa, Imad'eddine (2010).

Analyzing the venture capital investments in Africa, it has to be mentioned that the practical recommendations on the venture capital programme for the South Africa have been formulated in Stillman, Sunderland, Heyl, Swart (1999). The investment criteria, used by the South African venture capitalists in their venture screening and evaluation processes, have been analyzed in Van Deventer, Mlambo (2008, 2009). The challenges and prospects in the early-stage process of the venture capital funding in South Africa have been presented in Jones, Mlambo (2009). The rise and fall of South African venture capital industry have been discussed in Lingelbach, Murray, Gilbert (2009).

Let us analyse the venture capital (VC) organization and show its structural organizational scheme in Sahlman (1990), Lerner (1994, 1995), Gompers (1995), Black, Gilson (1998), Kortum (1998), Kortum, Lerner (2000), Hellmann, Puri (2000, 2002), Van (2000), Kaplan and Stromberg (2003), Lindsey (2003), Bottazzi, Da Rin and Hellmann (2004), Da Rin, Nicodano, Sembenelli (2004), Bertoni, Colombo, (2005), Lai (2005), Wong (2005), Luukkonen (2007), Sau (2007), Geronikolaou, Papachristou (2008), Van Deventer, Mlambo (2008, 2009), Block, Sandner (2009), Chen, Gompers, Kovner, Lerner (2009), Inci, Barlo (2010), Da Rin, Hellmann, Puri (2011), Samila (2011), Diaconu (2012), Gvazdaitytė (2012), Lazarevski, Mrsik, Smokvarski (2012), Pommet (2012), Rosenbusch (2012), Alqatawni (2013), Pennacchio (2013), Ledenyov D O, Ledenyov V O (2013i):

1. The general partners (GPs) are the Venture Capital firms;

2. The limited partners (LPs) are the institutional investors (the banks, pension funds, insurance companies and foundations) and the private investors (the wealthy individuals);

3. The venture capital is a financial capital (an equity financing resource) to invest into the start-up company with the focus on the early stage product/service development, the high risk business plan realization, pre-initial public-offering business creation;

4. The venture capital fund is an investment vehicle with the lifetime of 8-10 years;

5. The venture capital firm is a partnership among the venture capitalists to provide an expertise in the financial capital investment, the business strategy creation, the business management and the human resources management in the start-up company;

6. The venture capitalist is a an active investor-financier with the capital markets knowledge, the entrepreneurial process experience, and the network of business contacts, who performs a function of the intermediation between the private/institutional investors and the start-up in the conditions of the asymmetric information flows;

7. The startup company is a privately held early stage hi-tech company with the business plan and the high growth business potential.

8. The venture capital industry is an industry created of the VC funds, which has a cyclical business nature.

Fig. 28 shows the venture capital organization scheme.

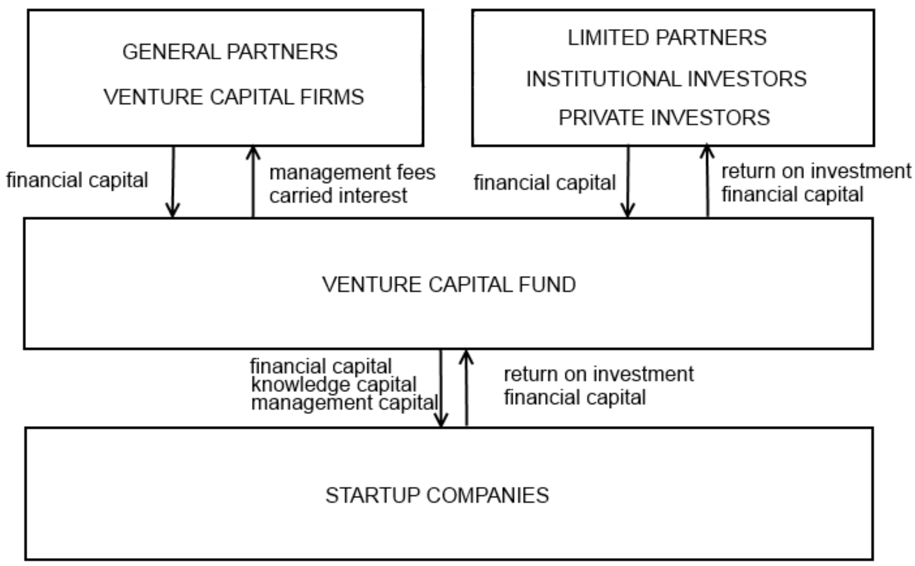

Fig. 28. Venture capital organization scheme.

Let us formulate the innovative start-ups financing problem in the frames of the theory of corporate finance in Tirole (2006). The main three problems in the startups funding are outlined in Orman (2008):

1. The big upfront financial resources requirement at the time, when there will be no the cash flows for a long time;

2. The big substantial uncertainty on the final potential outcomes in forms of developed products or services;

3. The presence of intangible assets in start-up company, which cannot be used as collaterals to get the financing.

All of the above listed issues can potentially reduce the willingness by financiers to provide financing to the new ventures, causing the credit-rationing in Stiglitz, Weiss (1981). Therefore, the VC financing represents a possible solution for the above mentioned financial problems in the cases of the innovative high-tech start-up companies.

There is a number of the different possible investment stages in the venture capital financing. Therefore, let us provide some information on the different VC financing stages in the process of the innovative startup company development in Geronikolaou, Papachristou (2008):

1. The seed financing, intended for new firms for the initial concept evaluation);

2. The start-up financing (aiming at the development of the firm's product before the firm has sold any products);

3. The expansion financing (aiming to assist the growth and expansion of the firm).

Sau (2007) proposes a general scheme of the most innovative start-ups financing:

1. The insider capital, informal private equity and easy-term public financing (Seed);

2. The venture capital financing (Start-up);

3. The self-financing, bank and/or business credit (Early Growth);

4. The direct issue of bonds and public equity (Sustained Growth).

Gompers (2002) distinguishes a few investment stages in the innovative startup company:

1. The start-up stage: the phase, when the company has a business plan for the product or service development;

2. The development stage: the phase of product/service development, when the revenues from sales are not generated;

3. The beta stage: the phase of the product testing by a limited number of customers. For example: the device testing;

4. The shipping stage: the phase at which the product/service is being sold to customers, generating the small revenues stream with the expenses still exceeding the revenues;

5. The profitable stage: the phase at which the company is selling products or services, generating a positive net income;

6. The restart stage: the phase at which the firm is recapitalized at a reduced valuation, pursuing the product or marketing focus shift.

The necessary and sufficient condition for the startup firm to obtain the financing from the uninformed investors can be written as in Da Rin, Nicodano, Sembenelli (2004, 2005)

$$\gamma(\boldsymbol{I}-\boldsymbol{A}) \leq \boldsymbol{p}_H \boldsymbol{R}_u = \boldsymbol{p}_H \left[\boldsymbol{R} - \left(\frac{\boldsymbol{B}}{\boldsymbol{p}_H - \boldsymbol{p}_L}\right)\right],$$

where **I** is the cost of the investment, **A** is the firm's own equity capital which is pledged as collateral, $\mathbf{I - A > 0}$ is the amount of capital, which is necessary to borrow for the firm, $\mathbf{p_H}$ is the probability to deliver the return **R**, **B** denotes the private benefits for the entrepreneurs, $\mathbf{R_u = R - R_f}$ is the share of return to uninformed investors, $\mathbf{R_f}$ is the share of return, retained by the firm.

Therefore, the market value of the loan (the left hand side) cannot exceed the firm's expected income (the right-hand side). Firms are then able to raise finance from uninformed investors if and only if in Da Rin, Nicodano, Sembenelli (2004, 2005)

$$\boldsymbol{A} \geq \overline{\boldsymbol{A}}(\gamma) = \boldsymbol{I} - \left(\frac{\boldsymbol{p}_H}{\gamma}\right)\left[\boldsymbol{R} - \left(\frac{\boldsymbol{B}}{\boldsymbol{p}_H - \boldsymbol{p}_L}\right)\right],$$

where **A** is increasing in $\boldsymbol{\gamma}$.

The amount of funds borrowed by monitored firms I_{vc} adjusts to satisfy the incentive compatibility constraint of the venture capitalist in Da Rin, Nicodano, Sembenelli (2004, 2005)

$$\boldsymbol{I}_{vc}(\beta) \geq \frac{\boldsymbol{c}\boldsymbol{p}_H}{\beta(\boldsymbol{p}_H - \boldsymbol{p}_L)}$$

where $\boldsymbol{\beta}$ is the rate of return to venture capital, $\boldsymbol{\beta = p_H R_{vc} / I_{vc}}$.

The necessary and sufficient condition for a firm to be financed by both uninformed investors and venture capitalists is then in Da Rin, Nicodano, Sembenelli (2004, 2005)

$$\boldsymbol{A} \geq \underline{\boldsymbol{A}}(\gamma, \beta) = \boldsymbol{I} - \boldsymbol{I}_{vc}(\beta) - \left(\frac{\boldsymbol{p}_H}{\gamma}\right)\left[\boldsymbol{R} - \left(\frac{\boldsymbol{b}+\boldsymbol{c}}{\boldsymbol{p}_H - \boldsymbol{p}_L}\right)\right]$$

where **c** is the monitoring cost.

Let us consider the typical venture capital investment scheme at the venture capital investment deal making process by the venture capital fund in Tyebjee, Bruno (1984), Da Rin, Nicodano, Sembenelli (2004, 2005), Isaksson (2006), Kõomägi, Sander (2006), Kvist, Rosengren (2016).

Fig. 29 shows the venture capital investment scheme at the venture capital investment deal making process by the venture capital fund.

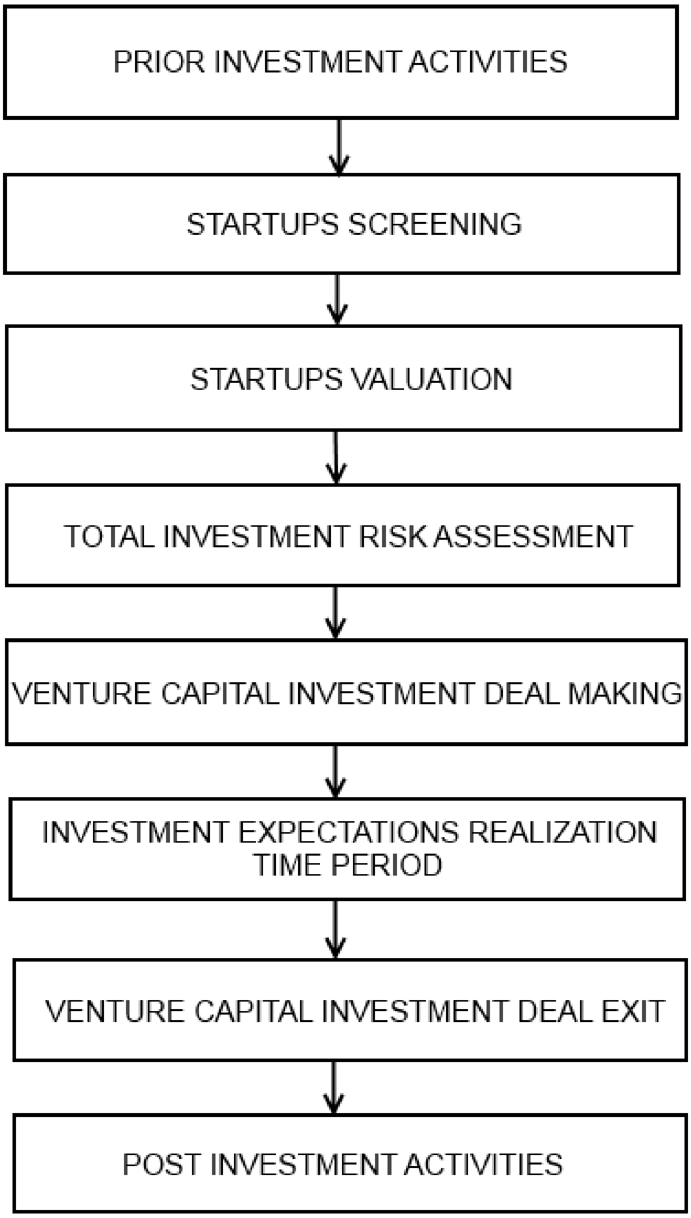

Fig. 29. Venture capital investment process scheme.

Let us discuss the asymmetric information problem between the various market agents at VC investment process. The impact by the investments on the economy performance has been studied in Akerlof, Stiglitz (1966). The theory of the innovation has been researched in Stiglitz (1969). The fact that the competition and entrepreneurship are important factors for the economy growth has been outlined in Kirzner (1973). The theory of firm has been well formulated in Jensen, Meckling (1976), Lucas (1978). The problems of the imperfect information, uncertainty and credit rationing between the different market agents in the conditions of market economy have been considered in Jaffee, Russell (1976). The existence of the credit rationing problem in the markets with the incomplete information has been also confirmed in Stiglitz, Weiss (1981), Stiglitz (1988). The new theory of the firm, taking to the account the asymmetric information flows, has been proposed in Greenwald, Stiglitz (1990). It has been also discovered that the imperfect information affects both the internal organization of the firms and the external relations with the labor, capital and product markets in Greenwald, Stiglitz (1990). The asymmetric effect of the diffusion processes has been explained in Richiardi, Gallegati, Greenwald, Stiglitz (2007). Leland, Pyle (1977), Amit et al (1990), Fried, Hisrich (1994), Gompers (1995), Zhang (2007b) highlighted the fact that the VC investment is characterized by an asymmetric information flows between the equity investors and the entrepreneur. This information asymmetry may prevent the venture capitalists from the investing of financial capital in the start-ups. There are two possible ways to overcome this problem in Tyebjee and Bruno (1984), Zhang (2007b): 1) the stage by stage investments of the financial capital by the venture capitalist into the startup; and 2) the evaluation of the startup owners by their entrepreneurial history. Pennacchio (2013) stresses an important role of the venture capitalists in the IPOs, saying that the analysis of the venture capital backing's effect on the IPO underpricing is a suitable way to investigate whether the venture capitalists are able to reduce 1) the asymmetric information in the IPO process and 2) the oscillations of the company stock price in the case of the IPO process. Ledenyov D O, Ledenyov V O (2013i) propose that the information signals can be mixed and self-modulated during the asymmetric information flows in the information transmission channels between the various market agents, resulting in an origination of the different types of the nonlinearities such as the high order harmonics, which may have a considerable impact on the VC's decision making process on the venture capital investments in the diffusion-type financial system. Ledenyov D O, Ledenyov V O (2013i) think that these nonlinearities have to be taken to an account during the venture capital optimal investment portfolio strategies selection process, which is all about making the right investment choices, using the econophysical econometrical analysis.

We would like to summarize our research discussion by saying that the modern research projects, aiming to create the extended knowledge base on the venture capital investments, have been conducted by many world renowned scientists in Rind (1981); Tyebjee, Bruno (1981), Bruno, Tyebjee (1983, 1986), Tyebjee, Bruno (1984), Chan (1983), Felda, DeNino, Salter (1983), Wilson (1983); Merkle (1984); Hutt, Thomas (1985), MacMillan, Siegel, Narasimha (1985), MacMillan, Zemann, Narasimha (1987); Beatty, Ritter (1986), Nevermann, Falk (1986), Timmons, Bygrave (1986); Block, Ornati (1987), Bygrave (1987), Bygrave, Timmons (1992), Robinson (1987), Ruhnka, Young (1987, 1991), Ruhnka, Felman, Dean (1992), Sandberg, Hofer (1987), Stedler (1987); Brophy, Guthner (1988), Clark (1988), Eisinger (1988, 1993), Florida, Kenney (1988), Florida, Smith (1993), Gladstone (1988), Harris, Raviv (1988), Hofer (1988), MacMillan, Kulow, Khoylian (1988), Sandberg, Schweiger, Schmidt (1988), Siegel R, Siegel E, MacMillan (1988), Tirole (1988); Benveniste, Spindt (1989), Gorman, Sahlman (1989), Holmstrom, Tirole (1989), Poterba (1989a, b); Amit, Glosten, Muller (1990a, b), Amit, Brander, Zott (1998), Barry, Muscarella, Peavy, Vetsuypens (1990), Barry (1994), Chan, Siegel, Thakor (1990), Hisrich, Jankowitz (1990), Sahlman (1990, 1993), Sykes (1990); Dixon (1991), Megginson, Weiss (1991); Sapienza (1992), Sapienza, Gupta (1994), Sapienza, Manigart, Vermeir (1996); Hall, Hofer (1993), Rosenstein, Bruno, Bygrave, Taylor (1993), Sahlman (1993); Admati, Pfleiderer (1994), Aghion, Tirole (1994), Anton, Yao (1994), Berglöf (1994), Bhidé (1994), Fried, Hisrich (1994), Gompers (1994, 1995, 1996, 1998, 2002, 2007), Gompers, Lerner (1996, 1997, 1998a, b, c, 1999a, b, c, d, 2000a, b, 2001a, b), Brav, Gompers (1997), Baker, Gompers (2003), Brav, Gompers (2003), Gompers, Lerner, Scharfstein (2005), Gompers, Kovner, Lerner, Scharfstein (2006, 2008), Gompers, Kovner, Lerner (2009), Gompers, Lerner, Scharfstein, Kovner (2010), Knight (1994), Kroszner, Rajan (1994), Lerner (1994a, b, 1995a, b, 1998, 1999, 2002, 2008, 2009), Kortum, Lerner (1998, 2000), Lerner, Shane, Tsai (2003), Lerner, Schoar (2004, 2005), Lerner, Moore, Shepherd (2005), Lerner, Schoar, Wongsunwai (2007), Lerner, Sorensen, Strömberg (2009), Chen, Gompers, Kovner, Lerner (2009), Lerner, Tåg (2012), Puri (1994, 1996), Puri, Robinson (2011); Anton, Yao (1995), Elango, Fried, Hisrich, Polonchek (1995), Hart (1995), Jain, Kini (1995), Loughran, Ritter (1995), Willner (1995); Muzyka, Birley, Leleux (1996), Packer (1996), Pettway, Kaneko (1996); Amit, Brander, Zott (1997), Cai, Wei (1997), Chevalier, Ellison (1997), Gilford (1997), Karsai, Wright, Filatotchev (1997), Wright, Robbie, Ennew (1997), Manigart, Wright, Robbie, Desbrieres, De Waele (1997), Manigart, Baeyens, Hyfte (2002), Manigart, De Waele, Wright, Robbie, Desbrieres, Sapienza, Beekman (2000, 2002); Bergemann, Hege (1998), Berger, Udell (1998), Berger, Schaek (2011), Black, Gilson (1998), Cornelius , Isaksson (1998), Fried, Bruton, Hisrich

(1998), Gerke (1998), Hellmann (1998, 2000, 2002, 2006, 2007), Hellmann, Puri (2000, 2002), Becker, Hellmann (2005), Hellmann, Lindsey, Puri (2004, 2008), Hyde (1998), Jacobs, Scheffler (1998), Karsai (1998, 2003, 2004), Karsai, Wright, Dudzinski, Morovic (1999), Lin, Smith (1998), Marx (1998), Marx, Strumsky, Fleming (2009), Murray, Marriott (1998), Prowse (1998), Rajan, Zingales (1998), Trester (1998), Wright, Robbie (1998), Zider (1998); Aernoudt (1999), Bliss (1999), Bygrave, Hay, Peeters (1999), Gilson (1999), Gilson, Schizer (2002, 2003), Gulati, Gargiulo (1999), Hamao, Packer, Ritter (1999), Leopold (1999), Neher (1999), Shepherd (1999), Shepherd, Zacharakis (1999), Stillman, Sunderland, Heyl, Swart (1999); Baygan, Freudenberg (2000), Baygan (2003), Bharat, Galetovic (2000), Cumming (2000, 2001, 2008), Cumming, MacIntosh (2000, 2001, 2002a, 2002b, 2002c, 2002d, 2003a, b, 2006), Cumming, Fleming (2002), Cumming, Fleming, Schwienbacher (2005, 2006, 2009), Cumming, Fleming, Suchard (2005), Cumming, Johan (2008), Cumming, Walz (2010), Gans, Stern (2000, 2003), Gans, Hsu, Stern (2002), Jain, Kini (2000), Jeng, Wells (2000), Kaplan, Strömberg (2000, 2001, 2002, 2003, 2004, 2009), Kaplan, Schoar (2005), Kaplan, Martel, Strömberg (2007), Kaplan, Sensoy, Strömberg (2009), Kaplan, Lerner (2010), Karaömerlioğlu, Jacobsson (2000), Koski (2000), Lee (2000), Lehtonen (2000), Quindlen (2000), Schefczyk (2000), Schertler (2000); Bascha, Walz (2001), Engel (2001a, b, 2002); Francis, Hasan (2001), Fredriksen, Klofsten (2001), Hyytinen, Pajarinen (2001), Keuschnigg, Nielsen (2001, 2003a, b, 2004a, b), Keuschnigg (2003, 2004a, b), Kanniainen, Keuschnigg (2004), Kirilenko (2001), Lockett, Wright (2001), Maula, Murray (2001), Peng (2001), Seppä, Laamanen (2001), Seppä (2003), Shachmurove Y (2001, 2007a, b), Shachmurove A, Shachmurove Y (2004), Shachmurove E, Shachmurove Y (2004), Sorenson, Stuart (2001); Allen, Song (2002), Audretsch, Lehmann (2002), Bottazzi, Da Rin (2002a, b, 2004), Bottazzi, Da Rin, Giavazzi (2003), Bottazzi, Da Rin, Hellmann (2004a, b, 2008, 2009), Brander, Amit, Antweiler (2002), Brander, De Bettignies (2009), Brander, Egan, Hellmann (2008), Brander, Du, Hellmann (2010), Chesbrough (2002), Cestone (2002), Davis, Schachermayer, Tompkins (2002), Dossani, Kenney (2002), Kenney, Han, Tanaka (2002), Eisele, Habermann, Oesterle (2002), Everts (2002), Koh F C C, Koh W T H (2002), McGlue (2002), Moskowitz, Vissing-Jørgensen (2002), Shane, Cable (2002), Shane, Stuart (2002), Zook (2002); Becker, Hellman (2003), Bergemann, Hege (2003), Hege, Palomino, Schwienbacher (2009), Casamatta (2003), Casamatta, Haritchabalet (2007), Cornelli, Yosha (2003), Davila, Foster, Gupta (2003), Franzke, Grohs, Laux (2003), Gawlik, Teczke (2003), Gilson, Schizer (2003), Hirukawa, Ueda (2003), Inderst, Muller (2003), Keilbach, Engel (2003), Leleux, Surlemont (2003), Rindermann (2003), Schertler (2003), Schmidt (2003), Schmidt, Wahrenburg (2003), Stuart, Sorenson (2003), Wang C K, Wang K, Lu (2003), Wasserman (2003, 2006), Woodward, Hall (2003); Aghion, Bolton, Tirole (2004), Avnimelech, Kenney, Teubal (2004), Avnimelech, Teubal (2004), Baum, Silverman (2004), Berk, Green, Naik (2004), Da Rin, Nicodano, Dittmann, Maug, Kemper (2004), Hsu (2004), Inderst, Müller (2004, 2009), Inderst, Müller, Muennich (2007), Jones, Rhodes-Kropf (2004), Lee, Wahal (2004), Megginson (2004), Michelacci, Suarez (2004), Mishra (2004), Peggy, Wahal (2004), Repullo, Suarez (2004), Roman, van Pottelsberghe de la Potterie (2004), Sembenelli (2004), Sternberg (2004), Ueda (2004); Bergemann, Hege (2005), Cochrane (2005), Da Rin, Hege, Llobet, Walz (2005), Da Rin, Nicodano, Sembenelli (2005, 2006), Da Rin, Hellmann, Puri (2011), De Carvalho, Calomiris, De Matos (2005), Dessein (2005), Dessí (2005), Dimov, Shepherd (2005), Dushnitsky, Lenox (2005, 2006), Dushnitsky, Lavie (2008), Ernst, Witt, Brachtendorf (2005), Ge, Mahoney J M, Mahoney J T (2005), Hsu, Kenney (2005), Hsu (2006, 2007), Klepper, Sleeper (2005), Klepper, Thompson (2010), Kõomägi (2005a, b, c), Kõomägi, Sander (2006), Lai (2005, 2007), Mäkelä, Maula (2005), Mayer, Schoors, Yafeh (2005), Mayer, Schoors, Yafeh (2005), Neus, Walz (2005), Wong (2005), Zook (2005); Antonelli, Teubal (2006), Cassiman, Ueda (2006), Colombo, Dimov, De Clercq (2006), Eckhardt, Shane, Delmar (2006), Ellul, Pagano (2006), Gebhardt, Schmidt (2006), Grilli, Piva (2006), Fallick, Fleischman, Rebitzer (2006), Franco, Filson (2006), Franco, Mitchell (2008), Isaksson (2006), Mathews (2006), Motohashi (2006, 2010), Nielsen, Keuschnigg (2006), Proimos, Murray (2006), Riyanto, Schwienbacher (2006), Wadhwa, Kotha (2006), Zhang (2006, 2007a, b); Bernile, Cumming, Lyandres (2007), Campbell, Kraeussl (2007), Colombo, Dawid, Kabus (2007), de Bettignies, Brander (2007), de Bettignies, Chemla (2008), de Bettignies (2008), Engel, Keilbach (2007), Hochberg, Ljungqvist, Lu (2007, 2010), Hsu (2007), Jovanovic, Szentes (2007), Lai (2007), Li, Prabhala (2007), Luukkonen (2007, 2008), Mann, Sager (2007), Pintado, De Lema, Van Auken (2007), Robinson, Stuart (2007), Sau (2007), Schwienbacher (2007, 2008), Sørensen (2007), Tykvová (2007); Aizenman, Kendall (2008), Broughman (2008), Broughman, Fried (2010), Davidsson, Steffens, Gordon, Senyard (2008), Geronikolaou, Papachristou (2008), Hand (2008), Hirukawa, Ueda (2008a, b), Katila, Rosenberger, Eisenhardt (2008), Lindsey (2008), McMillan, Roberts, Livada, Wang (2008), Orman (2008), Rossetto (2008), Schwienbacher (2008, 2009), Sorenson, Stuart (2008), Winton, Yerramilli (2008), Nahata (2008), Phalippou (2008), Phalippou, Gottschalg (2009), Puri, Zarutskie (2008), Van Deventer, Mlambo (2008, 2009); Aberman (2009), Bengtsson, Ravid (2009), Bengtsson, Hand (2011), Bengtsson, Sensoy (2011), Block, Sandner (2009), Clarysse, Knockaert, Wright (2009), Cockburn, MacGarvie (2009), Duffner, Schmid, Zimmermann (2009), Fitza, Matusik, Mosakowski (2009), Fulghieri, Sevilir (2009a, b), Jones, Mlambo (2009), Krohmer, Lauterbach, Calanog (2009), Lingelbach, Murray, Gilbert (2009), Litvak (2009a, b), Masulis, Nahata (2009, 2011), Norbäck, Persson (2009), Samuelsson, Davidsson (2009), Van de Vrande, Vanhaverbeke, Duysters (2009); Arikawa, Imad'eddine (2010), Benson, Ziedonis (2010), Bienz, Walz (2010), Cantner, Stützer (2010), Cowling, Murray, Liu (2010), Dushnitsky, Shapira (2010), Elston, Yang (2010), Groh, Liechtenstein (2010), Hall, Woodward (2010), Inci, Barlo (2010), Ivanov, Xie (2010), Jegadeesh, Kräussl, Pollet (2010), Korteweg, Sørensen (2010), Metrick, Yasuda (2010, 2011), Obschonka, Silbereisen, Schmitt-Rodermund, StuetzerNascent (2010), Samila, Sorenson (2010, 2011), Sevilir (2010), Zarutskie (2010), Zacharakis, Erikson, George (2010); Ball, Chiu, Smith (2011), Cherif, Gazdar (2011), Das, Jo, Kim (2011), Ferretti, Meles (2011), Kandel, Leshchinskii, Kraeussl, Krause (2011), Kerr, Nanda (2011), Li, Abrahamsson (2011), Samila, Sorenson (2011), Tian (2011), Yuklea (2011); Diaconu (2012), Gvazdaitytė (2012), Lazarevski, Mrsik, Smokvarski (2012), Lim, Cu (2012), Pommet (2012), Rosenbusch, Brinckmann, Müller (2012), Yitshaki (2012); Alqatawni (2013), Brettel, Mauer, Appelhoff (2013), Pennacchio (2013), Stuetzer, Obschonka, Davidsson, Schmitt-Rodermund (2013), Stuetzer, Obschonka, Schmitt-Rodermund (2013), Ledenyov D O, Ledenyov V O (2013i), Hsu, Haynie, Simmons, McKelvie (2014), Lahr, Mina (2014), Woike, Hoffrage, Petty (2015), Kvist, Rosengren (May 29 2016).

5.7 Angel investor as investment vehicle.

The **angel investor** or the **business angel** is an investment vehicle under the management by a private investor (a high-net-worth individual), who intends to make his/her own financial capital investment in the early-stage high-risk private unquoted startup-companies with the aim to get an increased return premium in the capital markets in the short and long time periods; and to take an active part in the business management as an advisor/member of the board of directors in the startup of interest in Wetzel (1981, 1983), Mason, Harrison (2008), Lerner, Schoar, Sokolinski, Wilson (August 2015), Landström, Mason (2016a, b).

The business angel term was coined in Wetzel (1981, 1983). The main conditional distinction between the angel investors and the venture capitalists is in their investment practices: the angel investors provide the small amounts of capital in order of US$50k–US$5m to the early-stage high-risk startups, whereas the traditional venture capitalists have almost abandoned the early-stage high-risk startups investment opportunities space in Van Osnabrugge (2000), Mason (2016). The angel investing as an investment vehicle for the private equity investing is almost 33 years old, whereas the venture capital investing is around 60 years old in Wetzel (1981, 1983), May, Manhong Mannie Liu (2015).

The startup's financing chain from the company's foundation phase to the company's maturity phase may include the following stages in the time domain in Mercil (2006):

1. The founders financing at initial stage;

2. The angel investors financing at product/service prototype stage;

3. The venture capitalists financing at product/service rollout stage;

4. The corporate investors financing at product/service rollout stage;

5. The investment banks financing at growth stage;

6. The IPO financing at expansion/maturity stage.

Indeed, the angel investors play a significant role in the inclusive financing of the early-stage startups in the economies of the scales and scopes, because they provide the seed capital for the hi-tech business ventures at the time, when these companies have a limited access to the financial resources from the traditional financial banks and institutions in Rubenstein (1958). In other words, the business angels stimulate the R&D and business activities in the early-stage high-risk startups by deploying the relatively small amounts of seed capital toward the highly innovative transformative technological solutions development in the selected startups. In addition, the business angels can contribute the so-called smart capital in the form of the product/service knowledge, business experience and contacts networks to the selected startup. These startups may potentially create the innovative products/services for the consumers, adding the economic value to and increasing the economic output of the economies of the scales and the scopes in Jensen (2002).

There may be the business angel networks (BANs) to effectively match the solo angel investors / the angel investors group(s) / the angel investors syndicates to the perspective early-stage high-risk startup companies with the aim to form the effective investment relationships in the economies of the scales and the scopes in EBAN (European Business Angel Network) (2005). The BANs increase the transparency, improve the efficiency, and decrease the search time toward the business deal making/brokering in the business angel investment market.

The startup's financing process by the business angel(s) has the following investment stages in Mason, Rogers (1997), Landström, Mason (2016a, b):

1. The startup's application stage;

2. The startup's pre-screening stage;

3. The startup's detailed due diligence stage;

4. The BA's investment entry into selected startup stage;

5. The BA's investment exit from selected startup stage.

In some cases, the business angels can form a group of the business angels to make the crowd-investing (the crowd-funding), which is a new form of the financing, when the a number of the small investors finance the startup business plan by collecting the necessary funds on the Internet in Sidman (2015), Hornuf, Schwienbacher (October 29 2016).

Of course, the creation and introduction of the progressive economic regulation policies frameworks by the governments can further stimulate the business angels activities to make the financial/knowledge capital investments into the perspective early-stage high-risk private unquoted startup-companies within the corresponding business ventures clusters in the economies of the scales and the scopes.

The business angels investment theories and practices in the finances have been researched in Rubenstein (1958), Wetzel (1981, 1983, 1986, 1987), Landström (1992, 1993, 1995, 1998, 2007), Landström, Manigart, Mason, Sapienza (1998), Landström, Mason (editors) (2012), Landström , Mason (2016a, October 29 2016b), Mason, Harrison (1994, 1995, 2000a, b, 2002, 2003, 2008, 2015), Mason, Rogers (1997), Mason, Stark (2004), Mason (2006, 2007, 2009, 2011a, b, 2016), Mason, Botelho (2016), Mason, Harrison, Botelho (2016), Riding, Duxbury, Haines (1994), Coveney, Moore (1998), Lerner (1998 , 2009), Lerner, Schoar, Sokolinski, Wilson (August 2015), Prowse (1998), Aernoudt (1999), Tashiro (1999), Farrell (2000), Freear, Sohl, Wetzel (2000, 2002), Freear, Sohl (2012), Kelly, Hay (2000, 2003), Kelly (2007), Prasad, Bruton, Vozikis (2000), Van Osnabrugge (2000), Amis, Stevenson (2001), Amis, Stevenson, Liechtenstein (2003), Benjamin, Margulis (2001), Sørheim, Landström (2001), Sørheim (2003), Brettel (2002, 2003), Jensen (2002), Payne, Macarty (2002), Stadler, Peters (2003), Sohl (2003, 2006, 2012), Sohl, Hill (2007), San Jose, Roure, Aernoudt (2004), Jossi (July 2005), Månsson, Landström (2005), Maula, Autio, Arenius (2005), EBAN (European Business Angel Network) (2005), Shane (October 1 2005, January 1 2008, 2009), Vance (2005), Wiltbank (October 2005, 2009), Wiltbank, Boeker (November 2007a, b), Wiltbank, Read, Dew, Sarasvathy (2009), Amatucci, Sohl (2006), Heukamp, Liechtenstein, Wakeling (October 2006), Mercil (2006), Sudek (2006), Chahine, Filatochev, Wright (2007), Harrison, Mason (2007), Harrison, Mason, Robson (2010), Knyphausen-Aufseß, Westphal (2007), Preston (2007), Clark (2008), Goldfarb, Hoberg, Kirsch, Triantis (2008), Ibrahim (2008), Ibrahim (2011), Riding (2008), Collewaert, Manigart (2009), Collewaert, Manigart, Aernoudt (2010), Collewaert (2016), DeGennaro, Dwyer (2009, 2010), DeGennaro (2010, 2012), Goldfarb, Hoberg, Kirsch, Triantis (2009), Goldfarb, Hoberg, Kirsch, Triantis (2012), Mehrotra (2009), Roach (2009), Wallisch (2009), Wong, Bhatia, Freeman (2009), Markova, Petkovska-Mirčevska (2010), Lahti (2011a, b), Lahti, Keinonen (2016), Maxwell, Jeffrey, Lévesque (2011), Maxwell, Levesque, Jeffrey

(2014), Maxwell (2016), OECD (2011), Johnson, Sohl (2012a, b), Mitteness, Sudek, Cardon (2012), Scheela, Jittrapanun (2012), Wu Zhenyu, Yuan Wenlong, Wei Xueqi (2012), Festel, De Cleyn (2013), Florin, Dino, Huvaj (2013), Gregson, Mann, Harrison (2013), Hoyos, Santos (2013), Zachary, Mishra (2013), Carpentier, Suret (2014), Carpentier, Suret (2016), Parhankangas, Ehrlich (2014), Zhujun Ding, Sunny Sun, Kevin Au (2014), Altuntas (2015), Anselmo, Amati (2015), Ashish, Agarwal (2015), Banga, Lewis (2015), Baumann (2015), Dollinger, Rhodes (2015), Finlay, Witkin (2015), Gluntz (2015), Gray (2015), Green (2015), Gunther (2015), Hellmann, Thiele (2015), Henyon (2015), Hudson (2015), Litzka (2015), May, Liu (editors) (2015), May, Manhong Mannie Liu (2015), Mullett (2015), Neira (2015), Oker-Blom (2015), Payne (2015), Poh-Kam Wong (2015), Protopopov, Fokin (2015), Reijtenbagh (20150, Roure, San Jose (2015), Roza, Banha (2015), Sidman (2015), Silby, Nicholas (2015), Tooth (2015), Vossen, Munck (2015), Wallace, Conti (2015), Wang Jiani, Chen Su (2015), Wang Jiani, Yi Tan, Manhong Liu (2016), Yeung (2015), Zhujun Ding, Au, Chiang (2015), Avdeitchikova, Landström (2016), Amatucci (2016), Estapé-Dubreuil, Ashta, Hédou (2016), Hornuf, Schwienbacher (October 29 2016), Lingelbach (2016), Murnieks, Cardon, Sudek, White, Brooks (2016), Politis (2016), Qoqiauri (2016), Romaní, Atienza (2016), Scheela (2016), Sørheim, Botelho (2016).

5.8 Investment boutique firm as investment vehicle.

The **investment boutique firm** represents an investment vehicle in the form of a small brokerage investment advisory firm on the wealth management towards the financial capital growth by making a limited number of the financial capital investments into the capital markets with the aim to get an increased return premium in the short and long time periods.

In other words, the investment boutique firm is a small brokerage investment advisory firm with the specialization in both the single corporate finance client sector (the telecommunications sector, the media sector, the retail sector) or the ultra-high net worth individuals, performing the private equity management and the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods in Hall (2007), Morrison, Wilhelm (Winter 2007).

Goodhart, Schoenmaker (March 2016) proposed to differentiate the four-tiers in the investment banking system in the capital markets in the finances, positioning the investment boutique firm at the tier four:

1. The global investment banks-giants;

2. The regional investment banks;

3. The national investment banks;

4. The small specialist advisory wealth management investment boutiques.

It makes sense to comment that the investment boutique firms industry has a different development dynamics, comparing to the investment banking industry in the global financial centers in the recent years in Hall (2007). In some cases, the investment boutique firms successfully compete with and challenge the big investment banks in the global capital markets. In other cases, the investment boutique firms pick up the outsourced businesses from the big investment banks such as the M&A advisory services or financial assets trading in the global capital markets in Morrison, Wilhelm (Winter 2007). The investment boutique firms in the finances have been researched in Thrift (1994), Luenberger (1997), Hall (2007), Morrison, Wilhelm (Winter 2007), Office of Career Services August (2012), Weihong Song, Wei Jie, Lei Zhou (2013), Goodhart, Schoenmaker (March 2016), Thomson Reuters (2016), Wikipedia (2016).

Finally, reviewing the ongoing trends in the investment vehicles in the finances, we would like to highlight the recent important developments such as a presence of an increasing number of the **private investment offices** in the financial industry around the World. The private investment office is an investment vehicle, a narrow specialized investment boutique firm and an investment advisory firm on the wealth management, which takes care about the accumulated wealth by the ultra-high-net-worth individuals. The main objective by the private investment office is to increase the financial capital by making the highly selective financial capital investments into the high-quality investment products in the capital markets with the aim to get an increased return premium in the short and long time periods.

In Chapter 5, we have already discussed the numerous investment vehicles for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

In Chapter 6, we will conduct a research discussion on the investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 6

Investment mediums for financial capital investment in capital markets

The investment medium is an financial environment, where the allocation of the financial capital to the investment product with an application of the investment vehicle is conducted in the process of the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. There are many different types of the investment mediums with the various characteristic properties, which also serve as the mediums of exchange in the capital markets in the finances.

Fig. 30 shows the investment mediums in the capital markets in the finances.

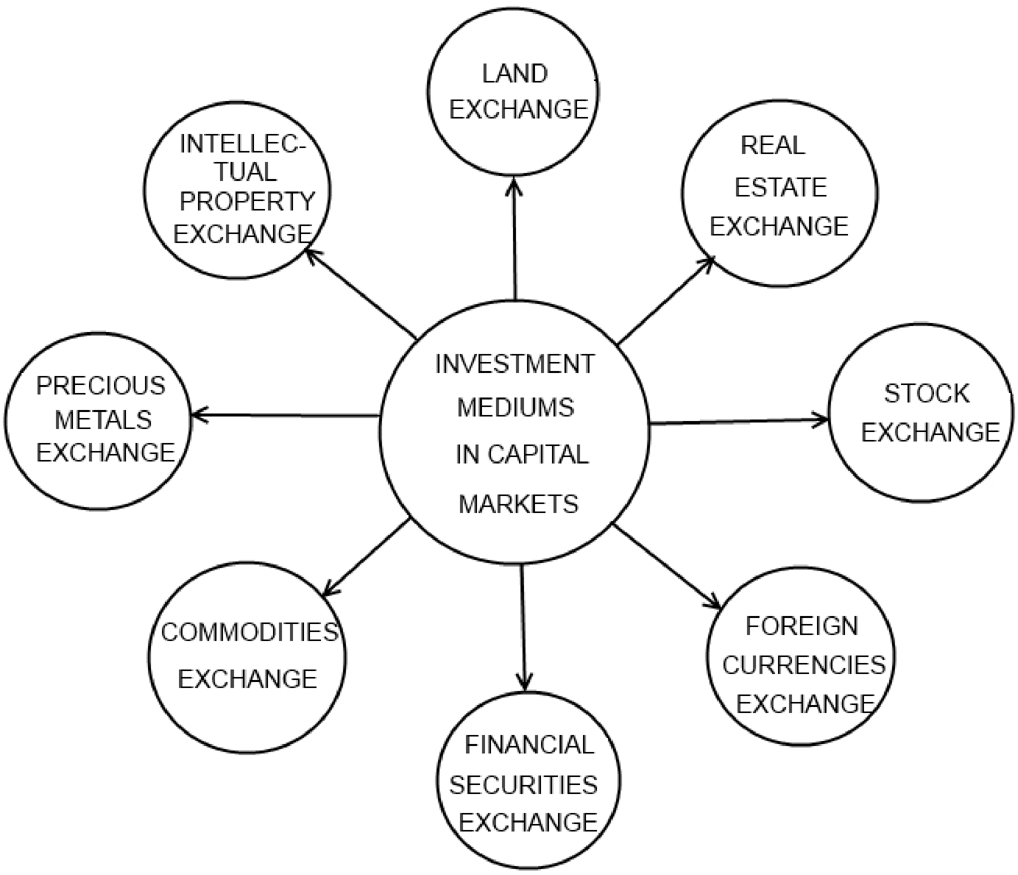

Fig. 30. Investment mediums in capital markets in finances.

Exploring the finances universe, let us assume that one of the observable stars has the multiple light emitting beams, radiating the light in the surrounding space. In this case, the following two theoretical premises can be made:

1. The star is formed of the different investment mediums;

2. The radiating beam of light with the different wavelength corresponds to a certain investment medium in the capital markets.

Let us consider the investment mediums (the exchange mediums) by paying a lot of attention to the notable research results on the subject of research interest.

6.1 Land exchange as investment medium.

Let us stick with the notion of the book and begin our consideration by saying that the **land exchange** can be regarded as one of the oldest investment mediums, which was created by the humans in the initial economies of the scales and the scopes on our planet. Indeed, the sellers of the land tried to make the direct land sales deals with the buyers of the land for the farming purposes mainly at the land exchanges in the primitive economies of the scales and scopes. At the later time, the trading land types included the farming land, the forest land, the building construction land, etc.

The land sales practices at the land exchanges from ancient time to the modern time have been described in Ricardo (1817, 1821), Denman (1956), Silberberg (1975), Veenman, Zonen (1961), Elvin, Ervin (1982), Mills, Hoover (1982), McFarlane (1983), Eaton (December 1984), Phipps (1984), Kaplan (Winter 1985), Fiske (October 7-8 1986), Wiltshaw (1986), Guzhvin (1987), Eaton (1988), Mercier (1988), Reeve (1988), Asako, Kuninori, Inoue, Murase (1989), Asako, Kuninori, Inoue, Murase (1997), Feder, Onchan (1989), Phillips, Bauer, Mercier, Mumey (1989), Phillips, Bauer, Akabua (1993), Roth, Barrows, Carter, Kanel (1989), Schnitkey, Taylor, Barry (1989), Barrett (1991), Kanemoto (1991), Lins, Hoffman, Kowalski (September 23-24 1991), Yoshida (1991), Butler, DeBraal (1993), Miller, Andrews (February 9 - 11 1993), Capozza, Yuming Li (1994), Werner (1994), Nieuwoudt (1995), Ogawa, Suzuki (1995), Ogawa, Kazuo, Shin-Ichi Kitasaka, Hiroshi Yamaoka, Yasuharu Iwata (1996), Grepperud (February 1996), Echevarria (1997), Deininger, Feder (2001), Kiyotaki, West (2004), Sekine, Tachibana (March 2004), Feinerman, Peerlings (2005), Hennings, Sherrick, Barry (2005), Ray (2005), Turnbull (2005), Kiyotaki, West (2006), Holden, Deininger, Ghebru (2007), Sekine, Tachibana (2007), Głuszak (2008), Von Braun, Meinzen-Dick (April 2009), Cotula, Vermeulen, Leonard, Keeley (2009), Cotula (2012), Fakton, van der Post (2010), Fischer, Shah (2010), Zoomers (2010), Abdulai, Owusu, Goetz (2011), Arezki, Deininger, Selod (December 2011), De Schutter

(2011), Hui-Wen Koo (2011), Palyanychko (2011), Zagema (September 22 2011), Di Corato, Hess (September 26-28 2012), Domeher, Abdulai (2012), Van der Kr Pasmans, Van der Heijden (2012), Todorovic, Vasiljevic, Rajic (2012), Oya (2013), Xianlei Ma, Heerink, van Ierland, van den Berg, Xiaoping Shi (2013), Zolin, Luzi (2013), Boehlje, Baker, Langemeier (January 3-5 2014), Malashchuk (2014), Palenychak (2014), Arezki, Deininger, Selod (2015), Busha (2015), Szreder (2015), Bochco (2016), Borghesi, Giovannetti, Iannucci, Russu (2016).

6.2 Real estate exchange as investment medium.

Undoubtedly, the **real estate exchange** can be considered as an investment medium, which was established by the economic agents in the initial economies of the scales and the scopes at the ancient times. Obviously, the real estate exchange was an exchange medium, where the numerous business deals on the real estate properties between the sellers of the real estate and the buyers of the real estate were completed. The real estate property includes the private homes, business shops, business centers, trade markets, public buildings and cathedrals, built of the different materials such as the wood, clay, stone, red bricks and concrete.

The real estate exchanges have been researched in Grebler (1954), Taylor, Bailey (1963), Wendt, Wong (December 1965), Friedman (December 1970, March 1971), Roulac (1976, 1996), Smith, Shulman (September–October 1976), Lusht (1978), Pellatt (1972), Chapman Findlay III, Hamilton, Messner, Yormark (September 1979), Ibbotson, Fall (1979), Ibbotson, Sinquefield (1982), Ibbotson, Siegel (1983, 1984), Ibbotson, Siegel, Love (Fall 1985), Penny (1980), Rystrom (1980), Burns, Epley (Winter 1982), Miles, Estey (Winter 1982), Miles, McCue (Summer 1982), Miles, McCue (1984), Brueggeman, Chen, Thibodeau (1984), Fogler (1984), Webb (1984), Webb, McIntosh (1986), Gau (1985), Gau, Wang (1990), Hartzell, Mengden (August 27 1986), Hartzell, Hekman, Miles (Spring 1987), Hartzell, Webb (1988), Hartzell, Liu, Kallberg (2004), Kuhle, Walther, Wurtzebach (1986), Kuhle (1987), Titman, Warga (Fall 1986), Haight, Fort (1987), Chen, Tzang (1988), Chinloy (1988), Firstenberg, Ross, Zisler (1988), Gyourko, Linneman (1988), Gyourko, Keim (1992), Hines (March 1988), Lusht (1988), Miller, Sklarz, Ordway (1988), Mooney S, Mooney K (1988), Wittner (Fall 1988), Geltner (1989), Goebel, Kim (1989), Rubens, Bond, Webb (1989), Sweeney (1989, 1993), Chan, Hendershott, Sanders (Winter 1990), Colwell, Park (September 1990), Giliberto (Summer 1990), Goetzmann, Ibbotson (1990), Howe, Shilling (1990), Liu, Hartzell, Grissom, Wylie (1990), McMahan (1990), Sagalyn (1990), Wheaton, Torto (1990), Asabere, Kleiman, McGowan (1991), Martin, Cook (1991), McIntosh, Liang, Tompkins (Spring 1991), Ross, Zisler (1991), Ziobrowski A J, Boyd (1991), Ziobrowski A J, Curcio (1991), Ziobrowski A J, Ziobrowski B J (1993), Ziobrowski B J, Ziobrowski A J (1995), Ziobrowski A J, McAlum, Ziobrowski B J (1996), Ambrose, Ancel, Griffiths (Spring 1992), DiPascuale, Wheaton (1992), Kleiman, Farragher (1992), Liu, Mei (1992), Brueggeman, Fisher (1993), Newell, MacFarlane (March 1994), Worzala (1994), Worzala, Newel (1997), Zumpano, Elder (1994), Baum (1995, 2009), Corgel, McIntosh, Ott (1995), Jun Han, Youguo Liang (1995), Mueller (Spring 1995), Barkham, Ward, Henry (1996), Geurts, Jaffe (1996), Han (1996), Newell (1996), Newell, Webb (1996), Seck (1996), Solnik (1996), Bers, Springer (1997), Brueggeman, Fisher (1997), Farrell (1997), Hoesli, MacGregor, Matysiak, Nanthakumaran (1997), Mei, Saunders (1997), Redman, Manakyan, Liano (1997), Ball, Lizieri, MacGregor (1998), Chun, Shilling (1998), D'Arcy, Keogh (1998), Martens (1998), Svensson (1998), Adair, Berry, McGreal, Syacutekora, Ghanbari Parsa, Redding (Spring 1999), Keogh, D'Arcy (1999), Liao, Mei (1999), Moshirian, Pham (2000), Brounen, Cools, Schweizer (Summer 2001), Lee (2001, 2005, 2006a, b), McGreal, Parsa, Keivani (2001), Thrall (2002), Blazenko, Pavlov (2004), Deqing Diane Li, Yung (2004), Engelberts, Suarez (2004), Hoskin, Higgins, Cardew (Spring 2004), Loo Lee Sim, Xing Quan Zhang, Jieming Zhu (2004), Pi-Ying, Lai Peddy (2004), Hardin, Liano, Gow-Cheng Huang (2005), Laposa, Lizieri (April 13 – 16 2005), Holsapple, Ozawa, Olienyk (2006), Johnson (2006), Lim, McGreal, Webb (2006), Adlington, Grover, Heywood, Keith, Munro-Faure, Perrotta (December 6-8 2008), Chan, Hardin III, Liano, Zheng (2008), Lambie-Hanson (Fall 2008), Minye Zhang, Yongheng Deng (July 9 2008), Falkenbach (2009), Kurzrock, Rottke, Schiereck (2009), Edelstein, Qian, Tsang (2010), Lieser, Groh (2010, July 2011), Peralta-Alva (2011), Chaney, Sraer, Thesmar (2012), Baker, Chinloy (editors) (September 4 2014, September 8 2014), Cunat, Cvijanovic, Yuan (2014), Gauder, Houssard, Orsmond (2014), Lieser, Groh (2014), Anderson, Rottke, Krautz (2015), Hazama, Uesugi (October 2015), Maksimov, Bachurinskaya (2015), Papastamos, Matysiak, Stevenson (2015).

6.3 Stock exchange as investment medium.

Let us follow on with a comprehensive discussion on the history of the **firms' stock exchange**, which is one of most attractive investment mediums from the investor's point of view. We would like to be focusing on the historical heritage, the regulatory aspects, and the operation principles, considering the European, American and Asian stock exchanges mainly. Most importantly, we would like to conduct the research discussion, using the obtained research findings in Ledenyov D O, Ledenyov V O (2013f).

The Amsterdam Stock Exchange is probably the oldest stock exchange, which was founded in Amsterdam in the Netherlands in 1602 in Joseph Penso de la Vega (1668, 1996), Viveen (2013), Shiryaev (1998a). The Amsterdam Stock Exchange has had the multiple periods of sustainable development and sharp decline, reflecting the historical economical development stages in The Netherlands in recent centuries in Landes (1998).

In the seventeenth century, the Britain succeeded the Netherlands as the biggest economy, throwing in the age of innovation by the way of the industrialization in Landes (1998), Viveen (2013). At that time, the British financial system was emulated to some degree from the Dutch financial system, for example, Munro (2003) writes: "Many English observers were praising the Dutch financial system as the one to emulate." The London Stock Exchange (LSE) has its historical beginnings since 1700 in Michie (1999, 2001). The LSE as a financial institution was established with a main goal to facilitate the development of the financial securities exchange market, and it has a long history of operations since early 1801 in Maddison (1875), Morgan, Thomas (1961), Michie (1988), Michie (1999, 2001), Neal (2005). The first LSE regulation framework was officially printed in February, 1812 in Neal (2005). Since that time, the LSE played one of the key roles in the first global capital market creation in Neal (2005). The LSE remained the world's most innovative stock exchange in the global capital market until recently in Neal (2005), however it gives up slowly to the Asian stock exchanges, because of the multiple impacts by the globalization process and the UK's Brexit political initiative.

The Paris Stock Exchange (PSE) represents the core of the financial securities exchange market in France since 1801 in Courtois (1855), Maddison (1875), Arbulu (1998a, b), Petit (2006), Hautcoeur, Riva (2007), Gallais-Hamonno, Georges (2007), Le Bris, Hautcoeur (2011). In the IXX-XX centuries, the Paris Stock Exchange evolved to become a stock exchange with the big perspectives for the European investors in Arbulu (1998a, b). Presently, the Paris Stock Exchange tries to attract the new public listed companies from the London Stock Exchange, attempting to become a new growing international center in Europe.

The New York Stock Exchange (NYSE) conducts its operations in New York, USA since 1817 in Shiryaev (1998a). The NYSE is one of the biggest companies' stock exchanges in the world, because of both: 1) it has one of the most advanced technical infrastructures, and it has an access to the biggest economy of the scale and the scope in the USA. The New York Stock Exchange was modernized extensively, implementing the several electronic trading technology upgrade phases in recent decades. The NYSE is regarded as a financial industry leader with the considerable expertise in the financial securities trading as explained in numerous analytic reports by the financial experts. Besides, in the present time, the NYSE works intensively to attract the new companies to conduct the IPO from mainland China, Hong Kong, Singapore, aiming to overcome the severe consequences of economic downturns in the USA such as the IT industry bubble crush in 2001 and the financial industry collapse in 2008.

The Tokyo Stock Exchange (TSE) was founded in Tokyo, Japan in 1878 in Hamao, Hoshi, Okazaki (2005). The TSE represents a most innovative platform for the companies' stock exchange, mainly dealing with the public listed companies in Japan. The relative isolation of the financial system in Japan from the rest of the World makes it difficult for the foreign companies to be listed at the TSE. The negative interest rates by the central bank in Japan are mainly stipulated by the presence of:

1. The high rate of the state budget deficit,

2. The practice of sales of the government bonds to the Japanese firms mainly, and

3. The lack of desire by the central bank to disseminate the Japanese Yen as a mean of payment around the World.

Therefore, a number of the listed foreign companies at the TSE is relatively small presently.

The global stock exchanges have various efficiencies of operations, which are mainly defined by the structure of organizational rules, listed companies valuations, national financial systems state and by some other factors in agreement with the theory of financial exchange organization in Davis, Neal (1998), Pirrong (1999, 2000). There is a considerable increase of the listing requirements for the companies at the global stock exchanges, aiming to make the companies as transparent as possible for the investors during the investment decision making process toward the investment portfolios building in Davis, Neal, White (2003), Elton, Gruber (1995). The global investors pursue a plenty of the different investment strategies at the modern stock exchanges, which can be characterized by the Return-on-Investment (ROI) and other parameters in Lowenfeld (1907, 1910), Gregory, Harris, Michou (2001). The most innovative stock exchanges include the Amsterdam, London, Melbourne, Frankfurt, Paris, Frankfurt, New York, Toronto, Tokyo, Shanghai, Hong Kong and Singapore stock exchanges in Hart, Moore (1996), Goetzmann, Ibbotson, Peng (2000), Le Bris, Hautcoeur (2011).

Today, the competition among the various stock exchanges for both 1) the public companies and 2) the investors increases exponentially as a result there is a trend toward the stock exchanges integration, which is realized by the means of the Mergers and Acquisitions (M&A) process between the different stock exchanges in Di Noia (2001). For example, the Amsterdam Stock Exchange merged with the Brussels Stock Exchange (BSE) and the Paris Stock Exchange to establish the Euronext in 2000 in Ledenyov D O, Ledenyov V O (2013f).

Let us sum up our discussion on the companies stock exchanges as an investment medium by saying that an accurate characterization of the stock market indexes trends dynamics in the conditions of the nonlinear capital flows during the electronic trading by the companies shares at the stock exchanges in the global capital markets becomes an important research task at our time in Ledenyov D O, Ledenyov V O (2013f). During the accurate characterization, the dependence of the stock market indexes on the company valuation, the dependence of the stock market indexes on the foreign currencies exchange rates, the dependence of the stock market indexes on the interest rates, the dependence of the stock market indexes on the strategic commodities, and the impact by the nonlinear capital flows on the stock market indexes must be taken to an account in Ledenyov D O, Ledenyov V O (2013f).

The trading of companies stocks at stocks exchanges around the World have been researched in Fama, Fisher, Jensen, Roll (1969), Fama (1970, 1998), Fama, French (1992, 1993, 1996), Fama, Hansen, French (2013), Akerlof (1970), Stoll, Curley (1970), Logue (1973), Logue, Rogalski, Seward, Foster-Johnson (2001), Reilly (1973), McDonald, Jacquillat (1974), Ibbotson, Jaffe (1975), Ibbotson (1975), Ibbotson, Sindeler, Ritter (1988, 1994), Benston, Smith (1976), Jensen, Meckling (1976), Jensen (1986), Miller (1977), Leland, Pyle (1977), Weinstein (1978), Kahneman, Tversky (1979), Wilson (1979), Brown, Warner (1980), Buckland, Herbert, Yeomans (1981), Milgrom (1981), Milgrom, Weber (1982), Myerson (1981), Baron (1982), Dretske (1983), Myers, Majluf (1984), Ritter (1984, 1987, 1991, 1998a, b, 2002, 2003a, b, 2005), Beatty, Ritter (1986), Loughran, Ritter (1995, 2002), Hamao, Packer, Ritter (1998), Kim, Ritter (1999), Chen, Ritter (2000), Ritter, Welch (2002), Ritter, Warr (2002), Kyle (1985), Amihud, Mendelson (1986), Amihud, Mendelson, Uno (1999), Amihud, Hauser, Kirsh (2001, 2003), Beatty, Ritter (1986), Beatty, Zajac (1994), Beatty, Welch (1996), Booth J, Smith (1986), Ridder (1986), Rock (1986), Shleifer, Vishny (1986), Shleifer, Wolfenzon (2002), Titman, Trueman (1986), Bernheim, Peleg, Whinston (1987), McAfee, McMillan (1987), Miller, Reilly (1987), Balvers, McDonald, Miller (1988), Johnson, Miller (1988), Tinic (1988), Allen, Faulhaber (1989), Barry (1989), Barry, Muscarella, Peavy, Vetsuypens (1990), Benveniste, Spindt (1989), Benveniste, Wilhelm (1990), Benveniste, Busaba, Wilhelm (1996), Benveniste, Busaba (1997), Benveniste, Wilhelm (1997), Benveniste, Erdal, Wilhelm (1998), Benveniste, Ljungqvist, Wilhelm, Yu (2003), Grinblatt, Hwang (1989), Koh, Walter (1989), Maskin, Riley (1989), Muscarella, Vetsuypens (1989a, b, 1990), Uhlir (1989), Welch (1989, 1992, 1996), Welch, Ritter (2002), Carter, Manaster (1990), Carter, Dark, Singh (1998), Clarkson, Thompson (1990), Husson, Jacquillat (1990), Levis (1990), Lucas, McDonald (1990), Sahlman (1990), Allen (1991), Hasbrouck (1991), Lee Ch M C, Shleifer, Thaler (1991), Megginson, Weiss (1991), Megginson, Smart (2009), Menon, Williams (1991), Spatt, Srivastava (1991), Cotter (1992), Hughes, Thakor (1992), Mauer, Senbet (1992), Aggarwal, Leal, Hernandez (1993), Aggarwal (2000), Aggarwal, Conway (2000), Aggarwal, Prabhala, Puri (2002), Aggarwal, Krigman, Womack (2002), Aggarwal (2003), Affleck-Graves, Hegde, Miller, Reilly (1993), Choe, Masulis, Nanda (1993), Back, Zender (1993), Back, Zender (2001), Chemmanur (1993), Chemmanur, Fulghieri (1997), Chemmanur, Fulghieri (1999), Chemmanur, Liu (2003), Chemmanur, Hu (2007), Chemmanur, Yan (2009), Chemmanur, He, Hu (2009), Chemmanur, He, Nandy (2010), Chemmanur, Krishnan (2012), Chemmanur, He (2012), Conrad, Kaul (1993), Dhatt, Kim, Lim (1993), Drake, Vetsuypens (1993), Figlewski, Webb (1993), Hanley (1993), Hanley, Wilhelm (1995), Hebner, Hiraki (1993), Jegadeesh, Weinstein, Titman (1993a), Jegadeesh, Weinstein, Welch (1993b), Keloharju (1993), Keloharju, Kulp (1996), Keloharju, Nyborg, Rydqvist (2004), Leleux (1993), Leleux, Muzyka (1997), Levis (1993), Levis (2004), Loughran (1993), Loughran, Ritter, Rydqvist (1994), Loughran, Ritter (1995), Loughran, Ritter (1997), Loughran, Ritter (2000), Loughran, Ritter (2002), Loughran, Ritter (2003), Loughran, Ritter (2004), Ruud (1993), Rydqvist (1993), Rydqvist, Högholm (1995), Vos, Cheung (1993), Friedlan (1994), Jain, Kini (1994), Jog, Srivastava (1994), Jog, McConomy (1999), Kunz, Aggarwal (1994), Lerner (1994), Michaely, Shaw (1994), Michaely, Womack (1999), Schultz, Zaman (1994), Schultz (2003), Degeorge (1995), Degeorge, Derrien, Womack (2005), Gerstein (1995), Gerstein (1996), Gompers (1995), Gompers, Lerner (1997), Gompers, Lerner (2001), Gompers, Lerner (2003a), Gompers, Lerner (2003b), Kim, Krinsky, Lee (1995), Spiess, Affleck-Graves (1995), Spiess, Pettway (1997), Spiess, Affleck-Graves (1999), Spiess, Affleck-Graves (1999), Zingales (1995), Barber, Lyon (1996a), Barber, Lyon (1996b), Barber, Lyon (1997), Barber, Odean (2008), Booth J R, Chua (1996), Booth J R, Booth L (2003), Borggreve, Dobrikat (1996), Brealey, Myers (1996), Brennan, Subrahmanyam (1996), Chowdhry, Sherman (1996), Chowdhry, Nanda (1996), Easley, Kiefer, O'Hara, Paperman (1996), Hazen (1996), Houston, James (1996), Houston, James, Karceski (2004), Kogut, Zander (1996), Kothari, Warner (1996), Kothari, Warner (1997), Kothari (2001), Lee P J, Taylor, Walter (1996a), Lee P J, Taylor, Walter (1996b), Lee P J, Taylor, Walter (1999), Nyborg, Sundaresan (1996), Pettway, Kaneko (1996), Périer (1996), Aussenegg (1997), Brav, Gompers (1997), Brav (2000), Brav, Geczy, Gompers (2000), Brav, Gompers (2002), Brav, Gompers (2003), Brennan, Franks (1997), Cai, Wei (1997), Carhart (1997), Datta, Iskandar-Datta, Patel (1997), Dechow, Sloan (1997), Dechow, Hutton, Sloan (1999), Dechow, Hutton, Sloan (2000), Ehrhardt (1997), Firth (1997), Gande, Puri, Saunders, Walter (1997), Gande, Puri, Saunders (1999), Gregg (1997), Huang, Stoll (1997), Kooli (2000), La Porta, Lopez-de-Silanes, Shleifer, Vishny (1997), La Porta, Lopez-de-Silanes, Shleifer, Vishny (1998), La Porta, Lopez-de-Silanes, Shleifer (2002), La Porta, Lopez-de-Silanes, Shleifer (2006), Lee I (1997), Ljungqvist (1997), Ljungqvist, Nanda, Singh (2001), Ljungqvist, Wilhelm (2002), Ljungqvist, Wilhelm (2003), Ljungqvist, Jenkinson, Wilhelm (2003), Ljungqvist, Marston, Wilhelm (2003), Ljungqvist, Nanda, Singh (2003), Ljungqvist, Nanda, Singh (2006), Ljungqvist (2006), Mikkelson, Partch, Shah (1997), Nanda, Youngkeol Yun (1997), Page, Reyneke (1997), Rajan, Servaes (1997a), Rajan, Servaes (1997b), Stehle (1997), Stehle, Ehrhardt (1999), Stehle, Ehrhardt, Przyborowsky (2000), Steib, Mohan (1997), Su, Fleisher (1997), Arkebauer (1998), Asquith, Jones, Kieschnick (1998), Ausubel, Cramton (1998a), Ausubel, Cramton (1998b), Black, Gilson (1998), Daniel, Hirshleifer, Subrahmanyam (1998), Goergen (1998), Goergen, Renneboog (2002), Helwege, Kleiman (1998), Helwege, Liang (2001), Helwege, Liang (2004), Kahn, Winton (1998), Malvey, Archibald (1998), Mello, Parsons (1998), Mok, Hui (1998), Pagano, Panetta, Zingales (1998), Pagano, Röell (1998), Paudyal, Saadouni, Briston (1998), Poon, Firth, Fung (1998), Rangan (1998), Reese (1998), Sapusek (1998), Stoughton, Zechner (1998), Taylor, Whittred (1998), Theoh, Welch, Wong (1998a), Theoh, Welch, Wong (1998b), Ansotegui, Fabregat (1999), Arcas, Ruiz (1999), Baker, Gompers (1999), Baker, Wurgler (2000), Baker, Gompers (2001), Baker, Nofsinger, Weaver (2002), Brown (1999), Cornelli, Goldreich (1999), Cornelli, Goldreich (2001), Cornelli, Goldreich (2002), Cornelli, Goldreich (2003), Cornelli, Goldreich, Ljungqvist (2006), Field (1999), Field, Hanka (2001), Field, Sheehan (2001), Field, Karpoff (2002), Field, Sheehan (2002), Field, Lowry (2009), Kandel, Sarig, Wohl (1999), Khurshed, Mudambi, Goergen (1999), Khurshed, Mudambi (2002), Krigman, Shaw, Womack (1999), Krigman, Shaw, Womack (2001), Lyon, Barber, Tsai (1999), Olson, Nelson (1999), Short, Keasey (1999), Stulz (1999), Stulz (2005), Stulz (2009), Subramanyam, Titman (1999), Thomas, Zhang (1999), Arosio, Giudici, Paleari (2000), Arosio, Giudici, Paleari (2001), Aussenegg (2000), Berkman, Bradbury, Ferguson (2000), Binmore, Swierzbinski (2000), Boehmer, Fishe (2000), Boehmer, Fishe (2001), Boehmer, Fishe (2005), Brailsford, Heaney, Powell, Shi (2000), Brailsford, Heaney, Shi (2004), Chen, Firth, Kim (2000), D'Mello, Ferris (2000), Draho (2000), Dunbar (2000), Dunbar, Foerster (2008), Duque, Almeida (2000), Eckbo, Masulis, Norli (2000), Eckbo, Norli (2001), Eckbo, Norli (2002), Eckbo, Norli (2005), Eckbo (2008), Ellis, Michaely, O'Hara (2000), Ellis, Michaely, O'Hara (2002), Fabrizio (2000), Foerster (2000), Gilbert, Klemperer (2000), Jain, Kini (2000), Kiymaz (2000), Koskie, Michaely (2000), Lewis, Seward, Foster-Johnson (2000), Löffler (2000), Reuschenbach (2000), Sapusek (2000), Schultz (2000), Schultz (2001), Schultz, Zaman (2001), Sinclair (2000), Sherman (2000), Sherman (2001), Sherman, Titman (2002) Sherman (2003), Smart, Zutter (2000), Stehle, Ehrhardt, Przyborowsky (2000), Westerholm (2000), Von Eije, de Witte, van der Zwaan (2000), Bernardo, Welch (2001), Bradley, Jordan, Ha-Chin Yi, Roten (2001), Bradley, Jordan (2002), Bradley, Jordan, Ritter (2003), Bradley, Jordan, Ritter (2008a), Bradley, Chan, Kim, Singh (2008b), Busaba, Benveniste, Guo (2001), Certo, Covin, Daily, Dalton (2001), Chan, Wang, Wei (2001), Cooney, Singh, Carter, Dark (2001), Daines, Klausner (2001), Danielsen, Sorescu (2001), Degeorge, Derrien (2001a), Degeorge, Derrien (2001b), Derrien, Womack (2002), Derrien (2005), Derrien, Kecskés (2006), Derrien (2007), DuCharme, Rajgopal, Sefcik (2001), Francis, Hasan (2001), Gerke, Fleischer (2001), Habib, Ljungqvist (2001), Hahn, Ligon (2004), Hansen (2001), Heaton (2001), Hoffmann-Burchardi (2001), Holmén, Högfeldt (2001), Houge, Loughran, Suchanek, Yan (2001), Jakobsen, Sørensen (2001), Jenkinson, Ljungqvist (2001), Jenkinson, Jones (2004), Jenkinson, Morrison, Wilhelm (2006), Jenkinson, Jones (2007), Killian, Smith, Smith (2001), Lowry, Schwert (2001), Lowry, Schwert (2002), Lowry, Shu (2002),Lowry (2003), Mager (2001), Maksimovic, Pichler (2001), Purnanandam, Swaminathan (2001), Rehkugler, Schenek (2001), Schatt, Roy (2001), Schatt, Broye (2003), Sentis (2001), Sentis (2002), Sentis (2004), Severin (2001), Stoughton, Wong, Zechner (2001), Torstila (2001), Torstila (2003), Van Bommel, Vermaelen (2001), Van Frederikslust, Van der Geest (2001), Vayanos (2001), Zhang (2004), Biais, Bossaerts, Rochet (2002), Biais, Faugeron-Crouzet (2002), Blondell, Hoang, Powell, Shi (2002), Brau, Francis, Kohers (2002), Brounen, Eichholtz (2002), Bulow, Klemperer (2002), Cheng, Mak, Chan (2002), Deloof, de Maeseneire, Inghelbrecht (2002), Easton, Taylor, Shroff, Sougiannis (2002), Easton (2004), Easton (2006), Easton, Sommers (2007), Faugeron-Crouzet, Ginglinger (2002), Filatotchev, Bishop (2002), Fishe (2002), Gao, Mao, Zhong (2002), Giudici, Roosenboom (2002), Giudici, Roosenboom (2005), Houge, Loughran, Suchanek, Xuemin Yan (2002), Kim, Kitsabunnarat, Nofsinger (2002), Kiss, Stehle (2002), Kutsuna, Okamura, Cowling (2002), Logue, Rogalski, Seward, Foster-Johnson (2002), Martimort (2002), Moerland (2002), Schiereck, Wagner (2002), Schuster (2002), Schuster (2003), Wang, Zender (2002), Xie (2002), Baginski, Wahlen (2003), Barondes, Nyce, Sanger (2003), Bartlett, Shulman (2003), Binay, Pirinsky (2003), Bourjade (2003, 2008), Clarke, Dunbar, Kahle (2003), Derrien, Womack (2003), Doeswijk, Hemmes, Venekamp (2005), Ellul, Pagano (2003), Goergen, Khurshed, McCahery, Renneboog (2003), Gounopoulos (2003), Gulati, Higgins (2003), Higgins, Gulati (2003), Hoberg (2003), Hong, Kubik (2003), Huyghebaert, Van Hulle (2003), Jelic, Briston (2003), Kaneko, Pettway (2003), Karolyi, Stulz (2003), Kraus, Burghof (2003), Lemmens (2003, 2007), Lemmens (2004, 2007), Manigart, de Maeseneire (2003), Neuhaus, Schremper (2003), Nounis (2003), Ofek, Richardson (2003), Peristiani (2003), Pham, Kalev, Steen (2003), Roosenboom, Van der Goot (2003), Roosenboom, Van der Goot, Mertens (2003), Roosenboom, Van der Goot (2005), Roosenboom (2007), Smart, Zutter (2003), Van Bommel, Vermaelen (2003), Van der Goot (2003), Weber, Willenborg (2003), Arugaslan, Cook, Kieschnick (2004), Bodnaruk, Kandel, Massa, Simonov (2004), Burrowes, Jones (2004), Cassia, Giudici, Paleari, Redondi (2004), Cassia, Paleari, Vismara (2004), Cassia, Vismara (2009), Chahine (2004a), Chahine (2004b), Chiang, Harikumar (2004), Cliff, Denis (2004), Corwin, Harris, Lipson (2004), Durnev, Morck, Yeung (2004), Fernando, Gatchev, Spindt (2004), Foerster (2004), Griffith (2004), Ganor (2004), Hahn, Ligon (2004), Hao (2004), Hoberg (2004), Kooli, Suret (2004), Kremer, Nyborg (2004a), Kremer, Nyborg (2004b), Kutsuma, Smith (2004), Lamont (2004), Lee M, Wahal (2004), Levy (2004), Lubig (2004), Mayhew, Mihov (2004), Mayhew, Mihov (2005), Mira (2004), Peggy, Wahal (2004), Pollock, Porac, Wade (2004), Pollock, Chen, Jackson, Hambrick (2005), Pritsker (2004), Pritsker (2004, 2005), Pritsker (2006), Purnanandam, Swaminathan (2004), Rath, Tebroke, Tietze (2004), Reuter (2004), Rice (2004), Rice (2006), Rindermann (2004), Sanders, Boivie (2004), Schenone (2004), Serve (2004), Alti (2005, 2006), Alvarez, Gonzalez (2005), Benninga, Helmantel, Sarig (20050, Berg, Neumann, Rietz (2005), Butler, Grullon, Weston (2005), Choo (2005), Corwin, Schultz (2005), Dolvin (2005), Drobetz, Kammermann, Wälchli (2005), Forestieri (2005), Hess (2005), Hurt (2005), Hurt (2006), Jagannathan, Gao (2005), Jain, Kini (2005), Jaskiewicz, Gonzàlez, Menéndez, Schiereck (2005), Khanna, Noe, Sonti (2005), Khanna, Noe, Sonti (2008), Li, McInish, Wongchoti (2005a), Li, Zheng, Melancon (2005b), LiCalzi, Pavan (2005), Malloy (2005), Nounis (2005), Pandey (2005), Parlour, Rajan (2005), Pastror, Veronesi (2005), Pastor, Taylor, Veronesi (2009), Pons-Sanz (2005), Sherman (2005), Yan (2005), Anand (2006), Aussenegg (2006), Aussenegg, Pichler, Stomper (2006), Boot A W A, Gopalan, Thakor (2006), Das, Guo, Zhang (2006), Damodaran (2006), Ellul, Pagano (2006), Gajewski, Gresse (2006), Goergen, Renneboog, Khurshed (2006), Hong (2006), Jagannathan, Sherman (2006), James, Karceski (2006), Pastor-Llorca, Poveda-Fuentes (2006), Tirole (2006), Trauten, Schulz (2006), Yung, Colak, Wang (2006), Zhang (2006), Arnold, Fishe, North (2007), Berkeley (2007), Doran, Jiang, Peterson (2007, 2009), Hopp, Dreherdo (2007), Jog, Sun (2007), Kerins, Kutsuna, Smith (2007), Leite (2007), Paleari, Vismara (2007), Paleari, Pellizzoni, Vismara (2008), Paleari, Ritter, Vismara (2010), Penman (2007), Thomas (2007), Toniato (2007), Zheng, Stangeland (2007), An, Chan (2008), Casotti, Motta (2008), Farina (2008), Hale, Santos (2008), Hild (2008), Kaustia, Knupfer (2008), Khurshed, Pande, Singh (2008), Khurshed, Paleari, Pande, Vismara (2011), Rossetto (2008), Kim, Weisbach (2008), Poudyal (2008), Yongyuan Qiao (2008), Yung, Colak, Wang (2008), Colak, Gunay (2011), Bouis (2009), Coakley, Hadass, Wood (2009), Deloof, De Maeseneire, Inghelbrecht (2009), Jiang, Leger (2009), Zhang (2009), Arikawa, Imad'eddine (2010), Bonardo, Paleari, Vismara (2010), Bonardo, Paleari, Vismara (2010), Caglio, Weiss-Hanley, Marietta-Westberg (2010), Cogliati, Paleari, Vismara (2010), Chod, Lyandres (2010), Deb, Marisetty (2010), Elston, Yang (2010), Guo, Brooks, Shami (2010), Hsu, Reed, Rocholl (2010), Hussinger (2010), Hussinger (2012), Jagannathan, Jirnyi, Sherman (2010), Pennacchio, Del Monte, Acconcia (2010), Acconcia, Del Monte, Pennacchio (2011), Pennacchio (2013), Sahoo, Rajib (2010), Shao, Wu, Qin, Wang (2010), Yao-Min Chiang, Hirshleifer, Yiming Qian, Sherman (2010), Adesoye, Atanda (2012), Boissin (2012), Cumming, Hass, Schweizer (2012), Datar, Emm, Ince (2012), Jacob (2012), Rodrigues, Stegemoller (2012), Saturnino, Saturnino, Lucena, Caetano, dos Santos (2012), Chang-Yi Hsu, Jean Yu, Shiow-Ying Wen (2013), Zhiqiang Hu, Yizhu Wang (2013), Lakicevic, Shachmurove, Vulanovic (2013), and by some other researchers.

Let us add a few words on the **firms' stock options exchange**, which is an investment medium for the firms' stock options trade/exchange by the experienced investors in the capital markets. The Chicago Board Options Exchange (CBOE) represents a main platform for the stock options trading in the USA. The operating rules for the Chicago Board Options Exchange (CBOE) are described in Chicago Board Options Exchange (1996).

6.4 Foreign currencies exchange as investment medium.

Moving to the next topic, we would like to continue our research discussion with a consideration on the **foreign currencies exchange**, which can also be described as one of the investment mediums in the capital markets in the finances in Ledenyov V O, Ledenyov D O (2016s).

The foreign currencies exchange markets have been established, pursuing a goal to facilitate the international trade by the goods and services between the various states with the different financial systems and the distinctive units of payment in XIX – XXI centuries in Ellis, Metzler (editors) (1949), Machlup (1949), Robinson (1949). Going from the research in Ellis, Metzler (editors) (1949), Machlup (1949), Robinson (1949)), we can definitely say that the growing international trade resulted in:

1. The constant need to exchange the foreign currencies;

2. The strong necessity to rate the foreign currencies;

3. The necessity to establish the foreign currencies exchange markets.

In our time, the global investors like to conduct the investments in the foreign currencies in the global capital markets, making their assumptions on the foreign currencies exchange rates trends dynamics as well as pursuing the only main goal to get the increased return premiums in the foreign currencies exchange markets in the short and long time periods in Goodhart (1992), Goodhart, Hall, Henry, Pesaran (1993), Goodhart, O'Hara (1995), Goodhart, O'Hara (1997).

As we already know, in the Schumpeterian technical and social innovations disruption age, there is a big number of unlimited opportunities toward a new era of the ultra high frequency electronic trading in the foreign currencies exchange markets has been created due to an increasing application of the computations processing in the range of ultra high frequencies in the modern finances in Ledenyov V O, Ledenyov D O (2016s).

Of course, there is a number of scientific methods for an accurate forecast of the foreign currencies exchange rates oscillations dynamics during the ultra high frequency electronic trading in the foreign currencies exchange markets in the short and long time periods in Ledenyov V O, Ledenyov D O (2016s). More specifically, the investors' assumptions on the FX rates can be significantly improved, using the modern techniques on a precise characterization on the foreign currencies exchange rates at the ultra high frequencies electronic trading in the foreign currencies exchange markets in the short and long time periods, which can be realized with an application of the mathematical, financial, electronic and quantum analysis methods in Ledenyov V O, Ledenyov D O (2016s).

The foreign currencies exchanges have been researched in Ellis, Metzler (editors) (1949), Machlup (1949), Robinson (1949), Friedman (1953), Baumol (1957), Debreu (1959), Fama (1965, 1970, 1984, 1998), Fama, Blume (1966), Fama, French (1988, 1996), Fama, Hansen, Shiller (2013), Demsetz (1968), Radner (1968), Bates, Granger (1969), Akerlof (1970), Arrow (1970), Black (1971, 1986), Black, Scholes (1973), Merton (1973), Newbold, Granger(1974), Fleming (1975), Shapiro (1975), Dooley, Shafer (1976), Dornbusch (1976, 1987), Frankel (1976, 1979, 1982a, b, 1983, 1992, (editor) 1993), Frankel, Froot (1987, 1990a, b, c), Frankel, Goldstein, Mason (1991), Frankel, Rose (1994, 1995), Frankel, Galli, Giovannini (editors) (1996), Frankel, Poonawala (2004), Garman (1976), Grossman (1976), Grossman, Stiglitz (1980), Grossman, Miller (1988), Kouri (1976), McKinnon (1976), Mussa (1976, 1979, 1981, 1984), Williamson (1976), Branson (1977), Branson, Halttunen, Masson (1977), Branson, Henderson (1985), Clark, Logue, Sweeney (editors) (1977), Girton, Henderson (1977), Cornell, Dietrich (1978), Cornell (1982), Stoll (1978, 1985, 1989, 1995, 1998, 2006), Huang, Stoll (1996, 1997), Stoll, Schenzler (2005), Blanchard (1979), Brunner, Meltzer (editors) (1979), Deardorff (1979), Goodman (1979), Aliber (1980, 2002), Allen, Kenen (1980), Amihud, Mendelson (1980), Amihud, Ho, Schwartz (editors) (1985), Amihud (1994a, b, c) Amihud, Levich (editors) (1994), Hansen, Hodrick (1980), Hellwig (1980, 1982), Krugman (1980, 1984, 1991, 1999), Krugman, Miller (1993), Callier (1981), Cohen, Maier, Schwartz, Whitcomb (1981), Cox, Ingersoll, Ross (1981), Diamond, Verrecchia (1981), Diamond (1982), Fieleke (1981), Ho, Stoll (1981, 1983), Loosignian (1981), Stigum (1981, 1990), Dooley, Isard (1982), Hansen (1982), Hodder (1982), Milgrom, Stokey (1982), Taylor D (1982), Bigman, Taya (editors) (1983), Copeland, Galai (1983), Dooley, Shafer (1983), Edwards (1983), French (1983), Garman, Kohlhagen (1983), Meese , Rogoff (1983a, b, 1988) Rogoff (1984, 1985, 1996), Meese (1986, 1990), Obstfeld, Rogoff (1995, 1998), Robinson (1983), Adler, Dumas (1984), Backus (1984), Bilson, Marston (editors) (1984), Booth (1984), Engel, Frankel (1984a, b), Engel, Hamilton (1990), Engel (1992, 1995, 1996, 1999), Devereux, Engel (1999, 2002), Devereux, Shi (2005), Engel, West (2004a b, 2005, 2006), Engel, Mark, West (2007), Garner, Shapiro (1984), Loopesko (1984), Roll (1984), French, Roll (1986), Roll (1988), White, Domowitz (1984), Bahmani-Oskooee, Das (1985), Cohen, Conroy, Maier (1985), Glosten, Milgrom (1985), Glosten, Harris (1988), Glosten (1989, 1994), Hakkio, Pearce (1985), Hardouvelis (1985), Jones, Kenen (editors) (1985), Kearney, Macdonald (1985), Kyle (1985, 1989), Kyle, Xiong (2001), Levich (1985), McInish, Wood (1985), Dominguez (1986, 1990, 1992, 1993, 1998, 2003a, b), Dominguez, Frankel (1993a, b, c), Bollerslev (1986, 1990), Baillie, Bollerslev (1989 1990, 1991), Bollerslev, Chou, Jayaraman, Kroner (1990), Bollerslev, Domowitz (1991, 1993), Bollerslev, Melvin (1994), Andersen, Bollerslev (1994, 1998), Bollerslev, Engle, Nelson (1995), Bollerslev, Cai, Song (2000), Andersen, Bollerslev, Diebold, Labys (2000, 2001, 2003), Andersen, Bollerslev, Diebold, Vega (2001, 2003), Andersen, Bollerslev, Diebold (2007), Engle (1982) Engle, Bollerslev (1986), Engle, Granger (1987), Engle, Rodriguez (1989), Engle, Ito, Lin Wen-Ling (1990), Engle, Russell (1995), Engle, Gallo (2006), Evans (1986), Flood, Lessard (1986), Grammatikos, Saunders, Swary (1986), Harris (1986, 1990), Hart, Kreps (1986), Lyons (1986, 1988, 1990, 1991, 1992, 1993a, b, c, 1994, 1995, 1996a, b, 1997a, b, c, 1998a, b, 2001, 2002a, b, 2003, 2006), Baldwin, Lyons (1994), Lyons, Rose (1995), Fan, Lyons (2001, 2003), Killeen, Lyons, Moore (2001), Killeen, Hau, Moore (2001), Killeen, Lyons, Moore (2006), O'Hara, Oldfield (1986) , Burdett, O’Hara (1987), O'Hara (1995, 1998), Shleifer (1986), Shleifer, Summers (1990), Sweeney (1986), DeLong, Shleifer, Summers, Waldmann (1990), Bilson, Hsieh (1987), Glassman (1987), Gerlach (1987), Hasbrouck, Ho (1987), Hasbrouck (1988, 1991), Hasbrouck, Sofianos (1993), Hasbrouck, Seppi (2001), Hodrick (1987), Ito, Roley (1987, 1990), Canova, Ito (1991), Ito, Engle, Lin (1992), Ito, Lin (1992), Ito, Isard, Symansky, Bayoumi (1996), Ito, Lyons, Melvin (1998), Ito (2002, 2005a, b), Ito, Hashimoto (2006), Mendelson (1987), Newey, West (1987), Rubinstein, Wolinsky (1987), Taylor (1987, 1989, 1995, 2005), Allen, Taylor (1989), Taylor, Allen (1992), Sarno, Taylor (2000, 2001a, b), Sager, Taylor (2005, 2006, 2008), Reitz, Taylor (2006), Schulmeister (1987), Melvin, Taylor (2009), Newey, West (1987), Wolff (1987), Admati, Pfleiderer (1988, 1989), Boothe (1988), Choi, Salandro, Shastri, Clinton (1988), Goodhart (1988, 1989, 1992), Goodhart, Demos (1990, 1991a, b), Goodhart, Curcio (1991), Goodhart, Figliuoli (1991), Goodhart, Hall, Henry, Pesaran (1993), Goodhart, Hesse (1993), Goodhart, Ito, Payne (1995, 1996), Goodhart, O'Hara (1995), Goodhart, O'Hara (1997), Goodhart, Love, Payne, Rime (2002), Hardouvelis (1988), Lewis (1988, 1995), Baldwin, Krugman (1989), Baxter, Stockman (1989), Dooley, Lizondo, Mathieson (1989), Giovannini (1989), Golub (1989), Humpage (1989), Leach, Madhavan (1989), Leahy (1989), Miller, Eichengreen, Portes (editors) (1989), Van Hagen (1989), Allen, Taylor (1990), Allen, Karjalainen (1999), Courakis, Taylor (1990), Diebold, Nason (1990), Flood, Hodrick (1990), Flood, Rose (1995), Flood, Taylor (1996), Flood, Marion (2001), Foster, Viswanathan (1990), Foster, Viswanathan (1993), Holthausen, Leftwich, Mayers (1990), De Long, Shleifer, Summers, Waldmann (1990), Domowitz (1990, 1993), Domowitz, Steil (1999), Johansen, Juselius (1990), Johansen (1991, 1992), Jorion (1990, 1991, 1996), Lo, MacKinley (1990), Melino, Turnbull (1990, 1995), Mishkin (1990), Müller, Dacorogna, Olsen, Pictet, Schwarz, Morgenegg (1990), Müller, Dacorogna, Dave, Pictet, Olsen, Ward (1993), Müller, Dacorogna, Dave, Olsen, Pictet, von Weizsäcker (1995), Roell (1990), Seppi (1990), Bali (1991), Bhattacharya, Spiegel (1991), Black (1991), Bossaerts, Hillion (1991), Burnham (1991), Campbell, LaMaster, Smith, Van Boening (1991), Campbell, Lo, MacKinlay (1997), Chinn (1991), Chinn, Meese (1995), Chowdhry, Nanda (1991), Edwards (1991), Froot, Obstfeld (1991), Froot, Rogoff (1995), Froot, Ramadorai (2002), Froot, Donohue (2004), Froot, Ramadorai (2005), Georg, Kaul, Nimalendran (1991), Grabbe (1991), Harvey, Huang (1991), Khonry (editor) (1991), Kim, Verrecchia (1991, 1994, 1997), Klein (1991), Klein, Rosengren (1991), Lease, Masulis, Page (1991), LeBaron (1991), Lee, Ready (1991), Messe, Rose (1991), Subrahmanyam (1991), Spiegel, Subrahmanyam (1992, 1995), Williamson (1991), Bekaert, Hodrick (1992), Choi, Elyasiani, Kopecky (1992), Choi, Elyasiani (1997), Curcio, Goodhart (1992), Curcio, Goodhart, Guillaume, Payne (1997), De Grauwe, Decupere (1992), De Grauwe, Grimaldi (2006a, b), Edison (1992, 1993, 2003), Edison, Liang (1999), Flood (1992, 1994), Flood, Rose (1995), Flood, Huisman, Koedijk, Mahieu (1996, 1998), Gosh (1992), Guillaume, Dacorogna, Dave, Muller, Olsen, Hamon, Jacquillat (1992), Guillaume, Pictet, Dacorogna (1995), Guillaume, Dacorogna, Dave, Muller, Olsen, Pictet (1997), Hansen (1992), Holden, Subrahmanyam (1992), Neal (1992), Pesaran, Samiei (1992), Rhee, Chang, Svensson (1992, 1993), Bertola, Svensson (1993), Rose, Svensson (1994), Taylor S J (1992), Zhou (1992a, b, 1997), Bank for International Settlements (1993, 1999a, b, 2001, 2002, 2004 2005, 2007, 2010), Bertola, Svensson (1993), Biais (1993), Chan, Weinstein (1993), Cheung (1993), Cheung, Ng (1996), Cheung, Chinn (1998, 2001), Cheung, Wong (1999, 2000), Cheung, Chinn, Marsh (2004), Cheung, Chinn, Pascual (2004, 2005), Dacorogna, Muller, Nagrel, Olsen, Pictet (1993), Dacorogna, Muller, Pictet, de Vries (1995), Dominguez, Frankel (1993), Dominguez (1998, 2006), Dominguez, Panthaki (2006), Ederington, Lee (1993), Edin, Vredin (1993), Goldstein, Folkerts-Landau, Garber, Rojas-Suarez, Spencer (1993), Griffiths, White (1993), Grimes (1993), Harris, Raviv (1993), Klein (1993), Levich, Thomas (1993), Matsuyama, Kiyotaki, Matsui (1993), Romer (1993), Schmidt, Iversen, Treske (1993), Schmidt, Iversen (1993), Schmidt, Oesterhelweg, Treske (1996), Wolinsky (1990), Ammer, Brunner (1994), Andrew, Broadbent (1994), Bakker, Boot, Sleijpen, Vanthoor (editors) (1994), Bartov, Bodnar (1994, 1995), Berry, Howe (1994), Bessembinder (1994), Ball, Roma (1994), Brousseau, Czarnecki (1994), De Jong (1994), De Jong, Nijman, Röell (1995), De Jong, Nijman, Röell (1996), De Jong, Mahieu, Schotman (1998), De Jong, Ligterink, Macrae (2006), De Jong, Verschoor, Zwinkels (2010), Degryse, de Jong, van Kervel (2011), Dini (1994), Fialkowski, Petersen (1994), Glass (1994), Grünbichler, Longstaff, Schwartz (1994), Hansch, Naik, Viswanathan (1994), Hirschleifer, Subrahmanyam, Titman (1994), Hogan, Melvin (1994), Jones, Kaul, Lipson (1994), Jones, Lipson (1999), Kraus, Smith (1994), Massib, Phelps (1994), Mendelson, Peake (1994), Naidu, Rozeff (1994), Nieuwland, Verschoor, Wolff (1994), Pictet, Dacorogna, Muller, De Vries (1994), Sharpe (1994), Silber (1994), Slezak (1994), Szpiro (1994), Yadav, Pope, Paudyal (1994), Walsh (1994), Wei (1994), Watanabe (1992), Watanabe, Harada (2004), Watanabe, Yabu (2007), Almekinders (1995), Chiang, Jiang (1995), Dumas, Solnik (1995), Ederington, Lee (1995), Evertsz (1995), Faruqee (1995), Frino, McCorry (1995), Frino, McInish, Toner (1998), Ghysels, Jasiak (1995), Grossman, Rogoff (1995), Havrilesky (1995), Hong, Wang (1995), Isard (1995), Kandel, Pearson (1995), Lewis (1995), Lin, Sanger, Booth (1995), Mantegna, Stanley (1995), Mark (1995, 2001, 2009), Mark, Wu (1998), Obstfeld, Rogoff (1995, 1998), Osler (1995, 1998, 2000, 2003, 2005, 2006, 2008, 2009, 2012), Carlson, Osler (1999, 2005), Kevin, Osler (1999), Osler, Vandrovych (2009), Osler, Yusim (2009), Osler, Mende, Menkhoff (2011), Osler, Savaser (2011), Dahl, Carlson, Osler (2011), Peiers (1995), Prasad, Rajan (1995), Schnidrig, Würtz (1995), Schwartz (editor) (1995), Shyy, Lee (1995), Shyy, Vijayraghavan, Scott-Quinn (1996), Vivex (1995), Zaheer, Zaheer (1995), Bonser – Neal, Tanner (1996), Claassen (1996), Danker, Haas, Henderson, Symanski, Tryon (1996), Dukas, Fatemi, Tavakkol (1996), Dwyer, Locke, Yu (1996), Easley, Kiefer, O'Hara, Paperman (1996, 1997a, b), Easley, O'Hara, Srinivas (1998), Flemming, Ostdiek, Whaley (1996), Gagnon (1996), Ghashghaie, Breymann, Peinke, Talkner, Dodge (1996), Hsieh, Kleidon (1996), Ingersoll (1996), Kaminsky, Lewis (1996), LeBaron (1996), MacDonald, Marsh (1996), Madrigal (1996), Mosekilde (1996), Pirrong (1996), Rosenberg (1996), Tsang (1996, 1998, 1999a, b), Tsang, Sin, Cheng (1999), Tsang, Yue (2002), Vermeiren, Ková (1996), Balke, Fomby (1997), Balke, Wohar (1998), Bhattacharya, Weller

(1997), Campbell, Lo, MacKinlay (1997), Campbell, Viceira (2002), Chamberlain, Howe, Popper (1997), Clarida, Taylor (1997), Clarida, Sarno, Taylor, Valente (2003), Copejans, Domowitz (1997), DeGennaro, Shrieves (1997), Dewachter (1997, 2001), Dewachter, Lyrio (2005), Embrechts, Klueppelberg, Mikosch (1997), Evans (1997, 2001, 2002, 2005, 2009, 2010, 2011), Evans, Lyons (1999, 2001a, b, c, 2002a, b, c, d, 2003, 2004a, b, 2005a, b, c, d, 2006, 2007, 2008, 2009), Cao, Evans, Lyons (2003), Evans, Hnatkovska (2005), Fleming, Remolona (1997, 1999), Fleming (2002, 2003), Franke, Hess (1997), Goldberg, Tenorio (1997), Gosh, Ostry, Gulde, Wolf (1997), Harris, Schultz (1997), Hartmann (1997, 1998a, b, 1999), Hung (1997), Kirilenko (1997), Lamoureux, Schnitzlein (1997), Madhavan, Smidt (1991, 1993), Leach, Madhavan (1993), Keim, Madhavan (1996), Madhavan, Cheng (1997), Madhavan, Richardson, Roomans (1997), Madhavan, Sofianos (1997), Madhavan (2000a, b, c), Martens (1997), Montiel (1997), Pagano, Roell (1997), Peiers (1997), Reiss, Werner (1997), Sweeney (1997, 2000), Szakmary, Mathur (1997), Vogler (1997), Wei, Kim (1997), Werner (1997), Wren-Lewis (1997), Abhyankar (1998), Abrams, Beato (1998), Anthony, MacDonald (1998, 1999), Bjønnes, Rime (1998, 2001, 2005), Bjønnes, Rime, Solheim (2005), Bjønnes, Osler, Rime (2011), Blennerhasset, Bowman (1998), Bodnar, Hayt, Marston (1998), Caramazza, Aziz (1998), Chang, Taylor (1998), Choi, Hiraki, Takezawa (1998), Chow, Chen (1998), Clark, Macdonald (1998), Covrig, Melvin (1998), Eddelbuttel, McCurdy (1998), Edison (1998), Fleming, Kirby, Ostdiek (1998), Garfinkel, Nimalendran (1998), George (1998), Hansch, Naik, Viswanathan (1998), Hau (1998), Hau, Killeen, Moore (2000, 2002a, b), Hau, Rey (2002, 2003), He, Ng (1998), Helpman, Sadka (1998), Hong Kong Monetary Authority (1998), Isard, Faruqee (1998), Isard, Faruqee, Kincaid, Fetherston (2001), Kanas (1998), Lee (1998), Litterman, Winkelmann (1998), Lui, Mole (1998), Menkhoff (1998, 2010), Gehrig, Menkhoff (2000, 2004), Mende, Menkhoff (2003, 2006), Menkhoff, Taylor (2007), Frömmel, Mende, Menkhoff (2008), Menkhoff, Schmeling (2008, 2010), Miller, Reuer (1998), Miville, DiMillo (1998), Nagayasu (1998), Neely (1998, 2000a, b, 2004, 2005), Pesaran, Hasem, Smith (1998), Portes, Rey (1998), Rey (2001), Reiss, Werner (1998), Sarkar, Tozzi (1998), Viswanathan, Wang (1998, 2000), Vitale (1998, 1999, 2000, 2003, 2004, 2006) Yao (1998), Alberola, Cervero, Lopez, Ubide (1999), Bos, Fetherstone (1999), Carrera (1999), Chaboud, LeBaron (1999, 2001), Chaboud, Humpage (2005), Chaboud, Chernenko, Wright (2008), Chaboud, Chiquoine, Hjalmarsson, Vega (2009), Chaboud, Chiquoine, Hjalmarsson, Loretan (2009), Fiess, MacDonald (1999, 2002), Fleming, Lopez (1999), Freihube, Kehr, Krahnen, Theissen (1999), Grammig, Schiereck, Theissen (1999), Isard, Razin, Rose (1999), Jeanne, Rose (1999), Kandel, Marx (1999), LeBaron (1999), Marks (1999), Macey, O'Hara (1999), Naik, Neuberger, Viswanathan (1999), Naik, Yadav (1999), Payne (1999, 2003), Payne, Vitale (2003), Moore, Payne (2011), Love, Payne (2004, 2008), Rigobon (1999), Saar (1999), Scalia, Vacca (1999), Scalia (2004, 2008), Shapiro, Varian (1999), Theissen (1999), Vayanos (1999, 2001), Wang (1999), Aliber, Chowdhry, Yan (2000), Ausloos (2000), Baillie, Humpage, Osterberg (2000), Carlson, Osler (2000), Carlson (2002), Ebrahim (2000), Eichengreen, Mathieson (2000), Greenspan (2000), Hüfner (2000), Franke, Hess (2000), Fujiwara (2000), Kanas (2000), Kaul, Mehrotra, Morck (2000), Kim, Kortian, Sheen (2000), Kim, Sheen (2002), Kim (2003), Lane, Milesi-Ferretti (2000), Lo (2000), Lee, Swaminathan (2000), Ma, Kanas (2000), Ma, Tsang, Yiu, Wai-Yip Alex Ho (2010), Martin (2000), Martin, Mauer (2003, 2005), McCallum (2000), Melvin M, Yin (2000), Melvin M, Melvin B P (2003), Melvin M, Taylor (2009), Naranjo, Nimalendran (2000), Ng (2000), Ramaswamy, Samiei (2000), Rime (2000, 2001, 2003), Akram, Rime, Sarno (2005), Rime, Sarno, Sojli (2006, 2007, 2010), Schwartz (2000), US General Accounting Office (2000), Allayannis, Ofek (2001), Anderson, Vahid (2001), Brandt, Edelen, Kavajecz (2001), Brown (2001), Cai, Cheung, Lee, Melvin (2001), Claessens, Forbes (2001), Clark, McCraken (2001), Collins, Rodrik (2001), Corsetti, Pesenti, Roubini (2001), Coval, Shumway (2001), Croushore, Stark (2001), Dacorogna, Gencay, Mueller, Olsen, Pictet (2001), D'Souza (2001), Duarte, Stockman (2001), Fischer (2001), Galati (2001), Griffin, Stulz (2001), Guembel, Sussman (2001), Hong (2001), Lane (2001), Montgomery, Popper (2001), Moore, Roche (2001, 2002), Rey (2001), Sato, Hawkins (2001), Sinn, Westermann (2001), Tse, Zabotina (2001), Williamson (2001), Yamaguchi (2001), Aguiar (2002), Beine (2002), Cavallo, Perri, Roubini, Kisselev (2002), Chari, Kehoe, McGrattan (2002), Chari (2006), Chordia, Roll, Subrahmanyam (2002), Covrig, Melvin (2002), Daníelsson, Payne (2002, 2011), Danielsson, Payne, Luo (2002), Daníelsson, Love (2006), Deutsche Bundesbank (2002), Doyne, Joshi (2002), Fatum, Hutchison (2002), Fatum, King (2005), King, Sarno, Sojli (2010), King, Rime (2010), King, Mallo (2010), King, Osler, Rime (2011a, b, 2012), Kantelhardt, Zschiegner, Koscielny-Bunde, Havlin, Bunde, Stanley (2002), Galati (2002), Girardin, Horsewood (2002), Huang, Cai, Jeanne, Rose (2002), Kaul, Mehrotra (2002), Obadan (2002), Ryan, Worthington (2002), Abreu, Brunnermeier (2003), Aliber, Chowdry, Yan (2003), Bacchetta, van Wincoop (2003), Bergsten, Williamson (2003), Bodnar, Wong (2003), Burstein, Neves, Rebelo (2003), Carpenter, Wang (2003), Derviz (2003), Dominguez (2003), Dominguez, Panthaki (2006), Doukas, Hall, Lang (2003), Fatum, Hutchison (2003), Fatum, Hutchison (2006), Faust, Rogers, Wright (2003), Gordon (2003), Humpage (2003), Koutmos, Martin (2003), Laurenceson, Chai (2003), Mathisen (2003), Okunev, White (2003), Peng, Shu, Chow (2003), Rogers, Siklos (2003), Spiegel (2003), Westerhoff (2003), Wright (2003), Aitken, Frino, Hill, Jarnecic (2004), Anwar (2004), Bacchetta, van Wincoop

(2004, 2006), Bartram (2004), Bartram, Bodnar (2004), Bartram, Brown, Minton (2005), Bartram, Karolyi (2006), Bhanumurthy (2004), Brandt, Kavajecz (2004), Breedon, Vitale (2004), Cashin, Cespedes, Sahay (2004), Choi, Baek (2004), De Wet, Gebreselasie (2004), Dunne, Hau, Moore (2004), Fratzscher (2004), Hahm (2004), Hui, Neely, Higbee (2004, 2007), Hui, Yeung, Fung, Lo (2007), Hui, Fong (2007), Hui, Genberg, Chung (2009), Kim, Yoon (2004), Nagayasu (2004), National Bank of Poland (2004, 2007), Reinhart, Rogoff (2004), Rigobon, Sack (2004), Simatele (2004), Akram, Rime, Sarno (2005), Ates, Wang (2005), Bauwens, Omrane, Giot (2005), Campa, Goldberg (2005, 2006a, b), Chui, Gerlach, Yu (2005), DeGrauwe (editor) (2005), Dueker, Neely (2005), Eichengreen (2005), El-Shagi, Rübel (editors) (2005), Fung, Lien, Tse, Tse (2005), Hau, Rey (2005), Inoue, Kilian (2005), Marsh, O'Rourke (2005), Newsome (2006), Vaubel (2005), Yu, Fung, Hongyi (2005), Alexander, Barbosa (2006), Bacchetta, van Wincoop (2006), Bayoumi, Lee, Jayanthi (2006), Boyen, Van Norden (2006), Cai, Howorka, Wongswan (2006), Cai, Howorka, Wongswan (2008), Cao, Evans, Lyons (2006), Carlson, Lo (2006), Charlebois, Sapp (2006), Chu, Mo, Wong, Lim (2006), Gilbert, Rijken (2006), Jeon, Oh, Yang (2006), Escribano, Pascual (2006), Kaul, Sapp (2006), Killeen, Lyons, Moore (2006), Kim, Lee, Shin (2006), Kočenda, Valachy (2006), Kočenda, Kutan, Yigit (2008), Kočenda, Poghosyan (2009), LeBaron (2006), Mende (2006), Mende, Menkhoff (2006), Muller, Verschoor (2006), Norouzzadeh, Rahmani (2006), Pelham (2006), Rodrik (2006), Sager, Taylor M P(2006), Starks, Wei (2006), Tabak, Cajueiro (2006), Taylor A, Farstrup (2006) Taylor J B (2006), Tesfatsion, Judd (editors) (2006), Wong (2006), Adebiyi (2007), Barker (2007), Bhansali (2007), Broz, Frieden, Weymouth (2007), Burnside, Eichenbaum, Rebelo (2007, 2009), Burnside (2012), Canto, Kräussl (2007), Chi, Tripe, Young (2007), Christodoulou, O'Connor (2007), Dreher, Vaubel (2007), DuCharme (2007), Egstrup, Fischer (2007), Fleming, Mizrach (2007), Fung, Yu (2007), Genberg, He, Leung (2007a, b), Genberg, Hui (2009), Hong Kong Monetary Authority (2007), Jiang, Ma, Cai (2007), Leung, Ng (2007, 2008), Mitchell, Pedersen, Pulvino (2007), Pasquariello (2007), Sahminan (2007), Scarlat, Stan, Cristescu (2007), Van Wincoop, Tille (2007), Wong J, Wong E, Fong, Choi (2007), Wong E, Wong J, Leung (2008), Yu, Fung, Tam (2007), Acemoglu, Rogoff, Woodford (editors) (2008), Baglioni, Monticini (2008), Barndorff-Nielsen, Hansen, Lunde, Shephard (2008), Bartram (2008), Beaupain, Durré (2008), Berger, Chaboud, Chernenko, Howorka, Wright (2008), Brunnermeier, Nagel, Pedersen (2008), Burnside (2008), Burnside, Eichenbaum, Kleshchelski, Rebelo, Hall L, Hall H (2008), Chinn, Moore (2008, 2011), Gagnon, Chaboud (2008), Lam, Fung, Yu (2008), Lien (2008), Lindley (2008), Liu, Tsang (2008), Liu, Fung, Tse (2008), Lo, Sapp (2008, 2010), Ramadorai (2008), Sebastião (2008), Terada, Higashio, Iwasaki (2008), Adrian, Etula, Shin (2009), Bacchetta, Mertens, Van Wincoop (2009), Baba, Packer (2009), Brunnermeier, Nagel, Pedersen (2009), Brunnermeier, Crockett, Goodhart, Persaud, Shin (2009), Bubák, Zikes (2009), Bubák, Kočenda, Žikeš (2010), De Zwart, Markwat, Swinkels, van Dijk (2009), Ding (2009), Gallardo, Heath (2009), Gençay, Gradojevic (2009), Jiang, Zhou (2009), Hattori, Shin (2009), He, Zhang, Wang (2009), Heath, Whitelaw (2011), McGuire, von Peter (2009), Meyers (2009), Muller, Verschoor (2009), Nolte I, Nolte S (2009, 2011), Serban (2009), Simwaka, Mkandawire (2009), Breedon, Vitale (2010), Breedon, Rime, Vitale (2011), Dunne, Hau, Moore (2010), Fukuda, Kon (2010), Liu, Qian, Lu (2010), Maurer, Schäfer (2010), Nightingale, Ossolinski, Zurawski (2010), Pasquariello (2010), Yiu, Ho, Ma, Tsang (2010), Diamond (2011), Durčáková (2011), Heimer, Simon (2011), Marzo, Zagaglia (2011), Moore, Payne (2011), Plantin, Shin (2011), Rafferty (2011), Wang, Wu, Pan (2011), Banti, Phylaktis, Sarno (2012), James, Marsh, Sarno (editors) (2012), Mancini, Ranaldo, Wrampelmeyer (2012), Sheng (2012a, b, 2014), Trenca, Plesoianu, Căpusan (2012), Wang, Yu, Suo (2012), Lassmann (2013), Ledenyov V O, Ledenyov D O (2016s).

6.5 Financial securities exchange as investment medium.

The high investment culture among the private/institutional investors is a golden key to the long-term prosperity of the economy of the scale and the scope. As we know the investors frequently like to invest the financial capital into the numerous financial securities with the help of various investment vehicles in the different investment mediums such as the **financial securities exchanges** in the capital markets in the finances.

Actually, there are the two big groups of the financial securities exchanges, where the most innovative investment products such as the financial securities, including the credit derivatives, are traded among the financial dealers/organizations in Heckinger, Mengle (2013), Steigerwald (2013), Heckinger, Ruffini, Wells (2014):

1. The over-the-counter (OTC) derivatives exchanges, where the derivatives contracts (the swaps) are confidently negotiated/exchanged between the counterparties. All the OTC derivatives contracts are cleared/settled on the bilateral basis or on the Counterparty Clearing House basis;

2. The listed derivatives exchanges, where the derivatives contracts are openly traded/exchanged among all the interested parties.

The financial futures derivatives contracts were openly traded/exchanged at the Chicago Mercantile Exchange since 1972. Presently, the financial derivatives contracts are traded at in Heckinger, Mengle (2013), Steigerwald (2013), Heckinger, Ruffini, Wells (2014):

1. The Chicago Mercantile Exchange (Group CME Group);

2. The Chicago Board Options Exchange (CBOE);

3. The Deutsche Börse AG;

4. The European Exchange (Eurex);

5. The Hong Kong Stock Exchange;

6. The London Stock Exchange (LSE);

7. The Moscow International Currency Exchange (MICEX-RTS);

8. The National Stock Exchange of India (NSEI);

9. The New York Stock Exchange (NYSE Euronext);

10. The Singapore Stock Exchange;

11. The Tokyo Stock Exchange (TSE);

12. The Toronto Stock Exchange (TSE).

The statistics on the trading by the financial derivatives contracts is conducted by the World Federation of Exchanges (WFE).

The financial securities exchanges, including the listed derivatives exchanges, have been researched in Knight (1921), Fisher, Tippett (1928), Working (1948), Modigliani, Miller (1958), Borch (1960, 1961, 1962), Sharpe (1964), Akerlof (1970), Cox (1972), Black, Scholes (1973), Black, Cox (1976), Fama, MacBeth (1973), Merton (1974a, b), Jaffee, Russel (1976), Leland, Pyle (1977), Leland (1994), Stiglitz, Weiss (1981, 1983), Diamond (1984, 1991), Diamond, Rajan (2000), Fama (1985), Blazenko (1986), James (1987), Rudolph (1987, 1994), Berger, Udell (1990), Cronon (1991), Hellwig (1991), Berlin (1992), Heath, Jarrow, Morton (1992), Dewatripont, Tirole (1993), Froot, Scharfstein, Stein (1993), Froot, Stein (1998), Cocheo (1994), Figlewski (Summer 1994), Hull, White (1994a, b, 1996, 2000, 2001, 2004, 2005a, b, 2008), Hull, Predescu, White (2004), Hull (2013, January 25 2014), Jarrow, Lando, Turnbull (1994), Jarrow, Turnbull (1995, 2000a, b), Jarrow, Lando, Turnbull (1997), Jarrow (2001), Jarrow, Yu (2001), Jarrow, Yildirim (2002), McAllister, Mingo (May 1994), Neuberger (1994), Das (Spring 1995, 1998a, b, 2000), Das, Hanouna, Sarin (2009), Edwards (August 1995), Gorton, Pennacchi (1995), Gorton, Winton (1998), Gorton, Souleles (2005), Hasbrouck (1995), Longstaff, Schwartz (June 1995a, b), Longstaff, Mithal, Neis (August 2003), Longstaff, Mithal, Neis (2005), Longstaff, Rajan (2008), Whittaker, Kumar (1995), Whittaker, Frost (May 1997), Altman (September 1996), Duffee (1996), Duffee, Zhou (February 1997, November 1999, 2001), Duffie (1996a b, 1999, July 2008), Duffie, Singleton (1999, 2002), Duffie, Pan, Singleton (November 2000), Duffie, Gârleanu (2001), Duffie, Lando (2001), Duffie, Gârleanu (2003), Duffie, Filipovic, Schachermayer (2003), Hattori (1996), Hyder, Bolger, Leung (July 1996), Neal (May

1996), Neal, Rolph (1999), Reoch, Masters (March 1996), Schönbucher (August 1996, 1997, Fall 1999, 2000a, b, 2003, 2006), Smithson, Holappa, Rai (June 1996), Drzik, Kuritzkes (July 1997), Freixas, Rochet (1997), Géczy, Minton, Schrand (1997), Hill (1997), Hüttemann (1997, 1998), Joe (1997), Kaufman (1997), Mahtani (August 23 1997), Ogden (1997), Wilson (September 1997a, October 1997b), Burghof, Henschel (1998), Burghof, Henke, Rudolph, Schönbucher, Sommer (2005), Henke, Burghof, Rudolph (1998), Fabozzi (January 1998), Fabozzi, Davis, Choudhry (October 20 2006), Fabozzi, Kothari (2007), Lancaster, Schultz, Fabozzi (April 25 2008), Fabozzi (January 16 2012), Lando (1998, 2004), Scott–Quinn, Walmsley (1998), Steinherr (1998), Tavakoli (1998, 2001, 2003), Arvanitis, Gregory, Laurent (Spring 1999), DeMarzo, Duffie (1999), DeMarzo (2005), Gauvin (September 8 1999), Heidorn (1999), Embrechts, McNeil, Straumann (1999), Embrechts, Lindskog, McNeil (2001), Master, Bryson (1999), Nelken (1999), Rappoport (1999), Staehle, Cumming (1999), Allen, Gale (2000), Allen , Carletti (2006), British Bankers' Association (2000), Brewer, Minton, Moser (2000), Kiff, Morrow (Autumn 2000), Kiff, Michaud, Mitchell (2002, June 2003a, b), Li (2000), Müller (2000), Saunders (2000), Wahl, Broll (2000), Arvantis, Gregory (Jon 2001), Bomfim (July 11 2001), Cossin, Hricko (May 2001), Collin-Dufresne, Goldstein, Martin (2001), Craddock, Platen (June 28 2001), Delianedis, Geske (2001), Elton, Gruber, Agrawal, Mann (2001), Giesecke (2001, 2002, 2003, 2004, 2006), Giesecke, Weber (2003), Giesecke, Goldber (2004), Goodman (2001), Lopez (2001), Lucas, Klaassen, Spreij, Staetmans (2001), Mashal, Naldi (2001), Ranciere (2001), Rehm (2001), Rule (June 2001), Schmidt (März 2001), Amihud (2002), Angelini (2002), Arping (May 2002), Aunon-Nerin, Cossin, Hricko, Huang (2002), Batten, Hogan (2002), Bielecki, Rutkowski (2002, 2004), Broll, Welzel (2002), Broll, Pausch, Welzel (July 2002), Broll, Schweimayer, Welzel (2003), Di Graziano, Rogers (2002), Dodd (2002, March 2012), Dunne, Moore, Portes (2002), Grill, Perczynski, Int-Veen, Muthig, Platz (2002), Jobst (2002), Läger (2002), Prato (November 2002), Ranciere (April 2002), Skinner, Townend (2002), Albanese, Campolieti, Chen, Zavidonov (2003), Albanese, Chen (2005), Albanese, Vidler (October 9 2007), Amato, Remolona (December 2003), Amato (December 2005), BIS (2003), Blanco, Brennan, Marsch (2003, 2004), Codogno, Favero, Missale (2003), Fage (November 24 2003), Francis, Kakodkar, Martin (April 2003), Galiani (2003), Grundke (2003), Haas (June 2003), Li Chen, Filipović (July 4 2003), MacKenzie, Millo (2003), Packer, Suthiphongchai (December 2003), Schmidt (2003), Xu, Wilder (May 2003), Blanco, Brennan, March (2004), Cebenoyan, Strahan (2004), Chan-Lau, Kim (2004), Edwards, Morrison (2004), Eller, Markus (2004, 2005), Ericsson, Jacobs, Oviedo (2004), Ericsson, Reneby, Wang (2006), Favero, Von Thadden (2004), Favero, Pagano, Von Thadden (2009), Felsenheimer (June 2

2004), Felsenheimer (September 2004), Felsenheimer, Gisdakis, Zaiser (2005), Garcia, Maghakian, Sharma (2004), Gibson (2004 , May 22 2007), Madan, Konikov, Marinescu (2004), Meneguzzo, Vecchiato (2004), Norden, Weber (2004a, b, March 26 2007), Olléon-Assouan (June 2004), Pagano, Von Thadden (2004), Pausch, Schweimayer (March 2004), Puffer (2004), Shelton (August 2004), Shimko (2004), Tavares, Nguyen, Chapovsky, Vaysburd (2004), Verdier (2004), Zhu (2004), Abid, Naifar (2005, 2006a, b), Acharya, Pedersen (2005), Acharya, Schaefer (2006), Acharya, Johnson (2007), Acharya, Schaefer, Zhang (May 2007), Albrecht (2005), Bielecki, Crepey, Jeanblanc, Rutkowski (March 2005), Bielecki, Vidozzi A, Vidozzi L (May 2006), Blanco, Brennan, Marsh (2005), Bomfim (2005), Brigo (January 2005), Brigo, Alfonsi (2005), Brigo, Cousot (2006), Brigo, El-Bachir (2006), Brigo, Pallavicini, Torresetti (June 2007), Burtschell, Gregory, Laurent (2005, 2008), Chiesa (2005), Cossin, Lu (June 2005), Cousseran, Rahmouni (June 2005), Franke, Krahnen (2005), Franke (2005), Greenspan (May 5 2005), Gruber J, Gruber W, Braun (2005), Heinrich (2005), Houweling, Vorst (2005), Instefjord (2005), Jorion (2005), Jortzik (2005), Joshi, Stacey (2005), Kalemanova, Schnid, Werner (2005), Kim, Lucey, Wu (2005), Kim, Moshirian, Wu (2006), Lucas, Goodman, Fabozzi (2006, 2007), Lucas, Goodman, Fabozzi, Manning (2007), Minton, Stulz, Williamson (August 2005, June 2006), Morrison (2005), Nési (March 2005), Neske (2005), Nicolò, Pelizzon (October 17 2005), Parlour, Plantin (2005), Posthaus (2005), Pelizzon, Schaefer (2005), Skinner (2005), Stamicar, Finger (2005), Allen, Carletti (2006), Beitel, Dürr, Pritsch, Stegemann (2006), Beck, Lesko, Schlottmann, Wimmer (Ausgabe 14 2006), Chilcote (2006), Cremers (2006), Cremers, Walzner (June 2007, 2009a, b), De Wit (2006), Felsenheimer, Gisdakis, Zaiser (2006a, b), Geithner (May 16 2006), Gikhman (July 2006, February 4 2008, July 2008, 2008, November 2011), Goderis, Marsh, Castello, Wagner (2006), De Wit (2006), Huault, Rainelli-Le Montagner (2006, 2008), Joshi, Stacey (July 2006), Juselius (2006), Ludovici (November December 2006), Marsh (2006), Martin, Reitz, Wehn (2006), McDonald (2006), Minton, Stulz, Williamson (June 2006), Mortensen (2006), Nicolò, Pelizzon (November 2006), Papenbrock (2006), Partnoy, Skeel (2006), Predescu (2006), Pugachevsky (2006), Sircar, Zariphopoulou (2006), Zhu (2006), Wagner, Marsh (2006), Ammer, Cai (2007), Ashcraft, Santos (July 2007), Baba, Inada (2007), Boulier, Brière, Viala (2007), Byström (2007, 2008, 2010), Chen, Lesmond, Wei (2007), Davydenko, Strebulaev (2007), Dötz (2007), Drucker, Puri (2007), Fathi, Nader (2007), Fulop, Lescourret (2007), Henrard (2007, 2009), Hirtle (February 2007, March 2008), In, Kang, Kim (2007), Mengle (2007), Nashikkar, Subrahmanyam (2007), Nashikkar, Subrahmanyam, Mahanti (2009), Pan, Singleton (2007), Papageorgiou, Sircar (2007), Pausch (2007), Pykhtin, Zhu (July August 2007), Rajan, McDermott (2007), Schulz, Wolf (2007), Summer (2007), Tang, Yan

(2007), Thompson (2007), Truslow (March 22 2007), Weithers (Fourth Quarter 2007), Yan, Zivot (2007), Abid, Naifar (2008), Alexander, Kaeck (2008), Arnsdorf, Halperin (2008), Chen, Cheng, Liu (2008), Claes, De Ceuster (2008), Cont, Minca (2008), Coudert, Gex (2008), Cserna, Imbierowicz (2008), Curto, Nunes, Oliveira (2008), Jankowitsch, Pullirsch, Veža (2008), Le Roux (October 2008), Li, Zou (2008), Morgan (May 2008), O'Kane (2008), Peng, Kou (2008), Sougné, Heuchenne, Hübner (2008), Ametrano, Bianchetti (2009), Ametrano (January 18 2011), Bayraktar, Yang (2009), Deutsche Börse AG (September 2009), Elizalde, Doctor (2009), Elizalde, Doctor, Saltuk (2009), Forte, Peňa (2009), Fujii, Shimada, Takahashi (2009a, b), Fujii, Shimada, Takahashi (2010a, b), Fujii, Takahashi (2011), Mayordomo, Peña, Romo (September 2009, 2012), Rey (2009), Panchenko, Wu (2009), Rey (November 20 2009), Varga (May 2009), Buraschi, Porchia P, Porchia F (2010), Ciolpan, Adam (2010), Coudert, Gex (2010), Courtney (2008, May 19 2010), Gómez (2010), Gregory (2010), Fries (2010), Tsui (2010, May 18 2010), Piterbarg (2010a, b), Bianchetti (October 31 2011), Bianchetti M, Mattia C (March 28 2012), Calice, Ioannidis, Williams (2011), Coşkun (2011), Lahusen, Speyer (2011), Lijun Bo, Ying Jiao, Xuewei Yang (December 13 2011), Ojo (May 24 2011, April 30 2012), Rennie, Lipton (2011), Avino, Lazar (2012), Heller, Vause (2012), Roman, Şargu (2012), Tim Leung, Peng Liu (October 2 2012), Yildirim, Coskun, Caglar, Yildirak (2012), Heckinger, Mengle (2013), Heckinger, Ruffini, Wells (2014), Steigerwald (2013).

6.6 Commodities exchange as investment medium.

Focusing on the forthcoming issue, we would like to explain that the **commodities exchange** is one of the investment mediums in the capital markets in the finances. The commodities exchanges have been created to facilitate the commodities trading on a global scale.

There are the following commodity exchanges in Demidova-Menzel, Heidorn (August 2007), Yamori (September 7 2009):

1. The Commodity Exchange (COMEX);

2. The New York Mercantile Exchange (NYMEX);

3. The Chicago Board of Trade (CBOT);

4. The Tokyo Commodity Exchange (TCE);

5. The Tokyo Grain Exchange (TGE).

The commodities exchanges have been researched in Keynes (1923, September 1938, 1942, 1980, 1943), Hotelling (1931), Graham (1937), Kaldor (1939), Working (February 1948, 1949, 1960), Brennan (1958, 1991), Brennan, Schwartz (1985), Sharpe (1964), Sharpe, Alexander, Bailey (1995), Telser (1968), Dusak (1973), Lovell, Vogel (1973), Merton (1973), Stoll (1979), Stoll, Whaley (2009, 2010), Bodie, Rosansky (May June 1980), Breeden (1980), Spraos (March 1980), Newbery, Stiglitz (1981), Wright, Williams (1982), Abel (1983), Abel, Blanchard (1986), Abel, Mankiw, Summers, Zeckhauser (1989), Abel, Eberly (1994), Bernanke (1983), Carter, Rausser, Schmitz (April 1983), Garbade, Silber (1983), Edwards, Freebairn (1984), Kanbur (1984), Cox, Rubinstein (1985), Gilbert (September 1985, 1996), Jagannathan (1985), Taylor (1985), Fama, French (January 1987, December 1988), Hartzmark (1987), Chinloy (1988), Gyourko, Linneman (1988), Hirshleifer (1988, 1989, 1990), Lichtenberg, Ujihara (1988), Paddock, Siegel, Smith (1988), Baumol, Benhabib (1989), Frank, Stengos (1989), Jaffee (1989), Rubens, Bond, Webb (1989), De Gorter, Zilberman (1990), De Gorter, Tsur (1991), De Gorter, Nielson, Rausser (1992), De Gorter, Swinnen (1998), Gibson, Schwartz (1990), Kaminsky, Kumar (1990), Pindyck, Rotemberg (1990), Shleifer, Summers (1990), Siegel D R, Siegel D F (1990), Blank (1991), Brennan (1991), Chan K, Chan K C, Karolyi (1991), Subrahmanyam (1991), Williams, Wright (1991), Bessembinder (1992), Bessembinder, Chan K (1992), Bessembinder, Seguin (1992, 1993), Bessembinder, Coughenour, Seguin, Smoller (1995, Winter 1996), Deaton, Laroque (January 1992, 1996), DeCoster, Labys, Mitchell (1992), Edwards, Ma (1992), Kolb (1992, 1996, 1997), Maizels (1992), Ankrim, Hensel (May/June 1993), Bleaney, Geenaway (July 1993), Brueggeman, Fisher (1993), Lummer, Siegel (Summer 1993), Yang, Brorsen (1993), Dixit, Pindyck (1994), Satyanarayan, Varangis (March 1994), Litzenberger, Rabinowitz (December 1995), O'Hara (1995), Sachs, Warner (1995a, b, 1997, 1999, 2001, Chambers, Bailey (1996), Duffie (1996), Hamilton (1996, 2005, Spring 2009a, b), Hamilton, Jing Wu (2013a b), Hamilton, Wu(2014), Sanders, Irwin, Leuthold (1996), Sanders, Irwin (2010a b, 2011a, b, 2013), Sanders, Irwin, Merrin (2010), Hoesli, MacGregor, Matysiak, Nanthakumaran (1997), Kocagil (1997), Schneeweis, Spurgin (1997), Schwartz (July 1997), Schwartz, Smith (July 2000), Mabro (1998), Pilipovic (1998), Cashin, McDermott, Scott (1999), Greenaway, Morgan (1999), Hielscher (1999), Irwin, Yoshimaru (1999), Irwin, Holt (2004), Irwin, Sanders, Merrin (April 20-21 2009a, August 2009b), Irwin, Sanders (February 2011 2012a, b), Labys, Achouch, Terraza (1999), Becker, Finnerty (2000), Borenstein, Bushnell, Stoft (2000), Cashin, Liang, McDermott (2000), Cashin, McDermott (2002), Christie-David, Chaudry, Koch (2000), De Roon, Nijman, Veld (2000), De Roon, Szymanowska (2010), Greer (2000), Jensen, Johnson, Mercer (2000, Summer 2002), Routledge, Seppi, Spatt (2000), Swinnena, De Gorterc, Rausserd, Banerjeea (2000), Till (Fall 2000a, September 1 2000b, April 2003, 2006), Till, Eagleeye (May 2003, Fall 2005), Cochrane (2001), Fabozzi (2001), Kogan (November 2001, 2004), Kogan, Livdan, Yaron (2005), Richards, Padilla (August 5 - 8 2001), Barsky, Kilian (May 2002, 2004), Chatrath, Adrangi, Dhanda (2002), Cremer, Laffont (2002), Cremer, Gasmi, Laffont (2003), Ederington, Lee (2002), Weiner (2002), Bower, Kamel (June 2003), Sorenson (2003), Vrugt (2003), Wang (2003), Weiser (2003), Greer (Summer 2004), Greer (April 2005), Gorton, Rouwenhorst (2004, 2006), Gorton, Hayashi, Rouwenhorst (2013), Longstaff, Wang (2004), Beenen (2005), Casassus, Collin-Dufresne (2005), Casassus, Collin-Dufresne, Routledge (December 2005), Erb, Harvey (May 2005, 2006), Haigh, Hranaiova, Oswald (2005), Lautier (Summer 2005), Lewis (April 2005), Micu (December 2005), O'Connell (December 2005), Taylor (2005), Brown (January February 2006), Bryant, Bessler, Haigh (2006), Campbell, Orskaug, Williams (Spring 2006), Feldman, Till (2006), Frankel (2006), Fusaro, Vasey (September 2006), Holmes (2006), McNee (July 2006), Upperman (2006), Blanchard, Gali (2007), Demidova-Menzel, Heidorn (August 2007), Domanski, Heath (March 2007), Kat, Oomen (2007a, b), Miffre, Rallis (2007), Chong, Miffre (2010), Basu, Miffre (2013), Miffre, Brooks (2013), Röthig, Chiarella (2007), Worthington, Pahlavani (2007), Adams, Füss, Kaiser (2008), Bachmeier, Qi Li, Liu (2008), Bhardwaj, Gorton, Rouwenhorst (2008), Büyükşahin, Haigh, Harris, Overdahl, Robe (2008), Büyükşahin, Haigh, Robe (2010), Büyükşahin, Robe (2010, 2011, 2014), Büyükşahin, Brunetti, Harris (2010), Büyükşahin, Harris (2011), Caballero, Farhi, Gourinchas (2008), Carney (2008), Fabozzi, Füss, Kaiser (2008), Johnson Matthey Plc (2008), Khan, Khoker, Simin (2008), Kilian (2008a, b, 2009, 2010, 2014), Kilian, Park (2009), Kilian, Vega (2011), Kilian, Vigfusson (2011), Kilian, Murphy (2013, 2014), Kilian, Hicks (2013), Kolos, Ronn (March 2008), Reisen (July 18 2008), Roache (September 2008), Roache, Rossi (July 2009), Scherer, He (2008), Woodward (2008), Attié, Roache1 (April 2009), Bose (2009), Du, Yu, Hayes (2009), Frankel, Rose (2009), Kaufmann, Ullman (2009), Korniotis (2009), Mayer (2009, 2012), Reitz, Slopek (2009), Smith (2009), Smith, Thompson, Lee (2013), Yamori (September 7 2009, May 20 2011, 2011), Yung, Liu (2009), Alquist, Kilian (2010), Alquist, Kilian, Vigfusson (2013), Anzuini, Lombardi, Pagano (2010), Aulerich, Irwin, Garcia (2010), Baffes, Haniotis (July 2010), Baker (2012), Baker, Routledge (2012), Basak, Pavlova (2012), Blanchard, Gali (2010), Calvo-Gonzalez, Shankar, Trezzi (2010), Cifarelli , Paladino (2010), Fuertes, Miffre, Rallis (2010), Elder, Serletis (2010), Etula (2010), Gilbert (March 2010, 2010), Hailu, Weersink (2010), Hernandez, Torero (2010), Nissanke (December 2010), Silvennoinen, Thorp (2010), Tang, Xiong (2010), Tang, Wei Xiong (2012), Tang, Zhu (2015), Wong, Smith (July 25 - 27 2010), Basu, Gavin (2011), Cárdenas, Ramírez, Tuzemen (December 2011), Connolly, Orsmond (2011), Daskalaki, Skiadopoulos (2011), Dwyer, Gardner, Williams (2011), Dwyer, Holloway, Wright (2012), Fattouh (2011), Ghosh (2011), G20 Study Group on Commodities (November 2011), Hong, Yogo (2011), Inamura, Kimata, Kimura, Muto (March 2011), Lombardi, Robays (2011), Mou (2011), Peñaranda, Micola (2011), Reichsfeld, Roache (2011), Tilton , Humphreys, Radetzki (2011), Yiuman Tse, Williams (December 20 2011), UNCTAD (2011), Arbatli, Vasishtha (2012), Cespedes, Velasco (2012), Fattouh, Kilian, Mahadeva (2012), Gasmi, Oviedo (October 2012), Girardi (January 2 2012), Girardi (October 9 2012), Gruber, Vigfusson (2012), Henderson, Pearson, Li Wang (2012), Hong, Yogo (2012), Juvenal, Petrella (2012), Nissanke (2012), Rouwenhorst, Ke Tang (2012), Sockin, Wei Xiong (2012), Sockin, Wei Xiong (2013), Varadi (March 2012), Acharya, Lochstoer, Ramadorai (2013), Anghelache, Dincă, Sacală, Lixandru (2013), Aulerich, Irwin, Garcia (2013), Baumeister, Peersman (2013), Baumeister, Kilian (2014, 2016), Chevallier, Ielpo, Ling-Ni Boon (2013), Creti, JoÎts, Mignon (2013), Fattouh, Kilian, Mahadeva (2013), Heumesser, Staritz (October 2013), Hurduzeu, Hurduzeu (2013), Ing-Haw Cheng, Wei Xiong (2013, November 2013, 2014), Ing-Haw Cheng, Kirilenko, Wei Xiong (2014), Jovanovic (2013), Kang, Rouwenhorst, Ke Tang (2013), Le Pen, Sévi (2013), Marshall, Nguyen, Visaltanachoti (2013), Grimes, Hyland (2013), Santos (2013), Van Robays (2013), Venditti (2013), Adams, Glück (June 2014, August 2015), Basak, Pavlova (2014), Daskalakis, Kostakis, Skiadopoulos (2014), Fornero, Kirchner, Yany (2014), Gruss (2014), Jo (2014), Mykhailovska (2014), Sadorsky (2014), Bonato, Taschini (November 2015), Henderson, Pearson, Wang (2015), Novotný (2015), Novotný, Polach (2016), Joëts, Mignon, Razafindrabe (November 2016).

6.7 Precious metal exchange as investment medium.

Considering the next topic of our research interest, it makes sense to explain that the **precious metals exchange** and the **industrial metals exchange** can also be defined as the existing investment mediums in the capital markets in the finances, where the precious metals are being valued, traded, sold and bought at the certain open-market prices by the metal traders as requested by the investors/industrialists around the World.

In general, let us make a few short remarks that the precious metals, including the gold, silver, platinum and palladium, are classified as the commodities asset class in Anikin (1988), Figuerola-Ferretti, McCrorie (2016). The precious metals synthesis, application, and industrial consumption in the economy of the scale and the scope has been studied in Hourwich (1902, 1903). The precious metals valuation in the economy of the scale and the scope has been studied in Goodman (1956), Crowson (1987), Kaufmann, Winters (1989), Aggarwal, Lucey (2007). The precious metals prices dependences on various oscillating economic variables such as the industrial consumption in the real sector of the economy of the scale and the scope have been researched in Fama, French (1988), Labys, Achouch, Terraza (1999). The precious metals prices dependences on various fluctuating financial variables such as the foreign currencies exchange rate in the finances have been researched in Crowson (1987). The precious metals prices dependencies on some other commodities such as the diamonds have been researched in Rand Kwong Yew Low, Yiran Yao, Faff (2016). The precious metals forward/spot exchange rates dynamics has been studied in Hammoudeh, Yuan, McAleer, Thompson (2009), Aggarwal, Lucey, O'Connor (2014). The investment into the precious metals by buying the physical precious metal or by investing into the precious metals funds or by occurring the precious metals mining companies stocks has been researched in Jaffee (1989), Demidova-Menzel; Heidorn (August 2007b). The precious metals safe haven and hedging properties for the private/institutional investors have been researched in Worthington, Pahlavani (2007), Rand Kwong Yew Low, Yiran Yao, Faff (2016).

Completing a comprehensive review of academic literature, we can evidently argue that the precious metals exchanges have been established to facilitate the precious metals trade in the economies of the scales and scopes on the national/global scales. There are the following main precious metals exchanges in the World in Sephton, Cochrane (1990), Demidova-Menzel, Heidorn (August 2007):

1. The Commodity Exchange (COMEX);

2. The New York Mercantile Exchange (NYMEX);

3. The Chicago Board of Trade (CBOT);

4. The London Metal Exchange (LME).

The precious metals physical/chemical properties, valuation, and trading at the precious metals exchanges have been also investigated in Hourwich (1902, 1903), Goodman (1956), Tschoegl (1980), Solt, Swanson (1981), Burke (June 4 1982), Mate (1984), Ho (1985), Aggarwal, Sundararaghavan (1987), Aggarwal, Soenen (1988), Aggarwal, Mohanty, Song (1995), Aggarwal (2004), Aggarwal, Lucey (2007), Aggarwal, Zong (2008), Aggarwal, Lucey, O'Connor (November 2014, 2015), Crowson (1987), Anikin (1988), Fama, French (1988), Luke Chan, Mountain (1988), Frank, Stengos (1989), Jaffee (1989), Kaufmann, Winters (1989), Radetzki (1989), Sephton, Cochrane (1990), Vandeloise, Wael (1990), Akgiray, Booth, Hatem (August 1991), Agbeyegbe (1992), Cheung, Lai (May 1993), Chaudhuri (1994), Brunetti, Gilbert (1995), Moore, Cullen (1995), Qiang, Weber (1995), Qiang (1998), Wahab (1995), Sjaastad, Scacciavillani (December 1996), Sjaastad (June 2008), Escribano, Granger (1998), Taylor (1998), Labys, Achouch, Terraza (1999), Rockerbie (1999), Christie-David, Chaudhry, Koch (2000), Cai, Cheung, Wong (2001), Ciner (2001), Ciner, Gurdgiev, Lucey (2013), Hammoudeh, Malik, McAleer (2001, March 2011), Hammoudeh, Yuan (2008), Hammoudeh, Yuan, McAleer, Thompson (2009, 2010), Hammoudeh, Santos, Al-Hassan (2013), Mackenzie, Mitchell, Brooks, Faff (2001), Adrangi, Chatrath (April 2002), Smith (2002), Cavaletti, Factor, All (2004), Baron (2005), Capie, Mills, Wood (2005), Conover, Jensen, Johnson, Mercer (2005, 2009), Drelichman (2005), Papyrakis, Gerlagh (2005), Pulvermacher (March 2005a, b), Xiaoqing Eleanor Xu, Hung-Gay Fung (2005), Banken (2006), Draper, Faff, Hillier (2006), Hillier, Draper, Robert (2006), Batten, Lucey (2007, 2010), Batten, Ciner, Lucey (June 2008, 2010), Batten, Ciner, Lucey (2013, 2015), Demidova-Menzel, Heidorn (August 2007a, b), Kyrtsou, Labys (2007), Sari, Hammoudeh, Ewing (2007), Sari, Hammoudeh, Soytas (2010), Tully, Lucey (2007), Worthington, Pahlavani (2007), Jerrett, Cuddington (2008), LBMA (London Bullion Market Association) (2008), Watkins, McAleer (2008), Roberts (2009), Soytas, Sari, Hammoudeh, Hacihasanoglu (2009), Baur, Lucey (2010), Baur, Mcdermott (2010), Baur (2012), Baur, Tran (2014), Chen (September 2010), Humphreys (2010), Kovalenko (2010), Lucey (2010), Lucey, Larkin, O'Connor (2013), Lucey, O'Connor (2014), Lucey, Sile Li (2015), Riley (Summer 2010), Roache, Rossi (2010), Shafiee, Topal (2010), Tsuchiya (2010), Zhang, Wei (September 2010), Khalifa, Miao, Ramchander (2011), Morales, Andreosso-O'Callaghan (2011, 2014), Pukthuanthong, Roll (2011), Arouri, Hammoudeh, Lahiani, Nguyen (2012), Arouri, Hammoudeh, Nguyen, Lahiani (2013), Cochran, Mansur, Odusami (2012), Elder, Miao, Ramchander (2012), Krezolek (2012), Mutafoglu, Tokat E, Tokat H A (2012), Papież, Śmiech (2012), Śmiech, Papież (2012), Yermilova (2012), Caporin, Ranaldo, Velo (2013, 2015), Emmirich, McGroarty (2013), Ewing, Malik (2013), Hood, Malik (2013), Jain, Ghosh (2013), Öztek, Ocal (2013), Reboredo (2013a, b), Reboredo, Ugolini (2015), Revenda (2013, 2016), Rizea Raluca, Sârbu, Condrea (2013), Sensoy (2013), Smales (2013), Westerlund (2013), Agyei-Ampomah, Gounopoulos, Mazouz (2014), Apergis, Christou, Payne (2014), Charles, Darné, Kim (June 19 2014), Charlot, Vêlayoudom Marimoutou (2014), Demiralay, Ulusoy (January 27 2014a, b), Giles, Qinlu Chen (2014), Golosnoy, Rossen (2014), Issler, Rodrigues, Burjack (2014), Papadamou, Markopoulos (2014), Tsolas (2014), Walczak (2014), Wanat, Papież, Śmiech (June 15 2014), Antonakakis, Kizys (2015), Auer (2015), Balcilar, Katzke, Gupta (2015), Balcilar, Hammoudeh, Nwin-Anefo Fru Asaba (2015), Bildirici, Türkmen (2015), Bosch, Pradkhan (2015), Gil-Alana, Chang, Balcilar, Aye, Gupta (2015), Mensi, Hammoudeh, Sang Hoon Kang (2015), Figuerola-Ferretti, McCrorie (2016), Novotný, Polach (2016), Pierdzioch, Risse, Rohloff (2016), Pradkhan (2016), Rand Kwong Yew Low, Yiran Yao, Faff (2016).

6.8 Intellectual property exchange as investment medium.

Finally, ensuring a consistency in our research discussion, we would like to say a few words on the **intellectual property exchange**, which can be undoubtedly classified as one of the perspective investment mediums in the capital markets in the finances.

We believe that the creation of the intellectual property exchanges will further facilitate the intellectual property selling, buying, licensing by the inventors, the IP rights holders, the entrepreneurs, the interested firms around the World. In our opinion the intellectual property exchanges will be established in the clusters with the hi-tech and financial firms mainly.

The intellectual property has been studied in Plant (1934a, b), Callmann (1947), Penrose (1951), Prager (1952), Arrow (1962), Scherer (1965, 1984), Baxter (1966), Hurt, Schuchman (1966), Barzel (1968), Nordhaus (1969), Bowman (1973, 1977), Taylor, Silberston (1973), Roffe (1974), Adelman (1977), Loury (1979), Cheung (1982), Gilbert, Newbery (1982, 1984), Gilbert, Shapiro (1990), Mackaay (1982, 1985a, b, 1986, 1989, 1990a, b, 1991a, b, c, 1992a, b, 1994), Sieghart (1982), Ashford, Heaton (1983), Ashford et al (1985), Baird (1983), Beck (1983), Fudenberg, Gilbert, Stiglitz, Tirole (1983), Wright (1983), Mossinghoff (1984), Adelstein, Peretz (1985), Cave (1985), David (1985, 1993), Farrell, Saloner (1985, 1989), Gallini, Winter (1985), Gallini (1992), Judd (1985), Lehmann (1985, 1989, 1990), Pendleton (1985), Samuelson (1985), Department of Trade and Industry (1986), Hay (1986), Mansfield (1986), Priest (1986), Evenson, Putnam (1987), Menell (1987, 1989, 1994, 1998), Rozek (1987), Sirilli (1987), Tullock (1987), Feinberg (1988), Feinberg, Rousslang (1990), Hughes (1988a, b), Merges (1988, 1992, 1994a, b, 1995a, b, 1996a, b), Merges, Menell, Lemley, Jorde (1997), Von Hippel (1988), Walker, Bloomfield (editors) (1988), Beier, Shricker (1989), Besen, Kirby (1989a, b), Besen, Raskind (1991), Besen, Kirby, Salop (1992), Braga (1989), Centner (1989), Centner, White (1989), Davis (1989), Krauss (1989), Palmer (1989, 1990), Brenner (1990), Chin, Grossman (1990), Easterbrook (1990), Gilbert, Shapiro (1990), Klemperer (1990), Rushing, Brown (editors) (1990), Caves, Whinston, Hurwitz (1991), Coombe (1991), Heald (1991), Scotchmer (1991), Segerstrom (1991), Teijl, Holzhauer (1991), Deardorff (1992), Gallini (1992), Gordon (1992a, b, 1993), Grady, Alexander (1992), Quaedvlieg (1992), Aoki (1993-1994, 1996a, b), Becker (1993), Brennan (1993), Carter (1993),Chou Chien-Fu, Shy (1993), Helpman (1993), Kay (1993), Lanjouw (1993), Lanjouw, Pakes, Putnam (1998), Lanjouw, Schankerman (2001a, b), Nelson (1993, 1994), Barlow (1994), Dam (1994, 1995), Japan Institute of Intellectual Property (1994), Karjala (1994), Lerner (1994, 1995, 2002), Chang (1995), Lemley (1995), Gould, Gruben (1996), Matutes, Regibeau, Rockett (1996), Brousseau, Bessy (September 19 - 21 1997), Ginarte, Park (1997), Grindley, Teece (1997), Park, Ginarte (1997), Besen (1998), Maskus (1998), Schankerman (1998), Templeman (1998), Reilly, Schweihs (1999), Reilly (2013), Gallini, Scotchmer (2001), Hall, Zeidonis (2001), McCalman (2001), Sakakibara, Branstetter (2001), Scotchmer (2001), Shapiro (2001), Boldrin, Levine (2002, 2004a, b, 2005, 2006, February 6 2007), Grossman, Lai (2002, 2004), Lasinski (2002), Maskus (2000a, b), Deli Yang (2003), Menell (2003), Anson, Suchy, Ahya (2005), Anson, Noble, Samala (2014), Blair, Cotter (June 2005), Ramello (2005), Smith, Parr (2005), Andersen (editor) (January 1 2006), Hisamitsu Arai (2006), Kamiyama, Sheehan, Martínez (2006), Kanwar (2006), Kumar (2006), Lakdawalla, Philipson, Wang (October 2006), Moerman, Laan (2006), Aoki, Schiff (2007), Bittelmeyer (2007), Holland, III, Reed, Lee, Kimmel, Peterson (2007), Holland, Benedikt (2014), Malackowski, Cardoza, Gray, Conroy (2007), Menell, Scotchmer (2007), Parr (2007), Siegel, Wright (2007), Van Caenegem (May 2007), Ruder (2008), Kite (2009), Blakeney, Ullrich, Stauder, Llewelyn, MacQueen, Jacob, Laddie, Chisum, Benyamini, Straus, Llewellyn, McCarthy, Dworkin, Soltysinski, Lahore, Dufty, Ricketson, Ginsburg, Christie, Goldstein, Tapper, Kamina (December 2010), Flanagan, Montagnani (editors) (January 2010), Baker, Pak Yee Lee, Mezzetti (2011), Bryer, Lebson, Asbell (2011), Cottier, Veron (2011), McCoy, Barton, McDermott (2011), Palfrey (October 2011), Bouchoux (2012), George (2012), Rüther (2012), Boldrin, Levine (2013), Frey (2013), Howe, Griffiths, Sherman, Pottage, Gangjee, Bently, Hudson, Dreier, Breakey, Balganesh, Carrier, Burrell, Hudson, Lametti, Dussollier (September 2013), Buchanan, Wilson (2014), Fawcett (2014), Gervais (editor) (2014), Guellec, Ménière (2014), Sople (2014), Schmitt (2016), Searle, Brassell (August 2 2016).

Looking forward, we would like to make a research comment that the **digital currencies exchange** can be considered as one of the perspective investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. At this time, the Bitcoin and the Ethereum digital currencies began to be valued/traded/exchanged at the digital currencies exchanges in the global capital markets.

In Chapter 6, we focused on the investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. So far, we have gained a reasonably comprehensive knowledge on the investment products, vehicles, and mediums destined for application in the global capital markets.

In Chapter 7, we will tackle the research problem on the financial risk calculation, estimation and mitigation techniques in the process of the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 7

Financial risk of investment portfolio at financial capital investment in capital markets

A modern prosperous society can be accurately characterized by an existing level of investment attractiveness of its economy of the scale and the scope. The financial capital would be invested by the investor into the investment products with an application of the investment vehicles in the investment medium in the case, if the investor's expectation to get the high return-on-investment could be realized at a high probability level in the selected economy of the scale and the scope. The probability can be calculated by the investor, taking into an account the macro-/micro- economic variables in the frames of the modern investment portfolio theory during the wealth management process in the finances in Ledenyov D O, Ledenyov V O (2013a).

Fig. 31 shows a hypothetical investment portfolio with the diversified asset classes for the financial capital investment in the capital markets in the economies of the scales and scopes in the short and long time periods, which must be created by the investor with the goal to get an increased return premium.

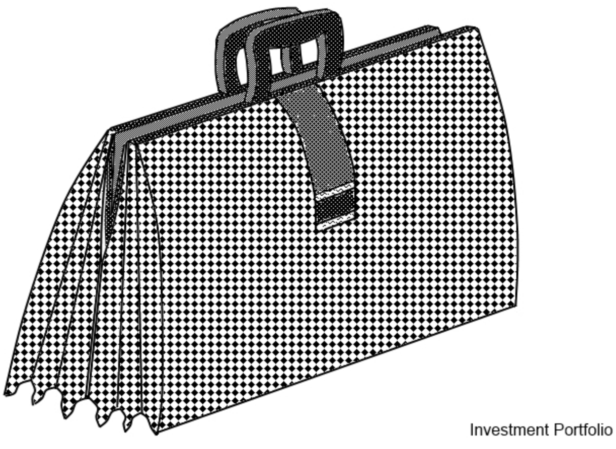

Fig. 31. Hypothetical investment portfolio with diversified asset classes for financial capital investment in capital markets in economies of scale and scope in short and long time periods.

Typically, the investors create an investment portfolio with the diversified assets classes to minimize all the existing financial, economic, political risks as well as to maximize the return on the financial capital investment in the capital markets in the economies of the scales and the scopes in the short and long time periods. The investment portfolio building during the wealth management process can be regarded as a quite challenging task, because the financial capital flows in the open, non-linear and complex diffusion-type financial systems with the positive or negative feedback loop mechanisms, resulting in the assets prices fluctuations in view of the macro-/micro- economic variables oscillations in the economies of the scales and the scopes in Mosekilde (1996, 1996-1997), Beinhocker (2006), Mandelbrot (2004).

The Modern Portfolio Theory (MPT) is based on a fundamental concept that the price changes by the different interrelated investment assets must be taken into an account in the process of the investment portfolio building in Markowitz (1952, 1956, 1959, 1987). In other words, Markowitz (1952) proposed that the investment portfolio's risk depends on the variance of the investment portfolio's expected return premium.

The Modern Portfolio Theory (MPT) introduces an idea of the Efficient Frontier (EF) in the finances in Markowitz (1952, 1956, 1959, 1987). Let us assume that we have a set of the selected investment assets, then, the maximum portfolio returns are limited by the upper concave boundary in the case of the increasing risk magnitude. A dependence between the investment return premium and the investment risk is represented by the concave curve, which is concavely increasing with the risk factors growth in Markowitz (1952, 1956, 1959, 1987), Shiryaev (1998a, b), Hull (2005-2006, 2010, 2012), Mitra (2009), Ledenyov D O, Ledenyov V O (2013a).

Let us define the weighted expected return of a portfolio Rp as in Mitra (2009)

$$\boldsymbol{R}_p = \sum_{i=1}^{N} w_i \mu_i,$$

then the portfolio's variance σ_p^2 can be written as

$$\sigma_p^2 = \sum_{i=1}^{N} \sum_{j=1}^{N} \sigma_{ij} w_i w_j,$$

where

- N is the number of assets in a portfolio;
- i, j are the asset indices and $i, j \in \{1, \ldots, N\}$;
- w_i is the asset weight, subject to the constraints:

$$0 \le w_i \le 1,$$

$$\sum_{i=1}^{N} w_i = 1;$$

• σ_{ij} is the covariance of asset i with asset j;

• μ_i is the expected return for asset i.

Speaking clearly, Markowitz (1952) considers the two characteristics of capital $X_1(b)$:

1. $EX_1(b)$ is the mathematical expectation;

2. $DX_1(b)$ is the dispersion.

In agreement with the *mean variance analysis* by *Markowitz (1952)*, the investment portfolios with a set of points $(EX_1(b), \sqrt{DX_1(b)})$ between the point α and the point β on the *efficient frontier* curve have the maximum mean value of capital at the minimum value of dispersion in Fig. 32.

In Fig. 32, the Markowitz Efficient Frontier (MEF) theoretical conception in the Modern Portfolio Theory (MPT) in the finances is illustrated graphically in Markowitz (1952, 1956, 1959, 1987), Shiryaev (1998a, b), Hull (2005-2006, 2010, 2012), Demidova-Menzel; Heidorn (August 2007), Mitra (2009), Hassine, Roncalli (2013), Ledenyov D O, Ledenyov V O (2013a), Wikipedia (2016).

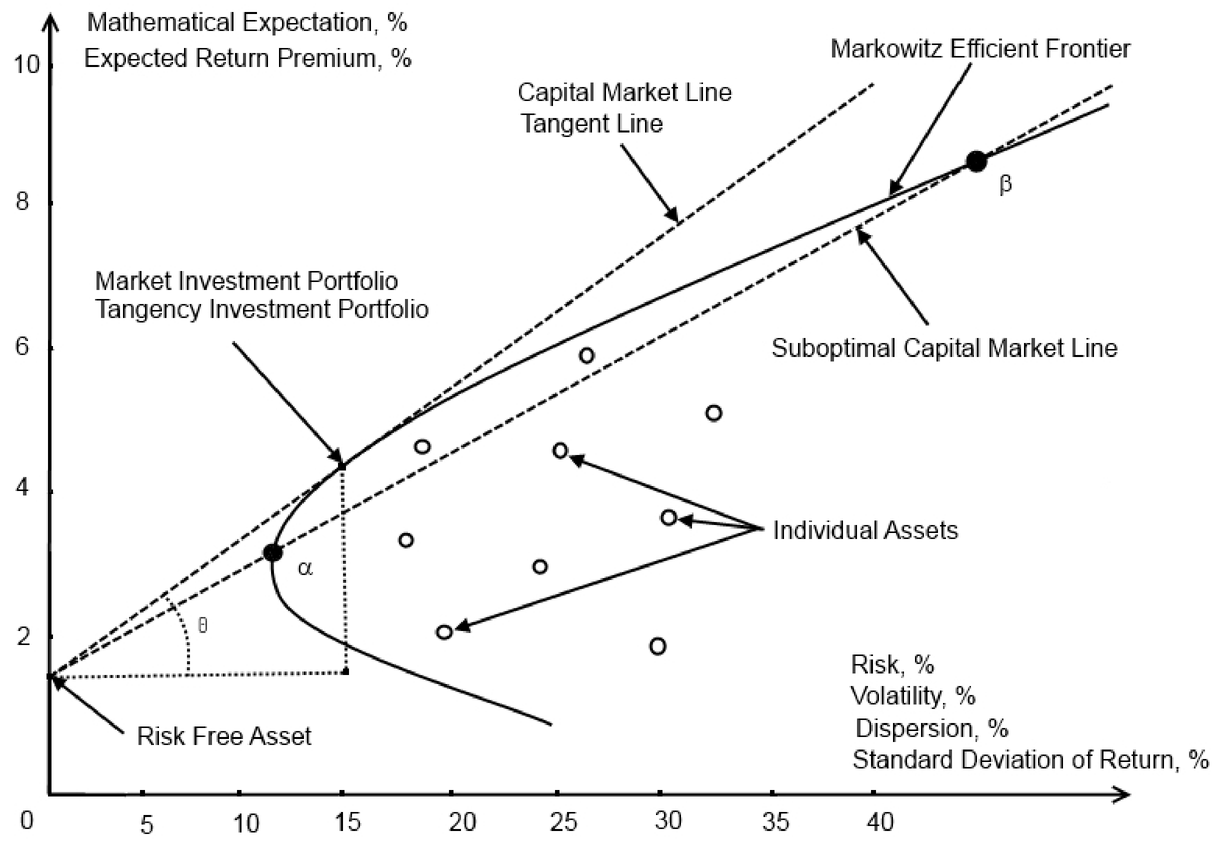

Fig. 32. Markowitz Efficient Frontier (MEF) and the tangency portfolio in Modern Portfolio Theory (MPT) (after Markowitz (1952, 1956, 1959, 1987), Shiryaev (1998a, b), Hull (2005-2006, 2010, 2012), Demidova-Menzel; Heidorn (August 2007), Mitra (2009), Hassine, Roncalli (2013), Ledenyov D O, Ledenyov V O (2013a), Wikipedia (2016)).

Let us list the main research findings in the Modern Portfolio Theory (MPT) in the finances in the chronological order:

1. Markowitz (1952, 1956, 1959, 1987), Tobin (1958), Sharpe (1964, 1966), and Merton (1969, 1970, 1971, 1972, 1973a, 1973b, 1977a, 1977b, 1982, 1983a, 1983b, 1990, 1992, 1993a, 1993b, 1994, 1995a, 1995b, 1997, 1998, 1999, 2001) associated the risk with the variance in the value of investment portfolio. Markowitz (1952) wrote: "the investor does (or should) consider expected return a desirable thing and variance of return an undesirable thing". They proposed that the efficient investment portfolio (a set of the optimal portfolios) is an investment portfolio that maximizes the expected return premium for a certain risk level;

2. Tobin (1958) introduced the Tobin's mutual fund theorem, stating that the investment portfolio's assets allocation problem can be viewed as a decision to allocate between the riskless asset and the risky portfolio. Tobin (1958) showed that the efficient frontier becomes a straight line in the presence of a risk-free asset;

3. Mandelbrot (1963) investigated the scaling properties of the certain speculative prices changes;

4. Fama (1963) discussed the Mandelbrot's research proposals and the stable Paretian hypothesis;

5. Sharpe (1964) summarized the research results by Markowitz (1952) and Tobin (1958) by introducing the Separation Theorem, in which the process of investment choice has the two possible phases:

1) The choice of a unique optimum combination of risky assets; and

2) The separate choice, concerning an allocation of funds between such a combination of a risky assets and a single riskless asset;

6. Merton (1969, 1970, 1971, 1972, 1973a, 1973b, 1977a, 1977b, 1982, 1983a, 1983b, 1990, 1992, 1993a, 1993b, 1994, 1995a, 1995b, 1997, 1998, 1999, 2001) slightly advanced the Modern Portfolio Theory (MPT);

7. Engle (2003, 2006) analyzed and summarized all the important research findings in the Modern Portfolio Theory (MPT) in Markowitz (1952), Tobin (1958), Sharpe (1964);

8. Demidova-Menzel; Heidorn (August 2007) briefly described the limitations in the case of application of a standard deviation of the investment returns as an investment portfolio risk measure in the Modern Portfolio Theory (MPT). A main criticism is in the fact that a standard deviation of the investment returns as an investment portfolio risk measure in the MPT is assumed to be described by the bell-shaped Gauss distribution, but the real observed deviations of the investment returns for the certain investment asset classes in the investment portfolio can be better characterized by the different types of statistical distributions. For example, the real observed deviations of the investment returns in the case of the commodity asset class in the investment portfolio can be accurately characterized by a right skewed distribution instead of a normal distribution. Therefore, an application of the standard deviation of the investment returns as an investment portfolio risk measure in the Modern Portfolio Theory (MPT) is limited by a set of the certain investment assets classes only;

9. Hassine, Roncalli (2013) analyzed and summarized all the research findings in the Modern Portfolio Theory (MPT) in the Markowitz (1952), Tobin (1958), Sharpe (1964);

10. Ledenyov D O, Ledenyov V O (2013a) innovated the Modern Portfolio Theory (MPT) in the Markowitz (1952), Tobin (1958), Sharpe (1964) by introducing the Ledenyov discrete-time investment assets values oscillations theory and the Ledenyov investment portfolio stability theory.

Going to the next point, let us discuss some important investment portfolio theories in the finances in details. The Capital Asset Pricing Model (CAPM) theory has been introduced with the purpose to accurately determine the expected return premiums on the selected assets in the investment portfolio during the financial capital investment in the capital markets in the economies of the scales and the scopes in Sharpe (1964), Lintner (1965), Mossin (1966).

The CAPM main idea is that, in the investment portfolio, the numerous investment products (the investment asset classes/the investment instruments) with the various associated market risks can generate the different expected return premiums during the financial capital investment in the capital markets in the economies of the scales and the scopes. In the CAPM theory, all the investors have both the similar objectives and the same accumulated information in Sharpe (1964), Lintner (1965), Mossin (1966), Engle (2003, 2006). The Capital Asset Pricing Model (CAPM) theory applications have been researched in Sharpe (1965, 1966, 1968, 1992, 1994), Sharpe, Alexander, Bailey (1999). The dynamic Consumption CAPM (CCAPM) theory has been proposed to extend the static Capital Asset Pricing Model (CAPM) theory by providing a theoretical framework to evaluate the market portfolio dynamically in Merton (1973).

Let us explain that the expected return premium in agreement with the CAPM theory can be written as in Sharpe (1965, 1966, 1968, 1992, 1994), Sharpe, Alexander, Bailey (1999), Lintner (1965), Mossin (1966), Engle (2003, 2006), Fama, French (2004), Capocci, Hubner (2004), Mitra (2009):

$$\boldsymbol{R}_a = \boldsymbol{R}_f + \beta(\boldsymbol{R}_m - \boldsymbol{R}_f) + \epsilon,$$

where

• R_a is the expected return of an asset;

• R_f is the risk-free rate of return;

• R_m is the expected market return;

• ϵ is the error term;

• the systematic risk with respect to the tangency portfolio $\beta = \frac{\sigma_{am}}{\sigma_{mm}}$;

• σ_{am} is the market and asset's covariance;

• σ_{mm} is the market's variance.

The Sharpe ratio attempts to provide the portfolio risk measure in terms of the quality of the portfolio's return at its given level of risk. The Sharpe ratio is a return-to-risk measure in the frames of the Capital Asset Pricing Model (CAPM) theory in Sharpe (1966), Mitra (2009):

$$\boldsymbol{S} = \frac{\boldsymbol{R_p} - \boldsymbol{R_f}}{\sigma_p}$$

where σ_p is the portfolio return's standard deviation.

The tangency investment portfolio is an investment portfolio that maximizes the Sharpe ratio as shown on the efficient frontier from the mutual fund theorem in Sharpe, Alexander, Bailey (1999). The maximum Sharpe ratio of the investment portfolio is situated on the efficient frontier in Hassine, Roncalli (2013)

The modified version of the Sharpe ratio can be written as in Fung and Hsieh in (1999b, 2000b), Mitra (2009)

$$\boldsymbol{Modified \quad Sharpe \quad Ratio} = \frac{\boldsymbol{R_p}}{\sigma_p}.$$

The Jensen's alpha is essentially an intercept of the regression of the excess returns on the risk factors, such as the Fama-French three factors in Jensen (1968), Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences (2013). It can be interpreted as the portfolio risk measure to quantify the portfolio return premiums above that predicted by CAPM in Jensen (1968), Economic Sciences Prize Committee of Royal Swedish Academy of Sciences (2013), Mitra (2009):

$$\alpha = \boldsymbol{R_p} - \left[\boldsymbol{R_f} + \beta_p\left(\boldsymbol{R_m} - \boldsymbol{R_f}\right)\right].$$

The Treynor ratio can be interpreted as the "quality" of portfolio return for a given level of risk, but the risk is measured on a CAPM theory basis and written as in Mitra (2009):

$$\boldsymbol{Treynor \quad Ratio} = \frac{\boldsymbol{R_p} - \boldsymbol{R_f}}{\beta_p}$$

The Fama, French Three Factor Model with the two new factors: 1) the book-to-market value; and 2) the price-earnings ratio for the listed companies, aiming to predict the expected return premiums in Fama, French (1993), Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences (2013). The three factor model accounts for these higher premiums in the following equation in Fama, French (1993), Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences (2013), Mitra (2009):

$$\boldsymbol{R}_{\alpha} = \boldsymbol{R}_{f} + \beta_{p1}\left(\boldsymbol{R}_{m} - \boldsymbol{R}_{f}\right) + \beta_{p2}\boldsymbol{SMB} + \beta_{p3}\boldsymbol{HML} + \varepsilon,$$

where

- SMB is the difference in return for small and large sized companies;
- HML is the difference in return for high book to market value and low book to market value companies;
- βp1, βp2, βp3 are regression gradients (slopes).

The Sharpe's Asset Class Factor Model has been proposed for the return premium measurement, which is a weighted average of a small number of asset classes instead of a weighted average of a large number of individual asset returns, in the cases of the mutual/hedge funds in Sharpe (1992), Fung, Hsieh (1997), Mitra (2009). The Sharpe's Asset Class Factor Model can be expressed as in Sharpe (1992), Fung, Hsieh (1997), Mitra (2009):

$$\boldsymbol{R}_{p} = \sum_{k} \boldsymbol{w}_{k}\boldsymbol{F}_{k} + \epsilon,$$

where

- $\boldsymbol{w}_{k} = \sum_{j} \boldsymbol{x}_{j}\lambda_{j};$
- $\epsilon = \sum_{j} \boldsymbol{x}_{j}\epsilon_{j};$
- j is the asset class;
- k is the total number of asset classes;
- x_j is the weighting of asset class j;
- λ_j is the factor loading for asset j (change in fund return/change in asset j return);
- ϵ_j is the error term for asset j.

Going to the next topic, as we know the investment portfolio can be created by investing the different investment products (the investment asset classes) with the help of the different investment vehicles in the different investment mediums in the capital markets in the economies of the scales and the scopes. For example, the investment portfolio can include the publicly traded shares of the public company's stock. In this case, the investor / firm's owner(s) may be interested to understand: How can the financial institution / public company / firm manage all the risks, and calculate the cost of capital, and compute the cost of equity?

In the practical case of the financial institution / company's risk management, the risk can be mitigated, going from the principles of diversification, hedging and total risk measurements. An actual risk management concept is reflected in the Economic Capital and Credit Modeling theories in which the dependence between the total risk and the investment return premium is derived in Ideas At Work (2006), Ledenyov D O, Ledenyov V O (2012d):

1. Cost of Capital is calculated using the Weighted Average Cost of Capital (WACC) model, which includes the following financial variables and ratios: Levered Beta, Debt/Total Capitalization, Tax Rate, Unlevered Beta, Targeted Capital Structure, Risk Free Rate, Market Risk Premium, Spread over Risk Free Rate. The Weighted Average Cost of Capital (WACC) is the weighted average of the marginal costs of all sources of capital. The formula for estimating WACC is as follows in Schnoor (2006):

$$WACC = K_d(1-T)D/V + K_e E/V + K_p P/V$$

where:

- **K_d** = the pre-Tax Cost of Debt;
- **T** = the Marginal Tax Rate of the entity being valued;
- **D/V** = the Long-term target Net Debt to Total Capitalization;
- **K_e** = the market-determined Cost of Equity Capital;
- **E/V =** the Long-term target Market Value of Equity to Total Capitalization;
- **K_p =** the Cost of Traditional Preferred Stock;
- **P/V** = the Long-term target Market Value of Preferred Stock to Total Capitalization.

2. Cost of Equity is calculated using the Capital Asset Pricing Model (CAPM), which includes the following financial variables and ratios: Beta = Firm Specific Risk / Market Risk, Cost of Equity = Risk Free Rate + Beta, Multifactor Models of Asset Returns. In CAPM theory in Jarrow (1988), Lintner (1965), Sharpe (1964), Sharpe, Alexander, Bailey (1999), the beta is a measure of risk: a measure of stock price volatility relative to the overall benchmark market index. The beta changes from 0 to 2 (beta=0, risk=0; beta=1, then risk=average market risk (a stock moves up or down in the same proportion as the overall market); beta=2, then risk=well above average market risk). The company's Cost of Equity, **Ke**, is calculated using the Capital Asset Pricing Model (CAPM) in Schnoor (2006):

$$K_e = R_f + \beta^* \left(market \quad risk \quad premium \right)$$

where: • $\mathbf{K_e}$ = the market-determined Cost of Equity Capital;

• $\mathbf{R_f}$ = the Risk Free Rate;

• **β** = the company's beta**.** The beta is a measure of stock price volatility relative to the overall benchmark market index. In other words, the beta is the price volatility of a financial instrument relative to the price volatility of a market or index as a whole. Beta is most commonly used with respect to equities. A high-beta instrument is riskier than a low-beta instrument. If the stock moves up or down in the same proportion as the overall market, it has a Beta of 1.0. A stock with Beta of 1.2 is considered riskier than the overall market. Higgins (2007) states that the beta can also be considered as an angle of incline:

$$\beta = \frac{P_{jm} y_i}{y_m}$$

where:

• P_{jm} is the non-diversified risk.

Continuing our discussion on the risk factors, let us consider all the existing risks in the finances in the details. We would like to draw attention to the fact that there are many types of risk, which have to be taken to an account by the investor at the investment process in the capital markets in the finances. Let us distinguish the two big classes of risks in the finances:

1. The microeconomic risks:

1) the business plan risk,

2) the financial credit risk,

3) the financial transaction risk,

4) the business operation risk,

5) the business management risk,

6) the business revenue generation risk;

2. The macroeconomic risks:

1) the local/global market risk,

2) the central bank interest rate risk,

3) the financial liquidity risk,

4) the foreign exchange risk,

5) the environmental risk,

6) the geopolitical risk.

Fig. 33 shows the financial, economic and political risks, which have to be accounted by investor in the process of creation of the hypothetical investment portfolio with diversified investment asset classes for the financial capital investment in the capital markets in short and long time periods.

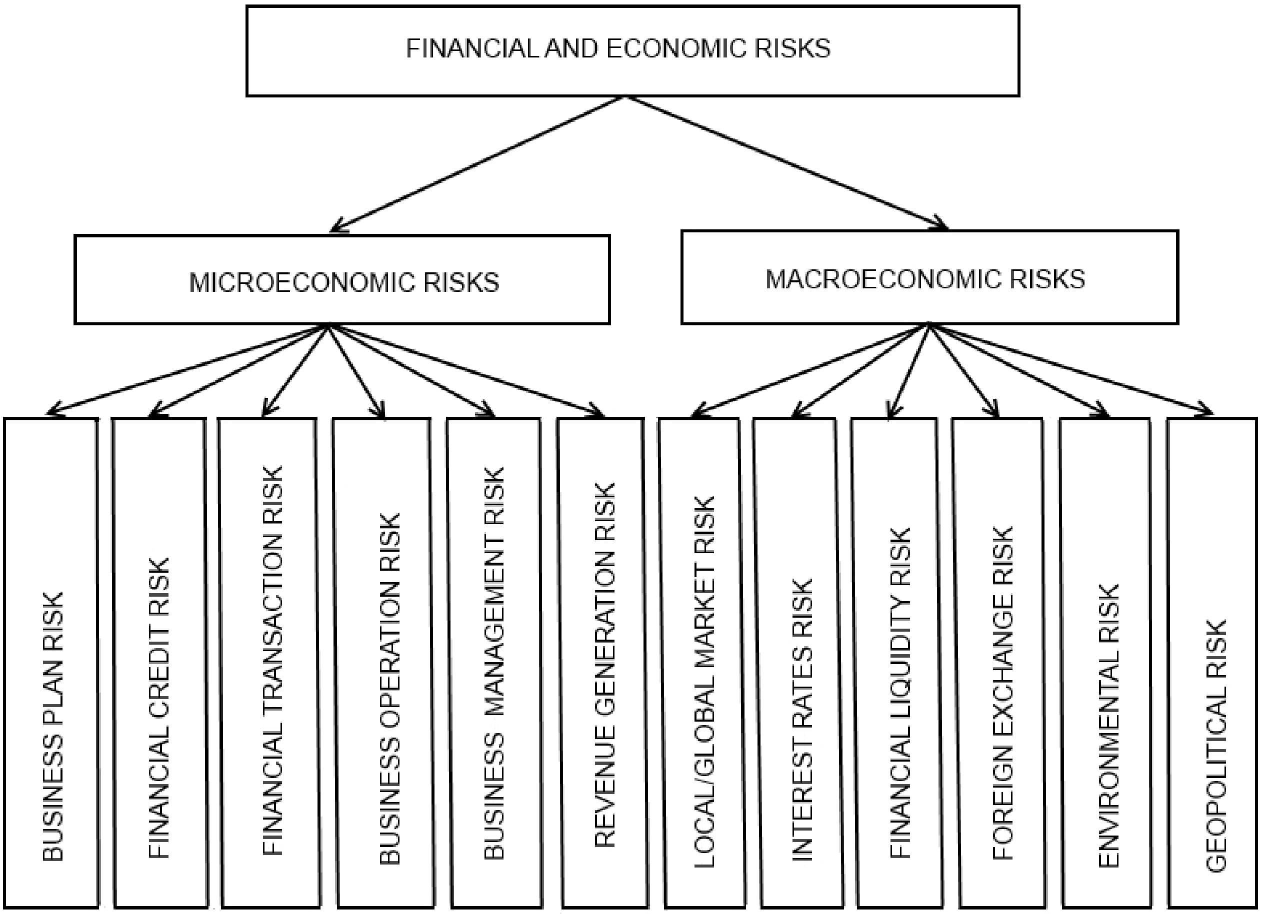

Fig. 33. Financial, economic, social and political risks to account at creation of hypothetical investment portfolio with diversified asset classes for financial capital investment in capital markets in economies of scale and scope in short and long time periods.

As we can see, there are many different categories of risk, which have to be taken to an account by an investor during the investment process in the capital markets in the finances. In the finances, the Basel III capital requirements have been formulated in Basel Committee on Banking Supervision (2006, 2009), Bernanke (2009a, b, c, d, e), Ledenyov V O, Ledenyov D O (2012d). In addition, it makes sense to note that many advanced models to account for the numerous risk factors and calculate the total risk magnitude in the capital markets in the finances have been developed. However, one of the interesting points to understand is that most these theoretical models have been created to operate with the positive interest rates and they have not been developed to work properly in the case of the negative interest rates, which are normally set by the central banks. The negative interest rates are present in Japan and some other countries presently in Higuchi (2016).

Let us write the the investment portfolio total risk computing algorithm as a dial in the Swiss watch, including the microeconomic risks: the business plan risk, the financial credit risk, the financial transaction risk, the business operation risk, the business management risk, the business revenue generation risk; as well as the macroeconomic risks: the local/global market risk, the central bank interest rate risk, the financial liquidity risk, the foreign exchange risk, the environmental risk, the geopolitical risk.

Fig. 34 demonstrates the investment portfolio total risk computing algorithm as a dial in the Swiss watch.

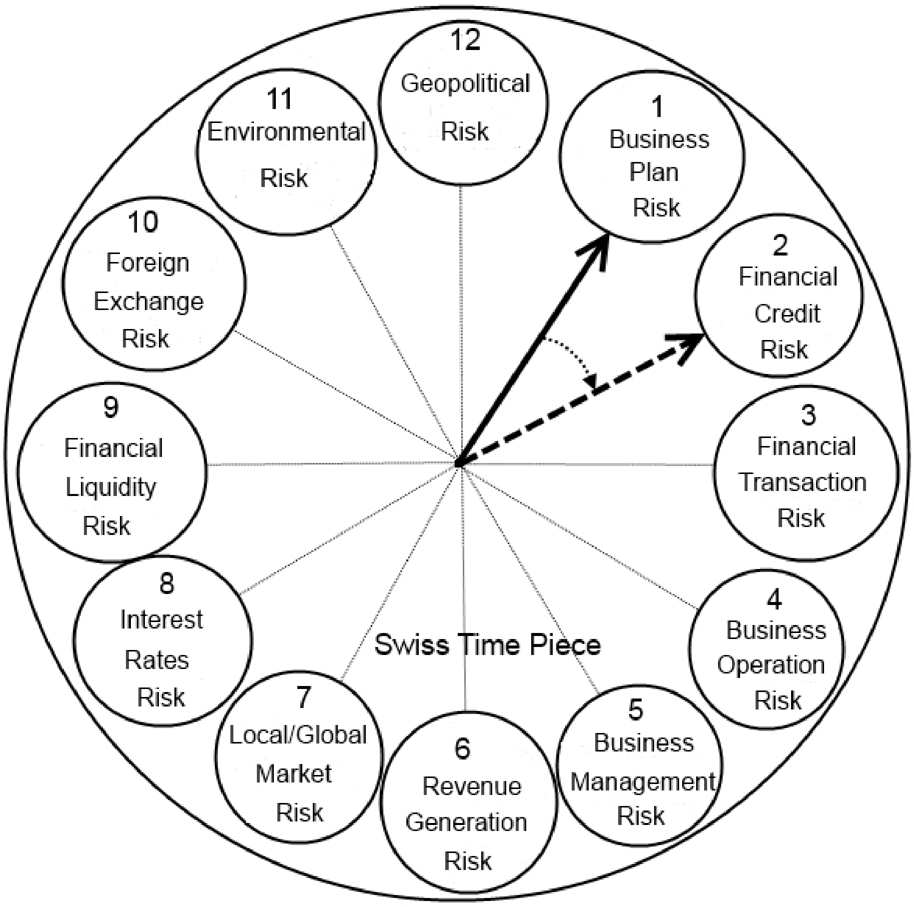

Fig. 34. Investment portfolio total risk computing algorithm as dial in Swiss watch.

In the computer science, it is a commonly accepted practice to create a block scheme of the computing algorithm. Thus, let us write the the investment portfolio total risk computing algorithm as a block scheme, including the microeconomic risks such as the business plan risk, the financial credit risk, the financial transaction risk, the business operation risk, the business management risk, the business revenue generation risk, as well as the macroeconomic risks such as the local/global market risk, the central bank interest rate risk, the financial liquidity risk, the foreign exchange risk, the environmental risk, the geopolitical risk.

Fig. 35 presents a block scheme of the investment portfolio total risk computing algorithm.

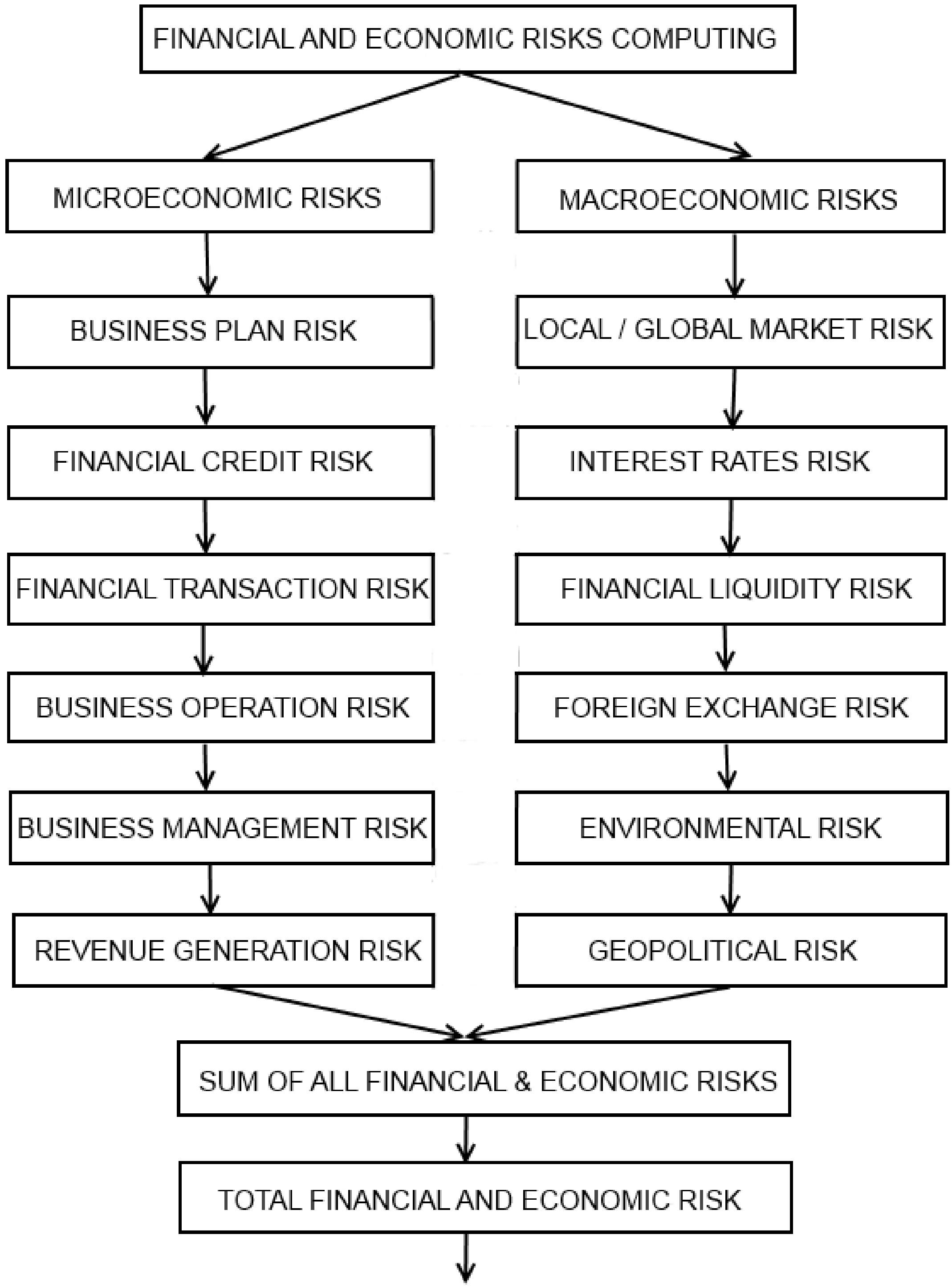

Fig. 35. Block scheme of investment portfolio total risk computing algorithm.

Continuing our discussion on the investment portfolio, let us assume that we make the financial capital investment in the publicly traded shares of the company's stock. Then, let us remind again that the electromagnetic signal processing theory in which the electromagnetic signal can be accurately characterized by the multiple measured parameters such as the amplitude, frequency, period and phase has been developed in the electrical, electronic and computer engineering sciences in Ledenyov D O, Ledenyov V O (2015a).

The investment product/asset value in the investment portfolio changes over the time, because of the macro-/micro-economic variables oscillations, including the demand/supply fluctuations. In a general case, it is a well accepted practice to characterize the investment asset value changes by the the continuous-time signals, corresponding to the Value of Share 1 (t), Value of Share 2 (t), and Value of Share 1 (t). Let us illustrate the concept by performing the spectrum analysis of the three continuous-time signals by the three fluctuating selected shares' values over the certain time period $S_1(t)$, $S_2(t)$, $S_3(t)$. The Value of Share 1 (t) and the Value of Share 2 (t) are correlated in the time; the Values of Shares 1, 2 (t) and the Value of Share 3 (t) are uncorrelated in the time.

Fig. 36 shows the correlated and uncorrelated continuous-time oscillations of the three selected shares values over the certain time period $S_1(t)$, $S_2(t)$, $S_3(t)$. The Value of Share 1 (t) and the Value of Share 2 (t) are correlated in the time; the Values of Shares 1, 2 (t) and the Value of Share 3 (t) are uncorrelated in the time.

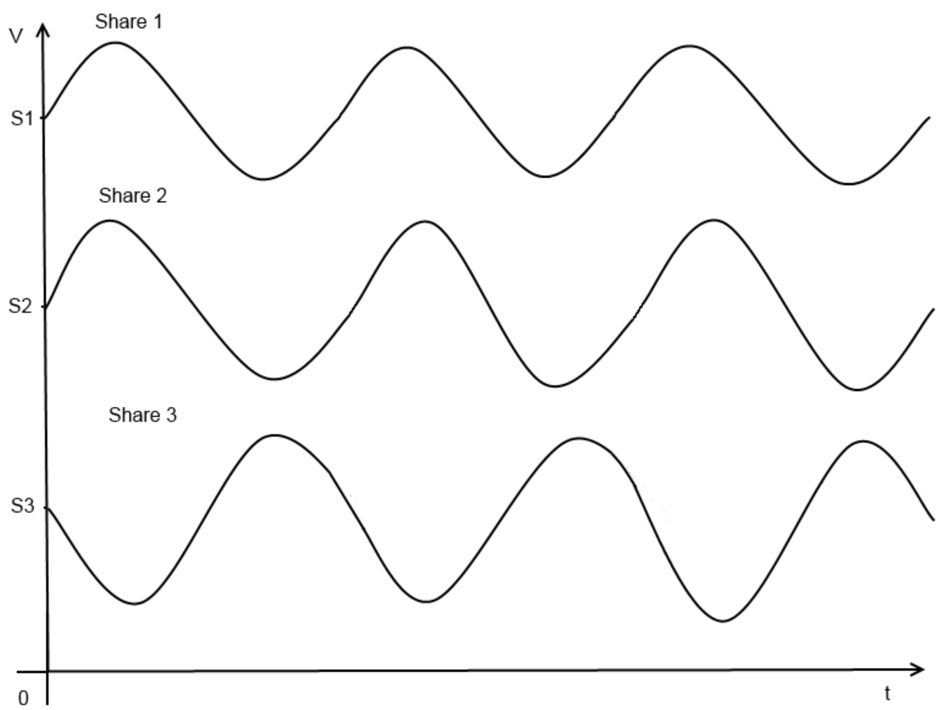

Fig. 36. Correlated and uncorrelated continuous-time oscillations of three selected shares values in time $S_1(t)$, $S_2(t)$, $S_3(t)$.

Thus, the correlated and uncorrelated investment assets can be included in the investment portfolio during the financial capital investment in the capital markets in the economies of the scales and the scopes. However, we would like to stress that the investment assets values in the time domain change abruptly in the capital markets in the economies of the scales and the scopes. The sharp disruptive events of various nature, including the technological, economical, financial, social, political disruptions, may have the multiple (in)direct instant impacts on the investment assets prices changes in the time domain.

We would like to propose the Ledenyov discrete-time investment assets values oscillations theory in the investment portfolio in the finances. We think that the dynamics of fluctuations of the investment assets' values in the investment portfolio in the capital markets in the economies of the scales and the scopes in the time domain has a discrete nature. Therefore, the investment assets values oscillations can be accurately approximated by the discrete-time digital signals in Oppenheim, Schafer (1989), Simon, Hinedi, Lindsey (1995), Proakis, Manolakis (1996), Prisch (1998), Wanhammar (1999), Sklar (2001), Rice (2008), Ledenyov D O, Ledenyov V O (2015a).

Fig. 37 illustrates the correlated and uncorrelated discrete-time oscillations of the three selected shares values over the certain time period $S_1(t)$, $S_2(t)$, $S_3(t)$. The Value of Share 1 (t) and the Value of Share 2 (t) are correlated in the time; the Values of Shares 1, 2 (t) and the Value of Share 3 (t) are uncorrelated in the time.

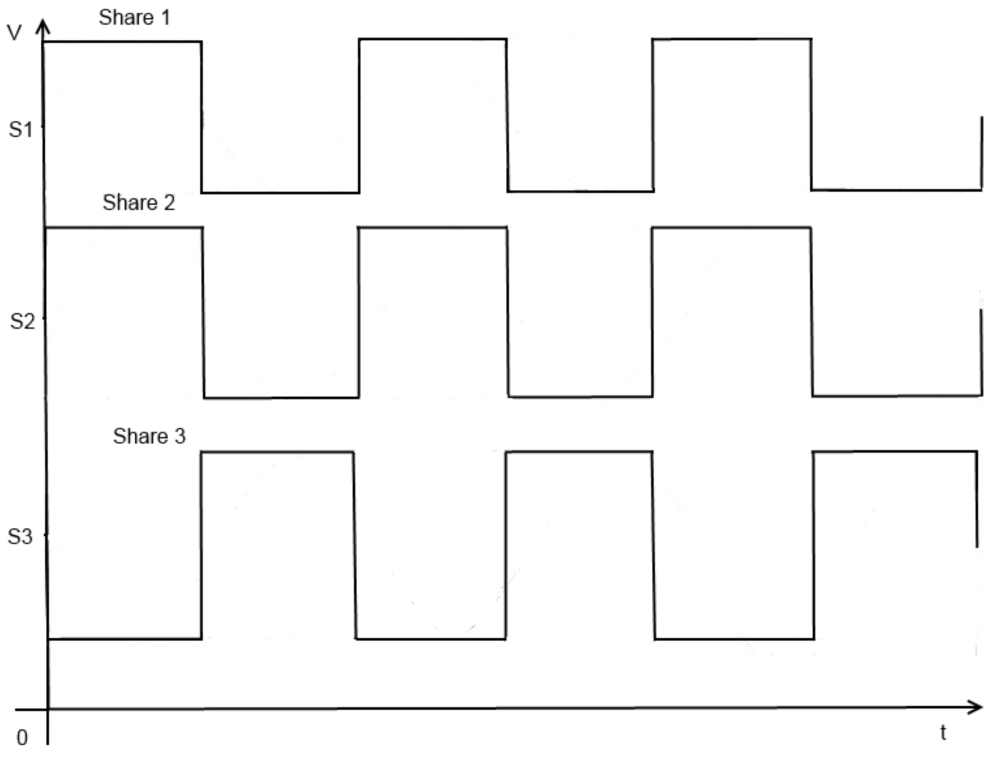

Fig. 37. Correlated and uncorrelated discrete-time oscillations of three selected shares values in time $S_1(t)$, $S_2(t)$, $S_3(t)$.

In real life, the changing discrete-time dynamics of the investment assets' values in the investment portfolio in the capital markets in the economies of the scales and the scopes in the time domain can be better approximated by the complex discrete-time signals in Oppenheim, Schafer (1989), Simon, Hinedi, Lindsey (1995), Proakis, Manolakis (1996), Prisch (1998), Wanhammar (1999), Sklar (2001), Rice (2008), Ledenyov D O, Ledenyov V O (2015a). We can finely illustrate this theoretical concept on the complex discrete-time signals in the finances by making a conditional comparison with the complex discrete-time digitally-modulated signals in the direct sequence spread spectrum wireless/optical communications in Dixon (1976), Viterbi (May 1979), Pickholtz, Milstein (May 1982), Simon, Omura, Scholtz, Levitt (1985, 1994), Simon, Moher (2008), Rappaport (January 2010), Ledenyov D O, Ledenyov V O (2015a), Miao, Zander, Sung, Slimane (2016).

Fig. 38 illustrates the correlated and uncorrelated complex discrete-time oscillations of the three selected shares values over the certain time period $S_1(t)$, $S_2(t)$, $S_3(t)$. The Value of Share 1 (t) and the Value of Share 2 (t) are correlated in the time; the Values of Shares 1, 2 (t) and the Value of Share 3 (t) are uncorrelated in the time.

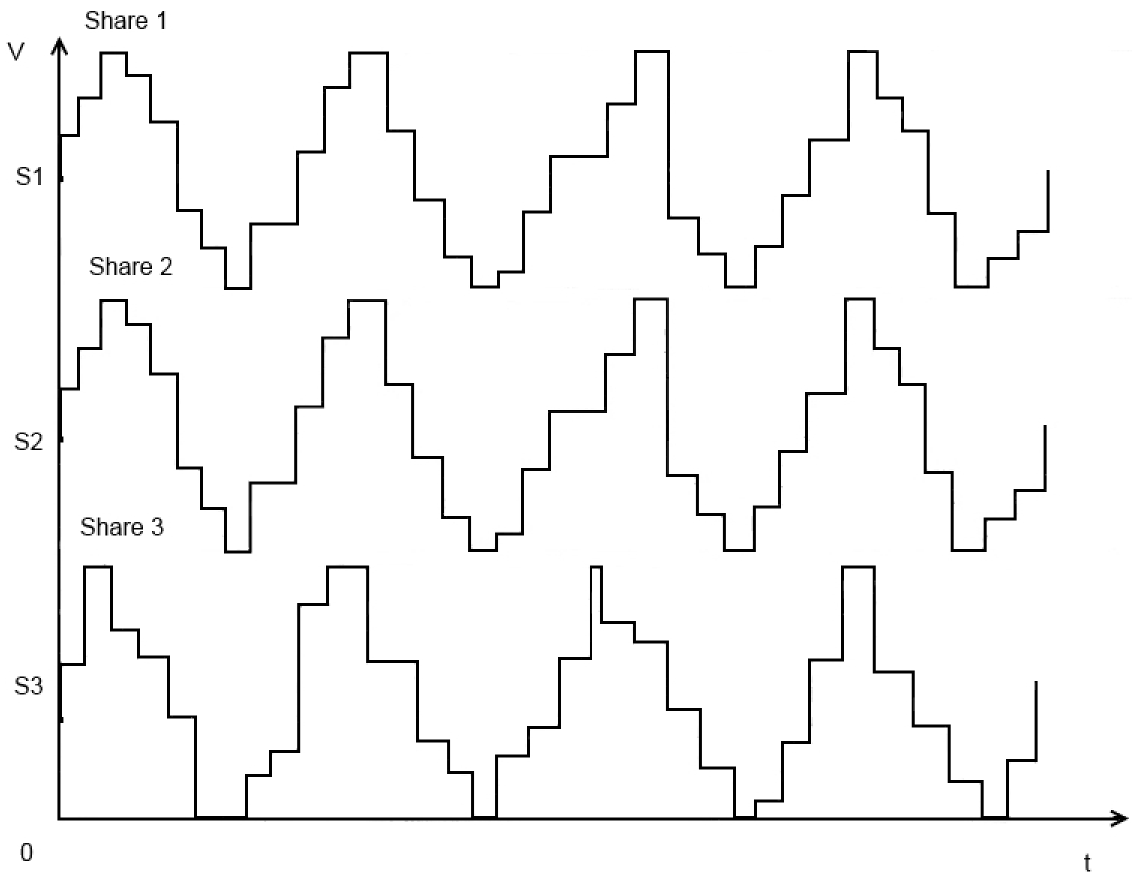

Fig. 38. Ledenyov correlated and uncorrelated complex discrete-time oscillations of three selected shares values in time $S_1(t)$, $S_2(t)$, $S_3(t)$.

Going to the next point, let us say that the Ledenyov correlated and uncorrelated complex discrete-time oscillations of the shares values in the investment portfolio depend on the instantly changing macro-/micro- economic variables in the capital markets in the economies of the scales and the scopes over the selected time period. For example, the GDP(t), GNP(t), GIP(t), PPP(t) fluctuations in the economies of the scales and the scopes in the time domain may cause the correlated and uncorrelated complex discrete-time oscillations of the shares values in the investment portfolio.

Fig. 39 pictures the old theoretical conception to describe the GDP(t), GNP(t), PPP(t) fluctuations in the economy of the scale and the scope by the on the continuous-time waves. The Juglar economic cycle, Kondratiev economic cycle, Kitchin economic cycle, Kuznets economic cycle in the form of the continuous-time waves with the different amplitudes, frequencies, periods and phases can be seen in Juglar (1862), Kondratieff (1922, 1925, 1926, 1928, 1935, 1984, 2002), Kitchin (1923), Kuznets (1973a, b).

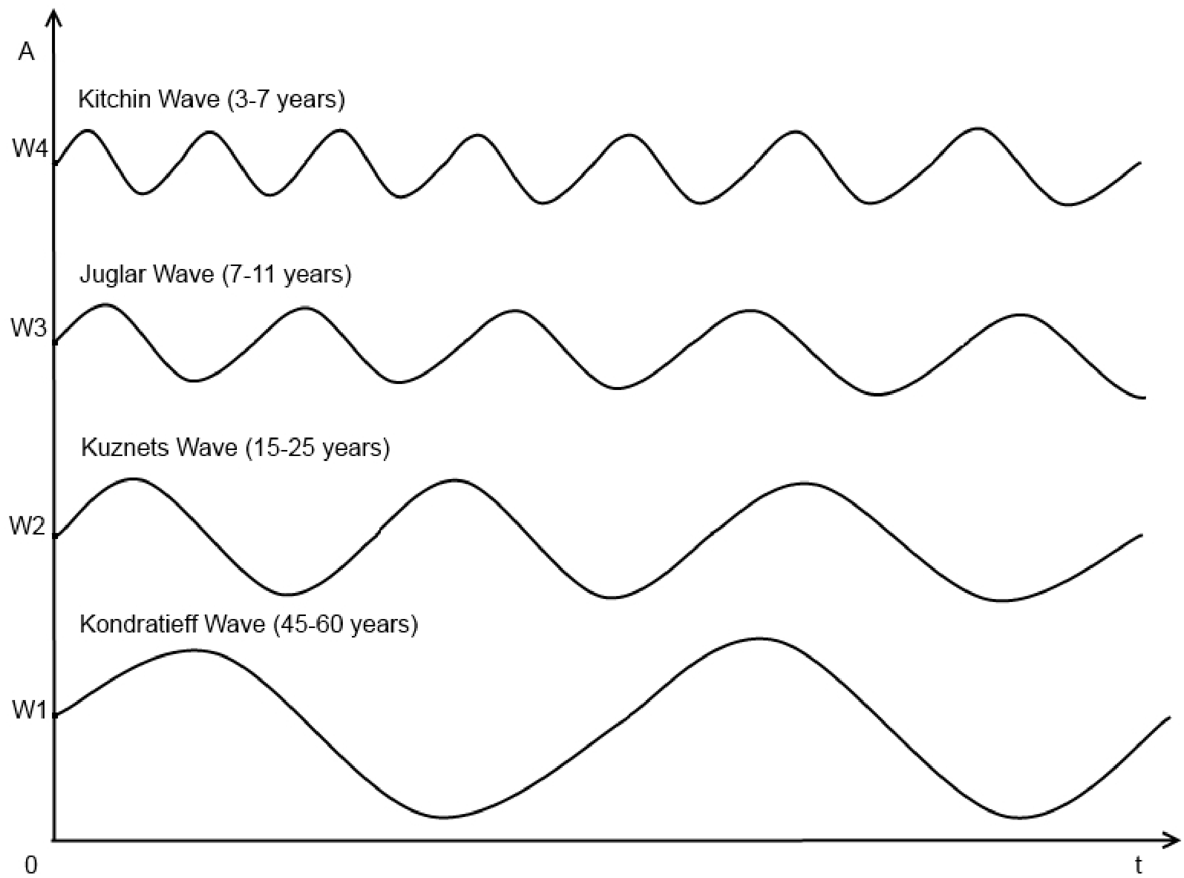

Fig. 39. Continuous-time waves of GDP(t)/GNP(t)/PPP(t) fluctuations in economy of scale and scope.

Recently, the new theory on the Ledenyov discrete-time digital waves of GDP(t)/GNP(t)/GIP(t)/PPP(t) fluctuations in the economy of the scale and the scope has been proposed in Ledenyov D O, Ledenyov V O (2015d, e, f), Ledenyov D O, Ledenyov V O (2016r), Ledenyov V O, Ledenyov D O (2016s). In our opinion, there are the Ledenyov complex discrete-time digital waves with the different amplitudes, frequencies, periods, phases proposed in Ledenyov D O, Ledenyov V O (2015d, e, f, 2016r, s), which more accurately characterize the economic output fluctuations comparing to the Juglar continuous-time wave in Juglar (1862), the Kondratieff continuous-time wave in Kondratieff (1922, 1925, 1926, 1928, 1935, 1984, 2002), the Kitchin continuous-time wave in Kitchin (1923), the Kuznets continuous-time wave in Kuznets (1973a,b).

In Fig. 39, we would like to illustrate the new theoretical conception on the Ledenyov discrete-time waves of the GDP(t)/GNP(t)/GIP(t)/PPP(t) fluctuations with the four types of the waves:

1. The simple discrete-time digital wave, Wave 1 (W1);

2. The complex discrete-time digital wave, Wave 2 (W2);

3. The complex discrete-time digital wave with multiple distortions, Wave 3 (W3);

4. The complex discrete-time digital wave with the multiple distortions, which is transmitted in the form of the bursts, Wave 4 (W4).

We think that the Ledenyov complex discrete-time digital waves may have the complex wave forms with the different amplitudes, frequencies, periods, phases as in case of the complex discrete-time digital wave with the multiple distortions (see Wave 3 (W3), Wave (W4) in Fig. 38). We believe that the Ledenyov complex discrete-time digital waves can finely approximate the long, medium and short fluctuations of the economic output in the economies of the scales and the scopes.

In the case of the long/medium/short waves of the economic output fluctuations, we think that there are the Ledenyov complex discrete-time digital waves, which are propagated in the form of the transmitted bursts of the complex discrete-time digital signals similar to the transmitted bursts of the spread spectrum signals in Dixon (1976), Viterbi (May 1979), Pickholtz, Milstein (May 1982), Simon, Omura, Scholtz, Levitt (1985, 1994), Simon, Moher (2008), Rappaport (January 2010), Miao, Zander, Sung, Slimane (2016). Speaking more clearly, during the spectral analysis of the economic output fluctuations in the economics, the long/medium/short Ledenyov complex discrete-time digital waves of the economic output fluctuations may be present in the form of transmitted complex discrete-time digital signal bursts.

Fig. 40 presents the Ledenyov discrete-time waves of GDP(t)/GNP(t)/PPP(t) fluctuations in the economy of the scale and scope. The simple discrete-time digital wave is denoted as Wave 1 (W1), the complex discrete-time digital wave is marked as Wave 2 (W2), the complex discrete-time digital wave with the multiple distortions is presented as Wave 3 (W3), the complex discrete-time digital wave with the multiple distortions, which is transmitted in the form of the bursts, is shown as Wave 4 (W4).

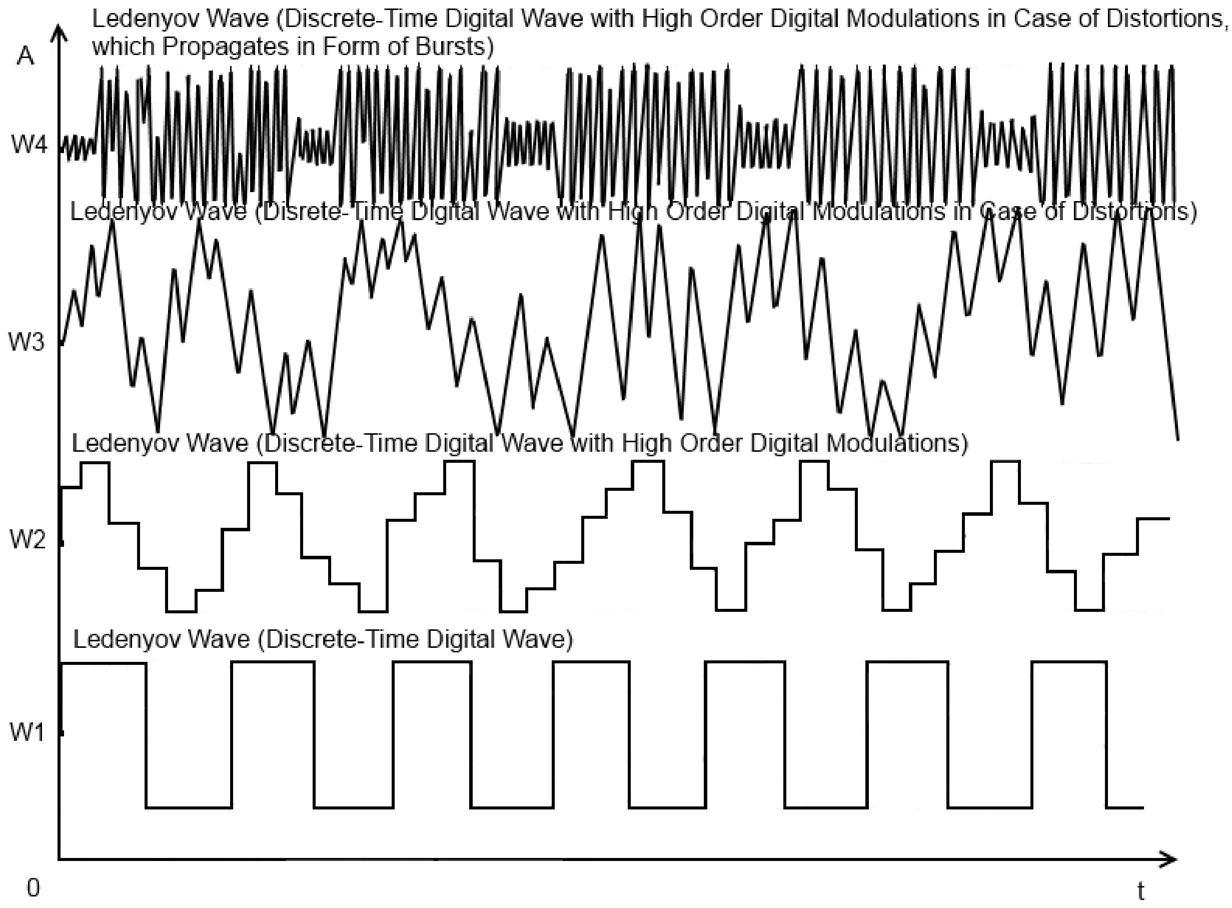

Fig. 40. Ledenyov discrete-time digital economic output waves in economy of scale and scope in time.

Let take a close look on the Ledenyov complex discrete-time digital economic output wave, aiming to understand the its nature, generation techniques and econophysical properties.

Fig. 41 shows the Ledenyov discrete-time digital economic output wave, which is generated by the complex high order digital modulations techniques with an application of the disruptive financial/economic/social/political innovations and propagated in the form of the signal bursts in the economy of the scale and the scope. The Ledenyov discrete-time digital economic output wave can be distorted by various economic financial technological political events in the economy of the scale and the scope.

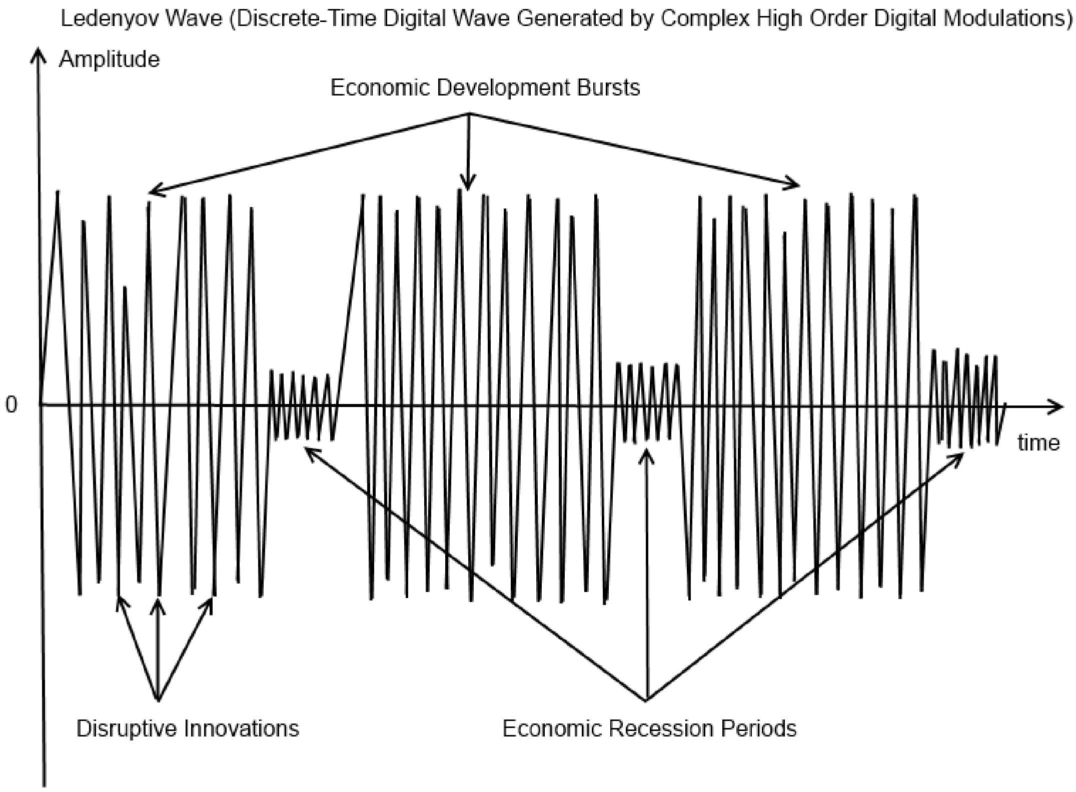

Fig. 41. Ledenyov discrete-time digital economic output wave, which is generated by complex high order digital modulations techniques with application of disruptive financial/economic/social/political innovations and propagated in form of bursts.

For example, the Chinese civilization economy of the scale and the scope with 4000 years of history can be accurately characterized by the Ledenyov long complex discrete-time digital wave, propagating in the form of the discrete-time signal bursts over the centuries. We can assume that, at a certain time period, there was a signal burst with the complex discrete-time digital signal, corresponding to the intensive development stage with the disruptive events such as the inventions of the paper, writing, arithmetic. At the subsequent time period, there was no a signal burst with the complex discrete-time digital signals, because of the destruction phase in the Chinese economy of the scale and the scope. At the next time periods, the complex discrete-time digital signal, corresponding to the intensive development stage with the disruptive events such as the globalization, the growing international trade, the new innovative technologies inventions in the electronics, the new innovative industries creation was observed again and again. We can consider the Roman civilization as another possible example to illustrate the Ledenyov long complex discrete-time digital wave, propagating in the form of the signal bursts over the centuries.

Now, let us formulate the Ledenyov investment assets theorem: The investment assets can sharply/instantly/discretely correlate/uncorrelate in the investment portfolio during the financial capital investment in the capital markets in the economies of the scales and the scopes in the short and long time periods, depending on the various financial/economic variables fluctuations caused by the disruptive financial/economic/social/political innovations.

This is an important theorem, because there is a principal distinction between:

1) The investment assets, which are approximated by the continuous-time signals with the slow correlation/uncorrelation properties on the one side, and

2) The investment assets, which are approximated by the discrete-time digital signals with the ultrafast correlation/uncorrelation properties on the other side.

In general, it means that the investment portfolio managers must use the Ledenyov complex discrete-time digital signals processing theory to analyze the spectrum of the investment assets signals, calculating the total risk of the investment portfolio and the total stability of the investment portfolio.

Going to the next point, we would like to say a few words about the well known modern theoretical and practical approaches to model the market volatility and evaluate the risk of the investment portfolio in Barone-Adesi, Giannopoulos, Vosper (1999); McNeil, Frey (2000).

We would like to focus our attention on the three broad categories of existing models:

1. The parametric models:

1) The risk metrics: The basic concept of the Value-at-Risk (VaR) in the investment portfolio has been introduced in JP Morgan (1994), Mitra (2009). The VaR has become the standard measure to quantify the risk in the finances. It evaluates the value-at-risk by the "variance-covariance method" (the delta-normal method), assuming that the standardized residuals are normally distributed, but that is not a case in the real-life investment scenarios in Manganelli, Engle (2001);

2) The generalized autoregressive conditional heteroskedasticity (GARCH): It models the financial and economic variables (the interest rates and the equity prices), applying the big observation window on the sequential events, using the weighted averages and giving more weight to the recent events and less weight to the distant events in the time domain in Bollerslev (1986). It performs the Monte Carlo simulation with the stochastic differential equations (SDE) in Engle (1982a, 2003). It evaluates the difference, using an Exponentially Weighted Moving Average in the Integrated GARCH model in Engle (1982a, 2003):

$$\sigma_t^2 = \lambda \sigma_{t-1}^2 + (1-\lambda)\, y_{t-1}^2$$

with λ usually set equal to 0.94 or 0.97.

2. The nonparametric models:

1) The historical simulation: It uses the rolling observation windows of sequential events over the selected time periods to estimate the investment portfolio return premiums. Aiming to compute the Value-at-Risk (VaR) the next time period, the rolling observation window has to be moved forward by one observation, and then the entire procedure must be repeated.

2) The hybrid model: It applies the historical simulation and the GARCH model;

3. The semi-parametric models:

1) The extreme value theory in Mitra (2009);

2) The conditional autoregressive value at risk (CAViaR}: It uses the GARCH model with some improvements and computes directly the quantile of the distribution in Engle , Manganelli (1999), Manganelli, Engle (2001);

3) The quasi-maximum likelihood GARCH: It uses the GARCH model with some improvements in Engle, Manganelli (1999), Manganelli, Engle (2001).

More information on the GARCH application for the market volatility modeling, which is proportional to the value-at-risk, including some other related research topics can be found in Engle, Ta-Chung Liu (1972), Engle (1974, 1976, 1978,1980 1982a, b, 1983, 1988, 1990, 1994, 1995, 2000, 2001a, b, 2002a, b, 2003, 2004a, b, 2006a, b, 2011, 2012), Engle, Foley (1975), Engle, Gardner (1976), Engle, Watson (1983), Engle, Granger, Kraft (1984), Engle, Hendry, Trumble (1985), Engle, Lilien, Watson (1985), Watson, Engle (1985), Bollerslev, Engle, Nelson (1986), Engle, Yoo (1987), Engle, Granger (1987), Engle, Lilien, Robins (1987), Bollerslev, Engle, Wooldridge (1988), Engle, Ito, Lin (1990), Engle, Ng, Rothschild (1990), Engle, Granger editors (1991), Engle, Gonzalez-Rivera (1991), Chou, Engle, Kane (1992), Ng, Engle, Rothschild (1992), Engle, Navarro, Carson (1992), Engle, Mustafa (1992), Ding, Granger, Engle (1993), Engle, Ng (1993), Engle, Hendry (1993), Engle, Kozicki (1993), Vahid, Engle (1993), Engle, Susmel (1993), Engle, Ng (1993), Susmel, Engle (1994), Lin, Engle, Ito (1994), Engle, Kroner (1995), Engle, Issler (1995), Engle, Russell (1997), Vahid, Engle (1997), Engle, Russell (1998), Burns, Engle, Mezrich (1998), Engle, White editors (1999), Engle, Smith (1999), Alfonso, Engle (2000), Engle, Lange (2001), Engle, Patton (2001), Manganelli, Engle (2001), Engle, Ishida (2002), Rosenberg, Engle (2002), Engle, Lunde (2003), Engle, Manganelli (2004), Engle, Patton (2004), Russell, Engle (2005), Cappiello, Engle, Sheppard (2006), Engle, Gallo (2006), Diebold, Engle, Favero, Gallo, Schorfheide (2006), Engle, Marcucci (2006), Engle, Colacito (2006), Barone-Adesi, Engle, Mancini (2007), Engle, Rangel (2008), Easley, Engle, O'Hara, Wu (2008), Giovanni, Engle, Mancini (2008), Bali, Engle (2010), Colacito, Engle, Ghysels (2011), Engle, Kelly (2012), Engle, Gallo, Velucchi (2012), Acharya, Engle, Richardson (2012), Rangel, Engle (2012), Engle, Ghysels, Sohn (2013), Bollerslev (1986), Bollerslev, Russell, Watson (2010).

Considering the next topic in our discussion, let us discuss the problem on the stability od the investment portfolio. From our previous considerations, we know that the investment portfolio must be built, using the diversified asset classes to increase the investment return premium and to reduce the total risk on the invested financial capital in the capital markets at the same time, because there is a certain inter-dependence between:

1. The expected investment return premium on the invested financial capital in the investment portfolio with the diversified asset classes in the capital markets in the short and long time periods from one side, and

2. The macro-/micro- economic/financial risk factors associated with the invested financial capital in the investment portfolio with the diversified asset classes in the capital markets in the short and long time periods from other side.

However, let us point to an interesting scientific observation that the investment portfolio, perfectly optimized from the risk point of view, can also be qualified as the investment portfolio, which is inherently unstable from the stability point of view.

For example, let us assume that we have conducted the financial engineering process and the risk mitigation process, designing an investment portfolio with the diversified asset classes to reduce the total risk magnitude. This investment portfolio is expected to deliver an increased investment return premium in the capital markets in the short and long time periods. However, let us explain that:

1. The any selected pair of assets in the investment portfolio may be un-correlated (stable), reducing the total risk magnitude of the investment portfolio; or

2. The any selected pair of assets in the investment portfolio may be correlated (unstable), decreasing the total stability magnitude of the investment portfolio at the same time.

In other words, the investment portfolio may have the low total risk magnitude, but it can be inherently unstable at the same time. Therefore, in this case, the investor may not be able to obtain the increased investment return premium on the invested financial capital in the investment portfolio with the diversified asset classes in the capital markets in the short and long time periods, because the investment portfolio is inherently unstable in Ledenyov D O, Ledenyov V O (2013a).

Therefore, the highly performing investment portfolio with the diversified asset classes in the capital markets in the short and long time periods can be created by doing the following two things in Ledenyov D O, Ledenyov V O (2013a):

1. The optimization of the investment portfolio in terms of its total risk factors decrease;

2. The optimization of the investment portfolio in terms of its stability magnitude increase.

We propose the Ledenyov investment portfolio stability theorem in the finances in Ledenyov D O, Ledenyov V O (2013a): The investment portfolio is considered to be stable in the case, when any pair of the randomly selected assets is stable, satisfying the Lyapunov stability criteria: The two randomly selected assets must have the two close trajectories at the start and continue to have the two close trajectories always in Lyapunov (1892, 1966, 1992).

It is necessary to understand that the problem on the stability of the investment portfolio can be considered as the frames of the discrete system stability theory in the nonlinear dynamic chaos science in Kuznetsov, Leonov (2005). Therefore, we propose to use the dynamic regimes modeling on the bifurcation diagram, based on the nonlinear dynamic chaos theory, with the purpose to make the accurate characterization of the dynamic properties of the combining risky investments in the investment portfolio, namely to precisely characterize the stability of investment portfolio in Ledenyov D O, Ledenyov V O (2013a).

The Ledenyov investment portfolio theorem has been formulated, using the important research results in the science of the stochastic processes and the science of the nonlinear dynamic chaos in Lyapunov (1892, 1966, 1992), Kolmogorov, Petrovsky, Piskunov (1937), Kolmogorov (1940, 1941, 1959, 1985, 1986), Ulam, von Neumann (1947), Alexandrov, Khinchin (1953), Kubo (1957), Kubo, Toda, Hashitsume (1983), Kalman, Bertram (1960), Kalman (1963), Sharkovsky (1964, 1965), May (1974, 1976), May, Oster (1976), Li, Yorke (1975), Feigenbaum (1978, 1979a, b, 1980), Feigenbaum, Kadanoff, Shenker (1982), Lanford (1982), Grebogi, Ott, Yorke (1982), Klimontovich (1982, 1990), Anishenko (1990, 2000), Anishenko, Vadivasova, Astakhov (1999), Strogatz (1994), Gandolfo (1996), Kuznetsov (1996-1997, 2001), Kuznetsov, Leonov (2005), Mosekilde (1996-1997, 1996), Peters (1996), Sauer (1996), Shiryaev (1998a, b), Medvedeva (2000), Nikulchev (2007, 2011), Bunde, Havlin (2009), Smirnov (2010), Saratov group of theoretical nonlinear dynamics (2012).

Continuing our research discussion on the investment portfolio stability, let us note that Shiryaev (1998a, b) reviewed the nonlinear chaotic models, highlighting a well known fact that the diffusion-type financial systems can be characterized as the chaotic diffusion-type financial systems or the deterministic nonlinear diffusion-type financial systems. Shiryaev (1998a, b) considered the nonlinear dynamic diffusion-type financial system, which can be described by the logistic equation

$$x_n = \lambda x_{n-1}\left(1 - x_{n-1}\right), \quad n \geq 1, \quad 0 < x_0 < 1,$$

where the nonlinear dynamic diffusion-type financial system has a number of the stable and unstable states at the increase of parameter λ, resulting in the transition to the chaos state at the parameter λ=3,6.

Shiryaev (1998) noted that the below expression is true in the case of all the parabolic systems, where F = 4.669201 is the Feigenbaum number

$$\frac{\lambda_k - \lambda_{k-1}}{\lambda_{k+1} - \lambda_k} \to F, \quad k \to \infty.$$

Fig. 42 shows the 3D bifurcation diagram for the accurate characterization of dynamic properties of the combining risky investments in an investment portfolio in the nonlinear dynamic financial system, obtained in Matlab in Ledenyov D O, Ledenyov V O (2013a).

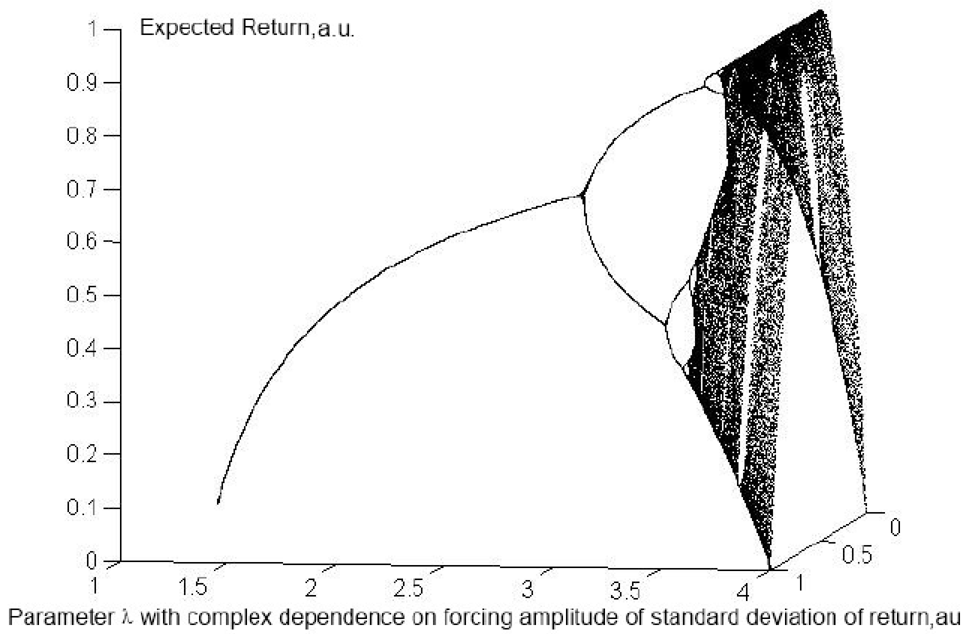

Fig. 42. 3D bifurcation diagram for accurate characterization of dynamic properties of combining risky investments in investment portfolio in nonlinear dynamic financial system, created in Matlab (after Ledenyov D O, Ledenyov V O (2013a)).

We completed the above computer simulation with the aim to obtain the 3D bifurcation diagram to illustrate the dynamic properties of the combining risky investments in the investment portfolio in the nonlinear dynamic financial system in the time domain Ledenyov D O, Ledenyov V O (2013a).

Finally, let us note that the research problem on the investment of capital with the application of the investment portfolio with the diversified asset classes in the capital markets in the short and long time periods have been researched in Bachelier L (1900), Cowles (1933), Markowitz (1952, 1956, 1959, 1987), Lintner (1956, 1965), Tobin (1958), Osborne (1959), Alexander (1961), Shiryaev (1961, 1963, 1964, 1965, 1967, 1978, 1998a, b, 2002, 2008a, b, 2010), Grigelionis, Shiryaev (1966), Graversen, Peskir, Shiryaev (2001), Kallsen, Shiryaev (2001, 2002), Jacod, Shiryaev (2003), Peskir, Shiryaev (2006), Feinberg, Shiryaev (2006), du Toit, Peskir, Shiryaev (2007), Eberlein, Papapantoleon, Shiryaev (2008, 2009), Shiryaev, Zryumov (2009), Shiryaev, Novikov (2009), Gapeev, Shiryaev (2010), Karatzas, Shiryaev, Shkolnikov (2011), Shiryaev, Zhitlukhin (2012), Zhitlukhin, Shiryaev (2012), Feinberg, Mandava, Shiryaev (2013), Cootner (1962, 1964), Mandelbrot (1963), Fama (1963, 1965, 1970, 1976, 1984, 1991, 1998), Fama, Blume (1966), Fama, Fisher, Jensen, Roll (1969), Fama, MacBeth (1973), Fama, Schwert (1977), Fama, Bliss (1987), Fama, French (1988a, b, 1989, 1992, 1993, 1995, 1996, 1998, 2004, 2010), Davis, Fama, French (2000), Fama, Litterman (2012), Sharpe (1964, 1965, 1966, 1968, 1992, 1994), Sharpe, Alexander, Bailey (1999), Samuelson (1965), Treynor (1965), Mossin (1966), Jensen (1968), Merton (1969, 1970, 1971, 1972, 1973a, 1973b, 1977a, 1977b, 1982, 1983a, 1983b, 1990, 1992, 1993a, 1993b, 1994, 1995a, 1995b, 1997, 1998, 1999, 2001), Black, Jensen, Scholes (1972), Black, Scholes (1973), Fischer (1977a, b), Shiller (1979, 1981a, b, 1982, 1984, 1987, 1988, 1989, 2000, 2008), Shiller, Campbell, Schoenholtz (1983), Shiller, Perron (1985), Shiller, Pound (1989), Hansen, Sargent (1980), Hansen, Hodrick (1980), Hansen (1982, 1985), Hansen, Singleton (1982, 1983, 1984), Hansen, Richard (1987), Hansen, Heaton, Ogaki (1988), Hansen, Jagannathan (1991, 1997), Hansen, Scheinkman (1995), Hansen, Heaton, Yaron (1996), Hansen, Sargent (2001), Hansen, West (2002), Hansen, Heaton, Li (2008), Hansen, Sargent (2008), Engle, Ta-Chung Liu (1972), Engle (1974, 1976, 1978,1980 1982a, b, 1983, 1988, 1990, 1994, 1995, 2000, 2001a, b, 2002a, b, 2003, 2004a, b, 2006a, b, 2011, 2012), Engle, Foley (1975), Engle, Gardner (1976), Engle, Watson (1983), Engle, Granger, Kraft (1984), Engle, Hendry, Trumble (1985), Engle, Lilien, Watson (1985), Watson, Engle (1985), Bollerslev, Engle, Nelson (1986), Engle, Yoo (1987), Engle, Granger (1987), Engle, Lilien, Robins (1987), Bollerslev, Engle, Wooldridge (1988), Engle, Ito, Lin (1990), Engle, Ng, Rothschild (1990), Engle, Granger editors (1991), Engle, Gonzalez-Rivera (1991), Chou, Engle, Kane (1992), Ng, Engle, Rothschild (1992), Engle, Navarro, Carson (1992), Engle, Mustafa (1992), Ding, Granger, Engle (1993), Engle, Ng (1993), Engle, Hendry (1993), Engle, Kozicki (1993), Vahid, Engle (1993), Engle, Susmel (1993), Engle, Ng (1993), Susmel, Engle (1994), Lin, Engle, Ito (1994), Engle, Kroner (1995), Engle, Issler (1995), Engle, Russell (1997), Vahid, Engle (1997), Engle, Russell (1998), Burns, Engle, Mezrich (1998), Engle, White editors (1999), Engle, Smith (1999), Alfonso, Engle (2000), Engle, Lange (2001), Engle, Patton (2001), Manganelli, Engle (2001), Engle, Ishida (2002), Rosenberg, Engle (2002), Engle, Lunde (2003), Engle, Manganelli (2004), Engle, Patton (2004), Russell, Engle (2005), Cappiello, Engle, Sheppard (2006), Engle, Gallo (2006), Diebold, Engle, Favero, Gallo, Schorfheide (2006), Engle, Marcucci (2006), Engle, Colacito (2006), Barone-Adesi, Engle, Mancini (2007), Engle, Rangel (2008), Easley, Engle, O'Hara, Wu (2008), Giovanni, Engle, Mancini (2008), Bali, Engle (2010), Colacito, Engle, Ghysels (2011), Engle, Kelly (2012), Engle, Gallo, Velucchi (2012), Acharya, Engle, Richardson (2012), Rangel, Engle (2012), Engle, Ghysels, Sohn (2013), Bollerslev (1986), Bollerslev, Russell, Watson (2010), Campbell (1987, 1993), Campbell, Cochrane (1999), Campbell, Polk, Vuolteenaho (2009), Campbell, Shiller (1987), Campbell, Shiller (1988a, b), Campbell, Shiller (1991), Campbell, Vuolteenaho (2004), Campbell, Giglio, Polk, Turley (2012), Jegadeesh, Titman (1993), Barone-Adesi, Giannopoulos, Vosper (1999), Cochrane (2001), Abreu, Brunnermeier (2002), Brunnermeier, Nagel (2004), Brunnermeier (2009), Brunnermeier, Pedersen (2009), Jorion (2003), Hull (2005-2006, 2010, 2012), Schnoor (2005-2006), Schnoor (2006), Scherer (2007), Hassine, Roncalli (2013), Ledenyov D O, Ledenyov V O (2013a, e, f).

In Chapter 8, we will consider the research problem on the quantum winning virtuous investment strategies creation and execution for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 8

Quantum strategies of investment portfolio at financial capital investment in capital markets

A financial process of the financial capital investment in the capital markets in the economies of the scale and the scope includes, at least, the eight main stages. All these phases must be clearly distinguished, fully understood and finely processed by the prospective investors:

1. The financial investment capital allocation;

2. The financial investment strategy creation;

3. The optimal investment opportunity finding;

4. The financial investment risk evaluation;

5. The financial investment capital investing;

6. The increased return premium generation;

7. The increased financial capital collection;

8. The financial investment capital increase.

We would like to take a more detailed unbiased view on the process of the investment strategy creation in this chapter, integrating all the modern scientific discoveries in the natural/social sciences with the aim to find an optimal investment strategy in the course of our discussion on the topic of research interest.

In a century of competition between the globalization trend and the protectionism trend in Wolf (2004), we believe that the technological, social, and political disruptive innovations may create or destroy the investment opportunities in the economies of the scales and the scopes around the World instantly. Therefore, the problem on the creation of the optimal investment strategy in the capital markets can be considered as one of the central problems in the finances. Let us begin our research thinking on the quantum winning virtuous investment strategy creation by elegantly comparing all the important scientific topics in the finances with the shining high quality diamonds of the white, yellow, pink, red, black colors colours. Highlighting an undisputable unquestionable importance of the quantum winning virtuous investment strategy creation process, we would like to make a persuasive philosophical statement that the fundamental strategy theory could be conditionally classified as a crystally clear pink diamond of highest quality, shining brightly, colorfully and attractively in a spectrum of illuminating lights of the finances, economics and business administration sciences in Ledenyov V O, Ledenyov D O (2016s).

Indeed, the research topic on the quantum winning virtuous investment strategy creation generates a considerable scientific interest among the authoritative strategy thinkers, experts and professors in the globally integrated World in Ledenyov V O, Ledenyov D O (2016s). Of course, the research on the quantum winning virtuous investment strategy creation is in a state of constant progressive development through a chain of the scientific evolutionary visions transformations in the best minds of the leading strategy thinkers, experts and professors in Ledenyov V O, Ledenyov D O (2016s).

Considering the strategy theory advancements, we can distinguish the following new theoretical approaches in the fundamental strategy theory in Ledenyov V O, Ledenyov D O (2016s):

1. The classical philosophical views on the fundamental strategy theory, which consider the continuous-time processes in the economies of the scales and scopes in the mechanical devices disruption century in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005);

2. The analogue philosophical views on the fundamental strategy theory, which deal with the continuous-time processes in the analogue creative economies of the scales and scopes in the analogue devices disruption century in Ledenyov D O, Ledenyov V O (2015b);

3. The digital philosophical views on the fundamental strategy theory, which deal with the discrete-time processes in the digital creative economies of the scales and scopes in the digital devices disruption century in Ledenyov D O, Ledenyov V O (2015b);

4. The quantum philosophical views on the fundamental strategy theory, which focus on the discrete-time quantum processes in the quantum creative economies of the scales and scopes in the quantum devices disruption century in Ledenyov D O, Ledenyov V O (2015b, n, o).

Of course, there are some other original scientific approaches, which can be certainly used to improve the fundamental strategy theory in the frames of the finances, economics, business administration, econophysics, psychology sciences during the scientific learning process. They have been researched, to a certain extent, during an intensive research process with an application of the accumulated knowledge base in the frames of the finances, economics, business administration, econophysics, psychology sciences in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005), Chandler , Daems (1980), Andrews (1971a, b, 1980, 1981a, b, 1984), Rumelt (1974, 1982), Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, December 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Porter, Heppelmann (November 2014), Schendel, Hofer (1979), Yelle (1979), Dess, Davis (1984), Schwenk (1984), Pitol-Belin (1984), Hambrick (1985), Palepu (1985), Barney (1986, 1991), Huff, Reger (1987), Hill, Snell (1988), Hill, Jones (1998, 2004), Baysinger, Hoskisson (1989), Rue, Holland (1989), Fombrum, Shanley (1990), Pearson (1990), Ansoff (1991), Goold (1991), Goold, Luchs (1993), Goold et al (1994), Goold, Campbell (September, October 1998), Alexander, Goold, Collis, Campbell, Lieberthal, Montgomery, Palepu, Prahalad, Stalk, Khanna, Hart, Shulman, Evans (1992, 1995, 1996, 1997, 1998, 1999), Yip (1992, 1998, 2000, 2007), Campbell et al (1995), Johnson, Scholes (1997), Johnson, Scholes, Whittington (1998), Johnson, Scholes, Whittington (2002, 2003), McKiernan (1997), Child, Faulkner (1998), Martin (1998-1999, 2004, 2005-2006, 2007a,b, 2008, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Shiryaev (1999), Laffont, Tirole (1999), Grant (2001), Welch (2001a, b), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Gavetti, Levinthal (2004), Gavetti, Rivkin (2007), Roney (2004), Thietart, Xuereb (2005), Godard (2006), Ireland, Hoskisson, Hitt (2006), Hitt, Ireland, Hoskisson (2007), Lorino, Tarondeau (2006), Besanko, Shanley, Dranove (2007), Sull (2007a, b, c, d, 2008), Teece, Winter (2007), Samuels (2008), Chamberlain (2010), Holt, Cameron (2010), Ledenyov D O, Ledenyov V O (2015b, n, o, s).

In these circumstances, the most striking fact to be mentioned is that the fundamental strategy theory learning curve during the strategy knowledge accumulation process in the the finances, economics, business administration, econophysics, psychology sciences in the time scale may exhibit, at least, the three possible dependences:

1. The linear dependence, when the level of strategy knowledge increases linearly in the selected time period (it can be realized in real life at the short time periods only);

2. The exponential dependence, when the level of strategy knowledge increases exponentially and steadily in the selected time period (it can be observed in real life over the long time periods);

3. The S-type nonlinear dependence, when the level of strategy knowledge increases nonlinearly in the selected time period, namely the strategy knowledge accumulation or destruction processes in the selected time period may have place (it can be observed in real life over the long time periods).

Fig. 43 presents the fundamental strategy theory learning curve as a linear dependence of the strategy knowledge accumulation on the time in the simplest possible case. In addition, Fig. 43 shows that the fundamental strategy theory learning curve can also be represented as the exponential dependence or the S-type nonlinear dependence of the strategy knowledge accumulation/destruction processes on the time in more complex cases to account for the nonlinear data gaining/losing by the financial investors during the strategy knowledge accumulation process in the long term perspectives.

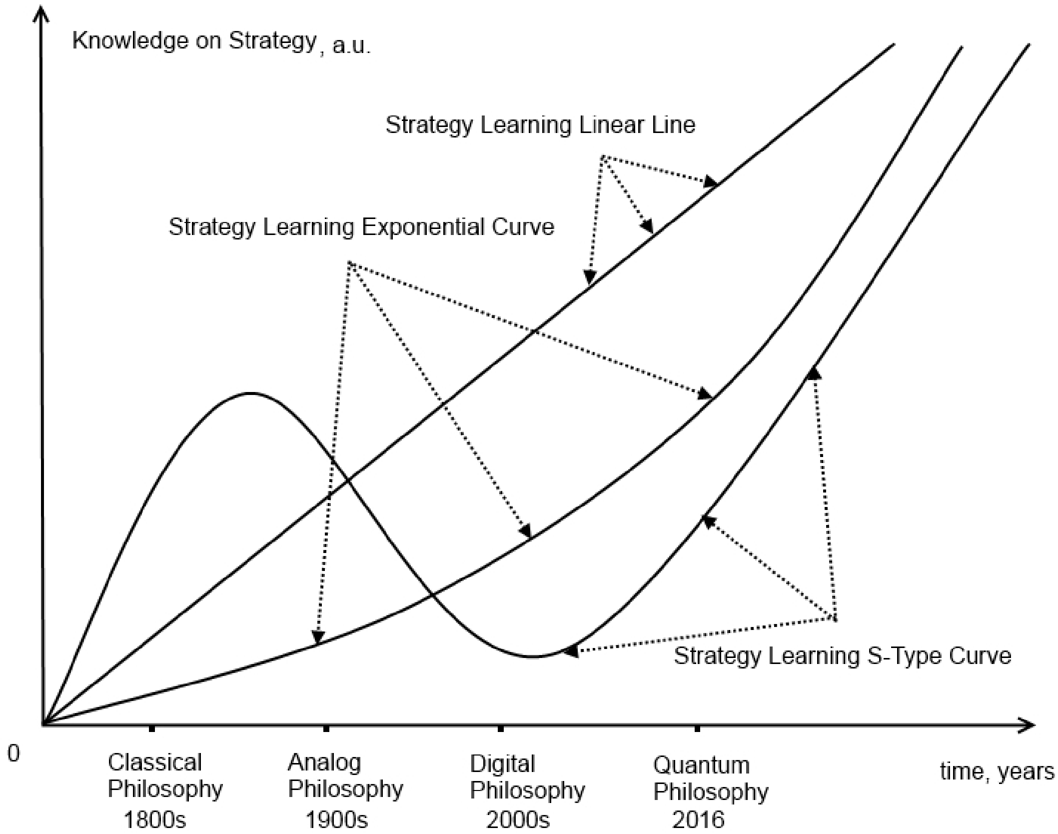

Fig. 43. Dependence of strategy knowledge accumulation/learning on time: 1) Linear, 2) Exponential, 3) S-type nonlinear.

Now, let us introduce the Ledenyov multidimensional strategy space with XYZ coordinates. In this case, we can represent the strategy as a Ledenyov strategy vector, which points to a certain direction in the XYZ multidimensional strategy space. In other words, we propose to think about the strategy vector as the strategy vector of action, which is directed toward the certain direction in the XYZ multidimensional strategy space. Speaking clearly, we can set our strategic goal to reach an increased return premium on the financial investments in the capital markets by drawing the strategy vector with the direction to the certain point in the XYZ multidimensional strategy space. Then, we could say that a real implementation of the created strategy would require an application of the well defined practical actions toward the completion of our outlined strategic goal. This geometric representation of the strategy in the terms of the Ledenyov strategy vector in the Ledenyov multidimensional strategy space with the XYZ coordinates will be quite useful during the forthcoming discussion on the complex multivector strategies definition, meaning, creation and their practical implementation in real life situations in the finances.

Fig. 44 represents the strategy as the Ledenyov strategy vector of action, which points to the certain direction in the Ledenyov multidimensional strategy space with XYZ coordinates.

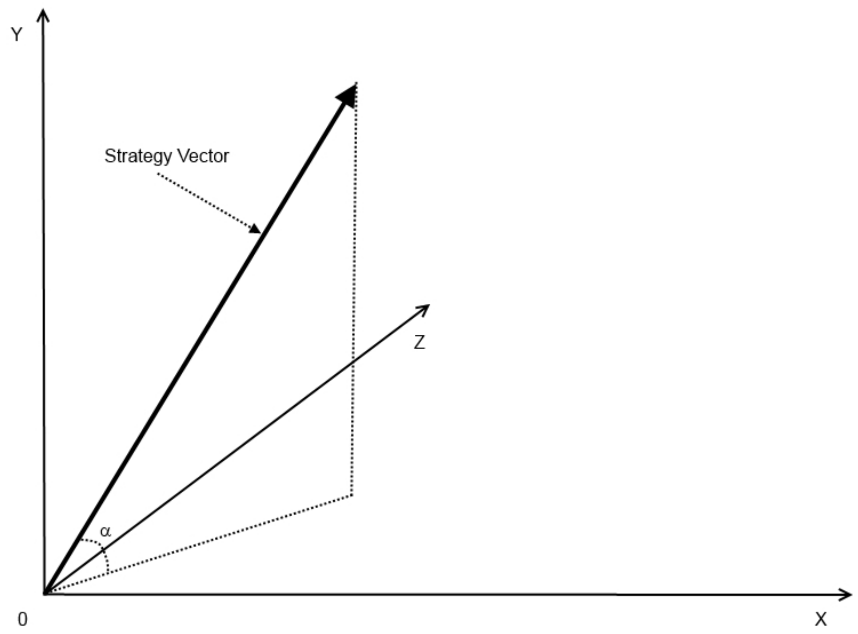

Fig. 44. Ledenyov strategy vector in Ledenyov multidimensional strategy space with XYZ coordinates.

Moving forward, let us say that we can think about the complex strategy, employing the complex strategy concept in the cases, when the complex strategy may include a big number of the Ledenyov strategy vectors with the discretely changing directions in the Ledenyov multidimensional strategy space in the time domain. For example, let us illustrate the complex strategy concept by assuming that we would like to move from point A to point B by the Rolls Royce automobile, using an existing highways network on our European continent. First of all, we must create the simple strategy of our automobile movement from the point A to the point B by drawing the automobile movement vector from the point A to the point B on the map. Let us imagine that there are many natural barriers, including the mountains, hills, valleys, rivers between the point A and point B, hence in this case, we would be forced to drive towards the slightly different directions to reach the final destination point on our travelling way. Therefore, we must create the Ledenyov complex strategy vector for our automobile movement from point A to point B by drawing the multiple automobile movement vectors with the slightly different directions between the point A and the point B on the map. In other words, the complex strategy may include a number of the strategy vectors, changing in the Ledenyov XYZ multidimensional strategy space over the time.

Fig. 45 demonstrates the complex strategy concept in which the Ledenyov complex multivector strategy includes a number of the Ledenyov strategy vectors, changing in the Ledenyov XYZ multidimensional strategy space over the time.

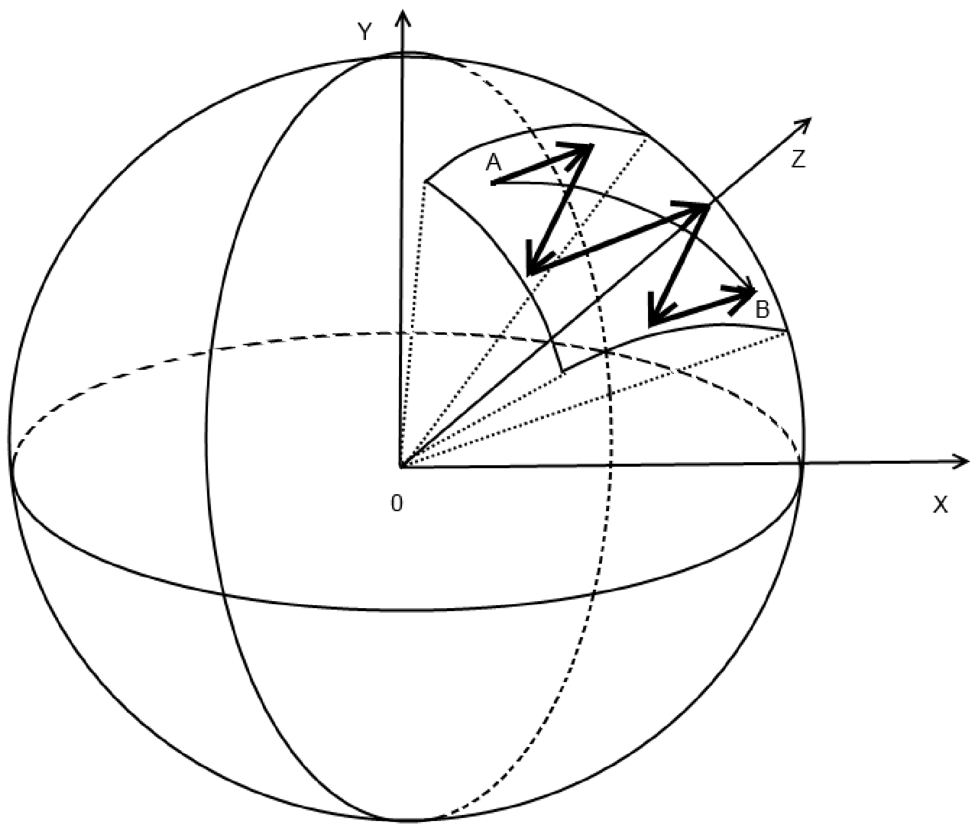

Fig. 45. Ledenyov complex multivector strategy as number of Ledenyov strategy vectors in Ledenyov multidimensional strategy space with XYZ coordinates, changing in the space – time domains.

Obviously, in the finances, the Ledenyov complex multivector strategy can be efficiently frequently used to reach the pre-determined strategic goals by the private and institutional investors during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

For instance, the Ledenyov complex multivector strategies can be formulated and executed to reach the certain return premium target level or the certain profitability target level or the certain net income target level at the financial institutions, investment funds, investment boutiques, etc. There may be a number of the financial/economic/political factors, which must be taken to an account in the process of the Ledenyov complex multivector strategy creation by the investors at the financial institutions for a number of possible applications at various social/financial/economic settings in the selected time periods.

Fig. 46 shows the geometric representation of the Ledenyov parallel complex multivector strategy and Ledenyov sequential complex multivector strategy in the Ledenyov multidimensional strategy space with XY coordinates, changing in the space – time domains.

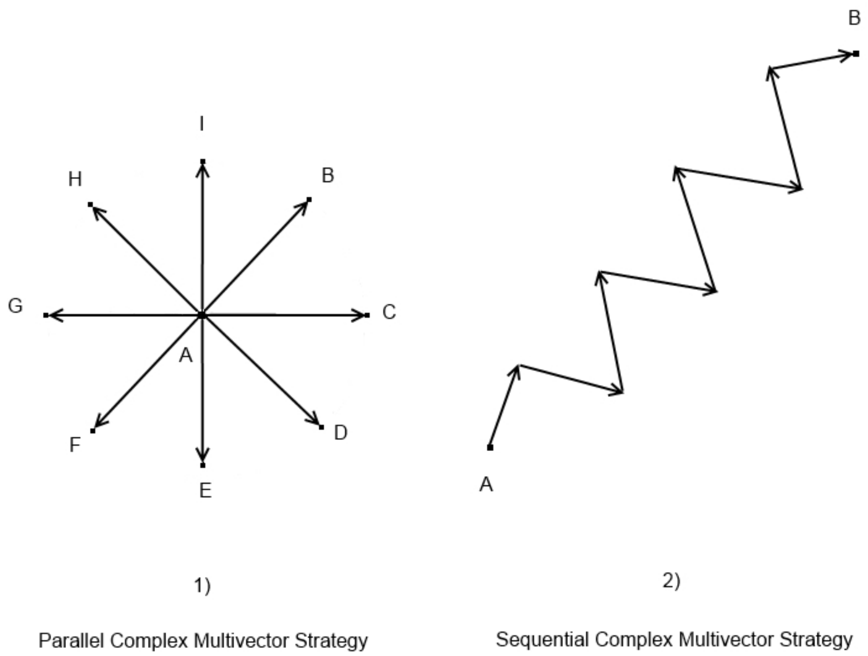

Fig. 46. Geometric representation of Ledenyov parallel complex multivector strategy and Ledenyov sequential complex multivector strategy in Ledenyov multidimensional strategy space with XY coordinates, changing in space – time domains.

Going from the modern scientific findings and our research understanding, we prefer to divide all the Ledenyov complex multivector strategies in the two specific categories:

1. The Ledenyov parallel complex multivector strategies;

2. The Ledenyov sequential complex multivector strategies.

For example, in one case, the investor may pursue the Ledenyov parallel complex multivector strategies at the same time period by investing the financial capital in the diversified investment products, using various unrelated investment vehicles in the investment mediums in the capital market over the selected limited time. In this case, let us assume that investor will execute the investment strategies in parallel.

In other case, the investor can pursue the Ledenyov sequential complex multivector strategy at the same time period by investing the financial capital in the preferable investment products, using various unrelated investment vehicles in the investment mediums in the capital market at the selected limited time period. In this case, let us assume that investor will alter the investment strategies sequentially.

However, in the real life situation, the investor can also pursue the Ledenyov mixed parallel-sequential complex multivector strategies:

1. by investing the financial capital in the diversified investment products, using various unrelated investment vehicles in the investment mediums in the capital market over the selected limited time in parallel; as well as

2. by changing sequentially the investment strategies during the financial capital in the preferable investment products, using various unrelated investment vehicles in the investment mediums in the capital market at various time moments.

Fig. 47 shows the geometric representation of the Ledenyov mixed parallel-sequential complex multivector strategies in the Ledenyov multidimensional strategy space, changing in space – time domains.

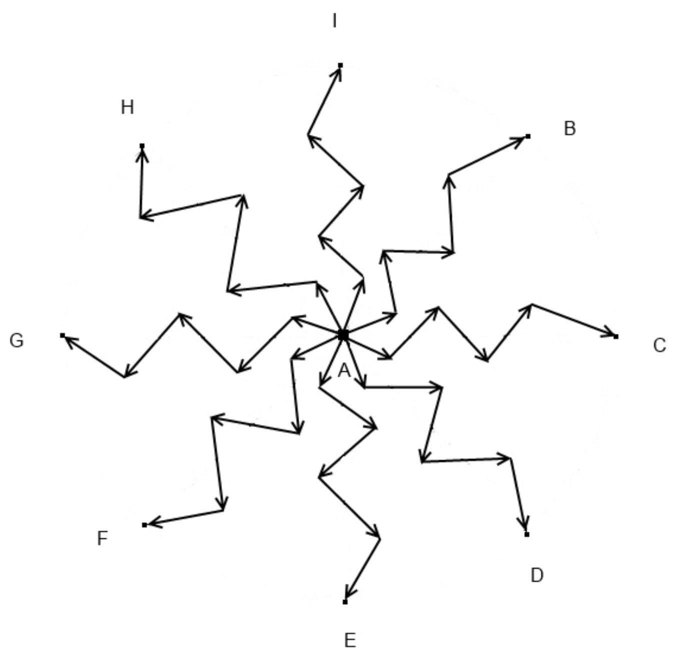

Fig. 47. Geometric representation of Ledenyov mixed parallel-sequential complex multivector strategies in Ledenyov multidimensional strategy space with XY coordinates, changing in space – time domains.

In a big number of cases, the Ledenyov complex multivector strategies can be used in the game theory applications in Cournot (1838, 1897), Edgeworth (1881), von Neumann (1928, 1959), von Neumann, Morgerstern (1944).

The game theory is mainly focused on the nature of the strategic interactions between the engaged economic agents, pursuing their specific strategic business goals. It makes sense to remind that the game theory is conceptually based on the notion of the game, which is a mathematical model of a particular business situation, simulating the strategic interactions between the engaged economic agents with their certain strategic goals. The engaged economic agents may have the rational or irrational behaviors in the cooperative or (non)cooperative games. The strategic decision making process by the engaged economic agents in the games is represented in the form of decision trees usually. The discovery of the Cournot - Nash non-cooperative equilibria, which is a set of strategies, when each economic agent's strategy is regarded as a best strategy against the equilibrium strategies by other economic agent's in the game, can be considered as a significant milestone in the game theory progressive scientific development in Cournot (1838, 1897), Nash (1951). It is necessary to note that the game theory has been extensively studied in Cournot (1838, 1897), Edgeworth (1881), von Neumann J (1928, 1959), von Neumann, Morgerstern (1944), Hayek (September 1945), Nash (1950a,b, c, 1951, 1953), Shapley (1953), Williams (1954), Simon (1955), Luce, Raiffa (1957, 1989), Shubik (1953a, b, c, 1954, 1955, 1956, 1958a, b, c, 1959, 1975, 1981, 1987, 1988, July 12 2000, May 2001), Brewer, Shubik (1979), Shubik, Levitan (1980), Tucker, Luce (editors) (1959), Blackett (1962), Farquharson (1969), Morse, Kimball (1970), Arrow (1971), Howard (1971), Alchian, Demsetz (December 1972), Maynard Smith, Price (1973), Maynard Smith (1974, 1982), Aumann, Shapley (1974), Harsanyi (1974), Selten (1975, 1988), Selten, Harsanyi (1988), Jensen, Meckling (October 1976, Summer 1994, 1998), Jensen (1995), Bicchieri (1989, 1993, 2006), Bicchieri, Jeffrey, Skyrms (editors) (1999), Fudenberg, Tirole (1991), Myerson (1991), Gibbons (1992), Poundstone (1992), Fudenberg, Tirole (1993), Ben David, Borodin, Karp, Tardos, Wigderson (1994), Osborne, Rubinstein (1994), Osborne (2004), Green, Mas-Colell, Whinston (1995), Owen (1995), Petrosyan, Zenkevich (1996), Fernandez, Bierman (1998), Dutta (1999), Isaacs (1999), Gintis (2000), Camerer (2003), Miller (2003), Rasmusen (2006), Bellhouse (2007), Hansen, Hendricks (editors) (2007), Webb (2007), Harrington (2008), Fudenberg, Levine (editors) (2008), Leyton-Brown, Shoham (2008), Shoham, Leyton-Brown (2009), Leonard (2010), Papayoanou (2010), Julmi (2012), Brandenburger (2014), McCain (2014).

Fig. 48 shows the decision tree, which can be used to make the strategic decisions on the complex multivector strategies in the frames of the game theory in Fudenberg, Tirole (1991).

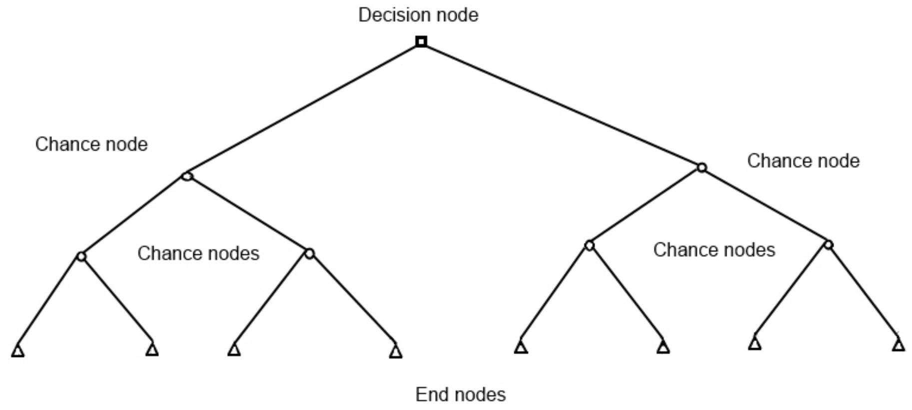

Fig. 48. Decision tree in game theory.

We think that the investor's decision (the economic agent's decision) to change the direction of the strategy vector in the multidimensional strategy space during the strategic operation is forced/encouraged by the strategic analysis of the numerous (un)related factors and (un)objective reasons in the frames of the (non)cooperative games in the economic environment within the limited information dataset at the selected time periods as researched in the finances, economics and business administration sciences. However, in our opinion, the game theory may have a number of theoretical limitations. One of the most notable limitation is the only use of the inductive logic, the deductive logic, and in some cases, the abductive logic during the decision making process with an application of the decision trees in the strategic games analysis in Cournot (1838, 1897), Edgeworth (1881), von Neumann J (1928, 1959), von Neumann, Morgerstern (1944), Hayek (September 1945), Nash (1950a,b, c, 1951, 1953), Shapley (1953), Williams (1954), Simon (1955), Luce, Raiffa (1957, 1989), Shubik (1953a, b, c, 1954, 1955, 1956, 1958a, b, c, 1959, 1975, 1981, 1987, 1988, July 12 2000, May 2001), Brewer, Shubik (1979), Shubik, Levitan (1980), Tucker, Luce (editors) (1959), Blackett (1962), Farquharson (1969), Morse, Kimball (1970), Arrow (1971), Howard (1971), Alchian, Demsetz (December 1972), Maynard Smith, Price (1973), Maynard Smith (1974, 1982), Aumann, Shapley (1974), Harsanyi (1974), Selten (1975, 1988), Selten, Harsanyi (1988), Jensen, Meckling (October 1976, Summer 1994, 1998), Jensen (1995), Bicchieri (1989, 1993, 2006), Bicchieri, Jeffrey, Skyrms (editors) (1999), Fudenberg, Tirole (1991), Myerson (1991), Gibbons (1992), Poundstone (1992), Fudenberg, Tirole (1993), Ben David, Borodin, Karp, Tardos, Wigderson (1994), Osborne, Rubinstein (1994), Osborne (2004), Green, Mas-Colell, Whinston (1995), Owen (1995), Petrosyan, Zenkevich (1996), Fernandez, Bierman (1998), Dutta (1999), Isaacs (1999), Gintis (2000), Camerer (2003), Miller (2003), Rasmusen (2006), Bellhouse (2007), Hansen, Hendricks (editors) (2007), Webb (2007), Harrington (2008), Fudenberg, Levine (editors) (2008), Leyton-Brown, Shoham (2008), Shoham, Leyton-Brown (2009), Leonard (2010), Papayoanou (2010), Julmi (2012), Brandenburger (2014), McCain (2014).

Going from the research findings in the quantum physics science and the quantum mechanics science in Planck (1900a, b, c, d, 1901, 1903, 1906, 1914, 1915, 1943), Einstein (1905, 1917, 1924, 1935), Einstein, Podolsky, Rosen (1935), Bohr (1922, 1924), de Broglie L (1924, 1925, 1926, 1927, 1928), Compton (1926), Compton A, Allison S K (1935), Schrödinger (1926), Schiff (1949), Akhiezer, Berestetsky (1953, 1964, 1980), Berestetsky, Lifshits, Pitaevsky (1980), Dirac (1958), Merzbacher (1961), Feynman, Leighton, Sands (1965), Atkins (1974, 1977, 1978), Landau, Lifshits (1977), Bransden, Joachain (1983), Resnick, Eisberg (1985), Galindo, Pascual (1990, 1991), Shankar (1994), Ballentine (1998), Bransden, Joachain (2000), Liboff (2002), Abers, Pearson (2004), Blokhintsev (2004), Griffiths (2004), Vakarchuk (2004), McMahon (2006), Halliday (2007), Hand, Finch (2008), Teschl (2009), Zettili (2009), Laloe (2012), Rylov (2015), we propose to use a new type of the quantum (probabilistic) logic during the decision making process with the application of the decision trees in the game theory and some other theories.

At this point of our research discussion, let us precisely define the quantum logic (the probability logic), the inductive logic, the deductive logic, the abductive logic in Ledenyov D O, Ledenyov V O (2015n, s):

1. The Ledenyov quantum logic (the probability logic) – the logic of what may occur – reasons through computing of events probabilities distributions. Quantum logic allows a and b to be realized, depending on a and b events probabilities distributions equal to square of the Schrödinger's wave function in Ledenyov D O, Ledenyov V O (2015n, s).

2. The inductive logic – the logic of what is operative — reasons from the specific to the general. Induction allows inferring a entails b from multiple instantiations of a and b at the same time.

3. The deductive logic – the logic of what must be — reasons from the general to the specific. Deduction allows deriving b as a consequence of a. In other words, deduction is the process of deriving the consequences of what is assumed.

4. The abductive logic – the logic of what could possibly be true –reasons through successive approximation. Abduction allows inferring a as an explanation of b, because of this, abduction allows the precondition a to be inferred from the consequence b.

Applying our innovative scientific thinking, we propose the Quantum Thinking Process (QTP) algorithm, which can be considered as the "computing kernel" to make the logic decisions in the case of the decision making process by the investors during the financial capital investment in the diversified investment products by means of various investment vehicles in the different investment mediums in the capital markets in the economies of the scales and scopes. Thus, let us list the main distinctive features of the Quantum Thinking Process (QTP) algorithm:

1. The parallel application of the inductive logic, deductive logic, abductive logic;

2. The subsequent application of the Ledenyov quantum (probabilistic) logic;

3. The highly sophisticated decision making technique to select the best decision during the decision making process.

Fig. 49 shows the block scheme of the Ledenyov quantum thinking process algorithm.

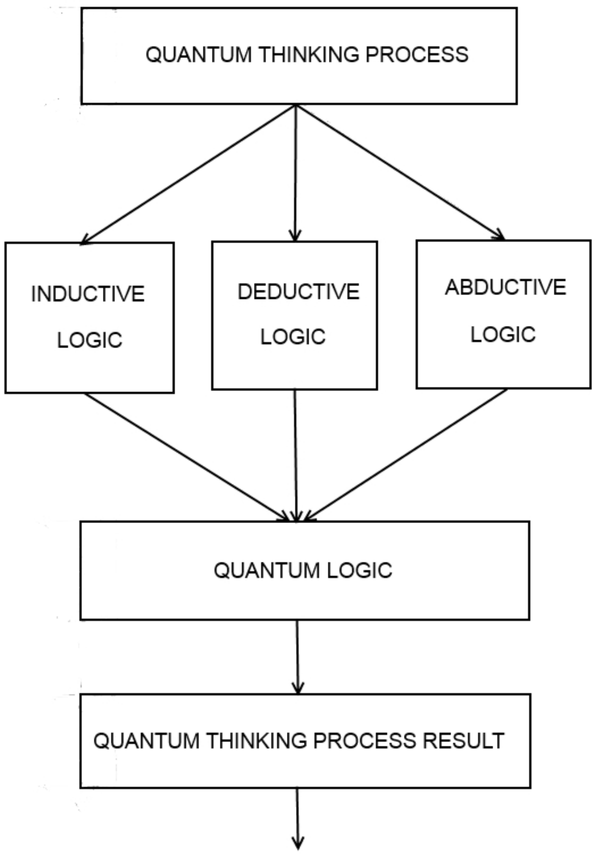

Fig. 49. Block scheme of Ledenyov quantum thinking process algorithm.

The Ledenyov Quantum Thinking Process (LQTP) algorithm is an integral part of the Ledenyov Quantum Winning Virtuous Strategy Search (LQWVSS) algorithm. Let us formulate the Ledenyov Quantum Winning Virtuous Strategy Search Algorithm:

The smart active investor with the highest information absorption capacity, who experiences the phenomenon of resonant - type absorption of information, is able to create the quantum winning virtuous investment strategies through the decision making process on the available business choices in the diffusion - type financial economic system with the induced nonlinearities, applying the econophysical econometrical analysis techniques in Schumpeter (1906, 1933), Bowley (1924), Box, Jenkins (1970), Grangel, Newbold (1977), Van Horne (1984), Taylor S (1986), Tong (1986, 1990), Judge, Hill, Griffiths, Lee, Lutkepol (1988), Hardle (1990), Grangel, Teräsvirta (1993), Pesaran, Potter (1993), Banerjee, Dolado, Galbraith, Hendry (1993), Hamilton (1994), Karatzas, Shreve (1995), Campbell, Lo, MacKinlay (1997), Rogers, Talay (1997), Hayashi (2000), Durbin, Koopman (2000, 2002, 2012), Ilinski (2001), Greene (2003), Koop (2003), Davidson, MacKinnon (2004), Campbell, Lo, MacKinlay (1996), Vialar, Goergen (2009) and using the creative imperative integrative intelligent conceptual co-lateral adaptive logarithmic thinking process with the application of the quantum logic in Ledenyov D O, Ledenyov V O (2015n, s) above the inductive, deductive and abductive logics in Martin (1998-1999, 2005-2006) in the frames of the strategic choice structuring process, that is the winning through the distinctive choices process, in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007), aiming to reach the following business purposes:

1. to get an increased return premium during the financial capital investment in the capital markets in the short and long time periods;

2. to make a positive financial impact in the society in the frames of the socially responsible investment (SRI) that integrates the social, environmental, and ethical considerations into the investment decision making process at the financial capital investment in the capital markets in the short and long time periods in Waddock, Graves, (1994), Arora, Gangopadhyay (1995), Sparkes (1998, 2004, 2008), Johnson, Greening (1999), Lyndenburg (2002), Cox, Brammer, Millington (2004), Kotler, Lee (2005), Louche, Lydenberg (2006), McWilliams, Siegel, Wright (2006), Scholtens (2006), Cespa, Cestone (2007), Cumming, Johan (2007), Williams (2007), Hull, Rothenberg (2008), Reinhardt, Stavins, Vietor (2008), Renneboog, Horst, Zhang (2008), Arjalies (2010), Crifo, Mottis (2010), Morrell, Clark (2010), Baron, Harjoto, Jo (2011), Crifo, Forget (February, 2012);

3. to share a part of the increased investment return premium on the realization of the shared value principles initiatives, aiming to reduce an inequality between all the modern society members and to improve a quality of life of all the developed society members in Porter, Kramer (December 2006).

We can illustrate the Ledenyov quantum winning virtuous strategy search algorithm by drawing the action stages on an imagined dial in the Swiss mechanical watch. We prefer to place the described actions in the positions of the hours, ranging from 1 to 12, on an imagined dial of the Swiss mechanical watch. Then, let us assume that the arrow will switch clockwise from 1 to 12 at an imagined dial in the Swiss mechanical watch. This way, we can illustrate the 12 most significant activities to create the quantum winning virtuous investment strategy in the finances.

Fig. 50 illustrates the Ledenyov quantum winning virtuous strategy search algorithm as a set of the strategic actions, shown on an imagined dial of the Swiss mechanical watch.

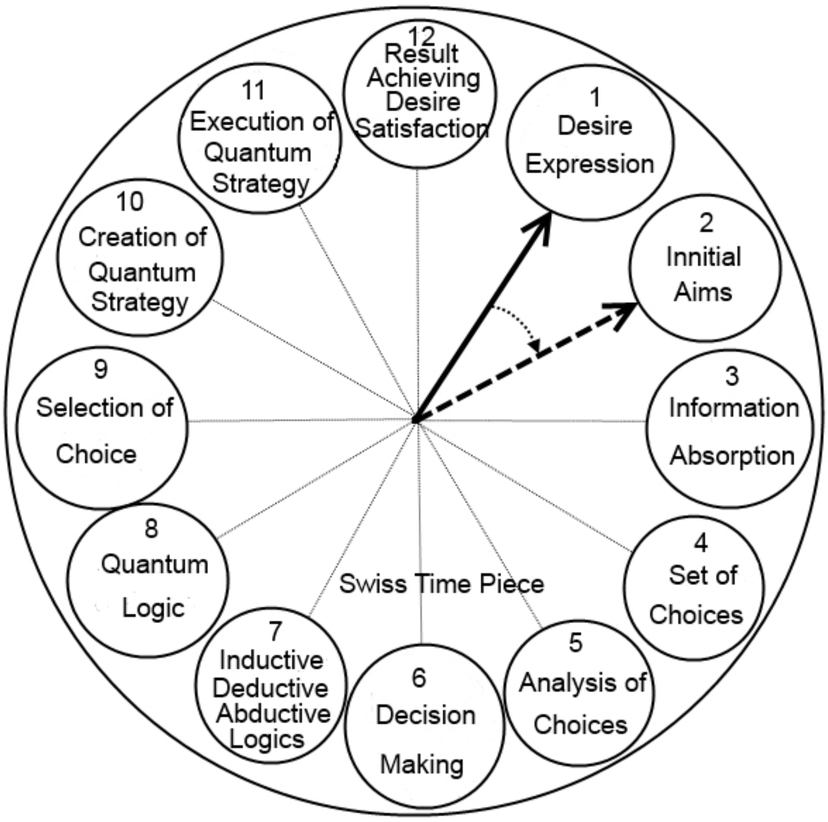

Fig. 50. Ledenyov quantum winning virtuous strategy search algorithm as a set of strategic actions on imagined dial of Swiss mechanical watch.

Making a step forward, let us create a block scheme of the Ledenyov quantum winning virtuous strategy search algorithm as it is commonly accepted in the financial engineering science and the computer science. In other words, we will simply represent a set of the strategic actions on an imagined dial of the Swiss mechanical watch in the form of the block scheme.

Fig. 51 depicts the block scheme of the Ledenyov quantum winning virtuous strategy search (LQWVSS) algorithm.

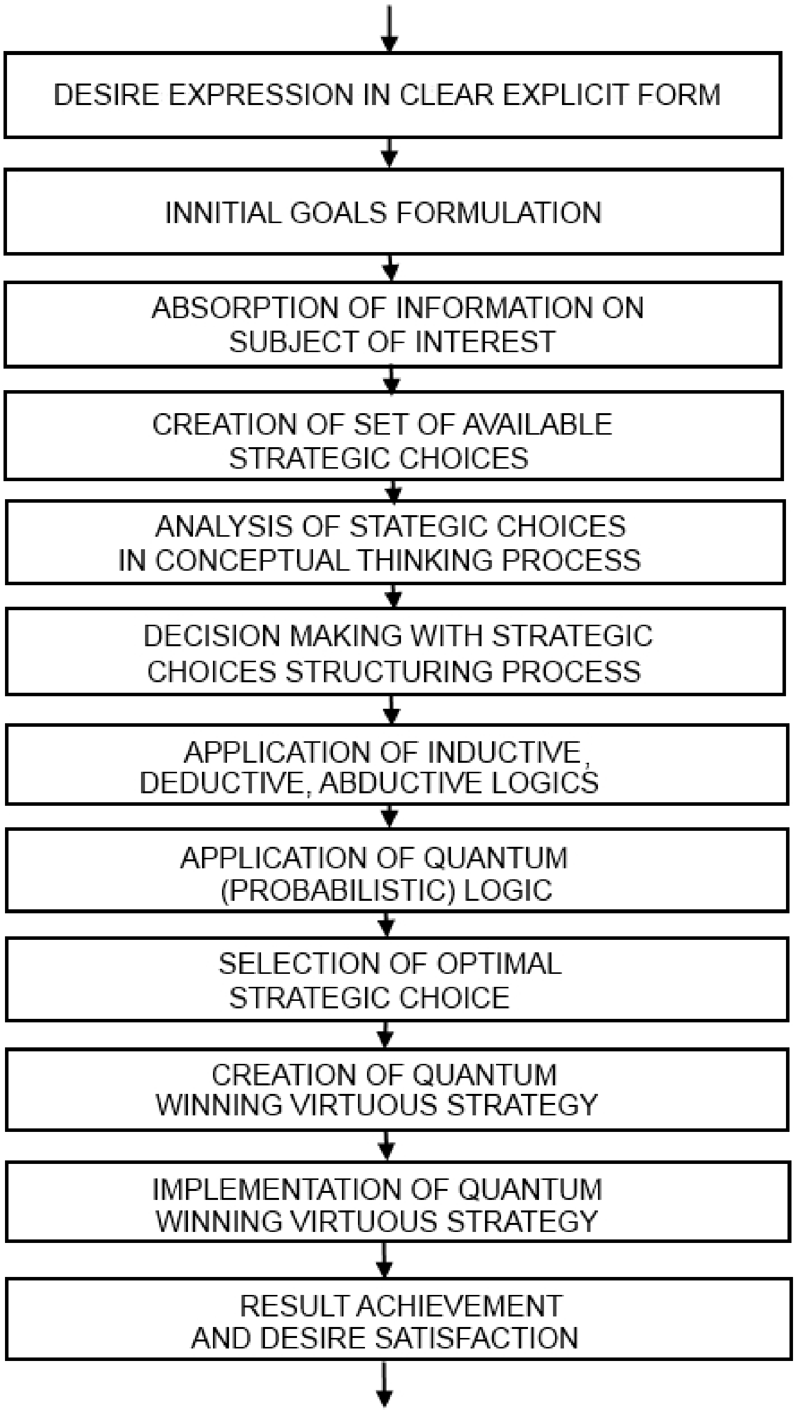

Fig. 51. Block scheme of Ledenyov quantum winning virtuous strategy search algorithm.

Let us move ahead with the consideration of a practical realization and application of the Ledenyov Quantum Winning Virtuous Strategy Search (LQWVSS) algorithm, discussing the concrete practical meaning of every action block in the above block scheme:

1. The desire expression: The investor has to outline his/her desire in the general terms as far as the financial capital investment in the capital markets is concerned in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

2. The initial goals formulation: The investor has to formulate a set of the initial clear goals, which can be reached during the financial capital investment in the capital markets in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

3. The absorption of information on the subject of interest: The different information diffusion, absorption and dispersion processes are present in the economy of the scale and scope, hence the investor must efficiently absorb the information of interest from various sources in the economy of the scale and scope in Akerlof (1970, 2014), Khandwalla (1973), Grossman (1976), Grossman, Stiglitz (1980), Hellwig (1980), Diamond, Verrecchia (1981), Hambrick (1982), Copeland, Galai (1983), French, Roll (1986), Cohen, Levinthal (1990), Lyons (1993a), Miller and Chen (1994), Shyy, Lee (1995), Easley, Kiefer, O'Hara (1997a), Franke, Hess (1997, 2000), Covrig, Melvin (1998), Ito, Lyons, Melvin (1998), Miller, Reuer (1998), Wang (1999), Rime (2000), Brandt, Edelen, Kavajecz (2001), Bacchetta, van Wincoop (2003), Koutmos, Martin (2003), Evans, Lyons (2005b), Escribano, Pascual (2006), Bjønnes, Osler, Rime (2007), Chinn, Moore (2008), Farina (2008), De Zwart, Markwat, Swinkels, van Dijk (2009), Hussinger (2010, 2012), Menkhoff, Osler, Schmeling (2010), Bjønnes, Osler, Rime (2011), Moore, Payne (2011), Ledenyov D O, Ledenyov V O (2015l);

4. The creation a set of the available strategic choices: The investor has to create a set of strategic choices, which will include the optimal available investment choices on the financial capital investment in the capital markets in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

5. The analysis of the strategic choices in the conceptual thinking process: The investor has to analyze a set of strategic choices, keeping in mind all the pluses and minuses of the selected optimal investment choices on the financial capital investment in the capital markets in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

6. The decision making with the strategic choices structuring process: The investor has to create the decision tree, which is based on a set of strategic choices such as the optimal available investment choices on the financial capital investment in the capital markets in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

7. The application of the quantum thinking process with the inductive, deductive, abductive logics: The investor has to apply the inductive logic, the deductive logic and the abductive logic to make his/her decision on a set of strategic choices such as the optimal available investment choices on the financial capital investment in the capital markets in Ledenyov V O, Ledenyov D O (2016s), Martin (1998-1999, 2005-2006);

8. The application of the quantum thinking process with the quantum (probabilistic) logic: The investor has to apply the quantum (probabilistic) logic to make his/her decision on a set of strategic choices such as the optimal available investment choices on the financial capital investment in the capital markets in Ledenyov V O, Ledenyov D O (2016s);

9. The selection of the optimal strategic choice: The investor has to make the optimal strategic choice among a set of strategic choices such as the optimal available investment choices on the financial capital investment in the capital markets in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007);

10. The creation of the quantum winning virtuous strategy: The investor has to create the quantum winning virtuous strategy by placing the strategy vector toward the direction of the optimal strategic choice among a set of strategic choices such as the optimal available investment choices on the financial capital investment in the capital markets in Ledenyov V O, Ledenyov D O (2016s);

11. The implementation of the quantum winning virtuous strategy: The investor has to execute the quantum winning virtuous strategy by completing all the activities to reach the goal(s), which are set by the strategy vector as far as the financial capital investment in the capital markets in concerned in Ledenyov V O, Ledenyov D O (2016s);

12. The result achievement and desire satisfaction: The investor has to evaluate the obtained result against the initial goals as far as the financial capital investment in the capital markets in concerned, satisfying the initially expressed investment desire in Ledenyov V O, Ledenyov D O (2016s).

Finally, we would like to make a concluding remark that Ledenyov Quantum Winning Virtuous Strategy Search (LQWVSS) algorithm can be implemented in the form of the software program and executed at the high performance computing systems to numerically solve the challenging research problem on the investment strategy creation and execution during a process of the financial capital investment in the global capital markets.

In particular, we embedded the Ledenyov Quantum Winning Virtuous Strategy Search (LQWVSS) in the automated reasoning process for the complex problem solving in the developed software program for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, using the advanced artificial intelligence principles in Turing (October 1950), Rich (1983), Winston (1984), Haugeland (1985), Edelson (1991), Jang (July 1991), Sun, Bookman (1994), John, Langley (1995), Dowe, Hajek (1997), Kohavi (1997), Mitchell (1997), Nilsson (1998, 2010), Poole, Mackworth, Goebel (1998), Calmet, Benhamou, Caprotti, Henocque, Sorge (2002), Russell, Norvig (2003), Luger, Stubblefield (2004), McNelis (2005), Bach (2008), Neapolitan, Jiang (2012).

Conclusion

The financial capital investment as a research subject in the finances has always been treated similarly to a "newly discovered star" in the finances galaxy, attracting a considerable research interest and originating original thoughts by the economists, financiers, philosophers, thinkers and scientists over the recent centuries. The great scientific minds tried to explore and understand the capital origination, accumulation and distribution principles in the financial systems in the economies of the scales and scopes in various social economical political settings and systems at the different historical time periods in the World in Joseph Penso de la Vega (1668, 1996), Mortimer (1765), Smith (1776, 2008), Ricardo (1817, 1821), Bentham (1839), Mill (1862), Marx (1867, 1893, October 1994), Bagehot (1873, 1897), George (1879, 1881, 2009), von Böhm-Bawerk (1884, 1889, 1921), Hirsch (1896), Bachelier (1900), Slutsky (1910), von Mises (1912), Keynes (1930 1934, 1936), Schumpeter (1939), Obstfeld, Rogoff (1996), Krugman, Wells (2005), Stiglitz (2005, 2016), Piketty (August 2013), Dodd (2014).

Undoubtedly, the financial capital investment in the capital markets in the finances has been considered as a financial conundrum with a big number of the changing financial variables and the unanswered questions by the economists, financiers, investors, philosophers, thinkers and scientists over the centuries, who attempted to formulate, re-think and solve the problem on the financial capital investment in the nonlinear diffusion-type financial systems from the social and natural sciences perspectives over the years in Markowitz (1959, 1987), Fabozzi, Markowitz (editors), Cootner (1964), Merton (1992), Shiryaev (1998a, b), Hull (2010, 2012a, b).

Of course, as we know, the nature of the processes of the financial capital origination, accumulation and distribution has been comprehensively studied and understood, to some degree, highlighting the unequal fragmented capital distributions in the form of increasing financial capital gaps between the different social hierarchy layers in various countries in Stiglitz (2015), Piketty (August 2013, August 15 2014). A general expressed opinion is that this inequality in the financial capital distributions appears due to a number of factors, including the ineffective economic policies introduction by the governments, the increased investment return premium generation by the successful market agents, and the low level of capital gains taxation by the tax authorities in the conditions of the nonlinear diffusion-type financial system, because of various existing economic/social/political reasons in the economies of the scales and the scopes.

This book represents the three decades of multidisciplinary research excellence by the authors in the finances, econometrics and econophysics. Indeed, we decided to discuss a challenging problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, keeping in mind the fact that a serious progress has been achieved in the finances, econometrics and econophysics sciences, for instance: a) the origination of the numerous groundbreaking financial innovations in the capital markets in the finances, b) the creation of the sophisticated theoretical financial capital investment models and theories in the econometrics/econophysics sciences, c) the development of the innovative theoretical financial capital investment models and theories in the quantum econophysics science, and d) the introduction of the advanced theoretical financial capital investment models and theories in the discrete and stochastic mathematics science.

Chapter 1 discusses briefly the history of creation of the financial capital markets, the evolution of the financial capital markets and the present state of the financial capital markets in Asia, Europe and North America from the ancient time to the present time, going from the academic literature perspective. The main historical facts to emphasis are:

1. The introduction of the money to the first financial system in the ancient time of the Song dynasty and the Yuan Dynasty in mainland China;

2. The significant historical scientific role by the Austrian school of economic and financial thinking toward the creation of the fundamental theory on the modern global financial system operation;

3. The considerable impact by the Chicago school of the economic and financial thinking toward the creation of the modern global financial system in the global capital market.

Chapter 2 formulates a problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main research findings to keep in mind are:

1. The investment as an act of allocation of the financial capital in order to gain the profit in the form of the increased return premium, advantage or interest;

2. The fact that the problem on the investment of the financial capital in the capital markets can only be solved, introducing a number of the financial and economic variables to characterize the financial capital in the differential equations in the advanced theoretical models in various sciences;

3. The axiom that the financial capital investment in the capital markets can be accurately characterized by measuring and analyzing the statistical distributions of the discrete-time financial/economic events by the oscillating financial/economic variables in the finances, economics, and econometrics sciences.

4. The proposition that the financial capital investment in the capital markets can be precisely described by measuring and researching the signals by the oscillating financial/economic variables in the finances, economics, and econophysics sciences;

5. The suggestion to characterize the financial capital investment in the capital markets by registering and studying the scaling properties of the discrete-time events by the oscillating financial/economic variables in the finances, economics and econophysics sciences.

Chapter 3 solves a problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main innovative research proposals to summarize are:

1. The innovative proposition to use the multilayered approach during the consideration of the investment problem, characterizing the different layers of the investment process;

2. The proposed investment problem solution, applying the investment process algorithm with the different embedded investment layers;

3. The definition and list of the possible investment products in the capital markets;

4. The definition and list of the possible investment vehicles in the capital markets;

5. The definition and list of the possible investment mediums in the capital markets.

Chapter 4 focused on the investment products for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main innovative research outcomes to pay attention are:

1. The land as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

2. The real estate as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

3. The commodity as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

4. The bond as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

5. The firm's stock and the stock options as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

6. The financial security as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

7. The foreign currency as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

8. The intellectual property as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods;

9. The bitcoin as an investment product for financial capital investment in capital markets with aim to get increased return premium in short and long time periods.

Chapter 5 considered the investment vehicles for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main innovative research analysis results to remember are:

1. The investment bank as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

2. The investment fund as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

3. The hedge fund as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

4. The pension fund as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

5. The mutual fund as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

6. The venture capital fund as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

7. The angel investor as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

8. The investment boutique as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

9. The private investment office as an investment vehicle for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 6 defined the investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main innovative research proposals to memorize are:

1. The land exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

2. The real estate exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

3. The stock exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

4. The foreign currencies exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

5. The financial securities exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

6. The precious metals exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

7. The intellectual property exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods;

8. The digital curencies exchange as an investment medium for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Chapter 7 introduced the financial risk calculation and mitigation techniques during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

The main innovative scientific findings to think about are:

1. The modern portfolio theory (MPT) in Markowitz (1952, 1956, 1959, 1987);

2. The efficient frontier (EF) theoretical conception in the Modern Portfolio Theory (MPT) in Markowitz (1952, 1956, 1959, 1987) and its limitations in the real-life practical applications;

3. The investment portfolio accurate characterization by both 1) the total risk value, which is a sum of all the risks of the selected assets in Markowitz (1952, 1956, 1959, 1987) and 2) the total stability magnitude, which is a sum of all the stabilities of the selected assets in Ledenyov D O, Ledenyov V O (2013a);

4. The representation of the asset classes in the investment portfolio as the electronic signals, which can be characterized by the correlated and uncorrelated complex discrete-time digital oscillations with the certain amplitudes, frequencies, periods, and phases. The spectrum analysis with an aim to minimize the total risk, to maximize the stability of the investment portfolio, and to create the efficient optimized investment portfolio;

5. The Ledenyov investment assets theorem on the ultrafast (un)correlation properties of the investment assets in the investment portfolio;

6. The Ledenyov investment portfolio stability theorem on the stability of the investment portfolio;

7. The Ledenyov discrete-time digital short/medium/long waves of the economic output fluctuations in the economies of the scales and the scopes;

8. The Ledenyov bursts with the discrete-time digital waves to characterize the economic output fluctuations in the economies of the scales and the scopes at the very long observation time periods;

9. The most important research result is that the diversification of the investment portfolio must be conducted across all the investment products, the investment vehicles, the investment mediums at the same time (The early research findings focused on the diversification among the investment products/asset classes/instruments only);

10. The final comment is that an efficient optimized investment portfolio includes the carefully selected diversified investment products, investment vehicles and investment mediums for the financial capital investment in the capital markets in the economies of scale and the scope in the short and long time periods, aiming to decrease the total risk of the investment portfolio, to increase the total stability of the investment portfolio and to get the increased return premium in Ledenyov D O, Ledenyov V O (2013a).

Chapter 8 proposed the new research approaches to the quantum winning virtuous strategies creation and execution with the use of the quantum logic, inductive logic, deductive logic and abductive logic during the capital investment in the capital markets in the short and long time periods.

The main innovative research ideas to memorize are:

1. The conceptual design of the Ledenyov Quantum Winning Virtuous Strategy Search (QWVSS) algorithm with the use of the quantum logic, inductive logic, deductive logic and abductive logic for the capital investment in the capital markets in the short and long time periods;

2. The conceptual design of the Ledenyov Quantum Thinking Process (QTP) algorithm with the use of the quantum logic, inductive logic, deductive logic and abductive logic for the capital investment in the capital markets in the short and long time periods;

3. The definition of the Ledenyov quantum logic (the probability logic) for the decision making in frames of Ledenyov Quantum Winning Virtuous Strategy Search (QWVSS) algorithm for the capital investment in the capital markets in the short and long time periods;

4. The theoretical conception on the strategy vector in the multidimensional strategy space in frames of the fundamental theory on the complex strategy in the multidimensional strategy space.

We conclude by saying that this book discussed some aspects of the complex problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. It explained how the investment process works, opening the unlimited opportunities for the individual and institutional investors towards the private/institutional wealth accumulation, the optimal wealth management and the social prosperity building on a global scale.

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Traditionally, we like to conduct the Q&A sessions after the invited lectures, hence we thank all the young inquisitive researchers, talented graduate students and their experienced professors from the leading universities for a big number of interesting questions during the questions and answers (Q&A) sessions after our presentations. We do consider all the questions as quite useful and encouraging, because the new groundbreaking innovative research ideas originate in our minds in the process of debate frequently. The multiple research inputs by the academicians, practitioners, subject experts allowed us to think differently on the multi-dimensional scientific problems and encouraged us to work intensively and persistently toward the research book completion this year.

We gratefully acknowledge the insightful thoughtful ideas on the subject of our research interest, expressed by Dr. Ben Shalom Bernanke, former Chairman of the Board of Governors of the Federal Reserve System in an electronic copy of his Ph. D. Thesis: “Long-term commitments, dynamic optimization, and the business cycle” as well as the copies his innovative research articles, analytic research reports, informative slide presentations, minutes of research discussions on the various financial topics and strategic economic issues within the scope of our research interest. Of course, the modern science evolves steadily and consistently, hence our understanding on the nature of the business cycles changes accordingly from the continues-time wave to the discrete-time digital waves of the economic output fluctuations in the time domain.

We are very grateful to Prof. Robert F. Engle III, Department of Finance, New York University in New York, USA for his scientific visionary statements, interesting discussions and comprehensive research data on the Stratonovich – Kalman – Bucy filtering algorithm, in

particular, the thoughtful discussion on the derivation of the probability density function as a sum of its predictive or conditional densities in the case the state-space model in Engle (2006) has to be mentioned. We absolutely agree with Prof. Robert F. Engle III wise research opinion that the modern finances can certainly be researched with an application of the digital signal processing techniques in the electronics science.

Speaking about the electronics and economics sciences, one of the interesting historical facts can be mentioned. Namely, the Danish school of scientific thinking in the analogues signals processing at Technical University of Denmark, Lyngby, Denmark as well as the Swedish school of scientific thinking on the digital signals processing at Linköping University, Sweden have had a considerable impact on the first author's scientific vision formation in the natural and social sciences. Scandinavian period in the first author's research work can be regarded as a most fruitful, because it allowed to make the innovative research in the electronics and economics sciences in parallel in 1995, 1996-1997. As Prof. Lars Wanhammar, Linköping University likes to state: "the signal processing is fundamental to the information processing, and includes various method of the information extraction", which may be used to make the assumptions in the electronics, finances, economics sciences.

It is a real privilege for the second author to deliver his personal cordial thanks to Prof. Janina E. Mazierska, Electrical and Computer Engineering Department, James Cook University in Townsville in Australia, who helped the second author to cultivate the logical scientific thinking to tackle the complex scientific problems on the analogue and digital signal processing, the accurate measurements of physical parameters, the nature of the nonlinearities in the microwave superconductivity, applying the interdisciplinary scientific knowledge since 2000.

We found that the integrative thinking is a quite useful theoretical approach to solve the financial engineering problems, hence we sincere thank Profs. Roger L. Martin, the Rotman School of Management at the University of Toronto in Toronto, Canada for the numerous long-hours scientific discussions on the strategy, integrative thinking and financial engineering in the electronic trading laboratory at the Rotman School of Management at U of T in Toronto, Canada in 1998-1999 and 2005-2006. Of course, our private discussions included a number of generals topics such as the wine, music and tennis.

We appreciate Prof. John C. Hull for the useful exchanges by the research opinions on the financial derivatives during our innovative research at the electronic trading laboratory at the Rotman School of Management at U of T in Toronto, Canada in 1998-1999 and 2005-2006, which proved to be increasingly important for the optimized computer algorithms creation, the software programs writing, and the computer modeling.

The important groundbreaking research results on the creative disruption and evolutionary economics, obtained by Prof. Joseph Alois Schumpeter at the University of Vienna in Austria in 1905 – 1908, University of Czernowitz in Ukraine in 1909 – 1911, University of Graz in Austria in 1912 – 1914, University of Bonn in Germany in 1925 – 1932, Harvard University in the USA in 1932 – 1950, had a considerable enigmatic influence on the presented research opinions by the authors. Let us repeat that the first author's visit to University of Czernowitz in Ukraine in March 2015 is just a clear confirmation of the above statements.

As we all know, the ideas on the creative destruction have been further researched by Prof. Clayton M. Christensen, Kim B. Clark University Professor of Business Administration, Harvard Business School, Harvard University and some other notable scientists, hence we studied and absorbed the modern research approaches and findings on the creative destruction before making our innovative scientific vision. Let us say that Prof. Clayton M. Christensen presented the very Scandinavian approach to the understanding of the research problem on the creative disruption and evolutionary economics in his lecture notes, research articles and numerous books. It is nice to see that Prof. Clayton M. Christensen continues to be very active in the field of his research interest, making his business foresights, writing his new research books, lecturing at Harvard Business School, and conducting the executive program in the summer time.

The authors would like to explain that the quantum strategy represents a new research subject for a big number of the leading research institutions and universities, hence we sincerely acknowledge an enormous interest to our innovative research on the quantum strategy application in the finances from the side of Prof. Michael E. Porter, Founding Director, Strategy Institute, Harvard Business School, Harvard University, USA. It is wonderful to see that Prof. Michael E. Porter, Founding Director, Strategy Institute, Harvard Business School, Harvard University finds the enough time to write his numerous research articles and books despite of his heavy administrative work load at the Strategy Institute, Harvard Business School, Harvard University. We are very grateful to Prof. Michael E. Porter, Bishop William Lawrence University Professor, Harvard University, who is considered by the authors as a father of the modern business strategy, for his valuable personal efforts and time to write and discuss a number of his interesting informative research articles and books as well as to create the lecture notes, providing us with his professional expertise, exceptional quality professional advices and wise opinions in the field of competitive strategy in the 21st century. In fact, Prof. Michael E. Porter is regarded by the authors as a "guiding star" in the strategy science galaxy.

Our Swiss watches collecting lifestyle, encouraged the second author to visit the Patek Philippe museum in Genève, Switzerland in 2016, resulting in an interesting research proposition to present the quantum strategy search algorithm in the form of an imagined dial in the Swiss mechanical time-pieces. Indeed, we found that the international students, professors and executives in the business administration education programs at various complexity levels can memorize the information on the Ledenyov Quantum Winning Virtuous Strategy Search (LQWVSS) algorithm, presented in the form of an imagined dial in the Swiss mechanical time-pieces, much more better, comparing to the generally accepted block-schemes, which may better suit the needs by the students enrolled in the computer science education programs.

One of the most important lessons, which we learned in the processes of our education and research at the universities over the years is that the innovative groundbreaking research ideas matter a lot in the modern society. The innovative research ideas lead to the "quantum leaps" in the social-scientific-economic-financial progress in the developed countries. Fortunately, we obtained the multidisciplinary knowledge, completing the university degrees in the Radio-Physics and Electronics at V.N. Karazin Kharkiv National University in Kharkiv, Ukraine in 1993 and 1999. Therefore, we would like to share an opinion that all our discoveries have been made due to the multi-disciplinary knowledge application, which is considered by the authors as a key factor on the way toward the modern society building.

Continuing our research discussion, let us explain the origins of some innovative research ideas, which are presented in this book in the finances:

1. We think that the multiple layers research analysis approach can be successfully applied to research the different investment layers in a process of capital investment in the capital markets in the finances science, including the investment product, vehicle, medium layers, in analogy to the complex hetero-junction structures research in the electronics;

2. The research on the analogue/digital signals processing in the electronics engineering science allowed us to formulate the Ledenyov discrete-time digital business cycles theory in which the discrete-time disruptive innovations can sharply change the economic output waveform in the economics science;

3. The research on the quantum transitions by the quantum objects in the atom in the quantum physics facilitated the creation of the discrete-time quantum business cycles theoretical model in the frames of the quantum macroeconomics theory and the quantum microeconomics theory in the economics science. In this case, we not only consider the discrete-time digital waveform of the economic output fluctuations, but study the discrete-time transition phenomena and its quantum properties, focusing on the number of disruptive events and their economic properties during the transition from the one level of the economic output to the another level of the economic output in the economy of the scale and the scope as explained in the book;

4. The research on the time division duplex (TDD) / frequency division duplex (FDD) direct sequence spread spectrum (DSSS) wireless communication devices and the Code Division Multiple Access (CDMA) wireless communication devices in the electrical and computer engineering science made it possible to formulate the theory on the Ledenyov long complex discrete-time digital wave, propagating in the form of the transmitted discrete-time spread spectrum signal bursts in the economy of the scale and the scope in the economics science. In this case, the every transmitted signal burst contains the Ledenyov discrete-time digital wave of GDP(t)/GNP(t)/PPP(t) fluctuations, which is modulated by the disruptive technological/social/political innovations in the economy of the scale and the scope in the scale-time domains. There may be the time periods, when the discrete-time spread spectrum signal bursts are present (the intensive economic development phase) or they are absent (the economic stagnation/downturn/crisis phase).

5. As we know the financial capital investment can be done into such an investment product as the foreign currencies, which are constantly traded in the FX markets in the finances. The research on the microwave signals generation/propagation/attenuation/processing in the electronics allowed us to propose an interesting idea on a possibility of realization of the ultra high frequency (UHF) electronic trading in the FX markets in the finances;

6. The foreign currencies exchange indexes in the foreign currencies exchange markets can fluctuate instantly. In this case, the research on the discrete-time digital signals in the digital signal processing theory in the electronics science gave us an opportunity to make a suggestion on a possibility of realization of the nonlinear signal filtering of the foreign currencies exchange indexes, using the Stratonovich-Kalman-Bucy filter and the particle filter in the Stratonovich-Kalman-Bucy nonlinear signals filtering theory in the finances;

7. The hedge fund is a well known investment vehicle in the modern finances. Thus, the research on the discrete-time digital signals in the digital signal processing theory in the electrical and computer engineering science allowed us to suggest that the tracking of the hedge fund's investment strategies by various investment funds can be efficiently done, using the Stratonovich-Kalman-Bucy nonlinear signals filtering theory in the finances;

8. The research on the analogue signal processing theory and the digital signal processing theory in the electronics science encouraged us to formulate the Ledenyov investment assets theorem in the finances science;

9. The research on the stability in the mathematics science and the complex systems stability in the electrical and computer engineering science allowed us to introduce the Ledenyov investment portfolio stability theorem in the finances science;

10. The research on the quantum random number generators on the magnetic flux qubits (1024 QRNG_MFQ chipset) in the quantum physics helped us to better understand the random fluctuations of the financial variables in the finances;

11. The theoretical conception on the quantum money in the finances was proposed as a result of our intensive research work in the quantum physics, superconductivity, optics and low temperature physics sciences over the recent decades;

12. A recent invention of the quantum logic for an application in the decision making theory in the business administration, law making, finances, and economics sciences is a result of our intensive research work in the quantum physics over 25 years.

It worth to comment that the scientific thinking school in Bunyakovsky (1825a, b, c, 1846), who was born in Town of Bar, Region of Vinnytsia, Ukraine; influenced the authors' strategic scientific vision creation and helped to develop the authors' tactical approaches to the scientific problems solutions in the case of the problem on the forecast in the capital markets.

Speaking about Kharkiv, we can say that Prof. Niels Bohr, Copenhagen University, Denmark visit to Kharkov, Ukraine in 1933 led to the creation of the econophysics science, and the second author's visits to Roskilde, Lyngby, Denmark and Copenhagen, Denmark in 1995, 1996-1997 resulted in the new quantum theories formulation in the econophysics science.

The authors acknowledge the multiple scientific discussions on the econophysics and the quantum mechanics with Oleg P. Ledenyov in Kharkiv, Ukraine over the recent decades. Our farther, Oleg P. Ledenyov, researched the absorption phenomena, including the absorption of the electromagnetic signals in the high pure metals / superconductors at the ultrasonic frequencies at the low temperatures; the absorption of the electromagnetic signals in the superconductor crystals/thin films at the ultra high frequencies at the low temperatures; the absorption of the electromagnetic signals in the quantum liquids such as the liquid Helium at the ultra high frequencies at the low temperatures; and the absorption of the chemical elements and their isotopes in the soft condensed matter in the physics in Kharkiv, Ukraine for the five decades. Therefore, it was interesting for us to make the advanced research on the absorption of information by the investors during the financial capital investment in the capital markets in the economics and the finances.

The first author thanks for a wonderful opportunity to deliver the invited research seminar, answer the multiple research questions, and make an exchange by the innovative research opinions on the nonlinear signals processing at Electrical and Computer Engineering Department, James Cook University, Townsville, Australia in April, 2016.

Looking forward, we can see an existence of a serious contradiction in the minds of the reputable economists in the economics science. The problem is that all the classic theories in the economics and finances sciences are based on an assumption that the financial and economic processes in the economies of the scales and the scopes can be classified as the continuous-time processes. The fact is that a big number of the economists created the outdated economic theories dealing with the continuous-time financial and economic processes in the economies of the scales and the scopes. However, presently, we came to an understanding that all the financial and economic processes in the economies of the scales and the scopes are the discrete-time digital processes. Therefore, it is necessary to recognize a profoundly important fact that a new way of thinking and a new mentality must be applied to understand and accurately characterize the discrete-time digital processes in the economies of the scale and the scope in the frequency/scale/time domains. In this context, we formulated our new innovative theories in the economics and finances sciences.

Finally, the authors thank a senior management team at The Mathworks for the license and kind permission to get a remote access to the software libraries with the different implementations of the digital signal processing algorithm, including the Stratonovich – Kalman - Bucy filtering algorithm, as well as the bifurcation algorithms in the Matlab, at the Mathworks servers in the USA.

It is not conceivable to write this book without the multiple useful research inputs from and encouragements by many brilliant people, who are not listed in the acknowledgement, because of various reasons. Indeed, playing the tennis at the tennis courts or the golf at the golf play grounds with our respected research collaborators, business partners, family friends in various countries around the World, we have already conducted many thousands of thoughtful discussions on the topics of our research interest, hence we would like to thank all our global Friends for their brilliant ideas, interesting opinions, numerous comments, wise suggestions and shared experiences on the subject of our research interest in the economics, finances, and econophysics.

References:

Economics science history, finance science history:

1. Joseph Penso de la Vega 1668, 1996 Confusión de Confusiones *John Wiley and Sons Inc* (re-published) USA.
2. Mortimer Th 1765 Every man his own broker *4th edition* London UK.
3. Smith A 1776, 2008 An inquiry into the nature and causes of the wealth of nations *W Strahan and T Cadell* London UK, A Selected Edition Sutherland K (editor) *Oxford Paperbacks* Oxford UK.
4. Ricardo D 1817, 1821 On the principles of political economy and taxation 3rd edition *John Murray* Albemarle Street London UK.
5. Bentham J 1839 A manual of political economy *G P Putnam* New York USA.
6. Mill J St 1862 Principles of political economy 5th edition *Appleton* New York USA.
7. Marx K 1867 Capital, Volume **1**.
8. Marx K July 1893 Capital, Volume 2: The process of circulation of capital *Engels publisher*.
9. Marx K October 1894 Capital, Volume 3: The process of capitalist production as a whole *Engels publisher*.
10. Menger C 1871 Principles of economics (Grundsätze der Volkswirtschaftslehre) *Ludwig von Mises Institute* Auburn Alabama USA http://www.mises.org/etexts/menger/Mengerprinciples.pdf .
11. Bagehot W 1873, 1897 Lombard Street: A description of the money market *Charles Scribner's Sons* New York USA http://www.gutenberg.org/ebooks/4359 .
12. George H 1879, 1881, 2009 Progress and poverty: An inquiry into the cause of industrial depressions and of increase of want with increase of wealth; The remedy *Kegan Paul* USA, *Cambridge University Press* UK ISBN 978-1-108-00361-2.
13. von Böhm-Bawerk E 1884, 1889, 1921 Capital and interest: History and critique of interest theories, positive theory of capital, further essays on capital and interest Austria; 1890 *Macmillan and Co* Smart W A (translator) London UK http://files.libertyfund.org/files/284/0188_Bk.pdf .
14. Hirsch M 1896 Economic principles: A manual of political economy *The Russkin Press Pty Ltd* 123 Latrobe Street Melbourne Australia.
15. Bachelier L 1900 Théorie de la spéculation *Annales de l'Ecole Normale Supérieure* Paris France vol **17** pp 21 – 86.

16. Bachelier L 1914 Le jeu, la chance et le hazard *Bibliothèque de Philosophie scientifique Ernest Flammarion* Paris France
http://gallica.bnf.fr/ark:/12148/bpt6k61926m .

17. Bachelier L 1937 Les lois des grands nombres du calcul des probabilitiés *Gauthier-Villars* Paris France.

18. Bachelier L 19 May 1941 Probabilitiés des oscillations maxima *Comptes-rendus des Séances de l'Académie des Sciences* pp 836 – 838.

19. Courtault J-M, Kabanov Yu, Bru B, Crépel P, Lebon I, Le Marchand A 2000 Louis Bachelier on the centenary of théorie de la spéculation *Mathematical Finance* **10** (3) pp 339 – 353 doi:10.1111/1467-9965.00098 .

20. Bachelier L, Samuelson P A, Davis M, Etheridge A 2006 Louis Bachelier's theory of speculation: The origins of modern finance *Princeton University Press* Princeton NJ USA ISBN 978-0-691-11752-2.

21. Schumpeter J A 1906 Über die mathematische methode der theoretischen ökonomie *ZfVSV* Austria.

22. Schumpeter J A 1933 The common sense of econometrics *Econometrica*.

23. Schumpeter J A 1911; 1939, 1961 Theorie der wirtschaftlichen entwicklung; The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle Redvers Opie (translator) *OUP* New York USA, *Harvard University Press* Cambridge MA USA.

24. Schumpeter J A 1939 Business cycle *McGraw-Hill* New York USA.

25. Schumpeter J A 1942, 1950, 1976 Capitalism, socialism and democracy *Harper & Row* New York USA.

26. Schumpeter J A 1947 The creative response in economic history *Journal of Economic History* vol **7** pp 149 – 159.

27. Slutsky E E 1910 Theory of marginal utility *M Sc Thesis* Vernadsky National Library Kiev Ukraine.

28. Slutsky E E 1915 Sulla teoria sel bilancio del consumatore *Giornale degli economisti e rivista di statistica* **51** no 1 pp 1 – 26 Italy.

29. Slutsky E E 1923 On calculation of state revenue from emission of paper money *Local Economy* **2** pp 39 – 62 Kiev Ukraine.

30. von Mises L 1912 The theory of money and credit *Ludwig von Mises Institute* Auburn Alabama USA
http://mises.org/books/Theory_Money_Credit/Contents.aspx .

31. Keynes J M 1919 The economic consequences of the peace *Macmillan* London UK.

32. Keynes J M 1930 The applied theory of money: A treatise on money vol **2** *Macmillan* London UK.

33. Keynes J M 1934 A treatise on money *Macmillan* London UK.

34. Keynes J M 1936 The general theory of employment, interest and money *Macmillan Cambridge University Press* Cambridge UK.

35. Keynes J M 1998 The collected writings of John Maynard Keynes *Cambridge University Press* Cambridge UK ISBN 978-0-521-30766-6.

36. Pigou A C 1924 The economics of welfare 2nd edition *Macmillan* London UK.

37. Clark J B 1927 Essential of economic theory *Macmillan* New York USA.

38. Fisher I 1930 The theory of interest *Macmillan Company* New York USA.

39. Hayek F A 1931, 1935, 2008 Prices and production 1st edition *Routledge and Sons* London UK, 2nd edition *Routledge and Kegan Paul* London UK, 2008 edition *Ludwig von Mises Institute* Auburn Alabama USA.

40. Hayek F A 1948, 1980 Individualism and economic order *London School of Economics and Political Science* London UK, *University of Chicago Press* Chicago USA.

41. Hicks J R 1939 Value and capital *Clarendon Press Oxford University Press* Cambridge UK.

42. Kaldor N October 1939 Speculation and economic stability *Review of Economic Studies* **7** pp 1 – 27.

43. Ellis H, Metzler L (editors) 1949 Readings in the theory of international trade *Blakiston* Philadelphia USA.

44. Friedman M (editor) 1953 Essays in positive economics *Chicago University Press* Chicago USA.

45. Baumol W 1957 Speculation, profitability, and stability *Review of Economics and Statistics* **39** pp 263 – 271.

46. Debreu G 1959 Theory of value *Cowles Foundation Monograph* vol **17** *John Wiley & Sons Inc* New York USA.

47. Olson M 1965 The logic of collective action *Harvard University Press* Cambridge Massachusetts USA.

48. Olson M 1982 The rise and decline of nations: Economic growth, stagflation, and social rigidities *Yale University Press* New Haven Connecticut USA.

49. Minsky H P 1974 The modeling of financial instability: An introduction *Modeling and Simulation* Proceedings of the Fifth Annual Pittsburgh Conference **5**.

50. Minsky H P May 1992 The financial instability hypothesis *Working Paper no 74*: 6–8 http://www.levy.org/pubs/wp74.pdf .

51. Minsky H P 2015 Minsky archive *The Levy Economics Institute of Bard College* Blithewood Bard College Annandale-on-Hudson New York USA http://www.bard.edu/library/archive/minsky/ .

52. Stigler G J 1982 Nobel Prize in Economics *Nobel Foundation* Stockholm Sweden.

53. Stigler G J 1988 Chicago studies in political economy *University of Chicago Press* Chicago USA ISBN 0-226-77437-6.

54. Kindleberger C P 1984 A financial history of Western Europe *Allen & Unwin* London UK.

55. Coase 1991 Nobel Prize in Economics *Nobel Foundation* Stockholm Sweden.

56. Roseveare H 1991 The financial revolution 1660-1760 *Longman* UK.

57. Becker 1992 Nobel Prize in Economics *Nobel Foundation* Stockholm Sweden.

58. Fogel 1993 Nobel Prize in Economics *Nobel Foundation* Stockholm Sweden.

59. Foray D, Freeman Ch (editors) 1993 Technology and the wealth of nations *Stanford University Press* Stanford California USA.

60. Lucas 1995 Nobel Prize in Economics *Nobel Foundation* Stockholm Sweden.

61. Obstfeld M, Rogoff K 1996 Foundations of international macroeconomics *MIT Press* USA.

62. Scornick-Gerstein F May, 1996 Private communications on land value taxation theory by Henry George *Royal Automobile Club* London UK.

63. Scornick-Gerstein F 1999 The future of taxation: The failure of the poll tax in the UK ISBN: 9781902250007.

64. Landes D S 1969 The unbound Prometheus: Technological change and industrial development in Western Europe from 1750 to the present *Cambridge University Press* Cambridge UK.

65. Landes D S May 1990 Why are we so rich and they so poor *American Econ Review* 80 2 pp 1 – 13.

66. Landes D S 1998; 1998; 1999 The wealth and poverty of nations: Why Some are So Rich and Some are So Poor *W W Norton & Company Inc*; *Little, Brown and Company*; *Abacus* London UK ISBN 0 34911166 9 pp 1 – 650.

67. Wolf M 2004 Why globalization works Yale Nota Bene, *Yale University Press* New Haven, USA and London, UK ISBN 0-300-10777-3 pp 1 – 398.

68. Krugman P, Wells R 2005 Economics *Worth Publishers* 1st edition ISBN-10: 1572591501 ISBN-13: 978-1572591509 pp 1 – 1200.

69. Stiglitz J E 2005 Principles of macroeconomics *W W Norton* 4th edition ISBN-10: 0393926249 ISBN-13: 978-0393926248 pp 1 – 526.

70. Stiglitz J E 2015 The great divide *Public Lecture on 19.05.2015* London School of Economics and Political Science London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20150519_1830_greatDivide.mp4 .

71. Stiglitz J E 2016 The Euro: How a common currency threatens the future of Europe *W W Norton and Company Inc* ISBN 978-0-393-25402-0 pp 1 – 448.

72. Morris D, Heathcote J 2007 The price and quantity of residential land in the United States *Journal of Monetary Economics* **54** (8) pp 2595 – 2620.

73. Poitras G 2000 The early history of financial economics, 1478–1776 From commercial arithmetic to life annuities and joint stocks *Edward Elgar Publishing* ISBN: 978 1 84064 455 5 pp 1 – 544 http://www.e-elgar.com/shop/the-early-history-of-financial-economics-1478-1776.

74. Poitras G (editor) 2006 Pioneers of financial economics: Volume 1 Contributions prior to Irving Fisher *Edward Elgar Publishing* ISBN: 978 1 84542 381 0 pp 1 – 288 http://www.e-elgar.com/shop/pioneers-of-financial-economics-volume-1 .

75. Poitras G, Jovanovic F (editors) 2007 Pioneers of financial economics: Volume 2 Twentieth-century contributions *Edward Elgar Publishing* ISBN: 978 1 84542 382 7 pp 1 – 256 http://www.e-elgar.com/shop/pioneers-of-financial-economics-volume-2 .

76. Fama 2013 Nobel Prize in Economics Stockholm Sweden.

77. Hansen 2013 Nobel Prize in Economics Stockholm Sweden.

78. Piketty Th August 2013, August 15 2014 Le Capital au XXIe siècle, Capital in the twenty-first century Goldhammer A (translator) *Éditions du Seuil, Harvard University Press* France, USA ISBN 978-0674430006 pp 1 – 696 http://piketty.pse.ens.fr/en/capital21c2 , https://en.wikipedia.org/wiki/Capital_in_the_Twenty-First_Century .

79. Antonopoulos A M December 20 2014 Mastering bitcoin: Unlocking digital cryptocurrencies *O'Reilly Media* ISBN-13: 978-1449374044.

80. Antonopoulos A M September 5 2016 The Internet of money *Merkle Bloom LLC* ISBN-13: 978-1537000459.

81. Dodd N 2014 The social life of money *Princeton University Press* NJ USA ISBN: 9780691141428 pp 1 – 456.

Juglar economic cycle theory in economics:

82. Juglar C 1862 Des crises commerciales et de leur retour périodique en France en Angleterre et aux États-Unis *Guillaumin* Paris France.

83. Schumpeter J A 1939 Business cycle *McGraw-Hill* New York USA.

84. Grinin L E, Korotayev A V, Malkov S Y 2010 A mathematical model of Juglar cycles and the current global crisis in *History & Mathematics* Grinin L, Korotayev A, Tausch A (editors) *URSS* Moscow Russian Federation.

<u>Kondratiev economic cycle theory in economics:</u>

85. Kondratieff N D 1922 The world economy and its trends during and after war *Regional branch of state publishing house* Vologda Russian Federation.

86. Kondratieff N D 1925 The big cycles of conjuncture *The problems of conjuncture* **1** (1) pp 28 – 79.

87. Kondratieff N D 1926 Die langen wellen der konjunktur *Archiv fuer Sozialwissenschaft und Sozialpolitik* **56** (3) pp 573 – 609.

88. Kondratieff N D 1928 The big cycles of conjuncture *Institute of Economics RANION* Moscow Russian Federation.

89. Kondratieff N D, Stolper W F 1935 The long waves in economic life *Review of Economics and Statistics The MIT Press* **17** (6) pp 105 – 115 doi:10.2307/1928486 JSTOR 1928486.

90. Kondratieff N D 1984 The Long wave cycle *Richardson & Snyder* New York USA.

91. Kondratieff N D 2002 The big cycles of conjuncture and theory of forecast *Economics* Moscow Russian Federation.

92. Garvy G 1943 Kondratieff's theory of long cycles *Review of Economic Statistics* **25** (4) pp 203 – 220.

93. Silberling N J 1943 The dynamics of business: An analysis of trends, cycles, and time relationships in American economic activity since 1700 and their bearing upon governmental and business policy *McGraw-Hill* New York USA.

94. Rostow W W 1975 Kondratieff, Schumpeter and Kuznets: Trend periods revisited *Journal of Economic History* **25** (4) pp 719 – 753.

95. Forrester J W 1978 Innovation and the economic long wave *MIT System Dynamics Group Working Paper* Massachusetts Institute of Technology Cambridge USA.

96. Forrester J W 1981 The Kondratieff cycle and changing economic conditions *MIT System Dynamics Group Working Paper* Massachusetts Institute of Technology Cambridge USA.

97. Forrester J W 1985 Economic conditions ahead: Understanding the Kondratieff wave *Futurist* **19** (3) pp 16 – 20.

98. Kuczynski Th 1978 Spectral analysis and cluster analysis as mathematical methods for the periodization of historical processes: Kondratieff cycles – Appearance or reality?

Proceedings of the Seventh International Economic History Congress vol **2** International Economic History Congress Edinburgh UK pp 79–86.

99. Kuczynski Th 1982 Leads and lags in an escalation model of capitalist development: Kondratieff cycles reconsidered *Proceedings of the Eighth International Economic History Congress* vol **B3** International Economic History Congress Budapest Hungary pp 27.

100. Barr K 1979 Long waves: A selective annotated bibliography *Review* **2** (4) pp 675 – 718.

101. Van Duijn J J 1979 The long wave in economic life *De Economist* **125** (4) pp 544 – 576.

102. Van Duijn J J 1981 Fluctuations in innovations over time *Futures* **13**(4) pp 264 – 275.

103. Van Duijn J J 1983 The long wave in economic life *Allen and Unwin* Boston MA USA.

104. Eklund K 1980 Long waves in the development of capitalism? *Kyklos* **33** (3) pp 383 – 419.

105. Mandel E 1980 Long waves of capitalist development *Cambridge University Press* Cambridge UK.

106. Van der Zwan A 1980 On the assessment of the Kondratieff cycle and related issues *in Prospects of Economic Growth* Kuipers S K, Lanjouw G J (editors) North-Holland Oxford UK pp 183 – 222.

107. Tinbergen J 1981 Kondratiev cycles and so-called long waves: The early research *Futures* **13** (4) pp 258 – 263.

108. Van Ewijk C 1982 A spectral analysis of the Kondratieff cycle *Kyklos* **35** (3) pp 468 – 499.

109. Cleary M N, Hobbs G D 1983 The fifty year cycle: A look at the empirical evidence *in Long Waves in the World Economy* Freeman Chr (editor) *Butterworth* London UK pp 164 – 182.

110. Glismann H H, Rodemer H, Wolter W 1983 Long waves in economic development: Causes and empirical evidence *in* Long Waves in the World Economy Freeman Chr (editor) *Butterworth* London UK pp 135 – 163.

111. Bieshaar H, Kleinknecht A 1984 Kondratieff long waves in aggregate output? An econometric test *Konjunkturpolitik* **30** (5) pp 279 – 303.

112. Wallerstein I 1984 Economic cycles and socialist policies *Futures* **16** (6) pp 579 – 585.

113. Zarnowitz V 1985 Recent work on business cycles in historical perspective: Review of theories and evidence *Journal of Economic Literature* **23** (2) pp 523 – 580.

114. Summers L H 1986 Some skeptical observations on real business cycle theory *Federal Reserve Bank of Minneapolis Quarterly Review* **10** pp 23 – 27.

115. Freeman C 1987 Technical innovation, diffusion, and long cycles of economic development *in* The long-wave debate Vasko T (editor) *Springer* Berlin Germany pp 295–309.

116. Freeman C, Louçã F 2001 As time goes by: From the industrial revolutions to the information revolution *Oxford University Press* Oxford UK.

117. Goldstein J 1988 Long cycles: Prosperity and war in the modern age *Yale University Press* New Haven CT USA.

118. Solomou S 1989 Phases of economic growth, 1850–1973: Kondratieff waves and Kuznets swings *Cambridge University Press* Cambridge UK.

119. Berry B J L 1991 Long wave rhythms in economic development and political behavior *Johns Hopkins University Press* Baltimore MD USA.

120. Metz R 1992 Re-examination of long waves in aggregate production series *New Findings in Long Wave Research* Kleinknecht A, Mandel E, Wallerstein I (editors) *St. Martin's* New York USA pp 80 – 119.

121. Metz R 1998 Langfristige wachstumsschwankungen – Trends, zyklen, strukturbrüche oder zufall Kondratieffs *Zyklen der Wirtschaft. An der Schwelle neuer Vollbeschäftigung?* Thomas H, Nefiodow L A, Herford (editors) pp 283 – 307.

122. Metz R 2006 Empirical evidence and causation of Kondratieff cycles *Kondratieff Waves, Warfare and World Security* Devezas T C (editor) *IOS Press* Amsterdam The Netherlands pp 91 – 99.

123. Tylecote A 1992 The long wave in the world economy *Routledge* London UK.

124. Cooley Th (editor) 1995 Frontiers of business cycle research *Princeton University Press* USA ISBN 0-691-04323-X.

125. Modelski G, Thompson W R 1996 Leading sectors and world politics: The co-evolution of global politics and economics *University of South Carolina Press* Columbia SC USA.

126. Modelski G 2001 What causes K-waves? *Technological Forecasting and Social Change* **68** pp 75 – 80.

127. Modelski G 2006 Global political evolution, long cycles, and K-waves *Kondratieff Waves, Warfare and World Security* Devezas T C (editor) *IOS Press* Amsterdam The Netherlands pp 293 – 302.

128. Perez C 2002 Technological revolutions and financial capital – The dynamics of bubbles and golden ages *Edward Elgar* Cheltenhem UK.

129. Rennstich J K 2002 The new economy, the leadership long cycle and the nineteenth K-wave *Review of International Political Economy* **9** pp 150 – 182.

130. Rumyantseva S Yu 2003 Long waves in economics: Multifactor analysis *St. Petersburg University Publishing House* St. Petersburg Russian Federation.

131. Diebolt C, Doliger C 2006 Economic cycles under test: A spectral analysis *in Kondratieff Waves, Warfare and World Security* Devezas T C (editor) *IOS Press* Amsterdam The Netherlands pp 39 – 47.

132. Linstone H A 2006 The information and molecular ages: Will K-waves persist? *Kondratieff Waves, Warfare and World Security* edited by Devezas T C *IOS Press* Amsterdam The Netherlands pp 260 – 269.

133. Thompson W 2007 The Kondratieff wave as global social process *in World System History, Encyclopedia of Life Support Systems* Modelski G (editor) *EOLSS Publishers* Oxford UK
http://www.eolss.net.

134. Papenhausen Ch 2008 Causal mechanisms of long waves *Futures* **40** pp 788 – 794.

135. Korotayev A V, Tsirel S V 2010 A spectral analysis of world GDP dynamics: Kondratieff waves, Kuznets swings, Juglar and Kitchin cycles in global economic development, and the 2008–2009 economic crisis *Structure and Dynamics* vol **4** issue 1 pp 1 – 55 http://www.escholarship.org/uc/item/9jv108xp .

136. Wikipedia 2015a Kondratieff *Wikipedia* USA
www.wikipedia.org .

<u>Kitchin economic cycle theory in economics:</u>

137. Kitchin J 1923 Cycles and trends in economic factors *Review of Economics and Statistics The MIT Press* **5** (1) pp 10 – 16 doi:10.2307/1927031 JSTOR 1927031.

<u>Kuznets economic cycle theory in economics:</u>

138. Kuznets S 1924 Economic system of Dr. Schumpeter *M. Sc. Thesis under Prof. Wesley Clair Mitchell* Columbia University NY USA.

139. Kuznets S 1930 Secular movements in production and prices *Ph. D. Thesis under Prof. Wesley Clair Mitchell* Columbia University NY USA.

140. Kuznets S 1930 Secular movements in production and prices. Their nature and their bearing upon cyclical fluctuations *Houghton Mifflin* Boston USA.

141. Kuznets S 1937 National income and capital formation, 1919 – 1935.

142. Kuznets S 1941 National income and its composition, 1919 – 1938.

143. Kuznets S March 1955 Economic growth and income inequality *American Economic Review* **45** pp 1 – 28.

144. Kuznets S 1963 Quantitative aspects of the economic growth of nations, VIII: The distribution of income by size *Economic Development and Cultural Change* **11** pp 1 – 92.

145. Kuznets S 1966 Modern economic growth: Rate, structure, and spread.

146. Kuznets S 1968 Toward a theory of economic growth, with reflections on the economic growth of modern nations.

147. Kuznets S 1971 Economic growth of nations: Total output and production structure.

148. Kuznets S 1973a Population, capital and growth.

149. Kuznets S 1973b Modern economic growth: Findings and reflections *American Economic Review* **63** pp 247 – 58.

150. Abramovitz M 1961 The nature and significance of Kuznets cycles *Economic Development and Cultural Change* **9** (3) pp 225 – 248.

151. Abramovitz M March 1986 Simon Kuznets (1901 – 1985) *The Journal of Economic History* vol **46** no 1 pp 241 – 246.

152. Lundberg E 1971 Simon Kuznets contributions to economics *The Swedish Journal of Economics* **73** (4) pp 444 – 459 DOI:10.2307/3439225, JSTOR 3439225.

153. Hozelitz B F January 1983 Bibliography of Simon Kuznets *Economic Development and Cultural Change* vol **31** no 2 pp 433 – 454.

154. Ben-Porath Y April 1988 Simon Kuznets in person and in writing *Economic Development and Cultural Change* vol **36** no 3 pp 435 – 447.

155. Street J H June 1988 The contribution of Simon S. Kuznets to institutionalist development theory *Journal Economic Issues* vol **22** no 2 pp 499 – 509.

156. Kapuria-Foreman V, Perlman M November 1995 An economic historian's economist: Remembering Simon Kuznets *The Economic Journal* **105** pp 1524 – 1547.

157. Fogel R W 2000 Simon S. Kuznets: April 30, 1901 – July 9, 1985 *NBER Working Paper no W7787* NBER USA.

158. Fogel R W, Fogel E M, Guglielmo M, Grotte N 2013 Political arithmetic: Simon Kuznets and the empirical tradition in economics *University of Chicago Press* Chicago USA ISBN 0-226-25661-8.

159. Syed M K, Mohammad M J 2004 Revisiting Kuznets hypothesis: An analysis with time series and panel data *Bangladesh Development Studies* **30** (3-4) pp 89 – 112.

160. Diebolt C, Doliger C 2008 New international evidence on the cyclical behaviour of output: Kuznets swings reconsidered. Quality & quantity. *International Journal of Methodology* **42** (6) pp 719 – 737.

161. Wikipedia 2015b Simon Kuznets Economist *Wikipedia* USA www.wikipedia.org .

Ledenyov economic cycle theory in economics:

162. Ledenyov D O, Ledenyov V O 2015d Information money fields of cyclic oscillations in nonlinear dynamic economic system *MPRA Paper no 63565* Munich University Munich Germany, *SSRN Paper no SSRN-id2592975 Social Sciences Research Network* New York USA pp 1 – 40
http://mpra.ub.uni-muenchen.de/63565/ ,
http://ssrn.com/abstract=2592975 .

163. Ledenyov D O, Ledenyov V O 2015e On the spectrum of oscillations in economics *MPRA Paper no 64368* Munich University Munich Germany, *SSRN Paper no SSRN-id2606209 Social Sciences Research Network* New York USA pp 1 – 48
http://mpra.ub.uni-muenchen.de/64368/ ,
http://ssrn.com/abstract=2606209 .

164. Ledenyov D O, Ledenyov V O 2015f Digital waves in economics *MPRA Paper no 64755* Munich University Munich Germany, *SSRN Paper no SSRN-id2613434 Social Sciences Research Network* New York USA pp 1 – 55
http://mpra.ub.uni-muenchen.de/64755/ ,
http://ssrn.com/abstract=2613434 .

165. Ledenyov D O, Ledenyov V O 2016r Precise measurement of macroeconomic variables in time domain using three dimensional wave diagrams *MPRA Paper no 69609* Munich University Munich Germany, *SSRN Paper no SSRN-id2733607 Social Sciences Research Network* New York USA pp 1 – 52
http://mpra.ub.uni-muenchen.de/69609/ ,
http://ssrn.com/abstract=2733607 .

166. Ledenyov V O, Ledenyov D O 2016s Forecast in capital markets *Lambert Academic Publishing* Saarbrücken Germany ISBN 978-3-659-91698-4; *MPRA Paper no 72286* Munich University Munich Germany; *SSRN Paper no SSRN-id2802085 Social Sciences Research Network* New York USA pp 1 – 260
www.lap-publishing.com ,
http://mpra.ub.uni-muenchen.de/72286/ ,
http://ssrn.com/abstract=2802085 .

Accurate characterization of properties of economic cycles in economics:

167. George H 1881, 2009 Progress and poverty *Kegan Paul* USA; reissued by *Cambridge University Press* Cambridge UK ISBN 978-1-108-00361-2.

168. Schumpeter J A 1939 Business cycle *McGraw-Hill* New York USA.

169. Burns A F, Mitchell W C 1946 Measuring business cycles *National Bureau of Economic Research* New York USA.

170. Dupriez L H 1947 Des mouvements economiques generaux vol **2** pt 3 *Institut de Recherches Economiques et Sociales de 1'Universite de Louvain* Belgium.

171. Samuelson P A 1947 Foundations of economic analysis *Harvard University Press* Cambridge MA USA.

172. Hicks J R 1950 A contribution to the theory of the trade cycle *Oxford University Press* Oxford UK.

173. Goodwin R M 1951 The nonlinear accelerator and persistence of business cycles *Econometrica* **19** no 1 pp 1 – 17.

174. Inada K, Uzawa H 1972 Economical development and fluctuations *Iwanami* Tokyo Japan.

175. Bernanke B S 1979 Long-term commitments, dynamic optimization, and the business cycle *Ph. D. Thesis* Department of Economics Massachusetts Institute of Technology USA.

176. Marchetti C 1980 Society as a learning system: Discovery, invention, and innovations cycles revisited *Technological Forecast and Social Change* **18** pp 257 – 282.

177. Kleinknecht A 1981 Innovation, accumulation, and crisis: Waves in economic development? *Review* **4** (4) pp 683 – 711.

178. Dickson D 1983 Technology and cycles of boom and bust *Science* **219** (4587) pp 933 – 936.

179. Hodrick R J, Prescott E C 1997 Postwar U.S. business cycles: An empirical investigation *Journal of Money, Credit, and Banking* vol **29** no 1 pp 1 – 16.

180. Anderson H M, Ramsey J B 1999 *Economic Research Reports PR # 99-01* New York University NY USA.

181. Baxter M, King R G 1999 Measuring business cycles: Approximate band-pass filters for economic time series *Review of Economics and Statistics* **81** (4) pp 575 – 593.

182. Kim Ch-J, Nelson Ch 1999 Has the U.S. economy become more stable? A Bayesian approach based on a Markov-switching model of the business cycle *Review of Economics and Statistics*.

183. McConnell M, Pérez-Quirós G 2000 Output fluctuations in the United States: What has changed since the early 1980s? *American Economic Review*.

184. Devezas T C, Corredine J T 2001 The biological determinants of long-wave behavior in socioeconomic growth and development *Technological Forecasting & Social Change* **68** pp 1 – 57.

185. Devezas T C, Corredine J T 2002 The nonlinear dynamics of technoeconomic systems. An informational interpretation *Technological Forecasting & Social Change* **69** pp 317 – 357.

186. Devezas T C (editor) 2006 *Kondratieff Waves, Warfare and World Security IOS Press* Amsterdam The Netherlands.

187. Arnord L 2002 Business cycle theory *Oxford University Press* Oxford UK 2002.

188. Stock J, Watson M 2002 Has the business cycle changed and why? *NBER Macroeconomics Annual* NBER USA.

189. Helfat C E, Peteraf M A 2003 The dynamic resource-based view: Capability life cycles *Strategic Management Journal* **24** (10) pp 997 – 1010.

190. Selover D D, Jensen R V, Kroll J 2003 *Studies in Nonlinear Dynamics & Econometrics* **7** p 1.

191. Sussmuth B 2003 Business cycles in the contemporary World *Springer* Berlin Heidelberg Germany.

192. Hirooka M 2006 Innovation dynamism and economic growth: A nonlinear perspective *Edward Elgar* Cheltenham UK Northampton MA USA.

193. Kleinknecht A, Van der Panne G 2006 Who was right? Kuznets in 1930 or Schumpeter in 1939? in *Kondratieff Waves, Warfare and World Security* Devezas T C (editor) *IOS Press* Amsterdam The Netherlands pp 118 – 127.

194. Iyetomi H, Aoyama H, Ikeda Y, Souma W, Fujiwara Y 2008 Econophysics *Kyoritsu Shuppan* Tokyo Japan.

195. Iyetomi H, Nakayama Y, Yoshikawa H, Aoyama H, Fujiwara Y, Ikeda Y, Souma W 2011 What causes business cycles? Analysis of the Japanese industrial production data *Journal of the Japanese and International Economies* **25** (3) pp 246 – 272.

196. Iyetomi H, Aoyama H, Fujiwara Y, Sato A-H (editors) 2012 Econophysics 2011 - The Hitchhiker's guide to the economy *Proceedings of the YITP Workshop on Econophysics Japan Progress of Theoretical Physics Supplement* no 194.

197. Jourdon Ph 2008 La monnaie unique Europeenne et son lien au developpement economique et social coordonne: une analyse cliometrique *Thèse Universite Montpellier* France.

198. Taniguchi M, Bando M, Nakayama A 2008 Business cycle and conserved quantity in economics *Journal of the Physical Society of Japan* vol **77** no 11.

199. Drehmann M, Borio C, Tsatsaronis K 2011 Anchoring countercyclical capital buffers: The role of credit aggregates *International Journal of Central Banking* vol **7** no 4 pp 189 – 240.

200. Ikeda Y, Aoyama H, Fujiwara Y, Iyetomi H, Ogimoto K, Souma W, Yoshikawa H 2012 Coupled oscillator model of the business cycle with fluctuating goods markets *Proceedings of the YITP Workshop on Econophysics Japan Progress of Theoretical Physics Supplement* no 194 pp 111 – 121.
arXiv:1110.6679v1 .

201. Ikeda Y, Aoyama H, Yoshikawa H 2013a Synchronization and the coupled oscillator model in international business cycles *RIETI Discussion Paper October 13-E-089* The Research Institute of Economy, Trade and Industry Japan
http://www.rieti.go.jp/en/ .

202. Ikeda Y, Aoyama H, Yoshikawa H 2013b Direct evidence for synchronization in international business cycles *Financial Networks and Systemic Risk*.

203. Ikeda Y 2013 Direct evidence for synchronization in Japanese business cycles *Evolutionary and Institutional Economic Review* **10** (2) pp 1 – 13
arXiv:1305.2263v1 .

204. Swiss National Bank 2012 Swiss National Bank financial stability report 2012 http://www.snb.ch/en/mmr/reference/stabrep_2012/source/stabrep_2012.en.pdf .

205. Swiss National Bank 2013 Countercyclical capital buffer: Proposal of the Swiss National Bank and decision of the Federal Council http://www.snb.ch/en/mmr/reference/pre_20130213/source/pre_20130213.en.pdf .

206. Uechi L, Akutsu T 2012 Conservation laws and symmetries in competitive systems *Progress of Theoretical Physics Supplement* no 194 pp 210 – 222.

207. Central Banking Newsdesk 2013 Swiss board member supports counter-cyclical capital buffer
http://www.centralbanking.com/central-banking/speech/2203857/swiss-board-member-supportscountercyclical-capital-buffer .

208. Union Bank of Switzerland 2013 UBS outlook Switzerland http://www.ubs.com/global/en/wealth_management/wealth_management_research/ubs_outlook_ch.html .

209. Da Costa (2015) Weak first-quarter growth due to seasonal issues after all, SF Fed says *The Wall Street Journal* New York USA.

210. Federal Reserve Bank of St Louis 2015 US Federal Reserve Economic Data (FRED) Federal Reserve Bank of St Louis
http://research.stlouisfed.org/fred

211. Desai M, King St, Goodhart Ch 2015 Hubris: Why economists failed to predict the crisis and how to avoid the next one *Public Lecture on 27.05.2015* London School of Economics and Political Science London UK
http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20150527_1830_hubris.mp4 .

212. Wikipedia 2015c Business cycle *Wikipedia* California USA
www.wikipedia.org.

Disruptive technological and social innovations in economics and finances:

213. Schumpeter J A 1911; 1939, 1961 Theorie der wirtschaftlichen entwicklung; The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle Redvers Opie (translator) *OUP* New York USA.

214. Schumpeter J A 1939 Business cycle *McGraw-Hill* New York USA.

215. Schumpeter J A 1947 The creative response in economic history *Journal of Economic History* vol **7** pp 149 – 159.

216. Solow R H August 1957 Technical change and the aggregate production function *Review of Economics and Statistics* **39** pp 214 – 231.

217. Christensen C M June 16, 1977 Fatal attraction: The dangers of too much technology *Computerworld Leadership Series* pp 3 – 11.

218. Christensen C M Fall 1992a Exploring the limits of the technology S-curve, Part 1: Component Technologies *Production and Operations Management* **1** pp 334 – 357.

219. Christensen C M Fall 1992b Exploring the limits of the technology S-curve, Part 2: Architectural technologies *Production and Operations Management* **1** pp 358 – 366.

220. Bower J L, Christensen C M January February 1995 Disruptive technologies: Catching the wave *Harvard Business Review* **73** no 1 pp 43 – 53.

221. Bower J L, Christensen C M 1997 Disruptive technologies: Catching the wave *in* Seeing differently: Insights on innovation Brown J S (editor) *Harvard Business School Press* Boston MA USA.

222. Christensen C M 1997 The innovator's dilemma: When new technologies cause great firms to fail *Harvard Business School Press* Boston MA USA.

223. Christensen C M, Armstrong E G Spring 1998 Disruptive technologies: A credible threat to leading programs in continuing medical education? *Journal of Continuing Education in the Health Professions* **69** no 80 pp 69 – 80.

224. Christensen C M 1998 The evolution of innovation *in* Technology management handbook Dorf R (editor) *CRC Press* Boca Raton FL USA.

225. Christensen C M December 1998 Disruptive technologies: Catching the wave TN *Harvard Business School Teaching Note 699 - 125*.

226. Christensen C M, Cape E G December 1998 Disruptive technology a heartbeat away: Ecton, Inc *Harvard Business School Case 699 - 018*.

227. Christensen C M April 1999a Value networks and the impetus to change: Managing innovation: Overview teaching note for module 1 *Harvard Business School Teaching Note 699 - 163*.

228. Christensen C M April 1999b Finding new markets for new and disruptive technologies: Managing innovation, overview teaching note for module 2 *Harvard Business School Teaching Note 699 - 164*.

229. Christensen C M April 1999c Teradyne: The Aurora project & Teradyne: Corporate management of disruptive change, TN *Harvard Business School Teaching Note 399 - 087*.

230. Christensen C M, Dann J June 1999 Processes of strategy definition and implementation, The *Harvard Business School Background Note 399 - 179*.

231. Bower J L, Christensen C M 1999 Disruptive technologies: Catching the wave Ch 29 *in* The entrepreneurial venture 2nd edition Sahlman W A, Stevenson H H, Roberts M J, Bhide A V pp 506 – 520 *Harvard Business School Press* Boston MA USA.

232. Christensen C M 1999a Innovation and the general manager *Irwin McGraw-Hill* Homewood IL USA.

233. Christensen C M 1999b Impact of disruptive technologies in telecommunications in Bringing PC economies to the telecommunications industry *PulsePoint Communications*.

234. Christensen C M, Tedlow R S January February 2000 Patterns of disruption in retailing *Harvard Business Review* **78** no 1 pp 42 – 45.

235. Christensen C M, Donovan T March 2000 Disruptive technology a heartbeat away: Ecton, Inc TN *Harvard Business School Teaching Note 600 - 129*.

236. Christensen C M, Overdorf M March April 2000 Meeting the challenge of disruptive change *Harvard Business Review* **78** no 2 pp 66 – 76.

237. Christensen C M, Bohmer R M J, Kenagy J September October 2000 Will disruptive innovations cure health care? *Harvard Business Review* **78** no 5 pp 102 – 117.

238. Christensen C M, Craig Th, Hart S March April 2001 The great disruption *Foreign Affairs* **80** no 2.

239. Christensen C M Summer 2001 Assessing your organization's innovation capabilities *Leader to Leader* no 21 pp 27 – 37.

240. Christensen C M, Milunovich S March 2002 Technology strategy: The theory and application of the Christensen model *Merrill Lynch Report Series*.

241. Bass M J, Christensen C M April 2002 The future of the microprocessor business *IEEE Spectrum* **39** no 4.

242. Anthony S D, Roth E A, Christensen C M April 2002 The policymaker's dilemma: The impact of government intervention on innovation in the telecommunications industry *Harvard Business School Working Paper no 02 - 075*.

243. Kenagy J, Christensen C M May 2002 Disruptive innovation: A new diagnosis for health care's 'Financial flu' *Healthcare Financial Management* pp 62 – 66.

244. Christensen C M, Johnson M W, Rigby D K Spring 2002 Foundations for growth: How to identify and build disruptive new businesses *MIT Sloan Management Review* **43** no 3.

245. Kenagy J W, Christensen C M 2002 Disruptive innovation - New diagnosis and treatment for the systemic maladies of healthcare *World Markets Series Business Briefing Global Healthcare 2002* pp 14 – 17.

246. Christensen C M June 2002 The rules of innovation *Technology Review*.

247. Hart S L, Christensen C M Fall 2002 The great leap: Driving innovation from the base of the global pyramid *MIT Sloan Management Review* **44** no 1 pp 51 – 56.

248. Christensen C M, Verlinden M, Westerman G November 2002 Disruption, disintegration, and the dissipation of differentiability *Industrial and Corporate Change* **11** no 5 pp 955 – 993.

249. Christensen C M 2003 The opportunity and threat of disruptive technologies *Harvard Business School Publishing Class Lecture* HBSP Product Number 1482C Boston MA USA.

250. Shah Ch D, Brennan T A, Christensen C M April 2003 Interventional radiology: Disrupting invasive medicine.

251. Christensen C M March April 2003 Beyond the innovator's dilemma *Strategy & Innovation* **1** no 1.

252. Christensen C M, Raynor M E 2003 The innovator's solution: Creating and sustaining successful growth *Harvard Business School Press* Boston MA USA.

253. Burgelman R A, Christensen C M, Wheelwright S C 2003 Strategic management of technology and innovation 4th edition *McGraw-Hill Irwin* USA.

254. Christensen C M, Anthony S D January February 2004 Cheaper, faster, easier: Disruption in the service sector *Strategy & Innovation* **2** no 1.

255. Christensen C M, Anthony S D, Roth E A 2004 Seeing what's next: Using the theories of innovation to predict industry change *Harvard Business School Press* Boston MA USA.

256. Christensen C M January 2006 The ongoing process of building a theory of disruption *Journal of Product Innovation Management* **23** pp 39 – 55.

257. Christensen C M, Baumann H, Ruggles R, Sadtler Th M December 2006 Disruptive innovation for social change *Harvard Business Review* **84** no 12.

258. Christensen C M, Horn M B, Johnson C W 2008 Disrupting class: How disruptive innovation will change the way the World learns *McGraw-Hill* USA.

259. Christensen C M, Grossman J H, Hwang J 2009 The innovator's prescription: A disruptive solution for health care *McGraw-Hill* USA.

260. Dyer J H, Gregersen H B, Christensen C M December 2009 The innovator's DNA *Harvard Business Review* **87** no 12.

261. Christensen C M, Donovan T May 2010 Disruptive IPOs? WR Hambrecht & Co *Harvard Business School Case 610-065*.

262. Dyer J H, Gregersen H B, Christensen C M 2011 The innovator's DNA: Mastering the five skills of disruptive innovators *Harvard Business Press* Boston MA USA.

263. Christensen C M, Talukdar Sh, Alton R, Horn M B Spring 2011 Picking green tech's winners and losers *Stanford Social Innovation Review* USA.

264. Christensen C M, Wang D, van Bever D October 2013 Consulting on the cusp of disruption *Harvard Business Review* **91** no 10 pp 106 – 114.

265. Christensen C M, Raynor M E, McDonald R December 2015 What is disruptive innovation? *Harvard Business Review* Cambridge MA USA pp 44 – 53 https://hbr.org/2015/12/what-is-disruptive-innovation .

266. Christensen C M, Denning St December 2015 Disruptive innovation *Forbes* New York USA http://www.forbes.com/sites#/sites/stevedenning/2015/12/02/fresh-insights-from-clayton-christensen-on-disruptive-innovation/ .

267. Christensen C M 2015 Disruptive strategy *Course for Senior Executives* Harvard Business School Harvard University Cambridge USA.

268. Bhattacharya S, Ritter J R 1983 Innovation and communication: Signaling with partial disclosure *Review of Economic Studies* **50** pp 331 – 346.

269. Scherer F M 1984 Innovation and growth: Schumpeterian perspectives *MIT Press* Cambridge MA USA.

270. Rogers E M August 16 2003 Diffusion of innovations 5th edition *Free Press* ISBN-13: 978-0743222099 pp 1 – 576.

271. Rodin J 2015 Managing disruption, avoiding disaster and growing stronger in an unpredictable World *Public Lecture on 19.01.2015* London School of Economics and Political Science London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20150119_1830_managingDisruption.mp4 .

272. Dobbs R, Woetzel J, Flanders St 2015 No ordinary disruption: The four global forces breaking all the trends *Public Lecture on 08.06.2015* London School of Economics and Political Science London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20150608_1830_noOrdinaryDisruption.mp4 .

273. Barber L 2015 Making news for the new World *Public Lecture on 12.11.2015* London School of Economics and Political Science London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20151112_1830_makingNewsForTheNewWorld.mp4 .

Metal coins, paper money, electronic money, network money, electronic cash, digital cash, bit coin, electronic payments, debit cards, credit cards, stored value cards, smart cards (electronic purses) in finances:

274. Smith A 1776, 1991 An inquiry into the nature and causes of the wealth of nations London UK, *Alfred A Knopf Inc* New York USA.

275. Ricardo D 1816, 1951 Proposals for an economical and secure currency *in* The works and correspondence of David Ricardo vol **IV**: Pamphlets and Papers, 1815-1823 Piero Sraffa (editor), *2nd* edition *Cambridge University Press* London Cambridge UK.

276. Del Mar A 1894 History of money in ancient countries New-York USA.

277. Fisher I 1933 Stamped scrip *Adelphi & Co* New York USA http://userpage.fu-berlin.de/~roehrigw/fisher/

278. Keynes J M 1936 The general theory of employment, interest, and money *Harcourt Brace Jovanovich* New York USA.

279. Redlich F 1951 The molding of American banking: Men and ideas *Hafner Publishing Company Inc* New York USA.

280. Baumol W 1952 The transactions demand for cash – An inventory theoretic approach *Quarterly Journal of Economics* **66** pp 545 – 556.

281. Butlin S J 1953 Foundations of the Australian monetary system 1788-1851 *Sydney University Press* Sydney Australia.

282. Tobin J 1956 The interest rate elasticity of transactions demand for money *Review of Economics and Statistics* **38** (3) pp 241 – 247.

283. Tobin J May 1961 Money, capital, and other stores of value *American Economic Review* **LI** pp 26 – 37.

284. Tobin J 1963 Commercial banks as creators of money *in* Banking and monetary studies Carson D (editor) *Irwin* Homewood IL USA pp 408 – 419.

285. Tobin J 1965 Money and economic growth *Econometrica* vol **33** no 3 pp 671 – 684.

286. Cook R M 1958 Speculations on the origins of coinage *Historia* 7 pp.257 – 262.

287. Carson R A G 1962 Coins of the World New-York USA.

288. Friedman M, Jacobson Schwartz A 1963 A monetary history of the United States, 1867-1960 *Princeton University Press* Princeton NJ USA pp 1 – 442.

289. Friedman M, Jacobson Schwartz A 1986 Has government any role in money? *Journal of Monetary Economics* vol **17** (1) pp 37 – 62.

290. Black F August 1970 Banking and interest rates in a World without money *Journal of Banking Research* **1** pp 8 – 20.

291. Crawford M 1970 Money and exchange in the Roman world *Journal of Roman Studies* **60** pp 40 – 48.

292. Balmuth M S 1971 Remarks on the appearance of the earliest coins *in* Studies Presented to George M.A. Hanfmann *Harvard University Press* Cambridge USA pp 1 – 7.

293. Rousseas St W 1972 Monetary theory *Enopf* New York USA.

294. Thompson M, Kraay C M, Morkholm O (editors) 1973 An inventory of Greek coin hoards New York USA.

295. Hayek F A 1974, 1976a Choice in currency: A way to stop inflation *Occasional Paper 48* The Institute of Economic Affairs London UK.

296. Hayek F A 1976b Denationalization of money: An analysis of the theory and practice of concurrent currencies *Hobart Paper Special 70* The Institute of Economic Affairs London UK.

297. Hayek F A 1978 Denationalization of money: The argument refined *The Institute of Economic Affairs* London UK.

298. Checkland S G 1975 Adam Smith and the bankers *in* Essays on Adam Smith Skinner A S, Wilson T (editors) *Clarendon Press* London UK.

299. Galbraith J K 1976 Money: Whence it came, where it went *Houghton Mifflin Company* Boston USA.

300. McKinnon R I 1979 Money in international exchange: The convertible currency system *Oxford University Press* UK.

301. Fama E F 1980 Banking in a theory of finance *Journal of Monetary Economics* vol **6** pp 39 – 57.

302. Kagan D 1982 The dates of the earliest coins *American Journal of Archaeology* **86** (2) pp 343 – 360.

303. Price M J 1983 Thoughts on the beginnings of coinage *in* Studies in numismatic method presented to Philip Grierson Brooke C N L et al (editors) *Cambridge University Press* Cambridge UK pp 1 – 10.

304. White L H September 1984 Competitive payments systems and the unit of account *American Economic Review* vol **74** no 4 pp 699 – 712.

305. White L H 1989 Competition and currencies *New York University Press* NY USA.

306. White L H (editor) 1993 Free banking vols **1**, **2**, **3** *E Elgar Publishing* Aldershot Hants UK.

307. White L H 1999 The theory of monetary institutions *Blackwell Publishers* Oxford UK.

308. Hellwig M F 1985 What do we know about currency competition? *Zeitschrift Wirtschafts-und Sozialwissenschaften* **5** pp 565 – 588.

309. Lawrence C, Shay R P (editors) Technological innovation, regulation, and the monetary economy *Ballinger Publishing Company* Cambridge USA.

310. Wallace N 1986 The impact of new payment technologies: A macro view *in* Technological innovation, regulation, and the monetary economy Lawrence C, Shay R P (editors) *Ballinger Publishing Company* Cambridge pp 201 – 206.

311. Prescott E 1987 Multiple means-of-payment model *in* New approaches to money economics Barnett W, Singleton K (editors) *Cambridge University Press* Cambridge, New York USA.

312. Suhr D 1989 The capitalistic cost-benefit structure of money: An analysis of money's structural non-neutrality and its effects on the economy *Springer* Berlin Heidelberg New York USA.

313. Wallace R B 1987 The origin of the electrum coinage *American Journal of Archaeology* **91** pp 385 – 397.

314. Wallace R B 1989 On the production and exchange of early Anatolian electrum coinages *Revue des Etudes Anciennes* **91** pp 87 – 94.

315. Goodhart Ch 1989 Money, information, and uncertainty *Macmillan* London UK.

316. Goodhart Ch 2000 Can central banks survive the IT revolution? *International Finance* vol **3** no 2 pp 189 – 209.

317. Kennedy M 1989 Interest and inflation free money: How to create an exchange medium that works for everyone *Permakultur Instiute e.V.*

318. Whitesell W 1989 The demand for currency versus debitable accounts *Journal of Money, Credit and Banking* **21** (2) pp 246 – 251.

319. Whitesell W 1992 Deposit banks and the market for payment media *Journal of Money, Credit and Banking* **24** (4) pp 484 – 496.

320. Howgego Ch J 1990 Why did ancient states strike coins? *The Numismatic Chronicle* **150** pp 1 – 25.

321. Karwiese St 1991 The Artemisian hoard and the first coins of Ephesus *Revue Belge de Numismatique* **13** (7) pp 1 – 28.

322. Selgin G A, White L W December 1994 How would the invisible hand handle money? *Journal of Economic Literature* pp 1718 – 1749.

323. Bauer P W October 1 1995 Making payments in cyberspace *Economic Commentary* Federal Reserve Bank of Cleveland USA.

324. Crede A 1995 Electronic commerce and the banking industry: The requirement and opportunities for new payment systems using the Internet *Journal of Computer Mediated Communication* vol **1/3**
http://www.ascusc.org/jcmc/vol1/issue3/vol1no3.html .

325. Duca J V, Whitesell W C 1995 Credit cards and money demand: A cross-sectional study *Journal of Money, Credit and Banking* **27** (2) pp 604 – 623.

326. Humphrey D B, Pulley L B, Vesala J M 1996 Cash, paper, and electronic payments: A cross-country analysis *Journal of Money, Credit and Banking* vol **28** no 4 part 2 pp 914 – 939.

327. Humphrey D B 2004 Replacement of cash by cards in US consumer payments *Journal of Economics and Business* **56** pp 211 – 225.

328. Kezar M Winter 1995/1996 Logging on to electronic means of payment *Cross Sections* Federal Reserve Bank of Richmond USA pp 10 – 18.

329. Matonis J W 1995 Digital cash and monetary freedom *INET 95 June 26 - 30* Honolulu Hawaii USA.

330. Thiveaud J-M, Sylvain P 1995 De la monnaie électronique à l'invention de la monnaie d'électron : en Lydie au VIIe siècleavant Jésus-Christ *Revue d'économie financière* N°32 1995 Les technologies bancaires et financières pp 271 – 293.
doi : 10.3406/ecofi.1995.2178
http://www.persee.fr/web/revues/home/prescript/article/ecofi_0987-3368_1995_num_32_1_2178

331. Wenninger J, Laster D April 1995 The electronic purse *Federal Reserve Bank of New York Current Issues in Economics and Finance* **1** (1) Federal Reserve Bank of New York US pp 1 – 6.

332. Bank for International Settlements (BIS) 1996a Security of digital money *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

333. Bank for International Settlements (BIS) 1996b Implications for central banks of the development of digital money *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

334. Bank for International Settlements (BIS) December 1998 Statistics on payment systems in the group of ten countries *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

335. Bank for International Settlements (BIS) September 1999 Retail payments in selected countries: A comparative study *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

336. Bank for International Settlements (BIS) 2000 Survey of electronic money developments *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

337. Bank for International Settlements (BIS) 2001a Survey of electronic money developments *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

338. Bank for International Settlements (BIS) 2001b Electronic finance: A new perspective and challenges *BIS Papers no 7 Monetary and Economic Department Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

339. Bank for International Settlements (BIS) 2004 Survey of developments in electronic money and Internet and mobile payments *Committee on Payment and Settlement Systems Bank for International Settlements* Basel Switzerland
www.bis.org/publ/index.htm .

340. Bernkopf M 1996 Electronic cash and monetary policy *First Monday Munksgaard International Publishers* Copenhagen Denmark
http://www.firstmonday.dk .

341. Browne F X, Cronin D 1996 Payment technologies, financial innovation, and Laissez-Faire banking: A further discussion of the issues *in* The future of money in the information age Dorn J A (editor) *Cato Institute* Washington D C USA
http://www.cato.org/pubs/books/money/money18.htm .

342. Dorn J A (editor) 1996 The future of money in the information age *Cato Institute* Washington DC USA.

343. Jordan J L, Stevens E J 1996 Money in the 21st Century *in* The future of money in the information age Dorn J A (editor) *Cato Institute* Washington DC USA http://www.cato.org/pubs/books/money/money15.htm .

344. Lynch D, Lundquist L 1996 Digital money: The new era of Internet commerce *John Willey and Sons Inc* New York USA.

345. Mitchell R December 1996 Lots of calls for phone cards *Credit Card Management* vol **9** no 9 pp 14 – 18.

346. Santomero A, Seater J 1996 Alternative monies and the demand for media of exchange *Journal of Money, Credit and Banking* **28** (4) pp 942 – 960.

347. US Treasury September 1996 An introduction to electronic money issues *US Treasury* USA.

348. Berentsen A 1997a Digital money, liquidity, and monetary policy *First Monday Munksgaard International Publishers* Copenhagen Denmark
http://www.firstmonday.dk/issues/issue2_7/berentsen/index.html .

349. Berentsen A 1997b Supervision and regulation of network banks *First Monday Munksgaard International Publishers* Copenhagen Denmark
http://www.firstmonday.dk/issues/issue2_8/berentsen/index.html .

350. Berentsen A 1997c March 2012 Monetary policy implications of digital money *MPRA Paper no 37392* University of Munich Germany pp 1 – 29
http://mpra.ub.uni-muenchen.de/37392/ .

351. Choi S-Y, Stahl D, Whinston A 1997 The economics of electronic commerce *Macmillan Technical Publishing* Indianapolis USA.

352. Cronin M J (editor) Banking and finance on the Internet *Van Nostrand Reinhold Press* New York USA.

353. Frei F, Kalakota R 1997 Frontiers of online financial services *in* Banking and finance on the Internet Cronin M J (editor) *Van Nostrand Reinhold Press* New York USA.

354. Hitachi Research Institute 1997 Electronic money: Its impact on retail banking and electronic commerce *Hitachi Research Institute* Japan, *FIA Financial Publishing Company* USA.

355. Kennickell A B, Kwast M L July 1997 Who uses electronic banking? Results from the 1995 survey of consumer finance *Finance and Economics Discussion Series Paper 1997-35* Board of Governors of the Federal Reserve System USA.

356. Kobrin S J 1997 Electronic cash and the end of national markets *Foreign Policy* pp 65 – 77.

357. Marimon R, Nicolini J P, Teles P August 1997 Electronic money: The end of inflation? *Discussion Paper 122* Institute for Empirical Macroeconomics Federal Reserve Bank of Minneapolis USA pp 1 – 36.

358. McAndrews J J January/February 1997 Making payments on the Internet *Federal Reserve Bank of Philadelphia Business Review* USA pp 3 – 14.

359. McAndrews J J November/December 1997 Network issues and payment systems *Federal Reserve Bank of Philadelphia Business Review* USA pp 15 – 25.

360. McAndrews J J 1997 Banking and payment system stability in an electronic money World *Working Paper 97-9* Federal Reserve Bank of Philadelphia USA.

361. McAndrews J J July 1999 E-money and payment system risk *Contemporary Economic Policy* **17** pp 348 – 357.

362. McKnight L, Bailey J (editors) 1997 Internet economics *MIT Press* Cambridge MA USA.

363. Neuman C, Medvinsky G 1997 Internet payment services *in* Internet economics McKnight L, Bailey J (editors) *MIT Press* Cambridge MA USA.

364. Schreft S L 1997 Looking forward: The role for government in regulating electronic cash *Economic Review - 4th Quarter 1997* Federal Reserve Bank of Kansas City Kansas USA pp 59 – 84.

365. Woodford M September 1997 Doing without money: Controlling inflation in a post-monetary world *NBER Working Paper no 6188* National Bureau of Economic Research Cambridge Massachusetts USA.

366. Woodford M 2000 Monetary policy in a world without money *International Finance* vol **3** no 2 pp 229 – 260.

367. Woodford M 2003 Interest and prices: Foundations of a theory of monetary policy *Princeton University Press* Princeton NJ USA.

368. European Central Bank August 1998 Report on electronic money *European Central Bank* Frankfurt am Main Germany
www.ecb.int/pub/pdf/emoney.pdf .

369. Furst K, Lang W W, Nolle D E September 1998 Technological innovation in banking and payments: Industry trends and implications for banks *Office of the Comptroller of the Currency Quarterly Journal* **17** pp 23 – 31.

370. Hatakka T 1998 Payment methods in Finland and selected EU countries: Electronic banking and developments *Bank of Finland Bulletin* **72** (2) pp 3 – 7.

371. Phillips A L Winter 1998 Migration of corporate payments from check to electronic format: A report on the current status of payments *Financial Management* **27** pp 92 – 105.

372. Shy O, Tarkka J 1998 The market for electronic cash cards *Suomen Pankin Monistuskeskus* Helsinki Finland ISBN 951-686-591-7 pp 1 – 35.

373. Stalder F, Clement A July 1998 Exploring policy issues of electronic cash: The Mondex case *Working Paper 8* Information Policy Research Program Faculty of Information Studies University of Toronto Canada
www.fis.utoronto.ca/research/iprp/dipcii/workpap8.htm.

374. US General Accounting Office July 1998 Experience with electronic check presentment *GAO/GGD-98-145* US General Accounting Office USA.

375. Gowrisankaran G, Stavins J May 1999 Are there network externalities in electronic payments? *Federal Reserve Bank of Chicago Conference on Bank Structure and Competition* Federal Reserve Bank of Boston USA.

376. Hankel T, Ize A, Kovanen A 1999 Central banking without a central bank *IMF Working Paper no 99/92* International Monetary Fund Washington DC USA.

377. Hitt L M, Frei F X April 1999 Do better customers utilize electronic distribution channels? The case of PC banking *Working Paper 99-21* Wharton Financial Institutions Center USA.

378. Hogarth J M, O'Donnell K H July 1999 Banking relationships of lower-income families and the governmental trend toward electronic payment *Federal Reserve Bulletin* **85** pp 459 – 473.

379. King M August 27 1999, November 1999 Challenges for monetary policy: New and old *New Challenges for Monetary Policy Symposium* Federal Reserve Bank of Kansas City Jackson Hole Wyoming USA, *Bank of England Quarterly Bulletin* vol **39** pp 397 – 415.

380. Orr B July 1999a At last Internet banking takes off *ABA Banking Journal* p 36.

381. Orr B July 1999b E-banks or E-branches? Both are in play as early adopters make them work *ABA Banking Journal* pp 32 – 34.

382. Prinz A 1999 Money in the real and virtual world: E-money, C-money and the demand for Cb-money *Netnomics* vol **1** pp 11 – 35.

383. Schulz K August 1999 The future of digital cash *Banking Policy Report* **18** pp. 8 – 13.

384. Van Hove L 1999 Electronic money and the network externalities theory: Lessons for real life *Netnomics* vol **1** pp 137 – 171.

385. Freedman Ch 2000 Monetary policy implementation: Past, present and future - Will electronic money lead to the eventual demise of central banking? *International Finance* vol **3** no 2 pp 211 – 227.

386. Friedman B M 2000 Decoupling at the margins: The threat to monetary policy from the electronic revolution in banking *NBER Working Paper no 7955* National Bureau of Economic Research Cambridge Massachusetts USA.

387. Huber J, Robertson J 2000 Creating new money: A monetary reform for the information age New Economics Foundation London UK.

388. Mester L J March/April 2000 The changing nature of the payments system: Should new players mean new rules? *Business Review* Federal Reserve Bank of Philadelphia USA pp 3 – 26.

389. Rahn R W 2000 The impact of digital money on central banks *Cato Journal Institute's 18th Annual Monetary Conference*
www.cato.org .

390. Workshop October 20 – 21 2000 The analysis of new electronic payments systems based on Carl Menger's institutional theory of the origin of money *Workshop* Vienna Austria.

391. Arnone M February 26 2001 E-money and the transmission of monetary policy *2nd Monetary Conference: Electronic Banking: Challenges and Opportunities for Central Banks* Central Bank of Philippines Manila Philippines.

392. Arnone M, Bandiera L 2003 E-money: Chances of success and consequences for monetary policy *Working Paper no 401* Kiel Institute for World Economics Kiel Germany.

393. Arnone M, Bandiera L July 2004 Monetary policy, monetary areas, and financial development with electronic money *IMF Working Paper WP/04/122* Monetary and Financial Systems Department International Monetary Fund USA pp 1 – 43.

394. Beck H 2001 Banking is essential, banks are not. The future of financial intermediation in the age of the Internet *Netnomics* vol 3 pp 7 – 22.

395. Bootle R 2001 The future of electronic money - Why the Nok will not replace the Dollar *The Business Economist* vol **32** no 1 pp 7 – 15.

396. Cohen B J 2001 Electronic money. New day or false dawn? *Review of International Political Economy* vol **8** (2) pp 197 – 225.

397. Costa Storti C, De Grauwe P February 2001 Monetary policy in a cashless society *CEPR Discussion Paper Series no 2696* Centre for Economic Policy Research London UK.

398. Costa Storti C, De Grauwe P May 2002 Electronic money and optimal size of monetary union *CEPR Discussion Paper Series no 3391* Centre for Economic Policy Research London UK.

399. Hawkins J 2001 Electronic finance and monetary policy *in* Electronic finance: A new perspective and challenges *BIS Papers no 7* Bank for International Settlements Basel Switzerland.

400. Mesonnier J-S July 2001 Monnaie electronique et politique monétaire *Bulletin de la Banque de France* no 91 Paris France.

401. Sato S, Hawkins J November 2001 Electronic finance: An overview of the issues *in* Electronic finance: A new perspective and challenges *BIS Paper no 7* Bank for International Settlements Basel Switzerland.

402. Spencer P January–March 2001 E-money: Will it take off? *World Economics* vol **2** no 1 pp 121 – 136.

403. Berk J M September 2002 Central banking and financial innovation. A survey of the modern literature *Banca Nazionale del Lavoro Quarterly Review no 222*.

404. Davies G 2002 A history of money from ancient times to the present day 3rd edition *University of Wales Press* Cardiff UK.

405. Drehmann M, Goodhart Ch, Krüger M 2002 The challenges facing currency usage: Will the traditional transaction medium be able to resist competition from the new technologies? *Economic Policy* vol **17** pp 193 – 227.

406. Organization for Economic Cooperation and Development (OECD) 2002 The future of money *Organization for Economic Cooperation and Development* Paris France.

407. Palley Th 2002 The e-money revolution: Challenges and implications for monetary policy *Journal of Post Keynesian Economics* vol **24** no 2 pp 217 – 233.

408. Shy O, Tarkka J May 2002 The market for electronic cash cards *Journal of Money, Credit and Banking* vol **34** no 2.

409. Stevens E March 2002 Electronic money and the future of central banks *Federal Reserve Bank of Cleveland* USA pp 1 – 4.

410. Gormez Y, Budd C H 2003 Electronic money free banking and some implications for central banking *Working Paper* Research Department The Central Bank of the Republic of Turkey.

411. Markose Sh M, Yiing Jia Loke 2003 Network effects on cash-card substitution in transactions and low interest rate regimes *Economic Journal* **113** (487) pp 456 – 476.

412. Rysman M 2004 An empirical analysis of payment card usage *Journal of Industrial Economics* **55** (1) pp 1 – 36.

413. Stix H 2004 How do debit cards affect cash demand? Survey data evidence *Empirica* **31** (2-3) pp 93 – 115.

414. Amromin G, Chakravorti S 2007 Debit card and cash usage: A cross-country analysis *Working Paper Series: WP-07-04* Federal Reserve Bank of Chicago USA.

415. Nakata M 2007 Effect of electronic money to existing currency demand (in Japanese) *PRI Discussion Paper Series No 07A-19* Policy Research Institute Ministry of Finance Government of Japan.

416. Williams M M, Anderson R G March 2007 Handicapping currency design: Counterfeit deterrence and visual accessibility in the United States and abroad *Working Paper 2007-011B* Federal Reserve Bank of St. Louis MO USA pp 1 – 74
http://research.stlouisfed.org/wp/2007/2007-011.pdf .

417. Bank of Japan 2008 Recent developments in electronic money in Japan *BOJ Report and Research Papers* Payment and Settlement Systems Department Bank of Japan 2-1-1 Nihonbashi-Hongokucho Chuo-Ku Tokyo 103-8660 Japan.

418. Bank of Japan 2009 Recent developments in electronic money in Japan (in Japanese) BOJ Report and Research Papers Payment and Settlement Systems Department Bank of Japan 2-1-1 Nihonbashi-Hongokucho Chuo-Ku Tokyo 103-8660 Japan.

419. Boaden A March 2008 Recent trends and developments in currency *Reserve Bank of New Zealand: Bulletin* vol **71** no 1 New Zealand pp 16 – 24.

420. Godschalk H July 28 2008 Electronic money: "Op or a new run-up?" Everyday *digital monies: Innovation in money cultures and technologies conference* Paper Session 1.

421. Fujiki H, Tanaka M 2009 Demand for currency, new technology and the adoption of electronic money: Evidence using individual household data *Discussion Paper No 2009-E-27* Institute for Monetary and Economic Studies Bank of Japan 2-1-1 Nihonbashi-Hongokucho Chuo-Ku Tokyo 103-8660 Japan pp 1 – 39

http://www.imes.boj.or.jp .

422. Turnbull Sh 2010 How might cell phone money change the financial system? *The Capco Institute Journal of Financial Transformation* pp 33 – 42

www.capco.com ,

http://ssrn.com/abstract=1602323 .

423. Moroz V S, Moroz V S September 2014 Roman coin on the Podillia and South-Eastern Volyn' *III International Scientific Conference "Bar's Land Podill'ya: European Heritage and Innovative Development Perspectives* Bar Vinnytsia Region Ukraine ISBN 978-617-7171-10-1 pp 162 – 169.

424. Yeoman R S 2014 A guide book of United States Coins 2015 68th edition *Whitman Publishing LLC* Atlanta Georgia USA ISBN 978-0-7948-4180-5.

Central banks, federal reserve banks, federal reserve system in finances:

425. Owen R L 1919 The Federal Reserve Act: Its origin and principles *Century Company* New York USA.

426. Willis H P 1923 The Federal Reserve System: Legislation, Organization, and Operation *Ronald Press Company* New York USA.

406. Bernanke B S 1979 Long-term commitments, dynamic optimization, and the business cycle *Ph. D. Thesis* Department of Economics Massachusetts Institute of Technology USA.

407. Bernanke B S, Blinder A S 1992 The federal funds rate and the channels of monetary transmission *American Economic Review* **82** (4) pp 901 – 921.

408. Bernanke B S, Gertler M 1995 Inside the black box: The credit channel of monetary policy transmission *Journal of Economic Perspectives* **9** (4) pp 27 – 48.

409. Bernanke B S 2002 Deflation: "Making sure it doesn't happen here." *Speech before the National Economists Club* Washington DC

http://www.federalreserve.gov.

410. Bernanke B S 2004 The great moderation

www.federalreserve.gov.

411. Bernanke B S, Reinhart V R 2004 Conducting monetary policy at very low short-term interest rates *The American Economic Review* vol **94** no 2 pp 85 – 90.

412. Bernanke B S, Reinhart V R, Sack B P 2004 Monetary policy alternatives at the zero bound: an empirical assessment *Brookings Papers on Economic Activity* Issue 2 pp 1 – 78.

413. Bernanke B S 2007 The financial accelerator and the credit channel *Speech at The Credit Channel of Monetary Policy in the Twenty-first Century Conference* Federal Reserve Bank of Atlanta Georgia USA.

414. Bernanke B S 2009a The crisis and the policy response *Federal Reserve* USA.

415. Bernanke B S 2009b On the outlook for the economy and policy *Bank for International Settlements* Basel Switzerland http://www.bis.org/review/r091119a.pdf .

416. Bernanke B S 2009c The Federal Reserve's balance sheet – an update *Bank for International Settlements* Basel Switzerland http://www.bis.org/review/r091013a.pdf .

417. Bernanke B S 2009d Regulatory reform *Bank for International Settlements* Basel Switzerland http://www.bis.org/review/r091006a.pdf .

418. Bernanke B S 2009e Policy responses to the financial crisis *Public Lecture on 13.01.2009* London School of Economics and Political Science London UK. http://richmedia.lse.ac.uk/publicLecturesAndEvents/20090113_1300_policyResponsesToTheFinancialCrisis.mp3 .

419. Bernanke B S 2010a Monetary policy and the housing bubble *Annual Meeting of the American Economic Association* Atlanta Georgia USA.

420. Bernanke B S 2010b Causes of the recent financial and economic crisis *testimony before the Financial Crisis Inquiry Commission* Washington USA www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm .

421. Bernanke B S 2012a Some reflections on the crisis and the policy response *Rethinking Finance: Perspectives on the Crisis conference* sponsored by the Russell Sage Foundation and The Century Foundation New York USA www.federalreserve.gov/newsevents/speech/bernanke20120413a.htm .

422. Bernanke B S 2012b Monetary policy since the onset of the crisis *The Changing Policy Landscape symposium* sponsored by the Federal Reserve Bank of Kansas City Jackson Hole Wyoming USA www.federalreserve.gov/newsevents/speech/bernanke20120831a.htm .

423. Bernanke B S 2013a Financial and economic education *13th Annual Redefining Investment Strategy Education (RISE) Forum* Dayton Ohio USA.

424. Bernanke B S 2013b Stress testing banks: What have we learned? *Maintaining Financial Stability: Holding a Tiger by the Tail conference* sponsored by the Federal Reserve Bank of Atlanta Stone Mountain Ga USA www.federalreserve.gov/newsevents/speech/bernanke20130408a.htm .

425. Bernanke B S 2013c Monitoring the financial system *49th Annual Conference on Bank Structure and Competition sponsored by the Federal Reserve Bank of Chicago* Chicago Illinois USA pp 1 – 16.

426. Bernanke B S 2013d A century of U.S. central banking: Goals, frameworks, accountability *The first 100 years of the Federal Reserve: The policy record, lessons learned, and prospects for the future conference* sponsored by the *National Bureau of Economic Research* Cambridge Massachusetts USA.

427. Bernanke B S, Blanchard O, Summers L H, Weber A A 2013 What should economists and policymakers learn from the financial crisis? *Public Lecture on 25.03.2013* London School of Economics and Political Science London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20130325_1715_whatShouldEconomistsAndPolicymakersLearn.mp4 ; http://www.federalreserve.gov/newsevents/speech/bernanke20130325a.htm.

428. Bernanke 2013a Teaching and learning about the Federal Reserve *A Teacher Town Hall Meeting: 100 Years of the Federal Reserve* Washington DC USA pp 1 – 5.

429. Bernanke 2013c The crisis as a classic financial panic *Fourteenth Jacques Polak Annual Research Conference* Washington DC USA pp 1 – 9.

427. Bernanke B S 2013b A century of U.S. central banking: Goals, frameworks, accountability *The first 100 years of the Federal Reserve: The policy record, lessons learned, and prospects for the future conference* sponsored by the *National Bureau of Economic Research* Cambridge Massachusetts USA.

428. Alesina A, Summers L H 1993 Central Bank independence and macroeconomic performance: Some comparative evidence *Journal of Money, Credit and Banking* vol **25** pp 151 – 162.

429. Capie F, Fischer St, Goodhart Ch, Schnadt N 1994 The development of central banking The future of central banking the tercentenary symposium of the Bank of England *Cambridge University Press* Cambridge UK ISBN 9780521496346 http://eprints.lse.ac.uk/39606/ .

430. Taylor J B 1999 Monetary policy rules *University of Chicago Press* Chicago USA.

431. Ferguson R W Jr 2003 Rules and flexibility in monetary policy *Remarks at the University of Georgia* Athens Georgia USA
http://www.federalreserve.gov/boarddocs/speeches/2003/20030212/default.htm .

432. Meltzer A H 2003 A history of the Federal Reserve vol **1**: 1913-1951 *University of Chicago Press* Chicago Illinois USA.

433. Meltzer A H 2009a A history of the Federal Reserve vol **2** Book 1: 1951-1969 *University of Chicago Press* Chicago Illinois USA.

434. Meltzer A H 2009b A history of the Federal Reserve vol **2** Book 2: 1970-1986 *University of Chicago Press* Chicago Illinois USA.

435. Fox L S, Alvarez S G, Braunstein S, Emerson M M, Johnson J J, Johnson K H, Malphrus S R, Reinhart V R, Roseman L L, Spillenkothen R, and Stockton D J 2005 The Federal Reserve System: Purposes and Functions *Board of Governors of Federal Reserve System* Washington DC 20551 USA *9th edition* Library of Congress Control Number 39026719 pp 1 – 146.

436. Quinn St, Roberts W 2006 An economic explanation of the early Bank of Amsterdam, debasement, bills of exchange, and the emergence of the first central bank Working Paper 2006-13 Federal Reserve Bank of Atlanta USA
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=934871 .

437. Baltensperger E, Hildebrand P M, Jordan T J 2007 The Swiss National Bank's monetary policy concept – an example of a 'principles-based' policy framework *Swiss National Bank Economic Studies* no 3 Swiss National Bank Switzerland ISSN 1661-142X pp 1 - 28.

438. Ledenyov D O, Ledenyov V O 2013g On the Stratonovich - Kalman - Bucy filtering algorithm application for accurate characterization of financial time series with use of state-space model by central banks *MPRA Paper no 50235* Munich University Munich Germany pp 1 – 52, *SSRN Paper no SSRN-id2594333 Social Sciences Research Network* New York USA
http://mpra.ub.uni-muenchen.de/50235/ ,
http://ssrn.com/abstract=2594333 .

439. Ledenyov D O, Ledenyov V O December 11 - 12 2015 On the Stratonovich - Kalman - Bucy filtering algorithm application for accurate characterization of financial time series with use of state-space model by central banks *23rd Conference on the Theories and Practices of Securities and Financial Markets* National Sun Yat-Sen University Kaohsiung Taipei

Taiwan 52 p http://sfm.finance.nsysu.edu.tw/php/Papers/CompletePaper/014-1856280412.pdf .

<u>Stock exchange history, stock exchange operation principles, company valuation, company stock emission, company stock valuation by market, company stock valuation by rating agencies in economics and finances:</u>

440. Mortimer Th 1765 Every man his own broker *4th edition* London UK.

441. Courtois A 1855 Des opérations de bourse Paris France.

442. Maddison E 1875 The Paris Bourse and the London Stock Exchange. A comparison of the course of business on each exchange London UK.

443. Bachelier L 1900 Theorie de la speculation *Annales de l'Ecole Normale Superieure* vol **17** pp 21-86.

444. Lowenfeld H 1907 The investment of trust funds in the safest and most productive manner *Effingham Wilson* London UK.

445. Lowenfeld H 1910 All about investment *2nd Edition The Financial Review of Reviews* London UK.

446. Fisher I 1922 The making of index numbers. A study of their varieties, tests, and reliability New York USA.

447. Morgan E V, Thomas W A 1961 The stock exchange, its history and functions *Elek Books Ltd* London UK.

448. Michie R 1988 Different in name only? The London Stock Exchange and foreign bourses c. 1850 - 1914 *Business History* **30** pp 46 – 68.

449. Michie R 1999, 2001 The London Stock Exchange: A history *Oxford University Press* UK 978-0-19-924255-9 pp 1 – 688.

450. Arbulu P 1998a Le marché parisien des actions françaises au XIXe siècle: Performance et efficience d'un marché émergent Thèse de doctorat Université d'Orléans France.

451. Arbulu P 1998b La Bourse de Paris au xixème siecle: l'exemple d'un marche emergent devenu efficient Revue d'Économie Financière pp 213 – 249.

452. Neal L 2005 The London Stock Exchange in the 19th century: Ownership structures, growth and performance *Working Paper 115 Oesterreichische Nationalbank* Wien Austria pp 1 – 38.

453. Petit M 2006 Inventaire des séries de données historiques du projet Old Paris stock exchange 1919-1939 *Economies et Sociétés* **40** no 8 pp 1089 – 1119.

454. P C Hautcoeur 2006 Why and how to measure stock market fluctuations? The early history of stock market indices, with special reference to the French case *Working paper no 10 Paris School of Economics* Paris France.

455. Hautcoeur P-C, Riva A 2007 The Paris financial market in the 19th century: An efficient multi-polar organization ? *Working Paper no.31 Paris School of Economics* Paris France.

456. Le Bris D, Hautcoeur P-C 2011 A challenge to triumphant optimists? *halshs-00586765 version 1 Paris School of Economics – EHESS* Paris France
www.pse.ens.fr .

457. Gallais-Hamonno, Georges (ed.) 2007 Le marché financier français au 19e siècle, Aspects antitatifs des acteurs et des instruments à la Bourse de Paris *Paris* France.

458. Hamao Y, Hoshi T, Okazaki T 2005 The genesis and development of the capital market in pre-war Japan CARF-F-023 Tokyo Japan
http://www.carf.e.u-tokyo.ac.jp/workingpaper/index.cgi .

459. Hart O, Moore J 1996 The governance of exchanges: Members' cooperatives versus outside ownership *Oxford Review of Economic Policy* **12** pp 53 – 69.

460. Goetzmann W, Ibbotson R, Peng C 2000 A new historical database for the NYSE 1815 to 1925: Performance and predictability *The Journal of Financial Markets* **4** no 1 pp. 1 – 32.

461. Davis L E, Neal L 1998 Micro rules and macro outcomes: The impact of the structure of organizational rules on the efficiency of security exchanges, London, New York, and Paris, 1800-1914 *American Economic Review* **88** (2) pp 40 – 45.

462. Davis L E, Neal L, White E N 2003 How it all began: The rise of listing requirements on the London, Berlin, Paris, and New York stock exchanges *The International Journal of Accounting* **38** (2) pp 117 – 143.

463. Pirrong C 1999 The organization of financial exchange markets: Theory and evidence *Journal of Financial Markets* **2** (4) pp 329 – 357.

464. Pirrong C 2000 A theory of financial exchange organization *Journal of Law & Economics* **43** pp 437 – 471.

465. Di Noia C 2001 Competition and integration among stock exchanges in Europe: Network effects, implicit mergers and remote access *European Financial Management* **7** (1) pp 39 – 72.

466. Gregory A, Harris D F, Michou M 2001 An analysis of contrarian investment strategies in the UK *Journal of Business Finance and Accounting* **28** (9-10) pp 1192 – 1228.

467. Munro J H 2003 The medieval origins of the 'Financial Revolution': usury, rentes, and negotiability *The International History Review* **XXV 3** ISSN 0707-5332 pp 505 – 756 *Munich University* Munich Germany http://mpra.ub.uni-muenchen.de/10925/ .

468. Landes D 1998, 1999 The wealth and poverty of nations *W W Norton & Company Inc USA*; *Little Brown & Company UK*; *Abacus UK* ISBN 0 349 11166 9 pp 1 – 650.

469. Shiryaev A N 1998a Foundations of stochastic financial mathematics vol **1** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 1 – 492.

470. Shiryaev A N 1998b Foundations of stochastic financial mathematics vol **2** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 493 – 1017.

471. Schnoor I 2006 Comparable analysis and data manipulation tools *The Marquee Group* Toronto Canada pp 1 – 66.

472. Schnoor I 2005-2006 Private communications on business valuation methodologies *Rotman School of Management University of Toronto* Canada.

473. Łuniewska M A 2007 A statistical analysis of dividend in chosen companies listed on the Warsaw Stock Exchange *Folia Oeconomica Stetinensia* DOI: 10.2478/v10031-007-0013-4 pp 76 – 85.

474. Bartram S M, Bodnar G M 2009 Crossing the lines: The conditional relation between exchange rate exposure and stock returns in emerging and developed markets *MPRA Paper No. 14018 Munich University Munich Germany* pp 1 – 43 http://mpra.ub.uni-muenchen.de/14018/ .

475. Granger C W J 1969 Investigating causal relations by econometrics models and cross spectral methods *Econometrica* **37** pp 424 – 438.

476. Granger C W J, Huang B, Yang C W, 2000 Bivariate causality between stock prices and exchange rates: Evidence from recent Asian flu *The Quarterly Review of Economics and Finance* **40** pp 337 – 354.

477. Aggarwal R 1981 Exchange rates and stock prices: A study of U.S. capital market under floating exchange rates *Akron Business and Economic Review* **12** pp 7 – 12.

478. Soenen L A, Hennigar E S 1988 An analysis of exchange rates and stock prices - the U.S. experience between 1980 and 1986 *Akron Business and Economic Review* **19** pp 7 – 16.

479. Giovannini A, Jorion P 1989 The time-variation of risk and return in the foreign exchange and stock markets *Journal of Finance* **44** pp 307 – 325.

480. Jorion P 1991 The Pricing of exchange rate risk in the stock market *Journal of Financial and Quantitative Analysis* **26** (3) pp 363 – 376.

481. Loudon G F 1993 The foreign exchange operating exposure of Australian stocks *Accounting and Finance* **33** (1) pp 19 – 32.

482. Bailey W, Chung Y P 1995 Exchange rate fluctuations, political risk, and stock returns: Some evidence from an emerging market *Journal of Financial and Quantitative Analysis* **30** (4) pp 541 – 560.

483. Prasad A M, Rajan M 1995 The role of exchange and interest risk in equity valuation: A comparative study of international stock markets *Journal of Economics and Business* **47** (5) pp 457 – 472.

484. Ajayi R A, Mougoue M 1996 On the dynamic relation between stock prices and exchange rates *Journal of Financial Research* **19** pp 193 – 207.

485. Ajayi R A, Friedman J, Mehdian S M 1998 On the relationship between stock returns and exchange rates: Tests of Granger causality *Global Finance Journal* **9** pp 241 – 251.

486. Issam S, Abdalla A, Murinde V 1997 Exchange rate and stock price interactions in emerging financial markets: Evidence on India, Korea, Pakistan and the Philippines *Applied Financial Economics* **7** pp 25 – 35.

487. Yu Q 1997 Stock prices and exchange rates: Experience in leading East Asian financial countries: Tokyo, Hong Kong and Singapore *Singapore Economic Review* **41** pp 47 – 56.

488. Chow E H, Lee W Y, Solt M E 1997 The exchange rate risk exposure of asset returns *Journal of Business* **70** (1) pp 107 – 123.

489. Choi J J, Hiraki T, Takezawa N 1998 Is foreign exchange rate risk priced in the Japanese stock market? *Journal of Financial and Quantitative Analysis* **33** (3) pp 361 – 382.

490. Stavarek D 2004 Stock prices and exchange rates in the EU and the USA: Evidence of their mutual interactions *MPRA Paper No 7297* pp 1 – 23
http://mpra.ub.uni-muenchen.de/7297/ .

491. Kolari J W, Moorman T C, Sorescu S M 2005 Foreign exchange risk and the cross-section of stock returns *Texas A&M Working Paper* USA.

492. Tabak B M 2006 The dynamic relationship between stock prices and exchange rates: Evidence for Brasil *The Banco Central do Brasil Working Paper Series no 124* ISSN 1518-3548 pp 1 – 37.

493. Hartmann D, Pierdzioch Ch 2006 Nonlinear links between stock returns and exchange rate movements *MPRA Paper No. 2918 Munich University* Munich Germany pp 1 – 15 http://mpra.ub.uni-muenchen.de/2918/ .

494. Hyde S J 2007 The response of industry stock returns to market, exchange rate and interest rate risks *Manchester Business School Working Paper No 2007-491 MPRA Paper No. 9679 Munich University* Munich Germany
http://mpra.ub.uni-muenchen.de/9679/ .

495. Alagidede P, Panagiotidis T, Xu Zhang 2010 Causal relationship between stock prices and exchange rates *Stirling Economics Discussion Paper 2010-05 Stirling Management School* Stirling University UK
http://www.economics.stir.ac.uk .

496. Thai-Ha Le, Youngho Chang 2011a The impact of oil price fluctuations on stock markets in developed and emerging economies *MPRA Paper No. 31936 Munich University Germany*
http://mpra.ub.uni-muenchen.de/31936/ .

497. Thai-Ha Le, Youngho Chang 2011b Dynamic relationships between the price of oil, gold and financial variables in Japan: A bounds testing approach *MPRA Paper No. 33030 Munich University Germany* pp 1 – 30
http://mpra.ub.uni-muenchen.de/33030/ .

498. Hamilton J D 1983 Oil and the macroeconomy since World War II *Journal of Political Economy* **91** pp 228 – 248.

499. Gisser M, Goodwin T H 1986 Crude oil and the macroeconomy: Tests of some popular notions *Journal of Money, Credit, and Banking* **18** pp 95 – 103.

500. Fortune N J 1987 The inflation rate of the price of gold, expected prices and interest rates *Journal of Macroeconomics* ***9*** (1) pp 71 – 82.

501. Mork K A 1989 Oil and the macroeconomy. When prices go up and down: An Extension of Hamilton’s results *Journal of Political Economy* **91** pp 740 – 744.

502. Sjaastad L A, Scacciallani F 1996 The price of gold and the exchange rate *Journal of Money and Finance* **15** pp 879 – 897.

503. Chan H W H, Faff R 1998 The sensitivity of Australian industry equity returns to a gold price factor *Accounting and Finance* **38** pp 223 – 244.

504. Cai J, Cheung Y-L, Wong M C S 2001 What moves the gold market? *Journal of Futures Markets* **21** pp 257 – 278.

505. Basher S A, Sadorsky P 2006 Oil price risk and emerging stock markets *Global Finance Journal* **17** pp 224 – 251.

506. Park J, Ratti R 2008 Oil prices shocks and stock markets in the U.S. and 13 European countries *Energy Economics* **30** (5) pp 2587 – 2608.

507. Kilian L, Park C 2009 The impact of oil price shocks on the US stock market International *Economic Review* **50** (4) pp 1267 – 1287.

508. Wang M L Wang C P, Huang T Y 2010 Relationships among oil price, gold price, exchange rate and international stock markets *International Research Journal of Finance and Economics* **47** pp 82 – 91.

509. Busch Th, Christensen B J Nielsen M Ø 2009 The role of implied volatility in forecasting future realized volatility and jumps in foreign exchange, stock, and bond markets *CREATES Research Paper 2007-9* Danske Bank Copenhagen Denmark; Center for Research in Econometric Analysis of Time Series Aarhus Denmark; School of Economics and Management University of Aarhus Denmark; Queen's University Kingston Ontario Canada pp 1 – 20.

510. Schwert G W 1989 Why does stock market volatility change over time? *Journal of Finance* **44** pp 1115 – 1153.

511. Égert B, Koubaa Y 2004 Modelling stock returns in the G-7 and in selected CEE economies: a non-linear GARCH approach *William Davidson Institute Working Paper no 663*.

512. Kavkler A, Festić M 2011 Modeling stock exchange index returns in different GDP growth regimes *Prague Economic Papers* **1** pp 3 – 22.

513. Elton E J, Gruber M J 1995 Modern portfolio theory and investment analysis *J Wiley and Sons Inc* New York USA.

514. Statman M 1987 How many stocks make a diversified portfolio *Journal of Financial and Quantitative Analysis* vol **22** no 3 pp 353 – 363.

515. Anghelache G 2000 The stock exchange and the OTC *Economic Publishing House* Bucharest Romania.

516. Stoica V, Ionescu E 2000 Capital markets and stock exchange *Economic Publishing House* Bucharest Romania.

517. Utsugi A, Ino K, Oshikawa M 2003 Random matrix theory analysis of cross correlations in financial markets *Cornell University* NY USA http://arxiv.org/abs/cond-mat/0312643v1 .

518. Abhyankar A H, Copeland L S, Wong W W 1997 Uncovering nonlinear structure in real-time stock-market indexes: the S&P 500, the DAX, the Nikkei 225, and the FTSE-100 *Journal of Business and Economic Statistics* **15** (1) pp 1 – 14.

519. Chappell D, Panagiotidis T 2005 Using the correlation dimension to detect nonlinear dynamics: Evidence from the Athens Stock exchange *Finance Letters* **3** (4) pp 29 – 32.

Investment capital, investment portfolio, investment portfolio risk management in finances:

520. Markowitz H M 1952 Portfolio selection *The Journal of Finance* vol **7** (1) pp 77 – 91.

521. Markowitz H M 1956 The optimization of a quadratic function subject to linear constraints *Naval Research Logistics Quarterly* vol **3**.

522. Markowitz H M 1959 Portfolio selection: Efficient diversification of investments *John Wiley & Sons Inc* NY USA.

523. Markowitz H M 1987 Mean-variance analysis in portfolio choice and capital markets *Basil Blackwell* USA.

524. Lintner J 1956 Distribution of incomes of corporations among dividends, retained earnings, and taxes *American Economic Review* **46** (2) pp 97 – 113.

525. Lintner J 1965 The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets *Review of Economics and Statistics* **47** pp 13 – 37.

526. Tobin J 1958 Liquidity preference as behavior towards risk *Review of Economic Studies* vol **25** pp 65 – 86.

527. Osborne M F M 1959 Brownian motion in the stock market *Operations Research* **7** pp 145 – 173.

528. Alexander S S 1961 Price movements in speculative markets: Trends or random walks *Industrial Management Review* **2** pp 7 – 26.

529. Shiryaev A N 1961 The problem of the most rapid detection of a disturbance in a stationary process *Soviet Mathematical Doklady* **2** pp 795 – 799.

530. Shiryaev A N 1963 On optimal methods in quickest detection problems *Theory of Probability and its Applications* **8** (1) pp 22 – 46.

531. Shiryaev A N 1964 On Markov sufficient statistics in non-additive Bayes problems of sequential analysis *Theory of Probability and its Applications* **9** (4) pp 670 – 686.

532. Shiryaev A N 1965 Some exact formulas in a 'disorder' problem *Theory of Probability and its Applications* **10** pp 348 – 354.

533. Grigelionis B I, Shiryaev A N 1966 On Stefan's problem and optimal stopping rules for Markov processes *Theory of Probability and its Applications* **11** pp 541 – 558.

534. Shiryaev A N 1967 Two problems of sequential analysis *Cybernetics* **3** pp 63 – 69.

535. Shiryaev A N 1978 Optimal stopping rules *Springer* Berlin Germany.

536. Shiryaev A N 1998a Foundations of stochastic financial mathematics vol **1** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 1 – 492.

537. Shiryaev A N 1998b Foundations of stochastic financial mathematics vol **2** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 493 – 1017.

538. Graversen S E, Peskir G, Shiryaev A N 2001 Stopping Brownian motion without anticipation as close as possible to its ultimate maximum *Theory of Probability and its Applications* **45** pp 125–136 MR1810977
http://www.ams.org/mathscinet-getitem?mr=1810977 .

539. Kallsen J, Shiryaev A N 2001 Time change representation of stochastic integrals *Theory of Probability and its Applications* **46** pp 579–585 MR1978671
http://www.ams.org/mathscinet-getitem?mr=1978671 .

540. Kallsen J, Shiryaev A N 2002 The cumulant process and Esscher's change of measure *Finance Stoch* **6** pp 397–428 MR1932378
http://www.ams.org/mathscinet-getitem?mr=1932378 .

541. Shiryaev A N 2002 Quickest detection problems in the technical analysis of the financial data *Proceedings Mathematical Finance Bachelier Congress* Paris France (2000) *Springer* Germany pp 487–521 MR1960576
http://www.ams.org/mathscinet-getitem?mr=1960576 .

542. Jacod J, Shiryaev A N 2003 Limit theorems for stochastic processes 2nd edition Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences] **288** *Springer* Berlin Germany MR1943877
http://www.ams.org/mathscinet-getitem?mr=1943877

543. Peskir G, Shiryaev A N 2006 Optimal stopping and free-boundary problems *Lectures in Mathematics* ETH Zürich *Birkhäuser* Switzerland MR2256030
http://www.ams.org/mathscinet-getitem?mr=2256030 .

544. Feinberg E A, Shiryaev A N 2006 Quickest detection of drift change for Brownian motion in generalized Bayesian and mini-max settings *Statistics & Decisions* **24** (4) pp 445 – 470.

545. du Toit J, Peskir G, Shiryaev A N 2007 Predicting the last zero of Brownian motion with drift Cornell University NY USA pp 1- 17
http://arxiv.org/abs/0712.3415v1 .

546. Shiryaev A N 2008a Generalized Bayesian nonlinear quickest detection problems: on Markov family of sucient statistics Mathematical Control Theory and Finance Proceedings of the Workshop of April 10–14 2007 Lisbon Portugal Sarychev A et al editors *Springer* Berlin Germany pp 377 – 386.

547. Shiryaev A N 2008b Optimal stopping rules 3rd edition *Springer* Germany.

548. Eberlein E, Papapantoleon A, Shiryaev A N 2008 On the duality principle in option pricing: Semimartingale setting *Finance Stoch* **12** pp 265 – 292 http://www.ams.org/mathscinet-getitem?mr=2390191 .

549. Shiryaev A N, Novikov A A 2009 On a stochastic version of the trading rule "Buy and Hold" *Statistics & Decisions* **26** (4) pp 289 – 302.

550. Eberlein E, Papapantoleon A, Shiryaev A N 2009 Esscher transform and the duality principle for multidimensional semimartingales *The Annals of Applied Probability* vol **19** no 5 pp 1944 – 1971 http://dx.doi.org/10.1214/09-AAP600 http://arxiv.org/abs/0809.0301v5 .

551. Shiryaev A N, Zryumov P Y 2009 On the linear and nonlinear generalized Bayesian disorder problem (discrete time case) optimality and risk – modern trends in mathematical finance The Kabanov Festschrift Delbaen F et al editors *Springer* Berlin Germany pp 227 – 235.

552. Gapeev P V, Shiryaev A N 2010 Bayesian quickest detection problems for some diffusion processes Cornell University NY USA pp 1 – 25 http://arxiv.org/abs/1010.3430v2 .

553. Karatzas I, Shiryaev A N, Shkolnikov M 2011 The one-sided Tanaka equation with drift Cornell University NY USA http://arxiv.org/abs/1108.4069v1 .

554. Shiryaev A N, Zhitlukhin M V 2012 Optimal stopping problems for a Brownian motion with a disorder on a finite interval Cornell University NY USA pp 1 – 10 http://arxiv.org/abs/1212.3709v1 .

555. Zhitlukhin M V, Shiryaev A N 2012 Bayesian disorder detection problems on filtered probability spaces *Theory of Probability and Its Applications* **57** (3) pp 453 – 470.

556. Feinberg E A, Mandava M, Shiryaev A N 2013 On solutions of Kolmogorov's equations for nonhomogeneous jump Markov processes Cornell University NY USA pp 1 – 15 http://arxiv.org/abs/1301.6998v3 .

557. Rothbard M N 1962, 2004 Man, economy, and state *Ludwig von Mises Institute* Auburn Alabama USA http://www.mises.org/rothbard/mes.asp .

558. Cootner P 1962 Stock prices: Random vs. systematic changes *Industrial Management Review* **3** pp 24 – 45.

559. Cootner P 1964 The random character of stock prices *MIT Press* Cambridge USA.

560. Mandelbrot B 1963 The variation of certain speculative prices *Journal of Business* **36** pp 394 – 419.

561. Fama E F 1963 Mandelbrot and the stable Paretian hypothesis *Journal of Business* **36** (4) pp 420 – 429.

562. Fama E F 1965 The behavior of stock market prices *Journal of Business* **38** pp 34 - 105.

563. Fama E F 1970 Efficient capital markets: a review of theory and empirical work *Journal of Finance* **25** pp 383 - 417.

564. Fama E F 1976 Foundations of finance: Portfolio decisions and securities prices *Basic Books* New York USA.

565. Fama E F 1984 Forward and spot exchange rates *Journal of Monetary Economics* **14** pp 319 – 338.

566. Fama E F 1991 Efficient capital markets II *Journal of Finance* **46** pp 1575 – 1618.

567. Fama E F, French K R 1993 Common risk factors in the returns on stocks and bonds *Journal of Financial Economics* **33** (1) pp 3 – 56.

568. Fama E F 1998 Market efficiency, long-term returns, and behavioral finance *Journal of Financial Economics* **49** pp 283 – 306.

569. Fama E F, Blume M E 1966 Filter rules and stock market trading *Journal of Business* **39** (II) pp 226 – 241.

570. Fama E F, Fisher L, Jensen M, Roll R 1969 The adjustment of stock prices to new information *International Economic Review* **10** pp 1 – 21.

571. Fama E F 1970 Efficient capital markets: A review of theory and empirical work *Journal of Finance* **25** (2) pp 383 – 417.

572. Fama E F, MacBeth J D 1973 Risk, return and equilibrium: empirical tests *Journal of Political Economy* **81** pp 607 – 636.

573. Fama E F, Schwert G W 1977 Asset returns and inflation *Journal of Financial Economics* **5** pp 115 – 146.

574. Fama E F, Bliss R R 1987 The information in long-maturity forward rates *American Economic Review* **77** pp 680 – 692.

575. Fama E F, French K R 1988a Dividend yields and expected stock returns *Journal of Financial Economics* **22** pp 3 – 26.

576. Fama E F, French K R 1988b Permanent and temporary components of stock prices *Journal of Political Economy* **96** pp 246 – 273.

577. Fama E F and French K R 1989 Business conditions and expected returns on stocks and bonds *Journal of Financial Economics* **25** pp 23 - 50.

578. Fama E F 1991 Efficient capital markets: II *Journal of Finance* **46** (5) pp 1575 – 1617.

579. Fama, E.F. and French K R 1992 The cross-section of expected stock returns *Journal of Finance* **47** pp 427 – 466.

580. Fama E F, French K R 1993 Common risk factors in the returns on stocks and bonds *Journal of Financial Economics* **33** pp 3 – 56.

581. Fama E F, French K R 1995 Size and book-to-market factors in earnings and returns *Journal of Finance* **50** pp 131 – 156.

582. Fama E F, French K R 1996 Multifactor explanations for asset pricing anomalies *Journal of Finance* **51** (1) pp 55 – 84.

583. Fama E F, French K R 1998 Value versus growth: The international evidence Journal of Finance **53** (6) pp 1975 – 1999.

584. Fama E F, French K R 2004 The capital asset pricing model: Theory and evidence *Journal of Economic Perspectives* **18** (3) pp 25 – 46.

585. Fama E F, French K R 2010 Luck versus skill in the cross-section of mutual fund returns *Journal of Finance* **65** (5) pp 1915 – 1947.

586. Davis J L, Fama E F, French K R 2000 Characteristics, covariances, and expected returns: 1928-1997 *Journal of Finance* **55** pp 389 – 406.

587. Fama E F, Litterman R 2012 An experienced view on markets and investing *Financial Analysts Journal* **68** (6) pp 1 – 5.

588. Sharkovsky A N 1964 Co-existence of cycles of a continuous map of a line in itself *Ukrainian Mathematical Journal* vol **16** pp 61 – 71.

589. Sharkovsky A N 1965 On the cycles and structure of continuous mapping *Ukrainian Mathematical Journal* vol **17** p 104.

590. Sharkovsky A N, Maistrenko Yu L, Romanenko E Yu 1986 Differential equations and their applications *Naukova Dumka* Kiev Ukraine pp 1 – 280.

591. Sharpe W F 1964 Capital asset prices: A theory of market equilibrium under conditions of risk *Journal of Finance* vol **19** pp 425 – 442.

592. Sharpe W 1965 Risk aversion in the stock market *The Journal of Finance* vol **20** Issue 3 pp 416-422.

593. Sharpe W F 1966 Mutual fund performance *Journal of Business* vol **39** no 1 part 2: Supplement on security prices pp 119 – 138.

594. Sharpe W F 1968 Mutual fund performance and the theory of capital asset pricing: Reply *The Journal of Business* vol **41** no 2 pp 235 – 236.

595. Sharpe W 1992 Asset allocation: Management style and performance measurement *Journal of Portfolio Management* **18** no 2 pp 7 – 19.

596. Sharpe W F 1994 The Sharpe ratio *Journal of Portfolio Management* Fall pp 49 – 59.

597. Sharpe W F, Alexander G J, Bailey J V 1999 Investments 6th edition *Prentice-Hall Inc* USA.

598. Samuelson P A 1965 Proof that properly anticipated prices fluctuate randomly *Industrial Management Review* **6** pp 41 – 49.

599. Treynor J 1965 How to rate management of investment funds *Harvard Business Review* **43** no 1 pp 63 – 75.

600. Mossin J 1966 Equilibrium in a capital asset market *Econometrica* **34** (4) pp 768 – 783.

601. Jensen M C 1968 The performance of mutual funds in the period 1945-1964 *Journal of Finance* **23** (2) pp 389 – 416.

602. Blumethal R M, Getoor R K 1968 Markov processes and potential theory *Academic Press* USA MR0264757
http://www.ams.org/mathscinet-getitem?mr=0264757 .

603. Ball R, Brown P 1968 An empirical evaluation of accounting income numbers *Journal of Accounting Research* **6** pp 159 – 178.

604. Merton R C 1969 Lifetime portfolio selection under uncertainty: The continuous time case *Review of Economics and Statistics* vol **51** pp 247 – 257.

605. Merton R C 1970 A dynamic general equilibrium model of the asset market and its application to the pricing of the capital structure of the firm *Working Paper No. 497-70 Sloan School of Management* Massachusetts Institute of Technology Cambridge MA [Reprinted in Merton R C 1992 Ch 11)].

606. Merton R C 1971 Optimum consumption and portfolio rules in a continuous-time model *Journal of Economic Theory* vol **3** pp 373 – 413.

607. Merton R C 1972 Appendix: Continuous-time speculative processes *in* Day R H, Robinson S M editors *Mathematical Topics in Economic Theory and Computation Society for Industrial and Applied Mathematics* Philadelphia USA [Reprinted in Merton R C 1973 *SIAM Review* vol **15** pp 34 – 38].

608. Merton R C 1973a Theory of rational option pricing *Bell Journal of Economics and Management Science* vol **4** pp 141 – 183.

609. Merton R C 1973b An inter-temporal Capital Asset Pricing Model *Econometrica* vol **41** pp 867 – 887.

610. Merton R C 1977a An analytic derivation of the cost of deposit insurance and loan guarantees: An application of modern option pricing theory *Journal of Banking and Finance* vol **1** pp 3 – 11.

611. Merton R C 1977b A re-examination of the Capital Asset Pricing Model Studies in risk and return Bicksler J, Friend I editors *Ballinger* vols **I** & **II** pp 141 – 159.

612. Merton R C 1982 On the microeconomic theory of investment under uncertainty in Handbook of Mathematical Economics vol **II** Arrow K, Intriligator M editors *North-Holland Publishing Company* Amsterdam The Netherlands.

613. Merton R C 1983a On consumption-indexed public pension plans *in* Financial Aspects of the US Pension System in Bodie Z, Shoven J editors *University of Chicago Press* Chicago USA.

614. Merton R C 1983b Financial economics *in* Brown E C, Solow R M editors Paul Samuelson and Modern Economic Theory *McGraw-Hill* NY USA.

615. Merton R C 1990 The financial system and economic performance *Journal of Financial Services Research* vol **4** pp 263 – 300.

616. Merton R C 1992 Continuous-time finance Revised Edition *Basil Blackwell* Cambridge MA USA.

617. Merton R C 1993a Operation and regulation in financial intermediation: A functional perspective *in* Englund P editor Operation and regulation of financial markets *The Economic Council* Stockholm Sweden.

618. Merton R C 1993b Optimal investment strategies for university endowment funds in Clotfelter C, Rothschild M editors Studies of supply and demand in higher education *University of Chicago Press* Chicago USA.

619. Merton R C 1994 Influence of mathematical models in finance on practice: Past, present and future *Philosophical Transactions of the Royal Society of London* vol **347** pp 451 – 463.

620. Merton R C 1995a A functional perspective of financial intermediation *Financial Management* vol **24** no 2 pp 23 – 41.

621. Merton R C 1995b Financial innovation and the management and regulation of financial institutions *Journal of Banking and Finance* vol **19** pp 461 – 481.

622. Merton R C 1997 On the role of the Wiener process in finance theory and practice: The case of replicating portfolios *in* Jerison D, Singer I M, and Stroock D W editors The Legacy of Norbert Wiener: A Centennial Symposium PSPM Series vol **60** *American Mathematical Society* Providence RI USA.

623. Merton R C 1998 Applications of option-pricing theory: Twenty-five years later Les Prix Nobel 1997 Nobel Foundation Stockholm Sweden [Reprinted in American Economic Review pp 323 – 349].

624. Merton R C 1999 Commentary: Finance theory and future trends: The shift to integration risk pp 48 – 50.

625. Merton R C, Bodie Z 1992 On the management of financial guarantees *Financial Management* vol **21** pp 87 – 109.

626. Merton R C, Bodie Z 1993 Deposit insurance reform: A functional approach in Meltzer A, Plosser C editors *Carnegie-Rochester Conference Series on Public Policy* vol **38** pp 1 – 34

627. Merton R C, Scholes M S 1995 Fischer Black *Journal of Finance* vol **50**.

628. Merton R C 2001 Future possibilities in finance: Theory and finance practice *Working Paper 01-030 Harvard Business School* Harvard University Boston USA pp 1 – 43.

629. Black F, Jensen M C, Scholes M 1972 The capital asset pricing model: Some empirical tests *in* Jensen M editor Studies in the theory of capital markets *Praeger*.

630. Black F, Scholes M 1973 The pricing of options and corporate liabilities *Journal of Political Economy* **81** pp 637 – 654.

631. Fischer S 1977a Long-term contracts, rational expectations, and the optimal money supply rule *Journal of Political Economy* vol **85** no 1 pp 191 – 205.

632. Fischer S 1977b Long-term contracting, sticky prices, and monetary policy *Journal of Monetary Economics* vol **3** pp 317 – 323.

633. Shiller R J 1979 The volatility of long term interest rates and expectations models of the term structure *Journal of Political Economy* **87** pp 1190 – 1219.

634. Shiller R J 1981a Do stock prices move too much to be justified by subsequent changes in dividends? *American Economic Review* **71** pp 421 – 436.

635. Shiller R J 1981b The use of volatility measures in assessing market efficiency *Journal of Finance* **36** (2) pp 291 – 304.

636. Shiller R J 1982 Consumption, asset markets and macroeconomic fluctuations *Carnegie Rochester Conference Series on Public Policy* **17** pp 203 – 238.

637. Shiller R J 1984 Stock prices and social dynamics *Carnegie Rochester Conference Series on Public Policy* pp 457 – 510.

638. Shiller R J 1987 Investor behavior in the 1987 stock market crash: Survey evidence *NBER working paper no 2446*.

639. Shiller R J 1988 Portfolio insurance and other investor fashions as factors in the 1987 stock market crash *NBER Macroeconomics Annual* **3** pp 287 – 297.

640. Shiller R J 1989 Market volatility *MIT Press* Cambridge USA.

641. Shiller R J 2000 Irrational exuberance *Princeton University Press* USA.

642. Shiller R J 2008 The subprime solution: How today's global financial crisis happened, and what to do about I *Princeton University Press* USA.

643. Shiller R J, Campbell J Y, Schoenholtz K L 1983 Forward rates and future policy: interpreting the term structure of interest rates *Brookings Papers on Economic Activity* **1** pp 173 – 223.

644. Shiller R J, Perron P 1985 Testing the random walk hypothesis: Power vs. frequency of observation *Economics Letters* **18** pp 381 – 386.

645. Shiller R J, Pound J 1989 Survey evidence on the diffusion of interest and information among investors *Journal of Economic Behavior and Organization* **12** pp 47 – 66.

646. Bernanke B S 1979 Long-term commitments, dynamic optimization, and the business cycle *Ph. D. Thesis Department of Economics* Massachusetts Institute of Technology USA.

647. Bernanke B S, Blinder A S 1992 The federal funds rate and the channels of monetary transmission *American Economic Review* **82** (4) pp 901 – 921.

648. Bernanke B S, Gertler M 1995 Inside the black box: The credit channel of monetary policy transmission *Journal of Economic Perspectives* **9** (4) pp 27 – 48.

649. Bernanke B S 2002 Deflation: "Making sure it doesn't happen here." Speech before the *National Economists Club* Washington DC
http://www.federalreserve.gov .

650. Bernanke B S 2004 The great moderation
www.federalreserve.gov .

651. Bernanke B S, Reinhart V R 2004 Conducting monetary policy at very low short-term interest rates *The American Economic Review* vol **94** no 2 pp 85 – 90.

652. Bernanke B S, Reinhart V R, Sack B P 2004 Monetary policy alternatives at the zero bound: an empirical assessment *Brookings Papers on Economic Activity* Issue 2 pp 1 – 78.

653. Bernanke B S 2007 The financial accelerator and the credit channel *Speech at The Credit Channel of Monetary Policy in the Twenty-first Century Conference* Federal Reserve Bank of Atlanta Georgia USA.

654. Bernanke B S 2009a The crisis and the policy response *Federal Reserve* USA.

655. Bernanke B S 2009b On the outlook for the economy and policy *Bank for International Settlements* Basel Switzerland http://www.bis.org/review/r091119a.pdf .

656. Bernanke B S 2009c The Federal Reserve's balance sheet – an update *Bank for International Settlements* Basel Switzerland
http://www.bis.org/review/r091013a.pdf .

657. Bernanke B S 2009d Regulatory reform *Bank for International Settlements* Basel Switzerland
http://www.bis.org/review/r091006a.pdf .

658. Bernanke B S 2009e Policy responses to the financial crisis Public Lecture on 13.01.2009 *London School of Economics and Political Science* London UK. http://richmedia.lse.ac.uk/publicLecturesAndEvents/20090113_1300_policyResponsesToTheFinancialCrisis.mp3 .

659. Bernanke B S 2010a Monetary policy and the housing bubble *Annual Meeting of the American Economic Association* Atlanta Georgia USA.

660. Bernanke B S 2010b Causes of the recent financial and economic crisis testimony before the *Financial Crisis Inquiry Commission* Washington USA www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm .

661. Bernanke B S 2012a Some reflections on the crisis and the policy response Rethinking Finance: Perspectives on the Crisis conference sponsored by the *Russell Sage Foundation* and *The Century Foundation* New York USA www.federalreserve.gov/newsevents/speech/bernanke20120413a.htm .

662. Bernanke B S 2012b Monetary policy since the onset of the crisis *The Changing Policy Landscape symposium* sponsored by the *Federal Reserve Bank of Kansas City* Jackson Hole Wyoming USA www.federalreserve.gov/newsevents/speech/bernanke20120831a.htm .

663. Bernanke B S 2013a Financial and economic education *13th Annual Redefining Investment Strategy Education (RISE) Forum* Dayton Ohio USA.

664. Bernanke B S 2013b Stress testing banks: What have we learned? *Maintaining Financial Stability: Holding a Tiger by the Tail conference* sponsored by the *Federal Reserve Bank of Atlanta* Stone Mountain Ga USA www.federalreserve.gov/newsevents/speech/bernanke20130408a.htm .

665. Bernanke B S 2013c Monitoring the financial system *49th Annual Conference on Bank Structure and Competition* sponsored by the *Federal Reserve Bank of Chicago* Chicago Illinois USA pp 1 – 16.

666. Bernanke B S 2013d A century of U.S. central banking: Goals, frameworks, accountability *The first 100 years of the Federal Reserve: The policy record, lessons learned,* *and prospects for the future conference* sponsored by the *National Bureau of Economic Research* Cambridge Massachusetts USA.

667. Bernanke B S, Blanchard O, Summers L H, Weber A A 2013 What should economists and policymakers learn from the financial crisis? Public Lecture on 25.03.2013 *London School of Economics and Political Science* London UK http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20130325_1715_whatShouldEconomistsAndPolicymakersLearn.mp4 ; http://www.federalreserve.gov/newsevents/speech/bernanke20130325a.htm.

668. Hansen L P, Sargent T J 1980 Formulating and estimating dynamic linear rational expectation models *Journal of Economic Dynamics and Control* **2** pp 7 – 46.

669. Hansen L P, Hodrick R J 1980 Forward exchange rates as optimal predictors of future spot rates: An econometric analysis *Journal of Political Economy* **88** (5) pp 829 – 853.

670. Hansen L P 1982 Large sample properties of generalized method of moments estimators *Econometrica* **50** pp 1029 – 1054.

671. Hansen L P, Singleton K J 1982 Generalized instrumental variable estimation of nonlinear rational expectations models *Econometrica* **50** (5) pp 1269 – 1286.

672. Hansen L P, Singleton K J 1983 Stochastic consumption, risk aversion, and the temporal behavior of asset prices *Journal of Political Economy* **91** (2) pp 249 – 265.

673. Hansen L P, Singleton K J 1984 Erratum: Generalized instrumental variable estimation of nonlinear rational expectations models *Econometrica* **52** (1) pp 267 – 268.

674. Hansen L P 1985 A method for calculating bounds on the asymptotic covariance matrices of generalized method of moments estimators *Journal of Econometrics* **30** pp 203 – 238.

675. Hansen L P, Richard S F 1987 The role of conditioning information in deducing testable restrictions implied by dynamic asset pricing models *Econometrica* **55** pp 587 – 613.

676. Hansen L P, Heaton J C, Ogaki M 1988 Efficiency bounds implied by multiperiod conditional moment restrictions *Journal of the American Statistical Association* **83**.

677. Hansen L P, Jagannathan R 1991 Implications of security market data for models of dynamic economies *Journal of Political Economy* **99** pp 225 – 262.

678. Hansen L P, Scheinkman J A 1995 Back to the future: Generating moment implications for continuous-time Markov processes *Econometrica* **63** pp 767 – 804.

679. Hansen L P, Heaton J C, Yaron A 1996 Finite-sample properties of some alternative GMM estimators *Journal of Business & Economic Statistics* **14**.

680. Hansen L P Jagannathan R 1997 Assessing specification errors in stochastic discount factor models Journal of Finance **52** (2) pp 557 – 590.

681. Hansen L P, Sargent T J 2001 Robust control and model uncertainty *American Economic Review* **91** (2) pp 60 – 66.

682. Hansen L P, West K D 2002 Generalized method of moments and macroeconomics *Journal of Business and Economic Statistics* **20** (4) pp 460 – 469.

683. Hansen L P, Heaton J C, Li N 2008 Consumption strikes back? Measuring long-run risk *Journal of Political Economy* **116** pp 260 – 302.

684. Hansen L P, Sargent T J 2008 Robustness *Princeton University Press* USA**.**

685. Engle R F, Ta-Chung Liu 1972 Effects of aggregation over time on dynamic characteristics of an econometric model *National Bureau of Economic Research Chapters* in *Econometric Models of Cyclical Behavior* vols **1** and **2** pp 673 – 738.

686. Engle R F 1974 Band spectrum regression *International Economic Review* Department of Economics University of Pennsylvania and Osaka University Institute of Social and Economic Research Association vol **15** (1) pp 1 – 11.

687. Engle R F, Foley D K 1975 An asset price model of aggregate investment *International Economic Review* Department of Economics University of Pennsylvania and Osaka University Institute of Social and Economic Research Association vol **16** (3) pp 625 – 647.

688. Engle R F, Gardner R 1976 Some finite sample properties of spectral estimators of a linear regression *Econometrica* Econometric Society vol **44** (1) pp 149 – 165.

689. Engle R F 1976 Interpreting spectral analyses in terms of time-domain models *National Bureau of Economic Research Chapters* in *Annals of Economic and Social Measurement* vol **5** no 1 pp 89 – 109.

690. Engle R F 1978 Testing price equations for stability across spectral frequency bands *Econometrica* Econometric Society vol **46** (4) pp 869 – 881.

691. Engle R F 1980 Exact maximum likelihood methods for dynamic regressions and band spectrum regressions *International Economic Review* Department of Economics University of Pennsylvania and Osaka University Institute of Social and Economic Research Association vol **21** (2) pp 391 – 407.

692. Engle R F 1982a Autoregressive conditional heteroskedasticity with estimates of the variance of UK inflation *Econometrica* 50 pp 987 – 1008.

693. Engle R F 1982b A general approach to Lagrange multiplier model diagnostics *Journal of Econometrics* Elsevier vol **20** (1) pp 83 – 104.

694. Engle R F 1983 Estimates of the variance of US inflation based upon the ARCH model *Journal of Money, Credit, and Banking* **15** pp 286 – 301.

695. Engle R F, Watson M 1983 Alternative algorithms for the estimation of dynamic factor, MIMIC and varying coefficient regression models *Journal of Econometrics* vol **23** pp 385 – 400.

696. Engle R F, Granger C W J, Kraft D 1984 Combining competing forecasts of inflation using a bivariate arch model *Journal of Economic Dynamics and Control* Elsevier vol **8** (2) pp 151 – 165.

697. Engle R F, Hendry D F, Trumble D 1985 Small-sample properties of ARCH estimators and tests Canadian *Journal of Economics* Canadian Economics Association vol **18** (1) pp 66 – 93.

698. Engle R F, Lilien D M, Watson M 1985 A Dynamic model of housing price determination *Journal of Econometrics* vol **28** pp 307 – 326.

699. Watson M W, Engle R F 1985 Testing for regression coefficient stability with a stationary AR(1) alternative The Review of Economics and Statistics *MIT Press* vol **67** (2) pp 341 – 346.

700. Bollerslev T, Engle R F, Nelson D B 1986 Arch models *in* Engle R F, McFadden D editors Handbook of Econometrics *Elsevier* edition 1 vol **4** chapter 49 pp 2959 – 3038.

701. Engle R F, Yoo B S 1987 Forecasting and testing in co-integrated systems Journal of Econometrics *Elsevier* vol **35** (1) pp 143 – 159.

702. Engle R F, Granger C W J 1987 Co-integration and error correction: Representation, estimation, and testing *Econometrica* Econometric Society vol **55** (2) pp 251 – 276.

703. Engle R F, Lilien D M, Robins R P 1987 Estimating time varying risk premia in the term structure: The ARCH-M model *Econometrica* **55** pp 391 – 407.

704. Bollerslev T, Engle R F, Wooldridge J M 1988 A capital asset pricing model with time-varying covariances Journal of Political Economy *University of Chicago Press* vol **96** (1) pp 116 – 131.

705. Engle R F 1988 Estimates of the variance of US inflation based upon the ARCH model: Reply Journal of Money, Credit and Banking *Blackwell Publishing* vol **20** (3) pp 422 – 423.

706. Engle R F 1990 Stock volatility and the crash of '87: Discussion *Review of Financial Studies Society for Financial Studies* vol **3** (1) pp 103 – 106.

707. Engle R F, Ito T, Lin W L 1990 Meteor-showers or heat waves – Heteroskedastic intradaily volatility in the foreign-exchange market *Econometrica* **58** pp 525 – 542.

708. Engle R F, Ng V K, Rothschild M 1990 Asset pricing with a factor-ARCH covariance structure: Empirical estimates for treasury bills *Journal of Econometrics* **45** pp 213 – 237.

709. Engle R F, Granger C W J editors 1991 Long-run economic relationships: Readings in Cointegration *Oxford University Press* UK OUP catalogue number 9780198283393.

710. Engle R F, Gonzalez-Rivera G 1991 Semiparametric ARCH models *Journal of Business & Economic Statistics* American Statistical Association vol **9** (4) pp 345 – 359.

711. Chou R, Engle R F, Kane A 1992 Measuring risk-aversion from excess returns on a stock index *Journal of Econometrics* **52** pp 201 – 224.

712. Ng V, Engle R F, Rothschild M 1992 A multi-dynamic-factor model for stock returns *Journal of Econometrics Elsevier* vol **52** (1-2) pp 245 – 266.

713. Engle R F, Navarro P, Carson R 1992 On the theory of growth controls *Journal of Urban Economics Elsevier* vol **32** (3) pp 269 – 283.

714. Engle R F, Mustafa Ch 1992 Implied ARCH models from options prices *Journal of Econometrics Elsevier* vol **52** (1-2) pp 289 – 311.

715. Ding Zh, Granger C W J, Engle R F 1993 A long memory property of stock market returns and a new model *Journal of Empirical Finance Elsevier* vol **1** (1) pp 83 – 106.

716. Engle R F, Ng V K 1993 Measuring and testing the impact of news on volatility *Journal of Finance* American Finance Association vol **48** (5) pp 1749 – 1778.

717. Engle R F, Hendry D F 1993 Testing superexogeneity and invariance in regression models *Journal of Econometrics Elsevier* vol **56** (1-2) pp 119 – 139.

718. Engle R F, Kozicki Sh 1993 Testing for common features *Journal of Business & Economic Statistics* American Statistical Association vol **11** (4) pp 369 – 380.

719. Vahid F, Engle R F 1993 Common trends and common cycles *Journal of Applied Econometrics John Wiley & Sons Ltd* vol **8** (4) pp 341 – 360.

720. Engle R F, Susmel R 1993 Common volatility in international equity markets *Journal of Business & Economic Statistics American Statistical Association* vol **11** (2) pp 167 – 176.

721. Engle R F, Ng V K 1993 Time-varying volatility and the dynamic behavior of the term structure Journal of Money, Credit and Banking *Blackwell Publishing* vol **25** (3) pp 336 – 349.

722. Susmel R, Engle R F 1994 Hourly volatility spillovers between international equity markets *Journal of International Money and Finance Elsevier* vol **13** (1) pp 3 – 25.

723. Lin W-L, Engle R F, Ito T 1994 Do bulls and bears move across borders? International transmission of stock returns and volatility *Review of Financial Studies* Society for Financial Studies vol **7** (3) pp 507 – 538.

724. Engle R F 1994 Bayesian analysis of stochastic volatility models: Comment *Journal of Business & Economic Statistics* American Statistical Association vol **12** (4) pp 395 – 396.

725. Engle R F, Kroner K F 1995 Multivariate simultaneous generalized ARCH Econometric Theory *Cambridge University Press* UK vol **11** (01) pp 122 – 150.

726. Engle R F, Issler J V 1995 Estimating common sectoral cycles *Journal of Monetary Economics Elsevier* vol **35** (1) pp 83 – 113.

727. Engle R F editor 1995 ARCH: Selected readings *Oxford University Press* UK OUP Catalogue number 9780198774327.

728. Engle R F, Russell J R 1997 Forecasting the frequency of changes in quoted foreign exchange prices with the autoregressive conditional duration model *Journal of Empirical Finance Elsevier* vol **4** (2-3) pp 187 – 212.

729. Vahid F, Engle R F 1997 Codependent cycles *Journal of Econometrics Elsevier* vol **80** (2) pp 199 – 221.

730. Engle R F, Russell J R 1998 Autoregressive conditional duration: A new model for irregularly spaced transaction data *Econometrica* **66** pp 1127 – 1162.

731. Burns P, Engle R F, Mezrich J 1998 Correlations and volatilities of asynchronous data *Journal of Derivatives* pp 1 – 12.

732. Engle R F, White H editors 1999 Cointegration, causality, and forecasting: Festschrift in honour of Clive W J Granger *Oxford University Press* UK OUP Catalogue number 9780198296836.

733. Engle R F, Smith A D 1999 Stochastic permanent breaks *The Review of Economics and Statistics MIT Press* Cambridge USA vol **81** (4) pp 553 – 574.

734. Engle R F 2000 The econometrics of ultra-high-frequency data *Econometrica* **68** (1) pp 1 – 22.

735. Alfonso D, Engle R F 2000 Time and the price impact of a trade *Journal of Finance* American Finance Association vol **55** (6) pp 2467 – 2498.

736. Engle R F 2001a GARCH 101: The use of ARCH/GARCH models in applied econometrics *Journal of Economic Perspectives* American Economic Association vol **15** (4) pp 157 – 168.

737. Engle R F 2001b Financial econometrics - A new discipline with new methods *Journal of Econometrics Elsevier* vol **100** (1) pp 53 – 56.

738. Engle R F, Lange J 2001 Predicting VNET: A model of the dynamics of market depth *Journal of Financial Markets Elsevier* vol **4** (2) pp 113 – 142.

739. Engle R F, Patton A J 2001 What good is a volatility model? *Quantitative Finance Taylor and Francis Journals* vol **1** (2) pp 237 – 245.

740. Manganelli S, Engle R F 2001 Value at risk models in finance *European Central Bank Working Paper no 75* ISSN 1561-0810 European Central Bank Kaiserstrasse 29 D-60311 Frankfurt am Main Germany pp 1 – 41.

741. Engle R 2002a Dynamic conditional correlation: A simple class of multivariate generalized autoregressive conditional heteroskedasticity models *Journal of Business & Economic Statistics* **20** (3) pp 339 – 350.

742. Engle R 2002b New frontiers for ARCH *Journal of Applied Econometrics* **17** (5) pp 425 – 446.

743. Engle R, Ishida I 2002 Forecasting variance of variance: The square-root, the affine, and the CEV Garch models *Department of Finance Working Papers* New York University NY USA.

744. Rosenberg J V, Engle R F 2002 Empirical pricing kernels *Journal of Financial Economics* **64** (3) pp 341 – 372.

745. Engle R F 2003 Risk and volatility: Econometrics models and financial practice Nobel Lecture Stockholm Sweden pp 326 – 349
www.nobel.se .

746. Engle R F, Lunde A 2003 Trades and quotes: A bivariate point process *Journal of Financial Econometrics Society for Financial Econometrics* vol **1** (2) pp 159 – 188.

747. Engle R F, Manganelli S 2004 CAViaR: Conditional autoregressive value at risk by regression quantiles *Journal of Business & Economic Statistics* American Statistical Association vol **22** pp 367 – 381.

748. Engle R F 2004a Robert F Engle: Understanding volatility as a process *Quantitative Finance Taylor and Francis Journals* vol **4** (2) pp 19 – 20.

749. Engle R F 2004b Risk and volatility: Econometric models and financial practice *American Economic Review* American Economic Association vol **94** (3) pp 405 – 420.

750. Engle R F, Patton A J 2004 Impacts of trades in an error-correction model of quote prices *Journal of Financial Markets Elsevier* vol **7** (1) pp 1 – 25.

751. Russell J R, Engle R F 2005 A discrete-state continuous-time model of financial transactions prices and times: The autoregressive conditional multinomial-autoregressive conditional duration model *Journal of Business & Economic Statistics* American Statistical Association vol **23** pp 166 - 180.

752. Cappiello L, Engle R F, Sheppard K 2006 Asymmetric dynamics in the correlations of global equity and bond returns *Journal of Financial Econometrics* Society for Financial Econometrics vol **4** (4) pp 537 – 572.

753. Engle R F, Gallo G M 2006 A multiple indicators model for volatility using intra-daily data *Journal of Econometrics Elsevier* vol **131** (1-2) pp 3 – 27.

754. Diebold F X, Engle R F, Favero C, Gallo G M, Schorfheide F 2006 The econometrics of macroeconomics, finance, and the interface *Journal of Econometrics Elsevier* vol **131** (1-2) pp 1 – 2.

755. Engle R F, Marcucci J 2006 A long-run pure variance common features model for the common volatilities of the Dow Jones *Journal of Econometrics Elsevier* vol **132** (1) pp 7 – 42.

756. Engle R F, Colacito R 2006 Testing and valuing dynamic correlations for asset allocation *Journal of Business & Economic Statistics* American Statistical Association vol **24** pp 238 – 253.

757. Engle R F 2006a Private communications on the modern portfolio, risk management and nonlinear dynamic chaos theories in finances *Rotman School of Management* University of Toronto Ontario Canada.

758. Engle R F 2006b Private communications on the Stratonovich – Kalman – Bucy filtering algorithm *Rotman School of Management* University of Toronto Canada.

759. Barone-Adesi G, Engle R F, Mancini L 2007 A GARCH option pricing model in incomplete markets *Swiss Finance Institute Research Paper Series 07-03* Swiss Finance Institute Switzerland.

760. Engle R F, Rangel J G 2008 The Spline-GARCH model for low-frequency volatility and its global macroeconomic causes *Review of Financial Studies Society for Financial Studies* vol **21** (3) pp 1187 – 1222.

761. Easley D, Engle R F, O'Hara M, Wu L 2008 Time-varying arrival rates of informed and uninformed trades *Journal of Financial Econometrics Society for Financial Econometrics* vol **6** (2) pp 171 – 207.

762. Giovanni B-A, Engle R F, Mancini L 2008 A GARCH option pricing model with filtered historical simulation *Review of Financial Studies* Society for Financial Studies vol **21** (3) pp 1223 – 1258.

763. Bali T G, Engle R F 2010 The intertemporal capital asset pricing model with dynamic conditional correlations *Journal of Monetary Economics Elsevier* vol **57** (4) pp 377 – 390.

764. Engle R F 2011 Long-term skewness and systemic risk *Journal of Financial Econometrics* Society for Financial Econometrics vol **9** (3) pp 437 – 468.

765. Colacito R, Engle R F, Ghysels E 2011 A component model for dynamic correlations *Journal of Econometrics Elsevier* vol **164** (1) pp 45 – 59.

766. Engle R F, Kelly B 2012 Dynamic equicorrelation *Journal of Business & Economic Statistics* American Statistical Association vol **30** (2) pp 212 – 228.

767. Engle R F, Gallo G M, Velucchi M 2012 Volatility spillovers in East Asian financial markets: A mem-based approach *The Review of Economics and Statistics MIT Press* vol **94** (1) pp 222 – 223.

768. Engle R F 2012 Forecasting intraday volatility in the US equity market. Multiplicative component GARCH *Journal of Financial Econometrics* Society for Financial Econometrics vol **10** (1) pp 54 – 83.

769. Acharya V, Engle R F, Richardson M 2012 Capital shortfall: A new approach to ranking and regulating systemic risks *American Economic Review* American Economic Association vol **102** (3) pp 59 – 64.

770. Rangel J G, Engle R F 2012 The Factor--Spline--GARCH model for high and low frequency correlations *Journal of Business & Economic Statistics* American Statistical Association vol **30** (1) pp 109 – 124.

771. Engle R F, Ghysels E, Sohn B 2013 Stock market volatility and macroeconomic fundamentals *The Review of Economics and Statistics MIT Press* vol **95** (3) pp 776 – 797.

772. Bollerslev T 1986 Generalized Autoregressive Conditional Heteroskedasticity *Journal of Econometrics* vol **31** pp 307 – 327.

773. Bollerslev T, Russell J, Watson M 2010 Volatility and time series econometrics *Oxford University Press* Oxford UK ISBN13: 9780199549498 ISBN10: 0199549494 pp 1 – 384.

774. Barone-Adesi G, Giannopoulos K, Vosper L 1999 VaR without correlations for non-linear portfolios *Journal of Futures Markets* vol **19** pp 583 – 602.

775. McNeil A, Frey R 2000 Estimation of tail related risk measure for heteroscedastic financial time series: An extreme value approach *Journal of Empirical Finance* vol **7** pp 271 – 300

776. Campbell J Y 1987 Stock returns and the term structure *Journal of Financial Economics* **18** (2) pp 373 – 399.

777. Campbell J Y 1993 Intertemporal asset pricing without consumption data *American Economic Review* **83** (3) pp 487 – 512.

778. Campbell J Y, Cochrane J H 1999 By force of habit: A consumption-based explanation of aggregate stock market behavior *Journal of Political Economy* **107** pp 205 – 251.

779. Campbell J Y, Polk C, Vuolteenaho T 2009 Growth or glamour: Fundamentals and systematic risk in stock returns *Review of Financial Studies* **23** (1) pp 305 – 344.

780. Campbell J Y , Giglio S, Polk C, Turley R 2012 An intertemporal CAPM with stochastic volatility *NBER Working Paper 18411*.

781. Campbell J Y, Shiller R J 1987 Cointegration and tests of present value models *Journal of Political Economy* **95** pp 1062 – 1088.

782. Campbell J Y, Shiller R J 1988a The dividend-price ratio and expectations of future dividends and discount factors *Review of Financial Studies* **1** pp 195 – 227.

783. Campbell J Y, Shiller R J 1988b Stock prices, earnings, and expected dividends *Journal of Finance* **43** pp 661 – 676.

784. Campbell J Y, Shiller R J 1991 Yield spreads and interest rate movements: A bird's eye view *Review of Economic Studies* **58** pp 495 – 514.

785. Campbell J Y, Vuolteenaho T 2004 Bad beta, good beta *American Economic Review* **94** (5) pp 1249 – 1275.

786. Jegadeesh N, Titman S 1993 Returns to buying winners and selling losers: Implications for stock market efficiency *The Journal of Finance* **48** (1) pp 65 – 91.

787. Higuchi K 2016 Private communication on the interest rates setting by the Bank of Japan V. N. Karazin Kharkiv National University Kharkiv Ukraine.

Land investment, land valuation, land ownership, land exchange, financial capital investment product, financial capital investment medium in finances:

788. Ricardo D 1817, 1821 On the principles of political economy and taxation 3rd edition *John Murray* Albemarle Street London UK.

789. Denman D R 1956 The paradox of rural land investment in Britain *Land Economics* **32** (2) pp 109 – 117.

790. Silberberg R 1975 Rates of return on Melbourne land investment, 1880-92 *The Economic Record* **5**1 (134) pp 203 – 217.

791. Veenman H, Zonen 1961 An assessment of investments in land reclamation *Indian Journal of Agricultural Economics* **16** (2).

792. Elvin C A, Ervin D E 1982 Factors affecting the use of soil conservation practices: hypotheses, evidence and policy implications *Land Economics* **58** (3) pp 277 – 292.

793. Mills W L Jr, Hoover W L 1982 Investment in forest land: Aspects of risk and diversification *Land Economics* **58** (1) pp 33 – 51.

794. McFarlane L A 1983 British investment and the land: Nebraska, 1877–1946 *Business History Review* **57** (02) pp 258 – 272.

795. Eaton J December 1984 Foreign-owned land *NBER Working Paper no 1512* National Bureau of Economic Research Inc Cambridge USA pp 1 – 37.

796. Phipps T T 1984 Land prices and farm - based returns *American Journal of Agricultural Economics* **66** (4) pp 422 – 429.

797. Kaplan H M Winter 1985 Farm land as a portfolio investment *The Journal Portfolio Management* pp 73 – 78.

798. Fiske J R October 7-8 1986 The interaction of investment and financing decisions and the demand for farmland *Paper no 127214* Proceedings: 1986 Regional Committee NC-161 St Paul Minnesota USA pp 1 – 21.

799. Wiltshaw G D 1986 Land investment, planning permission, and uncertainty: A state-preference analysis *Environment and Planning A* **18** (2) pp 207 – 215.

800. Guzhvin P 1987 The yield of land and the structure of investment *Problems of Economic Transition* **29** (10) pp 38 – 54.

801. Eaton J 1988 Foreign-owned land *American Economic Review* **78** pp 76 – 88.

802. Mercier J E 1988 Farmland as an asset in the context of portfolio investment *M Sc Thesis* Department of Rural Economy University of Alberta Canada.

803. Reeve I J 1988 A squandered land: 200 Years of land degradation in Australia *Rural Development Unit* University of New England Armidale New South Wales Australia.

804. Asako K, Kuninori M, Inoue T, Murase H 1989 Tochi Hyouka to Tobin no q/Multiple q no Keisoku (Land valuation and Tobin’s q: Estimation by multiple q) *Japan Development Bank* Keizai Keiei Kenkyu 10-3 (in Japanese).

805. Asako K, Kuninori M, Inoue T, Murase H 1997 Setsubi Toushi to Tochi Toushi: 1977-1994 (Capital investment and land investment: 1977-1994) *in* Gendai Makuro Keizai Dougaku (Contemporary Dynamic Macroeconomics) Asako K, Otaki M (editors) pp 323 – 349 *University of Tokyo Press* Tokyo Japan (in Japanese).

806. Feder G, Onchan T 1989 Land ownership security and farm investment: Reply *American Journal of Agricultural Economics* **71** (1) pp 215 – 216.

807. Phillips W E, Bauer L, Mercier J E, Mumey G A 1989 Alberta farmland asset returns in the context of portfolio investment *Farming for the Future Project Report no 89-12* Department of Rural Economy University of Alberta Canada.

808. Phillips W E, Bauer L, Akabua K 1993 Returns to farmland investment in Alberta, 1964-89 *Paper no 232373* Project Report Series Department of Resource Economics and Environmental Sociology University of Alberta Edmonton Canada pp 1 – 49 http://ageconsearch.umn.edu//handle/232373 .

809. Roth M, Barrows R, Carter M, Kanel D 1989 Land ownership security and farm investment: Comment *American Journal of Agricultural Economics* **71** (1) pp 211 – 214.

810. Schnitkey G D, Taylor C R, Barry P J 1989 Evaluating farmland investments considering dynamic stochastic returns and farmland prices *Western Journal of Agricultural Economics* **14** (01).

811. Barrett S 1991 Optimal soil conservation and the reform of agricultural pricing policies *Journal of Development Economics* **36** pp 167 – 187.

812. Kanemoto Y 1991 Land tax and urban land supply *Japanese Economy* **20** (2) pp 53 – 93.

813. Lins D A, Hoffman C, Kowalski A September 23-24, 1991 Institutional investment diversification: Foreign stocks vs US farmland *Paper no 130948* Proceedings: 1991 Regional Committee NC-161 St Louis Missouri pp 1 – 27.

814. Yoshida T 1991 Usr cost of land investment *ISER Discussion Paper* Institute of Social and Economic Research Osaka University Japan.

815. Butler G S, DeBraal J P 1993 Foreign ownership of U.S. agricultural land through December 31, 1992 *Statistical Bulletin no 154796* Economic Research Service United States Department of Agriculture USA.

816. Miller E N, Andrews G February 9 - 11 1993 Factors influencing landholders' investments in soil conservation activities *Research Paper no 147759* Australian Agricultural and Resource Economics Society Conference (37th) Sydney Australia pp 1 – 14 http://ageconsearch.umn.edu/handle/147759 .

817. Capozza D, Yuming Li 1994 The intensity and timing of investment: The case of land *American Economic Review* **84** (4) pp 889 – 904.

818. Werner R A 1994 Japanese foreign investment and the "Land bubble" *Review of International Economics* **2** (2) pp 166 – 178.

819. Nieuwoudt W L 1995 The impact of a land tax on future investments: A note South *African Journal of Economics* **63** (1) pp 47 – 50.

820. Ogawa K, Suzuki K 1995 Land value and corporate investment: Evidence from Japanese panel data *ISER Discussion Paper* Institute of Social and Economic Research Osaka University Japan.

821. Ogawa Kazuo, Shin-Ichi Kitasaka, Hiroshi Yamaoka, Yasuharu Iwata 1996 Borrowing constraints and role of land asset in Japanese corporate investment decision *Journal of the Japanese and International Economies* pp 122 – 149.

822. Grepperud S February 1996 Soil conservation as an investment in land *Discussion Paper no 163* Research Department Statistics Norway Oslo Norway pp 1 – 21 http://www.ssb.no/a/publikasjoner/pdf/DP/dp_163.pdf .

823. Echevarria E 1997 Non-homothetic preferences, growth, trade and land *Working Paper* Instituto Valenciano de Investigaciones Económicas SA *Ivie*.

824. Deininger K, Feder G 2001 Land institutions and land markets *Chapter 06* Handbook of Agricultural Economics *Elsevier* **1** (1) pp 288 – 331.

825. Kiyotaki N, West K 2004 Land prices and business fixed investments in Japan *NBER Working Paper no 10909* National Bureau of Economic Research Inc USA http://www.nber.org/papers/w10909.pdf .

826. Sekine T, Tachibana T March 2004 Land investment by Japanese firms during and after the bubble period *Working Paper no 04-E-2* Bank of Japan Tokyo Japan pp 1 – 48 http://www.boj.or.jp/en/research/wps_rev/wps_2004/data/wp04e02.pdf .

827. Feinerman E, Peerlings J 2005 Uncertain land availability and investment decisions: The case of Dutch dairy farms *Journal of Agricultural Economics* **56** (1) pp 59 – 80.

828. Hennings E, Sherrick B J, Barry P J 2005 Portfolio diversification using farmland investments *Paper no 19273* Annual meeting of Agricultural and Applied Economics Association July 24-27 Providence RI USA.

829. Ray T 2005 Sharecropping, land exploitation and land-improving investments *The Japanese Economic Review* **56** (2) pp 127 – 143.

830. Turnbull G 2005 The investment incentive effects of land use regulations *The Journal of Real Estate Finance and Economics* **31** (4) pp 357 – 395.

831. Kiyotaki N, West K 2006 Land prices and business fixed investment in Japan Chapter 12 *in* Long-run Growth and Short-run Stabilization *Edward Elgar Publishing* London UK.

832. Holden S, Deininger K, Ghebru H 2007 Impacts of low-cost land certification on investment and productivity *American Journal of Agricultural Economics* **91** (2) pp 359 – 373.

833. Sekine T, Tachibana T 2007 Land as production input and collateral: Land investment by Japanese firms *The Journal of Real Estate Finance and Economics* **35** (4) pp 497 – 526.

834. Głuszak M 2008 Land acquisition in development projects: Investment value and risk *SRE-Discussion 2008/06* Department of Socioeconomics Institute for Multilevel Governance and Development Vienna University of Economics and Business Vienna Austria pp 1 – 16.

835. Von Braun J, Meinzen-Dick R April 2009 Land grabbing by foreign investors in developing countries: Risks and opportunities *IFPRI Policy Brief* **13**.

836. Cotula L, Vermeulen S, Leonard R, Keeley J 2009 Land grab or development opportunity? Agricultural investment and international land deals in Africa *International*

Fund for Agricultural Development, Food and Agriculture Organization London, Rome UK, Italy.

837. Cotula L 2012 The international political economy of the global land rush: A critical appraisal of trends, scale, geography and drivers *Journal of Peasant Studies* **39** (3-4) pp 649 – 680.

838. Fakton B, van der Post W 2010 The practice of land pricing across Europe *European Real Estate Society (ERES).*

839. Fischer G, Shah M 2010 Farmland investments and food security, statistical annex Laxenburg Austria (World Bank IIASA contract: Lessons for the large-scale acquisition of land from a agricultural land use analysis).

840. Zoomers A 2010 Globalisation and the foreignisation of space: Seven processes driving the current global land grab *Journal of Peasant Studies* **37** (2) pp 429 – 447.

841. Abdulai A, Owusu V, Goetz R 2011 Land tenure differences and investment in land improvement measures: Theoretical and empirical analyses *Journal of Development Economics* **96** (1) pp 66 – 78.

842. Arezki R, Deininger K, Selod H December 2011 What drives the global land rush? *CESifo Working Paper no 3666* CESifo Group Munich Germany pp 1 – 35 www.CESifo-group.org/wp .

843. De Schutter O 2011 The green rush: The global race for farmland and the rights of land users *Harvard International Law Journal* **52** (2) pp 503 – 559.

844. Hui-Wen Koo 2011 Property rights, land prices, and investment: A study of the Taiwanese land registration system *Journal of Institutional and Theoretical Economics (JITE)* **167** (3) pp 515 – 535.

845. Palyanychko N 2011 Investment in the sustainable use of agricultural land *Economics of Nature and the Environment* pp 170 – 179.

846. Zagema B September 22 2011 Land and power: The growing scandal surrounding the new wave of investments in land *Oxfam Briefing Paper 151* Oxfam International UK http://www.oxfam.org/sites/www.oxfam.org/files/bp151-land-power-rights-acquisitions-220911-en.pdf .

847. Di Corato L, Hess S September 26-28 2012 Foreign investment in farmland under uncertainty *Paper no 133017* 52nd Annual Conference of the German Association of Agricultural Economists (GEWISOLA) Stuttgart Germany pp 1 – 3 http://ageconsearch.umn.edu/handle/133017 .

848. Domeher D, Abdulai R 2012 Land registration, credit and agricultural investment in Africa *Agricultural Finance Review* **72** (1) pp 87 – 103.

849. Van der Kr Pasmans E, Van der Heijden R 2012 Explanations for the private investment decision in the industrial land market *19th Annual European Real Estate Society Conference* Edinburgh Scotland DOI: 10.15396/eres2012_264 .

850. Todorovic S Z, Vasiljevic Z R, Rajic Z N 2012 Economic efficiency of investments in agricultural land *International Journal of Sustainable Economies Management (IJSEM)* **1** (1) pp 61 – 74.

851. Oya C 2013 Methodological reflections on “land grab” databases and the “land grab” literature “rush” *Journal of Peasant Studies* **40** (3) pp 503 – 520.

852. Xianlei Ma, Heerink N, van Ierland E, van den Berg M, Xiaoping Shi 2013 Land tenure security and land investments in Northwest China *China Agricultural Economic Review* **5** (2) pp 281 – 307.

853. Zolin M B, Luzi L 2013 Unexpected and growing interest in land investments? The Asian case *Working Paper no 2013:26* Department of Economics University of Venice "Ca' Foscari" Venice Italy pp 1 – 20.

854. Boehlje M, Baker T G, Langemeier M January 3-5 2014 Farmland: Is it currently priced as an attractive investment? *Paper no 161650* Allied Social Science Association (ASSA) Annual Meeting Philadelphia PA USA.

855. Malashchuk O 2014 The land use ranking by the degree of investment attractiveness *Balanced Nature Using* **5** (3) pp 116 – 120.

856. Palenychak O 2014 Formation of investment attractiveness of the ecological-safety land use *Balanced Nature Using* **5** (3) pp 120 – 124.

857. Arezki R, Deininger K, Selod H 2015 What drives the global “Land rush”? *World Bank Economic Review* **29** (2) pp 207 – 233.

858. Busha D 2015 Land market infrastructure development as a basic prerequisite for improving the investment attractiveness of lands *Ukrainian Journal Ekonomist* issue **3** pp 21 – 25.

859. Szreder J 2015 Success factors in land development investments *World of Real Estate Journal (Swiat Nieruchomosci)* **93** pages 55 – 60.

860. Bochco O 2016 Increasing the level of investment attractiveness of land resources in Lviv region *Balanced Nature Using* **4** (2) pp 43 – 47.

861. Borghesi S, Giovannetti G, Iannucci G, Russu P 2016 The dynamics of foreign direct investments in land and pollution accumulation *SEEDS Working Paper no 1116* Sustainability Environmental Economics and Dynamics Studies pp 1 – 22 http://www.sustainability-seeds.org/ .

Commodity investment, commodity valuation, commodity derivatives, commodity futures, commodities exchange, financial capital investment product, financial capital investment medium in finances:

862. Keynes J M 1923 Some aspects of commodity markets *Manchester Guardian Commercial European Reconstruction Series Section* **13** pp 784 – 786.

863. Keynes J M September 1938 the policy of government storage of food-stuffs and raw materials *Economic Journal* **XLVIII** pp 449 – 460.

864. Keynes J M 1942, 1980 On commodities control *in* Collected writings of John Maynard Keynes Moggridge D (editor) **XXVII**: Activities 1940–46 Shaping the post-war world: Employment and commodities *Macmillan* London UK.

865. Keynes J M 1943 The objective of price stability *Economic Journal* **53** no 210 pp 185–187.

866. Hotelling H 1931 The economics of exhaustible resources *Journal of Political Economy* **39** pp 137 – 175.

867. Graham B 1937 Storage and stability: A modern ever-normal granary *McGraw* Hill NY USA.

868. Kaldor N 1939 Speculation and economic stability *Review of Economic Studies* **7** pp 1 – 27.

869. Working H February 1948 Theory of the inverse carrying charge in futures markets *Journal of Farm Economics* **30** pp 1 – 28.

870. Working H 1949 The theory of the price of storage *American Economic Review* **39** pp 1254 – 1262.

871. Working H 1960 Speculation on hedging markets *Food Research Institute Series* **1** pp 185 – 220.

872. Brennan M 1958 The supply of storage *American Economic Review* **48** pp 50 – 72.

873. Brennan M, Schwartz E S 1985 Evaluating natural resource investments *Journal of Business* **58** (2) pp 135 – 157.

874. Brennan M 1991 The price of convenience and the valuation of commodity contingent claims *in* Stochastic Models and Option Values Lund D, Oksendal B (editors) *North Holland* The Netherlands.

875. Sharpe W F 1964 Capital asset prices: A theory of market equilibrium under conditions of risk *Journal of Finance* **19** (3) pp 425 – 442.

876. Sharpe W F, Alexander G J, Bailey J V 1995 Investments 5th edition New York USA.

877. Telser L 1968 Futures trading and the storage of cotton and wheat *Journal of Political Economy* **66** pp 233 – 255.

878. Dusak K 1973 Futures trading and investor returns: An investigation of commodity market risk premiums *Journal of Political Economy* **81** (6) pp 1387 – 1406.

879. Lovell M C, Vogel R C 1973 A CPI-futures market *Journal of Political Economy* vol **81** no 4 pp 1009 – 1012.

880. Merton R C 1973 An intertemporal capital asset pricing model *Econometrica* **41** pp 867 – 888.

881. Stoll H R 1979 Commodity futures and spot price determination and hedging in capital market equilibrium *Journal of Financial and Quantitative Analysis* **14** (4) pp 873 – 894.

882. Stoll H R, Whaley R E 2009, 2010 Commodity index investing and commodity futures prices *Working Paper Owen Graduate School of Management* Vanderbilt University USA, *Journal of Applied Finance* **1** pp 1 – 40.

883. Bodie Z, Rosansky V I May June 1980 Risk and return in commodity futures *Financial Analysts Journal* vol **36** pp 3 – 14.

884. Breeden D T 1980 Consumption risk in futures markets *Journal of Finance* **35** (2) pp 503 – 520.

885. Spraos J March 1980 The statistical debate on the net barter terms of trade between primary commodities and manufacturers *Economic Journal* **90** pp 107 – 28.

886. Newbery D M, Stiglitz J E 1981 The theory of commodity price stabilization. A study of the economics of risk *Claredon Press Oxford University Press* Oxford UK.

887. Wright B, Williams J C 1982 The economic role of commodity storage *Economic Journal* **92** (367) pp 596 – 614.

888. Abel A B 1983 Optimal investment under uncertainty *American Economic Review* **73** (1) pp 228 – 233.

889. Abel A B, Blanchard O J 1986 The present value of profits and cyclical movements in investment *Econometrica* **54** (2) pp 249 – 273.

890. Abel A B, Mankiw N G, Summers L H, Zeckhauser R J 1989 Assessing dynamic efficiency: Theory and evidence *Review of Economic Studies* **56** pp 1 – 20.

891. Abel A B, Eberly J C 1994 A unified model of investment under uncertainty *American Economic Review* **84** (5) pp 1369 – 1384.

892. Bernanke B S 1983 Irreversibility, uncertainty, and cyclical investment *The Quarterly Journal of Economics* **98** pp 85 – 106.

893. Carter C A, Rausser G C, Schmitz A April 1983 Efficient asset portfolios and the theory of normal backwardation *The Journal of Political Economy* vol **91** no 2 pp 319 – 333.

894. Garbade K, Silber W L 1983 Price movements and price discovery in futures and cash markets *Review of Economics and Statistics* **65** pp 289 – 297.

895. Edwards G W, Freebairn J W 1984 The gains from research into tradable commodities *American Journal Agriculture Economics* **66** pp 41 – 49.

896. Kanbur S M R 1984 How to analyse commodity price stabilization? A review article *Oxford Economic Papers* **36** pp 336 – 358.

897. Cox J C, Rubinstein M 1985 Option markets *Prentice Hall Inc* New Jersey USA.

898. Gilbert C L September 1985 Futures trading and the welfare evaluation of commodity price stabilization *Economic Journal* **95** pp 637 – 661.

899. Gilbert C L 1996 International commodity agreements: An obituary notice *World Development* **24** (1) pp 1 – 19.

900. Jagannathan R 1985 An investigation of commodity futures prices using the consumption-based intertemporal capital asset pricing model *The Journal of Finance* vol **40** no 1 pp 175 – 191.

901. Taylor S J 1985 The behavior of futures prices over time *Applied Economics* **17** no 4 pp 713 – 734.

902. Fama E F, French K R January 1987 Commodity future prices: Some evidence on forecast power, premiums, and the theory of storage *Journal of Business* **60** (1) pp 55 – 73.

903. Fama E F, French K H December 1988 Business cycles and the behavior of metals prices *The Journal of Finance* **43** (5) pp 1075 – 1093.

904. Hartzmark M 1987 Returns to individual traders of futures: Aggregate results *Journal of Political Economy* **95** (6) pp 1292 – 1306.

905. Chinloy P 1988 Real estate—investment and financial strategy *Kluwer Academic Publishers* Boston USA.

906. Gyourko J, Linneman P 1988 Owner-occupied homes, income-producing real estate and REIT as inflation hedges *Journal of Real Estate Finance and Economics* vol **1** no 4 pp 347 – 372.

907. Hirshleifer D 1988 Residual risk, trading costs and commodity futures risk premia *Review of Financial Studies* **1** (2) pp 173 – 193.

908. Hirshleifer D 1989 Determinants of hedging and risk premia in commodity futures markets *Journal of Financial and Quantitative Analysis* **24** (3) pp 313 – 331.

909. Hirshleifer D 1990 Hedging pressure and futures price movements in a general equilibrium model *Econometrica* **58** pp 411 – 428.

910. Lichtenberg A J, Ujihara A 1988 Application of non-linear mapping theory to commodity price fluctuations *Journal Econ Dyn Control* **13** pp 225 – 246.

911. Paddock J L, Siegel D R, Smith J L 1988 Option valuation of claims on real assets: The case of offshore petroleum leases *Quarterly Journal of Economics* **103** pp 479 – 508.

912. Baumol W J, Benhabib J 1989 Chaos: Significance, mechanism, and economic applications *Journal Econ Perspect* **3** pp 77 – 105.

913. Frank M, Stengos T 1989 Measuring the strangeness of gold and silver rates of return *Rev Econ Stud* **456** pp 553 – 567.

914. Jaffee J F 1989 Gold and gold stocks as investments for institutional portfolios *Financial Analysts Journal* **45** pp 53 – 60.

915. Rubens J H, Bond M T, Webb J R 1989 The inflation-hedging effectiveness of real estate *Journal of Real Estate Research* vol **4** no 2 pp 45 – 55.

916. De Gorter H, Zilberman D 1990 On the political economy of public good inputs in agriculture *American Journal Agriculture Economics* **72** pp 131 – 137.

917. De Gorter H, Tsur Y 1991 Explaining price policy bias in agriculture: The calculus of support-maximizing politicians *American Journal Agriculture Economics* **73** pp 1244 – 1254.

918. De Gorter H, Nielson D J, Rausser G C 1992 Productive and predatory public policies *American Journal Agriculture Economics* **74** pp 27 – 37.

919. De Gorter H, Swinnen J 1998 The impact of economic development on public research and commodity policies in agriculture *Review Develop Econ* **2** (1) pp 41 – 60.

920. Gibson R, Schwartz E S 1990 Stochastic convenience yield and the pricing of oil contingent claims *Journal of Finance* **45** pp 959 – 976.

921. Kaminsky G, Kumar M S 1990 Efficiency in commodity futures markets *IMF Staff Papers* vol **37** no 3 pp 670 – 699.

922. Pindyck R, Rotemberg J 1990 The excess co-movement of commodity prices *Economic Journal* **100** pp 1173 – 1189.

923. Shleifer A, Summers L H 1990 The noise trader approach to finance *The Journal of Economic Perspectives* **4** (2) pp 19 – 33.

924. Siegel D R, Siegel D F 1990 The futures markets *McGraw Hill Book Company Ltd* Maidenhead UK.

925. Blank S C 1991 "Chaos" in futures markets? A non-linear dynamical analysis *Journal Futures Markets* **11** pp 711 – 728.

926. Brennan M 1991 The price of convenience and the valuation of commodity contingent claims *in* Stochastic Models and Option Models Lund D, Oksendal B (editors) *North Holland* Amsterdam The Netherlands.

927. Chan K, Chan K C, Karolyi G A 1991 Intraday volatility in the stock index and stock index futures markets *Review of Financial Studies* **4** pp 657 – 684.

928. Subrahmanyam A 1991 A theory of trading in stock index futures *Review of Financial Studies* **4** pp 17 – 51.

929. Williams J C, Wright B D 1991 Storage and commodity markets *Cambridge University Press* Cambridge UK.

930. Bessembinder H 1992 Systemic risk, hedging pressure, and risk premiums in futures markets *Review of Financial Studies* **5** (4) pp 637 – 667.

931. Bessembinder H, Chan K 1992 Time-varying risk premia and forecastable returns in futures markets *Journal of Financial Economics* **32** pp 169 – 193.

932. Bessembinder H, Seguin P J 1992 Futures-trading activity and stock price volatility *Journal of Finance* **47** pp 2015 – 2034.

933. Bessembinder H, Seguin P J 1993 Price volatility, trading volume, and market depth: Evidence from futures markets *Journal of Financial and Quantitative Analysis* **28** pp 21 – 39.

934. Bessembinder H, Coughenour J F, Seguin P J, Smoller M M 1995 Mean-reversion in equilibrium asset prices: Evidence from the futures term structure *Journal of Finance* **50** (1) pp 361 – 375.

935. Bessembinder H, Coughenour J P, Seguin P J, Smoller M M Winter 1996 Is there a term structure of futures volatilities? Reevaluating the Samuelson hypothesis *Journal Derivatives* pp 45 – 58.

936. Deaton A, Laroque G January 1992 On the behaviour of commodity prices *The Review of Economic Studies* **59** (1) pp 1 – 23.

937. Deaton A, Laroque G 1996 Competitive storage and commodity price dynamics Journal *of Political Economy* **104** pp 896 – 923.

938. DeCoster G P, Labys W C, Mitchell D W 1992 Evidence of chaos in commodity futures prices *Journal Futures Markets* **12** pp 291 – 305.

939. Edwards F M, Ma C W 1992 Futures and options *McGraw-Hill* New York USA.

940. Kolb R W 1992 Is normal backwardation normal? *Journal of Futures Markets* **12** pp 75 – 91.

941. Kolb R 1996 The systematic risk of futures contracts *Journal of Futures Markets* **16** no 6 pp 631 – 654.

942. Kolb R 1997 Understanding futures markets 5th edition *Blackwell Publishers* Oxford UK.

943. Maizels A 1992 The commodity price collapse of the 1980s, The impact on the developing countries *in* Commodities in crisis: The commodity crisis of the 1980s and the political economy of international commodity policies *Oxford University Press* Oxford UK.

944. Ankrim E M, Hensel C R May/June 1993 Commodities in asset allocation: A real-asset alternative to real estate? *Financial Analysts Journal* **49** (3) pp 20 – 29.

945. Bleaney M, Geenaway D July 1993 Long-run trends in the relative price of primary commodities and in the terms of trade of developing countries *Oxford Economic Papers* **45** (3), pp 349 – 363.

946. Brueggeman B W, Fisher D J 1993 Real estate finance and investments 9th edition *Irwin* BurrRidge USA pp 1 – 908 ISBN: 0-256-08290-1 .

947. Lummer S L, Siegel L B Summer 1993 GSCI collateralized futures: A hedging and diversification tool for institutional investors *Journal of Investing* pp75 – 82.

948. Yang S R, Brorsen B W 1993 Nonlinear dynamics of daily futures prices: Conditional heteroskedasticity or chaos? *The Journal of Futures Markets* **13** (2) pp 175 – 191.

949. Dixit A, Pindyck R 1994 Investment under uncertainty *Princeton University Press* Princeton New Jersey USA.

950. Satyanarayan S, Varangis P March 1994 An efficient frontier for international portfolios with commodity assets *Policy Research Working Paper 1266* The World Bank
http://www-
wds.worldbank.org/.../WDSP/IB/1994/03/01/000009265_3961006020009/Rendered/PDF/multi_page.pdf .

951. Litzenberger R H, Rabinowitz N December 1995 Backwardation in oil futures markets: Theory and empirical evidence *The Journal of Finance* vol **50** issue 5 pp 1517 – 1545.

952. O'Hara M 1995 Market microstructure theory *Blackwell* Oxford UK.

953. Sachs J D, Warner A M 1995a Natural resource abundance and economic growth *NBER Working Paper no 5398* Cambridge MA USA.

954. Sachs J D, Warner A M 1995b Economic convergence and economic policy *NBER Working Paper no 5039* Cambridge MA USA.

955. Sachs J D, Warner A M 1997 Sources of slow growth in African economies *Journal of African Economies* **6** pp 335 – 376.

956. Sachs J D, Warner A M 1999 The big push, natural resource booms and growth *Journal of Development Economics* **59** pp 43 – 76.

957. Sachs J D, Warner A M 2001 Natural resources and economic development. The curse of natural resources *European Economic Review* **45** pp 827 – 838.

958. Chambers M, Bailey R 1996 A theory of commodity price fluctuations *Journal of Political Economy* **104** (5) pp 924 – 957.

959. Duffie D 1996 Dynamic asset pricing theory *Princeton University Press* Princeton USA.

960. Hamilton J D 1996 This is what happened to the oil-price macroeconomy relationship *Journal of Monetary Economics* **38** pp 215 – 220.

961. Hamilton J D 2005 Oil and the macroeconomy *in* The New Palgrave Dictionary of Economics Durlauf S, Blume L (editors) 2nd edition *Palgrave MacMillan Ltd.*

962. Hamilton J D Spring 2009a Causes and consequences of the oil shock of 2007-08 *Brookings Papers on Economic Activity* **40** (1) pp 215 – 293.

963. Hamilton J 2009b Understanding crude oil prices *The Energy Journal* **30** (2) pp 179 – 206.

964. Hamilton J, Jing Wu 2013a Effects of index-fund investing on commodity futures prices *Working Paper* University of California San Diego USA.

965. Hamilton J, Jing Wu 2013b Risk premia in crude oil futures prices *Working Paper* University of California San Diego USA.

966. Hamilton J D, Cynthia J Wu 2014 Effects of index-fund investing on commodity futures prices *NBER Working Paper 19892* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA pp 1 – 43
http://www.nber.org/papers/w19892 .

967. Sanders D R, Irwin S H, Leuthold R M 1996 Noise trader demand in futures markets *Working Paper no 96-02* Department of Agricultural and Consumer Economics University of Illinois at Urbana-Champaign.

968. Sanders D R, Irwin S H 2010a A speculative bubble in commodity futures prices? Cross-sectional evidence *Agricultural Economics* **41** (1) pp 25 – 32.

969. Sanders D R, Irwin S H 2010b The impact of index and swap funds on commodity futures markets *OECD Food, Agriculture and Fisheries Working Papers no 27 OECD Publishing*.

970. Sanders D R, Irwin S H, Merrin R 2010 The adequacy of speculation in agricultural futures markets: Too much of a good thing? *Applied Economic Perspectives and Policy* **32** (1) pp 77 – 94.

971. Sanders D R, Irwin S H 2011a The impact of index funds in commodity futures markets: A systems approach *Journal of Alternative Investments* **14** pp 40 – 49.

972. Sanders D R, Irwin S H 2011b New evidence on the impact of index funds in U.S. grain futures markets *Canadian Journal of Agricultural Economics* **59** pp 519 – 532.

973. Sanders D W, S H Irwin 2013 Measuring index investment in commodity futures markets *The Energy Journal* **34** (3) pp 105 – 127.

974. Hoesli M, MacGregor B D, Matysiak G, Nanthakumaran N 1997 The short-term inflation-hedging characteristics of UK real estate *Journal of Real Estate Finance and Economics* vol **15** no 1 pp 59 – 76.

975. Kocagil A E 1997 Does futures speculation stabilize spot prices? Evidence from metals markets *Applied Financial Economics* **7** pp 115 – 125.

976. Schneeweis T, Spurgin R 1997 Energy based investment products and investor asset allocation *Center for International Securities and Derivatives Markets (CISDM) Isenberg School of Management* University of Massachusetts USA.

977. Schwartz E S July 1997 The stochastic behavior of commodity prices: Implications for valuation and hedging *Journal of Finance* **52** (3) pp 923 – 973.

978. Schwartz E S, Smith J E July 2000 Short-term variations and long-term dynamics in commodity prices *Management Science* **47** (2) pp 893 – 911.

979. Mabro R 1998 The oil price crisis of 1998 *Oxford Institute for Energy Studies* Oxford UK.

980. Pilipovic D 1998 Energy risk – valuing and managing energy derivatives *McGraw-Hill* NY USA.

981. Cashin P, McDermott J C, Scott A 1999 The myth of co-moving commodity prices *IMF Working Paper no 99/169* IMF USA.

982. Greenaway D, Morgan C W 1999 Introduction *The Economics of Commodity Markets* The International Library of Critical Writings in Economics An Elgar Reference Collection *Edward Elgar Publishing Ltd* Cheltenham UK.

983. Hielscher U 1999 Investmentanalyse *3rd edition* München Germany.

984. Irwin S H, Yoshimaru S 1999 Managed futures, positive feedback trading, and futures price volatility *Journal of Futures Markets* **19** pp 759 – 776.

985. Irwin S H, Holt B R 2004 The effect of large hedge fund and CTA trading on futures market volatility *in* Commodity Trading Advisors: Risk, Performance Analysis and Selection Gregoriou G N, Karavas V N, Lhabitant F-S and Rouah F (editors) *Wiley* Hoboken NJ USA.

986. Irwin S H, Sanders D R, Merrin R P April 20-21 2009a A speculative bubble in commodity futures prices? *Cross-sectional evidence NCCC-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management* St Louis Missouri USA.

987. Irwin S H, Sanders D R, Merrin R P August 2009b Devil or angel? The role of speculation in the recent commodity price boom (and bust) *Journal of Agricultural and Applied Economics* **41** (2) pp 377 – 391.

988. Irwin S H, Sanders D R February 2011 Index funds, financialization, and commodity futures markets *Applied Economic Perspectives and Policy* **33** pp 1 – 31.

989. Irwin S H, Sanders D R 2012a Testing the masters hypothesis in commodity futures markets *Energy Economics* **34** pp 256 – 269.

990. Irwin S H, Sanders D R 2012b A reappraisal of investing in commodity futures markets *Applied Economic Perspectives and Policy* **34** pp 515 – 530.

991. Labys W C, Achouch A, Terraza M 1999 Metal prices and the business cycle *Resources Policy* no 25 pp 229 – 238.

992. Becker K, Finnerty J 2000 Indexed commodity futures and the risk and return of institutional portfolios *Office of Futures and Options Research Working Paper*.

993. Borenstein S, Bushnell J, Stoft S 2000 The competitive effects of transmission capacity in a deregulated electricity industry *RAND Journal of Economics* **31** (2) pp 294 – 325.

994. Cashin P, Liang H, McDermott C J 2000 How persistent are hocks to world commodity prices *IMF Staff Papers* **47** (2) pp 177 – 217.

995. Cashin P, McDermott C 2002 The long-run behaviour of commodity prices: Small trends and big variability *IMF Staff Papers* **49** pp 175 – 199.

996. Christie-David R, Chaudry M, Koch T W 2000 Do macroeconomics news releases affect gold and silver prices? *Journal of Economics and Business* **52** pp 405 – 421.

997. De Roon F, Nijman T, Veld Ch 2000 Hedging pressure effects in futures markets *Journal of Finance* **55** (3) pp 1437 – 1456.

998. De Roon F, Szymanowska M 2010 The cross-section of commodity futures returns *SSRN Working Paper #891073* Social Science Research Network USA.

999. Greer R J 2000 The nature of commodity index returns *Journal of Alternative Investments* vol **3** no 1 pp 45 – 52.

1000. Jensen G R, Johnson R R, Mercer J M 2000 Efficient use of commodity futures in diversified portfolios *The Journal of Futures Markets* vol **20** issue 5 pp 489 – 506.

1001. Jensen G R, Johnson R R, Mercer J M Summer 2002 Tactical asset allocation and commodity futures *Journal of Portfolio Management* vol **28** issue 4 pp 100 – 111.

1002. Routledge B R, Seppi D J, Spatt C S 2000 Equilibrium forward curves for commodities *The Journal of Finance* **55** (3) pp 1297 – 1338.

1003. Swinnena J F M, De Gorterc H, Rausserd G C, Banerjeea A N 2000 The political economy of public research investment and commodity policies in agriculture: An empirical study *Agricultural Economics* **22** pp 111 – 122
www.elsevier.com/locate/agecon .

1004. Till H Fall 2000a Passive strategies in the commodity futures markets *Derivatives Quarterly* pp 49 – 54.

1005. Till H September 2000b Systematic returns in commodity futures *Commodities Now* pp 75 – 79.

1006. Till H April 2003 Actively timing an investment in the Goldman Sachs commodity index http://www.premiacap.com/publications.php .

1007. Till H 2006 Portfolio risk measurement in commodity futures investments
http://www.premiacap.com/publications.php .

1008. Till H, Eagleeye J May 2003 The risks of commodity investing
http://www.premiacap.com/publications.php .

1009. Till H, Eagleeye J Fall 2005 Commodities: Active strategies for enhanced return *Journal of Wealth Management* vol **8** no 2 pp 42 – 61.

1010. Cochrane J H 2001 Asset pricing *Princeton University Press* Princeton NJ USA.

1011. Fabozzi F J 2001 The handbook of fixed income securities 6th Edition *McGraw-Hill* New York USA.

1012. Kogan L November 2001 An equilibrium model of irreversible investment *Journal of Financial Economics* **62** (2) pp 201 – 245.

1013. Kogan L 2004 Asset prices and real investment *Journal of Financial Economics* **73** pp 411 – 431.

1014. Kogan L, Livdan D, Yaron A 2005 Futures prices in a production economy with investment constraints *NBER Working Paper* National Bureau of Economic Research USA.

1015. Richards T J, Padilla L August 5 - 8 2001 Commodity R&D, patenting and promotion *Selected Paper Presented at AAEA Annual Meetings* pp 1 – 21.

1016. Barsky R B, Kilian L May 2002 Do we really know that oil caused the great stagflation? A monetary alternative *in* NBER Macroeconomics Annual 2001 Bernanke B, Rogoff K (editors) pp 137 – 183.

1017. Barsky R B, Kilian L 2004 Oil and the macroeconomy since the 1970s *Journal of Economic Perspectives* **18** (4) pp 115 – 134.

1018. Chatrath A, Adrangi B, Dhanda K K 2002 Are commodity prices chaotic? *Agricultural Economics* **27** pp 123 – 137
www.elsevier.com/locate/agecon .

1019. Cremer H, Laffont J J 2002 Competition in gas markets *European Economic Review* **46** pp 928 – 935.

1020. Cremer H, Gasmi F, Laffont J J 2003 Access to pipelines for competitive gas markets *Journal of Regulatory Economics* **24** (1) pp 5 – 33.

1021. Ederington L, Lee J H 2002 Who trades futures and how: Evidence from the heating oil futures market *Journal of Business* **75** (2) pp 353 – 373.

1022. Weiner R J 2002 Sheep in wolves' clothing? Speculators and price volatility in petroleum futures *Quarterly Review of Economics and Finance* **42** pp 391 – 400.

1023. Bower J, Kamel N June 2003 Commodity price insurance: A Keynesian idea revisited *Oxford Institute for Energy Studies* Oxford UK ISBN 1 901 795 26 8 pp 1 – 50.

1024. Sorenson V L 2003 Trade and international commodity programs *Michigan State University* USA pp 1 – 12.

1025. Vrugt E B 2003 Tactical commodity strategies in reality: An economic theory approach *ABP Working Paper*
http://www.fdewb.unimaas.nl/finance/workingpapers .

1026. Wang C 2003 The behavior and performance of major types of futures traders *Journal of Futures Markets* **23** pp 1 – 31.

1027. Weiser S 2003 The strategic case for commodities in portfolio diversification *Commodities Now* pp 7 – 11.

1028. Greer R J Summer 2004 The nature of commodity index returns *The Journal of Alternative Investments* pp 45 – 53.

1029. Greer R J April 2005 Commodity indexes for real return and efficient diversification *An Investor Guide to Commodities Deutsche Bank* pp 24 – 34.

1030. Gorton G, Rouwenhorst K 2004 Facts and fantasies about commodity futures *NBER Working Papers no 10595* USA.

1031. Gorton G, Rouwenhorst K G 2006 Facts and fantasies about commodity futures *Yale ICF Working Paper no 04-20* Yale School of Management Yale University USA, *Financial Analysts Journal* **62** (2) pp 47 – 68.

1032. Gorton G B, Hayashi F, Rouwenhorst K G 2013 The fundamentals of commodity futures returns *Review of Finance* **17** (1) pp 35 – 105.

1033. Longstaff F, Wang A W 2004 Electricity forward prices: A high-frequency empirical analysis *The Journal of Finance* **59** (4) pp 1877 – 1900.

1034. Beenen J 2005 Commodities as a strategic investment for PGGM *in* An investor guide to commodities Michael Lewis (editor) *Deutsche Bank* Germany.

1035. Casassus J, Collin-Dufresne P 2005 Stochastic convenience yield implied from commodity futures and interest rates *Journal of Finance* **60** pp 2283 – 2331.

1036. Casassus J, Collin-Dufresne P, Routledge B R December 2005 Equilibrium commodity prices with irreversible investment and non-linear technology *NBER Working Paper 11864* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA pp 1 – 74

http://www.nber.org/papers/w11864 .

1037. Erb C, Harvey C May 2005 The tactical and strategic value of commodity futures *NBER Working Papers no 11222* USA.

1038. Erb C, Harvey C 2006 The strategic and tactical value of commodity futures *Financial Analysts Journal* **62** (2) pp 69 – 97.

1039. Haigh M, Hranaiova J, Oswald J 2005 Price dynamics, price discovery and large futures trader interactions in the energy complex *US Commodity Futures Trading Commission Working Paper* USA.

1040. Lautier D Summer 2005 Term structure models of commodity prices: A review *Journal of Alternative Investments* vol **8** issue 1 pp 42 – 64.

1041. Lewis M April 2005 Convenience yields, term structures and volatility across commodity markets *An Investor Guide to Commodities Deutsche Bank* pp 18 – 23.

1042. Micu M December 2005 Declining risk premia in the crude oil futures market *BIS Quarterly Review* pp 50 – 1.

1043. O'Connell R December 2005 What sets the precious metals apart from other commodities? *World Gold Council*.

1044. Pulvermacher K March 2005a What are commodities?

http://www.gold.org/value/stats/research/index.html .

1045. Pulvermacher K 2005b Commodity returns and the economic cycle http://www.gold.org/value/stats/research/index.html .

1046. Taylor S J 2005 Asset price dynamics: Volatility and prediction *Princeton University Press* Princeton USA.

1047. Brown S P January February 2006 The commodity question: Can adding commodities to a portfolio improve performance? *CFA Magazine* pp 44 – 45.

1048. Bryant H L, Bessler D A, Haigh M. S 2006 Causality in futures markets *Journal of Futures Markets* **26** (11) pp 1039 – 1057.

1049. Campbell P, Orskaug B-E, Williams R Spring 2006 The forward market for oil *The Bank of England Quarterly Bulletin* pp 66 – 74.

1050. Feldman, B Till H 2006 Separating the wheat from the chaff: Backwardation as the long-term driver of commodity futures performance; evidence from soy, corn, and wheat futures from 1950 to 2004 *EDHEC Risk and Asset Management Research Centre* Nice France.

1051. Frankel J 2006 The effect of monetary policy on real commodity prices *NBER Working Paper #12713* National Bureau of Economic Research USA, *in* Asset Prices and Monetary Policy John Campbell (editor) *University of Chicago Press* Chicago USA.

1052. Fusaro, P, Vasey G September 2006 Energy & environmental funds continuing to offer superior opportunities? *Commodities Now* pp 1 – 3.

1053. Holmes D 2006 A financial feast: A-la-carte commodity investing *Alchemy* issue **43** *The London Bullion Market Association* pp 10 – 12.

1054. McNee A July 2006 Investors slake commodities thirst with structured products *The Banker* pp 40 – 42.

1055. Upperman F 2006 Positions of traders *Wiley* Hoboken NJ USA.

1056. Blanchard O J, Gali J 2007 The macroeconomic effects of oil shocks: Why are the 2000s so different from the 1970s? *NBER Working Paper 13368* National Bureau of Economic Research USA.

1057. Demidova-Menzel N; Heidorn Th August 2007 Commodities in asset management Working *Paper Series Frankfurt School of Finance and Management no 81* Frankfurt Germany pp 1 – 67 http://nbn-resolving.de/urn:nbn:de:101:1-20080827282 , http://hdl.handle.net/10419/27848 , www.frankfurt-school.de .

1058. Domanski D, Heath A March 2007 Financial investors and commodity markets *BIS Quarterly Review* pp 53 – 67.

1059. Kat H M, Oomen R C A 2007 What every investor should know about commodities Part II: Univariate return analysis *Journal of Investment Management* **5** (1) pp 1 – 25.

1060. Kat H M, Oomen R C A 2007 What every investor should know about commodities Part II: Multivariate return analysis *Journal of Investment Management* **5** (3) pp 16 – 40.

1061. Miffre J, Rallis G 2007 Momentum strategies in commodity futures markets *Journal of Banking and Finance* **31** (6) pp 1863 – 1886.

1062. Chong J, Miffre J 2010 Conditional correlation and volatility in commodity futures and traditional asset markets *Journal of Alternative Investments* **12** (3) pp 61 – 75.

1063. Basu D, Miffre J 2013 Capturing the risk premium of commodity futures: The role of hedging pressure *Journal of Banking and Finance* **37** pp 2652 – 2664.

1064. Miffre J, Brooks Ch 2013 Do long-short speculators destabilize commodity futures markets? *EDHEC Business School* 393 Promenade des Anglais 06 202 Nice France pp 1 – 30.

1065. Röthig A, Chiarella C 2007 Investigating nonlinear speculation in cattle, corn, and hog futures markets using logistic smooth transition regression models *Journal of Futures Markets* **27** pp 719 – 737.

1066. Worthington A C, Pahlavani M 2007 Gold investment as an inflationary hedge: Cointegration evidence with allowance for endogenous structural breaks *Applied Financial Economics Letters* vol **3** no 4 pp 259 – 262.

1067. Adams Z, Füss R, Kaiser D 2008 Macroeconomic determinants of commodity futures returns *in* Handbook of Commodity Investment Fabozzi F J, Füss R, Kaiser D (editors) *John Wiley & Sons Inc* Hoboken USA.

1068. Bachmeier L, Qi Li, Liu D 2008 Should oil prices receive so much attention? An evaluation of the predictive power of oil prices for the U.S. economy *Economic Inquiry* **46** pp 528 – 539.

1069. Bhardwaj G, Gorton G, Rouwenhorst K G 2008 Fooling some of the people all of the time: The inefficient performance of commodity trading advisors *Yale ICF Working paper 08-21* Yale University USA.

1070. Büyükşahin B, Haigh M, Harris J, Overdahl J, Robe M 2008 Fundamentals, trader activity and derivative pricing *EFA 2009 Bergen Meetings Paper*, Social Sciences Research Network NY USA
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=966692.

1071. Büyükşahin B, Haigh M, Robe M 2010 Commodities and equities: Ever a "market of one"? *Journal of Alternative Investments* **12** (3) pp 76 – 95.

1072. Büyükşahin B, Robe M A 2010 Speculators, commodities and cross-market linkages Social Sciences Research Network NY USA
http://ssrn.com/abstract=1707103.

1073. Büyükşahin B, Brunetti C, Harris J 2010 Is speculation destabilizing? *Commodity Futures Trading Commission Working Paper*.

1074. Büyükşahin B, Robe M A 2011 Does 'paper oil' matter? Energy markets' financialization and equity-commodity co-movements Social Sciences Research Network NY USA
http://ssrn.com/abstract=1855264.

1075. Büyükşahin B, Harris J H 2011 Do speculators drive crude oil futures prices? *Energy Journal* **32** (2) pp 167 – 202.

1076. Büyükşahin B, Robe M 2014 Speculation, commodities and cross-market linkages *Journal of International Money and Finance* **42** pp 38 – 70.

1077. Caballero R J, Farhi E, Gourinchas P O 2008 Financial crash, commodity prices, and global imbalances *Brookings Papers on Economic Activity Fall* pp 1 – 55.

1078. Carney M 2008 Capitalizing on the commodity boom – The role of monetary policy *Haskayne School of Business* Calgary Alberta
http://www.bis.org/review/r080620d.pdf .

1079. Fabozzi F J, Füss R, Kaiser D G 2008 A primer on commodity investing *in* The Handbook of Commodity Investing Fabozzi F J, Füss R, Kaiser DG (editors) *Wiley* Hoboken NJ USA pp 3 – 37.

1080. Johnson Matthey Plc 2008 Platinum 2008 *Johnson Matthey* Royston, UK.

1081. Khan S A, Khoker Z I, Simin T T 2008 Expected commodity futures returns Social Sciences Research Network NY USA
http://ssrn.com/abstract=1107377

1082. Kilian L 2008a The economic effects of energy price shocks *Journal of Economic Literature* **46** (4) pp 871 – 909.

1083. Kilian L 2008b Exogenous oil supply shocks: How big are they and how much do they matter for the U.S. economy? *Review of Economics and Statistics* **90** pp 216 – 240.

1084. Kilian L 2009 Not all oil price shocks are alike: Disentangling demand and supply shocks in the crude oil market *American Economic Review* **99** pp 1053 – 1069.

1085. Kilian L, Park Ch 2009 The impact of oil price shocks on the U.S. stock market *International Economic Review* **50** (4) pp 1267 – 1287.

1086. Kilian L 2010 Explaining fluctuations in gasoline prices: A joint model of the global crude oil market and the U.S. retail gasoline market *The Energy Journal* **31** (2) pp 87 – 104.

1087. Kilian L, Vega C 2011 Do energy prices respond to U.S. macroeconomic news? A test of the hypothesis of predetermined energy prices *Review of Economics and Statistics* **93** (2) pp 660 – 671.

1088. Kilian L, Vigfusson R J 2011 Nonlinearities in the oil price-output relationship *Macroeconomic Dynamics* **15** (3) pp 337 – 363.

1089. Kilian L, Murphy D 2013 The role of inventories and speculative trading in the global market for crude oil *Journal of Applied Econometrics*.

1090. Kilian L, Hicks B 2013 Did unexpectedly strong economic growth cause the oil price shock of 2003-2008? *Journal of Forecasting* **32** (5) pp 385 – 394.

1091. Kilian L 2014 Oil price shocks: Causes and consequences *Annual Review of Resource Economics* 6 pp 133 – 154.

1092. Kilian L, Murphy D P 2014 The role of inventories and speculative trading in the global market for crude oil *Journal of Applied Econometrics* **29** pp 454 – 478.

1093. Kolos S P, Ronn E I March 2008 Estimating the commodity market price of risk for energy prices *Energy Economics* vol **30** issue 2 pp 621 – 641.

1094. Reisen H July 18 2008 How to spend it: Commodity and non-commodity sovereign wealth funds *Policy Brief no 38* OECD Development Centre pp 1 – 22, *Research Notes Working Paper Series Deutsche Bank Research no 28* Frankfurt am Main Germany
www.dbresearch.com .

1095. Roache S K September 2008 Commodities and the market price of risk *IMF Working Paper WP/08/221* International Monetary Fund NY USA pp 1 – 25.

1096. Roache S K, Rossi M July 2009 The effects of economic news on commodity prices: Is gold just another commodity? *IMF Working Paper 140* International Monetary Fund USA.

1097. Scherer B, He L 2008 The diversification benefits of commodity futures indexes: A mean-variance spanning test *in* The Handbook of Commodity Investing Fabozzi F J, Füss R, Kaiser D G (editors) *Wiley* Hoboken NJ USA pp 241 – 265.

1098. Woodward J D 2008 Commodity futures investments: A review of strategic motivations and tactical opportunities *in* The Handbook of Commodity Investing Fabozzi F J, Füss R, Kaiser D G (editors) *Wiley* Hoboken NJ USA pp 56 – 86.

1099. Attié A P, Roache1 S K April 2009 Inflation hedging for long-term investors *IMF Working Paper WP/09/90* International Monetary Fund USA pp 1 – 39.

1100. Bose S 2009 The role of futures market in aggravating commodity price inflation and the future of commodity futures in India *Money and Finance ICRA Bulletin* http://www.icra.in/Files/MoneyFinance/4.%20Suchismita%20Bose.pdf .

1101. Du X, Yu C L, Hayes D J 2009 Speculation and volatility spillover in the crude oil and agricultural commodity markets: A Bayesian analysis *Working Paper no 09* Iowa State University USA.

1102. Frankel J A, Rose A K 2009 Determinants of agricultural and mineral commodity prices *in* Inflation in an era of relative price shocks Fry R, Jones C, Kent C (editors) *Proceedings of Conference* Reserve Bank of Australia Sydney Australia pp 9 – 43.

1103. Kaufmann R K, Ullman B 2009 Oil prices, speculation, and fundamentals: Interpreting causal relations among spot and futures prices *Energy Economics* **31** pp 550 – 558.

1104. Korniotis G 2009 Does speculation affect spot price levels? The case of metals with and without futures markets *Working Paper Federal Reserve Board* Washington DC USA.

1105. Mayer J 2009 The growing interdependence between financial and commodity markets UNCTAD Discussion Paper 195 Geneva Switzerland.

1106. Mayer J 2012 The growing financialization of commodity markets: Divergences between index investors and money managers *Journal of Development Studies* **48** (6) pp 751 – 767.

1107. Reitz S, Slopek U 2009 Non-linear oil price dynamics: A tale of heterogeneous speculators? *German Economic Review* **10** pp 270 – 283.

1108. Smith J 2009 World oil: Market or mayhem? *Journal of Economic Perspectives* **23** pp 145 – 164.

1109. Smith J, Thompson R, Lee Th 2013 The informational role of spot prices and inventories *Working Paper* Southern Methodist University USA.

1110. Yamori N September 7 2009 Characteristics of Japan's commodities index and its correlation with stock index *Nagoya University* Japan, *MPRA Paper no 17160* Munich University Germany, *Journal of Applied Research in Finance* **I** (2) pp 187 – 192.
http://mpra.ub.uni-muenchen.de/17160/ .

1111. Yamori N May 20 2011 Commodity ETFs in the Japanese stock exchanges *Nagoya University* Japan, *MPRA Paper no 31003* Munich University Munich Germany
https://mpra.ub.uni-muenchen.de/31003/ .

1112. Yamori N 2011 Co-movement between commodity market and equity market: Does commodity market change? *Modern Economy*.

1113. Yung K, Liu Y C 2009 Implications of futures trading volume: Hedgers versus speculators *Journal of Asset Management* **10** pp 318 – 337.

1114. Alquist R, Kilian L 2010 What do we learn from the price of crude oil futures? *Journal of Applied Econometrics* **25** pp 539 – 573.

1115. Alquist R, Kilian L, Vigfusson R J 2013 Forecasting the price of oil *in* Handbook of Economic Forecasting Elliott G, Timmermann A (editors) **2** pp 427 – 507.

1116. Anzuini A, Lombardi M J, Pagano P 2010 The impact of monetary policy shocks on commodity prices *European Central Bank Working Paper no 1232.*

1117. Aulerich N M, Irwin S H, Garcia P 2010 The price impact of index funds in commodity futures markets: Evidence from the CFTC's daily large trader reporting system *Working Paper Department of Agricultural and Consumer Economics* University of Illinois at Urbana- Champaign USA.

1118. Baffes J, Haniotis T July 2010 Placing the 2006/08 commodity price boom into perspective *Policy Research Working Paper 5371* The World Bank Development Prospects Group World Bank USA.

1119. Baker St 2012 The financialization of storable commodities *Working Paper* Carnegie Mellon University NY USA.

1120. Baker St, Routledge B 2012 The price of oil risk *Working Paper* Carnegie Mellon University NY USA.

1121. Basak S, Pavlova A 2012 A model of financialization of commodities *Working Paper* London Business School London UK.

1122. Blanchard O, Gali J 2010 The macroeconomic effects of oil shocks: Why are the 2000s so different from the 1970s? *in* International Dimensions of Monetary Policy Gali J, Gertler M (editors) University of Chicago Press Chicago USA.

1123. Calvo-Gonzalez O, Shankar R, Trezzi R 2010 Are commodity prices more volatile now: a long-run perspective *World Bank Policy Research Working Paper 5460* World Bank NY USA.

1124. Cifarelli G, Paladino G 2010 Oil price dynamics and speculation: A multivariate financial approach *Energy Economics* **32** pp 363 – 372.

1125. Fuertes A-M, Miffre J, Rallis G 2010 Tactical allocation in commodity futures markets: Combining momentum and term structure signals *Journal of Banking and Finance* **34** (10) pp 2530 – 2548.

1126. Elder J, Serletis A 2010 Oil price uncertainty *Journal of Money, Credit and Banking* **42** pp 1137 – 1159.

1127. Etula E 2010 Broker-dealer risk appetite and commodity returns *Working Paper* Federal Reserve Bank of New York NY USA.

1128. Gilbert C L March 2010 Speculative influences on commodity futures prices 2006-08 *UNCTAD Discussion Paper no 197* United Nations Conference on Trade and Development NY USA pp 1 – 40.

1129. Gilbert C L 2010 How to understand high food prices *Journal of Agricultural Economics* **61** (2) pp 398 – 425.

1130. Hailu G, Weersink A 2010 Commodity price volatility: The impact of commodity index traders *CATPRN Commissioned Paper 2010-02*.

1131. Hernandez M, Torero M 2010 Examining the dynamic relationship between spot and future prices of agricultural commodities *IFPRI Discussion Paper no 988*.

1132. Nissanke M December 2010 Commodity markets and excess volatility: Sources and strategies to reduce adverse development impacts *CFC Conference* University of London Brussels Belgium.

1133. Silvennoinen A, Thorp S 2010 Financialization, crisis, and commodity correlation dynamics *Working Paper no 267* Quantitative Finance Research Centre Sydney University of Technology Sydney Australia.

1134. Tang K, Xiong W 2010 Index investment and financialization of commodities *NBER Working Paper no 16325* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA, *Financial Analysts Journal* **68** pp 54 – 74.

1135. Tang K, Wei Xiong 2012 Index investment and financialization of commodities *Financial Analysts Journal* **68** (6) pp 54 – 74.

1136. Tang K, Zhu H 2015 Commodities as collateral *MIT Sloan Working Paper* MIT USA.

1137. Wong T, Smith A July 25 - 27 2010 Commodity markets: Rational expectations in markets with irrational investors *Selected Paper prepared for presentation at the Agricultural and Applied Economics Associations 2010 AAEA, CAES and WAEA Joint Annual Meeting* Denver Colorado USA pp 1 – 12.

1138. Basu P, Gavin W T 2011 What explains the growth in commodity derivatives? *Federal Reserve Bank of St Louis Review* vol **93** no 1 pp 37 – 48.

1139. Cárdenas M, Ramírez S, Tuzemen D December 2011 Commodity dependence and fiscal capacity *RWP 11-08* Federal Reserve Bank of Kansas City USA.

1140. Connolly E, Orsmond D 2011 The mining industry: From bust to boom *RBA Research Discussion Paper no 2011-08*.

1141. Daskalaki C, Skiadopoulos G 2011 Should investors include commodities in their portfolios after all? *Journal of Banking and Finance* **35** (10) pp 2606 – 2626.

1142. Dwyer A, Gardner G, Williams T 2011 Global commodity markets – price volatility and financialization *RBA Bulletin June* pp 49 – 57.

1143. Dwyer A, Holloway J, Wright M 2012 Commodity market financialization: A closer look at the evidence *Reserve Bank of Australia Bulletin March Quarter 2012* Reserve Bank of Australia Canberra Australia pp 65 – 78.

1144. Fattouh B 2011 An anatomy of the crude oil pricing system *The Oxford Institute for Energy Studies no 40* Oxford UK.

1145. Ghosh J 2011 Implications of regulating commodity derivatives markets in the USA and EU *PSL Quarterly Review* vol **64** no 258 pp 287 – 304.

1146. G20 Study Group on Commodities November 2011 Report of the G20 study group on commodities under the chairmanship of Mr Hiroshi Nakaso *Banque de France* France http://www.banque-france.fr/fileadmin/user_upload/banque_de_france/Economie_et_Statistiques/Tendances_Regionales__ne_pas_ecraser_/mois_impairs/Study_group_report_final.pdf .

1147. Hong H, Yogo M 2011 What does futures market interest tell us about the macroeconomy and asset prices? *Journal of Financial Economics* **105** (3) pp 473 – 490.

1148. Inamura Y, Kimata T, Kimura T, Muto T March 2011 Recent surge in global commodity prices – Impact of financialization of commodities and globally accommodative monetary conditions *Bank of Japan Review* Tokyo Japan.

1149. Lombardi M J, Robays I V 2011 Do financial investors destabilize the oil price? *Working Paper European Central Bank* Belgium.

1150. Mou Y 2011 Limits to arbitrage and commodity index investment: Front-running the Goldman roll *Working Paper* Columbia University NY USA.

1151. Peñaranda F, Micola A 2011 On the drivers of commodity co-movement: Evidence from biofuels *Working Paper* Universitat Pompeu Fabra.

1152. Reichsfeld D A, Roache S K 2011, Do commodity futures help forecast spot prices? *IMF Working Paper WP/11/254* IMF USA.

1153. Tilton J E, Humphreys D, Radetzki M 2011 Investor demand and spot commodity prices *Resources Policy* **36** pp 187 – 195.

1154. Yiuman Tse, Williams M December 20 2011 Does index speculation impact commodity prices? An intraday futures analysis *WP # 007FIN-257-2011* Department of Finance University of Texas San Antonio Texas USA pp 1 – 44.

1155. UNCTAD 2011 Price formation in financialized commodity markets http://www.unctad.org/en/docs/gds20111_en.pdf .

1156. Arbatli E, Vasishtha G 2012 Growth in emerging market economies and the commodity boom of 2003–2008: Evidence from growth forecast revisions *Bank of Canada Working Paper no 2012-8* Ottawa Canada.

1157. Cespedes L F, Velasco A 2012 Macroeconomic performance during commodity price booms and busts *NBER Working Paper 18569* National Bureau of Economic Research Cambridge MA USA

1158. Fattouh B, Kilian L, Mahadeva L 2012 The role of speculation in oil markets: What have we learned so far? *Working Paper* University of Michigan USA.

1159. Gasmi F, Oviedo J D October 2012 Investment in transport capacity and regulation of regional monopolies in natural gas commodity markets *Serie Documentos De Trabajo no 125* Universidad del Rosario Columbia pp 1 – 54.

1160. Girardi D January 2 2012 Do financial investors affect commodity prices? The case of Hard Red Winter wheat *University of Siena* Italy, *MPRA Paper no 35670* Munich University Germany pp 1 – 39

https://mpra.ub.uni-muenchen.de/35670/ .

1161. Girardi D October 9 2012 Do financial investors affect the price of wheat? *CRESME* University of Siena Italy, *MPRA Paper no 40285* Munich University Munich Germany pp 1 – 32

https://mpra.ub.uni-muenchen.de/40285/ .

1162. Gruber J, Vigfusson R 2012 Interest rates and the volatility and correlation of commodity prices *Working Paper* Federal Reserve Board USA.

1163. Henderson B, Pearson N, Li Wang 2012 New evidence on the financialization of commodity markets *Working Paper* University of Illinois USA.

1164. Hong H, Yogo M 2012 What does futures market interest tell us about the macroeconomy and asset prices? *Journal of Financial Economics* **105** pp 473 – 490.

1165. Juvenal L, Petrella I 2012 Speculation in oil market *Working Paper* Federal Reserve Bank of Saint Loius USA.

1166. Nissanke M 2012 Commodity markets linkages in the global financial crisis: Excess volatility and development impacts *Journal of Development Studies* **48** (6) pp 732 – 750.

1167. Rouwenhorst G K, Ke Tang 2012 Commodity investing *Annual Review of Financial Economics* **4** pp 447 – 467.

1168. Sockin M, Wei Xiong 2012 Informational frictions and commodity markets *Working Paper* Princeton University Princeton USA.

1169. Sockin M, Wei Xiong 2013 Feedback effects of commodity futures prices *NBER Working Paper 18906* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA.

1170. Varadi V K March 2012 An evidence of speculation in Indian commodity markets *MPRA Paper no 38337* Munich University Munich Germany pp 1 – 24
https://mpra.ub.uni-muenchen.de/38337/ .

1171. Acharya V, Lochstoer L, Ramadorai T 2013 Limits to arbitrage and hedging: Evidence from commodity markets *Journal of Financial Economics* **109** pp 441 – 465.

1172. Anghelache G V, Dincă Z, Sacală C, Lixandru D 2013 The main indicators used in the analysis of commodity exchanges *Academy of Economic Studies* Bucharest Romania pp 1 – 6.

1173. Aulerich N M, Irwin S H, Garcia Ph 2013 Bubbles, food prices, and speculation: Evidence from the CFTC's daily large trader data files *NBER Working Paper 19065* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA.

1174. Baumeister Ch, Peersman G 2013 The role of time-varying price elasticities in accounting for volatility changes in the crude oil market *Journal of Applied Econometrics* **28** (7) pp 1087 – 1109.

1175. Baumeister Ch, Kilian L 2014 Do oil price increases cause higher food prices? *Economic Policy* **80** pp 691 – 747.

1176. Baumeister Ch, Kilian L 2016 Understanding the decline in the price of oil since June 2014 *Journal of the Association of Environmental and Resource Economists* (forthcoming).

1177. Chevallier J, Ielpo F, Ling-Ni Boon 2013 Common risk factors in commodities *Economics Bulletin* **33** (4) pp 2801 – 2916.

1178. Creti A, JoÎts M, Mignon V 2013 On the links between stock and commodity markets volatility *Energy Economics* **37** pp 16 – 28.

1179. Fattouh B, Kilian L, Mahadeva L 2013 The role of speculation in oil markets: What have we learned so far? *The Energy Journal* **34** (3) pp 7 – 33.

1180. Heumesser Ch, Staritz C October 2013 Financialization and the microstructure of commodity markets - a qualitative investigation of trading strategies of financial investors and commercial traders *Working Paper Austrian Foundation for Development Research (ÖFSE) no 44* Vienna Sensengasse 3 Austria pp 1 – 59
http://hdl.handle.net/10419/98809 ,
http://www.centrum3.at ,
http://www.eza.at .

1181. Hurduzeu G, Hurduzeu R 2013 International diversification of the asset portfolio by investing in agricultural commodities. why not use the CAPM futures markets? *135 EAAE Seminar Challenges for the Global Agricultural Trade Regime after Doha* pp 183 – 190.

1182. Ing-Haw Cheng, Wei Xiong 2013 Why do hedgers trade so much? *Working Paper* Dartmouth College USA.

1183. Ing-Haw Cheng, Wei Xiong November 2013, 2014 The financialization of commodity markets *Working Paper* Princeton University Princeton USA, *Working Paper 19642* National Bureau of Economic Research 1050 Massachusetts Avenue Cambridge MA 02138 USA pp 1 – 37, *Annual Review of Financial Economics* **6** (1) pp 419 – 441.

http://www.nber.org/papers/w19642 .

1184. Ing-Haw Cheng, Kirilenko A, Wei Xiong 2014 Convective risk flows in commodity futures markets *Working Paper* Dartmouth College USA, *Review of Finance* **1** pp 1 – 49.

1185. Jovanovic B 2013 Bubbles in prices of exhaustible resources *International Economic Review* **54** pp 1 – 34.

1186. Kang W, Rouwenhorst G K, Ke Tang 2013 The role of hedgers and speculators in liquidity provision to commodity futures markets *Working Paper* Yale University USA.

1187. Le Pen Y, Sévi B 2013 Futures trading and the excess co-movement of commodity prices *SSRN Working Paper #2191659* Social Sciences Research Network NY USA.

1188. Marshall B, Nguyen N, Visaltanachoti N 2013 Liquidity commonality in commodities *Journal of Banking and Finance* **37** (1) pp 11 – 20.

1189. Grimes A, Hyland S Passing the buck: Impacts of commodity price shocks on local outcomes *Motu Working Paper 13-10* Motu Economic and Public Policy Research Wellington New Zealand ISSN 1176-2667 pp 1 – 46

www.motu.org.nz .

1190. Santos J M 2013 Trading grain now and then: the relative performance of early grain futures markets *Applied Economics* **45** (3) pp 287 – 298.

1191. Van Robays I 2013 Macroeconomic uncertainty and the impacts of oil shocks *ECB Working Paper 1479* European Central Bank.

1192. Venditti F 2013 From oil to consumer energy prices: how much asymmetry along the way? *Energy Economics* **40** pp 468 – 473.

1193. Adams Z, Glück T June 2014, August 2015 Financialization in commodity markets: A passing trend or the new normal? *Working Papers on Finance no 2014/13* Swiss Institute of Banking and Finance (S/BF – HSG) University of St Gallen Rosenbergstrasse 52 9000 St Gallen Switzerland pp 1 – 52, *Journal of Banking and Finance* **60** pp 93 – 111.

1194. Basak S, Pavlova A 2014 A model of financialization of commodities *Working Paper London Business School* London UK.

1195. Daskalakis C, Kostakis A, Skiadopoulos G 2014 Are there Common Factors in Commodity Futures Returns*? Journal of Banking and Finance* **40** pp 346 – 363.

1196. Fornero J, Kirchner M, Yany A 2014 Terms of trade shocks and investment in commodity-exporting economies *Central Bank of Chile Working Paper* Central Bank of Chile Santiago Chile.

1197. Gruss B 2014 After the boom–commodity prices and economic growth in Latin America and the Caribbean *IMF Working Paper 14/154* International Monetary Fund Washington USA.

1198. Jo S 2014 The effect of oil price uncertainty on global real economic activity *Journal of Money, Credit, and Banking* **46** (6) pp 1113 – 1135.

1199. Mykhailovska O 2014 Fractal characteristics of world market commodity derivatives pp 36 – 48.

1200. Sadorsky P 2014 Modeling volatility and correlations between emerging market stock prices and the prices of copper, oil and wheat *Energy Economics* **43** pp 72 – 81.

1201. Bonato M, Taschini L November 2015 Comovement and the financialization of commodities *Centre for Climate Change Economics and Policy Working Paper no 240, Grantham Research Institute on Climate Change and the Environment Working Paper no 215* UK pp 1 – 31.

1202. Henderson B J, N D Pearson, Wang L 2015 New evidence on the financialization of commodity markets *Review of Financial Studies* **28** (5) pp 1287 – 1311.

1203. Novotný J 2015 Commodity investment model and its significance for investors *International Scientific Forum (ISF)* European Scientific Institute University of Oxford UK pp 68 – 78 ISBN: 978-608-4642-42-8.

1204. Novotný J, Polach J 2016 Real silver and its investment and business options *International Journal of Entrepreneurial Knowledge* vol **4** issue 1/2016 pp 40 – 51 DOI: 10.1515/ijek-2016-0003.

1205. Joëts M, Mignon V, Razafindrabe T November 2016 Does the volatility of commodity prices reflect macroeconomic uncertainty? *Banque de France* Paris France pp 1 – 61 www.banque-france.fr .

1206. Babbage Ch 1832 On the economy of machinery and manufacturers *Charles Knight* 13 Pall Mall East London UK.

Precious metal investment, precious metal valuation, precious metals exchange, financial capital investment product, financial capital investment medium in finances:

1207. Hourwich I A 1902 The production and consumption of the precious metals *Journal of Political Economy* **10** (4) pp 575 – 610
http://dx.doi.org/10.1086/250881 ,
http://www.journals.uchicago.edu/doi/10.1086/250881 .

1208. Hourwich I A 1903 The production and consumption of the precious metals: II *Journal of Political Economy* **11** (4) pp 503 – 539
http://dx.doi.org/10.1086/250987 ,
http://www.journals.uchicago.edu/doi/10.1086/250987 .

1209. Goodman B 1956 The price of gold and international liquidity *Journal of Finance* **11** pp 15 – 28.

1210. Tschoegl A E 1980 Efficiency in the gold market *Journal of Banking and Finance* **4** pp 371 – 379.

1211. Solt M E, Swanson P J 1981 On the efficiency of the markets for gold and silver *Journal of Business* **54** pp 453 – 478.

1212. Burke W June 4 1982 Not-so-precious metal *FRBSF Economic Letter* issue **jun4** pp 1 – 4
https://fraser.stlouisfed.org/scribd/?item_id=517473&filepath=/files/docs/historical/frbsf/frbsf_let/frbsf_let_19820604.pdf&start_page=1 .

1213. Mate M E 1984 Precious metals in the later medieval and early modern worlds *Business History Review* **58** (3) pp 457 – 458.

1214. Ho Y-K 1985 Test of the incrementally efficient market hypothesis for the London gold market *Economics Letters* **19** pp 67 – 70.

1215. Aggarwal R, Sundararaghavan P 1987 Efficiency of the silver futures market: An empirical study using daily data *Journal of Banking and Finance* **11** (1) pp 49 – 64.

1216. Aggarwal R, Soenen L 1988 Nature and efficiency of the gold market *Journal of Portfolio Management* **14** (3) pp 18 – 21.

1217. Aggarwal R, Mohanty S, Song F 1995 Are survey forecasts of macroeconomic variables rational? *Journal of Business* **68** (1) pp 99 – 119.

1218. Aggarwal R 2004 Persistent puzzles in international finance and economics *The Economic and Social Review* **35** (3) pp 241 – 250.

1219. Aggarwal R, Lucey B 2007 Psychological barriers in gold prices? *Review of Financial Economics* **16** pp 217 – 230.

1220. Aggarwal R, Zong S 2008 Behavioral biases in forward rates as forecasts of future exchange rates: Evidence of systematic pessimism and under-reaction *Multinational Finance Journal* **12** (3) pp 241 – 277.

1221. Aggarwal R, Lucey B, O'Connor F November 2014 Rationality in precious metals forward markets: Evidence of behavioural deviations in the gold markets *Discussion Paper no 462* The Institute for International Integration Studies pp 1 – 32
http://www.tcd.ie/iiis/documents/discussion/pdfs/iiisdp462.pdf .

1222. Aggarwal R, Lucey B, O'Connor F 2015 Chapter 10 *in* The World Scientific Handbook of Futures Markets *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4566-91-9 pp 325 – 347
http://dx.doi.org/10.1142/9789814566926_0010 .

1223. Crowson P C F 1987 Metal prices and exchange rates *Resources Policy* **13** (3) pp 250 – 251.

1224. Anikin A V 1988 Gold: International economical aspect 2nd edition *International Relationships* Moscow Russian Federation.

1225. Fama E F, French K R 1988 Business cycles and the behaviour of metal prices *Journal of Finance* **43** pp 1075 – 1093.

1226. Luke Chan M W, Mountain D 1988 The interactive and causal relationships involving precious metal *Journal of Business & Economic Statistics* **6** (1) pp 69 – 77.

1227. Frank M, Stengos Th 1989 Nearest neighbor forecasts of precious metal rates of return *Working Paper* Department of Economics and Finance University of Guelph Canada.

1. Jaffee J F 1989 Gold and gold stocks as investments for institutional portfolios *Financial Analysts Journal* **45** pp 53 – 60.

1228. Kaufmann T D, Winters R A 1989 The price of gold: A simple model *Resources Policy* **15** pp 309 – 313.

1229. Radetzki M 1989 Precious metals: The fundamental determinants of their price behaviour *Resources Policy* **15** (3) pp 194 – 208.

1230. Sephton P, Cochrane D K 1990 A note on the efficiency of the London metal exchange *Economics Letters* **33** (4) pp 341 – 345.

1231. Akgiray V, Booth G, Hatem J C M August 1991 Conditional dependence in precious metal prices *The Financial Review* **26** (3) pp 367 – 386.

1232. Agbeyegbe T D 1992 Common stochastic trends: Evidence from the London Metal Exchange *Bulletin of Economic Research* **44** (2) pp 141 – 151.

1233. Cheung Y-W, Lai K S May 1993 Do gold market returns have long memory? *The Financial Review* **28** (2) pp 181 – 202.

1234. Chaudhuri K N 1994 Precious metals and mining in the New World: 1500–1800 *European Review* **2** (4) pp 261 – 270.

1235. Brunetti C, Gilbert C L 1995 Metals price volatility 1972–95 *Resources Policy* **21** pp 237 – 254.

1236. Moore M, Cullen U 1995 Speculative efficiency on the London metal exchange *The Manchester School of Economic and Social Studies* **63** (3) pp 235 – 256.

1237. Qiang Y, Weber E J 1995 Forecasting world metal prices *Discussion Paper 95.17* Department of Economics University of Western Australia.

1238. Qiang Y 1998 World metal prices: A database *Discussion Paper 98.03* Department of Economics University of Western Australia.

1239. Wahab M 1995 Conditional dynamics and optimal spreading in the precious metals futures markets *Journal of Futures Markets* **15** (2) pp 131 – 166.

1240. Sjaastad L A, Scacciavillani F December 1996 The price of gold and the exchange rate *Journal of International Money and Finance* **15** (6) pp 879 – 897.

1241. Sjaastad L A June 2008 The price of gold and the exchange rates: Once again *Resources Policy* **33** (2) pp 118 – 124.

1242. Escribano A, Granger C 1998 Investigating the relationship between gold and silver prices *Journal of Forecasting* 17 pp 81 – 107.

1243. Taylor N 1998 Precious metals and inflation *Applied Financial Economics* **8** (2) pp 201 – 210.

1244. Labys W C, Achouch A, Terraza M 1999 Metal prices and the business cycle *Resources Policy* **25** (4) pp 229 – 238.

1245. Rockerbie D W 1999 Gold prices and gold production: Evidence for South Africa *Resources Policy* **25** pp 69 – 76.

1246. Christie-David R, Chaudhry M, Koch T W 2000 Do macroeconomics news releases affect gold and silver prices? *Journal of Economics and Business* **52** (5) pp 405 – 421.

1247. Cai J, Cheung Y-L, Wong M C S 2001 What moves the gold market? *Journal of Futures Markets* **21** (3) pp 257 – 278.

1248. Ciner C 2001 On the long-run relationship between gold and silver: A note *Global Finance Journal* **12** (2) pp 299 – 303.

1249. Ciner C, Gurdgiev C, Lucey B M 2013 Hedges and safe havens: An examination of stocks, bonds, gold, oil and exchange rates *International Review of Financial Analysis* **29** pp 202 – 211.

1250. Hammoudeh Sh, Malik F, McAleer M 2001 Risk management of precious metals The *Quarterly Review of Economics and Finance* **51** pp 435 – 441.

1251. Hammoudeh Sh, Yuan Y 2008 Metal volatility in presence of oil and interest rate shocks *Energy Economics* **30** (2) pp 606 – 620.

1252. Hammoudeh Sh, Yuan Y, McAleer M, Thompson M 2009, 2010 Precious metals-exchange rate volatility transmissions and hedging strategies *Econometric Institute Research Paper no EI 2009-38* Erasmus School of Economics (ESE) Econometric Institute Erasmus University Rotterdam The Netherlands pp 1 – 43, *International Review of Economics & Finance* **19** (4) pp 633 – 647
http://repub.eur.nl/pub/17308/EI2009-38.pdf .

1253. Hammoudeh Sh, Malik F, McAleer M March 2011 Risk management of precious metals *KIER Working Paper no 765* Institute of Economic Research Kyoto University Japan pp 1 – 29, *The Quarterly Review of Economics and Finance* **51** (4) pp 435 – 441
http://www.kier.kyoto-u.ac.jp/DP/DP765.pdf .

1254. Hammoudeh Sh, Santos P A, Al-Hassan A 2013 Downside risk management and VaR-based optimal portfolios for precious metals, oil and stocks *The North American Journal of Economics and Finance* **25** (C) pp 318 – 334.

1255. Mackenzie M, Mitchell H, Brooks R, Faff R 2001 Power ARCH modeling of commodity futures data on the London's metal market *European Journal of Finance* **7** pp 22 – 38.

1256. Adrangi B, Chatrath A April 2002 The dynamics of palladium and platinum prices *Computational Economics* **17** pp 179 – 197.

1257. Smith G 2002 Tests of the random walk hypothesis for London gold prices *Applied Economics Letters* **9** pp 671 – 674.

1258. Cavaletti C, Factor T, All D 2004 Will gold hold its luster? *Futures* **33** pp 24 – 31.

1259. Baron M 2005 The price paid by the Romanian National Bank for the precious metals purchased from the local producers between 1920–1948 *Annals of the University of Petrosani: Economics* **5** pp 21 – 38.

1260. Capie F, Mills T C, Wood G 2005 Gold as a hedge against the dollar *Journal of International Financial Markets, Institution and Money* **15** pp 343 – 352.

1261. Conover C M, Jensen G R, Johnson R R, Mercer J M 2005 Can precious metals make your portfolio shine? *Financial Analysts Journal* **46** pp 76 – 79.

1262. Conover C M, Jensen G R, Johnson R R, Mercer J M 2009 Can precious metals make your portfolio shine? *Journal of Investing* **18** (1) pp 75 – 86.

1263. Drelichman M 2005 All that glitters: Precious metals, rent seeking and the decline of Spain *European Review of Economic History* **9** (3) pp 313 – 336.

1264. Papyrakis E, Gerlagh R 2005 Institutional explanations of economic development: The role of precious metals *Working Paper no 2005.131* Fondazione Eni Enrico Mattei Italy pp 1 – 35

http://www.feem.it/userfiles/attach/Publication/NDL2005/NDL2005-131.pdf .

1265. Pulvermacher K March 2005a What are commodities?

http://www.gold.org/value/stats/research/index.html .

1266. Pulvermacher K May 2005b Commodity returns and the economic cycle

http://www.gold.org/value/stats/research/index.html .

1267. Xiaoqing Eleanor Xu, Hung-Gay Fung 2005 Cross-market linkages between US and Japanese precious metals futures trading *Journal of International Financial Markets Institutions and Money* **15** (2) pp 107 – 124.

1268. Banken R 2006 National socialist plundering of precious metals, 1933-1945: The role of Degussa *Working Paper* Institute of European Studies UC Berkeley USA pp 1 – 22

http://escholarship.org/uc/item/5615g5pm .

1269. Draper P, Faff R W, Hillier D 2006 Do precious metals shine? An investment perspective *Financial Analysts Journal* **62** (2) pp 98 – 106.

1270. Hillier, Draper D, Robert F 2006 Do precious metals shine? An investment perspective *Financial Analysts Journal* **62** pp 98 – 106.

1271. Batten J M, Lucey B M 2007, 2010 Volatility in the gold futures market *Discussion Paper no 225* Institute for International Integration Studies, *Applied Economics Letter* **17** (2) pp 187 – 190.

1272. Batten J M, Ciner C, Lucey B M June 2008, 2010 The macroeconomic determinants of volatility in precious metals markets *Discussion Paper no 255* The Institute for International Integration Studies IIIS pp 1 – 26, *Resources Policy* **35** (2) pp 65 – 71

http://www.tcd.ie/iiis/documents/discussion/pdfs/iiisdp255.pdf .

1273. Batten J M, Ciner C, Lucey B M 2013 On the economic determinants of the gold-inflation relation *Working Paper*.

1274. Batten J, Ciner C, Lucey B M 2015 Which precious metals spill over on which, when and why? Some evidence *Applied Economics Letters* **22** (6) pp 466 – 473.

1275. Demidova-Menzel N; Heidorn Th August 2007a Commodities in asset management *Working Paper no 81* Frankfurt School of Finance and Management Frankfurt Germany pp 1 – 67

http://nbn-resolving.de/urn:nbn:de:101:1-20080827282 ,

http://hdl.handle.net/10419/27848 ,

www.frankfurt-school.de .

1276. Demidova-Menzel N; Heidorn Th August 2007b Gold in the investment portfolio *Working Paper no 87* Frankfurt School of Finance and Management Frankfurt Germany pp 1 – 50

1277. Kyrtsou, Labys 2007 Detecting feedback in multivariate time series: The case of metal prices and US inflation *Physica A* **377** pp 227 – 229.

1278. Sari R, Hammoudeh S, Ewing B T 2007 Dynamic relationships between oil and metal commodity futures prices *Geopolitics of Energy* **29** (7) pp 2 – 13.

1279. Sari R, Hammoudeh Sh, Soytas U 2010 Dynamics of oil price, precious metal prices, and exchange rate *Energy Economics* **32** (2) pp 351 – 362.

1280. Tully E, Lucey B 2007 A power GARCH examination of the gold market *Research in International Business and Finance* **21** (2) pp 316 – 325.

1281. Worthington A C, Pahlavani M 2007 Gold investment as an inflationary hedge: Cointegration evidence with allowance for endogenous structural breaks *Applied Financial Economics Letters* vol **3** no 4 pp 259 – 262.

1282. Jerrett D, Cuddington J T 2008 Broadening the statistical search for metal price super cycles to steel and related metals *Resources Policy* **33** (4) pp 188 – 195.

1283. LBMA (London Bullion Market Association) 2008 A guide to the London precious metals markets *The London Bullion Market Association*, *The London Platinum and Palladium Market*.

1284. Watkins C, McAleer M 2008 How has the volatility in metals markets changed? *Mathematics and Computers in Simulation* **78** pp 237 – 249.

1285. Roberts M C 2009 Duration and characteristics of metal price cycles *Resources Policy* **34** (3) pp 87 – 102.

1286. Soytas U, Sari R, Hammoudeh Sh, Hacihasanoglu E 2009 World oil prices, precious metal prices and macroeconomy in Turkey *Energy Policy* **37** (12) pp 5557 – 5566.

1287. Baur D G, Lucey B M 2010 Is gold a hedge or a safe heaven? An analysis of stocks, bonds and gold *The Financial Review* **45** (2) pp 217 – 229.

1288. Baur D G, Mcdermott T K 2010 Is gold a safe haven? International evidence *Journal of Banking and Finance* **34** pp 1886 – 1898.

1289. Baur D G 2012 Asymmetric volatility in the gold market *The Journal of Alternative Investments* **14** (4) pp 26 – 38.

1290. Baur D G, Tran D T 2014 The long-run relationship of gold and silver and the influence of bubbles and financial crisis *Empirical Economics* DOI: 10.1007/s00181-013-0787-1.

1291. Chen M-H September 2010 Understanding world metals prices–returns, volatility and diversification *Resources Policy* **35** (3) pp 127 – 140.

1292. Humphreys D 2010 The great metals boom: A retrospective *Resources Policy* **35** (1) pp 1 – 13.

1293. Kovalenko S A 2010 Development operation with precious metal and their role in stabilizations of the economy *Вісник Економіки Транспорту і Промисловості* **31** pp 102 – 104
http://cyberleninka.ru/article/n/development-operation-with-precious-metal-and-their-role-in-stabilizations-of-the-economy .

1294. Lucey B M 2010 Lunar seasonality in precious metal returns? *Applied Economics Letters* **17** (9) pp 835 – 838.

1295. Lucey B M, Larkin C, O'Connor F 2013 New York or London: Where and when does the gold price originate? *Applied Economics Letters* **20** pp 813 – 817.

1296. Lucey B M, O'Connor F 2014 Do bubbles occur in gold prices? Evidence from gold lease rates and Markov switching models *Borsa Istanbul Review*.

1297. Lucey B M, Sile Li 2015 What precious metals act as safe havens, and when? Some US evidence *Applied Economics Letters* **22** (1) pp 35 – 45.

1298. Riley C Summer 2010 A new gold rush: Investing in precious metals *Journal of Investing* pp 95 – 100.

1299. Roache S K, Rossi M 2010 The effects of economic news on commodity prices: Is gold just another commodity *The Quarterly Review of Economics and Finance* **50** pp 377 – 385.

1300. Shafiee S, Topal E 2010 An overview of global gold market and gold price forecasting *Resources Policy* **35** pp 178 – 189.

1301. Tsuchiya Y 2010 Linkages among precious metals commodity futures prices: Evidence from Tokyo *Economics Bulletin* **30** (3) pp 1772 – 1777
http://www.accessecon.com/Pubs/EB/2010/Volume30/EB-10-V30-I3-P162.pdf .

1302. Zhang Y-J, Wei Y-M September 2010 The crude oil market and the gold market: Evidence for cointegration, causality and price discovery *Resources Policy* **35** (3) pp 168 – 177.

1303. Khalifa A A A, Miao H, Ramchander S 2011 Return distribution and volatility forecasting in metal futures markets: Evidence from gold, silver and copper *Journal of Future Markets* **31** (1) pp 55 – 80.

1304. Morales L, Andreosso-O'Callaghan B 2011 Comparative analysis on the effects of the Asian and global financial crises on precious metal markets *Research in International Business and Finance* **25** (2) pp 203 – 227.

1305. Morales L, Andreosso-O'Callaghan B 2014 Volatility analysis of precious metals returns and oil returns: An ICSS approach *Journal of Economics and Finance* **38** (3) pp 492 – 517.

1306. Pukthuanthong K, Roll R 2011 Gold and the dollar (and the euro, pound, and yen) *Journal of Banking and Finance* **35** pp 2070 – 2083.

1307. Arouri M E H, Hammoudeh Sh, Lahiani A, Nguyen D K 2012 Long memory and structural breaks in modeling the return and volatility dynamics of precious metals *The Quarterly Review of Economics and Finance* **52** (2) pp 207 – 218.

1308. Arouri M E H, Hammoudeh Sh, Nguyen D K, Lahiani A 2013 On the short- and long-run efficiency of energy and precious metal markets *Energy Economics* **40** (C) pp 832 – 844
https://hal.archives-ouvertes.fr/hal-00798036/document .

1309. Cochran S J, Mansur I, Odusami B 2012 Volatility persistence in metal returns: A FIGARCH approach *Journal of Economics and Business* **64** (4) pp 287 – 305.

1310. Elder J, Miao H, Ramchander S 2012 Impact of macroeconomic news on metal futures *Journal of Banking & Finance* **36** (1) pp 51 – 65.

1311. Krezolek D 2012 Non-classical measures of investment risk on the market of precious non-ferrous metals using the methodology of stable distributions *Dynamic Econometric Models* **12** pp 89 – 104.

1312. Mutafoglu T H, Tokat E, Tokat H A 2012 Forecasting precious metal price movements using trader positions *Resources Policy* **37** (3) pp 273 – 280.

1313. Papież M, Śmiech S 2012 Causality in mean and variance between returns of crude oil and metal prices, agricultural prices and financial market prices *in* Proceedings of 30th International Conference Mathematical Methods in Economics Ramík J, Stavárek D (editors) *School of Business Administration Karviná Silesian University* pp 675 – 680.

1314. Śmiech S, Papież M 2012 A dynamic analysis of causality between prices on the metals market *in* Proceedings of the International Conference Quantitative Methods in Economics (Multiple Criteria Decision Making XVI) Reiff M (editor) Slovakia Bratislava pp 221 – 225.

1315. Yermilova M 2012 Possible scenarios for the world monetary system development in conditions of returning to using of precious metals *Ukrainian Journal Ekonomist* **10** pp 4 – 7.

1316. Caporin M, Ranaldo A, Velo G G 2013 Stylized facts and dynamic modeling of high-frequency data on precious metals *Working Paper on Finance no 1318* School of Finance University of St Gallen Switzerland pp 1 – 40
http://ux-tauri.unisg.ch/RePEc/usg/sfwpfi/WPF-1318.pdf .

1317. Caporin M, Ranaldo A, Velo G G 2015 Precious metals under the microscope: A high-frequency analysis *Quantitative Finance* **15** (5) pp 743 – 759
http://ux-tauri.unisg.ch/RePEc/usg/sfwpfi/WPF-1409.pdf .

1318. Emmirich O, McGroarty F J 2013 Should gold be included in institutional investment portfolios? *Applied Financial Economics* **23** (19) pp 1553 – 1565.

1319. Ewing B, Malik F 2013 Volatility transmission between gold and oil futures under structural breaks *International Review of Economics and Finance* **25** pp 113 – 121.

1320. Hood M, Malik M 2013 Is gold the best hedge and a safe haven under changing stock market volatility? *Review of Financial Economics* **22** pp 47 – 52.

1321. Jain A, Ghosh S 2013 Dynamics of global oil prices, exchange rate and precious metal prices in India *Resources Policy* **38** (1) pp 88 – 93.

1322. Öztek M F, Ocal N 2013 Financial crises, financialization of commodity markets and correlation of agricultural commodity index with precious metal index and S&P500 *ERC Working Paper no 1302* ERC - Economic Research Center Middle East Technical University Turkey
http://www.erc.metu.edu.tr/menu/series13/1302.pdf .

1323. Reboredo J C 2013a Is gold a hedge or safe haven against oil price movements? *Resources Policy* **38** (2) pp 130 – 137.

1324. Reboredo J C 2013b Is gold a safe haven or a hedge for the US dollar? Implications for risk management *Journal of Banking and Finance* **37** (8) pp 2665 – 2676.

1325. Reboredo J C, Ugolini A 2015 A downside/upside price spillovers between precious metals: A vine copula approach *The North American Journal of Economics and Finance* **34** (C) pp 84 – 102.

1326. Revenda Z 2013 Peníze a zlato (2[nd] edition) *Management Press* Prague Czech ISBN 978-80-7261-260-4.

1327. Revenda Z 2016 Investment in precious metals and stocks *Acta Oeconomica Pragensia* **2016** (4) pp 25 – 36
http://www.vse.cz/polek/download.php?jnl=aop&pdf=542.pdf .

1328. Rizea Raluca D, Sârbu R and Condrea E 2013 The effects of the global economical crisis on the global precious metals market *Ovidius University Annals Economic Sciences Series* **13** (2) pp 60 – 64.

1329. Sensoy A 2013 Dynamic relationship between precious metals *Resources Policy* **38** (4) pp 504 – 511.

1330. Smales L A 2013 News sentiment in the gold futures market *Social Science Research Network* NY USA
http://ssrn.com/abstract=2309868 .

1331. Westerlund J 2013 Simple unit root testing in generally trending data with an application to precious metal prices in Asia *Journal of Asian Economics* **28** (C) pp 12 – 27.

1332. Agyei-Ampomah S, Gounopoulos D, Mazouz K 2014 Does gold offer a better protection against losses in sovereign debt bonds than other metals? *Journal of Banking and Finance* **40** (C) pp 507 – 521.

1333. Apergis N, Christou Ch, Payne J 2014 Precious metal markets, stock markets and the macroeconomic environment: a FAVAR model approach *Applied Financial Economics* **24** (10) pp 691 – 703.

1334. Charles A, Darné O, Kim J June 19 2014 Precious metals shine? A market efficiency perspective *Working Paper* HAL France
https://hal.archives-ouvertes.fr/hal-01010516/document .

1335. Charlot Ph, Vêlayoudom Marimoutou 2014 On the relationship between the prices of oil and the precious metals: Revisiting with a multivariate regime-switching decision tree *Energy Economics* **44** (C) pp 456 – 467.

1336. Demiralay S, Ulusoy V January 27 2014a Value-at-risk predictions of precious metals with long memory volatility models *MPRA Paper no 53229* University Library of Munich Germany pp 1 – 25
https://mpra.ub.uni-muenchen.de/53229/1/MPRA_paper_53229.pdf .

1337. Demiralay S, Ulusoy V 2014b Non-linear volatility dynamics and risk management of precious metals The North American *Journal of Economics and Finance* **30** (C) pp 183 – 202.

1338. Giles D, Qinlu Chen 2014 Risk analysis for three precious metals: An application of extreme value theory *Econometrics Working Paper no EWP1402* Department of Economics University of Victoria Canada pp 1 – 28
http://www.uvic.ca/socialsciences/economics/assets/docs/econometrics/ewp1402.pdf .

1339. Golosnoy V, Rossen A 2014 Modeling dynamics of metal price series via state space approach with two common factors *HWWI Research Paper no 156* Hamburg Institute of International Economics (HWWI) pp 1 – 30
https://www.econstor.eu/bitstream/10419/104543/1/806861886.pdf .

1340. Issler J V, Rodrigues C, Burjack R 2014 Using common features to understand the behavior of metal-commodity prices and forecast them at different horizons *Journal of International Money and Finance* **42** pp 310 – 335.

1341. Papadamou St, Markopoulos Th 2014 Investigating intraday interdependence between gold, silver and three major currencies: the Euro, British Pound and Japanese Yen *International Advances in Economic Research* **20** (4) pp 399 – 410.

1342. Tsolas I E 2014 Precious metal mutual fund performance appraisal using DEA modeling *Resources Policy* **39** (C) pp 54 – 60.

1343. Walczak M 2014 Precious metals roles in investment portfolio - comparative analysis of Czech, Hungary and Poland *Economy & Business Journal* **8** (1) pp 1220 – 1230.

1344. Wanat S, Papież M, Śmiech S June 15 2014 The conditional dependence structure between precious metals: A copula-GARCH approach *MPRA Paper no 56664* University Library of Munich Germany pp 1 – 15
https://mpra.ub.uni-muenchen.de/56664/1/MPRA_paper_56664.pdf .

1345. Antonakakis N, Kizys R 2015 Dynamic spillovers between commodity and currency markets *International Review of Financial Analysis* **41** (C) pp 303 – 319.

1346. Auer B R 2015 Superstitious seasonality in precious metals markets? Evidence from GARCH models with time-varying skewness and kurtosis *Applied Economics* **47** (27) pp 2844 – 2859.

1347. Balcilar M, Katzke N, Gupta R 2015 Do precious metal prices help in forecasting South African inflation *Working Paper no 15-05* Department of Economics Eastern Mediterranean University Turkey pp 1 – 22
http://repec.economics.emu.edu.tr/RePEc/emu/wpaper/15-05.pdf ,
http://www.ekon.sun.ac.za/wpapers/2015/wp032015/wp-03-2015.pdf .

1348. Balcilar M, Hammoudeh Sh, Nwin-Anefo Fru Asaba 2015 A regime-dependent assessment of the information transmission dynamics between oil prices, precious metal prices and exchange rates *International Review of Economics & Finance* **40** (C) pp 72 – 89.

1349. Bildirici M, Türkmen N 2015 Nonlinear causality between oil and precious metals *Resources Policy* **46** (P2) pp 202 – 211.

1350. Bosch D, Pradkhan E 2015 The impact of speculation on precious metals futures markets *Resources Policy* **44** (C) pp 118 – 134.

1351. Gil-Alana L, Chang Sh, Balcilar M, Aye G C, Gupta R 2015 Persistence of precious metal prices: A fractional integration approach with structural breaks *Resources Policy* **44** (C) pp 57 – 64
http://ncid.unav.edu/download/file/fid/590 .

1352. Mensi W, Hammoudeh Sh, Sang Hoon Kang 2015 Precious metals, cereal, oil and stock market linkages and portfolio risk management: Evidence from Saudi Arabia *Economic Modelling* **51** (C) pp 340 – 358.

1353. Figuerola-Ferretti I, McCrorie J R 2016 The shine of precious metals around the global financial crisis *Journal of Empirical Finance* **38** (PB) pp 717 – 738.

1354. Novotný J, Polach J 2016 Real silver and its investment and business options *International Journal of Entrepreneurial Knowledge* vol **4** issue 1/2016 pp 40 – 51 DOI: 10.1515/ijek-2016-0003.

1355. Pierdzioch Ch, Risse M, Rohloff S 2016 Are precious metals a hedge against exchange-rate movements? An empirical exploration using Bayesian additive regression trees *The North American Journal of Economics and Finance* **38** (C) pp 27 – 38.

1356. Pradkhan E 2016 Information content of trading activity in precious metals futures markets *Journal of Futures Markets* **36** (5) pp 421 – 456.

1357. Rand Kwong Yew Low, Yiran Yao, Faff R 2016 Diamonds vs precious metals: What shines brightest in your investment portfolio? *International Review of Financial Analysis* **43** (C) pp 1 – 14.

Real estate investment, real estate valuation, real estate exchange financial capital investment product, financial capital investment medium in finances:

1358. Grebler L 1954 Real estate investment experience in New York City *Journal of Finance* **9** (2) pp 216 – 218.

1359. Taylor G S, Bailey E N 1963 Real estate investment trusts *Business Horizons* **6** (2) pp 71 – 80.

1360. Wendt P F, Wong S N December 1965 Investment performance: Common stocks versus apartment houses *Journal of Finance* pp 633 – 646.

1361. Friedman H C December 1970 Real estate investment and portfolio theory *Journal of Financial and Quantitative Analysis* pp 861 – 874.

1362. Friedman H C March 1971 Real estate investment and portfolio theory *Journal of Financial and Quantitative Analysis* **6** (2) pp 861 – 874 DOI: https://doi.org/10.2307/2329720 .

1363. Roulac S E 1976 Can real estate returns outperform common stocks? *Journal of Portfolio Management* **2** pp 26 – 43.

1364. Roulac S E 1996 Real estate market cycles, transformation forces and structural change *Journal of Real Estate Portfolio Management* **2** (1) pp 1 – 17.

1365. Smith K V, Shulman D September–October 1976 The performance of equity real estate investment trusts *Financial Analysts Journal* pp 61 – 66.

1366. Lusht K M 1978 Inflation and real estate investment value *Real Estate Economics* **6** (1) pp 37 – 49.

1367. Pellatt P G K 1972 The analysis of real estate investments under uncertainty *Journal of Finance* **27** (2) pp 459 – 471.

1368. Chapman Findlay III M, Hamilton C W, Messner S D, Yormark J S September 1979 Optimal real estate portfolios *Real Estate Economics* DOI: 10.1111/1540-6229.t01-11-00201 http://onlinelibrary.wiley.com/doi/10.1111/1540-6229.t01-11-00201/abstract;jsessionid=0F84C68B32F80FF1F91F04EEC5EA6ADB.f01t02 .

1369. Ibbotson R G, Fall C L 1979 The United States market wealth portfolio *Journal of Portfolio Management* **6** pp 82 – 92.

1370. Ibbotson R G, Sinquefield R A 1982 Stocks, bonds, bills and inflation: The past and the future *Financial analysts Research Foundation* Charlottesville VA USA.

1371. Ibbotson R G, Siegel L B 1983 The world market wealth portfolios *Journal of Portfolio Management* **9** pp 5 – 17.

1372. Ibbotson R G, Siegel L B 1984 Real estate returns: A comparison with other investments *Real Estate Economics* **12** (3) pp 219 – 242.

1373. Ibbotson R G, Siegel L, Love K Fall 1985 World wealth: Market values and returns *Journal of Portfolio Management* pp 4 – 23.

1374. Penny P E 1980 Modern investment theory and real estate analysis South African *Journal of Economics* **48** (1) pp 39 – 52.

1375. Rystrom D 1980 Inflation and real estate investment value: A comment *Real Estate Economics* **8** (4) pp 395 – 401.

1376. Burns W L, Epley D R Winter 1982 The performance of portfolio of REITs + stocks *Journal of Portfolio Management* pp 37 – 41.

1377. Miles M E, Estey A S Winter 1982 How well do real estate funds perform? *Journal of Portfolio Management* pp 62 – 68.

1378. Miles M E, McCue T Summer 1982 Historic returns and institutional real estate portfolios *AREUEA Journal* pp 184 – 199.

1379. Miles M, McCue T 1984 Commercial real estate returns *AREUEA Journal* **12** (3) pp 355 – 377.

1380. Brueggeman W B H, Chen A H, Thibodeau T G 1984 Real estate investment funds: Performance and portfolio considerations *AREUEA Journal* **12** (3) pp 333 – 354.

1381. Fogler H R 1984 20 percent in real estate: Can theory justify it? *Journal of Portfolio Management* **10** pp 6 – 13.

1382. Webb J R 1984 Real estate investment acquisition rules for life insurance companies and pension funds *Journal of the American Real Estate and Urban Economics Association* **12** (4) pp 495 – 520.

1383. Webb J R, McIntosh W 1986 Real estate investment acquisition rules for REITs: A survey *Journal of Real Estate Research* **1** (1) pp 77 – 98.

1384. Gau G W 1985 Public information and abnormal returns in real estate investment *Real Estate Economics* **13** (1) pp 15 – 31.

1385. Gau G W, Wang K 1990 Capital structure decisions in real estate investment *Real Estate Economics* **18** (4) pp 501 – 521.

1386. Hartzell D J, Mengden A August 27 1986 Real estate investment trusts - Are they stocks or real estate? *Salomon Brothers Real Estate Research* USA.

1387. Hartzell D J, Hekman J S, Miles M E Spring 1987 Real estate returns and inflation *AREUEA Journal* pp 617 – 637.

1388. Hartzell D J, Webb J 1988 Real estate risk and return expectations: Recent survey results *Journal of Real Estate Research* **3** (3) pp 31 – 38.

1389. Hartzell J C, Liu C H, Kallberg J G 2004 The role of underlying real asset market in REIT IPOs *Social Science Research Network* NY USA
http://ssrn.com/abstract=516662 .

1390. Kuhle J L, Walther C H, Wurtzebach C H 1986 The financial performance of real estate investment trusts *Journal of Real Estate Research* **1** (1) pp 67 – 75.

1391. Kuhle J L 1987 Portfolio diversification and return benefits - Common stocks vs. real estate investment trusts *Journal of Real Estate Research* **2** (2) pp 1 – 9.

1392. Titman S, Warga A Fall 1986 Risks and the performance of real estate investment trusts: A multiple index approach *AREUEA Journal* **14** pp 414 – 431.

1393. Haight G T, Fort D A 1987 REITs, new opportunities in real estate investment trust securities *Probus Publishing* Chicago Illinois USA.

1394. Chen K C, Tzang D D 1988 Interest-rate sensitivity of real estate investment trusts *Journal of Real Estate Research* **3** (3) pp 13 – 22.

1395. Chinloy P 1988 Real estate - investment and financial strategy *Kluwer Academic Publishers* Boston USA.

1396. Firstenberg P M, Ross S A, Zisler R C 1988 Real estate: The whole story *The Journal of Portfolio Management* **14** pp 22 – 34.

1397. Gyourko J, Linneman P 1988 Owner - occupied homes, income producing properties, and REITs as inflation hedges: Empirical findings *Journal of Real Estate Finance and Economics* **2** (3) pp 350 – 360.

1398. Gyourko J, Keim D B 1992 What does the stock market tell us about real estate returns? *AREUEA Journal* **20** pp 457 – 485.

1399. Hines M March 1988 International dimensions of real estate *Appraisal Journal* pp 492 – 501.

1400. Lusht K M 1988 The real estate pricing puzzle *AREUEA Journal* 16 (2) pp 95 – 104.

1401. Miller N, Sklarz M, Ordway N 1988 Japanese purchases, exchange rates and speculation in residential real estate markets *Journal of Real Estate Research* **3** (3) pp 39 – 49.

1402. Mooney S, Mooney K 1988 Considerations for the foreign investor in the U.S. real estate market *Journal of Valuation* 7 pp 22 – 34.

1403. Wittner D A Fall 1988 Japanese investment in US real estate: The Oriental express *Real Estate Law Journal* **17.**

1404. Geltner D 1989 Estimating real estate's systematic risk from aggregated level appraisal-based returns *AREUEA Journal* **17** pp 463 – 481.

1405. Goebel P R, Kim K S 1989 Performance evaluation of finite-life real estate investment trusts *Journal of Real Estate Research* **4** (2) pp 57 – 69.

1406. Rubens J H, Bond M T, Webb J R 1989 The inflation-hedging effectiveness of real estate *Journal of Real Estate Research* vol **4** no 2 pp 45 – 55.

1407. Sweeney F 1989 International real estate diversification: A viable strategy *Journal of Property Management* **5** pp 317 – 326.

1408. Sweeney F 1993 Mapping a European property investment strategy *Journal of Property Valuation and Investment* **11** pp 259 – 267.

1409. Chan K C, Hendershott P H, Sanders A B Winter 1990 Risk and return on real estate: Evidence from equity REITs *AREUEA Journal* **18** (4) pp 431 – 452.

1410. Colwell P F, Park H Y September 1990 Seasonality and size effects: The case of real-estate-related investment *Journal of Real Estate Finance and Economics* **3** pp 251 – 259.

1411. Giliberto S M Summer 1990 Equity real estate investment trusts and real estate returns *Journal of Real Estate Research* **5** pp 259 – 263.

1412. Goetzmann W N, Ibbotson R G 1990 The performance of real estate as an asset class *Journal of Applied Corporate Finance* pp 450 – 460.

1413. Howe J S, Shilling J D 1990 REIT advisor performance *AREUEA Journal* **18** (4) pp 479 – 500.

1414. Liu C H, Hartzell D J, Grissom T V, Wylie G 1990 The composition of the market portfolio and real estate investment performance *AREUEA Journal* pp 18 (1) pp 49 – 75.

1415. McMahan J 1990 Foreign investment in U.S. real estate *Real Estate Issues* **15** pp 35 – 37.

1416. Sagalyn L B 1990 Real estate risk and the business cycle: Evidence from security markets *Journal of Real Estate Research* **5** (2) pp 203 – 219.

1417. Wheaton W C, Torto R G 1990 An investment model of the demand and supply for industrial real estate *Real Estate Economics* **18** (4) pp 530 – 547.

1418. Asabere P, Kleiman R, McGowan C 1991 The risk-return attributes of international real estate equities *Journal of Real Estate Research* **6** (2) pp 143 – 151.

1419. Martin J D, Cook D O 1991 A comparison of the recent performance of publicly traded real property portfolios and common stocks *AREUEA Journal* **19** (2) pp 184 – 212.

1420. McIntosh W, Liang Y, Tompkins D L Spring 1991 An examination of the small firm effect within the REIT industry *Journal of Real Estate Research* **6** pp 9 – 17.

1421. Ross S, Zisler R 1991 Risk and return in real estate *Journal of Real Estate Finance and Economics* **4** pp 129 – 146.

1422. Ziobrowski A J, Boyd J W 1991 Leverage and foreign investment in U. S. real estate *Journal of Real Estate Research* **7** (1) pp 33 – 57.

1423. Ziobrowski A J, Curcio R J 1991 Diversification benefits of U.S. real estate to foreign investors *Journal of Real Estate Research* **6** (2) pp 119 – 142.

1424. Ziobrowski A J, Ziobrowski B J 1993 Hedging foreign investments in U.S. real estate with currency options *Journal of Real Estate Research* **8** (1) pp 27 – 54.

1425. Ziobrowski B J, Ziobrowski A J 1995 Using forward contracts to hedge foreign investment in U.S. real estate *Journal of Property Valuation & Investment* **13** pp 22 – 43.

1426. Ziobrowski A J, McAlum H, Ziobrowski B J 1996 Taxes and foreign real estate investment *The Journal of Real Estate Research* **11** (2) pp 197 – 213.

1427. Ambrose B W, Ancel E, Griffiths M D Spring 1992 The fractal structure of real estate investment returns: The search for evidence of market segmentation and nonlinear dependency *Journal of the American Real Estate and Urban Economics Association* **20** pp 23 – 54.

1428. DiPascuale D, Wheaton W C 1992 The markets for real estate and space: A conceptual framework *Journal of the American Real Estate and Urban Economics Association* **20** (1) pp 181 – 197.

1429. Kleiman R, Farragher E 1992 Investment characteristics of international real estate equities *Real Estate Review* **22** pp 33 – 39.

1430. Liu C H, Mei J 1992 The predictability of returns on equity REITs and their co-movement with other assets *Journal of Real Estate Finance and Economics* **5** (4) pp 401 – 418.

1431. Brueggeman B W, Fisher D J 1993 Real estate finance and investments 9th edition *Irwin BurrRidge* USA pp 1 – 908 ISBN: 0-256-08290-1 .

1432. Newell G, MacFarlane J March 1994 Property: More volatile than you thought *Journal of Australian Securities Institute* pp 25 – 37.

1433. Worzala E 1994 Overseas property investments: How are they perceived by the institutional investor? *Journal of Property Valuation and Investment* **12** pp 31 – 47.

1434. Worzala E, Newel G 1997 International real estate: A review of strategic investment issues *Journal of Real Estate Portfolio Management* **3** (2) pp 87 – 96.

1435. Zumpano L V, Elder H W 1994 Economies of scope and density in the market for real estate brokerage services *Journal of the American Real Estate and Urban Economics Association* **22** (3) pp 497 – 513.

1436. Baum A 1995 Can foreign investment be successful? *Real Estate Finance* **12** (1) pp 81 – 89.

1437. Baum A 2009 Commercial real estate investment: A strategic approach 2nd edition *EG Books*.

1438. Corgel J B, McIntosh W, Ott S H 1995 Real estate investment trusts: A Review of the literature *Journal of Real Estate Literature* **3** (1) pp 13 – 46.

1439. Jun Han, Youguo Liang 1995 The historical performance of real estate investment trusts *The Journal of Real Estate Research* **10** (3) pp 235 – 262.

1440. Mueller G R Spring 1995 Understanding real estate's physical and financial cycles *Journal of Real Estate Finance* pp 47 – 52.

1441. Barkham R J, Ward C W R, Henry O T 1996 The inflation-hedging characteristics of U.K. property *Journal of Property Finance* **7** (1) pp 16 – 26.

1442. Geurts T G, Jaffe A J 1996 Risk and real estate investment: An international perspective *The Journal of Real Estate Research* **11** (2) pp 117 – 130.

1443. Han J 1996 Targeting markets is popular: A survey of pension real estate investment advisors *Real Estate Finance* **13** (1) pp 66 – 75.

1444. Newell G 1996 The inflation-hedging characteristics of Australian commercial property: 1984-1995 *Journal of Property Finance* **7** (1) pp 1 – 15.

1445. Newell G, Webb J 1996 Assessing risk for international real estate investments *The Journal of Real Estate Research* **11** (2) pp 103 – 115.

1446. Seck D 1996 The substitutability of real estate assets *Real Estate Economics* **24** (1) pp 75 – 95.

1447. Solnik B 1996 International investments 3rd edition *Addison-Wesley* Massachusetts USA.

1448. Bers M, Springer Th M 1997 Economies-of-scale for real estate investment trusts *Journal Of Real Estate Research* **14** (3) pp 275 – 291.

1449. Brueggeman W B, Fisher J D 1997 Real estate finance and investments *Irwin McGraw-Hill* Boston MA USA.

1450. Farrell R 1997 Japanese foreign direct investment in real estate 1985–1994 *Pacific Economic Papers no 272* Australia–Japan Research Centre Research School of Pacific and Asian Studies The Australian National University Canberra Australia ISBN 0 86413 216 6 pp 1 – 53.

1451. Hoesli M, MacGregor B D, Matysiak G, Nanthakumaran N 1997 The short-term inflation-hedging characteristics of UK real estate *Journal of Real Estate Finance and Economics* vol **15** no 1 pp 59 – 76.

1452. Mei J, Saunders A 1997 Have U.S. financial institutions' real estate investments exhibited "trend-chasing" behavior? *Review of Economics and Statistics* **79** (2) pp 248 – 258.

1453. Redman A L, Manakyan H, Liano K 1997 Real estate investment trusts and calendar anomalies *Journal Of Real Estate Research* **14** (1/2) pp 19 – 28.

1454. Ball M, Lizieri C, MacGregor B N 1998 The economics of commercial property markets *Routledge* London UK.

1455. Chun G H, Shilling J D 1998 Real estate asset allocations and international real estate markets *Journal of the Asian Real Estate Society* **1** (1) pp 17 – 44.

1456. D'Arcy E, Keogh G 1998 Territorial competition and property market process: An explanatory analysis *Journal of Urban Studies* **35** (8) pp 1215 – 1230.

1457. Martens C-P 1998 Real estate investment in Germany *5th European Real Estate Society Conference* Maastricht The Netherlands.

1458. Svensson J 1998 Investment, property rights and political instability: Theory and evidence *European Economic Review* **42** (7) pp 1317 – 1341.

1459. Adair A, Berry J, McGreal S, Syacutekora L, Ghanbari Parsa A, Redding B Spring 1999 Globalization of real estate markets in Central Europe *European Planning Studies* **7** (3) pp 295 – 305.

1460. Keogh G, D'Arcy E 1999 Property market efficiency: An institutional economics perspective *Journal of Urban Studies* **36** (13) pp 2401 – 2414.

1461. Liao H-H, Mei J 1999 Institutional factors and real estate returns – A cross country study *International Real Estate Review* **2** (1) pp 21 – 34.

1462. Moshirian F, Pham T 2000 Determinants of US investment in real estate abroad *Journal of Multinational Financial Management* **10** (1) pp 63 – 72.

1463. Brounen D, Cools T, Schweizer M Summer 2001 Information transparency pays: Evidence from European property shares *Real Estate Finance* pp 39 – 49.

1464. Lee St 2001 The risk of investing in the real estate markets of the Asian region *Working Paper of Department of Land Management no 6* University of Reading UK.

1465. Lee St 2005 Gauging the investment potential of international real estate markets *Working Paper of Department of Real Estate and Planning no 19* University of Reading UK.

1466. Lee St 2006a The impact of country risk on international real estate returns *Working Paper of Department of Real Estate and Planning no 10* University of Reading UK.

1467. Lee St 2006b The impact of exchanges rates on international real estate portfolio allocation *Working Paper of Department of Real Estate and Planning no 4* University of Reading UK.

1468. McGreal S, Parsa A, Keivani R 2001 Perceptions of real estate markets in central Europe: A survey of European investor *Journal of Real Estate Literature* **9** (2) pp 147 – 160.

1469. Thrall G I 2002 Business geography and new real estate market analysis *Oxford University Press* New York and Oxford USA and UK.

1470. Blazenko G W, Pavlov A D 2004 The economics of maintenance for real estate investments *Real Estate Economics* **32** (1) pp 55 – 84.

1471. Deqing Diane Li, Yung K 2004 Short interests in real estate investment trusts *International Real Estate Review* **7** (1) pp 56 – 70.

1472. Engelberts R, Suarez J L 2004 The real estate industry in The Netherlands *Working Paper WP 558* IESE Business School University of Navarra Barcelona Spain pp 1 – 62.

1473. Hoskin N, Higgins D, Cardew R Spring 2004 Macroeconomic variables and real estate returns: An international comparison *The Appraisal Journal* pp 163 – 170.

1474. Loo Lee Sim, Xing Quan Zhang, Jieming Zhu 2004 Globalization and real estate investment in Beijing *11th European Real Estate Society Conference* Milano Italy.

1475. Pi-Ying, Lai Peddy 2004 The competitiveness of real estate industry in Taiwan *11th European Real Estate Society Conference* Milano Italy.

1476. Hardin W G, Liano K, Gow-Cheng Huang 2005 Real estate investment trusts and calendar anomalies: Revisited *International Real Estate Review* **8** (1) pp 83 – 94.

1477. Laposa S, Lizieri C April 13 – 16 2005 Real estate capital flows and transitional economies *Conference Paper* ARES Meeting Santa Fe NM USA.

1478. Holsapple E J, Ozawa T, Olienyk J 2006 Foreign "direct" and "portfolio" investment in real estate *Journal of Real Estate Portfolio Management* 12 (1) pp 37 – 47.

1479. Johnson D T 2006 Real estate investing *Managerial Finance* **32** (12) pp 953 – 954.

1480. Lim L Ch, McGreal S, Webb J R 2006 Perception of real estate investment opportunities in Central/South America and Africa *Journal of Real Estate Portfolio Management* **12** (3) pp 261 – 276.

1481. Adlington G, Grover R, Heywood M, Keith S, Munro-Faure P, Perrotta L December 6-8 2008 Developing real estate markets in transition economies UN Intergovernmental Conference Paper RICS Research Foundation.

1482. Chan K C, Hardin III W G, Liano K, Zheng Yu 2008 The internationalization of real estate research *Journal Real Estate Research* **30** (1) pp 91 – 124.

1483. Lambie-Hanson L Fall 2008 Addressing the prevalence of real estate investments in the new markets tax credit program *Working Paper 2008-04* Federal Reserve Bank of San Francisco California USA pp 1 – 43
http://frbsf.org/cdinvestments/ .

1484. Minye Zhang, Yongheng Deng July 9 2008 The relationship between stock returns and the past performance of hotel real estate industry in the U.S.: Is hotel real estate prone to overinvestment? *School of Policy, Planning, and Development* USC California USA pp 1 – 52.

1485. Falkenbach H 2009 Market selection for international real estate investments *International Journal of Strategic Property Management* **13** (4) pp 299 – 308.

1486. Kurzrock B M, Rottke N, Schiereck D 2009 Influence factors on the performance of direct property investments *Journal of Real Estate Portfolio Management* **15** (1) pp 59 – 73.

1487. Edelstein R, Qian W, Tsang D 2010 How do institutional factors affect international real estate returns? *Journal of Real Estate Economics and Finance* DOI: 10.1007/s11146-010-9245-4.

1488. Lieser K, Groh A P 2010 The attractiveness of 66 countries for institutional real estate investment: A composite index approach *Working Paper WP 868* IESE Business School University of Navarra Barcelona Spain pp 1 – 62.

1489. Lieser K, Groh A P July 2011 The determinants of international commercial real estate investments *Working Paper WP 935* IESE Business School University of Navarra Barcelona Spain pp 1 – 55.

1490. Peralta-Alva A 2011 Real estate bubbles and weak recoveries *Economic Synopses* no 39 Federal Reserve Bank of St. Louis USA pp 1 – 2.

1491. Chaney Th, Sraer D, Thesmar D 2012 The collateral channel: How real estate shocks affect corporate investment *American Economic Review* **102** (6) pp 2381 – 2409.

1492. Baker H K, Chinloy P (editors) September 4 2014 Private real estate markets and investments *Oxford University Press* ISBN: 9780199388752 pp 1 – 312.

1493. Baker H K, Chinloy P (editors) September 8 2014 Public real estate markets and investments *Oxford University Press* ISBN: 9780199993277pp 1 – 336.

1494. Cunat V, Cvijanovic D, Yuan K 2014 Within-bank transmission of real estate shocks *SSRN Working Paper*

http://ssrn.com/abstract=2332177 ,

http://dx.doi.org/10.2139/ssrn.2332177 .

1495. Gauder M, Houssard C, Orsmond D 2014 Foreign investment in residential real estate *Reserve Bank of Australia Bulletin June Quarter 2014* Australia pp 11 – 18.

1496. Lieser K, Groh A 2014 The determinants of international commercial real estate investment *The Journal of Real Estate Finance and Economics* **48** (4) pp 611 – 659.

1497. Anderson R I, Rottke N B, Krautz S 2015 Is real estate private equity real estate? *22nd Annual European Real Estate Society Conference* Istanbul Turkey.

1498. Hazama M, Uesugi L October 2015 Heterogeneous impact of real estate prices on firm investment *Working Paper Series no 30* Institute of Economic Research, Hitotsubashi University Tokyo Japan http://hdl.handle.net/10086/27541 .

1499. Maksimov S, Bachurinskaya I 2015 Real estate markets of Russia and St. Petersburg in the context of globalization: Challenges and prospects *Izvestia Journal of University of Economics* Varna Bulgaria pp 21 – 35.

1500. Papastamos D, Matysiak G, Stevenson S 2015 Assessing the accuracy and dispersion of real estate investment forecasts *International Review of Financial Analysis* **42** (C) pp 141 – 152.

Private and public firms theories in economics and finances:

1501. Ueda 1904 Shogyo Dai Jiten (The dictionary of commerce) Japan.

1502. Ueda 1937 Keieikeizaigaku Saran (The science of business administration, *Allgemeine Betriebswirtschaftslehre*) Japan.

1503. Marshall A 1923 Money, credit, and commerce *Prometheus Books* Amherst New York USA ISBN 13: 9781591020363.

1504. Berle A 1932 For whom corporate managers are trustees: A note *Harvard Law Review* vol **45** pp 1365 – 1072.

1505. Berle A A, Means G 1932 The modern corporation and private property *Harcourt Brace and Word Inc, The Commerce Clearing House*, *The MacMillan Company* New York USA pp 1 – 396.

1506. Dodd M 1932 For whom are corporate managers trustees? *Harvard Law Review* vol **45** pp 1145 – 1163.

1507. Ohlin B 1933 Interregional and international trade *Harvard University Press* Cambridge Massachusetts USA.

1508. Coase R H 1937 The nature of the firm *Economica* vol **4** (16) pp 386 – 405 doi:10.1111/j.1468-0335.1937.tb00002.x year=1937.

1509. Coase R H October 1960 The problem of social cost *Journal of Law and Economics* **3** pp 1 – 44.

1510. Coase R H 1988 The nature of the firm: Influence *Journal of Law, Economics, and Organization* **4** (1) pp 33 – 47.

1511. Barnard C I 1938 The functions of the executive *Harvard University Press* Cambridge MA USA pp 241 – 244.

1512. Barnard C I 1948 Organization and management: Selected papers *Harvard University Press* Cambridge MA USA.

1513. Barnard C I 1949 The entrepreneur and formal organization *Change and the Entrepreneur. Harvard University Press* Cambridge MA USA.

1514. Barnard C I 1958 Elementary conditions of business morale *California Management Review* vol **1** no 1.

1515. Alchian A A June 1950 Uncertainty, evolution and economic theory *Journal of Political Economy* **58** no 3 pp 211 – 221.

1516. Alchian A A, Demsetz H December 1972 Production, information costs, and economic organisation *American Economic Review* **62** no 5 pp 777 – 795.

1517. Solow R M August 1957 Technical changes and the aggregate production function *Review of Economics and Statistics* **39** pp 214 – 231.

1518. March J, Simon H 1958 Organizations *John Wiley and Sons Inc* New York USA.

1519. Modigliani F, Miller M June 1958 The cost of capital, corporation finance, and the theory of investment *American Economic Review* pp 261 – 297.

1520. Ward B 1958 The firm in Illyria: Market syndicalism *American Economic Review* **48** (4) pp 566 – 589.

1521. Baumol W 1959 Business behaviour, value and growth.

1522. Baumol W 1962 The theory of expansion of the firm *American Economic Review.*

1523. Penrose E T 1959 The theory of the growth of the firm *Oxford University Press* Oxford UK, *John Wiley and Sons Inc* New York USA.

1524. March J G 1962 The business firm as a political coalition *Journal of Politics* **24** pp 662 – 678.

1525. Cyert R, March J G 1963, 1992 A behavioral theory of the firm *Wiley-Blackwell* 2[nd] edition ISBN 0-631-17451-6.

1526. Marris R May 1963 A model of the managerial enterprise *Quarterly Journal of Economics* **77** pp 185 – 209.

1527. Telser L 1963 Cutthroat competition and the long purse *Journal of Law and Economics* **9** pp 259 – 277.

1528. Fogel R 1964 Railroads and American economic growth: Essays in econometric history *Johns Hopkins Press* Baltimore USA.

1529. Williamson O E 1964 The economics of discretionary behavior: Managerial objectives in a theory of the firm *Prentice-Hall* Englewood Cliffs NJ USA.

1530. Williamson O E 1975 Markets and hierarchies: Analysis and antitrust implications *Free Press* New York USA.

1531. Williamson O E 1984 Corporate governance *Yale Law Journal* vol **88** pp 1183 – 1200.

1532. Williamson O E December 1985 The modern corporation: Origins, evolution, attributes *Journal of Economic Literature* pp 537 – 568.

1533. Williamson O E 1988 Corporate finance and corporate governance *Journal of Finance* **43** (3) pp 28 – 30.

1534. Williamson O E 1996 The mechanisms of governance *Oxford University Press* New York USA.

1535. Williamson O E 2002 The theory of the firm as governance structure: From choice to contract *Journal of Economic Perspectives* vol **16** (3) pp 171 – 195.

1536. Williamson O E 2007 Corporate boards of directors: In principle and in practice *Journal of Law, Economics, and Organization*.

1537. Manne H G 1965 Mergers and the market for corporate control *Journal of Political Economy* **73-74** pp 110 – 120.

1538. Galbraith J K 1967, 1978 The new industrial state 1st edition, 2nd edition *Penguin Books* USA.

1539. Stigler G 1968 The organization of industry *Richard Irwin Inc* Homewood USA.

1540. Mano O 1968-1969 On the science of business administration in Japan *Hokudai Economic Papers* vol **1** pp 77 – 93 Hokkaido University Japan.

1541. Mano O 1970-1971 The development of the science of business administration in Japan since 1955 *Hokudai Economic Papers* vol **2** pp 30 – 42 Hokkaido University Japan.

1542. Mano O 1972-1973 An approach to the organization economy - The development of Barnard's theory *Hokudai Economic Papers* vol **3** Hokkaido University Japan.

1543. Mano O 1975-1976 Social responsibility of the firm-one development of Barnard's theory *Hokudai Economic Papers* vol **5** Hokkaido University Japan.

1544. Mano O 1978 Soshiki Keizai no Kaimei (Organization economy - A study of the management theory of C. L. Barnard) *Bunshindo* Tokyo Japan.

1545. Mano O 1980-1981 Barnard's theory of education for executives *Hokudai Economic Papers* vol **10** Hokkaido University Japan.

1546. Mano O 1987 Barnard no Keiei Riron (Management Theory of C. I. Barnard) *Bunshindo* Tokyo Japan.

1547. Mano O 1994 The differences between Barnard's and Simon's concept of organization equilibrium-Simon's misunderstanding about Barnard's intention *Economic Journal of Hokkaido University* vol **23** Hokkaido University Japan.

1548. Mano O 1995 On the significance of lateral organization *in* C I Barnard's theory *Economic Journal of Hokkaido University* vol **24** pp 1 – 13 Hokkaido University Japan.

1549. Lewellen W 1969 Management and ownership in the large firms *Journal of Finance* **24** pp 299 – 329.

1550. Hirschman A O 1970 Exit, voice, and loyalty: Responses to decline in firms, organizations, and states *Harvard University Press* Cambridge MA USA.

1551. Meade J March 1972 The theory of labour-managed firms and profit sharing *Economic Journal* **82** pp 402 – 428.

1552. Meade J 1986 Alternative systems of business organisation and of workers' remuneration *Allen & Unwin* London UK.

1553. Meade J 1989 Agathotopia: The economics of partnerships *Cambridge University Press* Cambridge UK.

1554. Black F, Scholes M 1973 The pricing of options and corporate liabilities *Journal of Political Economy* vol **81** pp 637 – 654.

1555. Black F, Cox J C 1976 Valuing corporate securities: Some effects of bond indenture provisions *Journal of Finance* vol **31** pp 351 – 367.

1556. Merton R C 1973 Theory of rational option pricing *Bell Journal of Economics and Management Science* vol **4** pp 141 – 183.

1557. Mintzberg H 1973 The nature of managerial work *Harper & Row* New York USA.

1558. Arrow K J 1974 The limits of organization pp 69 – 70.

1559. Merton R C 1974 On the pricing of corporate debt: The risk structure of interest rates *Journal of Finance* vol **29** pp 449 – 470.

1560. Crew M A 1975 Theory of the firm *Longman* New York USA ISBN 0-582-44042-4 pp 1 – 182.

1561. Lee, Jung Hwan 1975 An essay on the theory of the firm 農業経営研究 vol **2** pp 133 – 153.

1562. Jensen M C, Meckling W H 1976 Theory of the firm: Managerial behavior, agency costs and ownership structure *Journal of Financial Economics* **3** pp 305 – 360.

1563. Jensen M C, Meckling W H October 1979 Rights and production functions: An application to labor managed firms and codetermination *Journal of Business* **52** no 4 pp 469 – 506.

1564. Jensen M C, Ruback R S 1983 The market for corporate control: The scientific evidence *Journal of Financial Economics* **11** (1-4) pp 5 – 50.

1565. Jensen M C 1986 Agency costs of free cash flow, corporate finance and takeovers *American Economic Review* Papers and Proceedings of the 98th Annual Meeting of the American Economic Association**76** (2) pp 323 – 329.

1566. Jensen M C September-October 1989 The eclipse of the public corporation *Harvard Business Review* **67** (5) pp 61 – 74
http://papers.ssrn.com/abstract=146149 .

1567. Jensen M C, Zimmermann J L April 1985 Management compensation and the managerial labor market *Journal of Accounting and Economics* **7** no 1-3 pp 3 – 9.

1568. Jensen M C, Murphy K J 1990 Performance pay and top management incentives *Journal of Political Economy* **98** (2) pp 225 – 264.

1569. Jensen M C 1993 The modern industrial revolution: Exit and the failure of internal control systems *Journal of Finance* **48** (3) pp 831 – 880.

1570. Jensen M C 2007 The economic case for private equity *Unpublished Harvard NOM Research Paper no 07-02*.

1571. Simon Y, Tezenas Du Montcel H Mai 1977 Théorie de la firme et réforme de l'entreprise *Revue Économique* **1** pp 321 – 351.

1572. Pfeffer J, Salancik G R 1978 The external control of organizations: A resource-dependency perspective *Harper & Row* New York USA.

1573. Pfeffer J 1981 Power in organizations *Harper Business*, *Pitman* Marshfield MA USA.

1574. Pfeffer J 1982 Organizations and organization theory *Ballinger Publishing Company* USA.

1575. Pfeffer J 1983 Organizational demography *in* Research in organizational behavior Cummings L L, Staw B M (editors) *JAI Press* **5** Greenwich pp 449 – 461.

1576. Pfeffer J 1991 Organizational theory and structural perspectives on management *Journal of Management* **17** pp 789 – 803.

1577. Pfeffer J, Salancik G R 2003 The external control of organizations: A resource dependency perspective *Stanford Business Classics* Stanford USA.

1578. Simon Y, Tezenas Du Montcel H 1978 Économie des ressources humaines dans l'entreprise *Masson*.

1579. Fama E April 1980 Agency problems and the theory of the firm *Journal of Political Economy* **88** (2) pp 288 – 307.

1580. Fama E, Jensen M 1983a Agency problems and residual claims Journal of Law ans Economics vol 26.

1581. Fama E, Jensen M 1983b Separation of ownership and control *Journal of Law and Economics* **26** pp 301 – 325.

1582. Fama E, Jensen M 1985 Organizational forms and investment decisions *Journal of Financial Economics* vol **14** pp 101 – 119.

1583. Mintzberg H 1982 Structure et dynamique des organisations *Les Editions d'Organisation*.

1584. Demsetz H June 1983 The structure of ownership and the theory of the firm *Journal of Law and Economics* vol **26** pp 375 – 390.

1585. Demsetz D, Lehn K 1985 The structure of corporate ownership: Causes and consequences *Journal of Political Economy* **93-6** pp 1155 – 1177.

1586. Demsetz H 1997 Theories of the firm: Their contrasts and implications *Chung-Hua Series of Lectures* no 25 *The Institute of Economics Academia Sinica* Nankang Taipei Taiwan Republic of China.

1587. Demsetz D, Villalonga B 2001 Ownership structure and corporate performance *Journal of Corporate Finance* vol **7** pp 209 – 233.

1588. Wernerfelt B 1984 A resource-based view of the firm *Strategic Management Journal* **5** pp 171 – 180.

1589. Wernerfelt B 1995 The resource-based view of the firm: Ten years after *Strategic Management Journal* **16** pp 171 – 174.

1590. Lode Li 1986 A stochastic theory of the firm *Working Paper no 1844-86* Sloan School of Management MIT USA.

1591. Perrow C 1986 Complex organizations *Random House* New York USA.

1592. Tirole J 1986 Hierarchies and bureaucracies: On the role of collusion in organizations *Journal of Law Economics, and Organization* **2** (2) pp 181 – 214.

1593. Tirole J 1988 The theory of the firm *in* The theory of industrial organization *MIT Press* pp 15 – 60.

1594. Aghion P, Tirole J 1997 Formal and real authority in organisations *Journal of Political Economy* **105** (1) pp 1 – 29.

1595. Tirole J 2001 Corporate governance *Econometrica* vol **69** no 1 pp 1 – 35.

1596. Tirole J 2006 The theory of corporate finance *Princeton University Press* Princeton USA.

1597. Donaldson L 1990 The ethereal hand: Organizational economics and management theory *Academy of Management Review* **15** (3) pp 369 – 381.

1598. Hart O, Moore J 1990 Property rights and the nature of the firm *Journal of Political Economy* vol **98** no 6 pp 1119 – 1158.

1599. Hart O 2011 Thinking about the firm: A review of Daniel Spulber's the theory of the firm *Journal of Economic Literature* **49** (1) pp 101 – 113
http:www.aeaweb.org/articles.php?doi=10.1257/jel.49.1.101 .

1600. Kogut B, Zander U 1992 Knowledge of the firm, combinative capabilities, and the replication of technology *Organizational Science* **3** (3) pp 383 – 397.

1601. Kogut B, Zander U 2000 The network as knowledge: Generative rules and the emergence of structure *Strategic Management Journal* **21** pp 405 – 425.

1602. Prowse S 1992 The structure of corporate ownership in Japan *Journal of Finance* vol **47** pp 1121 – 1140.

1603. Barnhart S, Marr M W, Rosenstein S 1994 Firm performance and board composition some new evidence *Managerial and Decision Economics* **15** (4) pp 329 – 340.

1604. Short H 1994 Ownership, control, financial structure and the performance of the firms *Journal of Economic Surveys* vol **8** no 3 pp 204 – 247.

1605. Nonaka I, Takeuchi H 1995 The knowledge creating company: How Japanese companies create the dynamics of innovation *Oxford University Press* New York USA.

1606. Aharony J, Falk H, Chan-Jane Lin 1996 Changes in ownership structure and the value of the firm: The case of mutual-to-stock converting thrift institutions *Journal of Corporate Finance* vol **2** no 3 pp 301 – 316.

1607. Agrawal A, Knoeber C R 1996 Firm performance and mechanisms to control agency problems between managers an shareholders *Journal of Financial and Quantitative Analysis* vol **31** pp 377 – 397.

1608. Foss N J 1996 More critical comments on knowledge-based theories of the firm *Organizational Science* **7** (5) pp 519 – 523.

1609. Grant R M 1996a Toward a knowledge-based theory of the firm *Strategic Management Journal* **17** Winter Special Issue pp 109 – 122.

1610. Grant R M 1996b Prospering in dynamically-competitive environments: Organizational capability as knowledge integration *Organizational Science* **7** (4) pp 375 – 387.

1611. Grant R M 1996c The knowledge-based view of the firm *in* The strategic management of intellectual capital and organizational knowledge Choo C W, Bontis N (editors) *Oxford University Press* Oxford UK pp 133 – 148.

1612. Hansmann H 1996 Ownership of the enterprise *Oxford University Press* Oxford UK.

1613. Spender J C 1996 Making knowledge the basis of a dynamic theory of firm *Strategic Management Journal* **17** Special Issues pp 45 – 62.

1614. Rajan R, Zingales L May 1998 Power in a theory of the firm *Quarterly Journal of Economics*.

1615. Blair M 1999 Firm-specific human capital and theories of the firm *in* Employees and corporate governance Blair M, Roe M (editors) *Brookings Institution Press* Brookings institution Washington DC USA.

1616. Sterman 2000 Business dynamics *McGraw Hill* USA.

1617. Alavi M, Leidner D E 2001 Review: Knowledge management and knowledge management systems *MIS Quarterly* **25** (1) pp 1107 – 136.

1618. Donaldson L 2001 The contingency theory of organizations *Sage* London UK.

1619. Gompers P A, Metrick A, Ishii J L 2003 Corporate governance and equity prices *Quarterly Journal of Economics* **118** pp 107 – 156.

1620. Bhagat S, Black B, Blair M 2004 Relational investing and firm performance *Journal of Financial Research* **27** (1) pp 1 – 30.

1621. Nickerson J, Zenger T 2004 A knowledge –based theory of the firm: The problem-solving perspective *Organizational Science* **15** (6) pp 617 – 632.

1622. Perez-Gonzalez F 2006 Inherited control and firm performance *American Economic Review* 96 pp 1559 – 1588.

1623. Biondi Y, Canziani A, Kirat T (editors) 2007 The firm as an entity: Implications for economics, accounting and law *Routledge*.

1624. Kantarelis D 2007 Theories of the firm *Inderscience* Genève Switzerland ISBN 0-907776-34-5, ISBN: 0-907776-35-3.

1625. Jacobides M G 2008 Competitive environments and redefining firm and industry boundaries *Public Lecture* London School of Economics and Political Science London UK.

1626. Jacobides M G 2008 Can firms shape their environments to gain an architectural advantage? *Public Lecture* London School of Economics and Political Science London UK.

1627. Spulber D F 2009 The theory of the firm: Microeconomics with endogenous entrepreneurs, firms, markets, and organizations *Cambridge University Press* UK http://www.cambridge.org/9780521736602 .

1628. Ledenyov D O, Ledenyov V O 2013b On the theory of firm in nonlinear dynamic financial and economic systems *Cornell University* NY USA pp 1 – 27
www.arxiv.org 1206.4426v2.pdf .

1629. Ledenyov D O, Ledenyov V O 2015c Information theory of firm *MPRA Paper no 63380* Munich University Munich Germany, *SSRN Paper no SSRN-id2587716 Social Sciences Research Network* New York USA pp 1 – 185
http://mpra.ub.uni-muenchen.de/63380/ ,
http://ssrn.com/abstract=2587716 .

1630. Wikipedia 2015k Microeconomics *Wikipedia* USA
www.wikipedia.org .

Public company investment, public company initial public offering valuation by rating agency/open market, stock exchange, financial capital investment product, financial capital investment medium in finances:

1631. Berney R E 1964 The auction of long-term government securities *Journal Finance* **19** pp 470 – 479.

1632. Smith V L 1967 Experimental studies of discrimination versus competition in sealed-bid auction markets *Journal Business* **40** pp 56 – 60.

1633. Fama E F, Fisher L, Jensen M C, Roll R 1969 The adjustment of stock prices to new information *International Economic Review* **10** pp 1 – 21.

1634. Fama E F 1970 Efficient capital markets: A review of theory and empirical work *Journal of Finance* vol **25** pp 383 – 417.

1635. Fama E F, French K R 1992 The cross-section of expected stock returns *Journal of Finance* **47** (2) pp 427 – 465.

1636. Fama E F, French K R 1993 Common risk factors in the returns on stocks and bonds *Journal of Financial Economics* **33** (1) pp 3 – 56.

1637. Fama E F, French K 1996 Multifactor explanations of asset pricing anomalies *Journal of Finance* vol **51** no 1 pp 55 – 84.

1638. Fama E F 1998 Market efficiency, long-term returns, and behavioral finance *Journal of Financial Economics* **49** pp 283 – 306.

1639. Fama E, Hansen L P, Shiller R 2013 Lectures: 2013 Nobel Prize in economic sciences http://www.youtube.com/watch?v=WzxZGvrpFu4 ,
www.nobelprize.org .

1640. Akerlof G A 1970 The market for 'lemons': Quality uncertainty and the market mechanism *Quarterly Journal of Economics* **84** pp 488 – 500.

1641. Stoll H R, Curley A J 1970 Small business and the new issues market for equities *Journal of Financial and Quantitative Analysis* **5** pp 309 – 322.

1642. Logue D E 1973 On the pricing of unseasoned equity issues: 1965-1969 *Journal of Financial and Quantitative Analysis* **8** pp 91 – 103.

1643. Logue D E, Rogalski R, Seward J, Foster-Johnson L 2001 What's special about the role of underwriter reputation and market activities in IPOs? *Journal of Business*.

1644. Reilly F K 1973 Further evidence on short-run results for new issues investors *Journal of Financial and Quantitative Analysis* **8** pp 83 – 90.

1645. McDonald J G, Jacquillat B C 1974 Pricing of initial equity issues: The French sealed-bid auction *Journal Business* **47** pp 37 – 39.

1646. Ibbotson R G, Jaffe J 1975 Hot issue markets *Journal of Finance* vol **30** (5) pp 1027 – 1042.

1647. Ibbotson R G 1975 Price performance of common stocks new issues *Journal of Financial Economics* **2** (3) pp 235 – 272.

1648. Ibbotson R G, Sindeler J L, Ritter J R 1988 Initial public offering *Journal of Applied Corporate Finance* **1** (2) pp 37 – 45.

1649. Ibbotson R G, Sindelar J, Ritter J 1994 The market's problems with the pricing of initial public offerings *Journal of Applied Corporate Finance* **7** pp 66 – 74.

1650. Ibbotson R G, Ritter 1995 Initial public offerings *in* Jarrow R A, Maksimovic V, Ziemba W T (editors) Handbooks in operations research and management science: Finance pp 993 – 1016 *North-Holland Publishing* Amsterdam The Netherlands.

1651. Benston G, Smith C 1976 A transactions cost approach to the theory of financial intermediation *Journal of Finance* **31** pp 218 – 231.

1652. Jensen M C, Meckling H 1976 Theory of the firm: Managerial behavior, agency costs and ownership structure *Journal of Financial Economics* vol **3** (4) pp 305 – 360.

1653. Jensen M C 1986 Agency costs of free cash flow, corporate finance, and takeovers *The American Economic Review* **76** pp 323 – 329.

1654. Miller E M 1977 Risk, uncertainty, and divergence of opinion *Journal of Finance* pp 1151 – 1168.

1655. Leland H, Pyle D 1977 Informational asymmetries, financial structure, and financial intermediation *The Journal of Finance* **32** (2) pp 371 – 387.

1656. Weinstein M I 1978 The seasoning process of new corporate bond issue *Journal of Finance* **33** (5) pp 1343 – 1355.

1657. Kahneman D, Tversky A 1979 Prospect theory: An analysis of decision under risk *Econometrica* **47** pp 263 – 291.

1658. Wilson R 1979 Auctions of shares *Quarterly Journal of Economics* **93** pp 675 – 689.

1659. Brown S, Warner J B 1980 Measuring security price performance *Journal of Financial Economics* **8** pp 205 – 258.

1660. Buckland R, Herbert P J, Yeomans K A 1981 Price discount on new equity issues in the UK and their relationship to investor subscription in the period 1965 - 75 *Journal of Business Finance and Accounting* **8** pp 79 – 95.

1661. Milgrom P 1981 Rational expectations, information acquisition, and competitive bidding *Econometrica* **49** pp 921 – 943.

1662. Milgrom P, Weber R J 1982 A theory of auctions and competitive bidding *Econometrica* **50** pp 1089 – 1122.

1663. Myerson R 1981 Optimal auction design *Mathematics of Operation Research* **6** pp 58 – 73.

1664. Baron D P 1982 A model of the demand for investment banking advising and distribution services for new issues *Journal of Finance* **37** (4) pp 955 – 976.

1665. Dretske F 1983 The flow of information *MIT Press* Cambridge Massachusetts USA.

1666. Bhattacharya S, Ritter J R 1983 Innovation and communication: Signaling with partial disclosure *Review of Economic Studies* **50** pp 331 – 346.

1667. Ritter J R 1984 The "hot issue" market of 1980 *Journal of Business* **57** (2) pp 215 – 240.

1668. Ritter J R 1984 Signaling and the valuation of unseasoned new issues: A comment *Journal of Finance* **39** (4) pp 1231 – 1237.

1669. Beatty R P, Ritter J R 1986 Investment banking, reputation, and the underpricing of initial public offerings *Journal of Financial Economics* **15** pp 213 – 232.

1670. Ritter J R 1987 The costs of going public *Journal of Financial Economics* **19** pp 269 – 282.

1671. Ritter J R 1988 The buying and selling behavior of individual investors at the turn of the year *Journal of Finance* **43** (3) pp 701 – 717.

1672. Ritter J R 1991 The long-run underperformance of initial public offerings *Journal of Finance* vol **46** (1) pp 3 – 27.

1673. Chopra N, Lakonishok J, Ritter J R 1992 Measuring abnormal performance: Do stocks overreact? *Journal of Financial Economics* **31** (2) pp 235 – 268.

1674. Ritter J R 1992 The turn-of-the-year effect in The new Palgrave dictionary of money and finance Eatwell J, Milgate M, Newman P (editors) *MacMillan* London UK pp 705 – 706.

1675. Hanley K W, Ritter J R 1992 Going public pp 248 – 255 in The new Palgrave dictionary of money and finance Eatwell J, Milgate M, Newman P (editors) *MacMillan* London UK.

1676. Ibbotson R G, Sindelar J L, Ritter J R 1994 The market's problems with the pricing of initial public offerings *Journal of Applied Corporate Finance* **7** (1) pp 66 – 74.

1677. Loughran T, Ritter J R, Rydqvist K 1994 Initial public offerings: International insights *Pacific-Basin Finance Journal* **2** (2-3) pp 165 – 199.

1678. Ibbotson R G, Ritter J R 1995 Initial public offerings *Chapter 30* pp 993 – 1016 *in* Handbooks of operations research and management science: Finance Jarrow R, Maksimovic V, Ziemba W *North-Holland Publishing* Amsterdam The Netherlands.

1679. Loughran T, Ritter J R 1995 The new issue puzzle *Journal of Finance* **50** (1) pp 23 – 51.

1680. Lee I, Lochhead S, Ritter J R, Zhao Q 1996 The costs of raising capital *Journal of Financial Research* **19** (1) pp 59 – 74.

1681. Loughran T, Ritter J R 1996 Long-term market overreaction: The effect of low-priced stocks *Journal of Finance* **51** (5) pp 1959 – 1970.

1682. Loughran T, Ritter J R 1997 The operating performance of firms conducting seasoned equity offerings *Journal of Finance* 52 5 pp 1823 - 1850.

1683. Ritter J R 1998a Initial public offerings *in* Warren, Gorham, and Lamont Handbook of modern finance Logue D, Seward J *WGL/RIA* Boston and New York USA; *Contemporary Financial Digest* **2** (1) pp 5 – 30.

1684. Ritter J R 1998b Initial public offerings *in* Warren, Gorham, and Lamont *Handbook of modern finance* Logue D, Seward J (editors) Boston and New York USA.

1685. Hamao Y, Packer F, Ritter J R 1998 Institutional affiliation and the role of venture capital: Evidence from initial public offerings in Japan *Working Paper* Columbia University New York USA.

1686. Kim M, Ritter J R 1999 Valuing IPOs *Journal of Financial Economics* **53** (3) pp 409 – 437.

1687. Chen H C, Ritter J R 2000 The seven percent solution *Journal of Finance* **55** (3) pp 1105 – 1131.

1688. Hamao Y, Packer F, Ritter J R 2000 Institutional affiliation and the role of venture capital: Evidence from initial public offerings in Japan *Pacific-Basin Finance Journal* **8** (5) pp 529 – 558.

1689. Ritter J R 2002 The future of the new issues market *Brookings-Wharton Papers on Financial Services* pp 293 – 308.

1690. Ritter J R, Welch I 2002 A review of IPO activity, pricing and allocations *Journal of Finance* **57** (4) pp 1795 – 1828.

1691. Ritter J R, Warr R S 2002 The decline of inflation and the bull market of 1982 – 1999 *Journal of Financial and Quantitative Analysis* **37** (1) pp 29 – 61.

1692. Loughran T, Ritter J R 2002 Why don't issuers get upset about leaving money on the table in IPOs? *Review of Financial Studies* **15** (2) pp 413 – 443.

1693. Ritter J R 2003a Behavioral finance *Pacific-Basin Finance Journal* **11** (4) pp 429 – 437.

1694. Ritter J R 2003b Differences between European and American IPO markets *European Financial Management* **9** (4) pp 421 – 434.

1695. Ritter J R 2003c Investment banking and securities issuance *in* Handbook of the economics of finance Constantinides G M, Harris M, Stulz R (editors) *North-Holland Publishing* Amsterdam The Netherland pp 255 – 306.

1696. Ritter J R, Bradley D, Jordan B D 2003 The quiet period goes out with a bang *Journal of Finance* **58** (1) pp 1 – 36.

1697. Ritter J R, Bradley D J, Jordan B D, Wolf J G 2004 The IPO quiet period revisited *Journal of Investment Management* **2** (3) pp 3 – 13.

1698. Ritter J R, Loughran T 2004 Why has IPO underpricing changed over time? *Financial Management* **33** (3) pp 5 – 37.

1699. Ritter J R (editor) 2005 Introduction to recent developments in corporate finance *in* Recent developments in corporate finance vols **1**, **2** *Edward Elgar Publishing* Northampton MA.

1700. Ritter J R 2005 Economic growth and equity returns *Pacific-Basin Finance Journal* **13** (5) pp 489 – 503.

1701. Ritter J R 2005 Some facts about the 2004 IPO market *Working Paper* University of Florida USA http://bear.cba.ufl.edu/ritter .

1702. Ritter J R, Asquith P, Pathak P A 2005 Short interest, institutional ownership, and stock returns *Journal of Financial Economics* **78** (2) pp 243 – 276.

1703. Ritter J R, Nimalendran M, Donghang Zhang 2007 Do today's trades affect tomorrow's IPO allocation? *Journal of Financial Economics* **84** (1) pp 87 – 109.

1704. Ritter J R, Donghang Zhang 2007 Affiliated mutual funds and the allocation of initial public offerings *Journal of Financial Economics* **86** (2) pp 337 – 368.

1705. Bradley D J, Jordan B D, Ritter J R 2008 Analyst behavior following IPOs: The "bubble period" evidence *Review of Financial Studies* **21** (1) pp 101 – 133.

1706. Ritter J R 2008 Forensic finance *Journal of Economic Perspectives* **22** (3) pp 127 – 147.

1707. Ritter J R, Huang R 2009 Testing theories of capital structure and estimating the speed of adjustment *Journal of Financial and Quantitative Analysis* **44** (2) 237 – 271.

1708. Ritter J R, Xiaoding Liu 2010 The economic consequences of IPO spinning *Review of Financial Studies* **23** (5) pp 2024 – 2059.

1709. Ritter J R, Xiaohui Gao 2010 The marketing of seasoned equity offerings *Journal of Financial Economics* **97** (1) pp 33 – 52.

1710. Ritter J R, Xiaoding Liu 2011 Local underwriter oligopolies and IPO underpricing *Journal of Financial Economics* **102** (3) pp 579 – 601.

1711. Ritter J R 2011 Equilibrium in the initial public offerings market *Annual Review of Financial Economics* **3** pp 347 – 374.

1712. Ritter J R, Kenney M, Patton D 2012 Post-IPO employment and revenue growth for US IPOs, June 1996-2010 *Kauffman Foundation Report Ewing Marion Kauffman Foundation*.

1713. Ritter J R, Vismara S, Paleari S 2012 Europe's second markets for small companies *European Financial Management* **18** (3) pp 352 – 388.

1714. Ritter J R 2013 Re-energizing the IPO market *Chapter 4* pp 123 – 145 *in* Restructuring to speed economic recovery Bailey M, Herring R, Seki Y (editors) *Brookings Press* USA.

1715. Ritter J R, Xiaohui Gao, Zhongyan Zhu 2013 Where have all the IPOs gone? **48** (6) *Journal of Financial and Quantitative Analysis*.

1716. Ritter J R, Signori A, Vismara S 2013 Economies of scope and IPO activity in Europe *Chapter 1* pp 11 - 34 *in* Handbook of research on IPOs Levis M, Vismara S (editors) *Edward Elgar Publishing* Cheltenham UK.

1717. Myers S C, Majluf N S 1984 Corporate financing and investment decisions when firms have information that investors do not have *Journal of Financial Economics* **13** pp 187 – 22.

1718. Kyle A S 1985 Continuous auction and insider trading *Econometrica* **53** (6) pp 1315 – 1336.

1719. Amihud Y, Mendelson H 1986 Asset pricing and the bid-ask spread *Journal of Financial Economics* **17** (2) pp 223 – 249.

1720. Amihud Y, Mendelson H, Uno J 1999 Number of shareholders and stock prices: Evidence from Japan *Journal of Finance* **54** pp 1169 – 1184.

1721. Amihud Y, Hauser S, Kirsh A 2001 Allocations, adverse selection and cascades in IPOs: Evidence from Israel *Working Paper*.

1722. Amihud Y, Hauser S, Kirsh A 2003 Allocations, adverse selection and cascades in IPOs: Evidence from the Tel Aviv exchange *Journal of Financial Economics* **68** (1) pp 137 – 158.

1723. Beatty R P, Ritter J R 1986 Investment banking, reputation, and the underpricing of initial public offerings *Journal of Financial Economics* **15** pp 213 – 232.

1724. Beatty R P, Zajac E J 1994 Managerial incentives, monitoring, and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings *Administrative Science Quarterly* **39** pp 313 – 335.

1725. Beatty R P, Welch I 1996 Issuer expenses and legal liability in initial public offerings *Journal of Law and Economics* **39** pp 545 – 602.

1726. Booth J, Smith R 1986 Capital raising, underwriting and the certification hypothesis *Journal of Finance* **15** pp 261 – 281.

1727. Ridder A 1986 Access to the stock market - An empirical study on the efficiency of the British and the Swedish primary markets *Casion Press* Stockholm Sweden.

1728. Rock K 1986 Why new issues are underpriced *Journal of Financial Economics* **15** (1-2) pp 187 – 212.

1729. Shleifer A, Vishny R 1986 Large shareholders and corporate control *Journal of Political Economy* **94** (3) pp 461 – 488.

1730. Shleifer A, Wolfenzon D 2002 Investor protection and equity markets *Journal of Financial Economics* **66** (1) pp 3 – 27.

1731. Titman Sh, Trueman B 1986 Information quality and the valuation of new issues *Journal of Accounting and Economics* **8** pp 159 – 172.

1732. Bernheim D, Peleg B, Whinston M D 1987 Coalition-proof Nash equilibria I. Concepts *Journal of Economic Theory* **42** pp 1 – 12.

1733. McAfee R P, McMillan J 1987 Auctions and bidding *Journal Econ Lit* **25** pp 699 – 702.

1734. Miller R E, Reilly F K 1987 An examination of mispricing, returns and uncertainty for initial public offerings *Financial Management* **16** (2) pp 33 – 38.

1735. Balvers R J, McDonald B D, Miller R E 1988 Underpricing of new issues and the choice of auditor as a signal of investment banker reputation *The Accounting Review* **63** pp 605 – 622.

1736. Johnson J M, Miller R E 1988 Investment banker prestige and the underpricing of initial public offerings *Financial Management* **17** pp 19 – 29.

1737. Tinic S M 1988 Anatomy of initial public offerings of common stocks *Journal of Finance* **43** (4) pp 789 – 822.

1738. Allen F, Faulhaber G A 1989 Signaling by under-pricing in the IPO market *Journal of Financial Economics* **23** (2) pp 303 – 323.

1739. Barry C B 1989 Initial public offerings underpricing: The issuer's view — A comment *Journal of Finance* **44** pp 1099 – 1103.

1740. Barry C B, Muscarella C J, Peavy J W, Vetsuypens M R 1990 The role of venture capital in the creation of public companies: Evidence from the going-public process *Journal of Financial Economics* **27** pp 447 – 471.

1741. Benveniste L M, Spindt P A 1989 How investment bankers determine the offer price and allocation of new issues *Journal of Financial Economics* **24** (2) pp 343 – 362.

1742. Benveniste L M, Wilhelm W 1990 A comparative analysis of IPO proceeds under alternative regulatory environments *Journal of Financial Economics* **28** (1-2) pp 173 – 208.

1743. Benveniste L M, Busaba W Y, Wilhelm W J Jr 1996 Price stabilization as a bonding mechanism in new equity issues *Journal of Financial Economics* **42** pp 223 – 256.

1744. Benveniste S, Busaba W Y 1997 Book-building vs fixed price: An analysis of competing strategies for marketing IPOs *Journal of Financial and Quantitative Analysis* **32** (4) pp 383 – 403.

1745. Benveniste L M, Wilhelm W J 1997 Initial public offerings: Going by the book *Journal of Applied Corporate Finance* **10** pp 98 – 108.

1746. Benveniste L M, Erdal S M, Wilhelm W J Jr 1998 Who benefits from secondary market price stabilization of IPOs *Journal of Banking and Finance* **22** pp 741 – 767.

1747. Benveniste L M, Ljungqvist A P, Wilhelm W J, Yu X 2003 Evidence of information spillovers in the production of investment banking services *Journal of Finance* **58** pp 577 – 608.

1748. Grinblatt M, Hwang C 1989 Signaling and the pricing of new issues *Journal of Finance* **44** (2) pp 393 – 420.

1749. Koh F, Walter T 1989 A direct test of Rock's model of the pricing of unseasoned issues *Journal of Financial Economics* **23** pp 251 – 272.

1750. Maskin E S, Riley J G 1989 Optimal multi unit auctions *in* Franck Hahn (editor) The economics of missing markets, information, and game *Oxford University Press, Clarendon Press* Oxford UK pp 312 – 335.

1751. Muscarella C J, Vetsuypens M R 1989a A simple test of Baron's model of IPO underpricing *Journal of Financial Economics* **24** pp 125 – 136.

1752. Muscarella C J, Vetsuypens M R 1989b The under-pricing of second initial public offering *Journal of Financial Research* **12** (3) pp 183 – 192.

1753. Muscarella C, Vetsuypens M 1990 Firm age, uncertainty, and IPO underpricing: Some new empirical evidence *SMU Working Paper* USA.

1754. Uhlir H 1989 Der gang an die börse und das underpricing - phänomen: Eine empirische untersuchung Deutscher emissionen (1977-1987) *Zeitschrift für Bankrecht und Betriebswirtschaft* **1** pp 2 - 16.

1755. Welch I 1989 Seasoned offerings and the pricing of new issues *Journal of Finance* **44** (2) pp 421 – 450.

1756. Welch I 1992 Sequential sales, learning and cascades *Journal of Finance* **47** (2) pp 695 – 732.

1757. Welch I 1996 Equity offerings following the IPO: Theory and evidence *Journal of Corporate Finance* **2** (3) pp 227 – 259.

1758. Welch I, Ritter J 2002 A review of IPO activity, pricing and allocations *Yale ICF Working Paper no 02-01* Yale School of Management Yale University, University of Florida USA pp 1 - 45 http://papers.ssrn.com/abstract=296393 .

1759. Carter R B, Manaster S 1990 Initial public offerings and underwriter reputation *Journal of Finance* **45** (4) pp 1045 – 1068.

1760. Carter R B, Dark F A, Singh A K 1998 Underwriter reputation, initial returns, and the long run performance of IPO stocks *The Journal of Finance* **53** (1) pp 285 – 311.

1761. Clarkson P M, Thompson R 1990 Empirical estimates of beta when investors face estimation risk *Journal of Finance* **45** (2) pp 431 – 453.

1762. Husson B, Jacquillat B 1990 Sous-évaluation des titres et méthodes d'introduction au second *Marché Finance* **11** (1) pp 123 – 134.

1763. Levis M 1990 The winner's curse problem, interest costs and the under-pricing of initial public offerings *Economic Journal* **100** (399) pp 76 – 89.

1764. Lucas D, McDonald R 1990 Equity issues and stock price dynamics *Journal of Finance* **45** pp 1019 – 1043.

1765. Sahlman W A 1990 The structure and governance of venture capital organizations *Journal of Financial Economics* **27** pp 473 – 524.

1766. Allen S N 1991 A Lawyer's guide to the operation of underwriting syndicates *New Eng Law Review* **26** (94) pp 350 – 351.

1767. Hasbrouck J 1991 Measuring the information content of stock trades *Journal of Finance* **46** (1) pp 179 – 208.

1768. Lee Ch M C, Shleifer A, Thaler R H 1991 Investor sentiment and the closed-end fund puzzle *Journal of Finance* **46** pp 75 – 109.

1769. Megginson W L, Weiss K A 1991 Venture capitalists certification in initial public offerings *Journal of Finance* **46** (3) pp 879 – 903.

1770. Megginson W L, Smart S B 2009 Introduction to corporate finance 2nd edition *Cengage Learning Inc* Florence Kentucky USA.

1771. Menon K, Williams D D 1991 Auditor credibility and initial public offerings *The Accounting Review* **66** pp 313 – 332.

1772. Spatt C, Srivastava S 1991 Preplay communication, participation restrictions and efficiency in initial public offerings *Review of Financial Studies* **4** (4) pp 709 – 726.

1773. Cotter J F 1992 The long run efficiency of IPO pricing *Working Paper* University of North Carolina at Chapel Hill NC USA.

1774. Hughes P J, Thakor A V 1992 Litigation risk, intermediation, and the underpricing of initial public offerings *Review of Financial Studies* **5** (4) pp 709 – 742.

1775. Mauer D C, Senbet W 1992 The effect of the secondary market on the pricing of initial public offerings: Theory and evidence *Journal of Financial and Quantitative Analysis* **27** (1) pp 55 – 79.

1776. Aggarwal R, Leal R, Hernandez F 1993 The aftermarket performance of initial public offerings in Latin America *Financial Management* **22** pp 42 – 53.

1777. Aggarwal R 2000 Stabilization activities by underwriters after initial public offerings *Journal of Finance* **55** (3) pp 1075 – 1103.

1778. Aggarwal R, Conway P 2000 Price discovery in initial public offerings and the role of the lead underwriter *Journal of Finance* **55** pp 2093 – 2922.

1779. Aggarwal R, Prabhala N, Puri M 2002 Institutional allocation in initial public offerings: Empirical evidence *Journal of Finance* **57** pp 1421 – 1442.

1780. Aggarwal R, Krigman L, Womack K 2002 Strategic IPO underpricing, information momentum, and lockup expiration selling *Journal of financial Economics* **66** (1) pp 106 – 137.

1781. Aggarwal R 2003 Allocation of initial public offerings and flipping activity *Financial Economics* **68** (1) pp 111 – 112.

1782. Affleck-Graves J, Hegde S, Miller R E, Reilly F K 1993 The effect of the trading system on the underpricing of initial public offerings *Financial Management* **22** (1) pp 99 – 108.

1783. Choe H, Masulis R, Nanda V 1993 Common stock offerings across the business cycle: Theory and evidence *Journal of Empirical Finance* **1** pp 3 – 31.

1784. Back K, Zender J 1993 Auctions of divisible goods: On the rationale for the treasury experiment *Review of Financial Studies* **6** pp 733 – 764.

1785. Back K, Zender J 2001 Auctions of divisible goods with endogenous supply *Economics Letters* **73** pp 29 – 34.

1786. Chemmanur Th J 1993 The pricing of initial public offerings: A dynamic model with information production *Journal of Finance* **48** (1) pp 285 – 304.

1787. Chemmanur Th J, Fulghieri P 1997 Why include warrants in new equity issues? A theory of unit IPOs *Journal of Financial and Quantitative Analysis* **32** (1).

1788. Chemmanur Th J, Fulghieri P 1999 A theory of the going-public decision *Review of Financial Studies* **12** pp 249 – 279.

1789. Chemmanur Th J, Liu H 2003 How should a firm go public? A dynamic model of the choice between fixed-price offerings and auctions in IPOs and privatizations *Working Paper* Boston College USA.

1790. Chemmanur T J, Hu G 2007 Institutional trading, allocation sales, and private information in IPOs *Western Finance Association 2007 Meetings Paper*.

1791. Chemmanur T J, Yan A 2009 Product market advertising and new equity issues *Journal of Financial Economics* **92** pp 40 – 65.

1792. Chemmanur T J, He S, Hu G 2009 The role of institutional investors in seasoned equity offerings *Journal of Financial Economics* **94** pp 384 – 411.

1793. Chemmanur Th J, He Sh, Nandy D 2010 The going public decision and the product market *Review of Financial Studies* **23** pp 1855 – 1908.

1794. Chemmanur T J, Krishnan K 2012 Heterogeneous beliefs, short sale constraints, and the economic role of the underwriter in IPOs *Financial Management* **41** pp 769 – 811.

1795. Chemmanur T J, He J 2012 IPO waves, product market competition, and the going public decision: theory and evidence *Discussion Paper CES 12-07* Center for Economic Studies US Census Bureau Washington DC USA pp 1 – 72.

1796. Conrad J, Kaul G 1993 Long-term market overreaction or biases in computed returns? *Journal of Finance* **48** pp 39 – 63.

1797. Dhatt M, Kim Y, Lim U 1993 The short-run and long-run performance of Korean IPOs: 1980-1990 *Working Paper* University of Cincinnati USA, Yonsei University South Korea.

1798. Drake P D, Vetsuypens M R 1993 IPO underpricing and insurance against legal liability *Financial Management* **22** pp 64 – 73.

1799. Figlewski S, Webb G P 1993 Options, short sales, and market completeness *Journal of Finance* **48** pp 761 – 777.

1800. Hanley K W 1993 The underpricing of initial public offerings and the partial adjustment Phenomenon *Journal of Financial Economics* **34** (2) pp 231 – 250.

1801. Hanley K W, Wilhelm W J 1995 Evidence on the strategic allocation of initial public offerings *Journal of Financial Economics* **37** (2) pp 239 – 257.

1802. Hebner K J, Hiraki T 1993 Japanese initial public offerings. Restructuring Japan's financial markets *in* Walter I, Hiraki T (editors) *Business One / Irwin* USA pp 79 – 113.

1803. Jegadeesh N, Weinstein M, Titman S 1993a Returns to buying winners and selling losers: Implications for stock market efficiency *Journal of Finance* **48** (1) pp 65 – 91.

1804. Jegadeesh N, Weinstein M, Welch I 1993b An empirical investigation of IPO returns and subsequent equity offerings *Journal of Financial Economics* **34** (2) pp 153 – 175.

1805. Keloharju M 1993 The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland *Journal of Financial Economics* **34** (2) pp 251 – 277.

1806. Keloharju M, Kulp K 1996 Market-to-book ratios, equity retention, and management ownership in Finnish initial public offerings *Journal of Banking and Finance* **20** pp 1583 – 1599.

1807. Keloharju M, Nyborg K, Rydqvist K 2004 Strategic behavior and underpricing in uniform price auctions: Evidence from Finnish treasury auctions *Journal of Finance*.

1808. Leleux B F 1993 Post-IPO performance: A French appraisal *Finance* vol **14** (2) pp 79 – 106.

1809. Leleux B F, Muzyka D F 1997 European IPO markets: The post-issue performance imperative *Entrepreneurship Theory and Practice* **21** (4) pp 111 – 118.

1810. Levis M 1993 The long-run performance of initial public offerings: The UK experience 1980 - 1988 *Financial Management* **22** (1) pp 28 – 41.

1811. Levis M 2004 The UK IPO market 2000 *Working Paper* Cass Business School UK.

1812. Loughran T 1993 NYSE vs NASDAQ: Market microstructure or the poor performance of initial public offerings *Journal of Financial Economics* **33** (2) pp 241 – 260.

1813. Loughran T, Ritter J R, Rydqvist K 1994 Initial public offerings: International insights *Pacific-Basin Finance Journal* **2** (2-3) pp 165 – 199.

1814. Loughran T, Ritter J R 1995 The new issue puzzle *Journal of Finance* **50** (1) pp 23 – 51.

1815. Loughran T, Ritter J R 1997 The operating performance of firms conducting seasoned equity offering *Journal of Finance* vol **52** (5) pp 1823 – 1850.

1816. Loughran T, Ritter J R 2000 Uniformly least powerful tests of market efficiency *Journal of Financial Economics* **55** (3) pp 361 – 389.

1817. Loughran T, Ritter J R 2002 Why don't issuers get upset about leaving money on the table in IPOs? *Review of Financial Studies* **15** (2) pp 413 – 443.

1818. Loughran T, Ritter J R 2003 Why has IPO underpricing changed over time? *Working Paper* University of Florida USA.

1819. Loughran T, Ritter J R 2004 Why has IPO underpricing changed over time? *Financial Management* **33** (3) pp 5 – 37.

1820. Ruud J S 1993 Underwriter price support and the IPO underpricing puzzle *Journal of Financial Economics* **34** (2) pp 135 – 151.

1821. Rydqvist K 1993 Compensation, participation, restrictions, and the underpricing of initial public offerings: Evidence from Sweden *Working Paper* Stockholm School of Economics Stockholm Sweden.

1822. Rydqvist K, Högholm K 1995 Going public in the 1980s: Evidence from Sweden *European Financial Management* **1** (3) pp 287 – 315.

1823. Rydqvist K 1997 IPO underpricing as tax-efficient compensation *Journal of Banking and Finance* **21** (3) pp 295 – 313.

1824. Vos E A, Cheung J 1993 New Zealand IPO underpricing: A reputation based model *Small Enterprise Research* **1** pp 13 – 22.

1825. Friedlan J 1994 Accounting choices by issuers of initial public offerings *Contemporary Accounting Research* **11** pp 1 – 32.

1826. Jain B A, Kini O 1994 The post-issue operating performance of IPO firms *Journal of Finance* vol **49** (5) pp 1699 – 1726.

1827. Jog V M, Srivastava A 1994 Underpricing of Canadian initial public offerings 1971 - 1992: An update *FINECO* **4** (1) pp 81 – 89.

1828. Jog V M, McConomy B J 1999 Voluntary disclosure of management earnings forecasts in IPOs and the impact on underpricing and post-issue return performance *Working Paper* School of Business Carlton University Ottawa Canada.

1829. Kunz R, Aggarwal R 1994 Why initial public offerings are underpriced: Evidence from Switzerland *Journal of Banking and Finance* **18** (4) pp 705 – 723.

1830. Lerner J 1994 Venture capitalists and the decision to go public *Journal of Financial Economics* **35** pp 293 – 316.

1831. Michaely R, Shaw W H 1994 The pricing of initial public offerings: Tests of the adverse-selection and signaling theories *Review of Financial Studies* **7** (2) pp 279 – 319.

1832. Michaely R, Womack K 1999 Conflict of interest and the credibility of underwriter analyst recommendations *Review of Financial Studies* **12** (4) pp 653 – 686.

1833. Schultz P H, Zaman M A 1994 Aftermarket support and underpricing of initial public offerings *Journal of Financial Economics* **35** (2) pp 199 – 219.

1834. Schultz P H 2003 Pseudo market timing and the long-run underperformance of IPOs *Journal of Finance* **58** (2) pp 483 – 518.

1835. Degeorge F 1995 Underwriter price support and the IPO underpricing puzzle: A comment *Working Paper* HEC Paris France.

1836. Degeorge F, Derrien F, Womack K L 2005 Quid pro quo in IPOs: Why book-building is dominating auctions? *Working Paper* University of Lugano Switzerland, University of Toronto Canada, Dartmouth College USA.

1837. Gerstein F S 1995 Private communications on the IPO underpricing, long term performance and emerging issues markets Copenhagen Denmark www.scornik-gerstein.com, www.scornik.com .

1838. Gerstein F S 1996 Private communications on the IPO underpricing, long term performance and emerging issues markets Brighton, London UK

www.scornik-gerstein.com, www.scornik.com .

1839. Gompers P A 1995 Optimal investment, monitoring, and the staging of venture capital *Journal of Finance* **50** (5) pp 1461 – 1489.

1840. Gompers P, Lerner J 1997 Venture capital and the creation of public companies: Do venture capitalists really bring more than money? *Journal of Private Equity* **1** (1) pp 15 – 30.

1841. Gompers P, Lerner J 2001 The really long-term performance of initial public offerings: The pre-Nasdaq evidence *Unpublished Harvard Business School Working Paper* Harvard University USA.

1842. Gompers P A, Lerner J 2003a The really long-run performance of initial public offerings: The pre-Nasdaq evidence *Harvard Business School Working Paper* Harvard University USA.

1843. Gompers P A, Lerner J 2003b The really long-run performance of initial public offerings: The pre-Nasdaq evidence *Journal of Finance* **63** pp 1355 – 1392.

1844. Kim J-B, Krinsky I, Lee J 1995 The aftermarket performance of initial public offerings in Korea *Pacific-Basin Finance Journal* vol **3** no 4 pp 429 – 448.

1845. Spiess D K, Affleck-Graves J 1995 Underperformance in long-run stock returns following seasoned equity offerings *Journal of Financial Economics* **38** pp 243 – 267.

1846. Spiess D K, Pettway R H 1997 The IPO and the first seasoned equity sale: Issue proceeds, owner/manager's wealth, and the under-pricing signal *Journal of Banking and Finance* **21** (7) pp 967 – 988.

1847. Spiess D K, Affleck-Graves J 1999 The long-run performance of stock returns following debt offerings *Journal of Financial Economics* **54** pp 45 – 73.

1848. Zingales L 1995 Insider ownership and the decision to go public *Review of Economic Studies* **62** pp 425 – 448.

1849. Barber B M, Lyon J D 1996a Detecting long-run abnormal stock returns: The empirical power and specification of test statistics *Working Paper* University California - Davis California USA.

1850. Barber B M, Lyon J D 1996b How can long-run abnormal stock returns be both positively and negatively biased? *Working Paper* University California - Davis California USA.

1851. Barber B M, Lyon J D 1997 Detecting long-run abnormal stock returns: The empirical power and specification of test statistics *Journal of Financial Economics* **43** pp 341 – 372.

1852. Barber B M, Odean T 2008 All that glitters: The effect of attention on the buying behaviour of individual and institutional investors *Review of Financial Studies* **21** pp 785 – 818.

1853. Booth J R, Chua L 1996 Ownership dispersion, costly information, and IPO underpricing *Journal of Financial Economics* **41** (2) pp 291 – 310.

1854. Booth J R, Booth L 2003 Technology shocks, regulation, and the IPO market *Working Paper* Arizona State University Arizona USA.

1855. Borggreve H, Dobrikat J 1996 Telekom-börsengang beeinflusst mmarkt – pläne anderer unternehmen. Aktienemissionen werden weiter eine wichtige rolle spielen *Handelsblatt 1996/90* B6.

1856. Brealey R A, Myers S C 1996 Principles of corporate finance *McGraw-Hill* New York USA pp 1 – 998.

1857. Brennan M J, Subrahmanyam A 1996 Market microstructure and asset pricing: On the compensation for illiquidity in stock returns *Journal of Financial Economics* **41** (3) pp 441 – 464.

1858. Chowdhry B, Sherman A 1996 The winner's curse and international methods of allocating initial public offerings *Pacific-Basin Finance Journal* **4** pp 15 – 30.

1859. Chowdhry B, Nanda V 1996 Stabilization, syndication, and pricing of IPOs *Journal of Financial and Quantitative Analysis* **31** pp 25 – 42.

1860. Easley D, Kiefer N M, O'Hara M, Paperman J B 1996 Liquidity, information, and infrequently traded stocks *Journal of Finance* **51** (4) pp 1405 – 1436.

1861. Hazen Th L 1996 Treatise on the law of securities regulation *3rd edition*.

1862. Houston J, James C 1996 Bank information monopolies and the mix of private and public debt claims *Journal of Finance* **51** pp 1863 – 1899.

1863. Houston J, James C, Karceski J 2004 What a difference a month makes: Stock analyst valuations following initial public offerings *University of Florida Working Paper* USA.

1864. Kogut B, Zander U 1996 What firms do? Coordination, identity and learning *Organizational Science* **7** pp 502 – 518.

1865. Kothari S P, Warner J B 1996 Measuring long-horizon security price performance *Working Paper* University of Rochester USA.

1866. Kothari S, Warner J 1997 Measuring long-horizon security price performance *Journal of Financial Economics* **43** (3) pp 301 – 339.

1867. Kothari S P 2001 Capital markets research in accounting *Journal of Accounting and Economics* **31** pp 105 – 231.

1868. Lee P J, Taylor S, Walter T 1996a Australian IPO underpricing in the short and long run *Journal of Banking and Finance* **20** pp 1189 – 1210.

1869. Lee P J, Taylor S L, Walter T S 1996b Expected and realized returns for Singaporean IPOs: Initial and long-run analysis *Pacific-Basin Finance Journal* vol **4** no 2-3 pp 153 – 180.

1870. Lee P J, Taylor S L, Walter T S 1999 IPO underpricing explanations: Implications from investor application and allocation schedules *Journal of Financial and Quantitative Analysis* **34** pp 425 – 444.

1871. Nyborg K, Sundaresan S 1996 Discriminatory versus uniform treasury auctions: Evidence from when-issued transactions *Journal of Financial Economics* **42** pp 63 – 104.

1872. Pettway R H, Kaneko T 1996 The effect of removing price limits and introducing auctions upon short-term IPO returns: The case of Japanese IPOs *Pacific-Basin Finance Journal* **4** (2-3) pp 241 – 258.

1873. Périer S 1996 Gestion des résultats comptables et introduction en bourse *Ph D Thesis* University of Grenoble France.

1874. Aussenegg W 1997 Short and long-run performance of initial public offerings in the Austrian stock market *Working Paper no 24* Austrian Working Group on Banking and Finance Austria.

1875. Brav A, Gompers P 1997 Myth or reality? The long-run performance of initial public offerings: Evidence from venture and non-venture capital-backed companies *Journal of Finance* **52** (5) pp 1791 – 1821.

1876. Brav A 2000 Inference in long-horizon event studies: A Bayesian approach with applications to initial public offerings *Journal of Finance* **55** pp 1979 – 2016.

1877. Brav A, Geczy C, Gompers P A 2000 Is the abnormal return following equity issuances anomalous? *Journal of Financial Economics* **56** (2) pp 209 – 249.

1878. Brav A, Gompers P A 2002 Insider trading subsequent to initial public offerings: Evidence from expirations of lockup provisions *Review of Financial Studies*.

1879. Brav A, Gompers P A 2003 The role of lockups in initial public offerings *Review of Financial Studies* **16** p 1 - 29.

1880. Brennan M J, Franks J 1997 Underpricing, ownership and control in initial public offerings of equity securities in the UK *Journal of Financial Economics* **45** (3) pp 391 – 413.

1881. Cai J, Wei J 1997 The investment and operating performance of Japanese initial offerings *Pacific-Basin Finance Journal* vol **5** pp 389 – 417.

1882. Carhart M M 1997 On persistence in mutual funds performance *Journal of Finance* **52** (1) pp 57 – 82.

1883. Datta S, Iskandar-Datta M, Patel A 1997 The pricing of initial public offers of corporate straight debt *Journal of Finance* **52** (1) pp 379 – 396.

1884. Dechow P M, Sloan R G 1997 Returns to contrarian investment: Tests of the naïve expectations hypotheses *Journal of Financial Economics* **43** pp 3 – 28.

1885. Dechow P, Hutton A, Sloan R 1999 The relation between analysts' forecasts of long-term earnings growth and stock price performance following equity offerings *Working Paper* University of Michigan USA.

1886. Dechow P M, Hutton A, Sloan R G 2000 The relation between analysts' forecasts of long-term earnings growth and stock price performance following equity offerings *Contemporary Accounting Research* **17** (1) pp 1 – 32.

1887. Ehrhardt O 1997 Börseneinführungen von aktien am deutschen kapitalmarkt *Wiesbaden* Germany.

1888. Firth M 1997 An analysis of the stock market performance of new issues in New Zealand *Pacific-Basin Finance Journal* **5** pp 63 – 85.

1889. Gande A, Puri M, Saunders A, Walter I 1997 Bank underwriting of debt securities: Modern evidence *Review of Financial Studies* **10** pp 1175 – 1202.

1890. Gande A, Puri M, Saunders A 1999 Bank entry, competition, and the market for corporate securities underwriting *Review of Financial Economics* **54** pp 165 – 195.

1891. Gregg S 1997 Regulation "A" initial public offerings on the Internet: A new opportunity for small businesses? *Journal of Small and Emerging Business* **50** pp 417 – 433.

1892. Huang R D, Stoll H R 1997 The components of the bid-ask spread: A general approach *Review of Financial Studies* **10** (4) pp 995 – 1034.

1893. Kooli M 2000 La sous-évaluation des émissions initiales: Le cas du Canada *Gestion* **25** (3) pp 78 – 91.

1894. La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R W 1997 Legal determinants of external finance *Journal of Finance* **52** pp 1131 – 1150.

1895. La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R 1998 Law and finance *Journal of Political Economy* **106** (6) pp 1113 – 1156.

1896. La Porta R, Lopez-de-Silanes F, Shleifer A 2002 Investor protection and corporate valuation *Journal of Finance* **57** (3) pp 1147 – 1170.

1897. La Porta R, Lopez-de-Silanes F, Shleifer A 2006 What works in securities laws? *The Journal of Finance* **61** (1) pp 1 – 32.

1898. Lee I 1997 Do firms knowingly sell overvalued equity? *Journal of Finance* **52** (4) pp 1439 – 1466.

1899. Ljungqvist A P 1997 Pricing initial public offerings: Further evidence from Germany *European Economic Review* **41** (7) pp 1309 – 1320.

1900. Ljungqvist A, Nanda V, Singh R 2001 Hot markets, investor sentiment, and IPO pricing, *Unpublished New York University Working Paper* New York USA.

1901. Ljungqvist A P, Wilhelm W J 2002 IPO allocations: Discriminatory or discretionary? *Journal of Financial Economics* **65** (2) pp 167 – 201.

1902. Ljungqvist A P, Wilhelm W J 2003 IPO pricing in the dot-com bubble *Journal of Finance* **58** (2) pp 723 – 752.

1903. Ljungqvist A, Jenkinson T, Wilhelm W 2003 Global integration in primary equity markets: The role of US banks and US investors *Review of Financial Studies* **16** (1) pp 63 – 99.

1904. Ljungqvist A P, Marston F, Wilhelm W J 2003 Competing for securities underwriting mandates: Banking relationships and analyst recommendations *NYU Working Paper* New York USA.

1905. Ljungqvist A P, Nanda V, Singh R 2003 Hot markets, investor sentiment, and IPO pricing *Stern School of Business Working Paper* New York University New York USA.

1906. Ljungqvist A P, Nanda V, Singh R 2006 Hot markets, investor sentiment, and IPO pricing *The Journal of Business* **79** (4) pp 1667 – 1702.

1907. Ljungqvist A 2006 IPO underpricing *in* Handbook of empirical corporate finance Eckbo B E (editor) chapter 3 *North-Holland* Amsterdam The Netherlands.

1908. Mikkelson W H, Partch M M, Shah K 1997 Ownership and operating performance of companies that go public *Journal of Financial Economics* vol **44** pp 281 – 307.

1909. Nanda V, Youngkeol Yun 1997 Reputation and financial intermediation: An empirical investigation of the impact of IPO mispricing on underwriter market value *Journal of Financial Intermediation* **6** pp 39 – 63.

1910. Page M J, Reyneke I 1997 The timing and subsequent performance of initial public offerings (IPOs) on the Johannesburg stock exchange *Journal of Business Finance & Accounting* **24** pp 1401 – 1420.

1911. Rajan R G, Servaes H 1997a Analyst following of initial public offerings *Journal of Finance* **52** (2) pp 507 – 529.

1912. Rajan R G, Servaes H 1997b The effect of market conditions on initial public offerings *Journal of Finance* vol **52** (2) pp 507 – 529.

1913. Stehle R 1997 Der size-effekt am Deutschen kapitalmarkt *Zeitschrift für Bankrecht und Bankwirtschaft* **9** pp 237 – 260.

1914. Stehle R, Ehrhardt O 1999 Renditen bei börseneinführungen am Deutschen kapitalmarkt *Zeitschrift für Betriebswirtschaft* **69** pp 1395 – 1422.

1915. Stehle R, Ehrhardt O, Przyborowsky R 2000 Long-run stock performance of German initial public offerings and seasoned equity issues *European Financial Management* **6** pp 173 – 196.

1916. Steib S, Mohan N 1997 The German re-unification, changing capital market conditions, and the performance of German initial public offerings *Quarterly Review of Economics & Finance* **37** (1) pp 115 – 137.

1917. Su D, Fleisher B M 1997 An empirical investigation of underpricing in Chinese IPOs *American Economic Association* New Orleans USA.

1918. Arkebauer J 1998 Going public *Dearborn*.

1919. Asquith D, Jones J, Kieschnick R 1998 Evidence on price stabilization and underpricing in early IPO returns *Journal of Finance* **53** (5) pp 1759 – 1773.

1920. Ausubel L, Cramton P 1998a Demand reduction and inefficiency in multi - unit auctions *Working Paper* University of Maryland USA.

1921. Ausubel L, Cramton P 1998b Auctioning securities *Working Paper* University of Maryland USA.

1922. Black B S, Gilson R J 1998 Venture capital and the structure of capital markets: Banks versus stock markets *Journal of Financial Economics* **47** pp 243 – 277.

1923. Daniel K, Hirshleifer D, Subrahmanyam A 1998 Investor psychology and security market under- and over- reactions *Journal of Finance* **53** pp 1839 – 1886.

1924. Goergen M 1998 Corporate governance and financial performance *Edward Elgar Publishing Ltd* Cheltenham UK.

1925. Goergen M, Renneboog L 2002 Prediction of control concentration in German and UK IPOs *in* Renneboog L, McCahery J, Moerland P, Raaijmakers T (editors) Convergence and diversity of corporate governance regimes and capital markets *Oxford University Press* Oxford UK.

1926. Helwege J, Kleiman P 1998 The pricing of high-yield debt IPOs *Journal of Fixed Income* **8** pp 61 – 68.

1927. Helwege J, Liang N 2001 Initial public offerings in hot and cold markets *Working Paper* Ohio State University USA.

1928. Helwege J, Liang N 2004 Initial public offerings in hot and cold markets *Journal of Financial and Quantitative Analysis* vol **39** pp 541 – 569.

1929. Kahn C, Winton A 1998 Ownership structure, speculation, and shareholder intervention *Journal of Finance* **53** (1) pp 99 – 129.

1930. Malvey P, Archibald C 1998 Uniform price auctions: Update of the treasury experience *Report of the US Department of the Treasury* US Government USA.

1931. Mello A, Parsons J 1998 Going public and the ownership structure of the firm *Journal of Financial Economics* **49** pp 79 – 109.

1932. Mok H M K, Hui Y V 1998 Underpricing and aftermarket performance of IPOs in Shanghai, China *Pacific-Basin Finance Journal* **6** (5) pp 453 – 474.

1933. Pagano M, Panetta F, Zingales L 1998 Why do companies go public: An empirical analysis *Journal of Finance* vol **53** (1) pp 27 – 64.

1934. Pagano M, Röell A 1998 The choice of stock ownership structure: Agency costs, monitoring and the decision to go public *The Quarterly Journal of Economics (February)* pp 187 – 225.

1935. Paudyal K, Saadouni B, Briston R J 1998 Privatisation initial public offerings in Malaysia: Initial premium and long-term performance *Pacific-Basin Finance Journal* **6** (5) pp 427 – 451.

1936. Poon W P H, Firth M, Fung H G 1998 Asset pricing in segmented capital markets: Preliminary evidence from China-domiciled companies *Pacific-Basin Finance Journal* **6** pp 307 – 319.

1937. Rangan S 1998 Earnings management and the performances of seasoned equity offerings *Journal of Financial Economics* vol **13** pp 1987 – 2221.

1938. Reese W A 1998 IPO underpricing, trading volume, and investor interest Working Paper Tulane University.

1939. Sapusek A 1998 Empirical evidence on the long-run performance of initial public offerings in Germany *Banque & Marchés* **34** pp 38 – 45.

1940. Stoughton N, Zechner J 1998 IPO-mechanisms, monitoring and ownership structure *Journal of Financial Economics* **49** (1) pp 45 – 77.

1941. Taylor S, Whittred G 1998 Security design and the allocation of voting rights: Evidence from the Australian IPO market *Journal of Corporate Finance* vol **4** pp 107 – 131.

1942. Theoh S H, Welch I, Wong T J 1998a Earnings management and the underperformance of seasoned equity offerings *Journal of Financial Economics* vol **50** pp 63 – 99.

1943. Theoh S H, Welch I, Wong T 1998b Earnings management and the long-run market performance of initial public offerings *Journal of Finance* **53** (6) pp 1935 – 1974.

1944. Ansotegui O C, Fabregat J 1999 Initial public offerings on the Spanish stock exchange *Working Paper* Escuela Superior de Administración y Dirección de Empresas (ESADE) Spain.

1945. Arcas M, Ruiz F 1999 Las ofertas públicas de venta (OPVs) de acciones en el mercado bursatil Espaňol: Privatizationes frente a no privatizaciones *Cuadernos de Economia y Direccion de la Empresa* **4** pp 325 – 347.

1946. Baker M, Gompers P A 1999 An analysis of executive compensation, ownership, and control in closely held firms *Working Paper* Harvard Business School Harvard University.

1947. Baker M, Wurgler J 2000 The equity share in new issues and aggregate stock returns *The Journal of Finance* **55** pp 2219 – 2257.

1948. Baker M, Gompers P A 2001 The determinants of board structure at the initial public offering *Working Paper* Harvard Business School Harvard University USA.

1949. Baker H K, Nofsinger J R, Weaver D G 2002 International cross-listing and visibility *Journal of Financial and Quantitative Analysis* **37** pp 495 – 521.

1950. Brown E 1999 Long-run performance analysis of a new sample of UK IPOs *Working Paper* University of Edinburgh UK.

1951. Cornelli F, Goldreich D 1999 Book building and strategic allocation *IFA Working Paper no 286* http://ssrn.com/abstract=157352 .

1952. Cornelli F, Goldreich D 2001 Book-building and strategic allocations *Journal of Finance* **56** (6) pp 2337 – 2370.

1953. Cornelli F, Goldreich D 2002 Book building: How informative is the order book? *Unpublished London Business School Working Paper* London UK.

1954. Cornelli F, Goldreich D 2003 Book building: How informative is the order book? *Journal of Finance* **58** pp 1415 – 1444.

1955. Cornelli F, Goldreich G, Ljungqvist A 2006 Investor sentiment and pre-IPO markets *Journal of Finance* vol **61** issue 3 pp 1187 – 1216.

1956. Field L C 1999 Control considerations of newly public firms: The implementation of anti-takeover provisions and dual class shares before the IPO *Working Paper* Pennsylvania State University USA.

1957. Field L C, Hanka G 2001 The expiration of IPO share lockups *Journal of Finance* **56** pp 471 – 500.

1958. Field L C, Sheehan D P 2001 Underpricing in IPOs: Control, monitoring, or liquidity? *Unpublished Penn State Working Paper* USA.

1959. Field L C, Karpoff J 2002 Takeover defenses of IPO firms *Journal of Finance* **57** pp 1857 – 1890.

1960. Field L C, Sheehan D P 2002 IPO underpricing and outside block holdings *Working Paper* Penn State University USA www.ssrn.com .

1961. Field L C, Lowry M 2009 Institutional versus individual investment in IPOs: The importance of firm fundamentals *Journal of Financial and Quantitative Analysis* **44** pp 489 – 516.

1962. Kandel S, Sarig O, Wohl A 1999 The demand for stocks: An analysis of IPO auctions *Review of Financial Studies* **12** pp 227 – 248.

1963. Khurshed A, Mudambi R, Goergen M 1999 On the long-run performance of IPOs *Working Paper* ISMA Centre University of Reading UK.

1964. Khurshed A, Mudambi R 2002 The short-run price performance of investment trust IPOs on the UK main market *Applied Financial Economics* **12** pp 697 – 706.

1965. Krigman L, Shaw W H, Womack K L 1999 The persistence of IPO mispricing and the predictive power of flipping *Journal of Finance* **54** (3) pp 1015 – 1044.

1966. Krigman L, Shaw W, Womack K 2001 Why do firms switch underwriters? *Journal of Financial Economics* **60** (2-3) pp 245 – 284.

1967. Lyon J D, Barber B M, Tsai C - L 1999 Improved methods for tests of long-run abnormal stock returns *Journal of Finance* **54** (1) pp 165 – 201.

1968. Olson J F, Nelson D W 1999 What makes a company a good candidate for going public? Criteria, advantages, and disadvantages related to going public *American Law Institute-American Bar Association Continuing Legal Education* 7/1999 pp 591 – 593.

1969. Short H, Keasey K 1999 Managerial ownership and the performance of firms: Evidence from the UK *Journal of Corporate Finance* vol **5** pp 79 – 101.

1970. Stulz R M 1999 Globalization, corporate finance, and the cost of capital *Journal of Applied Corporate Finance* **12** pp 8 – 25.

1971. Stulz R M 2005 The limits of financial globalization *Journal of Finance* **60** pp 1595 – 1638.

1972. Stulz R M 2009 Securities laws, disclosure, and national capital markets in the age of financial globalization *Journal of Accounting Research* **47** pp 349 – 390.

1973. Subramanyam A, Titman Sh 1999 The going public decision and the development of financial markets *Journal of Finance* **54** pp 1045 – 1082.

1974. Thomas J, Zhang X 1999 Identifying unexpected accruals: A comparison of current approaches *Working Paper* Columbia University New York USA www.ssrn.com .

1975. Arosio R, Giudici G, Paleari S 2000 What drives the initial market performance of Italian IPOs? An empirical investigation on underpricing and price support *Working Paper* University of Bergamo Italy.

1976. Arosio R, Giudici G, Paleari S 2001 Why do (or did?) Internet-stock IPOs leave so much money on the table? *Politecnico di Milano Working Paper* Milan Italy.

1977. Aussenegg W 2000 Privatization versus private sector initial public offerings in Poland *Multinational Finance Journal* **4** (1-2) pp 69 – 99.

1978. Berkman H, Bradbury M E, Ferguson J 2000 The accuracy of price-earnings and discounted cash flow methods of IPO equity valuation *Journal of International Financial Management and Accounting* **11** (2) pp 71 – 83.

1979. Binmore K, Swierzbinski J 2000 Treasury auctions: Uniform or discriminatory? *Review of Economic Design* **5** pp 387 – 410.

1980. Boehmer E, Fishe R P H 2000 Do underwriters encourage stock flipping? A new explanation for the under-pricing of IPOs *Working Paper* University of Miami USA.

1981. Boehmer E, Fishe P R 2001 Equilibrium rationing in initial public offerings of equity *Unpublished University of Miami Working Paper* University of Miami USA.

1982. Boehmer E, Fishe R P H 2005 Who receives IPO allocations? An analysis of 'regular' investors *Working Paper* American Finance Association (AFA) 2005 Meeting Philadelphia.

1983. Brailsford T, Heaney R, Powell J G, Shi J 2000 Hot and cold IPO markets: Identification using a regime switching model *Multinational Finance Journal* **4** (1/2) pp 35 – 68.

1984. Brailsford T, Heaney R, Shi J 2004 Modeling the behavior of the new issue market *International Review of Financial Analysis* **13** (2) pp 119 – 132.

1985. Chen G M, Firth M, Kim J 2000 The post-issue market performance of IPOs in China's new stock markets *Review of Quantitative Finance and Accounting* **14** pp 319 – 339.

1986. D'Mello R, Ferris S P 2000 The information effects of analyst activity at the announcement of new equity issues *Financial Management* **29** (1) pp 78 – 95.

1987. Draho J 2000 The timing of initial public offerings: A real option approach SSRN: 271351.

1988. Dunbar C 2000 Factors affecting investment bank initial public offering market share *Journal of Financial Economics* **55** pp 3 – 41.

1989. Dunbar C G, Foerster S 2008 Second time lucky? Withdrawn IPOs that return to the market *Journal of Financial Economics* **87** pp 610 – 635.

1990. Duque J, Almeida M 2000 Ownership structure and initial public offerings in small economies – The case of Portugal *Working Paper* Technical University of Lisbon Portugal.

1991. Eckbo B E, Masulis R W, Norli O 2000 Seasoned public offerings: Resolution of the new issues puzzle *Journal of Financial Economics* **56** (2) pp 251 – 291.

1992. Eckbo E, Norli O 2001 Leverage, liquidity, and long-run IPO returns *Unpublished Dartmouth Working Paper*.

1993. Eckbo B E, Norli Ø 2002 Liquidity risk, leverage, and long-run IPO returns *Dartmouth Tuck School of Business Working Paper* USA.

1994. Eckbo B, Norli Ø 2005 Liquidity risk, leverage and long-run IPO returns *Journal of Corporate Finance* **11** pp 1 – 35.

1995. Eckbo B E 2008 Handbook of corporate finance vol **1** Handbook of Finance Series *Elsevier / North-Holland* The Netherlands.

1996. Ellis K, Michaely R, O'Hara M 2000 When the underwriter is the market maker: An examination of trading in the IPO aftermarket *Journal of Finance* **55** no 3 pp 1039 – 1074.

1997. Ellis K, Michaely R, O'Hara M 2002 The making of a dealer market: From entry to equilibrium in the trading of Nasdaq stocks *Journal of Finance* **57** no 5 pp 2289 – 2316.

1998. Fabrizio S 2000 Asymmetric information and underpricing of IPOs: The role of the underwriter, the Prospectus and the analysts – An empirical examination of the Italian situation *Economic Research Department Italian Securities Exchange Commission* Rome Italy.

1999. Foerster B 2000 Securities industry association's capital markets handbook *2nd edition Aspen Publishers* Aspen Colorado USA.

2000. Gilbert R, Klemperer P 2000 An equilibrium theory of rationing *Rand Journal of Economics* **31** pp 1 – 21.

2001. Jain B, Kini O 2000 Does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance and Accounting* **27** (9-10) pp 1139 – 1176.

2002. Kiymaz H 2000 The initial and after market performance of IPOs in an emerging market: Evidence from Istanbul stock exchange *Journal of Multinational Financial Management* **10** (2) pp 213 – 227 UK.

2003. Koskie J L, Michaely R 2000 Prices, liquidity, and the information content of trades *Review of Financial Studies* **13** pp 659 – 696.

2004. Lewis C, Seward J, Foster-Johnson L 2000 Busted IPOs and windows of misopportunity *Working Paper* Dartmouth College.

2005. Löffler T 2000 Investorenunsicherheit bei börsenerstemissionen *Finanzmarkt und Portfolio Management* **14** pp 57 – 75.

2006. Reuschenbach H 2000 Der börsengang der Deutschen Telekom AG *in* Volk G Going public – der gang an die börse *Beratung, Erfahrung, Begleitung* 3rd edition Stuttgart Germany pp 159 – 187.

2007. Sapusek A 2000 Benchmark - sensitivity of IPO-long-run performance: An empirical study for Germany *Schmalenbach Business Review* **52** pp 374 – 405.

2008. Schultz P 2000 The timing of initial public offerings *Unpublished University of Notre Dame Working Paper*.

2009. Schultz P 2001 Pseudo market timing and the long-run underperformance of IPOs *Unpublished University of Notre Dame Working Paper*.

2010. Schultz P, Zaman M 2001 Do the individuals closest to internet firms believe they are overvalued? *Journal of Financial Economics* **59** (3) pp 347 – 381.

2011. Sinclair G 2000 Internet direct public offerings: New opportunities for small business capital finance *Manitoba Law Journal* vol **27** no 3.

2012. Sherman A E 2000 IPOs and long-term relationships: An advantage of book building *Review Financial Studies* **13** (3) pp 697 – 714.

2013. Sherman A 2001 Global trends in IPO methods: Book building versus auctions *Unpublished University of Notre Dame Working Paper*.

2014. Sherman A E, Titman S 2002 Building the IPO order book: Under-pricing and participation limits with costly information *Journal of Financial Economics* **65** (1) pp 3 – 29.

2015. Sherman A E 2003 Global trends in IPO methods: Book-building vs auctions *Working Paper* University of Notre-Dame.

2016. Smart S B, Zutter C J 2000 Control as a motivation for underpricing: A comparison of dual- and single- class IPOs *Working Paper* Indiana University USA.

2017. Stehle R, Ehrhardt O, Przyborowsky R 2000 Long-run stock performance of German initial public offerings and seasoned equity issues *European Financial Management* **6** (2) pp 173 – 196.

2018. Westerholm J 2000 Essays on initial public offerings – Empirical findings from the Helsinki stock exchange *Research Reports 48* Hanken Swedish School of Economics and Business Administration Stockholm Sweden.

2019. Von Eije J H, de Witte M C, van der Zwaan A H 2000 IPO-related organizational change and long-term performance *Faculty of Management and Organization* University of Groningen The Netherlands pp 1 - 18 http://som.rug.nl/ .

2020. Bernardo A E, Welch I 2001 On the evolution of overconfidence and entrepreneurs *Journal of Economics and Management Strategy* **10** pp 301 – 330.

2021. Bradley D J, Jordan B D, Ha-Chin Yi, Roten I C 2001 Venture capital and IPO lockup expiration: An empirical analysis *Journal of financial Research* **24** pp 465 – 494.

2022. Bradley D J, Jordan B 2002 Partial adjustment to public information and IPO underpricing *Journal of Financial and Quantitative Analysis* **37** pp 595 – 616.

2023. Bradley D J, Jordan B, Ritter J R 2003 The quiet period goes out with a bang *Journal of Finance* **58** pp 1 – 36.

2024. Bradley D J, Jordan B, Ritter J 2008a Analyst behavior following IPOs: The 'bubble period' evidence *Review of Financial Studies* **21** (1) pp 101 – 133.

2025. Bradley D J, Chan K, Kim J, Singh A 2008b Are there long-run implications of analysts' coverage for IPOs? *Journal of Banking and Finance* **32** (6) pp 1120 – 1132.

2026. Busaba W Y, Benveniste L M, Guo R J 2001 The option to withdraw IPOs during the premarket: Empirical analysis *Journal of Financial Economics* **60** pp 73 – 102.

2027. Certo S T, Covin J G, Daily C M, Dalton D R 2001 Wealth and the effects of founder management among IPO-stage new ventures *Strategic Management Journal* **22** pp 641 – 658.

2028. Chan K, Wang J, Wei K C 2001 Underpricing and long-term performance of IPOs in China *Journal of Corporate Finance* **183** pp 1 – 22.

2029. Cooney J W, Singh A K, Carter R B, Dark F H 2001 IPO initial returns and underwriter reputation: Has the inverse relationship flipped in the 1990s? *University of Kentucky Case Western Reserve University, Iowa State University Working Paper* USA.

2030. Daines R, Klausner M 2001 Do IPO charters maximize firm value? Antitakeover protection in IPOs *Journal of Law, Economics and Organization* vol **17** pp 83 – 120.

2031. Danielsen B R, Sorescu S M 2001 Why do option introductions depress stock prices? An empirical study of diminishing short-sale constraints *Journal of Financial and Quantitative Analysis* **36** pp 451 – 484.

2032. Degeorge F, Derrien F 2001a IPO Performance and earnings expectations: Some French evidence *Working Paper* HEC Paris France.

2033. Degeorge F, Derrien F 2001b Les déterminants de la performance à long terme des introductions en bourse : Le cas français *Banque & Marchés* **55** pp 8 – 18.

2034. Derrien F, Womack K L 2002 Auctions vs book building and the control of underpricing in hot IPO markets *Review of Financial Studies*.

2035. Derrien F 2005 IPO pricing in hot market conditions: Who leaves money on the table? *Journal of Finance* **60** (1) pp 487 – 521.

2036. Derrien F, Kecskés A 2006 The initial public offerings of listed firms *Journal of Finance*.

2037. Derrien F 2007 Currying favor to win IPO mandates *Working Paper AFA Conference* Chicago USA.

2038. DuCharme L L, Rajgopal S, Sefcik S E 2001 Why was Internet IPO underpricing so severe? *University of Washington Working Paper* Washington DC USA.

2039. Francis B B, Hasan I 2001 The underpricing of venture and non-venture capital IPOs: An empirical investigation *Journal of Financial Services Research* **19** pp 93 – 113.

2040. Gerke W, Fleischer J 2001 Die performance der börsengänge am neuen markt *Zeitschrift für betriebswirtschaftliche Forschung* **53** pp 827 – 839.

2041. Habib M, Ljungqvist A 2001 Underpricing and entrepreneurial wealth losses: Theory and evidence *Review of Financial Studies* **14** pp 433 – 458.

2042. Hahn T, Ligon J A 2004 Liquidity and initial public offering underpricing *College of Business and Economics* University of Idaho USA.

2043. Hansen R S 2001 Do investment banks compete in IPOs?: The advent of the "7% plus contract" *Journal of Financial Economics* **59** pp 313 – 346.

2044. Heaton J B 2001 Managerial optimism and corporate finance *Unpublished Bartlet Beck Working Paper* Chicago Illinois USA.

2045. Hoffmann-Burchardi U 2001 Clustering of initial public offerings, information revelation and underpricing *European Economic Review* **45** (2) pp 353 – 383.

2046. Holmén M, Högfeldt P 2001 A law and finance analysis of initial public offerings *Working Paper* Stockholm University Stockholm Sweden.

2047. Houge T, Loughran T, Suchanek G, Yan X 2001 Divergence of opinions, uncertainty, and the quality of initial public offerings *Financial Management* **30** (4) pp 5 – 23.

2048. Jakobsen J B, Sørensen O 2001 Decomposing and testing long-term returns: An application on Danish IPOs *European Financial Management* **7** pp 393 – 417.

2049. Jenkinson T, Ljungqvist A 2001 Going public, the theory and evidence on how companies raise equity finance *2nd edition University of Oxford Press* New York USA.

2050. Jenkinson T, Jones H 2004 Bids and allocation in European IPO book-building *Journal of Finance* **59** (5) pp 2309 – 2339.

2051. Jenkinson T, Morrison A, Wilhelm W 2006 Why are European IPOs so rarely prices outside the indicative price range? *Journal of Financial Economics* **80** pp 185 – 209.

2052. Jenkinson T, Jones H 2007 The economics of IPO stabilization, syndicates and naked shorts *European Financial Management* **13** pp 616 – 642.

2053. Killian L, Smith K, Smith W 2001 IPOs for everyone: The 12 secrets of investing in IPOs *John Wiley & Sons* Indiana USA.

2054. Lowry M, Schwert G W 2001 Biases in the IPO pricing process *Working Paper* Penn State University USA.

2055. Lowry M, Schwert G W 2002 IPO market cycles: Bubbles or sequential learning? *Journal of Finance* **57** (3) pp 1171 – 1200.

2056. Lowry M, Shu S 2002 Litigation risk and IPO under-pricing *Journal of Financial Economics* **65** (3) pp 309 – 335.

2057. Lowry M 2003 Why does IPO volume fluctuate so much? *Journal of Financial Economics* **67** pp 3 – 40.

2058. Mager F B 2001 Die performance von unternehmen vor und nach dem börsengang *Wiesbaden* Germany.

2059. Maksimovic V, Pichler P 2001 Technological innovation and initial public offerings *Review of Financial Studies* **14** pp 459 – 494.

2060. Purnanandam A K, Swaminathan B 2001 Are IPOs underpriced? *Unpublished Cornell University Working Paper*.

2061. Rehkugler H, Schenek A 2001 Underpricing oder overpricing? IPOs am Deutschen kapitalmarkt *in* Wirtz B W, Salzer E IPO - management – strukturen und erfolgsfaktoren Wiesbaden Germany pp 277 – 308.

2062. Schatt A, Roy T 2001 Modification de la structure de propriété et valorisation des sociétés introduites en bourse *Banque et Marchés* vol **55** pp 19 – 30.

2063. Schatt A, Broye G 2003 Pourquoi certains actionnaires cèdent plus d’actions que d’autres lors de l’introduction en bourse *Banque et Marchés* vol **65** pp 29 – 35.

2064. Sentis P 2001 Performances opérationnelles et boursières des sociétés introduites en bourse: Le cas français 1991-1995 *Finance* vol **22** (1) pp 87 – 118 France.

2065. Sentis P 2002 Initial public offerings: the good, the bad and the liars *Working Paper* University of Montpellier France.

2066. Sentis P 2004 Introduction en bourse, une approche internationale *Economica* Paris France.

2067. Severin E 2001 Ownership structure and the performance of firms: Evidence from France *European Journal of Economic and Social Systems* vol **15** (2) pp 85 – 107.

2068. Stoughton N M, Wong K P, Zechner J 2001 IPOs and product quality *Journal of Business* **74** pp 375 – 408.

2069. Torstila S 2001 What determines IPO gross spreads in Europe? *European Financial Management* **7** (4) pp 523 – 541.

2070. Torstila S 2003 The clustering of IPO gross spreads: International evidence *Journal of Financial and Quantitative Analysis* **38** (3) pp 673 – 694.

2071. Van Bommel J, Vermaelen Th 2001 Post-IPO capital expenditures and market feedback *Journal of Banking and Finance*.

2072. Van Frederikslust R A I, van der Geest R A 2001 Initial returns and long-run performance of private equity-backed initial public offerings on the Amsterdam stock exchange *Working Paper* Rotterdam School of Management The Netherlands.

2073. Vayanos D 2001 Strategic trading in a dynamic noisy market *Journal of Finance* **56** pp 131 – 171.

2074. Zhang D 2004 Why do IPO underwriters allocate extra shares when they expect to buy them back? *Journal of Financial and Quantitative Analysis* **39** (3) pp 571 – 594.

2075. Biais B, Bossaerts P, Rochet J C 2002 An optimal IPO mechanism *Review of Economic Studies* **69** pp 117 – 146.

2076. Biais B, Faugeron-Crouzet A M 2002 IPO auctions: English, Dutch, ... French and Internet *Journal of Financial Intermediation* **11** (1) pp 9 – 36.

2077. Blondell D, Hoang P, Powell J G, Shi J 2002 Detection of financial time series turning points: A new CUSUM approach applied to IPO cycles *Review of Quantitative Finance and Accounting* **18** (3) pp 293 – 315.

2078. Brau J C, Francis B, Kohers N 2002 The choice of IPO versus takeover: Empirical evidence *Journal of Business*.

2079. Brounen D, Eichholtz P M A 2002 Initial public offerings: Evidence from the British, Swedish and French property share markets *Journal of Real Estate Finance and Economics* **24** (1) pp 103 – 117.

2080. Bulow J, Klemperer P 2002 Prices and the winners curse *RAND Journal of Economics* **33** pp 1 – 21.

2081. Cheng L T W, Mak B S C, Chan K C 2002 Strategic share allocation, information content of pre-listing characteristics, listing-day trading activities, and under-pricings of IPOs *Working Paper Hong Kong Polytechnic University* Hong Kong P R China.

2082. Deloof M, de Maeseneire W, Inghelbrecht K 2002 The valuation of IPOs by investment banks and the stock market: Empirical evidence *Working Paper* Faculty of Applied Economics University of Antwerp Ghent University Belgium pp 1 – 29.

2083. Easton P, Taylor G, Shroff P, Sougiannis T 2002 Using forecasts of earnings to simultaneously estimate growth and the rate of return on equity investments *Journal of Accounting Research* **40** pp 657 – 676.

2084. Easton P 2004 PE rations, PEG rations, and estimating the implied expected rate of return on equity capital *Accounting Review* **79** pp 73 – 95.

2085. Easton P 2006 Use of forecasts of earnings to estimate and compare cost of capital across regimes *Journal of Business, Finance, and Accounting* **33** pp 374 – 394.

2086. Easton P, Sommers G 2007 Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts *Journal of Accounting Research* **45** (5) pp 983 – 1015.

2087. Faugeron-Crouzet A M, Ginglinger E 2002 Introductions en bourse, signal et émissions d'actions nouvelles sur le second marché français *Finance* **22** (2) pp 51 – 74.

2088. Filatotchev I, Bishop K 2002 Board composition, share ownership, and 'underpricing' of UK IPO firms *Strategic Management Journal* **23** pp 941 – 955.

2089. Fishe R P H 2002 How stock flippers affect IPO pricing and stabilization *Journal Financial and Quantitative Analysis* **37** pp 319 – 320.

2090. Gao Y, Mao C, Zhong R 2002 Divergence of opinion and IPO long-term performance *Working Paper* City University of New-York NY USA.

2091. Giudici G, Roosenboom P 2002 Pricing initial public offerings in Europe: What has Changed? *Working Paper* Erasmus University Germany.

2092. Giudici G, Roosenboom P 2005 Pricing initial public offerings on 'new' European stock markets *Working Paper* Università degli Studi di Bergamo and Tilburg University Germany.

2093. Houge T, Loughran T, Suchanek G, Xuemin Yan 2002 Divergence of opinion, uncertainty, and the quality of initial public offerings *Financial Management* **30** pp 5 – 23.

2094. Kim K, Kitsabunnarat P, Nofsinger J 2002 Ownership control and operating performance in an emerging market: Evidence from Thai IPO firms *Journal of Corporate Finance* vol **156** pp 1 – 27.

2095. Kiss I, Stehle R 2002 Underpricing and long-term performance of initial public offerings at Germany's neuer markt, 1997 – 2001 *Working Paper* Humboldt-University Berlin Germany.

2096. Kutsuna K, Okamura H, Cowling M 2002 Ownership structure pre and post-IPOs and the operating performance of JASDAQ companies *Pacific-Basin Finance Journal* vol **10** pp 163 – 181.

2097. Logue D E, Rogalski R J, Seward J K, Foster-Johnson L 2002 What is special about the roles of underwriter reputation and market activities in initial public offerings? *Journal of Business* **75** pp 213 – 243.

2098. Martimort D 2002 Multi unit auctions: A survey of recent literature *Revue d'Economie Politique* **112** pp 303 – 348.

2099. Moerland P W 2002 Corporate supervision in the Netherlands *in* Renneboog L, McCahery J, Moerland P, Raaijmakers T (editors) Convergence and diversity of corporate governance regimes and capital markets *Oxford University Press* Oxford UK.

2100. NASD Regulation 2002 NASD regulation charges Credit Suisse First Boston with siphoning tens of millions of dollars of customers' profits in exchange for "hot" IPO shares http://www.nasdr.com/news .

2101. Schiereck D, Wagner Ch 2002 Kursentwicklung von börsenneulingen am neuen markt und die reputation des konsortialführers *Zeitschrift für Betriebswirtschaft* **72** pp 823 – 845.

2102. Schuster J A 2002 The cross-section of European IPO returns *Working Paper* London School of Economics and Political Science London UK.

2103. Schuster J A 2003 IPOs: Insights from seven European countries *Working Paper* London School of Economics and Political Science London UK.

2104. Wang J, Zender J 2002 Auctioning divisible goods *Economic Theory* **19** pp 673 – 705.

2105. Xie F 2002 The endogeneity of IPOs being underwritten by prestigious underwriters SSRN: 352160.

2106. Baginski S, Wahlen J 2003 Residual income risk, intrinsic values and share prices *Accounting Review* **78** pp 327 – 351.

2107. Barondes R D R, Nyce C, Sanger G C 2003 Law firm prestige and performance in IPOs: Underwriters' counsel as gatekeeper or turnstile *Contracting and Organizations Research Institute* University of Missouri Columbia Missouri USA.

2108. Bartlett J, Shulman Z 2003 IPO reform: Some immodest proposals *Journal of Private Equity* Summer pp 1 – 11.

2109. Binay M, Pirinsky C 2003 Institutional participation in IPOs *Working Paper* Koc University Istanbul Turkey.

2110. Bourjade S 2003, 2008 Strategic price discounting and rationing in uniform price auctions *Toulouse Business School* Ecole Superieure de Commerce de Toulouse France *MPRA Paper no 7260* Munich University Munich Germany pp 1 – 32
http://mpra.ub.uni-muenchen.de/7260/ .

2111. Clarke J E, Dunbar C, Kahle K M 2003 All-star analyst turnover, investment bank market share, and the performance of initial public offerings *Georgia Tech Working Paper* USA.

2112. Derrien F, Womack K 2003 Auctions versus book building and the control of underpricing in hot IPO markets *Review of Financial Studies* **16** (1) pp 31 – 61.

2113. Doeswijk R Q, Hemmes H S K, Venekamp R 2005 25 years of Dutch IPOs – An examination of frequently cited IPO anomalies within main sectors and during hot and cold issue periods *Working Paper* IRIS Fortis and Erasmus University The Netherlands.

2114. Ellul A, Pagano M 2003 IPO underpricing and after-market liquidity *CSEF Working Paper no 99* University of Salerno Centre for Studies in Economics and Finance Italy.

2115. Goergen M, Khurshed A, McCahery J, Renneboog L 2003 The rise and fall of European new markets: On the short and long-run performance of high-tech initial public offerings *in* McCahery J, Renneboog L (editors) Venture capital contracting and the valuation of high technology firms *Oxford University Press* UK.

2116. Gounopoulos D 2003 The initial and aftermarket performance of IPOs: Evidence from Athens stock exchange *Working Paper* Manchester School of Management Manchester University UK.

2117. Gulati R, Higgins M C 2003 Which ties matter when? The contingent effects of inter-organizational partnerships on IPO success *Strategic Management Journal* **24** pp 127 – 144.

2118. Higgins M C, Gulati R 2003 Getting off to a good start: The effects of upper echelon affiliations on underwriter prestige *Organization Science* **14** pp 244 – 263.

2119. Hoberg G 2003 Strategic underwriting in initial public offerings *Yale University Working Paper* USA.

2120. Hong H, Kubik J D 2003 Analyzing the analysts: Career concerns and biased earnings forecasts *Journal of Finance* **58** pp 313 – 351.

2121. Huyghebaert N, Van Hulle C 2003 Structuring the IPO: Empirical evidence on the primary and secondary portion.

2122. Jelic R, Briston R 2003 Privatization initial public offerings: The Polish experience *European Financial Management* **9** (4) pp 457 – 484.

2123. Kaneko T, Pettway R H 2003 Auctions versus book-building of Japanese IPOs *Pacific-Basin Finance Journal* **11** (4) pp 439 – 462.

2124. Karolyi G A, Stulz R M 2003 Are financial assets priced locally or globally? *in* Handbook of the economics of finance vol **1B** Asset pricing Constantinides G M, Harris M, Stulz R M (editors) *Elsevier North Holland* Amsterdam The Netherlands.

2125. Kraus T, Burghof H P 2003 Post-IPO performance and the exit of venture capitalists *Working Paper Universität München* Germany.

2126. Lemmens G 2003, 2007 The choice of the investment bank when going public *Catholic University of Leuven* Belgium *MPRA Paper no 4692* Munich University Munich Germany pp 1 – 95

http://mpra.ub.uni-muenchen.de/4692/ .

2127. Lemmens G 2004, 2007 Internet & capital raising: The perfect match? *Catholic University of Leuven* Belgium *MPRA Paper no 4691* Munich University Munich Germany pp 1 – 41 http://mpra.ub.uni-muenchen.de/4691/ .

2128. Manigart S, de Maeseneire W 2003 Initial returns: Underpricing or overvaluation? Evidence from EASDAQ and Euro N M *Working Paper* Vierick Leuven Gent Belgium.

2129. Neuhaus S, Schremper R 2003 Langfristige performance von initial public offerings am Deutschen kapitalmarkt *Zeitschrift für Betriebswirtschaft* **73** pp 445 – 472.

2130. Nounis C 2003 Greek initial public offerings, 1994 – 2002 *Working Paper* National and Kapodistrian University of Athens Greece.

2131. Ofek E, Richardson M 2003 Dotcom mania: The rise and fall of Internet stock prices *Journal of Finance* **58** pp 1113 – 1138.

2132. Peristiani S 2003 Evaluating the riskiness of initial public offerings: 1980-2000 *Working Paper Federal Reserve Bank of New* York USA.

2133. Pham P K, Kalev P S, Steen A B 2003 Underpricing, stock allocation, ownership structure and post-listing liquidity of newly listed firms *Journal of Banking and Finance* **27** (5) pp 919 – 947.

2134. Roosenboom P, van der Goot T 2003 Takeover defenses and IPO firm value in the Netherlands *ERIM Report Series Research in Management no ERS-2003-049-F&A* Erasmus Research Institute of Management Rotterdam School of Management Rotterdam School of Economics Erasmus Universiteit Rotterdam University of Amsterdam The Netherlands pp 1 – 51.

2135. Roosenboom P G, van der Goot T, Mertens G 2003 Earnings management and initial public offerings: Evidence from the Netherlands *International Journal of Accounting* **38** (3) pp 243 – 266.

2136. Roosenboom P G, van der Goot T 2005 The effect of ownership and control on market valuation: Evidence from initial public offerings in the Netherlands *International Review of Financial Analysis* **14** (1) pp 43 – 59.

2137. Roosenboom P G J 2007 How do underwriters value IPOs? An empirical analysis of the French IPO market *Contemporary Accounting Research* **24** (4) pp 1217 – 1243.

2138. Smart S, Zutter C J 2003 Control as a motivation for underpricing: A comparison of dual- and single-class IPOs *Journal of Financial Economics* **69** pp 85 – 110.

2139. Van Bommel J, Vermaelen T 2003 Post-IPO capital expenditures and market feedback *Journal of Banking and Finance* **27** (2) pp 275 – 315.

2140. Van der Goot T 2003 Risk, the quality of intermediaries and legal liability in the Netherlands IPO market *International Review of Law & Economics* **23** (2) pp 121 – 140.

2141. Weber J, Willenborg M 2003 Do expert informational intermediaries add value? Evidence from auditors in microcap IPOs *Journal of Accounting Research* **41** pp 681 – 720.

2142. Arugaslan O, Cook D O, Kieschnick R 2004 Monitoring as a motivation for IPO underpricing *The Journal of Finance* **59** pp 2403 – 2420.

2143. Bodnaruk A, Kandel E, Massa M, Simonov A 2004 Shareholder diversification and IPOs *Working Paper* CEPR Discussion Papers Sweden.

2144. Burrowes A, Jones K 2004 Initial public offerings: Evidence from the UK *Managerial Finance* **30** pp 46 – 62.

2145. Cassia L, Giudici G, Paleari S, Redondi R 2004 IPO underpricing in Italy *Applied Financial Economics* **14** (3) pp 179 – 194.

2146. Cassia L, Paleari S, Vismara S 2004 The valuation of firms listed on the Nuovo Mercato: The peer comparables approach *Advances in Financial Economics* **10** pp 113 – 129.

2147. Cassia L, Vismara S 2009 Valuation accuracy and infinity horizon forecast: Empirical evidence from Europe *Journal of International Financial Management and Accounting* **20** (2).

2148. Chahine S 2004a Long-run abnormal return after IPOs and optimistic analysts' forecasts *International Review of Financial Analysis* **13** (1) pp 83 – 103.

2149. Chahine S 2004b Underpricing versus gross spreads: New evidence on the effects of sold shares at the time of IPOs *Working Paper* 2004 European Financial Management Association (EFMA) Meeting Basel Switzerland.

2150. Chiang K C H, Harikumar T 2004 Offering price clusters and underpricing in the US primary market *Applied Financial Economics* **14** pp 809 – 811.

2151. Cliff M, Denis D 2004 Do initial public offering firms purchase analysts' coverage with underpricing? *Journal of Finance* **59** (6) pp 2871 – 2901.

2152. Corwin S A, Harris J H, Lipson M L 2004 The development of secondary market liquidity for NYSE-listed IPOs *Journal of Finance* **59** (5) 2339 – 2373.

2153. Durnev A, Morck R, Yeung B 2004 Value enhancing capital budgeting and firm-specific stock return variation *Journal of Finance* **59** pp 65 – 105.

2154. Fernando C S, Gatchev V A, Spindt P A 2004 Wanna dance? How firms and underwriters choose each other *Tulane University Working Paper*.

2155. Foerster B 2004 Securities industry association's capital markets handbook *5th edition Aspen Publishers* Aspen Colorado USA.

2156. Griffith S J 2004 Spinning and underpricing: A legal and economic analysis of the preferential allocation of shares in initial public offerings *Brook Law Review* **69** pp 583 – 659.

2157. Ganor M 2004 A proposal to restrict manipulative strategy in auction IPOs *unpublished manuscript*

http://ssrn.com/abstract=572243 .

2158. Hahn T, Ligon J A 2004 Liquidity and initial public offering underpricing *Working Paper* College of Business and Economics University of Idaho University of Alabama USA.

2159. Hao Q 2004 Laddering in initial public offerings *Working Paper* University of Florida Miami USA.

2160. Hoberg G 2004 Strategic underwriting in initial public offers *Yale ICF Working Paper no 04-07* Yale University USA.

2161. Kooli M, Suret J M 2004 The aftermarket performance of initial public offerings in Canada *Journal of Multinational Financial Management* **14** pp 47 – 66.

2162. Kremer I, Nyborg K 2004a Divisible good auctions – The role of allocation rules *Rand Journal of Economics* **35** pp 147 – 159.

2163. Kremer I, Nyborg K 2004b Underpricing and market power in uniform price auctions *Review of Financial Studies* **17** pp 849 – 877.

2164. Kutsuma K, Smith R 2004 Why does book-building drive out auction methods of IPO issuance? Evidence from *Japan Review of Financial Studies* **17** (4) pp 1129 – 1166.

2165. Lamont O 2004 Short sale constraints and overpricing *in* Fabozzi F J (editors) The theory and practice of short selling: Risks, rewards, strategies *John Wiley & Sons* USA.

2166. Lee M, Wahal S 2004 Grandstanding, certification and the underpricing of venture capital backed IPOs *Journal of Financial Economics* **73** pp 375 – 407.

2167. Levy E R 2004 The law and economics of IPO favoritism and regulatory spin *Sw U L Review* **33** pp 185 – 203.

2168. Lubig D 2004 Underpricing und langfristige performance der IPOs am neuen markt *Frankfurt am Main* Germany.

2169. Mayhew S, Mihov V 2004 How do exchanges select stocks for option listing *Journal of Finance* **59** pp 447 – 471.

2170. Mayhew S, Mihov V 2005 Short sale constraints, overvaluation, and the introduction of options *Working Paper Texas Christian University Texas* USA.

2171. Mira G 2004 A proposal to restrict manipulative strategy in auction IPO's *Working Paper Series* Berkeley Program in Law and Economics University of California Berkeley USA pp 1 – 23 http://www.escholarship.org/uc/item/4sg5191h .

2172. Peggy M L, Wahal S 2004 Grandstanding, certification and the underpricing of venture capital backed IPOs *Journal of Financial Economics* **73** pp 375 – 407.

2173. Pollock T G, Porac J F, Wade J B 2004 Constructing deal networks: Brokers as network "architects" in the US IPO market and other examples *The Academy of Management Review* **29** pp 50 – 72.

2174. Pollock T G, Chen G, Jackson E M, Hambrick D 2005 Symbolic certification or substantive resources? Over tallying the signalling value of IPOs' prestigious affiliates *in Academy of Management Annual Meeting* Honolulu HI USA.

2175. Pritsker M 2004 Large investors: Implications for equilibrium asset returns, shock absorption and liquidity *The Federal Reserve Board* USA.

2176. Pritsker M 2004, 2005 A fully-rational liquidity-based theory of IPO underpricing and underperformance *Board of Governors Federal Reserve System* Washington USA pp 1 – 55.

2177. Pritsker M 2006 A fully-rational liquidity-based theory of IPO underpricing and underperformance *Staff Working Paper 2006-12* Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs Federal Reserve Board Washington DC USA pp 1 – 69.

2178. Purnanandam A K, Swaminathan B 2004 Are IPOs really underpriced *Review of Financial Studies* **17** (3) pp 811 – 848.

2179. Rath N, Tebroke H-J, Tietze Ch 2004 Marktstimmung" zur erklärung der langfristigen kursentwicklung von aktien nach dem börsengang *Zeitschrift für Bankrecht und Bankwirtschaft* **16** pp 269 – 352.

2180. Reuter J 2004 Are IPO allocations for sale? Evidence from the mutual fund industry *University of Oregon Working Paper* USA.

2181. Rice D T 2004 The nanotech IPO *Nanotechnology L and Bus* **1** pp 315 – 322.

2182. Rice D T 2006 When the nanotech company goes public: Using the electronic Dutch auction *Nanotechnology L and Bus* **3** pp 185 – 188.

2183. Rindermann G 2004 The performance of venture-backed IPOs on Europe's new stock markets: Evidence from France, Germany and the UK *Advances in Financial Economics* **10** pp 231 – 294.

2184. Sanders W G, Boivie S 2004 Sorting things out: Valuation of new firms in uncertain markets *Strategic Management Journal* **25** pp 167 – 186.

2185. Schenone C 2004 The effect of bank relationships on the firm's cost of equity in its IPO *Journal of Finance* **59** (6) pp 2903 – 2958.

2186. Serve S 2004 The operating performance of French IPO firms *THEMA Universite de Cergy-Pontoise* Cedex France.

2187. Alti A 2005 IPO market timing *Review of Financial Studies* **18** (3) pp 1105 – 1138.

2188. Alti A 2006 How persistent is the impact of market timing on capital structure *Journal of Finance* **61** pp 1681 – 1710.

2189. Alvarez S, Gonzalez V 2005 Long-run performance of initial public offerings in the Spanish capital market *Journal of Business Finance and Accounting* **32** (1-2) pp 325 – 350.

2190. Benninga S, Helmantel M, Sarig O 2005 The timing of initial public offerings *Journal of Financial Economics* **75** (1) pp 115 – 132.

2191. Berg J E, Neumann G R, Rietz T A 2005 Searching for Google's value: Using prediction markets to forecast market capitalization prior to an initial public offering *Working Paper* University of Iowa USA.

2192. Butler A W, Grullon G, Weston J P 2005 Stock market liquidity and the cost of issuing equity *Journal of Financial and Quantitative Analysis* **40** (2) pp 331 – 348.

2193. Choo E 2005 Note, Going Dutch: The Google IPO *Berkeley Technology L Journal* **20** p 405.

2194. Corwin Sh A, Schultz P 2005 The role of IPO underwriting syndicates: Pricing, information production, and underwriter competition *The Journal of Finance* **60** (1) pp 443 – 486.

2195. Dolvin S 2005 Venture capitalist certification of IPOs *Venture Capital: An International Journal of Entrepreneurial Finance* **7** pp 131 – 148.

2196. Drobetz W, Kammermann M, Wälchli U 2005 Long-run performance of initial public offerings: The evidence for Switzerland *Schmalenbach Business Review* **57** (3) pp 253 – 275.

2197. Forestieri G 2005 Corporate and investment banking *Egea* Milan Italy.

_2198._ Hess B M 2005 Google, Inc.: The Dutch auction approach as an alternative to firm commitment underwriting *Duque Bus L Journal* **7** pp 90 – 91.

_2199._ Hurt Ch 2005 Moral hazard and the initial public offering *Cardozo Law Review* **26** pp 711 – 769.

_2200._ Hurt Ch 2006 What Google can't tell us about Internet auctions (And what it can) *U Tol Law Review* **37** pp 423 – 424.

_2201._ Jagannathan R, Gao Y R 2005 Are IPOs underpriced? A closer examination *Working Paper* EFMA Conference Milan Italy.

_2202._ Jain B A, Kini O 2005 Industry clustering of initial public offerings *Managerial and Decision Economics* **27** (1) pp 1 – 20.

_2203._ Jaskiewicz P, Gonzàlez V M, Menéndez S, Schiereck D 2005 Long-run IPO performance analysis of German and Spanish family-owned businesses *Family Business Review* **18** (3) pp 179 – 202.

_2204._ Khanna N, Noe T H, Sonti R 2005 Good IPOs draw in bad: Inelastic banking capacity in the primary issue market *Michigan St University Working Paper* USA.

_2205._ Khanna N, Noe T H, Sonti R 2008 Good IPOs draw in bad: Inelastic banking capacity and hot markets *Review of Financial Studies* **21** pp 1873 – 1906.

_2206._ Li M, McInish T H, Wongchoti U 2005a Asymmetric information in the IPO aftermarket *The Financial Review* **40** (2) pp 131 – 153.

_2207._ Li M, Zheng S X, Melancon M V 2005b Underpricing, share retention, and the IPO aftermarket liquidity *International Journal of Managerial Finance* **1** (2) pp 76 – 94.

_2208._ LiCalzi M, Pavan A 2005 Tilting the supply schedule to enhance competition in uniform price auctions *European Economic Review* **49** pp 227 – 250.

_2209._ Malloy C J 2005 The geography of equity analysis *The Journal of Finance* **60** pp 719 – 755.

_2210._ Nounis Ch 2005 The Greek IPO initial returns and the price cap constraints: evidence from the Athens stock exchange (1994-2003) *Working Paper* National and Kapodistrian University of Athens Greece.

_2211._ Pandey A 2005 Initial returns, long run performance, and characteristics of issuers: Differences in Indian IPOs following fixed price and book building processes *Working Paper Indian Institute of Management* India.

_2212._ Parlour C, Rajan U 2005 Rationing in IPOs *Review of Finance* **9** pp 33 – 63.

_2213._ Pastror L, Veronesi P 2005 Rational IPO waves *Journal of Finance* **60** (4) pp 1713 – 1757.

2214. Pastor L, Taylor L, Veronesi P 2009 Entrepreneurial learning, the IPO decision, and the post-IPO drop in firm profitability *Review of Financial Studies* **22** pp 3005 – 3046.

2215. Pons-Sanz V 2005 Who benefits from IPO underpricing? Evidence from hybrid book building offerings *Working Paper* European Central Bank (ECB).

2216. Sherman A 2005 Global trends in IPO methods: Book building versus auctions with endogenous entry *Journal of Financial Economics* **78** (3) pp 615 – 649.

2217. Yan H 2005 Natural selection in financial markets: Does it work? *Thesis* London School of Economics and Political Science London UK.

2218. Anand A I 2006 Is the Dutch auction IPO a good idea? *Stanford Journal Law Business and Finance* **11** pp 233 – 238.

2219. Aussenegg W 2006 Underpricing and the aftermarket performance of initial public offerings: the case of Austria *in* Gregoriou G N (editor) Initial public offerings: An international perspective *Elsevier* Quantitative Finance Series Amsterdam The Netherlands pp 187 – 213.

2220. Aussenegg W, Pichler P, Stomper A 2006 IPO pricing with book building and a when-issued market *Journal of Financial and Quantitative Analysis*.

2221. Boot A W A, Gopalan R, Thakor A V 2006 The entrepreneur's choice between private and public ownership *Journal of Finance* **61** pp 803 – 836.

2222. Das S, Guo R, Zhang H 2006 Analysts' selective coverage and subsequent performance of newly public firms *Journal of Finance* **61** (3) pp 1159 – 1185.

2223. Damodaran A 2006 Damodaran on valuation *John Wiley and Sons* New York USA.

2224. Ellul A, Pagano M 2006 IPO underpricing and after-market liquidity *Review of Financial Studies* **19** (2) pp 381 – 421.

2225. Gajewski J - F, Gresse C 2006 A survey of the European IPO market *Université Paris, Université Paris X Nanterre* France *European Capital Markets Institute Paper no 2* ISBN 92-9079-658-8 pp 1 – 94 Brussels Belgium
www.ceps.be .

2226. Goergen M, Renneboog L, Khurshed A 2006 Explaining the diversity in shareholder lockup agreements *Journal of Financial Intermediation* **15** (2) pp 254 – 280.

2227. Hong L 2006 The new development of the Chinese capital market *China Securities Journal* **17**.

2228. Jagannathan R, Sherman A 2006 Why do IPO auctions fail? *Working Paper* University of Notre-Dame.

2229. James C, Karceski J 2006 Strength of analyst coverage following IPOs *Journal of Financial Economics* **82** (1) pp 1 – 34.

2230. Pastor-Llorca M J, Poveda-Fuentes F 2006 Earnings management and the long-run performance of Spanish initial public offerings *in* Gregoriou G N (editor) Initial public offerings: An international perspective *Elsevier Butterworth-Heinemann* chapter 7 pp 81 – 112.

2231. Tirole J 2006 The theory of corporate finance *Princeton University Press* New Jersey USA.

2232. Trauten A, Schulz R C 2006 IPO investment strategies and pseudo market timing *Internetökonomie und Hybridität no 36*, *ZEW Discussion Papers no 36* Leibniz Information Centre for Economics Germany pp 1 – 44
http://hdl.handle.net/10419/46583 .

2233. Yung C, Colak G, Wang W 2006 Cycles in the IPO Market *Working paper*.

2234. Zhang X F 2006 Information uncertainty and analyst forecast behavior *Contemporary Accounting Research* **23** (2) pp 565 – 590.

2235. Arnold T, Fishe R, North D 2007 The effects of “risk-factor” disclosure on the pricing of IPOs and long run returns *Working Paper* University of Richmond VA USA.

2236. Berkeley A J 2007 Some background and simple FAQs about Dutch auctions and the Google IPO *in* Fundamentals of securities law *American Law Institute American Bar Association* USA pp 275 – 279.

2237. Doran J, Jiang D, Peterson D 2007, 2009 Short-sale constraints and the idiosyncratic volatility puzzle: An event study approach *Florida State University MPRA Paper no 8261* Munich University Munich Germany pp 1 – 39
http://mpra.ub.uni-muenchen.de/8261/ .

2238. Hopp Ch, Dreherdo A 2007 Differences in institutional and legal environments explain cross-country variations in IPO underpricing? *CESIFO Working Paper no 2082* pp 1 – 48.

2239. Jog V M, Sun Ch 2007 Blank check IPOs: A home run for management http://ssrn.com/abstract=1018242 ,
http://dx.doi.org/10.2139/ssrn.1018242 .

2240. Kerins F, Kutsuna K, Smith R 2007 Why are IPOs underpriced? Evidence from Japan’s hybrid auction-method offerings *Journal of Financial Economics* **85** pp 637 – 666.

2241. Leite T 2007 Adverse selection, public information and underpricing in IPOs *Journal of Corporate Finance*.

2242. Paleari S, Vismara S 2007 Over-optimism when pricing IPOs *Managerial Finance* **33** (6) pp 352 – 367.

2243. Paleari S, Pellizzoni E, Vismara S 2008 The going public decision: Evidence from the IPOs in Italy and in the UK International *Journal of Applied Decision Sciences* **1** pp 131 – 152.

2244. Paleari S, Ritter J R, Vismara S 2010 Explaining the simultaneous consolidation and fragmentation of Europe's stock markets *Working Paper University of Florida* USA.

2245. Penman S H 2007 Financial statement analysis and security valuation *3rd edition McGraw-Hill* New York USA.

2246. Roosenboom P G J 2007 How do underwriters value IPOs? An empirical analysis of the French IPO market *Contemporary Accounting Research* **24** (4) pp 1217 – 1243.

2247. Thomas J K 2007 Discussion of how do underwriters value IPOs? An empirical analysis of the French IPO market *Contemporary Accounting Research* **24** (4) pp 1245 – 1254.

2248. Toniato J B A 2007 Hot issue" IPO markets and its consequences for issuing firms and investors: The UK market of 2000 *Brazilian Business Review* vol **4** no 1 pp 1 – 26 www.bbronline.com.br .

2249. Zheng S X, Stangeland D A 2007 IPO underpricing, firm quality, and analyst forecasts *Financial Management* **36** (2) pp 45 – 64.

2250. An H H, Chan K C 2008 Credit ratings and IPO pricing *Journal of Corporate Finance* 14 (5) pp 584 – 595.

2251. Casotti F P, Motta L F J 2008 IPO abordagem de múltiplos e custo de capital próprio *Revista Brasileira de Finanças* vol **6** no 2.

2252. Farina V 2008 Network embeddedness, specialization choices and performance in investment banking industry *University of Rome Tor Vergata* Italy *MPRA Paper no 11701* Munich University Munich Germany pp 1 – 26 http://mpra.ub.uni-muenchen.de/11701/ .

2253. Hale G, Santos J A C 2008 Do banks price their informational monopoly? *Working Paper 2008-14* Federal Reserve Bank of San Francisco USA pp 1 – 49 http://ssrn.com/abstract=935225
http://www.frbsf.org/publications/economics/papers/2008/wp08-14bk.pdf .

2254. Hild M 2008 The Google IPO *Journal of Business and Technology Law* vol **3** issue 1 pp 41 – 59
http://digitalcommons.law.umaryland.edu/jbtl/vol3/iss1/4 .

2255. Kaustia M, Knupfer S 2008 Do investors overweight personal experience? Evidence from IPO subscriptions *Journal of Finance* **63** pp 2679 – 2702.

2256. Khurshed A, Pande A, Singh A 2008 Subscription patterns, offer prices and the underpricing of IPOs
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1343024 .
2257. Khurshed A, Paleari S, Pande A, Vismara S 2011 Grading, transparent books and initial public offerings
http://www.unibg.it/dati/persone/1823/4211-Grading%20paper.pdf .
2258. Rossetto S 2008 The price of rapid exit in venture capital-backed IPOs *Annals of Finance* **4** pp 29 – 53.
2259. Kim W, Weisbach M S 2008 Motivations for public equity offers: An international perspective *Journal of Financial Economics* **87** pp 281 – 307.
2260. Poudyal S 2008 Grading initial public offerings (IPOs) in India's capital markets: A globally unique concept *Working Paper no 2008-12-08* Indian Institute of Management Ahmedabad India pp 1 – 30.
2261. Yongyuan Qiao 2008 Analysis into IPO underpricing and clustering in Hong Kong equity market *School of Economics and Finance* University of St Andrews UK *MPRA Paper no 7876* Munich University Munich Germany pp 1 – 28
http://mpra.ub.uni-muenchen.de/7876/ .
2262. Yung C, Colak G, Wang W 2008 Cycles in the IPO market *Journal of Financial Economics* **89** (1) pp 192 – 208.
2263. Colak G, Gunay H 2011 Strategic waiting in the IPO markets *Journal of Corporate Finance* **17** (3) pp 555 – 583.
2264. Bouis R 2009 The short-term timing of initial public offerings *Journal of Corporate Finance* **15** (5) pp 587 – 601.
2265. Coakley J, Hadass L, Wood A 2009 UK IPO underpricing and venture capitalists *The European Journal of Finance* **15** pp 421 – 435.
2266. Deloof M, De Maeseneire W, Inghelbrecht K 2009 How do investment banks value IPOs? *Journal of Business Finance and Accounting*.
2267. Jiang F, Leger L A 2009 The impact on IPO performance of reforming IPO allocation regulations: An event study of Shanghai stock exchange A-shares *Working Paper 2009 - 04* Department of Economics Loughborough University Loughborough UK ISSN 1750-4171 pp 1 – 24.
2268. Zhang J X 2009 Shareholding by venture capitalists and patent applications of Japanese firms in the pre- and post- IPO periods *IIR Working Paper WP#09-02* Institute of Innovation Research Hitotsubashi University Tokyo Japan pp 1 – 32

http://hdl.handle.net/10086/17349 ,
http://www.iir.hit-u.ac.jp .

2269. Arikawa Y, Imad'eddine G 2010 Venture capital affiliation with underwriters and the underpricing of initial public offerings in Japan *Journal of Economics and Business* **62** pp 502 – 516.

2270. Bonardo D, Paleari S, Vismara S 2010 When academia comes to market: Does university affiliation reduce the uncertainty of IPOs? *International Journal of Entrepreneurship and Innovation*.

2271. Bonardo D, Paleari S, Vismara S 2010 Valuing university-based firms: The effects of academic affiliation on IPO performance *Entrepreneurship Theory and Practice*.

2272. Caglio C, Weiss-Hanley K, Marietta-Westberg J 2010 Going public abroad: The role of international markets for IPOs *US Securities and Exchange Commission Working Paper* http://ssrn.com/abstract=1572949 .

2273. Cogliati G, Paleari S, Vismara S 2010 IPO pricing: Growth rates implied in offer prices *Working Paper no 02 – 2010* Department of Economics and Technology Management University of Bergamo Italy.

2274. Chod J, Lyandres E 2010 Strategic IPOs and product market competition *Journal of Financial Economics*.

2275. Deb S S, Marisetty V B 2010 Information content of IPO grading *Journal of Banking & Finance* **34** (9) pp 2294 – 2305.

2276. Elston J A, Yang J J 2010 Venture capital, ownership structure, accounting standards and IPO underpricing: Evidence from Germany *Journal of Economics and Business* **62** pp 517 – 536.

2277. Guo H, Brooks R, Shami R 2010 Detecting hot and cold cycles using a Markov regime switching model - Evidence from the Chinese A-share IPO market International *Review of Economics & Finance* **19** (2) pp 196 – 210.

2278. Hsu H-Ch, Reed A V, Rocholl J 2010 The new game in town: Competitive effects of IPOs *Journal of Finance* **65** pp 495 – 528.

2279. Hussinger K 2010 Absorptive capacity and post-acquisition inventor productivity *Katholieke Universiteit Leuven Belgium Centre for European Economic Research (ZEW) Mannheim Germany ZEW Discussion Papers no 10-066* Leibniz Information Centre for Economics Germany pp 1 – 32
http://hdl.handle.net/10419/41435 ,
ftp://ftp.zew.de/pub/zew-docs/dp/dp10066.pdf.

2280. Hussinger K 2012 Absorptive capacity and post-acquisition inventor productivity *Journal Technology Transfer* **37** pp 490 – 507 DOI 10.1007/s10961-010-9199-y .

2281. Jagannathan R, Jirnyi A, Sherman A 2010 Why don't issuers choose IPO auctions? The complexity of indirect mechanisms *Technical Report*
http://www.nber.org/papers/w16214 .

2282. Pennacchio L, Del Monte A, Acconcia A 2010 Underpricing and distance: An empirical analysis *MPRA Paper no 21737* Munich University Munich Germany pp 1 – 11 http://mpra.ub.uni-muenchen.de/21737/ .

2283. Acconcia A, Del Monte A, Pennacchio L 2011 Underpricing and firms' distance from financial centre: Evidence from three European countries *Working Paper no 295* CSEF University of Naples Italy.

2284. Pennacchio L 2013 The causal effect of venture capital backing on the underpricing of Italian IPOs *University of Napoli "Federico II"* Italy *MPRA Paper no 48695* Munich University Munich Germany pp 1 – 44
http://mpra.ub.uni-muenchen.de/48695/ .

2285. Sahoo S, Rajib P 2010 After market performance of initial public offerings (IPOs): Indian IPO market 2002 - 2006 *The Journal for Decision Makers* **35** (4) pp 27 – 43.

2286. Shao X, Wu H, Qin J Wang D 2010 The IPO market cycles in China: The analysis based on the investor sentiment and government's market timing *Journal of Financial Research* **11** pp 123 – 143.

2287. Yao-Min Chiang, Hirshleifer D, Yiming Qian, Sherman A 2010 Learning to fail? Evidence from frequent IPO investors *Department of Finance* National Chengchi University Taipei Taiwan, *The Paul Merage School of Business* University of California Irvine California USA, *Department of Finance* University of Iowa USA, *Department of Finance* DePaul University Chicago Illinois USA *MPRA Paper no 25231* Munich University Munich Germany pp 1 – 40
http://mpra.ub.uni-muenchen.de/25231/ .

2288. Boeh K K, Southam C 2011 Impact of initial public offering coalition on deal completion *Venture Capital: An International Journal of Entrepreneurial Finance* **13** (4) pp 313 – 336 *Routledge: Taylor and Francis Group* DOI: 10.1080/13691066.2011.642148 .

2289. Bubna A, Prabhala N R 2011 IPOs with and without allocation discretion: Empirical evidence *Journal of Financial Intermediation* **20** (4) pp 530 – 561.

2290. Doidge C, Karolyi G A, Stulz R M 2011 The US left behind: The rise of IPO activity around the World *Fisher College of Business WP 2011-03-008, NBER Working Paper 16916*

Rotman School of Management University of Toronto Canada, Johnson Graduate School of Management Cornell University USA, Charles A Dice Center for Research in Financial Economics Fisher College of Business Department of Finance The Ohio State University USA pp 1 – 58
http://www.ssrn.com/abstract=1795423,
http://www.nber.org/papers/w16916.
2291. Ferretti R, Meles A 2011 Underpricing, wealth loss for pre-existing shareholders and the cost of going public: The role of private equity backing in Italian IPOs *Venture Capital* **13** pp 23 – 47.
2292. Adesoye A B, Atanda A A-M 2012 Monetary policy and share pricing business in Nigeria *Department of Economics* Olabisi Onabanjo University Nigeria *MPRA Paper no 35846* Munich University Munich Germany pp 1 – 20
http://mpra.ub.uni-muenchen.de/35846/ .
2293. Boissin R 2012 Orphan versus non-orphan IPOs: The difference analyst coverage makes *MPRA Paper no 41584* Munich University Munich Germany pp 1 – 31
http://mpra.ub.uni-muenchen.de/41584/ .
2294. Cumming D J, Hass L H, Schweizer D 2012 The fast track IPO – Success factors for taking firms public with SPACs
http://ssrn.com/abstract=2144892 ,
http://dx.doi.org/10.2139/ssrn.2144892 .
2295. Datar V, Emm E, Ince U 2012 Going public through the back door: A comparative analysis of SPACs and IPOs *Banking and Finance Review* **4** (1).
2296. Jacob J 2012 Mandatory IPO grading: Does it help pricing efficiency? *Working Paper no 2012-12-07* Indian Institute of Management Ahmedabad India pp 1 – 39.
2297. Rodrigues U, Stegemoller M A 2012 What all-cash companies tell us about IPOs and acquisitions SSRN
http://ssrn.com/abstract=2101830 ,
http://dx.doi.org/10.2139/ssrn.2101830 .
2298. Saturnino O, Saturnino V, Lucena P, Caetano M, dos Santos J F 2012 Initial Public Offer of stocks in Brazil: An analysis of returns from stocks with low price/earnings ratio *Universidade Federal de Pernambuco* Brasil *MPRA Paper no 48106* Munich University Munich Germany pp 1 – 13
http://mpra.ub.uni-muenchen.de/48106/ .

2299. Chang-Yi Hsu, Jean Yu, Shiow-Ying Wen 2013 The analysts' forecast of IPO firms during the global financial crisis International *Journal of Economics and Financial Issues* vol **3** no 3 pp 673 – 682 ISSN: 2146-4138
www.econjournals.com .

2300. Zhiqiang Hu, Yizhu Wang 2013 The IPO cycles in China's A-share IPO market: Detection based on a three regimes Markov switching model *Romanian Journal of Economic Forecasting* **16** (3) pp 115 – 131 rjef3_2013p115-131.pdf .

2301. Lakicevic M, Shachmurove Y, Vulanovic M 2013 Institutional changes of SPACs *University of Montenegro, City College City University of New York, Western New England University MPRA Paper no 44181* Munich University Munich Germany pp 1 – 35 http://mpra.ub.uni-muenchen.de/44181/ .

<u>Private company investment, private company valuation, venture capital investment, venture capital fund, angel capital investment, financial capital investment product, financial capital investment medium in finances:</u>

2302. Akerlof G, Stiglitz J E 1966 Investment, income and wages *Econometrica* **34** (5) p 118.

2303. Stiglitz J E 1969 Theory of innovation: Discussion *American Economic Review* **59** (2) pp 46 – 49.

2304. Rothschild M, Stiglitz J 1976 Equilibrium in competitive insurance markets: An essay on the economics of imperfect information *Quarterly Journal of Economics* **90** pp 629 – 649.

2305. Stiglitz J, Weiss A 1981 Credit rationing in markets with incomplete information *American Economic Review* **71** pp 393 – 409.

2306. Stiglitz J E 1988 Randomization with asymmetric information *RAND Journal of Economics* **19** (3) pp 344 – 362.

2307. Greenwald B, Stiglitz J E 1990 Asymmetric information and the new theory of the firm: Financial constraints and risk behavior *American Economic Review* **80** (2) pp 160 – 165.

2308. J E Stiglitz 2001, 2002 Joseph E Stiglitz - Biographical *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2001* p 1 http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2001/stiglitz-bio.html .

2309. Richiardi M, Gallegati M, Greenwald B, Stiglitz J 2007 The asymmetric effect of diffusion processes: Risk sharing and contagion *Global Economy Journal* vol **8** issue 3 pp 1 - 10 ISSN 1524-5861 DOI: 10.2202/1524-5861.1365 .

2310. Stiglitz J E 2013 Five years in limbo *Columbia University* 3022 Broadway NY USA http://www8.gsb.columbia.edu/chazen/globalinsights/node/218/Five%20Years%20in%20Limbo# .

2311. Kirzner I 1973 Competition and entrepreneurship *University of Chicago Press* Chicago USA.

2312. Jensen M C, Meckling W H 1976 Theory of the firm: Managerial behavior, agency costs and ownership structure *Journal of Financial Economics* **3** pp 305 – 360.

2313. Lucas R E 1978 On the size distribution of business firm *Bell Journal of Economics* **9** (2) pp 508 – 523.

2314. Rind K W 1981 The role of venture capital in corporate development *Strategic Management Journal* **2** pp 169 – 180.

2315. Tyebjee T T, Bruno A V 1981 Venture capital decision making: Preliminary results from three empirical studies *Frontiers of Entrepreneurship Research* pp 316 – 334.

2316. Bruno A V, Tyebjee T T 1983 The one that got away: A study of ventures rejected by venture capitalists *in* Hornaday J A, Timmons J A, Vesper K H (editors) Frontiers of entrepreneurship research *Babson College* Wellesley MA pp 289 – 306.

2317. Tyebjee T, Bruno A 1984 A model of venture capitalist investment activity *Management Science* **30** pp 1051 – 1066.

2318. Bruno A V, Tyebjee T T 1986 The destinies of rejected venture capital deals *MIT Sloan Management Review* **27** pp 43 – 53.

2319. Chan Y S 1983 On the positive role of financial intermediation in allocation of venture capital in a market with imperfect information *The Journal of Finance* **38** (5) pp 1543 – 1568.

2320. Chan Y-S, Siegel D, Thakor A 1990 Learning, corporate control and performance requirements in venture capital contracts *International Economic Review* **31** pp 365 – 381.

2321. Felda H G, DeNino M J, Salter M S 1983 When corporate venture capital doesn’t work *Harvard Business Review* **61** May - June pp 114 – 120.

2322. Wilson J W 1983 The new ventures – inside the high stakes world of venture capital *Addison Wesley Publishing Company* Boston MA USA.

2323. Merkle E 1984 Venture capital als instrument des technologiemanagements *Betriebs-Berater* **39** pp 1060 – 1064.

2324. Tyebjee T T, Bruno A V 1984 A model of venture capitalist investment activity *Management Science* **30** (9) pp 1051 – 1066.

2325. Hutt R W, Thomas B 1985 Venture capital in Arizona *Frontiers of Entrepreneurship Research* pp 155 – 169.

2326. MacMillan I, Siegel R, Narasimha P 1985 Criteria used by venture capitalists to evaluate new venture proposals *Journal of Business Venturing* **1** (1) pp 119 – 128.

2327. MacMillan I C, Zemann L, Narasimha P N 1987 Criteria distinguishing successful from unsuccessful ventures in the venture screening process *Journal of Business Venturing* **2** (2) pp 123 – 137.

2328. Beatty R P, Ritter J 1986 Investment banking, reputation, and the underpricing of initial public offerings *Journal of Financial Economics* **15** pp 213 – 232.

2329. Nevermann H, Falk D 1986 Venture capital - Ein betriebswirtschaftlicher und steuerlicher vergleich zwischen den USA und der Bundesrepublik Deutschland *NOMOS Verlagsgesellschaft* Baden-Baden Germany.

2330. Timmons J A, Bygrave W D 1986 Venture capital's role in financing innovation for economic growth *Journal of Business Venturing* **1** pp 161 – 176.

2331. Block Z, Ornati O A 1987 Compensating corporate venture managers *Journal of Business Venturing* **2** pp 41 – 52.

2332. Bygrave W D 1987 Syndicated investments by venture capital firms: A networking perspective *Journal of Business Venturing* **2** (2) pp 139 – 154.

2333. Bygrave W D, Timmons J A 1992 Venture capital at the crossroads *Harvard Business School Press* Boston MA pp 1 – 79.

2334. Robinson R B 1987 Emerging strategies in venture capital industry *Journal of Business Venturing* vol **2** pp 53 – 77.

2335. Ruhnka J C, Young J E 1987 A venture capital model of the development process for new ventures *Journal of Business Venturing* vol **2** pp 167 – 184.

2336. Ruhnka J C, Young J E 1991 Some hypotheses about risk in venture capital investing *Journal of Business Venturing* vol **6** (2) pp 115 – 133.

2337. Ruhnka J C, Felman H D, Dean T J, 1992 The "living dead" phenomenon in venture capital investments *Journal of Business Venturing* vol **7** issue 2 pp 137 – 155.

2338. Sandberg W R, Hofer C W 1987 Improving new venture performance: The role of strategy, industry structure, and the entrepreneur *Journal of Business Venturing* **2** (1) pp 5 – 28.

2339. Stedler H 1987 Venture capital und geregelter freiverkehr: Eine empirische studie *Frankfurt am Main* Germany.

2340. Brophy D J, Guthner M W 1988 Publicly traded venture capital funds: Implications for institutional 'Fund of Funds' investors *Journal of Business Venturing* **3** (3) pp 187 – 206.

2341. Clark R 1988 Venture capital in Britain, America, and Japan *Croom Helm* London UK.

2342. Eisinger P 1988 The rise of the entrepreneurial state: State and local economic development policy in the United States *University of Wisconsin Press* Madison USA.

2343. Eisinger P 1993 State venture capitalism, state politics, and world of high risk investment *Economic Development Quarterly* **7** (2) pp 131 – 140.

2344. Florida R L, Kenney M 1988 Venture capital-financed innovation and technological change in the USA *Research Policy* **17** (3) pp 119 – 137.

2345. Florida R L, Smith D F 1993 Keep the government out of venture capital *Issues in Science and Technology* **9** pp 61 – 68.

2346. Gladstone D 1988 Venture capital handbook. New and revised. An entrepreneur's guide to obtaining capital to start a business, buy a business, or existing business *Prentice Hall* USA pp 1 – 350.

2347. Harris M, Raviv A 1988 Corporate governance: Voting rights and majority rules *Journal of Financial Economics* **20** pp 203 – 235.

2348. Sandberg W R, Schweiger D M, Hofer Ch W 1988 Use of verbal protocols in determining venture capitalists' decision process *Entrepreneurship Theory and Practice* **13** pp 182 – 196.

2349. Schmidt R H 1988 Venture capital in Deutschland: Ein problem der qualität *Die Bank* **4** pp 184 – 187.

2350. Siegel R, Siegel E, and MacMillan I 1988 Corporate venture capitalists: Autonomy, obstacles and performance *Journal of Business Venturing* **3** pp 233 – 247.

2351. Tirole J 1988 The theory of industrial organization Cambridge *MIT Press* Cambridge Massachusetts USA.

2352. Benveniste L M, Spindt P A 1989 How investment bankers determine the offer price and allocation of new issues *Journal of Financial Economics* **24** pp 343 – 361.

2353. Gorman M, Sahlman W 1989 What do venture capitalists do? *Journal of Business Venturing* **4** pp 231 – 248.

2354. Holmstrom B, Tirole J 1989 The theory of the firm *in* Schmalensee R, Willig R (editors) Handbook of industrial economics Chapter 2 Part 1 *Elsevier Publishing BV* Amsterdam The Netherlands.

2355. Poterba J 1989a Venture capital and capital gains taxation *Tax Policy and the Economy* **3** p 47.

2356. Poterba J 1989b Capital gains tax policy toward entrepreneurship *National Tax Journal* **42** pp 375 – 390.

2357. Shiller R J, Pound J 1989 Survey evidence on the diffusion of interest and information among investors *Journal of Economic Behavior and Organization* **12** pp 47 – 66.

2358. Amit R, Glosten L, Muller E 1990a Entrepreneurial ability, venture investments, and risk sharing *Management Science* **36** pp 1232 – 1245.

2359. Amit R, Glosten L, Muller E 1990b Does venture capital foster the most promising entrepreneurial firms? *California Management Review* pp 102 – 111.

2360. Amit R, Brander J, Zott C 1998 Why do venture capital firms exist? Theory and Canadian evidence *Journal of Business Venturing* **13** pp 441 – 466.

2361. Barry C, Muscarella C, Peavy J, Vetsuypens M 1990 The role of venture capital in the creation of public companies: evidence from the going public process *Journal of Financial Economics* **27** pp 447 – 471.

2362. Barry C 1994 New directions in research on venture capital finance *Financial Management* **23** (3) pp 3 – 15.

2363. Hisrich R D, Jankowitz A D 1990 Intuition in venture capital decisions: An exploratory study using a new technique *Journal of Business Venturing* **5** pp 49 – 62.

2364. Sahlman W 1990 The structure and governance of venture-capital organizations *Journal of Financial Economics* **27** (2) pp 473 – 521.

2365. Sykes H B 1990 Corporate venture capital: Strategies for success *Journal of Business Venturing* **5** pp 37 – 47.

2366. Dixon R 1991 Venture capitalists and the appraisal of investments OMEGA The *International Journal of Management Science* **19** (5) pp 333 – 344.

2367. Megginson W, Weiss K 1991 Venture capitalist certification in initial public offerings *Journal of Finance* **46** pp 879 – 903.

2368. Megginson W 2004 Towards a global model of venture capital? *Journal of Applied Corporate Finance* **16** (1) pp 8 – 26.

2369. Riquelme H, Rickards T 1992 Hybrid conjoint analysis: An estimation probe in new venture decisions *Journal of Business Venturing* **7** (6) pp 505 – 518.

2370. Sapienza H 1992 When do venture capitalists add value? *Journal of Business Venturing* **7** pp 9 – 27.

2371. Sapienza H, Gupta A 1994 Impact of agency risks and task uncertainty on venture capitalist-CEO interaction *Academy of Management Journal* **37** pp 1618 – 1632.

2372. Hall J, Hofer C 1993 Venture capitalists’ decision criteria in new venture evaluation *Journal of Business Venturing* **8** (1) pp 25 – 42.

2373. Norton E, Tenenbaum B H 1993 Specialization versus diversification as a venture capital investment strategy *Journal of Business Venturing* **8** (5) pp 431 – 442.

_2374._ Rosenstein J A, Bruno V, Bygrave W D, Taylor N T 1993 The CEO, venture capitalists, and the board *Journal of Business Venturing* **8** (2) pp 99 – 113.

_2375._ Sahlman W A 1993 Aspects of financial contracting in venture capital *in* Chew D H (editor) The new corporate finance. Where theory meets practice *McGraw-Hill* pp 229 – 242.

_2376._ Admati A, Pfleiderer P 1994 Robust financial contracting and the role of venture capitalists *Journal of Finance* **49** pp 371 – 402.

_2377._ Aghion P, Tirole J 1994 The management of innovation *Quarterly Journal of Economics* pp 109 1185 – 1209.

_2378._ Anton J, Yao D 1994 Expropriation and inventions *American Economic Review* **84** pp 190 – 209.

_2379._ Barry C B 1994 New directions in research on venture capital finance *Financial management* pp 3 – 15.

_2380._ Berglöf E 1994 A control theory of venture capital finance *Journal of Law, Economics and Organization* **10** pp 247 -267.

_2381._ Bhidé A 1994 The origin and evolution of new businesses *Oxford University Press* Oxford UK.

_2382._ Fried V, Hisrich R 1994 Toward a model of venture capital investment decision making *Financial Management* **23** (3) pp 28 – 37.

_2383._ Gompers P 1994 The rise and fall of venture capital *Business and Economic History* **23** pp 1 – 26.

_2384._ Gompers P 1995 Optimal investment, monitoring, and the staging of venture capital *Journal of Finance* **50** pp 1461 – 1489.

_2385._ Gompers P 1996 Grandstanding in the venture capital industry *Journal of Financial Economics* **42** pp 133 – 156.

_2386._ Gompers P A 1998 Venture capital growing pains: Should the market diet? *Journal of Banking and Finance* **22** (6-8) pp 1089 – 1104.

_2387._ Gompers P A 2002 Gompers P A 2002 Corporations and the financing of innovation: The corporate venturing experience *Federal Reserve Bank of Atlanta Economic Review Fourth Quarter* pp 1 – 18.

_2388._ Gompers P, Lerner J 1996 The use of covenants: An empirical analysis of venture partnership agreements *Journal of Law and Economics* **39** pp 463 – 498.

_2389._ Gompers P, Lerner J 1997 Risk and reward in private equity investments: The challenge of performance assessment *Journal of Private Equity* **1** pp 5 – 12.

2390. Gompers P, Lerner J 1998a Venture capital distributions: Short-run and long-run reactions *Journal of Finance* **53** pp 2161 – 2183.

2391. Gompers P, Lerner J 1998b What drives venture capital fundraising*? Brookings Papers on Economic Activity Microeconomics* pp 149 – 192.

2392. Gompers P, Lerner J 1998c The determinants of corporate venture capital success: organizational structure, incentives, and complementarities *National Bureau of Economic Research Conference* volume on Concentrated Ownership *NBER* Cambridge Massachusetts USA.

2393. Gompers P, Lerner J 1999a Conflict of interest in the issuance of public securities: Evidence from venture capital *Journal of Law and Economics* **42** pp 1 – 28.

2394. Gompers P, Lerner J 1999b An analysis of compensation in the U.S. venture capital partnership *Journal of Financial Economics* **51** pp 3 – 44.

2395. Gompers P, Lerner J 1999c Capital market imperfections in venture markets: A report to the advanced technology program *US Department of Commerce US Government* Washington USA.

2396. Gompers P, Lerner J 1999d The venture capital cycle *MIT Press* Cambridge Massachusetts USA.

2397. Gompers P, Lerner J 2000a The determinants of corporate venture capital success in Morck R (editor) Concentrated corporate ownership *University of Chicago Press* Chicago USA

2398. Gompers P, Lerner J 2000b Money chasing deals? The impact of fund inflows on private equity valuation *Journal of Financial Economics* **55** pp 281 – 325.

2399. Gompers P, Lerner J 2001a The venture capital revolution *Journal of Economic Perspectives* **15** pp 145 – 168.

2400. Gompers P, Lerner J 2001b The money of invention *Harvard Business School Press* Boston USA.

2401. Baker M, Gompers P 2003 The determinants of board structure at the initial public offering *Journal of Law and Economics* **46** pp 569 – 598.

2402. Gompers P, Lerner J, Scharfstein D 2005 Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999 *Journal of Finance* **60** pp 577 – 614.

2403. Gompers P A, Kovner A, Lerner J, Scharfstein D 2006 Skill vs luck in entrepreneurship and venture capital: Evidence from serial entrepreneurs *NBER Working Paper no 12592*.

2404. Gompers P 2007 Venture capital in Eckbo E (editor) Handbook of corporate finance vol **1** *North- Holland* Amsterdam The Netherlands.

2405. Gompers P, Kovner A, Lerner J, Scharfstein D 2008 Venture capital investment cycles: The impact of public markets *Journal of Financial Economics* **87** pp 1 – 23.

2406. Gompers P, Kovner A, Lerner J 2009 Specialization and success: evidence from venture capital *Journal of Economics and Management Strategy* **18** pp 817 – 844.

2407. Gompers P, Lerner J, Scharfstein D, Kovner A 2010 Performance persistence in entrepreneurship *Journal of Financial Economics* **96** pp 18 – 32.

2408. Knight R 1994 Criteria used by venture capitalists: A cross cultural analysis *International Small Business Journal* vol **13** no 1 pp 26 – 37.

2409. Kroszner R, Rajan R 1994 Is the Glass-Steagall act justified? A study of the US experience with universal banking before 1933 *American Economic Review* **84** pp 810 – 832.

2410. Lerner J 1994a Venture capitalists and the decision to go public *Journal of Financial Economics* **35** pp 293 – 316.

2411. Lerner J 1994b The syndication of venture capital investments *Financial Management* **23** pp 16 – 27.

2412. Lerner J 1995a Venture capitalists and the oversight of private firms *Journal of Finance* **50** pp 301 – 318.

2413. Lerner J 1995b Patenting in the shadow of competitors *Journal of Law and Economics* vol **38** pp 463 – 488.

2414. Lerner J 1998 Angel financing and public policy: An overview *Journal of Banking and Finance* **22** pp 773 – 783.

2415. Lerner J 1999 The government as venture capitalist: The long-run impact of the SBIR program *Journal of Business* **72** pp 285 – 318.

2416. Lerner J 2002 Boom and bust in the venture capital industry and the impact on innovation *Federal Reserve Bank of Atlanta Economic Review Fourth Quarter* USA pp 1 – 15.

2417. Kortum S, Lerner J 1998 Does venture capital spur innovation? *NBER Working Paper no W6846*.

2418. Kortum S, Lerner J 2000 Assessing the contribution of venture capital to innovation *RAND Journal of Economics* **31** (4) pp 674 – 692.

2419. Lerner J, Shane H, Tsai A 2003 Do equity financing cycles matter? Evidence from biotechnology alliances *Journal of Financial Economics* **67** pp 411 – 446.

2420. Lerner J, Schoar A 2004 The illiquidity puzzle: theory and evidence from private equity *Journal of Financial Economics* **72** pp 3 – 40.

2421. Lerner J, Schoar A 2005 Does legal enforcement affect financial transactions? The contractual channel in private equity *Quarterly Journal of Economics* **120** pp 223 – 246.

2422. Lerner J, Moore D, Shepherd S 2005 A study of New Zealand's venture capital market and implications for public policy *A report to the Ministry of Research, Science and Technology* New Zealand http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1459175 .

2423. Lerner J, Schoar A, Wongsunwai W 2007 Smart institutions, foolish choices? The limited partner performance puzzle *Journal of Finance* **62** pp 731 – 764.

2424. Lerner J 2008, 2009 Boulevard of broken dreams: Why public efforts to boost entrepreneurship and venture capital have failed *Princeton University Press* Princeton USA.

2425. Lerner J, Sorensen M, Strömberg P 2009 What drives private equity activity and success globally *in* Gurung A, Lerner J (editors) Globalization of alternative investments *Working Papers* vol **2** The global economic impact of private equity report 2009 *World Economic Forum* Geneva Switzerland pp 63 – 98.

2426. Chen H, Gompers P, Kovner A, Lerner J 2009 Buy local? The geography of successful and unsuccessful venture capital expansion *Working Paper 15102* National Bureau of Economic Research Cambridge MA USA
http://www.nber.org/papers/w15102 .

2427. Lerner J, Tåg J 2012, 2013 Institutions and venture capital. Working Paper 2012 : 17 *Swedish Entrepreneurship Forum* pp 1 – 31, *Industrial and Corporate Change* **22** (1) pp 153 – 182.

2428. Puri M 1994 The long-term default performance of bank underwritten security issues *Journal of Banking and Finance* **18** pp 397 – 418.

2429. Puri M 1996 Commercial banks in investment banking: Conflict of interest or certification role? *Journal of Financial Economics* **40** pp 373 – 401.

2430. Puri M, Robinson D 2011 Optimism and economic choice *Journal of Financial Economics* **86** pp 71 – 99.

2431. Timmons J A, Spinelli S 1994 New venture creation: Entrepreneurship for the 21st century *Irwin* Burr Ridge IL USA.

2432. Anton J, Yao D 1995 Start-ups, spin-offs, and internal projects *Journal of Law, Economics and Organization* **11** pp 362 – 378.

2433. Elango B, Fried V H, Hisrich R D, Polonchek A 1995 How venture capital firms differ *Journal of Business Venturing* vol **10** no 2 pp 157 – 179.

2434. Fiet J O 1995 Risk avoidance strategies in venture capital markets *Journal of Management Studies* **32** (4) pp 551 – 574.

2435. Hart O 1995 Firms, contracts, and financial structure *Oxford University Press* UK.

2436. Jain B, Kini O 1995 Venture capitalist participation and the post-issue operating performance of IPO firms *Managerial and Decision Economics* **5** pp 593 – 606.

2437. Loughran T, Ritter J 1995 The new issues puzzle *Journal of Finance* **50** pp 23 – 51.

2438. Willner R 1995 Valuing start-up venture growth options Real options in capital investment Trigeorgies L (editor) *Praeger* pp 221 – 239.

2439. Mason C M, Harrison R T 1996 Informal venture capital: A study of the investment process, the post-investment experience and investment performance *Entrepreneurship & Regional Development* **8** (2) pp 105 – 126.

2440. Mason C, Stark M 2004 What do investors look for in a business plan? A comparison of the investment criteria of bankers, venture capitalists and business angels *International Small Business Journal* 22 (3) pp 227 – 248.

2441. Sapienza H, Manigart S, Vermeir 1996 Venture capital governance and value-added in four countries *Journal of Business Venturing* **11** pp 439 – 469.

2442. Manigart S, Wright M, Robbie K, Desbrieres P, De Waele K 1997 Venture capitalists appraisal of investment projects: An empirical *European study Entrepreneurship Theory and Practice* vol **21** (4) pp 29 – 43.

2443. Manigart S, De Waele K, Wright M, Robbie K, Desbrieres P, Sapienza H, Beekman A 2000 Venture capitalists, investment appraisal and accounting information: A comparative study of the USA, UK, France, Belgium and Holland *European Financial Management* **6** (3) pp 389 – 403.

2444. Manigart S, De Waele K, Wright M, Robbie K, Desbrieres P, Sapienza H J, Beekman A 2002 The determinants of the required returns in venture capital investments: a five-country study *Journal of Business Venturing* **17** (4) pp 291 – 312.

2445. Manigart S, Baeyens K, Hyfte W V 2002 The survival of venture capital backed companies *Venture Capital* vol **4** no 2 pp 103 – 124.

2446. Muzyka D, Birley S, Leleux B 1996 Trade-offs in the investment decisions of European VCs *Journal of Business Venturing* **11** (4) pp 273 – 288.

2447. Packer F 1996 Venture capital, bank shareholding, and IPO underpricing in Japan in Levis M (editor) Empirical issues in raising equity capital *North-Holland* Amsterdam The Netherlands.

2448. Pettway R, Kaneko T 1996 The effects of removing price limits and introducing auctions upon short-term IPO returns: The case of Japanese IPOs *Pacific-Basin Finance Journal* **4** pp 241 – 158.

2449. Amit A R, Brander J, Zott C 1997 Venture capital financing of entrepreneurship in Canada *in* Halpern P (editor) Financing innovative enterprise in Canada *University of Calgary Press* Calgary Alberta Canada pp 237 – 277.

2450. Brav A, Gompers P 1997 Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture- and non venture-capital-backed companies *Journal of Finance* **52** pp 1791 – 1821.

2451. Cai J, Wei K C J 1997 The investment and operating performance of Japanese Initial Public Offerings *Pacific - Basin Finance Journal* **5** pp 389 – 417.

2452. Chevalier J, Ellison G 1997 Risk taking by mutual funds as a response to incentives *Journal of Political Economy* **105** pp 1167 – 1200.

2453. Fredriksen O 1997 Venture capital firms' relationship and cooperations with entrepreneurial companies *Thesis no 625* Linköping Studies in Science and Technology Linköpings Universitet SE-581 83 Linköping Sverige.

2454. Gilford S 1997 Limited attention and the role of the venture capitalist *Journal of Business Venturing* vol **12** pp 459 – 482.

2455. Karsai J, Wright M, Filatotchev I 1997 Venture capital in transition economies: The case of Hungary *Entrepreneurship Theory and Practice* **21** (4) pp 93 – 110.

2456. Shepherd D A, Zacharakis A 1997 Conjoint analysis: A window of opportunity for entrepreneurship research *Advances in entrepreneurship, firm emergence and growth* **3** pp 203 – 248.

2457. Shepherd D A 1999 Venture capitalists' assessment of new venture survival *Management Science* **45** (5) pp 621 – 632.

2458. Shepherd D A, Zacharakis A 1999 Conjoint analysis: A new methodology for researching the decision policies of venture capitalists *Venture Capital* **1** pp 197 – 217.

2459. Shepherd D A, Ettenson R, Crouch A 2000 New venture strategy and profitability: A venture capitalist's assessment *Journal of Business Venturing* **15** (5) pp 449 – 467.

2460. Shepherd D A, Zacharakis A 2002 Venture capitalists' expertise: A call for research into decision aids and cognitive feedback *Journal of Business Venturing* **17** (1) pp 1 – 20.

2461. Wright M, Robbie K, Ennew Ch 1997 Venture capitalists and serial entrepreneurs *Journal of Business Venturing* **12** pp 227 – 249.

2462. Amit R, Brander J, Zott C 1998 Why do venture capital firms exist? Theory and Canadian evidence *Journal of business Venturing* **13** (6) pp 441 – 466.

2463. Bergemann D, Hege U 1998 Venture capital financing, moral hazard, and learning *Journal of Banking and Finance* **22** pp 703 – 735.

2464. Berger A, Udell G 1998 The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle *Journal of Banking and Finance* **22** pp 613 – 673.

2465. Berger A, Schaek K 2011 Small and medium-sized enterprises, bank relationship strength, and the use of venture capital *Journal of Money, Credit and Banking* **43** pp 461 – 490.

2466. Black B, Gilson R 1998 Venture capital and the structure of capital markets: Banks versus stock markets *Journal of Financial Economics* **47** pp 243 – 277.

2467. Cornelius B, Isaksson A 1998 Venture capital incentives: A two country comparison *10th Nordic Conference on Small Business Research* Växjö University Växjö.

2468. Fried V H, Bruton G D, Hisrich R D 1998 Strategy and the board of directors in venture capital - backed firms *Journal of Business Venturing* vol **13** pp 493 – 503.

2469. Gerke W 1998 Market failure in venture capital markets for new medium and small enterprises *in* Hopt K J et al (editors) Comparative corporate governance – The state of the art and emerging research *Clarendon Press* Oxford UK pp 607 – 635.

2470. Hellmann T 1998 The allocation of control rights in venture capital contracts *RAND Journal of Economics* **29** pp 57 – 76.

2471. Hellmann Th F 2000 Venture capitalists: The coaches of Silicon Valley *in* Lee Ch-M, Miller W F Hancock M G, Rowen H S (editors) The Silicon Valley edge: A habitat for innovation and entrepreneurship *Stanford University Press* Stanford USA pp 276 – 294.

2472. Hellmann T, Puri M 2000 The interaction between product market and financing strategy: The role of venture capital *Review of Financial Studies* **13** pp 959 – 984.

2473. Hellmann T 2002 A theory of strategic venture investing *Journal of Financial Economics* **64** pp 285 – 314.

2474. Hellmann T, Puri M 2002 Venture capital and the professionalization of start-up firms: Empirical evidence *Journal of Finance* **57** (1) pp 169 – 197.

2475. Hellmann Th, Lindsey L, Puri M 2004 Building relationships early: Banks in venture capital *Working Paper 10535* National Bureau of Economic Research USA http://www.nber.org/papers/w10535 .

2476. Hellmann T 2006 IPOs, acquisitions, and the use of convertible securities in venture capital *Journal of Financial Economics* **81** pp 649 – 679.

2477. Hellmann T 2007 Entrepreneurs and the process of obtaining resources *Journal of Economics and Management Strategy* **16** pp 81 – 109.

2478. Hellmann T, Lindsey L, Puri M 2008 Building relationships early: Banks in venture capital *Review of Financial Studies* **21** pp 513 – 541.

2479. Hellmann T, Thiele V 2015 Friends or foes? The interrelationship between angel and venture capital markets *Journal of Financial Economics* **115** (3) pp 639 – 653.

2480. Hyde A 1998 Silicon valley's high-velocity labor market *Journal of Applied Corporate Finance* **11** pp 28 – 37.

2481. Jacobs O, Scheffler W 1998 Unternehmensbesteuerung und rechtsform, handbuch zur besteuerung deutscher unternehmen *2nd edition Beck* München Germany.

2482. Karsai J 1998 The appearance of venture capital in the Hungarian market and its participation in innovative processes *HFEP Research Booklet no 9* Hungarian Foundation for Enterprise Promotion and its Network Budapest Hungary.

2483. Karsai J, Wright M, Dudzinski Z, Morovic J 1999 Venture capital in transition economies: The cases of Hungary, Poland and Slovakia *in* Wright M, Robbie K (editors) Management buy-outs and venture capital *Edward Elgar* Cheltenham pp 81 – 114.

2484. Karsai J 2003 What has the state got to do with the venture capital market? Public financing of venture capital in Hungary *Acta Oeconomica* vol **53** no 3 pp 271 – 291.

2485. Karsai J 2004 Can the state replace private capital investors? Public financing of venture capital in Hungary *KTK/IE Discussion Papers 2004/9* Institute of Economics Hungarian Academy of Sciences Budapest Hungary HU ISSN 1785-377X ISBN 963 9588 09 1 pp 1 – 24.

2486. Lin T, Smith R 1998 Insider reputation and selling decisions: The unwinding of venture capital investments during equity IPOs *Journal of Corporate Finance* **4** pp 241 – 263.

2487. Marx L 1998 Efficient venture capital financing combining debt and equity *Review of Economic Design* **3** pp 371 – 387.

2488. Marx L, Strumsky D, Fleming L 2009 Mobility, skills, and the Michigan non-compete experiment *Management Science* **55** pp 875 – 889.

2489. Murray G C, Marriott R 1998 Why has the investment performance of technology-specialist European venture capital funds been so poor? *Research Policy* **27** pp 947 – 976.

2490. Prowse S 1998 Angel investors and the market for angel investments *Journal of Banking and Finance* **22** pp 785 – 792.

2491. Rajan R, Zingales L 1998 Financial dependence and growth *American Economic Review* **88** pp 59 – 86.

2492. Trester J 1998 Venture capital contracting under asymmetric information *Journal of Banking and Finance* **22** pp 675 – 699.

2493. Wright M, Robbie K 1998 Venture capital and private equity: A review and synthesis *Journal of Business Finance and Accounting* **25** (5) pp 521 – 570.

2494. Zider B 1998 How venture capital works *Harvard Business Review* pp 131 - 139.

2495. Aernoudt J 1999 European policy towards venture capital: Myth or reality? *Venture Capital* **1** (1) pp 47 – 57.

2496. Bliss R 1999 A venture capital model for transitioning economies: The case of Poland venture capital *International Journal of Entrepreneurial Finance* **1** (3) pp 241 – 257.

2497. Bygrave W D, Hay M, Peeters J B 1999 The venture capital handbook *Financial Times Prentice Hall* London UK.

2498. Gilson R 1999 The legal infrastructure of high technology industrial districts: Silicon Valley Route 128, and covenants not to compete *York University Law Review* **74** pp 575 – 629.

2499. Gilson R, Schizer D 2003 Understanding venture capital structure: A tax explanation for convertible preferred stock *Harvard Law Review* **116** pp 874 – 916.

2500. Gulati R, Gargiulo M 1999 Where do inter-organizational networks come from? *American Journal of Sociology* vol **104** (5) pp 1439 – 1493 *University of Chicago Press* Chicago USA.

2501. Hamao Y, Packer F, Ritter J R 1999 Institutional affiliation and the role of venture capital: Evidence from initial public offerings in Japan *Marshall School of Business University of Southern California Capital Markets Department Federal Reserve Bank of New York Warrington College of Business Administration University of Florida* USA pp 1 – 50.

2502. Leopold G 1999 Venture capital - das eigenkapitalgeschaft mit kleinen und mittleren unternehmen *Deutsches Steuerrecht* **37** pp 470 – 476.

2503. Neher D 1999 Staged financing: An agency perspective *Review of Economic Studies* **66** pp 255 – 274.

2504. Stillman R, Sunderland J, Heyl L, Swart H 1999 A venture capital programme for South Africa: Study and recommendations *Nathan Associates Working Paper* Arlington Virginia USA.

2505. Baygan G, Freudenberg M 2000 The internationalization of venture capital activity in OECD countries: Implications for measurement and policy *OECD Science, Technology and Industry Working Papers 2000/07 OECD Publishing* pp 1 – 55 http://dx.doi.org/10.1787/084236411045 .

2506. Baygan G 2003 Venture capital policies in Korea *OECD Science, Technology and Industry Working Papers 2003/02 OECD Publishing* Directorate for Science, Technology and Industry Organization for Economic Co-operation and Development pp 1 – 21 http://www.oecd.org/sti/working-papers http://dx.doi.org/10.1787/248000716362 .

2507. Bharat A, Galetovic A 2000 Weak property rights and holdup in R&D *Journal of Economics and Management Strategy* **9** pp 615 – 642.

2508. Cumming D J 2000 The convertible preferred equity puzzle in Canadian venture capital finance *Working Paper* University of Alberta
www.ssrn.com .

2509. Cumming D J 2001 The determinants of venture capital portfolio size: Empirical evidence *Working Paper* University of Alberta
www.ssrn.com .

2510. Cumming D J, MacIntosh J G 2000 Venture capital exits in Canada and the United States *University of Toronto Law Journal 2003*
www.ssrn.com .

2511. Cumming D J, MacIntosh J G 2001 Venture capital investment duration in Canada and the United States *Journal of Multinational Financial Management* **11** pp 445 – 463.

2512. Cumming D J, MacIntosh J G 2002a Crowding out private equity: Canadian evidence *Working Paper* University of Alberta and University of Toronto
www.ssrn.com .

2513. Cumming D J, MacIntosh J G 2002b A cross-country comparison of full and partial venture capital exits *Journal of Banking and Finance*
www.ssrn.com .

2514. Cumming D J, MacIntosh J G 2002c The extent of venture capital exits: Evidence from Canada and the United States in McCahery J, Renneboog L D R (editors) Venture capital contracting and the valuation of high-tech firms *Oxford University Press*
www.ssrn.com .

2515. Cumming D J, MacIntosh J G 2002d Economic and institutional determinants of venture capital investment duration in Libecap G (editor) Advances in the study of entrepreneurship innovation and economic growth *JAI Press*.

2516. Cumming D, Fleming G 2002 A law and finance analysis of venture capital exits in emerging markets *Working Paper Series in Finance 02-03* The Australian National University Canberra Australia.

2517. Cumming D J, MacIntosh J G 2003a A cross-country comparison of full and partial venture capital exits *Journal of Banking and Finance* **27** pp 511 – 548.

2518. Cumming D J, MacIntosh J G 2003b Venture-capital exits in Canada and the United States *The University of Toronto Law Journal* **53** (2) pp 101 – 199.

2519. Cumming D J, MacIntosh J F 2003c Comparative venture capital governance: private versus labour sponsored venture capital funds *CESifo Working Paper no 853* 2002 CESifo Area Conference on Venture Capital, Entrepreneurship and Public Policy pp 1 – 41.

2520. Cumming D, Fleming G, Schwienbacher A, 2005 Liquidity risk and venture capital finance *Financial Management* **34** (4) pp 77 – 105.

2521. Cumming D, Fleming G, Suchard J 2005 Venture capitalist value-added activities, fundraising and drawdowns *Journal of Banking and Finance* **29** pp 295 – 331.

2522. Cumming D, Fleming G, Schwienbacher A 2006 Legality and venture capital exits *Journal of Corporate Finance* **12** pp 214 – 245.

2523. Cumming D, MacIntosh J 2006 Crowding out private equity: Canadian evidence *Journal of Business Venturing* **21** pp 569 – 609.

2524. Cumming D 2008 Contracts and exits in venture capital finance *Review of Financial Studies* **21** (5) pp 1947 – 1982.

2525. Cumming D, Johan 2008 Preplanned exit strategies in venture capital *European Economic Review* **52** pp 1209 – 1241.

2526. Cumming D, Fleming G, Schwienbacher A 2009 Style drift in private equity *Journal of Business Finance and Accounting* **36** pp 645 – 678.

2527. Cumming D, Walz U 2010 Private equity returns and disclosure around the world *Journal of International Business Studies* **41** pp 727 – 754.

2528. Gans J, Stern S 2000 Incumbency and R&D incentives: Licensing the gale of creative destruction *Journal of Economics and Management Strategy* **9** pp 485 – 511.

2529. Gans J, Hsu D, Stern S 2002 When does start-up innovation spur the gale of creative destruction? *RAND Journal of Economics* **33** pp 571 – 586.

2530. Gans J, Stern S 2003 When does funding research by smaller firms bear fruit? Evidence from the SBIR program *Economics of Innovation and New Technology* **16** pp 361 – 384.

2531. Jain A, Kini O 2000 Does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance and Accounting* vol **27** issues 9, 10 pp 1139 – 1176.

2532. Jeng L, Wells P 2000 The determinants of venture capital funding: Evidence across countries *Journal of Corporate Finance* **6** pp 241 – 289.

2533. Kaplan S, Strömberg P 2000 Financial contracting theory meets the real world: An empirical analysis of venture capital contracts *NBER Working Paper no 7660*.

2534. Kaplan S, Strömberg P 2001 Venture capitalists as principals: Contracting, screening, and monitoring *American Economic Review* **91** pp 426 – 430.

2535. Kaplan S, Strömberg P 2002 Financial contracting theory meets the real world: An empirical analysis of venture capital contracts *Review of Economic Studies* vol **70** no 2 pp 281 – 315.

2536. Kaplan S, Strömberg P 2003 Financial contracting theory meets the real world: An empirical analysis of venture capital contracts *Review of Economic Studies* **70** pp 281 – 315.

2537. Kaplan S, Strömberg P 2004 Characteristics, contracts, and actions: Evidence from venture capitalist analyses *Journal of Finance* **59** pp 2177 – 2210.

2538. Kaplan S, Schoar A 2005 Private equity performance: returns, persistence, and capital flows *Journal of Finance* **60** pp 1791 – 1823.

2539. Kaplan S, Martel F, Strömberg P 2007 How do legal differences and experience affect financial contracts? *Journal of Financial Intermediation* **16** pp 273 – 311.

2540. Kaplan S, Strömberg P 2009 Leveraged buyouts and private equity *Journal of Economic Perspectives* **23** pp 121 – 146.

2541. Kaplan S, Sensoy B, Strömberg P 2009 Should investors bet on the jockey or the horse? Evidence from the evolution of firms from early business plans to public companies *Journal of Finance* **64** (1) pp 75 – 115.

2542. Kaplan S, Lerner J 2010 It ain't broke: The past, present, and future of venture capital *Journal of Applied Corporate Finance* **22** pp 36 – 47.

2543. Karaömerlioğlu D Ç, Jacobsson S 2000 The Swedish venture capital industry – an infant, adolescent or grown-up? *Venture Capital* **2** pp 61 – 68.

2544. Koski T 2000 Success potential of a venture capital investment. A model to simulate venture capitalists' perception using fuzzy set theory *PhD Dissertation A-177 HeSE Print* Helsinki School of Economics and Business Administration Helsinki Finland.

2545. Lee J 2000 Challenges of Korean technology-based ventures and governmental policies in the emergent-technology sector *Technovation* **20**.

2546. Lehtonen S 2000 Venture capitalist's exit vehicles and their effects on perceived utility. Allocation of rewards and contract structure *PhD Dissertation no 89* Swedish School of Economics and Business Administration Helsingfors Sweden.

2547. Quindlen R 2000 Confessions of a venture capitalist: Inside the high-stakes world of new venture financing *Warner Books* New York USA.

2548. Schefczyk M 2000 Erfolgsstrategien deutscher venture capital - gesellschaften *2nd edition Schaeffer-Poeschel* Stuttgart Germany.

2549. Schertler A 2000 The impact of public subsidies on venture capital investments in start-up enterprises *Kiel Working Paper no 1018* p 23.

2550. Van Osnabrugge M 2000 A comparison of business angel and venture capitalist investment procedures: An agency theory-based analysis *Venture Capital: An International Journal of Entrepreneurial Finance* **2** (2) pp 91 – 109.

2551. Zacharakis A L, Meyer G D 2000 The potential of actuarial decision models: Can they improve the venture capital investment decision? *Journal of Business Venturing* **15** (4) pp 323 – 346.

2552. Zacharakis A L, McMullen, J S, Shepherd D A 2007 Venture capitalists' decision policies across three countries: An institutional theory perspective *Journal of International Business Studies* **38** (5) pp 691 – 708.

2553. Bascha A, Walz U 2001 Convertible securities and optimal exit decisions in venture capital finance *Journal of Corporate Finance* **7** pp 285 – 306.

2554. Engel D 2001a Höheres beschäftigungswachstum durch venture capital? *ZEW Discussion Paper no 01-34* Mannheim Germany.

2555. Engel D 2001b Die identifizierung VC-finanzierter unternehmen in den *ZEW Gründungspanels Unveröffentlichtes Manuskript* Mannheim Germany.

2556. Engel D 2002 Welche regionen profitieren von venture capital - aktivitäten? *ZEW Discussion Papers no 02-37*

http://hdl.handle.net/10419/24770 ,

ftp://ftp.zew.de/pub/zew-docs/dp/dp0237.pdf .

2557. Engel D, Keilbach M 2007 Firm-level implications of early stage venture capital investment—An empirical investigation *Journal of Empirical Finance* **14** (2) pp 150 – 167.

2558. Francis B B, Hasan I 2001 The underpricing of venture and non-venture capital IPOs: An empirical investigation *Journal of Financial Services Research* **19** pp 93 – 113.

2559. Fredriksen Ø, Klofsten M 2001 Venture capitalists’ governance of their portfolio companies *Journal of Enterprising Culture* **9** pp 201 – 219.

2560. Hyytinen A, Pajarinen M 2001 Financial systems and venture capital in Nordic Countries: A comparative study *Discussion Paper 774* The Research Institute of the Finnish Economy Helsinki Finland.

2561. Keuschnigg Ch, Nielsen S B 2001 Public policy for venture capital *International Tax and Public Finance* **8** (4) pp 557 – 572.

2562. Keuschnigg Ch 2003 Optimal public policy for venture capital backed innovation *CEPR DP 3850.*

2563. Keuschnigg Ch, Nielsen S B 2003a Tax policy, venture capital, and entrepreneurship *Journal of Public Economics* **87** (1) pp 175 – 203.

2564. Keuschnigg C, Nielsen S B 2003b Taxes and venture capital support *European Finance Review* **7** pp 515 – 539.

2565. Keuschnigg, Ch 2004a Taxation of a venture capitalist with a portfolio of firms *Oxford Economic Papers* **56** (1) pp 285 – 306.

2566. Keuschnigg Ch 2004b Venture capital backed growth *Journal of Economic Growth* **9** (2) pp 239 – 261.

2567. Kanniainen V, Keuschnigg Ch 2004 Start-up investment with scarce venture capital support *Journal of Banking and Finance* **28** pp 1935 – 1959.

2568. Keuschnigg Ch, Nielsen S 2004a Start-ups, venture capitalists, and the capital gains tax *Journal of Public Economics* **88** pp 1011 – 1042.

2569. Keuschnigg C, Nielsen S B 2004b Taxation and venture capital backed entrepreneurship *International Tax and Public Finance* **11** pp 369 – 390.

2570. Kirilenko A 2001 Valuation and control in venture finance *Journal of Finance* **56** pp 565 – 587.

2571. Lockett A, Wright M 2001 The syndication of venture capital investments Omega The International *Journal of Management Science* **29** pp 375 – 390.

2572. Maula M, Murray G 2001 Corporate venture capital and the creation of US public companies *in* Hitt A, Amit R, Lucier C, Nixon D (editors) Creating value: Winners in the new business environment *Blackwell* New York USA.

2573. Peng L 2001 Building a venture capital index *Social Science Research Network Electronic Paper Collection* Economics Department Yale University pp 1 – 54 http://paper.ssrn.com/abstract=281804 .

2574. Seppä T J, Laamanen T 2001 Valuation of venture capital investments: Empirical evidence *R&D Management* vol **31** (2) pp 215 – 230.

2575. Seppä T J 2003 Essays on the valuation and syndication of venture capital investments *PhD Dissertation 2003/1* Espoo Finland.

2576. Shachmurove Y 2001 Annualized returns of venture-backed public companies categorized by stage of financing *Journal of Entrepreneurial Finance* vol **6** no 1 pp 44 – 58.

2577. Shachmurove Y 2007a Innovation and trade: Introduction and comments in Sheshinski E, Strom R J, Baumol W J (editors) Entrepreneurship, innovation, and the growth mechanism of the free-enterprise economies *Princeton University Press* pp 247 – 260.

2578. Shachmurove Y 2007b Geography and industry meets venture capital *Departments of Economics The City College of the City University of New York University of Pennsylvania* USA pp 1 – 34
http://ssrn.com/abstract=977989 .

2579. Shachmurove A, Shachmurove Y 2004 Annualized and cumulative returns on venture-backed public companies categorized by industry *The Journal of Entrepreneurial Finance and Business Ventures* vol **9** issue 3 pp 41 – 60.

2580. Shachmurove E, Shachmurove Y 2004 Annualized returns of ventured-backed public companies stratified by decades and by stage of financing *The Journal of Entrepreneurial Finance and Business Ventures* vol **9** issue 2 pp 109 – 123.

2581. Sorenson O, Stuart T 2001 Syndication networks and the spatial distribution of venture capital investments *American Journal of Sociology* **106** pp 1546 – 1588.

2582. Allen F, Song W 2002 Venture capital and corporate governance http://fic.wharton.upenn.edu/fic/papers/03/0305.pdf .

2583. Audretsch D, Lehmann E 2002 Debt or equity? The role of venture capital in financing the new economy Germany *CEPR Working Paper no 3656*.

2584. Bottazzi L, Da Rin M 2002a Venture capital in Europe and the financing of innovative companies *Economic Policy* **34** pp 229 – 269.

2585. Bottazzi L, Da Rin M 2002b Europe's "New" stock markets *CEPR Discussion Paper no 3521*.

2586. Bottazzi L, Da Rin M, Giavazzi F 2003 Research, patents, and the financing of ideas: Why is the EU growth potential so low?' *in* Sapir A, Nava M (editors) Economic policy-making in the European Union *European Commission* Brussels Belgium.

2587. Bottazzi L, Da Rin M 2004 Financing European entrepreneurial firms: Facts, issues and research agenda *in* Keuschnigg Ch, Kanniainen V (editors) Venture capital, entrepreneurship and public policy Cambridge MA *MIT Press* USA.

2588. Bottazzi L, Da Rin M, Hellmann T 2004a The changing face of the European venture capital industry: Facts and analysis *Journal of Private Equity* **7** pp 26 – 53.

2589. Bottazzi L, Da Rin M, Hellmann Th 2004b Active financial intermediation: Evidence on the role of organizational specialization and human capital *RICAFE Working Paper no 12*.

2590. Bottazzi L, Da Rin M, Hellmann T 2008 Who are the active investors? Evidence from venture capital *Journal of Financial Economics* **89** pp 488 – 512.

2591. Bottazzi L, Da Rin M, Hellmann T 2009 What is the role of legal systems in financial intermediation? Theory and evidence *Journal of Financial Intermediation* **18** pp 559 – 598.

2592. Brander J, Amit R, Antweiler W 2002 Venture capital syndication: Improved venture selection versus value-added hypothesis *Journal of Economics and Management Strategy* **11** (3) pp 423 – 452.

2593. Brander J, Egan E, Hellmann T 2008 Government sponsored versus private venture capital: Canadian evidence *in* Lerner J and Schoar A (editors) *NBER Conference Volume on International Differences in Entrepreneurship*.

2594. Brander J, De Bettignies J 2009 Venture capital investment: the role of predator-prey synamics with learning by doing *Economics of Innovation and New Technology* **18** pp 1 – 19.

2595. Brander J, Du Q, Hellmann T 2010 Governments as venture capitalists: Striking the right balance in *Globalization of alternative investments* vol **3** The global economic impact of private equity report 2010 *World Economic Forum* Davos Switzerland.

2596. Chesbrough H W 2002 Making sense of corporate venture capital *Harvard Business Review* **80** (3) pp 4 – 11.

2597. Cestone G 2002 Venture capital meets contract theory: Risky claims or formal control? *CEPR Discussion Paper 3462*.

2598. Davis M, Schachermayer W, Tompkins R 2002 The evaluation of venture capital as an instalment option: Valuing real options using real options pp 1 – 31.

2599. Dossani R, Kenney M 2002 Creating an environment for venture capital in India *World Development* **30** (2) pp 227 – 253.

2600. Eisele F, Habermann M, Oesterle R 2002 Die beteiligungskriterien fur eine venture capital finanzierung - eine empirische analyse der phasenbezogenen bedeutung *Tubinger Diskussionsbeitrag no 238* Germany pp 1 – 35.

2601. Everts M 2002 Cash dilution in illiquid funds *MPRA Paper no 4655* Munich University Munich Germany pp 1 – 15
http://mpra.ub.uni-muenchen.de/4655/ .

2602. Gilson R, Schizer D 2002 Understanding venture capital structure: A tax explanation for convertible preferred stock *Columbia Law School Working Paper no 230* Columbia University New York USA.

2603. Kenney M, Han K, Tanaka S 2002 Scattering geese: The venture capital industries of East Asia *A Report to the World Bank BRIE Working Paper 146* Berkeley California USA http://brie.berkeley.edu/publications/wp146.pdf .

2604. Koh F C C, Koh W T H 2002 Venture capital and economic growth: An industry overview and Singapore's experience *Working Paper no 21 - 2002* http://www.research.smu.edu.sg/faculty/edge/entrep_fin/papers/SERVCandGrowth_WP_dec_2002.pdf .

2605. McGlue D 2002 The funding of venture capital in Europe: Issues for public policy *Venture Capital* **4** (1) pp 45 – 58.

2606. Moskowitz T, Vissing-Jørgensen A 2002 The returns to entrepreneurial investment: A private equity premium puzzle? *American Economic Review* **92** pp 745 – 778.

2607. Shane S, Cable D 2002 Network ties, reputation, and the financing of new ventures *Management Science* **48** (3) pp 364 – 381.

2608. Shane S, Stuart T 2002 Organizational endowments and the performance of university start-ups *Management Science* **48** pp 154 – 170.

2609. Zook M 2002 Grounded capital: Venture financing and the geography of the Internet industry, 1994-2000 *Journal of Economic Geography* **2** pp 151 – 177.

2610. Brav A, Gompers P 2003 The role of lockups in Initial Public Offerings *Review of Financial Studies* **16** pp 1 – 29.

2611. Becker R, Hellman T 2003 The genesis of venture capital: Lessons from the German experience CESifo *Working Paper no 883* Sauder School of Business.

2612. Bergemann D, Hege U 2003 The value of benchmarking *in* McCahery J A, Renneboog L (editors) Venture capital contracting and the valuation of high tech firms *Oxford University Press* Oxford UK pp 83 – 107.

2613. Casamatta C 2003 Financing and advising: optimal financial contracts with venture capitalists *Journal of Finance* **58** pp 2059 - 2086.

2614. Casamatta C, Haritchabalet C 2007 Experience, screening and syndication in venture capital investments *Journal of Financial Intermediation* **16** pp 368 – 398.

2615. Cornelli F, Yosha O 2003 Stage financing and the role of convertible securities *Review of Economic Studies* **70** pp 1 – 32.

2616. Das S R, Jagannathan M, Sarin A 2003 Private equity returns: An empirical examination of the exit of venture-backed companies (Digest summary) *Journal of Investment Management* 1 (1152-177).

2617. Davila A, Foster G, Gupta M 2003 Venture capital financing and the growth of start-up firms *Journal of Business Venturing* **18** pp 689 – 708.

2618. Franzke S A, Grohs S, Laux Ch 2003 Initial public offerings and venture capital in Germany *CFS Working Paper no 2003/26* Center for Financial Studies an der Johann Wolfgang Goethe-*Universität Frankfurt am Main* Leibniz Information Centre for Economics Germany pp 1 – 39

http://hdl.handle.net/10419/25395 ,
www.ifk-cfs.de www.econstor.eu.

2619. Gawlik R, Teczke J 2003 Spin of enterprises as a financing solution for the innovative clients of science and technology parks *MPRA Paper no 45224* Munich University Munich Germany pp 1 – 7
http://mpra.ub.uni-muenchen.de/45224/ .

2620. Gilson R, Schizer D 2003 Venture capital structure: A tax explanation for convertible preferred stock *Harvard Law Review* **116** pp 875 – 916.

2621. Hirukawa M, Ueda M 2003 Venture capital and productivity *University of Wisconsin-Madison* USA.

2622. Inderst R, Muller H 2003 The effect of capital market characteristics on the value of start-up firms *Journal of Financial Economics* **72** pp 319 – 356.

2623. Jones C M, Rhodes-Kropf M 2003 The price of diversifiable risk in venture capital and private equity *unpublished working paper* Columbia University NY USA.

2624. Keilbach M, Engel D 2003 Firm level implications of early stage venture capital investment: An empirical investigation *ZEW Discussion Papers no 02-82* Leibniz Information Centre for Economics Germany p 1 – 25
http://hdl.handle.net/10419/23962 ,
ftp://ftp.zew.de/pub/zew-docs/dp/dp0282.pdf ,
www.econstor.eu.

2625. Nielsen S B, Keuschnigg Ch 2006 Public policy, start-up entrepreneurship, and the market for venture capital *Working Paper 15-06* Department of Economics Copenhagen Business School Copenhagen Denmark pp 1 – 43.

2626. Leleux B, Surlemont B 2003 Public versus private venture capital: seeding or crowding out? A pan-European analysis *Journal of Business Venturing* **18** pp 81 – 104.

2627. Rindermann G 2003 Venture capitalist participation and the performance of IPO firms: Empirical evidence from France, Germany and the UK *EFMA 2003 Helsinki Meeting* Finland.

2628. Schmidt K 2003 Convertible securities and venture capital finance *Journal of Finance* **58** pp 1139 – 1166.

2629. Schmidt D, Wahrenburg M 2003 Contractual relations between European - VC funds and investors: The impact of reputation and bargaining power on contractual design *RICAFE Working Paper 12*
http://ww.lse.ac.uk/ricafe.

2630. Schertler A 2003 Driving forces of venture capital investments in Europe: A dynamic panel data analysis. European Integration. Financial Systems and Corporate Performance *EFIC Working Paper no 03-27* United Nations University.

2631. Stuart T, Sorenson O 2003 Liquidity events and the geographic distribution of entrepreneurial activity *Administrative Science Quarterly* **48** pp 175 – 201.

2632. Wang C K, Wang K, Lu Q 2003 Effects of venture capitalists' participation in listed companies *Journal Banking Finance* **27** pp 2015 – 2034.

2633. Wasserman N 2003 Founder-CEO succession and the paradox of entrepreneurial success *Organization Science* **14** pp 149 – 172.

2634. Wasserman N 2006 Stewards, agents, and the founder discount: Executive compensation in new ventures *Academy of Management Journal* **49** pp 960 – 976.

2635. Woodward S, Hall R 2003 Benchmarking the returns to venture *NBER Working Paper 10202*
http://www.nber.org/papers/w10202.

2636. Aghion P, Bolton P, Tirole J 2004 Exit options in corporate finance: Liquidity versus incentives *Review of Finance* **8** pp 327 – 353.

2637. Avnimelech G, Kenney M, Teubal M 2004 Building venture capital industries: understanding the US and Israeli experiences *Berkeley Roundtable on the International Economy* UC Berkeley USA.

2638. Avnimelech G, Teubal M 2004 Venture capital start-up co-evolution and the emergence & development of Israel's new high tech cluster *Economics of Innovation & New Technology* **13** (1) pp 33 – 60.

2639. Audretsch D B, Keilbach M 2004 Entrepreneurship capital and economic performance *Regional Studies* **38** (8) pp 949 – 959.

2640. Baum J, Silverman B 2004 Picking winners or building them? Alliances, patents, and human capital as selection criteria in venture financing of biotechnology startups *Journal of Business Venturing* **19** pp 411 – 436.

2641. Berk J, Green R, Naik V 2004 Valuation and return dynamics of new ventures *Review of Financial Studies* **17** pp 1 – 35.

2642. Da Rin M, Nicodano G, Sembenelli A 2004 Public policy and the creation of active venture capital markets *Working Paper no 270* IGIER – Università Bocconi Italy pp 1 – 38 http://www.igier.uni-bocconi.it .

2643. Da Rin M, Nicodano G, Sembenelli A 2005, 2006 Public policy and the creation of active venture capital markets *Journal of Public Economics* **90** pp 1699 – 1723

http://www.ecb.int ,
http://ssrn.com/abstract_id=634025 .

2644. Da Rin M, Hege M U, Llobet G, Walz U 2005 The law and finance of venture capital financing in Europe: Findings from the RICAFE research project *MPRA Paper no 39552* Munich University Munich Germany pp 1 – 30
http://mpra.ub.uni-muenchen.de/39552/ .

2645. Da Rin M, Hellmann Th, Puri M 2011 A survey of venture capital research *TILEC Discussion Paper no 2011-044 CentER Discussion Paper no 2011-111* Tilburg University Tilburg Netherlands University of British Columbia Vancouver British Columbia Canada Duke University Durham North Carolina USA ISSN 0924-7815 pp 1 – 136 http://ssrn.com/abstract=1942821.

2646. De Clercq D, Dimov D 2004 Explaining venture capital firms' syndication behavior: A longitudinal study. *Venture Capital: An International Journal of Entrepreneurial Finance* **6** (4) pp 243 – 256.

2647. De Clercq D, Dimov D 2010 Doing it not alone. Antecedents, dynamics, and outcomes of venture capital syndication *Venture capital* pp 221 – 242 *John Wiley & Sons Inc* USA.

2648. Dittmann I, Maug E, Kemper J 2004 How fundamental are fundamental values? Valuation methods and their impact on the performance of German venture capitalists *European Financial Management* vol **10** (4) pp 609 – 638.

2649. Hsu D 2004 What do entrepreneurs pay for venture capital affiliation? *Journal of Finance* **59** pp 1805 – 1844.

2650. Inderst R, Müller H 2004 The effect of capital market characteristics on the value of startup firms *Journal of Financial Economics* **72** pp 319 – 356.

2651. Inderst R, Müller H, Muennich F 2007 Financing a portfolio of projects *Review of Financial Studies* **20** pp 1289 – 1325.

2652. Inderst R, Müller H 2009 Early-stage financing and firm growth in new industries *Journal of Financial Economics* **93** pp 276 – 291.

2653. Jones C M, Rhodes-Kropf M 2004 The price of diversifiable risk in venture capital and private equity pp 1 – 53.

2654. Lee P, Wahal S 2004 Grandstanding, certification and the underpricing of venture capital backed IPOs *Journal of Financial Economics* **73** pp 375 – 407.

2655. Michelacci C, Suarez J 2004 Business creation and the stock market *Review of Economic Studies* **71** pp 459 – 481.

2656. Mishra A 2004 Indian venture capitalists (VCs): Investment evaluation criteria *ICFAI Journal of Applied Finance* **10** (7) pp 71 – 93.

2657. Peggy M L, Wahal S 2004 Grandstanding, certification and the underpricing of venture capital backed IPOs *Journal of Financial Economics* **73** pp 375 – 407.

2658. Repullo R, Suarez J 2004 Venture capital finance: A security design approach *Review of Finance* **8** pp 75 – 108.

2659. Roman A, van Pottelsberghe de la Potterie B 2004 The determinants of venture capital: A panel analysis of 16 OECD countries *Working paper WF CEB 04/015* Universite Libre de Bruxelles Brussels Belgium.

2660. Sternberg R J 2004 Successful intelligence as a basis for entrepreneurship *Journal Business Venture* **19** pp 189 – 201.

2661. Ueda M 2004 Banks versus venture capital: Project evaluation, screening, and expropriation *Journal of Finance* **59** pp 601 – 621.

2662. Becker R, Hellmann T 2005 The genesis of venture capital: Lessons from the German experience *in* Keuschnigg C, Kanniainen V (editors) Venture capital, entrepreneurship, and public policy Chapter 2 *MIT Press* Massachusetts Institute of Technology USA pp 33 – 67.

2663. Bergemann D, Hege U 2005 The financing of innovation: learning and stopping *RAND Journal of Economics* **36** pp 719 – 752.

2664. Cochrane J 2005 The risk and return of venture capital *Journal of Financial Economics* **75** (1) pp 3 – 52.

2665. De Carvalho A G, Calomiris C W, De Matos J A 2005 Venture capital as human resource management *NBER Working Paper no 11350*.

2666. Dessein W 2005 Information and control in ventures and alliances *Journal of Finance* **60** pp 2513 – 2549.

2667. Dessí R 2005 Start-up finance, monitoring and collusion *RAND Journal of Economics* **36** pp 255 – 274.

2668. Dimov D, Shepherd D 2005 Human capital theory and venture capital firms: Exploring "home runs" and "strike outs" *Journal of Business Venturing* **20** pp 1 – 21.

2669. Dushnitsky G, Lenox M 2005a When do firms undertake R&D by investing in new ventures? *Strategic Management Journal* **26** pp 947 – 965.

2670. Dushnitsky G, Lenox M J 2005b When do incumbents learn from entrepreneurial ventures? Corporate venture capital and investing firm innovation rates *Research Policy* **34** pp 615 – 639.

2671. Dushnitsky G, Lenox M J 2006 When does corporate venture capital create firm value? *Journal of Business Venturing* **21** pp 753 – 772.

2672. Dushnitsky G, Lavie D 2008 Interdependence in the evolution of inter-firm networks: How alliances shape corporate venture capital in the software industry *2007 West Coast Research Symp on Technology Entrepreneurship* University of Washington Seattle USA.

2673. Ernst H, Witt P, Brachtendorf G 2005 Corporate venture capital as a strategy for external innovation: An exploratory empirical study *R&D Management* **25** pp 233 – 242.

2674. Ge D, Mahoney J M, Mahoney J T 2005 New venture valuation by venture capitalists: An integrative approach *Federal Reserve Bank of New York* NY USA.

2675. Hsu D, Kenney M 2005 Organizing venture capital: The rise and demise of American Research & Development Corporation, 1946-1973 *Industrial and Corporate Change* **14** pp 579 – 616.

2676. Hsu D 2006 Venture capitalists and cooperative start-up commercialization strategy *Management Science* **52** pp 204 – 219.

2677. Hsu D 2007 Experienced entrepreneurial founders, organizational capital, and venture capital funding *Research Policy* **36** pp 722 – 741.

2678. Klepper S, Sleeper S 2005 Entry by spinoffs *Management Science* **51** pp 1291 – 1306.

2679. Klepper S, Thompson P 2010 Disagreements and intra-industry spinoffs *International Journal of Industrial Organization* **28** pp 526 – 538.

2680. Kõomägi M 2005a Riskikapitaliinvesteeringud eestis. Haridus ja majandus *Rahvusvahelise teaduskonverentsi materjalid* Tallinn Estonia pp 53 – 56.

2681. Kõomägi M 2005b Venture capital financing and deal structuring problems in Estonia. Business development possibilities in the new European area *Scientific Proceedings* Part 1 Vilnius Lithuania pp 125 – 130.

2682. Kõomägi M 2005c Riskikapitali hinnakujunemise mehhanism. Eesti ettevõtluse perspektiivid Euroopa liidus *Pärnu Mattimar OÜ* Tallinn-Pärnu Estonia pp 94 – 110.

2683. Kõomägi M, Sander P 2006 Venture capital investments and financing in Estonia: A case study approach *Tartu University Press* Faculty of Economics and Business Administration University of Tartu Estonia ISSN 1406–5967 ISBN 9949–11–264–8 pp 1 – 77
www.tyk.ee .

2684. Lai R 2005 Does competition kill ties? *MPRA Paper no 4759* Munich University Munich Germany pp 1 – 37
http://mpra.ub.uni-muenchen.de/4759/ .

2685. Mäkelä M M, Maula M M 2005 Cross-border venture capital and new venture internationalization: An isomorphism perspective *Venture Capital* vol **7** no 3 pp 227 – 257.

2686. Mayer C, Schoors K, Yafeh Y 2005 Sources of funds and investment activities of venture capital funds: Evidence from Germany, Israel, Japan and the United Kingdom *Journal of Corporate Finance* **11** pp 586 – 608.

2687. Neus W, Walz U 2005 Exit timing of venture capitalists in the course of an initial public offering *Journal of Financial Intermediation* **14** pp 253 – 277.

2688. Wong L H 2005 Venture capital fund management: A comprehensive approach to investment practices and the operations of a VC firm *Aspatore Books* Singapore pp 1 – 485.

2689. Zook M A 2005 The geography of the Internet industry: Venture capital, dotcoms, and local knowledge *Blackwell Publishing* Malden MA USA.

2690. Antonelli C, Teubal M 2006 Venture capitalism as a mechanism for knowledge governance *Working paper series no 4* Department of Economics Università di Torino Italy.

2691. Cassiman B, Ueda M 2006 Optimal project rejection and new firm start-ups *Management Science* **52** pp 262 – 275.

2692. Colombo M, Grilli L, Piva E 2006 In search of complementary assets: the determinants of alliance formation of high-tech start-ups *Research Policy* **35** pp 1166 – 1199.

2693. Dimov D, De Clercq D 2006 Venture capital investment strategy and portfolio failure rate: A longitudinal study *Entrepreneurship Theory and Practice* vol **30** no 2 pp 207 – 223.

2694. Dimov D, Shepherd D A, Sutcliffe K M 2007 Requisite expertise, firm reputation, and status in venture capital investment allocation decisions *Journal of Business Venturing* **22** (4) pp 481 – 502.

2695. Eckhardt J, Shane S, Delmar F 2006 Multistage selection and the financing of new ventures. *Management Science* **52** pp 220 – 232.

2696. Ellul A, Pagano M 2006 IPO underpricing and after-market liquidity *Review of Financial Studies* **19** pp 381 – 421.

2697. Gebhardt G, Schmidt K 2006 Conditional allocation of control rights in venture capital firms *CEPR Discussion Paper 5758.*

2698. Fallick B, Fleischman C, Rebitzer J 2006 Job-hopping in Silicon Valley: Some evidence concerning the microfoundations of a high-technology cluster *Review of Economics and Statistics* **88** pp 472 – 481.

2699. Franke N, Gruber M, Harhoff D, Henkel J 2006 What you are is what you like—similarity biases in venture capitalists evaluations of start-up teams *Journal of Business Venturing* **21** (6) pp 802 – 826.

2700. Franke N, Gruber M, Harhoff D, Henkel J 2008 Venture capitalists' evaluations of start-up teams: Trade-offs, knock-out criteria, and the impact of VC experience *Entrepreneurship Theory and Practice* **32** (3) pp 459 – 483.

2701. Franco A, Filson D 2006 Spinouts: Knowledge diffusion through employee mobility *RAND Journal of Economics* **37** pp 841 – 860.

2702. Franco A, Mitchell M 2008 Covenants not to compete, labor mobility, and industry dynamics *Journal of Economics and Management Strategy* **17** pp 581 – 606.

2703. Isaksson A 2006 Studies on the venture capital process *PhD Thesis* Umeå University Umeå Sweden.

2704. Isaksson A 2010 Staten som venture-capitalist: En sammanställning av internationell empirisk forskning *in* Tillväxtanalys, Staten och riskkapitalet - Delrapport 1: Metodbeskrivning och kunskapsöversikt Rapport 2010:01 Östersund: Tillväxtanalys pp 33 – 84.

2705. Mathews R 2006 Strategic alliances, equity stakes, and entry deterrence *Journal of Financial Economics* **80** pp 35 – 79.

2706. Motohashi K 2006 R&D networks of small and medium size companies *in* Goto and Kodama editors Innovation system in Japan *University of Tokyo Press* (in Japanese) Tokyo Japan pp 137 – 167.

2707. Motohashi K 2010 Comparative analysis of biotechnology startups between Japan and the US *MPRA Paper no 50095* Munich University Munich Germany pp 1 – 25 http://mpra.ub.uni-muenchen.de/50095/ .

2708. Proimos A, Murray W 2006 Entrepreneuring into venture capital *The Journal of Private Equity* **9** (3) pp 23 – 34 doi: 10.3905/jpe.2006.635426 .

2709. Riyanto Y, Schwienbacher A 2006 On the strategic use of corporate venture financing for securing demand *Journal of Banking and Finance* **31** pp 679 – 702.

2710. Tirole J 2006 The theory of corporate finance *Princeton University Press* New Jersey USA.

2711. Wadhwa A, Kotha S 2006 Knowledge creation through external venturing: Evidence from the telecommunications equipment manufacturing industry *Academy of Management Journal* **49** (4) pp 819 – 835.

2712. Zhang J 2006 A study of academic entrepreneurs using venture capital data *Working Paper no 2006.01* Public Policy Institute of California San Francisco California USA.

2713. Zhang J 2007a Access to venture capital and the performance of venture capital-backed star-ups in Silicon Valley *Economics Developments Quarterly* **21** pp 124 – 147.

2714. Zhang J 2007b The advantage of experienced start-up founders in venture capital acquisition: Evidence from serial entrepreneurs *IZA Discussion Paper no 2964* Department of Economics Clark University USA pp 1 – 42.

2715. Bernile G, Cumming D, Lyandres E 2007 The size of venture capital and private equity fund portfolios *Journal of Corporate Finance* **13** pp 564 – 590.

2716. Campbell R A, Kraeussl R 2007 A survey of the venture capital industry in Central and Eastern Europe *in* Gregoriou G N, Kooli M, Kraeussl R (editors) Venture capital in Europe Chapter 4 *Elsevier – North Holland* Quantitative Finance Series New York USA.

2717. Casamatta C, Haritchabalet C 2007 Experience, screening and syndication in venture capital investments *Journal of Financial Intermediation* 16 (3) pp 368 – 398.

2718. Colombo L, Dawid H, Kabus K 2007 When do Thick Venture Capital Markets Foster Innovation? An Evolutionary Analysis *IEF0074 - marzo - 2007* Istituto di Economia e Finanza *Università Cattolica del Sacro Cuore* Milano Italy pp 1 – 31.

2719. de Bettignies J-E, Brander J 2007 Financing entrepreneurship: Bank finance versus venture capital *Journal of Business Venturing* **22** pp 808 – 832.

2720. de Bettignies J-E, Chemla G 2008 Corporate venturing, allocation of talent, and competition for star managers *Management Science* **54** pp 505 – 521.

2721. de Bettignies J-E 2008 Financing the entrepreneurial venture *Management Science* **54** pp 151 – 166.

2722. Hochberg Y, Ljungqvist A, Lu Y 2007 Whom you know matters: Venture capital networks and investment performance *Journal of Finance* **62** pp 251 – 301.

2723. Hochberg Y, Ljungqvist A, Lu Y 2010 Networking as a barrier to entry and the competitive supply of venture capital *Journal of Finance* **65** pp 829 – 859.

2724. Giot P, Schwienbacher A 2007 IPOs, trade sales and liquidations: Modelling venture capital exits using survival analysis *Journal of Banking & Finance* **31** (3) pp 679 – 702.

2725. Hsu D H 2007 Experienced entrepreneurial founders and venture capital funding *Research Policy* **36** pp 722 – 741.

2726. Jovanovic B, Szentes B 2007 On the return to venture capital *NBER Working Paper no 12874*.

2727. Lai R 2007 Why funds of funds? *MPRA Paper no 4762* Munich University Munich Germany pp 1 – 53
http://mpra.ub.uni-muenchen.de/4762/ .

2728. Li K, Prabhala N 2007 Self-selection models in corporate finance *in* Gecko E (editor) Handbook of corporate finance: Empirical corporate finance vol **1** *North Holland* Amsterdam The Netherlands.

2729. Luukkonen T 2007 Understanding the strategies of venture capital investors in helping their portfolio firms to become international *Discussion Paper no 1099* The Research Institute of the Finnish Economy Helsinki Finland ISSN 0781-6847 pp 1 – 28.

2730. Luukkonen T 2008 Different types of venture capital investors and value-added to high-tech portfolio firms *Discussion Paper no 1149* The Research Institute of the Finnish Economy Helsinki Finland ISSN 0781-6847 pp 1 – 28.

2731. Mann R, Sager T 2007 Patents, venture capital, and software start-ups *Research Policy* **36** pp 193 – 208.

2732. Pintado T R, De Lema D G P, Van Auken H 2007 Venture capital in Spain by stage of development *Journal of Small Business Management* **45** (1) pp 68 – 88.

2733. Robinson D, Stuart T 2007 Financial contracting in biotech strategic alliances *Journal of Law and Economics* **50** pp 559 - 596.

2734. Sau L 2007 New pecking order financing for innovative firms: An overview *MPRA Paper no 3659* Munich University Munich Germany pp 1 – 28
http://mpra.ub.uni-muenchen.de/3659/ .

2735. Schwienbacher A 2007 A theoretical analysis of optimal financing strategies for different types of capital-constrained entrepreneurs *Journal of Business Venturing* **22** pp 753 – 781.

2736. Schwienbacher A 2008 Innovation and venture capital exits *Economic Journal* **118** pp 1888 – 1916.

2737. Sørensen M 2007 How smart is smart money? A two-sided matching model of venture capital *Journal of Finance* **62** pp 2725 – 2762.

2738. Tykvová T 2007 Who chooses whom? Syndication, skills, and reputation *Review of Financial Economics* **16** pp 5 – 28.

2739. Aizenman J, Kendall J 2008 The internationalization of venture capital and private equity *NBER Working Paper no 14344*.

2740. Broughman B 2008 Independent directors and board control in venture finance *American Law and Economics Association Papers* 41 pp 1 – 24.

2741. Broughman B, Fried J 2010 Renegotiation of cash flow rights in the sale of VC-backed firms *Journal of Financial Economics* **95** pp 384 – 399.

2742. Cumming D 2008 Contracts and exits in venture capital finance *Review of Financial Studies* **21** pp 1947 – 1982.

2743. Davidsson P, Steffens P R, Gordon S R, Senyard J M 2008 Characteristics of high-potential start-ups: Some early observations from the CAUSEE project http://eprints.qut.edu.au/19649/1/c19649.pdf.

2744. Geronikolaou G, Papachristou G 2008 Venture capital and innovation in Europe *MPRA Paper no 36706* Munich University Munich Germany pp 1 – 16
http://mpra.ub.uni-muenchen.de/36706/ ,
http://ssrn.com/abstract=1309186 .

2745. Hand J 2008 Give everyone a prize? Employee stock options in private venture-backed firms *Journal of Business Venturing* **23** pp 385 – 404.

2746. Hirukawa M, Ueda M 2008a Venture capital and industrial innovation *CEPR Discussion Paper 7089*.

2747. Hirukawa M, Ueda M 2008b Venture capital and innovation: Which is first? *CEPR Discussion Paper 7090*.

2748. Katila R, Rosenberger J, Eisenhardt K 2008 Swimming with sharks: Technology ventures and corporate relationships *Administrative Science Quarterly* **53** pp 295 – 332.

2749. Lindsey L 2008 Blurring firm boundaries: The role of venture capital in strategic alliance *Journal of Finance* **63** pp 1137 – 1168.

2750. McMillan I, Roberts E, Livada V, Wang A 2008 Corporate venture capital: Seeking innovation and corporate growth *National Institute for Standards and Technology* US Department of Commerce US Government USA.

2751. Nahata R 2008 Venture capital reputation and investment performance *Journal of Financial Economics* **90** pp 127 – 151.

2752. Orman C 2008 Organization of innovation and capital markets *MPRA Paper no 23499* Munich University Munich Germany pp 1 – 39
http://mpra.ub.uni-muenchen.de/23499/ .

2753. Rossetto S 2008 The price of rapid exit in venture capital-backed IPOs *Annals of Finance* **4** pp 29 – 53.

2754. Schwienbacher A 2008 Innovation and venture capital exits *Economic Journal* **118** pp 1888 – 1916.

2755. Schwienbacher A 2009 Venture capital exits *in* Cumming D (editor) Companion to venture capital *Robert W Kolb Companion to finance Series Wiley/Blackwell* USA.

2756. Sorenson O, Stuart T 2008 Bringing the context back in: Settings and the search for syndicate partners in venture capital investment networks *Administrative Science Quarterly* **53** pp 266 – 294.

2757. Phalippou L 2008 The hazards of using IRR to measure performance: The case of private equity *Journal of Performance Measurement* **4** pp 55 – 67.

2758. Phalippou L, Gottschalg O 2009 The performance of private equity funds *Review of Financial Studies* **22** pp 1747 – 1776.

2759. Puri M, Zarutskie R 2008 On the lifecycle dynamics of venture-capital- and non-venture capital- financed firms *EFA 2007 Ljubljana Meetings Paper US Census Bureau Center for Economic Studies Paper no CES-WP-08-13*
http://ssrn.com/abstract=967841 .

2760. Van Deventer B, Mlambo Ch 2008, 2009 Factors influencing venture capitalists' project financing decisions in South Africa *MPRA Paper no 24970* Munich University Munich Germany pp 1 – 10 http://mpra.ub.uni-muenchen.de/24970/ ; *South Africa Journal Business Management* **40** (1) pp 33 – 41.

2761. Winton A, Yerrmilli V 2008 Entrepreneurial finance: Banks versus venture capital *Journal of Financial Economics* **88** pp 51 – 79.

2762. Aberman J 2009 The decline of the United States venture capital industry: What the federal government should do about it *Amplifier Ventures* Washington DC USA.

2763. Block J, Sandner Ph 2009 What is the effect of the current financial crisis on venture capital financing? Empirical evidence from US Internet start-ups *MPRA Paper no 14727* Munich University Munich Germany pp 1 – 23
http://mpra.ub.uni-muenchen.de/14727/ .

2764. Casamatta C 2003 Financing and advising: Optimal financial contracts with venture capitalists *Journal of Finance* **58** pp 2059 – 2086.

2765. Clarysse B, Knockaert M, Wright M 2009 Benchmarking UK venture capital to the US and Israel: What lessons can be learned? *Report prepared for the British Private Equity and Venture Capital Association (BVCA).*

2766. Cockburn I, MacGarvie M 2009 Patents, thickets and the financing of early-stage firms: Evidence from the software industry *Journal of Economics and Management Strategy* **18** pp 729 – 773.

2767. Fitza M, Matusik S, Mosakowski E 2009 Do VCs matter? The importance of owners on performance variance in start-up firms *Strategic Management Journal* **30** pp 387 – 404.

2768. Fulghieri P, Sevilir M 2009a Organization and financing of innovation, and the choice between corporate and independent venture capital *Journal of Financial and Quantitative Analysis* **44** pp 1291 – 1321.

2769. Fulghieri P, Sevilir M 2009b Size and focus of a venture capitalist's portfolio *Review of Financial Studies* **22** pp 4643 – 4680.

2770. Duffner S, Schmid M, Zimmermann H 2009 Trust and success in venture capital financing—an empirical analysis with German survey data *Kyklos* **62** pp 15 – 43.

2771. Hege U, Palomino F, Schwienbacher A 2009 Venture capital performance: The disparity between Europe and the United States *MPRA Paper no 39551* Munich University Munich Germany pp 1 – 42
http://mpra.ub.uni-muenchen.de/39551/ .

2772. Jones M, Mlambo Ch 2009 Early-stage venture capital in South Africa: Challenges and prospects *MPRA Paper no 42890* Munich University Munich Germany pp 1 – 29 http://mpra.ub.uni-muenchen.de/42890/ .

2773. Krohmer P, Lauterbach R, Calanog V 2009 The bright and dark side of staging: Investment performance and the varying motivations of private equity *Journal of Banking and Finance* **33** pp 1597 – 1609.

2774. Lingelbach D, Murray G, Gilbert E 2009 The rise and fall of South African venture capital: A co-production perspective http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1459175 .

2775. Litvak K 2009a Venture capital partnership agreements: Understanding compensation arrangements *University of Chicago Law Review* **76** pp 161 – 218.

2776. Litvak K 2009b Governing by exit: Default penalties and walkway options in venture capital partnership agreements *Willamette Law Review* **40** pp 771 – 812.

2777. Masulis R, Nahata R 2009 Financial contracting with strategic investors: Evidence from corporate venture capital backed IPOs *Journal of Financial Intermediation* **18** pp 599 – 631.

2778. Masulis R, Nahata R 2011 Venture capital conflicts of interest: Evidence from acquisitions of venture backed firms *Journal of Financial and Quantitative Analysis* **46** pp 395 – 430.

2779. Norbäck P, Persson L 2009 The organization of the innovation industry: entrepreneurs, venture capitalists, and oligopolists *Journal of the European Economic Association* **7** pp 1261 – 1290.

2780. Samuelsson M, Davidsson P 2009 Does venture opportunity variation matter? Investigating systematic differences between innovative and imitative new ventures *Small Business Economics* **33** (2) pp 229 – 255.

2781. Van de Vrande V, Vanhaverbeke W, Duysters G 2009 Additivity and complementarity in external technology sourcing: The added value of corporate venture capital investments *MPRA Paper no 26419* Munich University Munich Germany pp 1 – 45
http://mpra.ub.uni-muenchen.de/26419/ .

2782. Arikawa Y, Imad'eddine G 2010 Venture capital affiliation with underwriters and the underpricing of initial public offerings in Japan *Journal of Economics and Business* **62** pp 502 – 516.

2783. Benson D, Ziedonis R 2010 Corporate venture capital and the returns to acquiring portfolio companies *Journal of Financial Economics* **98** pp 478 – 499.

2784. Bienz C, Walz U 2010 Venture capital exit rights *Journal of Economics and Management Strategy* **19** pp 1071 – 1116.

2785. Cantner U, Stützer M 2010 The use and effect of social capital in new venture creation: Solo entrepreneurs vs new venture teams *Jena Economics Research Papers* **12**.

2786. Cowling M, Murray G, Liu W 2010 An independent econometric analysis of the "Innovation Investment Fund" programme (IIF) of the Australian commonwealth government: Findings and implications *Department of Innovation, Industry, Science and Research* Canberra Australia.

2787. Dushnitsky G, Shapira Z 2010 Entrepreneurial finance meets organizational reality: Comparing investment practices by corporate and independent venture capitalists *Strategic Management Journal* **31** pp 990 – 1017.

2788. Elston J A, Yang J J 2010 Venture capital, ownership structure, accounting standards and IPO underpricing: Evidence from Germany *Journal of Economics and Business* **62** pp 517 – 536.

2789. Groh A, Liechtenstein H 2010 The European venture capital and private equity attractiveness indices *Journal of Corporate Finance* **16**.

2790. Inci E, Barlo M 2010 Banks versus venture capital when the venture capitalist values private benefits of control *MPRA Paper no 25566* Munich University Munich Germany pp 1 – 43
http://mpra.ub.uni-muenchen.de/25566/ .

2791. Ivanov V, Xie F 2010 Do corporate venture capitalists add value to start-up firms? Evidence from IPOs and acquisitions of VC-backed companies *Financial Management* **35** pp 129 – 152.

2792. Jegadeesh N, Kräussl R, Pollet J 2010 Risk and expected returns of private equity investments: evidence based on market prices *NBER Working Paper 15335* USA.

2793. Hall R, Woodward S 2010 The burden of the non-diversifiable risk of entrepreneurship *American Economic Review* **100** pp 1163 – 1194.

2794. Korteweg A, Sørensen M 2010 Risk and return characteristics of venture capital-backed entrepreneurial companies *Review of Financial Studies* **23** pp 3738 – 3772.

2795. Metrick A, Yasuda A 2010a The economics of private equity funds *Review of Economic Studies* **23** pp 2303 – 2341.

2796. Metrick A, Yasuda A 2010b Venture capital and the finance of innovation *John Wiley and Sons Inc* NY USA.

2797. Metrick A, Yasuda A 2011 Venture capital and other private equity: A survey *European Financial Management* **17** pp 619 – 654.

2798. Obschonka M, Silbereisen R K, Schmitt-Rodermund E, StuetzerNascent M 2010 Entrepreneurship and the developing individual: Early entrepreneurial competence in adolescence and venture creation success during the career *MPRA Paper no 32021* Munich University Munich Germany pp 1 – 36 http://mpra.ub.uni-muenchen.de/32021/ http://www.sciencedirect.com/science/article/pii/S000187911000206X .

2799. Stuetzer M, Obschonka M, Davidsson P, Schmitt-Rodermund E 2013 Where do entrepreneurial skills come from? *MPRA Paper no 48274* Munich University Munich Germany pp 1 – 10
http://mpra.ub.uni-muenchen.de/48274/ .

2800. Samila S, Sorenson O 2010 Venture capital as a catalyst to innovation *Research Policy* **39** pp 1348 – 1360.

2801. Samila S, Sorenson O 2011 Venture capital, entrepreneurship, and economic growth *Review of Economics and Statistics* **93** pp 338 – 349.

2802. Schertler A, Tykvová T 2010 What lures cross-border venture capital inflows? *ZEW Discussion Papers no 10-001* pp 1 – 36
http://hdl.handle.net/10419/30016 .

2803. Sevilir M 2010 Human capital investment, new firm creation and venture capital *Journal of Financial Intermediation* **19** pp 483 – 508.

2804. Zacharakis A, Erikson T, George B 2010 Conflict between the VC and entrepreneur: The entrepreneur's perspective *Venture Capital* **12** (2) pp 109 – 126 doi:10.1080/13691061003771663

2805. Zarutskie R 2010 The role of top management team human capital in venture capital markets: Evidence from first-time funds *Journal of Business Venturing* **25** pp 155 – 172.

2806. Ball E, Chiu H, Smith R 2011 Can VCs time the market? An analysis of exit choice for venture-backed firms *Review of Financial Studies* **24** pp 3105 – 3138.

2807. Bengtsson O, Hand J 2011 CEO compensation in venture capital markets *Journal of Business Venturing* **26** pp 391 – 411.

2808. Bengtsson O, Sensoy B 2011 Investor abilities and financial contracting: Evidence from venture capital *Journal of Financial Intermediation* **20** pp 477 – 502.

2809. Cherif M, Gazdar K 2011 What drives venture capital in Europe? New results from a panel data analysis *Journal of Applied Business and Economics* **12** (3) pp 122 – 139.

2810. Das S, Jo H, Kim Y 2011 Polishing diamonds in the rough: The sources of syndicated venture performance *Journal of Financial Intermediation* **20** pp 199 – 230.

2811. Ferretti R, Meles A 2011 Underpricing, wealth loss for pre-existing shareholders and the cost of going public: The role of private equity backing in Italian IPOs *Venture Capital* **13** pp 23 – 47.

2812. Kandel E, Leshchinskii D, Yuklea H 2011 VC funds: Aging brings myopia *Journal of Financial and Quantitative Analysis* **46** pp 431 – 457.

2813. Kerr W, Nanda R 2011 Financing constraints and entrepreneurship *in* Audretsch D, Falck O, Heblich S (editors) Handbook on research on innovation and entrepreneurship *Edward Elgar* Cheltenham UK.

2814. Kraeussl R, Krause S 2011 Has Europe been catching up? An industry level analysis of venture capital success over 1985-2009 *Document de Travail no 327* Direction Générale des Etudes et des Relations Internationales Banque de France pp 1 – 42
http://www.banque-france.fr/ .

2815. Li J, Abrahamsson J T 2011 New money, new problems: A qualitative study of the conflicts between venture capitalists and entrepreneurs in Sweden *Ph.D. dissertation* Umeå University Sweden
http://umu.divaportal.org/smash/record.jsf?pid=diva2:426612 .

2816. Samila S, Sorenson O 2011 Venture capital, entrepreneurship, and economic growth *The Review of Economics and Statistics* **93** (1) pp 338 – 349 doi:10.1162/REST_a_00066 .

2817. Tian X 2011 The causes and consequences of venture capital stage financing *Journal of Financial Economics* **101** pp 132 – 159.

2818. Diaconu M 2012 Characteristics and drivers of venture capital investment activity in Romania *Theoretical and Applied Economics* vol **XIX** no 7 (572) pp 111 – 132.

2819. Gvazdaitytė A 2012 The analysis of the conditions needed for building venture capital industry in Lithuania *Journal of Business Management and Economics* vol **3** (3) pp 96 – 105 ISSN 2141-7482.

2820. Hochberg Y V 2012 Venture capital and corporate governance in the newly public firm *Review of Finance* **16** (2) pp 429 – 480.

2821. Lazarevski D, Mrsik J, Smokvarski E 2012 Evolution of the venture capital financing for growing small and medium enterprises in Central and Eastern Europe countries: The case of Macedonia *MPRA Paper No. 41997* Munich University Munich Germany pp 1 – 12 http://mpra.ub.uni-muenchen.de/41997/ .

2822. Lim K, Cu B 2012 The effects of social networks and contractual characteristics on the relationship between venture capitalists and entrepreneurs *Asia Pacific Journal of Management* **29** (3) pp 573 – 596 doi:10.1007/s10490-010-9212-x .

2823. Nyman M, Lundgren J, Rösiö C C 2012 Riskkapital – Private equity - och venture capital - investeringar *Norstedts Juridik* Stockholm Sweden.

2824. Rosenbusch N, Brinckmann J, Müller V 2012 Does acquiring venture capital pay off for the funded firms? A meta-analysis on the relationship between venture capital investment and funded firm financial performance *Journal of Business Venturing* http://dx.doi.org/10.1016/j.jbusvent.2012.04.002 .

2825. Pommet S 2012 The survival of venture capital backed companies: An analysis of the French case *GREDEG Working Paper no2012-14* University of Nice-Sophia Antipolis and GREDEG CNRS France pp 1 – 24
http://www.gredeg.cnrs.fr/working-papers.html .

2826. Yitshaki R 2012 Relational norms and entrepreneurs’ confidence in venture capitalists' cooperation: The mediating role of venture capitalists' strategic and managerial involvement *Venture Capital* **14** (1) pp 3 – 59 doi:10.1080/13691066.2012.662839 .

2827. Alqatawni T 2013 The relationship conflict between venture capital and entrepreneur *MPRA Paper no 48006* Munich University Munich Germany pp 1 – 12
http://mpra.ub.uni-muenchen.de/48006/ .

2828. Brettel M, Mauer R, Appelhoff D 2013 The entrepreneur's perception in the entrepreneur–*VCF* relationship: the impact of conflict types on investor value *Venture Capital* pp 1 – 25 doi:10.1080/13691066.2013.782625 .

2829. Pennacchio L 2013 The causal effect of venture capital backing on the underpricing of Italian IPOs *MPRA Paper no 48695* Munich University Munich Germany pp 1 – 44 http://mpra.ub.uni-muenchen.de/48695/ .

_2830._ Stuetzer M, Obschonka M, Schmitt-Rodermund E 2013 Balanced skills among nascent entrepreneurs *MPRA Paper no 48641* Munich University Munich Germany pp 1 – 39 http://mpra.ub.uni-muenchen.de/48641/ ; http://www.springerlink.com/content/e73m7t6j82733411/ .

_2831._ Hsu D K, Haynie J M, Simmons S A, McKelvie A 2014 What matters, matters differently: A conjoint analysis of the decision policies of angel and venture capital investors *Venture Capital* **16** (1) pp 1 – 25.

_2832._ Lahr H, Mina A 2014 Liquidity, technological opportunities, and the stage distribution of venture capital investments *Financial Management* **43** (2) pp 291 – 325.

_2833._ Woike J K, Hoffrage U, Petty J S 2015 Picking profitable investments: The success of equal weighting in simulated venture capitalist decision making *Journal of Business Research* **68** (8) pp 1705 – 1716.

_2834._ Kvist Ph, Rosengren J May 29 2016 Venture capitalisters Investeringskriterier: Vilka finansiella investeringskriterier är mest betydelsefulla vid en investeringsmöjlighet? *MSc Thesis (Karl Wennberg supervisor)* Linköpings Universitet SE-581 83 Linköping Sverige pp 1 – 99www.liu.se

<u>Firm's stock option investment, traded stock options, employee/executive stock options, equity options in finances:</u>

_2835._ Weinberg S J, Patton A 1963 Rx for stock option reform *Business Horizons* **6** (3) pp 45 – 52
http://www.sciencedirect.com/science/article/pii/000768136390048X .

_2836._ James Boness A April 1964 Elements of a theory of stock-option value *Journal of Political Economy* **72** (2) pp 163 – 175
http://www.journals.uchicago.edu/doi/10.1086/258885 .

_2837._ Bierman H September 1967 The valuation of stock options *Journal of Financial and Quantitative Analysis* **2** (3) pp 327 – 335
https://www.cambridge.org/core/journals/journal-of-financial-and-quantitative-analysis/article/div-classtitlethe-valuation-of-stock-optionsa-hreffn01-ref-typefnadiv/4D5E56090E9AE7227B94765F060319FD .

_2838._ Lewellen W G 1968 Stock options Chapter *in* Executive Compensation in Large Industrial Corporations *National Bureau of Economic Research Inc* USA pp 46 – 69
http://www.nber.org/chapters/c9345.pdf .

_2839._ Hirshleifer J 1970 Investment, interest, and capital *Prentice-Hall* London UK.

2840. Black F, Scholes M 1973 The pricing of options and corporate liabilities *Journal of Political Economy* **81** pp 637 – 659.

2841. Black F 1975 Fact and fantasy in the use of options *Financial Analysts Journal* **31** pp 36 – 41, pp 61 – 72.

2842. Merton R C 1973 Theory of rational option pricing *Bell Journal of Economics and Management Science* **4** pp 141 – 183.

2843. Merton R C 1997 Continuous-time finance *Blackwell Publishers* USA.

2844. Fisher S March 1978 Call option pricing when the exercise price is uncertain and the valuation of index bonds *Journal of Finance* pp 169 – 176.

2845. Klemkosky R C 1978 The impact of option expirations on stock prices *Journal of Financial and Quantitative Analysis* **13** (3) pp 507 – 518.

2846. Margrabe W March 1978 The value of an option to exchange one asset for another *Journal of Finance* pp 177 – 186.

2847. Cox J C, Ross S R, Rubinstein M 1979 Option pricing: A simplified approach *Journal of Financial Economics* **7** pp 229 – 263.

2848. MacBeth J D, Merville L J 1979 An empirical examination of the Black-Scholes call option pricing model *Journal of Finance* **34** pp 1173 – 1186.

2849. Bookstaber R M 1981 Observed option mispricing and the nonsimultaneity of stock and option quotations *The Journal of Business* **54** (1) pp 141 – 155.

2850. Brown R L, Rainbow K A 1981 Exercising of options in the Australian options market *Australian Journal of Management* **6** (1) pp 1 – 22.

2851. Hite G L, Long M S 1982 Taxes and executive stock options *Journal of Accounting and Economics* **4** (1) pp 3 – 14.

2852. Whaley R E 1982 Valuation of American call options on dividend paying stocks: Empirical tests *Journal of Financial Economics* **10** pp 29 – 57.

2853. Geske R, Roll R 1984 On valuing American call options with the Black-Scholes formula *Journal of Finance* **39** pp 443 – 455.

2854. Leland H E 1985 Option pricing and replication with transactions costs *Journal of Finance* **40** pp 1283 – 1301.

2855. Rubinstein M 1985 Nonparametric tests for alternative option pricing models using all reported trades and quotes on the 30 most active CBOE option classes from August 23, 1976 through August 31, 1978 *Journal of Finance* **40** pp 455 – 480.

2856. Barone-Adesi G, Whaley R E 1987 Efficient analytic approximation of American option values *Journal of Finance* **42** pp 301 – 320.

2857. Hull J, White A 1987 The pricing of options on assets with stochastic volatilities *Journal of Finance* **42** pp 281 – 300.

2858. Hull J 1997 Options, futures, and other derivative securities 3rd edition *Prentice Hall* New Jersey USA.

2859. Hull J, White A January-February 2004 How to value employee stock options *Financial Analysts Journal* **60** (1).

2860. Hull J 2005 – 2006 Private communications on the options pricing *Rotman School of Management* University of Toronto Canada.

2861. Blomeyer E C, Johnson H E 1988 An empirical examination of the pricing of American put options *Journal of Financial and Quantitative Analysis* **23** pp 13 – 22.

2862. Detemple, Jorion 1989 Option listing and stock returns *Working Paper* Columbia - Graduate School of Business Columbia University NY USA.

2863. Jorion Ph, Stoughton N M 1989 An empirical investigation of the early exercise premium of foreign currency options *Journal of Futures Markets* **9** pp 365 – 376.

2864. Lambert R A, Lanen W N, Larker D F 1989 Executive stock option plans and corporate dividend policy *Journal of Financial and Quantitative Analysis* **24** pp 409 – 424.

2865. Defusco R A, Johnson R R, Zorn T S 1990 The effect of executive stock option plans on stockholders and bondholders *Journal of Finance* **45** (2) pp 617 – 627.

2866. Vijh A M 1990 Liquidity of the CBOE equity options *Journal of Finance* **45** pp 1157 – 1179.

2867. Zivney T L 1991 The value of early exercise in option prices: An empirical investigation *Journal of Financial and Quantitative Analysis* **26** pp 129 – 138.

2868. Boyle Ph P, Vorst T 1992 Option replication in discrete time with transaction costs *Journal of Finance* **47** pp 271 – 293.

2869. French D W, Maberly E D 1992 Early exercise of American index options *Journal of Financial Research* **15** pp 127 – 138.

2870. Harvey C, Whaley R E 1992 Dividends and S&P 100 index option valuation *Journal of Futures Markets* **12** pp 123 – 137.

2871. Bizjak J M, Brickley J A, Coles J L 1993 Stock-based incentive compensation and investment behavior *Journal of Accounting and Economics* **16** pp 349 – 372.

2872. George T, Longstaff F 1993 Bid-ask spreads and trading activity in the S&P 100 index options market *Journal of Financial and Quantitative Analysis* **28** pp 381 – 397.

2873. Heston S L 1993 A closed form solution for options with stochastic volatility and application to bond and currency options *The Review of Financial Studies* **6** (2) pp 326 – 343.

2874. Dawson P 1994 Comparative pricing of American and European index options: An empirical analysis *Journal of Futures Markets* **14** pp 363 – 378.

2875. Dawson P 2000 The intraday distribution of volatility and the value of wildcard options *Journal of Futures Markets* **20** pp 307 – 320.

2876. Diz F, Finucane Th J 1994 The rationality of early exercise decisions: Evidence from the S&P 100 index options market *Review of Financial Studies* **6** pp 765 – 797.

2877. Fleming J, Whaley R E March 1994 The value of wildcard options *Journal of Finance* **49** pp 215 – 236.

2878. Huddart St 1994 Employee stock options *Journal of Accounting and Economics* **18** (2) pp 207 – 231.

2879. Huddart S, Lang M February 1996 Employee stock option exercises: An empirical analysis *Journal of Accounting and Economics* **21** (1) pp 5 – 43.

2880. Saly J 1994 Re-pricing executive stock options in a down market *Journal of Accounting and Economics* **18** (3) pp 325 – 356.

2881. Sheikh A M, Ronn E I 1994 A characterization of the daily and intra-day behavior of returns on options *Journal of Finance* **49** pp 557 – 579.

2882. Kamara A, Miller Th W Jr 1995 Daily and intradaily tests of European put-call parity *Journal of Financial and Quantitative Analysis* **30** pp 519 – 539.

2883. Mas-Colell A, Whinston M D, Green J R 1995 Microeconomic theory *Oxford University Press* New York USA, Oxford UK.

2884. Rubinstien M Fall 1995 On the accounting valuation of employee stock options *Journal of Derivatives*.

2885. Sung H M 1995 The early exercise premia of American put options on stocks *Review of Quantitative Finance and Accounting* **5** pp 365 – 373.

2886. Abken P A, Madan D B, Buddhavarapu Sailesh Ramamurtie 1996 Pricing S&P 500 index options using a Hilbert space basis *FRB Atlanta Working Paper no 96-21* Federal Reserve Bank of Atlanta USA.

2887. Aboody D 1996 Market valuation of employee stock options *Journal of Accounting and Economics* **22** (1-3) pp 357 – 391.

2888. Bergman Y, Grundy B, Weiner Z 1996 General properties of option prices *The Journal of Finance* **51** pp 1573 – 1610.

2889. Chicago Board Options Exchange 1996 CBOE constitution and rules: The official constitution and rules of the Chicago Board Options Exchange Inc *Commerce Clearing House* Chicago IL USA.

2890. Corrado Ch J, Miller Th W Jr 1996 Efficient option-implied volatility estimators *Journal of Futures Markets* **16** pp 247 – 242.

2891. Ikenberry D L, Vermaelen Th 1996 The option to repurchase stock *Financial Management* **25** (4).

2892. Scott L O 1997 Pricing stock options in a jump-diffusion model with stochastic volatility and interest rates: Applications of Fourier inversion methods *Mathematical Finance* **7** (4) pp 413 – 426.

2893. Easley D, O'Hara M, Subrahmanya Srinivas P 1998 Option volume and stock prices: Evidence on where informed traders trade *Journal of Finance* **53** pp 431 – 465.

2894. Alexander D, Veronesi P 1999 Option prices with uncertain fundamentals theory and evidence on the dynamics of implied volatilities *Finance and Economics Discussion Paper no 1999-47* Board of Governors of the Federal Reserve System USA pp 1 – 66
http://www.federalreserve.gov/pubs/feds/1999/199947/199947pap.pdf.

2895. Bates D S 1999 Post-'87 crash fears in the S&P 500 futures option market *Journal of Econometrics*.

2896. Campbell S D, Canlin Li 1999 Option prices with unobserved and regime-switching volatility *Technical Report* Department of Economics University of Pennsylvania USA.

2897. Heath Ch, Huddart St, Lang M May 1999 Psychological factors and stock options exercises *Quarterly Journal of Economics* **114** pp 601 – 628.

2898. Chance D M, Kumar R, Todd R B 2000 The 'repricing' of executive stock options *Journal of Financial Economics* **57** (1) pp 129 – 154.

2899. Etling Ch, Miller Th W Jr November 2000 The relationship between index option moneyness and relative liquidity *Journal of Futures Markets* **20** pp 971 – 987.

2900. Hall B J, Murphy K J May 2000a Optimal exercise prices for executive stock options *American Economic Review* **90** pp 209 – 214.

2901. Hall B J, Murphy K 2000b, 2002 Stock options for undiversified executives *NBER Working Paper no 8052* National Bureau of Economic Research Inc USA, *Journal of Accounting and Economics* **33** (1) pp 3 – 42.

2902. Hall B J, Murphy K J 2003 The trouble with stock options *Journal of Economic Perspectives* **17** (3) pp 49 – 70.

2903. Johnson Sh, Tian Y S 2000 Indexed executive stock options *Journal of Financial Economics* **57** (1) pp 35 – 64.

2904. Lee J H, Nayar N 2000 Can the American option sell for less than the matched European option? *Working Paper* University of Oklahoma Norman USA.

2905. McMurray L, Yadav P 2000 The early exercise premium in American option prices: Direct empirical evidence *Derivatives Use, Trading & Regulation* **6** (1) pp 411 – 435.

2906. Core J E, Guay W R August 2001 Stock option plans for non-executive employees *Journal of Financial Economics* **61** (2) pp 253 – 287.

2907. Coval J D, Shumway T 2001 Expected option returns *Journal of Finance* **56** pp 983 – 1009.

2908. Dueker M, Miller Th W 2002 Directly measuring early exercise premiums using American and European S&P 500 index options *Working Paper no 2002-016* Federal Reserve Bank of St Louis USA pp 1 – 38
http://research.stlouisfed.org/wp/2002/2002-016.pdf .

2909. Kalok Chan, Peter Chung Y, Wai-Ming Fong 2002 The informational role of stock and option volume *Review of Financial Studies* **15** (4) pp 1049 – 1075.

2910. Poteshman A, Serbin V 2002 Clearly irrational financial market behavior: Evidence from the early exercise of exchange traded stock options *Journal of Finance*.

2911. Sahlman W A December 2002 Expensing options solves nothing *Harvard Business Review* pp 91 – 96.

2912. Taylor St L 2002 Executive stock options: An accounting dilemma *Australian Accounting Review* **12** (26) pp 2-2.

2913. Utsunomiya K 2002 An analysis of employee stock options in Japan *Discussion Paper no 101* Center for Intergenerational Studies Institute of Economic Research Hitotsubashi University Japan
http://hermes-ir.lib.hit-u.ac.jp/rs/bitstream/10086/14471/1/pie_dp101.pdf .

2914. Bliss R April 2003 Common sense about executive stock options *Chicago Fed Letter no 188* Federal Reserve Bank of Chicago USA.

2915. Bodie Z, Kaplan R S, Merton R C March 2003 For the last time: Stock options are an expense *Harvard Business Review*.

2916. Campbell B A June 2003 Firm volatility and stock option incidence *Working Paper* Institute for Research on Labor and Employment, Institute of Industrial Relations UC Berkeley California USA pp 1 – 37
http://escholarship.org/uc/item/7gt1r0pn .

2917. Cassano M 2003 Executive stock options: Back to basics *Australian Economic Review* **36** (3) pp 306 – 315.

2918. Craig B, Glatzer E, Keller J G, Scheicher M 2003 The forecasting performance of German stock option densities *Working Paper no 312* Federal Reserve Bank of Cleveland USA.

2919. Guay W, Kothari S P, Sloan R May 2003 Accounting for employee stock options *American Economic Review* **93** (2), pp 405 – 409.

2920. Haubrich J November 2003 Expensing stock options *Economic Commentary* Federal Reserve Bank of Cleveland pp 1 – 4.

2921. Raupach P 2003 The cost of employee stock options *Working Paper no 123* Department of Finance Goethe University Frankfurt am Main Germany.

2922. Barenbaum L, Schubert W, O'Rourke B December 16-20 2004 Valuing employee stock options using a lattice model *The CPA Journal*.

2923. Battalio R, Hatch B, Jennings R 2004 Toward a national market system for US exchange–listed equity options *Journal of Finance* **59** pp 933 – 962.

2924. Calomiris Ch, Glenn Hubbard R January 2004 Options pricing and accounting practice *Working Paper no 103* American Enterprise Institute USA.

2925. Arnold M C, Gillenkirch R M September 2005 Stock options and dividend protection *Journal of Institutional and Theoretical Economics JITE* **161** (3) pp 453 – 472
http://www.ingentaconnect.com/content/mohr/jite/2005/00000161/00000003/art00006 .

2926. Bulow J, Shoven J B Fall 2005 Accounting for stock options *Journal of Economic Perspectives* **19** (4) pp 115 – 134.

2927. Ciccotello C, Terry Grant C, Mark Wilder W September 2005 Finance, politics, and the accounting for stock options *Journal of Applied Corporate Finance* **17** (4) pp 125 – 133.

2928. Dahlgren M, Korn R 2005 The swing option on the stock market *International Journal of Theoretical and Applied Finance (IJTAF)* **8** (1) pp 123 – 139.

2929. Eberhart A C 2005 Employee stock options as warrants *Journal of Banking and Finance* **29** (10) pp 2409 – 2433.

2930. Lie E May 2005 On the timing of CEO stock option awards *Management Science* **51** (5) pp 802 – 812.

2931. Manzon G 2005 Good options, bad stock *Journal of Business Research* **58** (7) pp 1006 – 1008.

2932. Oyer P, Schaefer S April 2005 Why do some firms give stock options to all employees?: An empirical examination of alternative theories *Journal of Financial Economics* **76** pp 99 – 133.

2933. Ross S, Westerfield R, Jaffe J 2005 Corporate finance *McGraw-Hill* Irwin Boston USA.

2934. Sundaram R K 2005 On rescissions in executive stock options *The Journal of Business* **78** (5) pp 1809 – 1836.

2935. Sautner Z, Weber M 2005 Stock options and employee behavior *Working Paper no 05-26* Sonderforschungsbereich 504 Universität Mannheim Germany.

2936. Cetin U, Jarrow R, Protter Ph, Warachka M 2006 Pricing options in an extended Black Scholes economy with illiquidity: Theory and empirical evidence *Review of Financial Studies* **19** pp 493 – 529.

2937. Chongwoo Choe, Xiangkang Yin 2006 Should executive stock options be abandoned? *Australian Journal of Management* **31** (2) pp 163 – 179.

2938. Deshmukh S, Howe K M, Luft C Spring 2006 Executive stock options: To expense or not? *Financial Management* **35** (1) pp 87 – 106.

2939. Macminn R D, Page F January 2006 Stock options and capital structure *Annals of Finance* **2** (1) pp 39 – 50
http://link.springer.com/article/10.1007%2Fs10436-005-0029-4 .

2940. Pan J, Poteshman A M 2006 The information in option volume for future stock prices *Review of Financial Studies* **19** pp 871 – 908.

2941. Rhee Th A 2006 On valuing employee stock option plans with the requisite service period requirement *Journal of Entrepreneurial Finance* **11** (1) pp 39 – 50.

2942. Sharma K 2006 Understanding employee stock options *Global Business Review* **7** (1) pp 77 – 93.

2943. Tirole J 2006 The theory of corporate finance *Princeton University Press* Princeton USA, Oxford UK.

2944. Uchida K 2006 Determinants of stock option use by Japanese companies *Review of Financial Economics* **15** (3) pp 251 – 269.

2945. Campbell D Winter 2007 Options on the outs *Econ Focus* pages 16 – 22
https://www.richmondfed.org/~/media/richmondfedorg/publications/research/region_focus/2007/winter/pdf/cover_story.pdf .

2946. Lakonishok J, Inmoo Lee, Pearson N D, Poteshman A M 2007 Option market activity *Review of Financial Studies* **20** pp 813 – 857.

2947. Taylor St J December 2007 Valuing options Chapter 9 *in* Modelling Financial Time Series *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-277-084-4 pp 225 – 237
http://dx.doi.org/10.1142/9789812770851_0009 .

2948. Hurtt D N 2008 Stock buybacks and their association with stock options exercised in the IT industry *American Journal of Business* **23** (1) pp 13 – 22.

2949. Ni S X, Pan J, Poteshman A M 2008 Volatility information trading in the option market *Journal of Finance* **63** pp 1059 – 1091.

2950. Ye G L 2008 Asian options versus vanilla options: A boundary analysis *Journal of Risk Finance* **9** (2) pp 188 – 199.

2951. Cuny Ch J, Martin G S, Puthenpurackal J J 2009 Stock options and total payout *Journal of Financial and Quantitative Analysis* **44** (2) pp 391 – 410.

2952. Gârleanu N, Pedersen L H, Poteshman A M 2009 Demand-based option pricing *Review of Financial Studies* **22** pp 4259 – 4299.

2953. Chen Y-R, Bong Soo Lee 2010 A dynamic analysis of executive stock options: Determinants and consequences *Journal of Corporate Finance* **16** (1) pp 88 – 103.

2954. Engle R, Neri B 2010 The impact of hedging costs on the bid and ask spread in the options market *Working Paper* New York University NY USA.

2955. Hallock K F, Olson C A 2010 New data for answering old questions regarding employee stock options *in* Labor in the New Economy Abraham K G, Spletzer J R, Harper M J (editors) *The University of Chicago Press* Chicago USA, London UK pp 149 – 180.

2956. Babenko I, Lemmon M, Tserlukevich Y 2011 Employee stock options and investment *Journal of Finance* **66** (3) pp 981 – 1009.

2957. Børsum Ø 2011 Employee stock options *Memorandum no 11/2010* Department of Economics Oslo University Oslo Norway pp 1 – 37
https://www.sv.uio.no/econ/english/research/unpublished-works/working-papers/pdf-files/2010/Memo-11-2010.pdf .

2958. Schürhoff N, Ziegler A 2011 Variance risk, financial intermediation, and the cross-section of expected option returns *Working Paper* University of Lausanne, University of Zurich Switzerland.

2959. Yang J, Carleton W 2011 Repricing of executive stock options *Review of Quantitative Finance and Accounting* **36** (3) pp 459 – 490.

2960. Zhongjin Yang, Cassidy Yang 2011 A model of stock option prices *International Journal of Financial Markets and Derivatives* **2** (4) pp 288 – 297.

2961. Korn O, Paschke C, Uhrig-Homburg M 2012 Robust stock option plans *Review of Quantitative Finance and Accounting* **39** (1) pp 77 – 103.

2962. Morikawa M 2012 Stock options and productivity *Discussion Paper 12-J-002* Research Institute of Economy Trade and Industry (RIETI) Japan pp 1 – 31
http://www.rieti.go.jp/jp/publications/dp/12j002.pdf .

2963. Perobelli F F C, de Souza Lopes B, da Silveira A D M 2012 Employee stock options plans and the value of Brazilian companies *Brazilian Review of Finance* **10** (1) pp 105 – 147.

2964. Timraz G A, Al-Shubiri F N 2012 The impact of stock options trading on the market value of companies listed in Kuwait stock exchange *Business Excellence and Management* **2** (3) pp 63 – 76.

2965. Baule R, Tallau Ch 2013 Stock price dynamics of listed growth companies: Evidence from the options market *The IUP Journal of Applied Finance* **19** (1) pp 5 – 26.

2966. Cao J, Bing Han 2013 Cross section of option returns and idiosyncratic stock volatility *Journal of Financial Economics* **108** pp 231 – 249.

2967. Aldatmaz S, Ouimet P, Van Wesep E D 2014 The option to quit: The effect of employee stock options on turnover *Working Paper* Center for Economic Studies US Census Bureau USA.

2968. An B-J, Ang A, Bali T G, Cakici N 2014 The joint cross section of stocks and options *Journal of Finance* **69** pp 2279 – 2337.

2969. Boyer B H, Vorkink K 2014 Stock options as lotteries *Journal of Finance* **69** (4) pp 1485 – 1527.

2970. Câmara A, Popova I, Simkins B 2014 Options on troubled stock *Journal of Futures Markets* **34** (7) pp 637 – 657.

2971. Karakaya M 2014 Characteristics and expected returns in individual equity options *Working Paper* University of Chicago USA.

2972. Sonika R, Carline N F, Shackleton M 2014 The option and decision to repurchase stock *Financial Management* **43** (4) pp 833 – 855.

2973. Christoffersen P, Goyenko R, Jacobs K, Karoui M 2015 Illiquidity premia in the equity options market *Working Paper* McGill University, University of Houston, University of Toronto Canada, USA.

2974. Goyenko R Y, Ornthanalai Ch, Shengzhe Tang 2015 Options illiquidity: Determinants and implications for stock returns *Working Paper* McGill University, University of Toronto Canada.

2975. Choy S-K, Wei J 2016 Liquidity risk and expected option returns *Working Paper* Shanghai University, University of Toronto P R China, Canada.

2976. Investopedia 2016 Options basics: How options work *Investopedia*
http://www.investopedia.com/university/options/ .

2977. Kanne St, Korn O, Uhrig-Homburg M 2016 Stock illiquidity, option prices, and option returns *CFR Working Paper no 16-08* Centre for Financial Research (CFR) University of Cologne Germany pp 1 – 52
https://www.econstor.eu/bitstream/10419/146777/1/869413082.pdf,
http://hdl.handle.net/10419/146777 .

Bond investment, bond valuation, financial securities investment, financial securities exchange, financial capital investment product, financial capital investment medium in finances:

2978. Macaulay F R 1938 Some theoretical problems suggested by the movement of interest rates, bond yields, and stock prices in the U.S. since 1856 *National Bureau of Economic Research* New York USA.

2979. Dougall H E 1953 Savings bonds in personal investment programs *Journal of Finance* **8** (2) pp 224 – 225.

2980. Burrell K O 1953 Savings bonds in personal investment programs *Journal of Finance* **8** (2) pp 212 – 223.

2981. Hickman W B 1957 Corporate bonds: Quality and investment performance *National Bureau of Economic Research Inc* USA pp 1 – 529
http://www.nber.org/books/hick57-1 .

2982. Fisher L June 1959 Determinants of risk premiums on corporate bonds *Journal of Political Economy* **LXVII** 217 – 237.

2983. Francis J C, Archer S H 1971 Portfolio analysis *Prentice-Hall* Englewood Cliffs USA.

2984. Jensen M C 1972 Capital markets: Theory and evidence *Bell Journal of Economics and Management Science* **III** pp 357 – 398.

2985. Barro B l974 Are government bonds net wealth? *Journal of Political Economy*.

2986. Merton R C 1974 On the pricing of corporate debt: The risk structure of interest rates *Journal of Finance* **29** pp 449 – 470.

2987. Ederlngton L H December 1974 The yield spread on new issues of corporate bonds *Journal of Finance* **XXIX** pp 1531 – 1543.

2988. Fischer S June 1975 The demand for index bonds *Journal of Political Economy*.

2989. Black F, Cox J C 1976 Valuing corporate securities: Some effects of bond indenture provisions *Journal of Finance* **31** (2) pp 351 – 367.

2990. Black F 1980 The tax advantages of pension fund investments in bonds *Working Paper no 533* NBER Working Paper Series NBER USA pp 1 – 21.

2991. Jackson W D 1976 Determinants of long-term bond risk *Working Paper no 76-03* Federal Reserve Bank of Richmond NC USA pp 1 – 37.

2992. Khang Ch December 1979 Bond immunization when short-term rates fluctuate more than long-term rates *Journal of Financial and Quantitative Analysis* pp 1085 – 1095.

2993. Ibbotson R G, Sinquefield R A 1982 Stocks, bonds, bills and inflation.

2994. Bodie Z, Kane A, McDonald R March 1983 Inflation and the role of bonds in investor portfolios *Working Paper no 1091* NBER Working Paper Series NBER USA pp 1 – 43.

2995. Brennan M J, Schwartz E S 1983 Duration, bond pricing and portfolio management *in* Innovations in Bond Portfolio Management: Duration Analysis and Immunization Kaufman G G, Bierwag G O, Toevs A (editors) Greenwich CT *JAI Press* pp 61 – 101.

2996. Kaufman G G, Bierwag G O, Toevs A (editors) 1983 Innovations in bond portfolio management: Duration analysis and immunization JAI Press Greenwich CT USA.

2997. Blume M E 1987 Risk and return characteristics of lower grade bonds *Financial Analysts Journal* vol **43** July/August pp 26 – 33.

2998. Blume M E, Keim D B, Patel S A March 1991 Returns and volatility of low-grade bonds *Journal of Finance* **46** (1) pp. 49 – 74.

2999. Fons J S March 1987 The default premium and corporate bond experience *Journal of Finance*.

3000. Fons J S 1990 Default risk and duration analysis *in* The High Yield Debt Market Altman E I (editor) *Dow Jones Irwin* New York USA.

3001. Levy H, Lerman Z 1988 The benefits of international diversification in bonds *Financial Analysts Journal* **44** (5) pp 56 – 64.

3002. Altman E September 1989 Measuring corporate bond mortality and performance *Journal of Finance* vol **44** pp 909 – 921.

3003. Altman E I Summer 1993 Revisiting the high-yield bond market *Financial Management* pp 78 – 92.

3004. Asquith P, Mullins Jr D, Wolff E September 1989 Original issue high yield bonds: Aging analyses of defaults, exchanges and calls *Journal of Finance* vol **44** pp 923 – 954.

3005. Tucker J F Fall 1989 Junk bonds for individual investors: Key characteristics and comparisons with other investments *Cross Sections* pp 1 – 4.

3006. Varma J 1989 Equilibrium pricing of special bearer bonds *IIMA Working Paper no WP1989-08-01_00893* Indian Institute of Management Ahmedabad India.

3007. Ambarish R, Subrahmanyam M G 1990 Default risk and the valuation of high-yield bonds: A methodological critique *in* The High Yield Debt Market Altman E I (editor) *Dow Jones Irwin* New York USA pp 79 – 95.

3008. Chance D June 1990 Default risk and the duration of zero coupon bonds *Journal of Finance* **45** (2) pp 265 – 274.

3009. Rosengren E May 1990 The case for junk bonds *New England Economic Review* pp 40 – 49.

3010. Litterman R, Iben Th March-April 1991 Corporate bond valuation and the term structure of credit spreads *Financial Analysts Journal* vol **47** pp 52 – 64.

3011. Shreve S E, Soner H M, Xu G-L 1991 Optimal investment and consumption with two bonds and transaction costs *Mathematical Finance* **1** (3) pp 53 – 84.

3012. Leland H November 1994 Bond prices, yield spreads, and optimal capital structure with default risk *Institute of Business and Economic Research Working Paper* University of California Berkeley USA.

3013. Merrill C January 1994 The valuation of corporate bonds: Theory and evidence *Ph D Dissertation* University of Pennsylvania USA.

3014. Morgan D 1994 Will the shift to stocks and bonds by households be destabilizing? *Economic Review* issue Q II pp 31 – 44.

3015. Babbel D F, Merrill C, Panning W September 1995 Default risk and the effective duration of bonds *Policy Research Working Paper 1511* Financial Sector Development Department The World Bank USA pp 1 – 22.

3016. Whittingham M Winter 1997 The Canadian market for zero-coupon bonds *Bank of Canada Review* **1996-1997** pp 47 – 62.

3017. Zatti F 1998 Le obbligazioni come mezzo di provvista delle banche *Studi e note di economia* vol **3** pp 49 – 81.

3018. Narayan D August 1999 Bonds and bridge: Social capital and poverty *Policy Research Working Paper 2167* Poverty Reduction and Economic Management Network Poverty Division The World Bank pp 1 – 60.

3019. Bolton P, Freixas X 2000 Equity, bonds, and bank debt: Capital structure and financial market equilibrium under asymmetric information *Journal of Political Economy* **108** (2) pp 324 – 351.

3020. Brennan M J, Xia Y 2000 Stochastic interest rates and the bond-stock mix *European Finance Review* **4** (2) pp 197 – 210.

3021. Canterbery E R 2000 The sacred college of bonds and money Chapter 4 *in* Wall Street capitalism: The theory of the bondholding class *World Scientific Publishing Co Pte Ltd* pp 47 – 63.

3022. Hong G, Warga A 2000 An empirical study of bond market transactions *Financial Analyst Journal* **56** pp 32 – 46.

3023. Landen C 2000 Bond pricing in a hidden Markov model of the short rate *Finance and Stochastics* **4** (4) pp 371 – 389.

3024. Campbell J Y, Viceira L M 2001 Who should buy long-term bonds? *The American Economic Review* **91** (1) pp 99 – 127.

3025. Campbell J Y, Taksler G B 2003 equity volatility and corporate bond yields *Journal of Finance* **58** pp 2321 – 2349.

3026. Elliott R J, Van Der Hoek J 2001 Stochastic flows and forward measure *Finance and Stochastics* **5** (4) pp 511 – 525.

3027. Elliott R J, Nishide K 2013 Pricing of discount bonds with a Markov switching regime *KIER Working Paper no 859* Institute of Economic Research Kyoto University Kyoto Japan pp 1 – 18.

3028. Schultz P 2001 Corporate bond trading costs: A peek behind the curtain *Journal of Finance* **56** pp 677 – 698.

3029. Livingston M, Zhou L 2002 The impact of rule 144A debt offerings upon bond yields and underwriter fees *Financial Management* **31** pp 5 – 27.

3030. Livingston M, Zhou L 2010 Split bond ratings and information opacity premiums *Financial Management* **39** pp 515 – 532.

3031. Jacoby G A 2003 Duration model for defaultable bonds *Journal of Financial Research* **26** (1) pp 129 – 146.

3032. Hunter D, Simon D 2004 Benefits of international bond diversification *Journal of Fixed Income* **13** (4) pp 57 – 72.

3033. Cochrane J H, Piazzesi M 2005 Bond risk premia *The American Economic Review* **95** (1) pp 138 – 160.

3034. Koijen R S J, Nijman Th, Werker B 2005 Labor income and the demand for long-term bonds *Discussion Paper no 2005-95* Center for Economic Research Tilburg University The Netherlands pp 1 – 67.

3035. Pu Shen 2005 How long is a long-term investment? *Economic Review First Quarter 2005 Federal Reserve Bank of Kansas City* USA pp 1 – 28.

3036. Alderson M J, Betker B L, Stock D R 2006 Investment and financing activity following calls of convertible bonds *Journal of Banking & Finance* **30** (3) pp 895 – 914.

3037. Anghelache G 2006 Bonds evaluation - A pillar for investment decision *Theoretical and Applied Economics* **3** (498).

3038. Harris L, Piwowar M 2006 Secondary trading costs in the municipal bond market *Journal of Finance* **61** pp 1361 – 1397.

3039. Pilotte E A, Sterbenz F P 2006 Sharpe and Treynor ratios on treasury bonds *The Journal of Business* **79** (1) pp 149 – 180.

3040. Bierman H 2007 Stocks versus bonds Chapter 7 *in* The bare essentials of investing: Teaching the horse to talk *World Scientific Publishing Co Pte Ltd* pp 111 – 118.

3041. Bierman H 2010 Convertible bonds Chapter 16 *in* An introduction to accounting and managerial finance: A merger of equals *World Scientific Publishing Co Pte Ltd* pp 323 – 342.

3042. Chen L, Lesmond D A, Wei J 2007 Corporate yield spreads and bond liquidity *Journal of Finance* **62** pp 117 – 149.

3043. Connolly M 2007 Measuring the effect of corruption on sovereign bond ratings *Journal of Economic Policy Reform* **10** (4) pp 309 – 323.

3044. Edwards A, Harris L, Piwowar M 2007 Corporate bond market transaction costs and transparency *Journal of Finance* **62** pp 1421 – 1451.

3045. Goldstein M, Hotchkiss E 2007 Dealer behavior and the trading of newly issued corporate bonds *Working Paper* Boston College Boston USA.

3046. Green R C, Hollifield B, Schurhoff N 2007a Dealer intermediation and price behavior in the aftermarket for new bond issues *Journal of Financial Economics* **86** pp 643 – 682.

3047. Green R C, Hollifield B, Schurhoff N 2007b Financial intermediation and the costs of trading in an opaque market *Review of Financial Studies* **20** (2) pp 275 – 314.

3048. Bessembinder H, Maxwell W 2008 Transparency and the corporate bond market *Journal of Economic Perspectives* **22** (2) pp 217 – 234.

3049. Hanson M, Liljeblom E, Löflund A 2008 International bond diversification strategies: The impact of currency, country, and credit risk *Social Science Research Network* NY USA http://ssrn.com/abstract=1082789 .

3050. Rosengren E S The case for junk bonds *Federal Reserve Bank of Boston* USA pp 1 – 10.

3051. Santos J A C, Winton A 2008 Bank loans, bonds, and information monopolies across the business cycle *Journal of Finance* **63** pp 1315 – 1359.

3052. Beber A, Brandt M, Kavajecz K 2009 Flight-to-quality or flight-to-liquidity? Evidence from the Euro-area bond market *Review of Financial Studies* **22** pp 925 – 957.

3053. Dejun Xie 2009 Theoretical and numerical valuation of callable bonds *The International Journal of Business and Finance Research* **3** (2) pp 71 – 82.

3054. Drut B March 2009 Sovereign bonds and socially responsible investment *Working Paper 2009-17* Université Paris X Nanterre Paris France pp 1 – 23
http://economix.u-paris10.fr/ .

3055. Webb A 2009 The case for investing in bonds during retirement issues in brief *Center for Retirement Research* Boston College Boston USA
http://crr.bc.edu/briefs/the-case-for-investing-in-bonds-during-retirement/ .

3056. Banko J C, Lei Zhou 2010 Callable bonds revisited *Financial Management* **39** (2) pp 613 – 641.

3057. Chulho Jung, Shambora W, Kyongwook Choi 2010 Are stocks really riskier than bonds? *Applied Economics* **42** (4) pp 403 – 412.

3058. Grasso R, Linciano N, Pierantoni L, Siciliano G 2010 Le obbligazioni emesse dalle banche italiane *Consob Quaderni di Finanza no 67*.

3059. Güntay L, Hackbarth D 2010 Corporate bond spreads and forecast dispersion *Journal of Banking & Finance* **34** pp 2328 – 2345.

3060. Răscolean I, Szabo R 2010 Investments in bonds on Romania's capital market *Annals of the University of Petrosani: Economics* **10** (4) pp 281 – 288.

3061. Schneider R, Ciobanu G 2010 Capital-protected structured bonds *Romanian Economic Journal* **13** (37) pp 69 – 93.

3062. Chang E C, Krueger Th M 2011 Does index investing work in bonds? *Managerial Finance* **37** (5) pp 451 – 464.

3063. Ibarra-Ramirez R June 2011 Stocks, bonds and the investment horizon: A spatial dominance approach *Banco de Mexico Working Paper no 2011-03* Direccion General de Investigacion Economica *Banco de Mexico* pp 1 – 32.

3064. Puzyrewicz T 2011 Obligacje na rynku Catayst. Przewodnik dla inwestorów (Bonds on Catalyst. The guide for investors) *Wydawnictwo GPW* Warszawa Poland.

3065. Fabozzi F J January 16, 2012 Bond markets, analysis and strategies 8th edition *Prentice Hall* ISBN-13: 978-0132743549 pp 1 – 744.

3066. Kovner A, Chenyang Wei March 2012 The private premium in public bonds *Staff Report no 553* Federal Reserve Bank of New York NY USA pp 1 – 57.

3067. Prewysz-Kwinto P 2012 Catalyst – Rynek obligacji GPW w 2,5 roku od otwarcia (Catalyst – WSE bond market 2,5 year after opening) *Annales Universitatis Mariae Curie-Skłodowska Sectio H Oeconomia* **56** pp 699 – 710.

3068. Prewysz-Kwinto P, Voss G 2014 Development of public market of corporate bonds in Poland *Eurasian Journal of Business and Management* **2** (3) pp 17 – 25
http://www.eurasianpublications.com .

3069. Zhiguo He, Milbradt K January 13 2012 Endogenous liquidity and defaultable bonds *Booth School of Business University of Chicago*, *MIT Sloan School of Management* Cambridge USA pp 1 – 58.

3070. Compton W, Kunkel R A, Kuhlemeyer G 2013 Calendar anomalies in Russian stocks and bonds *Managerial Finance* **39** (12) pp 1138 – 1154.

3071. Hung-Gay Fung, Derrick Tzau, Jot Yau 2013 Offshore Renminbi-denominated bonds *Chinese Economy* **46** (2) pp 6 – 28.

3072. Janska A 2013 Risk appraisal in the award of contract bonds *Copernican Journal of Finance & Accounting* **2** (1) pp 91 – 105.

3073. Mazurek J 2013 Obligacje korporacyjne na Catalyst – Przewodnik dla potencjalnych emitentów (Corporate bonds on Catalyst – The guide for potential issuers) *Wydawnictwo GPW* Warszawa Poland.

3074. Booth L, Gounopoulos D, Skinner F 2014 The choice between callable and non-callable bonds *Journal of Financial Research* **37** (4) pp 435 – 460.

3075. Morellec E, Valta Ph, Zhdanov A 2015 Financing investment: The choice between bonds and bank loans *Management Science* **61** (11) pp 2580 – 2602.

3076. Coletta M, Santioni R October 2016 Le obbligazioni bancarie nel portafoglio delle famiglie italiane *Questioni di Economia e Finanza no 359* Dipartimento di Economia e Statistica Banca d'Italia ISSN 1972-6627 pp 1 – 25.

3077. Ranosz R 2016 The raw materials convertible into bonds *Gospodarka Surowcami Mineralnymi / Mineral Resources Management* **32** (2) pp 79 – 94.

3078. Yu-Sheng Lai 2016 Modeling and forecasting the conditional covariance matrix between stock and bond returns using a multivariate high-frequency-based volatility (HEAVY) model Department of Banking and Finance National Chi Nan University Taiwan, SFM 24 NSYSU Taiwan
http://sfm.finance.nsysu.edu.tw .

Credit derivative investment, credit derivative pricing, credit derivatives exchange, financial capital investment product, financial capital investment medium in finances:

3079. Knight F 1921 Risk, uncertainty and profit *Houghton Mifflin* New York USA.

3080. Fisher R, Tippett L 1928 Limiting forms of the frequency distribution of the largest or smallest member of a sample *Proceedings of Cambridge Philosophical Society* **24** pp 180 – 190.

3081. Working H 1948 Theory of the inverse carrying charge in futures markets *Journal of Farm Economics* **30** no 1 pp 1 – 28.

3082. Modigliani F, Miller M 1958 The cost of capital, corporation finance and the theory of investment *American Economic Review* vol **48**.

3083. Borch K 1960 Reciprocal reinsurance treaties *The Astin Bulletin* **1** pp 170 – 191.

3084. Borch K 1961 Some elements of a theory of reinsurance *Journal of Risk and Insurance* **28** pp 35 – 43.

3085. Borch K 1962 Equilibrium in a reinsurance market *Econometrica* **30** pp 424 – 444.

3086. Sharpe W 1964 Capital asset prices: A theory of market equilibrium under conditions of risk *Journal of Finance* pp 425 – 441.

3087. Akerlof G A 1970 The market for "lemons": Quality uncertainty and the market mechanism *Quarterly Journal of Economics* vol **84** pp 488 – 500.

3088. Cox D R 1972 Regression models and life tables *Journal of the Royal Statistical Society* Series **B 34/2** pp 187 – 220.

3089. Black F, Scholes M 1973 The pricing of options and corporate liabilities *The Journal of Political Economy* **81** (3) pp 637 – 654.

3090. Black F, Cox J C 1976 Valuing corporate securities: Some effects of bond indenture provisions *Journal of Finance* vol **31** pp 351 – 367.

3091. Fama E, MacBeth J 1973 Risk, return and equilibrium: Empirical tests *Journal of Political Economy* **81** pp 607 – 636.

3092. Merton R C 1974a On the pricing of corporate debt: The risk structure of interest rates *Journal of Finance* **29** pp 449 – 470.

3093. Merton R C 1974b Theory of rational option pricing *Bell Journal of Econ*omics **4** (1) pp 141 – 183.

3094. Jaffee D, Russel T 1976 Imperfect information, uncertainty, and credit rationing *Quarterly Journal of Economics* **90** pp 651 – 666.

3095. Leland H E, Pyle D H 1977 Informational asymmetries, financial structure and financial intermediation *Journal Finance* **32** pp 371 – 387.

3096. Leland H E 1994 Risky debt, bond covenants and optimal capital structure *Journal of Finance* **49** pp 1213 – 1252.

3097. Stiglitz J E, Weiss A 1981 Credit rationing in markets with imperfect information *American Economic Review* **71** pp 393 – 410.

3098. Stiglitz J E, Weiss A 1983 Incentive effects of terminations: Applications to credit and labor markets *American Economic Review* **73** pp 912 – 927.

3099. Diamond D W 1984 Financial intermediation and delegated monitoring *Review of Economic Studies* **51** pp 393 – 414.

3100. Diamond D W 1991 Monitoring and reputation: The Choice between bank loans and directly placed debt *Journal of Political Economy* **99** pp 393 – 414.

3101. Diamond D W, Rajan R G 2000 A theory of bank capital *Journal of Finance* **55** pp 2431 – 2465.

3102. Fama E F 1985 What's different about banks? *Journal of Monetary Economics* **15** pp 29 – 40.

3103. Blazenko G 1986 The economics of reinsurance *Journal of Risk and Insurance* **53** pp 258 – 277.

3104. James C 1987 Some evidence on the uniqueness of bank loans *Journal of Financial Economics* **17** pp 113 – 134.

3105. Rudolph B 1987 Innovationen zur steuerung und begrenzung bankbetrieblicher risiken *in* Bankmanagement für neue märkte Krümmel H J, Rudolph B (editors) Frankfurt Germany pp 19 – 45.

3106. Rudolph B 1994 Ansätze zur kalkulation von risikokosten für kreditgeschäfte *in* Handbuch Bankcontrolling Schierenbeck H, Moser H Wiesbaden Germany.

3107. Berger A, Udell G 1990 Collateral, loan quality, and bank risk *Journal of Monetary Economics* **25** (1) pp 21 – 42.

3108. Cronon W 1991 Nature's metropolis: Chicago and the Great West *W W Norton* New York USA.

3109. Hellwig M 1991 Banking, financial intermediation and corporate finance *in* European Financial Integration Giovannini A, Mayer C et al (editors) pp 35 – 68.

3110. Berlin M 1992 Securitization *in* The New Palgrave Dictionary of Money and Finance vol **3** Newman P, Murray M, Eatwell J (editors) London UK pp 433 – 435.

3111. Heath D, Jarrow R, Morton A 1992 Bond pricing and the term structure of interest rates *Econometrica* **60** (1) pp 77 – 106.

3112. Dewatripont M, Tirole J 1993 The prudential regulation of banks *MIT Press* USA.

3113. Froot K, Scharfstein D, Stein J 1993 Risk management: Coordinating corporate investment and financing policies *Journal of Finance* **48** pp 1629 – 1658.

3114. Froot K, Stein J 1998 Risk management, capital budgeting and capital structure policy for financial institutions: An integrated approach *Journal of Financial Economics* **47** pp 55 – 82.

3115. Cocheo S 1994 Business - loan securitization: Trickle or flood? *ABA Banking Journal* **86** (12) pp 35 – 38.

3116. Figlewski St Summer 1994 The birth of the AAA derivatives subsidiary *Journal of Derivatives* pp 80 – 84.

3117. Hull J, White A 1994a Numerical procedures for implementing term structure models i:Single-factor models *Journal of Derivatives* **2** (1) pp 7 – 16.

3118. Hull J, White A 1994b Numerical procedures for implementing term structure models i: Two-factor models *Journal of Derivatives* **2** (2) pp 37 – 48.

3119. Hull J, White A 1996 Using Hull-White interest rate trees *Journal of Derivatives* **4** (1) pp 26 – 36.

3120. Hull J, White A 2000 Valuing credit default swaps I: No counterparty default risk *Journal of Derivatives* **8** (1) pp 29 – 40.

3121. Hull J, White A 2001 Valuing credit default swaps II: Modeling default correlations *Journal of Derivatives* **8** (3) pp 12 – 22.

3122. Hull J, White A 2004 Valuation of CDO and n^{th} to default CDS without Monte Carlo simulation *Journal of Derivatives* vol **12** (2) pp 8 – 23.

3123. Hull J, Predescu M, White A 2004 The relationship between credit default swap spreads, bond yields, and credit rating announcements *Journal of Banking & Finance* **28** (11) pp 2789 – 2811.

3124. Hull J, White A 2005a The valuation of correlation-dependent credit derivatives using a structural model *Joseph L Rotman School of Management* University of Toronto Canada.

3125. Hull J, White A 2005b The perfect copula *Working Paper* University of Toronto Canada.

3126. Hull J, White A 2008 Dynamic models of portfolio credit risk: A simplified approach *Journal of Derivatives* vol **15**.

3127. Hull J C 2013 Fundamentals of futures and options markets 8th edition *Pearson* ISBN-13: 978-0132993340 pp 1 – 624.

3128. Hull J January 25 2014 Options, futures and other derivatives 9^{th} edition USA ISBN-13: 978-0133456318 pp 1 – 896.

3129. Jarrow R, Lando D, Turnbull S 1994 A Markov model of the term structure of credit spreads *Working Paper* Cornell University NY USA.

3130. Jarrow R, Turnbull S 1995 Pricing derivatives on financial securities subject to credit risk *Journal of Finance* **50** (1) pp 53 – 85.

3131. Jarrow R, Lando D, Turnbull S M 1997 A Markov model for the term structure of credit risk spread *Review of Financial Studies* vol **10** pp 481 – 523.

3132. Jarrow R, Turnbull S 2000a The intersection of market and credit risk *Journal of Banking and Finance* **24**.

3133. Jarrow R, Turnbull S 2000b Derivatives securities 2nd edition *South Western College Publishing* USA.

3134. Jarrow R 2001 Default parameter estimation using market prices *Financial Analysts Journal* vol **5**.

3135. Jarrow R, Yu F 2001 Counterparty risk and the pricing of defaultable securities *The Journal of Finance* **56** pp 1765 – 1799.

3136. Jarrow R, Yildirim Y 2002 Valuing default swaps under market and credit risk correlation *The Journal of Fixed Income* **11** pp 7 – 19.

3137. McAllister P H, Mingo J J May 1994 Commercial loan risk management, credit scoring, and pricing: The need for a new shared database *Journal of Commercial Lending* pp 6 – 20.

3138. Neuberger D 1994 Kreditvergabe durch banken *Tübingen* Germany.

3139. Das S Spring 1995 Credit risk derivatives *Journal of Derivatives* pp 7 – 23.

3140. Das S 1998a Credit derivatives – instruments *in* Credit derivatives: Trading and management of credit and default risk Das S (editor) *John Willey and Sons Inc* Singapore pp 7 – 97.

3141. Das S 1998b Credit-linked structured notes *in* Credit derivatives: Trading and management of credit and default risk Das S (editor) *John Willey and Sons Inc* pp 99 – 121.

3142. Das S R 2000 Credit derivatives: Trading and management of credit and default risk *John Wiley & Sons Inc* Singapore.

3143. Das S R, Hanouna P, Sarin A 2009 Accounting-based versus market-based cross-sectional models of CDS spreads *Journal of Banking and Finance* **33** pp 719 – 730.

3144. Edwards B August 1995 Let's shuffle those loans *Euromoney* no 316 pp 22 – 26.

3145. Gorton G B, Pennacchi G 1995 Banks and loan sales: Marketing nonmarketable assets *Journal of Monetary Economics* **35** pp 389 – 411.

3146. Gorton G, Winton A 1998 Liquidity provision, the cost of bank capital and the macroeconomic *NBER Working Paper* NBER USA.

3147. Gorton G, Souleles N 2005 Special purpose vehicles and securitization *in* The Risks of Financial Institutions Carey M, Stulz R (editors) *University of Chicago Press* Chicago USA.

3148. Hasbrouck J 1995 One security, many markets: Determining the contributions to price discovery *Journal of Finance* **50** pp 1175 – 1199.

3149. Longstaff F A, Schwartz E June 1995a Valuing credit derivatives *Journal of Fixed Income* pp 6 – 14.

3150. Longstaff F A, Schwartz E 1995b A simple approach to valuing risky fixed and floating rate debt *Journal of Finance* **50** pp 789 – 819.

3151. Longstaff F A, Mithal S, Neis E August 2003 The credit-default swap market: Is credit protection priced correctly? *NBER Working Paper* NBER USA.

3152. Longstaff F A, Mithal S, Neis E 2005 Corporate yield spreads: Default risk or liquidity? New evidence from the credit default swap market *Journal of Finance* **60** (5) pp 2213 – 2253.

3153. Longstaff F A, Rajan A 2008 An empirical analysis of the pricing of collateralized debt obligations *Journal of Finance* **63** pp 529 – 563.

3154. Whittaker G, Kumar S 1995 Credit derivatives: A primer *Working Paper* Chemical Bank USA *in* The Handbook of Fixed Income Derivatives Dattateya R (editor) *Probus Publishing Company* Chicago USA.

3155. Whittaker G, Frost J May 1997 An introduction to credit derivatives *Journal of Lending and Credit Risk Management* vol **79** no 9 pp 15 – 25.

3156. Altman E I September 1996 Corporate bond and commercial loan portfolio analysis *Working Paper*.

3157. Duffee G R 1996 Rethinking risk management for banks: Lessons from credit derivatives *Proceedings of the 32nd Annual Conference on Bank Structure and Competition* Federal Reserve Bank of Chicago USA pp 381 – 400.

3158. Duffee G R, Zhou Ch February 1997 Credit derivatives in banking: Useful tools for loan risk management? *Federal Reserve Board Working Paper* NY USA.

3159. Duffee G R, Zhou Ch November 1999 Credit derivatives in banking: Useful tools for managing risk? *Research Program in Finance Working Paper RPF-289* University of California – Berkeley California USA pp 1 – 38
http://www.escholarship.org/uc/item/7g67n911 .

3160. Duffee G R, Zhou C 2001 Credit derivatives in banking: Useful tools for managing risk? *Journal of Monetary Economics* **48** (1) pp 25 – 54.

3161. Duffie D 1996a Dynamic asset pricing theory *Princeton University Press* Princeton USA.

3162. Duffie D 1996b Recursive valuation of defaultable securities and the timing of resolution of uncertainty *Annals of Applied Probability* **6** (4).

3163. Duffie D 1999 Credit swap valuation *Financial Analysts Journal* **55** pp 73 – 87.

3164. Duffie D, Singleton K 1999 Simulating correlated defaults *Graduate School of Business* Stanford University California USA.

3165. Duffie D, Pan J, Singleton J November 2000 Transform analysis and asset pricing for affine jump diffusions *Econometrica* **68** (6) pp 1343 – 1376.

3166. Duffie D, Gârleanu N G 2001 Risk and valuation of collateralized debt obligations *Working Paper* Graduate School of Business Stanford University, *Financial Analysts Journal* **57** (1) pp 41 – 59.

3167. Duffie D, Lando D 2001 Term structures of credit spreads with incomplete accounting information *Econometrica* **69** (3) pp 633 – 664.

3168. Duffie D, Singleton K 2002 Credit risk: Pricing, measurement, and management *Princeton University Press* Princeton NJ USA.

3169. Duffie D, Gârleanu N 2003 Risk and valuation of collateralized debt obligations *Graduate School of Business* Stanford University Stanford USA.

3170. Duffie D, Filipovic D, Schachermayer W 2003 Affine processes and applications in finances *Annals of Applied Probability* **13** (3) pp 985 – 1053.

3171. Duffie D July 2008 Innovations in credit risk transfer: Implications for financial stability *BIS Working Paper no 255* Bank for International Settlements Switzerland.

3172. Hattori P K 1996 The Chase guide to credit derivatives in Europe *London* UK.

3173. Hyder I, Bolger R M, Leung C July 1996 How S&P evaluates commercial loan-backed securitizations *Journal of Lending and Credit Risk Management* vol **78** no 11 pp 14 – 34.

3174. Neal R S May 1996 Credit derivatives: New financial instruments for controlling credit risk *Economic Review* Second Quarter Federal Reserve Bank of Kansas City Kansas USA pp 15 – 27.

3175. Neal R S, Rolph D S 1999 An introduction to credit derivatives *in* Handbook of Credit Derivatives Francis J C, Frost J A, Whittaker J G (editors) *McGraw-Hill* New York USA pp 3 – 24.

3176. Reoch R, Masters B March 1996 Credit derivatives: Structures and applications *Financial Derivatives and Risk Management* no 5 pp 4 – 10.

3177. Schönbucher P J August 1996 The term structure of defaultable bond prices *Discussion Paper B-384* University of Bonn SFB 303.

3178. Schönbucher P J Term structure modelling of defaultable bonds *The Review of Derivatives Studies* Special Issue: Credit Risk **2** (2/3) pp 161 – 192.

3179. Schönbucher P J Fall 1999 Credit risk modelling and credit derivatives *Ph D Thesis* Faculty of Economics University of Bonn Germany.

3180. Schönbucher P J 2000a Pricing of credit risk and credit risk derivatives *Bonn Graduate School of Economics* Department of Economics University of Bonn Germany.

3181. Schönbucher P J 2000b A tree implementation of a credit spread model for credit *Discussion Paper 17/2001* Bonn Graduate School of Economics Department of Economics University of Bonn Germany pp 1 – 37.

3182. Schönbucher P J 2003 Credit derivatives pricing models: Models, pricing, implementation *Wiley Finance John Wiley and Sons Inc* Chichester UK.

3183. Schönbucher P J 2006 Portfolio losses and the term structure of loss transition rates: A new methodology for the pricing of portfolio credit derivatives *Working Paper* ETHZ Switzerland.

3184. Smithson Ch, Holappa H, Rai Sh June 1996 Credit derivatives (2) *Risk* **9** (6) pp 47 – 48.

3185. Drzik J P, Kuritzkes A July 1997 Credit derivatives: The tip of the iceberg *Credit Risk A Risk Special Supplement* pp 12 – 14.

3186. Freixas X, Rochet J-C 1997 Microeconomics of banking *MIT Press* Cambridge MA USA.

3187. Géczy C, Minton B, Schrand C 1997 Why firms use currency derivatives *Journal of Finance* **52** pp 1323 – 1354.

3188. Hill C A 1997 Securitization: A low-cost Sweetener for Lemons *Journal of Applied Corporate Finance* vol **10** pp 64 – 71.

3189. Hüttemann P 1997 Derivative instrumente für den transfer von kreditrisiken *München* Germany.

3190. Hüttemann P 1998 Derivate instrumente für den transfer von kreditrisiken *in* Oehler A Credit Risk und Value-at-Risk Alternativen – Herausforderungen für das Risk Management *Schäffer-Poeschel Verlag* Stuttgart Germany.

3191. Joe H 1997 Multivariate models and dependence concepts *Chapman & Hall* London UK.

3192. Kaufman F 1997 Besonderheiten der finanzierung kleiner und mittlerer unternehmen *Kredit und Kapital* vol **30** pp 140 – 155.

3193. Mahtani A August 23 1997 Credit derivatives go structured *International Financial Review* no 1197.

3194. Ogden J 1997 Credit derivatives can cut companies' financing costs *Global Finance* **11** (4) pp 6 – 8.

3195. Wilson Th C September 1997a Portfolio credit risk (I) *Risk* **10** (9) pp 111 – 117.

3196. Wilson Th C October 1997b Portfolio credit risk (II) *Risk* **10** (10) pp 56 – 61.

3197. Burghof H-P, Henschel C 1998 Credit and Information in Universal Banking - A Clinical Study *CFS Working Paper*.

3198. Burghof H-P, Henke S, Rudolph B, Schönbucher Ph J, Sommer D 2005 Kreditderivate – Handbuch für die bank und anlagepraxis *Schäffer-Poeschel Verlag* Stuttgart Germany.

3199. Henke S, Burghof H-P, Rudolph B 1998 Credit securitization and credit derivatives: Financial instruments and the credit risk management of middle market commercial loan portfolios *CFS Working Paper no 1998/07* pp 1 – 30
http://nbn-resolving.de/urn:nbn:de:hebis:30-9462 ,
http://hdl.handle.net/10419/78086 .

3200. Fabozzi F J January 1998 Valuation of fixed income securities and derivatives 3rd edition *John Wiley and Sons Inc* ISBN-13: 978-1883249250 pp 1 – 288.

3201. Fabozzi F J, Davis H A, Choudhry M October 20 2006 Introduction to structured finance *John Wiley and Sons Inc* ISBN-13: 978-0470045350 pp 1 – 400.

3202. Fabozzi F J, Kothari V 2007 Securitization: The tool of financial transformation *Journal of Financial Transformation*.

3203. Lancaster B P, Schultz G M, Fabozzi F J April 25, 2008 Structured products and related credit derivatives: A comprehensive guide for investors *John Wiley and Sons Inc* ISBN-13: 978-0470129852 pp 1 – 544.

3204. Fabozzi F J January 16, 2012 Bond markets, analysis and strategies 8th edition *Prentice Hall* ISBN-13: 978-0132743549 pp 1 – 744.

3205. Lando D 1998 On Cox processes and credit risky securities *Review of Derivatives Research* **2** (2/3) pp 99 – 120.

3206. Lando D 2004 Credit risk modeling – Theory and applications *Princeton University Press* Princeton New Jersey USA.

3207. Scott–Quinn B, Walmsley J 1998 The impact of credit derivatives on securities markets *International Securities Market Association* Zurich Switzerland.

3208. Steinherr A 1998 Derivatives: The wild beast of finance *John Wiley and Sons Inc* Hoboken NJ USA.

3209. Tavakoli J 1998 Credit derivatives: A guide to instruments and applications *John Wiley and Sons Inc* New York USA.

3210. Tavakoli J 2001 Credit derivatives and synthetic structures: A guide to instruments and applications *John Wiley and Sons Inc* New York USA.

3211. Tavakoli J M 2003 Collateralized debt obligations and structured finance *John Wiley and Sons Inc* Hoboken New Jersey USA.

3212. Arvanitis A, Gregory J, Laurent J Spring 1999 Building models for credit spreads *Journal of Derivatives* **1** pp 27 – 43.

3213. DeMarzo P, Duffie D 1999 A liquidity-based model of security design *Econometrica* **67** pp 65 – 99.

3214. DeMarzo P 2005 The pooling and tranching of securities: A model of informed intermediation *Review of Financial Studies* **18** pp 1 – 35.

3215. Gauvin A September 8 1999 Nature et régime juridique des dérivés de crédit *Ph D Thesis* Sorbonne Paris 1 France.

3216. Heidorn T 1999 Kreditderivate *Hochschul* Frankfurt am Main Germany.

3217. Embrechts P, McNeil A, Straumann D 1999 Correlation and dependence in risk management: Properties and pitfalls *Working Paper* Department Mathematics ETH Zurich Switzerland.

3218. Embrechts P, Lindskog F, McNeil A 2001 Modelling dependence with copulas and applications to risk management *Working Paper* Department Mathematics ETH Zurich Switzerland.

3219. Master B, Bryson K 1999 Credit derivatives and loan portfolio management *in* Handbook of Credit Derivatives Francis J C, Frost J A, Whittaker J G (editors) *McGraw-Hill* New York USA pp 43 – 85.

3220. Nelken I 1999 Implementing credit derivatives: Strategies and techniques for using credit derivatives in risk management *McGraw-Hill* New York USA.

3221. Rappoport P 1999 Valuing credit fundamentals: Rock bottom spreads *JP Morgan Research* USA.

3222. Staehle D, Cumming C 1999 The supervision of credit derivative activities of banking organizations *in* Handbook of Credit Derivatives Francis J C, Frost J A, Whittaker J G (editors) *McGraw-Hill* New York pp 293 – 326.

3223. Allen F, Gale D 2000 Financial contagion *Journal of Political Economy* **108** (1) pp 1 – 33.

3224. Allen F, Carletti E 2006 Credit risk transfer and contagion *Journal of Monetary Economics* **53** (1) pp 80 – 111.

3225. British Bankers' Association 2000 Credit derivatives survey *BBA* London UK.

3226. Brewer III E, Minton B A, Moser J T 2000 Interest-rate derivatives and bank lending *Journal of Banking and Finance* **24** pp 353 – 379.

3227. Kiff J, Morrow R Autumn 2000 Credit derivatives *Bank of Canada Review* Autumn 2000 pp 3 – 11.

3228. Kiff J, Michaud F-L, Mitchell J 2002 Instruments of credit risk transfer: Effects on financial contracting and financial stability *Working Paper* Bank of Canada Ottawa Canada.

3229. Kiff J, Michaud F-L, Mitchell J Juin 2003a Une revue analytique des instruments de transfert du risque de crédit *Revue de la Stabilité Financière Banque de France, Banque de France Financial Stability Review no 2* pp 106 – 131.

3230. Kiff J, Michaudand F-L, Mitchell J 2003b Instruments of credit risk transfer: Effects on financial contracting and financial stability *NBB Working Paper* NBB.

3231. Li D 2000 On default correlation: a copula function approach *Journal of Fixed Income* **9** pp 43 – 54.

3232. Müller F 2000 Kreditderivate und risikomanagement *Bankakademie-Verlag GmbH* Frankfurt am Main Germany.

3233. Saunders A 2000 Financial institutions management: A modern perspective *Irwin McGraw-Hill* International Edition Homewood IL USA.

3234. Wahl J E, Broll U 2000 Financial hedging and bank's assets and liabilities management *in* Risk Management Frenkel M, Hommel U, Rudolf M (editors) *Springer* Heidelberg Germany.

3235. Arvantis A, Gregory Jon 2001 Credit: The complete guide to pricing, hedging and risk management *Risk Waters Group Ltd* London UK.

3236. Bomfim A N July 11 2001 Understanding credit derivatives and their potential to synthesize riskless assets *Monetary and Financial Market Analysis* Division of Monetary Affairs Federal Reserve Board Washington DC USA pp 1 – 31.

3237. Cossin D, Hricko May 2001 Exploring of credit risk in credit default swap transaction data *Working Paper* HEC Lausanne Switzerland.

3238. Collin-Dufresne P, Goldstein R, Martin S 2001 The determinants of credit spread changes *Journal of Finance* **56** (6) pp 2177 – 2207.

3239. Craddock M, Platen E June 28 2001 Benchmark pricing of credit derivatives under a standard market model *Department of Mathematical Sciences* School of Finance and Economics University of Technology Sydney Australia pp 1 – 27.

3240. Delianedis G, Geske R 2001 The components of corporate credit spreads: Default, recovery, tax, jumps, liquidity, and market factors *Working Paper* University of California USA.

3241. Elton E, Gruber D, Agrawal D, Mann C 2001 Explaining the rate spread on corporate bonds *Journal of Finance* **56** (1) pp 247 – 277.

3242. Giesecke K 2001 Default compensator, incomplete information, and the term structure of credit spreads *Department of Economics der Humboldt-Universität Berlin* Germany.

3243. Giesecke K 2002 Credit risk modeling and valuation: An introduction *Humboldt-Universität* Berlin Germany.

3244. Giesecke K 2003 A simple exponential model for dependent defaults *Journal of Fixed Income* vol **13**.

3245. Giesecke K, Weber St 2003 Cyclical correlations, credit contagion, and portfolio losses Cornell University, Technische Universität Berlin Ithaca, Berlin USA, Germany.

3246. Giesecke K 2004 Credit risk modeling and valuation: An introduction Cornell University Ithaca USA.

3247. Giesecke K, Goldber L R 2004 Forecasting default in the face of uncertainty *The Journal of Derivatives* vol **Fall/04**.

3248. Giesecke K 2006 Default and information *Journal of Economic Dynamics & Control* vol **30**.

3249. Goodman L S 2001 Synthetic CDOs *in* Investing collateralized debt obligations *John Wiley & Sons Inc* Fabozzi F J, Goodman L S (editors) Hoboken NJ USA.

3250. Lopez J A 2001 Financial instruments of mitigating credit risk *Federal Reserve Bank of San Francisco Economic Letter* pp 2001 – 2034.

3251. Lucas A, Klaassen P, Spreij P, Staetmans S 2001 An analytic approach to credit risk of large corporate bond and loan portfolios *Journal of Banking and Finance* **9** pp 1635 – 1664.

3252. Mashal R, Naldi M 2001 Pricing multi-name credit derivatives: Heavy tailed approach, *Working Paper* Columbia University NY USA.

3253. Ranciere R G 2001 Credit derivatives in emerging markets *IMF Policy Discussion Paper* IMF USA.

3254. Rehm F Ch 2001 Kreditrisikomodelle – Bewertung von Kreditderivaten und Portfoliomodelle zur Kreditrisikomessung *Dissertation an der Wissenschaftlichen Hochschule für Unternehmensführung – Otto-Beisheim-Hochschule – Vallendar* Koblenz Germany.

3255. Rule D June 2001 The credit derivatives market: Its development and possible implications for financial stability *Financial Stability Review* pp 117 – 140.

3256. Schmidt W März 2001 Credit default swaps: Analyse und bewertung Deutsche *Bank Global Markets Research & Analytics* Frankfurt Germany.

3257. Amihud Y 2002 Illiquidity and stock returns: Cross-section and time-series effects *Journal of Financial Markets* **5** pp 31 – 56.

3258. Angelini E 2002 Il profilo di rischio di un portafoglio con derivati creditizi: L'elaborazione di un modello di simulazione Montecarlo *Banca Impresa Società* **XXI** no 2 pp 259 – 282.

3259. Arping S May 2002 Playing hardball: Relationship banking in the age of credit derivatives *Research Paper no 49* FAME - International Center for Financial Asset Management and Engineering Geneva Switzerland
http://www.fame.ch .

3260. Aunon-Nerin D, Cossin D, Hricko T, Huang Z 2002 Exploring for the determinants of credit risk in credit default swap transaction data: Is fixed-income markets information sufficient to evaluate credit risk? *Working Paper* HEC-University of Lausanne and FAME Switzerland.

3261. Batten J, Hogan W 2002 A perspective on credit derivaties *International Review of Financial Analysis* **11**.

3262. Bielecki T R, Rutkowski M 2002 Credit risk: Modeling, valuation and hedging *Springer Verlag* Germany.

3263. Bielecki T R, Rutkowski M 2004 Credit risk: Modeling, valuation and hedging *Springer Verlag* Berlin Heidelberg Germany 2004.

3264. Broll U, Welzel P 2002 Bankrisiko und risikosteuerung mit derivaten *Volkswirtschaftliche Diskussionsreihe Beitrag nr 227* Institut für Volkswirtschaftslehre Universität Augsburg Germany.

3265. Broll U, Pausch Th, Welzel P July 2002 Credit risk and credit derivatives in banking *Volkswirtschaftliche Diskussionsreihe Beitrag nr 228* Institut für Volkswirtschaftslehre Universität Augsburg Germany pp 1 – 9.

3266. Broll U, Schweimayer G, Welzel P 2003 Managing credit risk with credit and macro derivatives *Volkswirschaftliche Diskussionsreihe Discussion Paper no 252* Institut für Volkswirtschaftslehre Universität Augsburg Germany.

3267. Di Graziano G, Rogers C 2002 A dynamic approach to the modelling of correlation credit derivatives using Markov chains *Cambridge University Press* Cambridge UK.

3268. Dodd R 2002 The structure of OTC derivatives markets *The Financier* vol **9** (1–4) http://www.financialpolicy.org/dscotcstructure.pdf .

3269. Dodd R March 2012 Markets: Exchange or over-the-counter *Finance & Development* http://www.imf.org/external/pubs/ft/fandd/basics/markets.htm .

3270. Dunne P G, Moore M J, Portes R 2002 Defining benchmark status: An application using Euro-area bonds *CEPR Discussion Paper no 3490*.

3271. Grill H, Perczynski H, Int-Veen Th, Muthig J, Platz S 2002 Wirtschaftslehre des kreditwesens *Bildungsverlag* EINS Troisdorf Germany.

3272. Jobst A 2002 The pricing puzzle: The default term structure of collateralized loan obligation *CFS Working Paper no 2002/14*.

3273. Läger V 2002 Bewertung von kreditrisiken und kreditderivaten *Uhlenbruch Verlag* Bad Soden/Ts Germany.

3274. Prato O November 2002 Credit derivatives: A new source of financial instability? *FSR* pp 69 – 83.

3275. Ranciere R G April 2002 Credit derivatives in emerging markets *IMF Policy Discussion Paper* IMF USA pp 1 – 24.

3276. Skinner F S, Townend T G 2002 An empirical analysis of credit default swaps *International Review of Financial Analysis* **11**.

3277. Albanese C, Campolieti J, Chen O, Zavidonov A 2003 Credit barrier models *Risk* **16** (6) pp 109 – 113.

3278. Albanese C, Chen O 2005 Discrete credit barrier models *Quantitative Finance* 5 pp 247 – 256.

3279. Albanese C, Vidler A October 9 2007 A structural model for credit-equity derivatives and bespoke CDOs *MPRA Paper no 5227* pp 1 – 28
http://mpra.ub.uni-muenchen.de/5227/ .

3280. Amato J D, Remolona E December 2003 The credit spread puzzle *BIS Quarterly Review* pp 51 – 63.

3281. Amato J D December 2005 Risk aversion and risk premia in the CDS market *BIS Quarterly Review* pp 55 – 68.

3282. BIS 2003 Credit risk transfer *Bank for International Settlements* ISBN 92-9131-641-5 pp 1 – 57.

3283. Blanco R, Brennan S, Marsch I W 2003 An empirical analysis of the dynamic relationship between investment-grade bonds and credit default swaps *Bank of England Working Paper no 211* London UK.

3284. Blanco R, Brennan S, March W 2004 An empirical analysis of the dynamic relationship between investment-grade bonds and credit default swaps *Bank of Spain Working Paper no 0401* Madrid Spain.

3285. Codogno L, Favero C, Missale A 2003 Government bond spreads *Economic Policy* **18** pp 504 – 532.

3286. Fage P November 24 2003 Hedging with credit default swaps *Credit Suisse First Boston Emerging Markets Sovereign Strategy Focus*.

3287. Francis C, Kakodkar A, Martin B April 2003 Credit derivative handbook 2003. A guide to products, valuation, strategies and risks *Merrill Lynch Global Securities Research and Economics Group*.

3288. Galiani S 2003 Copula functions and their application in pricing and risk managing multi-name credit derivative products *M Sc Thesis* King's College London UK.

3289. Grundke P 2003 Modellierung und bewertung von kreditrisiken *Ph D Dissertation* Universität zu Köln *Der Deutsche Universitätsverlag* Wiesbaden Germany.

3290. Haas F June 2003 Towards a 'market continuum'? Structural models and interaction between credit and equity markets *Banque de France Financial Stability Review* no 2.

3291. Li Chen, Filipović D July 4 2003 Credit derivatives in an affine framework *Information Sciences and Systems* Princeton University Princeton USA pp 1 – 21.

3292. MacKenzie D, Millo Y 2003 Constructing a market, performing theory: The historical sociology of a financial derivatives exchange *American Journal of Sociology* **109** pp 107 – 145.

3293. Packer F, Suthiphongchai C December 2003 Sovereign credit default swaps *BIS Quarterly Review* USA.

3294. Schmidt Th 2003 Credit risk modeling with random fields *Inaugural-Dissertation zur Erlangung des Doktorgrades an den Naturwissenschaftlichen Fachbereichen (Mathematik) der Justus-Liebig-Universität Gießen* Germany.

3295. Xu D, Wilder C May 2003 Emerging markets credit derivatives: Market overview, products, analyses and applications *Deutsche Bank Global Markets Research* Germany.

3296. Blanco R, Brennan S, March W 2004 An empirical analysis of the dynamic relationship between investment-grade bonds and credit default swaps *Working Paper no 0401* Bank of Spain Madrid Spain, *Bank of England Working Paper no 211* London UK.

3297. Cebenoyan A S, Strahan P E 2004 Risk management, capital structure and lending at banks *Journal of Banking and Finance* **28** pp 19 – 43.

3298. Chan-Lau J A, Kim Y S 2004 Equity prices, credit default swaps, and bond spreads in emerging markets *IMF Working Paper* IMF USA.

3299. Edwards F R, Morrison E R 2004 Derivatives and the Bankruptcy Code: Why the Special Treatment? *Working Paper no 258* The Center for Law and Economic Studies Columbia Law School New York USA.

3300. Eller R, Markus H 2004 Kreditderivate in der praktischen anwendung *Deutscher Sparkassen Verlag* Stuttgart Germany.

3301. Eller R 2005 Handbuch derivativer Instrumente – Produkte, Strategien und Risikomanagement *Schäffer-Poeschel-Verlag* Stuttgart Germany.

3302. Ericsson J, Jacobs K, Oviedo R A 2004 The determinants of credit default swap premia *CIRANO 2004s-55* Montréal Canada.

3303. Ericsson J, Reneby J, Wang H 2006 Can structural models price default risk? Evidence from bond and derivative markets *Working Paper McGill University*, *Stockholm School of Economics* Montreal Canada, Stockholm Sweden.

3304. Favero C, Von Thadden E-L 2004 The European bond markets under EMU *Oxford Review of Economic Policy* **4** pp 531 – 554.

3305. Favero C, Pagano M, Von Thadden E-L 2009 How does liquidity affect government bond yields? *Journal of Financial and Quantitative Analysis*.

3306. Felsenheimer J June 2 2004 CDS: Mechanism, pricing and application *HVB Global Markets Research*.

3307. Felsenheimer J September 2004 Kreditderivate spezial – CDS: Funktionsweise, bewertung, anwendung *Global Markets Research* HVB Corporates & Markets.

3308. Felsenheimer J, Gisdakis Ph, Zaiser M 2005 Kreditderivate spezial – Das kreditmarkt *Global Markets Research* HVB Corporates & Markets.

3309. Garcia T, Maghakian A, Sharma S 2004 Implications of stochastic recovery rates in evaluating CDO tranches *The Journal of Fixed Income* pp 64 – 71.

3310. Gibson M S 2004 Understanding the risk of synthetic CDOs finance and economics *Discussion Series 2004-36 Board of Governors of the Federal Reserve System* NY USA www.federalreserve.gov/pubs/feds/2004/200436/200436pap.pdf .

3311. Gibson M May 22 2007 Credit derivatives and risk management *Board of Governors of Federal Reserve System Finance and Economics Discussion Series Paper 2007-47* NY USA pp 1 – 23.

3312. Johnson, McBride Ph, Lee Hazen Th 2004 Derivatives regulation vol **1** *Aspen* New York USA.

3313. Madan D B, Konikov M, Marinescu M 2004 Credit and basket default swaps *Working Paper Robert H Smith School of Business* and *Bloomberg LP*.

3314. Meneguzzo D, Vecchiato W 2004 Copula sensitivity in collateralized debt obligations and basket default swaps *The Journal of Futures Markets* vol **24** pp 37 – 70.

3315. Norden L, Weber M 2004a Informational efficiency of credit default swap and stock markets: The impact of credit rating announcements *Working Paper* University of Mannheim Germany, *Journal of Banking and Finance* **28** (11) pp 2813 – 2843.

3316. Norden L, Weber M 2004b The co-movement of credit default swap, bond and stock markets: An empirical analysis *CEPR Discussion Paper Series no 4674*, *Center for Financial Studies Working Paper no 2004/20* London UK.

3317. Norden L, Wagner W March 26 2007 Credit derivatives and loan pricing *TILEC Discussion Paper DP 2007-015* University of Mannheim, Tilburg University Germany ISSN 1572-4042 pp 1 – 37.

3318. Olléon-Assouan E June 2004 Techniques used on the credit derivatives market: Credit default swaps *Banque de France Financial Stability Review* no 4 Paris France pp 94 – 107.

3319. Pagano M, Von Thadden E-L 2004 The European bond markets under the EMU *Oxford Review of Economic Policy* **20** pp 531 – 554.

3320. Pausch Th, Schweimayer G March 2004 Hedging with credit derivatives and its strategic role in banking competition *Beitrag nr 260* Faculty of Business Administration and Economics University of Augsburg Germany pp 1 – 39.

3321. Puffer M 2004 Einsatzmöglichkeiten von Kreditderivaten *in* Aktuelle Herausforderungen des Finanzmanagements Gerke W(editor) Stuttgart Germany pp 51 – 60.

3322. Shelton D August 2004 Back to normal, proxy integration: A fast accurate method for CDO and CDO-squared pricing Citigroup Structured Credit Research USA.

3323. Shimko D 2004 Credit risk: Models and management *Risk Books* Division of Incisive Financial Publishing Ltd London UK.

3324. Tavares P A C, Nguyen T U, Chapovsky A, Vaysburd I 2004 Composite basket model *Working Paper* Merrill Lynch Credit Derivatives NY USA.

3325. Verdier P-H 2004 Credit derivatives and the sovereign debt restructuring process *Harvard Law School* Harvard University USA.

3326. Zhu H 2004 An empirical comparison of credit spreads between the bond market and the credit default swap market *BIS Working Papers no 160* BIS Switzerland.

3327. Abid F, Naifar N 2005 The impact of stock returns volatility on credit default swap rates: A copula study *International Journal of Theoretical and Applied Finance* vol **8** no 8 pp 1135 - 1155.

3328. Abid F, Naifar N 2006a The determinants of credit default swap rates: An explanatory study *International Journal of Theoretical and Applied Finance* **9** (1) pp 23 – 42.

3329. Abid F, Naifar N August 2006b Credit default swap rates and equity volatility: a nonlinear relationship *Journal of Risk Finance* **7** (4) p 348 – 371.

3330. Acharya V, Pedersen L 2005 Asset pricing with liquidity risk *Journal of Financial Economics* **77** pp 375 – 410.

3331. Acharya V, Schaefer S 2006 Liquidity risk and correlation risk: Implications for risk management *Working Paper* London Business School London UK.

3332. Acharya V, Johnson T 2007 Insider trading in credit derivatives *Journal of Financial Economics* **84** pp 110 – 141.

3333. Acharya V, Schaefer S, Zhang Y May 2007 Liquidity risk and correlation risk: A clinical study of the General Motors and Ford *Working Paper* SSRN NY USA.

3334. Albrecht P 2005 Kreditrisiken – Modellierung und management: Ein überblick *Risk and Insurance Review*.

3335. Bielecki T R, Crepey S, Jeanblanc M, Rutkowski M March 2005 Valuation of basket credit derivatives in the credit migrations environment *Working Paper*.

3336. Bielecki T R, Vidozzi A, Vidozzi L May 2006 An efficient approach to valuation of credit basket products and rating triggered step-up bonds *Working Paper*.

3337. Blanco R, Brennan S, Marsh I W 2005 An empirical analysis of the dynamic relationship between investment grade bonds and credit default Swaps *Journal of Finance* **60** (5) pp 2255 – 2281.

3338. Bomfim A N 2005 Understanding credit derivatives and related instruments *Elsevier Academic Press* San Diego USA.

3339. Brigo D January 2005 Market models for CDS options and callable floaters *Risk*, *and in* Derivatives Trading and Options Pricing Dunbar N (editor) *Risk Books*.

3340. Brigo D, Alfonsi A 2005 Credit default swap calibration and derivatives pricing with SSRD stochastic intensity module *Finance and Stochastic* **9** (1)
http://www.damianobrigo.it/cirppcredit.pdf .

3341. Brigo D, Cousot L 2006 A comparison between SSRD module and the market module for CDS options pricing *International Journal of Theoretical and Applied Finance* **9** (3).

3342. Brigo D, El-Bachir N 2006 Credit derivatives pricing with a smile extended jump stochastic intensity model *ICMA Discussion Paper in Finance DP 2006 – 13* University of Reading UK pp 1 – 22.

3343. Brigo D, Pallavicini A, Torresetti R June 2007 CDO calibration with the dynamical generalized Poisson loss model *Risk Magazine*.

3344. Burtschell X, Gregory J, Laurent J-P 2005, 2008 A comparative analysis of CDO pricing models *Working Paper* BNP Paribas, Université de Lyon Paris, Lyon France.

3345. Chiesa G 2005 Risk transfer, lending capacity and real investment activity *Working Paper* Department of Economics University of Bologna Italy.

3346. Cossin D, Lu H June 2005 Are European corporate bonds and default swap markets segmented? *Working Paper 153* FAME.

3347. Cousseran O, Rahmouni I June 2005 The CDO market functioning and implications in terms of financial stability *Banque de France Financial Stability Review* no 6 pp 43 – 59.

3348. Franke G, Krahnen J 2005 Default risk sharing between banks and markets: The contribution of collateralized debt obligations *NBER Working Paper 11741* National Bureau of Economic Research USA, *in* The Risks of Financial Institutions Carey M, Stulz R *University of Chicago Press* Chicago USA.

3349. Franke G 2005 Risikomanagement mit kreditderivaten *in* Burghof H-P et al Kreditderivate – Handbuch für die bank und anlagepraxis *Schäffer-Poeschel Verlag* Stuttgart.

3350. Greenspan A May 5 2005 Risk transfer and financial stability *Remarks at the Federal Reserve Bank of Chicago's Forty-first Annual Conference on Bank Structure* Chicago IL USA.

3351. Heinrich M 2005 Kreditderivate *in* Eller R Handbuch derivativer instrumente – Produkte, strategien und risikomanagement *Schäffer-Poeschel-Verlag* Stuttgart Germany.

3352. Houweling P, Vorst T 2005 Pricing default swaps: Empirical evidence *Journal of International Money and Finance* **24** pp 1200 – 1225.

3353. Instefjord N 2005 Risk and hedging: Do credit derivatives increase bank risk? *Journal of Banking and Finance* **29** pp 333 – 345.

3354. Jorion Ph 2005 Financial risk manager handbook 3rd edition *Wiley–Finance John Wiley and Sons Inc* Hoboken NJ USA.

3355. Jortzik S 2005 Semi-analytische und simulative Kreditrisikomessung synthetischer Collateralized Debt Obligations bei heterogenen Referenzportfolios *Ph D Dissertation* Universität Göttingen Göttingen.

3356. Joshi M S, Stacey A 2005 Intensity gamma: A new approach to pricing portfolio credit derivatives *Working Paper* Royal Bank of Scotland UK.

3357. Kalemanova A, Schnid B, Werner R 2005 The normal inverse Gaussian distribution for synthethic CDO pricing *Risklab*, *Algorithmics Inc*, *Allianz* München, London Germany, UK.

3358. Kim S J, Lucey B M, Wu E 2005 Dynamics of bond market integration between established and new European Union countries *Journal of International Financial Markets, Institutions and Money* vol **16** no 1 pp 41 – 46.

3359. Kim S J, Moshirian F, Wu E 2006 Evolution of international stock and bond market integration: Influence of the European monetary union *Journal of Banking and Finance* vol **30** pp 1507 – 1534.

3360. Lucas D J, Goodman L S, Fabozzi F J 2006 Collateralized debt obligations: Structures and analysis 2nd edition *John Wiley & Sons Inc* Hoboken NJ USA ISBN-13: 978-0471718871 pp 1 – 528.

3361. Lucas D J, Goodman L S, Fabozzi F J, Manning R 2007 Developments in the collateralized debt obligations markets: New products and insights *John Wiley and Sons Inc* New Jersey USA.

3362. Lucas D J, Goodman L S, Fabozzi F J 2007 Collateralized debt obligations and credit risk transfer *Yale ICF Working Paper no 07-06* Yale University USA pp 1 – 14
http://ssrn.com/abstract=997276 .

3363. Minton B, Stulz R, Williamson R August 2005, June 2006 How much do banks use credit derivatives to reduce risk? *NBER Working Paper* 11579 National Bureau of Economic Research Massachusetts Avenue Cambridge USA pp 1 – 40, *Fisher College of Business Working Paper 2006-03-001*
http://www.nber.org/papers/w11579 .

3364. Morrison A 2005 Credit derivatives, disintermediation and investment decisions *Journal of Business* **78** (2) pp 621 – 647.

3365. Nési C March 2005 Reforming the legal framework for securisation in France *Banque de France Bulletin Digest no 135* Paris France.

3366. Neske Ch 2005 Grundformen von kreditderivaten *in* Burghof H-P et al Kreditderivate – Handbuch für die Bank und Anlagepraxis *Schäffer-Poeschel Verlag* Stuttgart Germany.

3367. Nicolò A, Pelizzon L October 17 2005 Credit derivatives: Capital requirements and strategic contracting Department of Economics University of Padova Italy pp 1 – 33.

3368. Parlour C, Plantin G 2005 Credit Risk Transfer *Working Paper* Tepper School of Business Carnegie Mellon University NY USA.

3369. Posthaus A 2005 Exotische kreditderivate *in* Burghof H-P et al Kreditderivate – Handbuch für die Bank und Anlagepraxis *Schäffer-Poeschel Verlag* Stuttgart Germany.

3370. Pelizzon L, Schaefer S 2005 Pillar 1 vs Pillar 2 under risk management *in* Risks of Financial Institutions and of the Financial Sector Carey M, Stulz R (editors) *Oxford University Press* Oxford UK.

3371. Skinner F 2005 Pricing and hedging interest and credit risk sensitive instruments *Elsevier Butterworth-Heinemann* Burlington Massachusetts USA.

3372. Stamicar R, Finger C C 2005 Incorporating equity derivatives into the credit grades model *RiskMetrics Group* New York USA.

3373. Allen F, Carletti E 2006 Credit risk transfer and contagion *Journal of Monetary Economics* **53** pp 89 – 111.

3374. Beitel P, Dürr J, Pritsch G, Stegemann U 2006 Actively managing the credit portfolio *in* Banking in a changing world McKinsey & Company (editors) pp 173 – 178.

3375. Beck A, Lesko M, Schlottmann F, Wimmer K Ausgabe 14 2006 Copulas im risikomanagement *Zeitschrift für das gesamte Kreditwesen*.

3376. Chilcote E 2006 Credit derivatives and financial fragility *Policy Note 2006 / 1* The Levy Economics Institute of Bard College Annandale-on-Hudson NY USA pp 1 – 6.

3377. Cremers H 2006 Bankcontrolling und risiko *in* Vorlesungsskript des Sommersemesters 2006 im Bachelor-Studiengang der HfB *Business School of Finance and Management* Frankfurt am Main Germany.

3378. Cremers H, Walzner J Juni 2007 Risikosteuerung mit kreditderivaten unter besonderer berücksichtigung von credit default swaps *Working Paper Frankfurt School of Finance & Management no 80* ISSN: 14369753 pp 1 – 66
http://nbn-resolving.de/urn:nbn:de:101:1-20080827273 ,
http://hdl.handle.net/10419/27847 .

3379. Cremers H, Walzner J 2009a Modellierung des kreditrisikos im einwertpapierfall *Working Paper Frankfurt School of Finance & Management no 126* ISSN: 14369753 pp 1 – 90
http://nbn-resolving.de/urn:nbn:de:101:1-20090826287 ,
http://hdl.handle.net/10419/27932 .

3380. Cremers H, Walzner J 2009b Modellierung des kreditrisikos im portfoliofall *Working Paper Frankfurt School of Finance & Management no 127* ISSN: 14369753 pp 1 – 72
http://nbn-resolving.de/urn:nbn:de:101:1-20090826290 ,
http://hdl.handle.net/10419/27933 .

3381. De Wit J 2006 Exploring the CDS-bond basis *Working Paper Research no 104 Research Series 200611-16* National Bank of Belgium Brussels Belgium.

3382. Felsenheimer J, Gisdakis Ph, Zaiser M 2006a Active portfolio management *John Wiley and Sons Inc* pp 1 – 581.

3383. Felsenheimer J, Gisdakis Ph, Zaiser M 2006b Active credit portfolio management – A practical guide to credit risk management strategies *Wiley Verlag* Weinheim Germany.

3384. Geithner T F May 16 2006 Implications of growth in credit derivatives for financial stability *Remarks at New York University Stern School of Business Third Credit Risk Conference* New York USA.

3385. Gikhman I July 2006 Some critical comments on credit risk modeling *MPRA Paper no 1451* Munich University Germany pp 1 – 7
http://mpra.ub.uni-muenchen.de/1451/ .

3386. Gikhman I February 4 2008, July 2008 Risky swaps *MPRA Paper no 7078* Munich University Germany pp 1 – 39, *ICFAI Journal of Derivative Markets*.
http://mpra.ub.uni-muenchen.de/7078/ .

3387. Gikhman I 2008, November 2011 Multiple risky securities valuation I *MPRA Paper no 34511* Munich University Germany pp 1 – 25
http://mpra.ub.uni-muenchen.de/34511/ .

3388. Goderis B, Marsh I W, Castello J V, Wagner W 2006 Bank behavior with access to credit risk transfer markets SSRN USA
http://ssrn.com/abstract=937287 .

3389. Gruber J, Gruber W, Braun H 2005 Praktike Gruber r-handbuch asset-backed-securities und kreditderivate – Strukturen, preisbildung, anwendungsmöglichkeiten, aufsichtliche behandlung *Schäffer-Poeschel-Verlag* Stuttgart Germany.

3390. Huault I, Rainelli-Le Montagner H 2006 Constructing a globalized over-the-counter financial market. Limits of performativity and problems of cognitive framing. The case of credit derivatives pp 1 – 29.

3391. Huault I, Rainelli-Le Montagner H 2008 Market shaping as an answer to ambiguities: The case of credit derivatives *University Paris Dauphine, University Paris I Pantheon Sorbonne* Paris France pp 1 – 30.

3392. Joshi M, Stacey A July 2006 Intensity gamma: A new approach to pricing portfolio credit derivatives *RISK* **19** pp 78 – 83.

3393. Juselius K 2006 The co-integrated VAR model: Methodology and applications *Oxford University Press* Oxford UK.

3394. Ludovici A November December 2006 The application of neural networks to the pricing of credit derivatives *Rivista Di Politica Economica* pp 187 – 221.

3395. Marsh I 2006 The effect of lenders' credit risk transfer activities on borrowing firms' equity returns *Cass Business School*.

3396. Martin M R W, Reitz S, Wehn C S 2006 Kreditderivate und kreditrisikomodelle – Eine mathematische einführung *Vieweg Verlag* Wiesbaden Germany.

3397. McDonald R L 2006 Derivatives markets 2nd edition *Addison Wesley* Boston USA.

3398. Minton B, Stulz R, Williamson R June 2006 How much do banks use credit derivatives to reduce risk? *Working Paper no 2006-03-001* Fisher College of Business.

3399. Mortensen A 2006 Semi-analytical valuation of basket credit derivatives in intensity-based models *Journal of Derivatives* **13** no 4 pp 8 – 26.

3400. Nicolò A, Pelizzon L November 2006 Credit derivatives, capital requirements and opaque OTC markets *Working Paper no 58/WP/2006* Department of Economics Ca' Foscari University of Venice Italy ISSN 1827-336X pp 1 – 38.

3401. Papenbrock J 2006 Price calibration and hedging of correlation dependent credit derivatives using a structural model with alpha-stable distributions *Diploma Thesis Institute for Statistics and Mathematical Economic Theory*.

3402. Partnoy F, Skeel D 2006 The promises and perils of credit derivatives *School of Law Legal Studies Research Paper no 07-74* University of San Diego San Diego USA.

3403. Predescu M 2006 The performance of structural models of default for firms with liquid CDS spreads *Working Paper* Rotman School of Management University of Toronto Canada.

3404. Pugachevsky D 2006 Pricing counterparty risk in unfunded synthetic CDO tranches *in* Counterparty Credit Risk Modeling Pykhtin M (editor) *Risk Books* London UK pp 371 – 394.

3405. Sircar R, Zariphopoulou T 2006 Utility valuation of credit derivatives and application to CDOs *Working Paper* Princeton University Princeton USA.

3406. Zhu H 2006 An empirical comparison of credit spreads between the bond market and the credit default swap market *Journal of Financial Services Research* **29** (3) pp 211 – 235.

3407. Wagner W, Marsh I 2006 Credit risk transfer and financial sector stability *Journal of Financial Stability* **2** (2) pp 173 – 193.

3408. Ammer J, Cai F 2007 Sovereign CDS and bond pricing dynamics in emerging markets: Does the cheapest-to-deliver option matter? *Board of Governors of Federal Reserve System International Finance Discussion Papers no 912* Federal Reserve System NY USA.

3409. Ashcraft A B, Santos J A C July 2007 Has the credit default swap market lowered the cost of corporate debt? *Staff Report no 290* Federal Reserve Bank of New York NY USA pp 1 – 44.

3410. Baba N, Inada M 2007 Price discovery of credit spreads for Japanese mega-banks: Subordinated bond and CDS *Discussion Paper 2007-E-6* Institute for Monetary and Economic Studies Bank of Japan Tokyo Japan.

3411. Boulier J F, Brière M, Viala J R 2007 Do leveraged credit derivatives modify credit allocation? *CEB Working Paper no 08/014* Solvay Business School Université Libre de Bruxelles Belgium pp 1 – 18.

3412. Byström H 2007 Back to the future: Futures margins in a future credit default swap index futures market *The Journal of Futures Markets* **27** (1) pp 85 – 104.

3413. Byström H 2008 Credit default swaps and equity prices: The iTraxx CDS index market *in* Credit Risk – Models, Derivatives, and Management *Financial Mathematics Series* vol **6** *Chapman & Hall*, Wagner N (editor) *CRC Press* pp 69 – 84.

3414. Byström H 2010 The age of turbulence, credit derivatives style *Department of Economics* Lund University Lund Sweden pp 1 – 20.

3415. Chen L, Lesmond D A, Wei J 2007 Corporate yield spreads and bond liquidity *The Journal of Finance* **62** pp 119 – 149.

3416. Davydenko S A, Strebulaev I A 2007 Strategic actions and credit spreads: An empirical investigation *Journal of Finance* **62** pp 2633 – 2671.

3417. Dötz N 2007 Time-varying contributions by the corporate bond and CDS markets to credit risk price discovery *Discussion Paper Series 2 Banking and Financial Studies no 08* Deutsche Bundesbank Germany.

3418. Drucker S, Puri M 2007 On loan sales, loan contracting, and lending relationships FDIC *Center for Financial Research Working Paper no WP 2007-04*, *Social Science Research Network* NY USA
http://ssrn.com/abstract=920877 .

3419. Fathi A, Nader N 2007 Copula based simulation procedures for pricing basket credit derivatives *Faculty of Business and Economics* University of Sfax Tunisia, *MPRA Paper no 6014* Munich University Germany pp 1 – 31
http://mpra.ub.uni-muenchen.de/6014/ .

3420. Fulop A, Lescourret L 2007 An analysis of intra-daily patterns on the CDS market *Working Paper* ESSEC Business School.

3421. Henrard M 2007 The irony in the derivative discounting *Working Paper* Social Science Research Network NY USA
http://ssrn.com/abstract=970509 .

3422. Henrard M 2009 The irony in the derivative discounting part II: The Crisis *Working Paper* Social Science Research Network NY USA
http://ssrn.com/abstract=1433022 .

3423. Hirtle B February 2007, March 2008 Credit derivatives and bank credit supply *Staff Report 276* Federal Reserve Bank of New York NY USA pp 1 – 44.

3424. In F, Kang B U, Kim S T 2007 Sovereign credit default swaps, sovereign debt and volatility transmission across emerging markets *Korea Advanced Institute of Science and Technology Working Paper Series* Seoul South Korea.

3425. Mengle D 2007 Credit derivatives: An overview *Economic Review Federal Reserve Bank of Atlanta* issue Q4 pp 1 – 24.

3426. Nashikkar A J, Subrahmanyam M G 2007 Latent liquidity and corporate bond yield spreads *NYU Working Paper no FIN-07-013* New York University NY USA.

3427. Nashikkar A J, Subrahmanyam M G, Mahanti S 2009 Limited arbitrage and liquidity in the market for credit risk *NYU Working Paper no FIN-08-011* New York University NY USA.

3428. Pan J, Singleton K J 2007 Default and recovery implicit in the term structure of sovereign CDS spreads *Review of Financial Studies*.

3429. Papageorgiou E, Sircar R 2007 Multiscale intensity models and name grouping for valuation of multi-name credit derivatives *Applied Mathematical Finance* **15** (1) pp 73 – 105.

3430. Pausch Th 2007 Endogenous credit derivatives and bank behavior *Discussion Paper Series 2: Banking and Financial Studies no 16/2007* Deutsche Bundesbank Frankfurt am Main Germany ISBN 978-3–86558–361–1 pp 1 – 48.

3431. Pykhtin M, Zhu S A July August 2007 Guide to modeling counterparty credit risk *GARP Risk Review*.

3432. Rajan A, McDermott G 2007 The structured credit handbook *Wiley Finance* New Jersey USA.

3433. Schulz A, Wolf G 2007 Sovereign bond market integration: The Euro, trading platforms and globalization *Deutsche Bundesbank Discussion Paper (Series 1) 12* Frankfurt Germany.

3434. Summer Ch 2007 Credit risk – Advanced models *Skriptum des Fachbereichs Bankbetriebslehre der Wirtschaftsuniversität* Wien Austria.

3435. Tang D Y, Yan H 2007 Liquidity and credit default swap spreads *Working Paper* Kennesaw State University.

3436. Thompson J R 2007 Credit risk transfer: To sell or to insure? *Working Paper 1131* Queen's University Kingston Ontario Canada.

3437. Truslow D March 22 2007 Effectiveness of credit risk management in allocating risk *Remarks at Federal Reserve Bank of Richmond 2007 Credit Market Symposium* Charlotte NC USA.
http://www.richmondfed.org/news_and_speeches/conferences/pdf/cms_risk%20allocation_truslow.pdf
3438. Weithers T Fourth Quarter 2007 Credit derivatives, macro risks, and systemic risks *Federal Reserve Bank of Atlanta Economic Review* Atlanta USA pp 43 – 69.
3439. Yan B, Zivot E 2007 The dynamics of price discovery *Working Paper* Series University of Washington USA.
3440. Abid F, Naifar N 2008 The application of copulas in pricing dependent credit derivatives instruments *Journal of Applied Economic Sciences* vol **III** issue2 (4) pp 65 – 74.
3441. Alexander C, Kaeck A 2008 Regime dependent determinants of credit default swap spreads *Journal of Banking and Finance* **32** pp 1008 – 1021.
3442. Arnsdorf M, Halperin I 2008 Bslp: Markovian bivariate spread-loss model for portfolio credit derivatives *Journal of Computational Finance* **12** pp 77 – 100.
3443. Chen R-R, Cheng X, Liu B 2008 Estimation and evaluation of the term structure of credit default swaps: An empirical study *Insurance: Mathematics and Economics* **43** pp 339 – 349.
3444. Claes A, De Ceuster M 2008 Single name credit default swap valuation: A review *in* Credit Risk Models, Derivatives, and Management Wagner N (editor) *CRC Press* pp 69 – 84.
3445. Cont R, Minca A 2008 Extracting portfolio default rates from CDO spreads *Working Paper* Columbia University NY USA.
3446. Coudert V, Gex M 2008 Co-movements in the CDS market and relationship to other financial markets: The case of the GM and Ford crisis in 2005 *Working Paper*.
3447. Cserna B, Imbierowicz B 2008 How efficient are credit default swap markets? An empirical study of capital structure arbitrage based on structural pricing models *Working Paper* Goethe University Frankfurt Germany.
3448. Curto J D, Nunes J P, Oliveira L 2008 The determinants of sovereign credit spread changes in the Euro-zone *Working Paper* ISCTE Business School.
3449. Jankowitsch R, Pullirsch R, Veža T 2008 The delivery option in credit default swaps *Journal of Banking and Finance* **32** pp 1269 – 1285.
3450. Le Roux S J October 2008 Measuring counterparty credit risk: An overview of the theory and practice *Ph D Dissertation* University of Pretoria South Africa.
3451. Li X M, Zou L P 2008 How do policy and information shocks impact co-movements of China's T-bond and stock markets? *Journal of Banking and Finance* vol **32** pp 347 – 359.

3452. Morgan G May 2008 Market formation and governance in international financial markets: The case of OTC derivatives *Human Relations* **61** (5) pp 637 – 660.

3453. O'Kane D 2008 Modelling single-name and multi-name credit derivatives *Wiley Finance Series John Wiley and Sons Inc* NY USA.

3454. Peng X, Kou S S G 2008 Default clustering and valuation of collateralized debt obligations *Working Paper* Columbia University NY USA.

3455. Sougné D, Heuchenne C, Hübner G 2008 The determinants of credit default swap prices: An industry-based investigation *in* Credit Risk Models Derivatives, and Management Wagner N (editor) *CRC Press* pp 85 – 96.

3456. Ametrano F M, Bianchetti M 2009 Bootstrapping the illiquidity: Multiple curve construction for coherent forward rates estimation *in* Modelling Interest Rates: Latest Advances for Derivatives Pricing Mercurio F (editor) *Risk Books* London UK.

3457. Ametrano F M January 18 2011 Rates curves for forward euribor estimation and CSA-Discounting *QuantLib Forum* London UK.

3458. Bayraktar E, Yang B 2009 Multi-scale time-changed birth processes for pricing multi-name credit derivatives *Applied Mathematical Finance* **16** (5) pp 429 – 449.

3459. Deutsche Börse AG September 2009 The global derivatives market - A blueprint for market safety and integrity White paper *Deutsche Börse AG* Germany
http://deutsche-boerse.com/dbg/dispatch/en/binary/gdb_content_pool/imported_files/public_files/10_downloads/80_misc/whitepaper_derivatives2.pdf.

3460. Elizalde A, Doctor S 2009 The bond-CDS funding basis *J P Morgan European Credit Derivatives Research.*

3461. Elizalde A, Doctor S, Saltuk Y 2009 Bond-CDS basis handbook *J P Morgan European Credit Derivatives Research.*

3462. Forte S, Peňa J I 2009 Credit spreads: Theory and evidence about the information content of stocks, bonds and CDSs *Journal of Banking and Finance* **33** (11) pp 2013 – 2025.

3463. Fujii M, Shimada Y, Takahashi A 2009a A survey on modelling and analysis of basis spread *CARF Working Paper CARF-F-195*
http://ssrn.com/abstract=1520619 .

3464. Fujii M, Shimada Y, Takahashi A 2009b A market model of interest rates with dynamic basis spreads in the presence of collateral and multiple currencies *CARF Working Paper CARF-F-196*
http://ssrn.com/abstract=1520618

3465. Fujii M, Shimada Y, Takahashi A 2010a A note on construction of multiple swap curves with and without collateral *CARF Working Paper CARF-F-154* http://ssrn.com/abstract=1440633 .

3466. Fujii M, Shimada Y, Takahashi A 2010b Collateral posting and choice of collateral currency – implications for derivative pricing and risk management *CARF Working Paper CARF-F-216*
http://ssrn.com/abstract=1601866 .

3467. Fujii M, Takahashi A 2011 Choice of collateral currency *Risk Magazine* **24** (1) pp 120 – 125.

3468. Goderis B, Wagner W March 19 2009 Credit derivatives and sovereign debt crises *Department of Economics* University of Oxford UK, *MPRA Paper no 17314* Munich University Germany pp 1 – 43
http://mpra.ub.uni-muenchen.de/17314/ .

3469. Mayordomo S, Peña J I, Romo J September 2009 Are there arbitrage opportunities in credit derivatives markets? A new test and an application to the case of CDS and ASPs *Working Paper 09-63* Business Economic Series 06 Departamento de Economía de la Empresa Business Economic Series 06 Universidad Carlos III de Madrid Spain pp 1 – 62.

3470. Mayordomo S, Peña J I, Romo J 2012 The effect of liquidity on the price discovery process in credit derivatives markets in times of financial distress *Department of Research and Statistics* Comisión Nacional del Mercado de Valores Madrid Spain pp 1 – 31.

3471. Rey N 2009 Credit derivatives: Instruments of hedging and factors of instability. The example of "Credit Default Swaps" on French reference entities *CEPN University of Paris 13* France pp 1 – 27.

3472. Panchenko V, Wu E 2009 Time-varying market integration and stock and bond return concordance in emerging markets *Journal of Banking and Financ*e vol **33** pp 1014 – 1021.

3473. Rey N November 20 2009 Credit derivatives: instruments of hedging and factors of instability. The example of "Credit Default Swaps" on French reference entities *CEPN University of Paris 13* France hal-00433883 version 1 pp 1 – 27.

3474. Varga L May 2009 The information content of Hungarian sovereign CDS spreads *MNB Occasional Papers 78* Magyar Nemzeti Bank Budapest Hungary ISSN 1585-5678 pp 1 – 30
www.mnb.hu .

3475. Buraschi A, Porchia P, Porchia F 2010 Correlation risk and optimal portfolio choice *Journal of Finance* vol **65** (1) pp 393 – 420.

3476. Ciolpan M, Adam C 2010 Developments of credit default swap contracts under the influence of global crisis *Finance – Challenges of the Future* **IX** (11) pp 254 – 259.

3477. Coudert V, Gex M 2010 Contagion inside the credit default swaps market: The case of the GM and Ford crisis in 2005 *Journal of International Financial Markets, Institutions and Money* **20** (2) pp 109 – 134.

3478. Courtney S May 19 2010 2008 SEC short selling ban: Impacts on the credit default swap market *Stanford University* California USA, *MPRA Paper no 35390* Munich University Germany pp 1 – 38
http://mpra.ub.uni-muenchen.de/35390/ .

3479. De Wit J 2006 Exploring the CDS-bond basis *Working Paper* National Bank of Belgium Brussels Belgium.

3480. Gómez S M 2010 Four essays on the interaction between credit derivatives and fixed income markets *Ph D Thesis* Departamento De Economía De La Empresa Universidad Carlos Iii De Madrid Spain pp 1 – 267.

3481. Gregory J 2010 Counterparty credit risk: The new challenge for global financial markets *John Wiley and Sons Inc* USA.

3482. Fries C P 2010 Discounting revisited: Valuation under funding, counterparty risk and collateralization Working Paper Social Science Research Network NY USA
http://ssrn.com/abstract=1609587

3483. Tsui L K 2010 Exact numerical algorithm for n-th order derivative of a single variable function *Working Paper* University of Pittsburgh USA.

3484. Tsui L K May 18 2010 Multi-factor bottom-up model for pricing credit derivatives *Department of Mathematics* University of Pittsburgh USA, *MPRA Paper no 23090* Munich University Germany pp 1 – 43
http://mpra.ub.uni-muenchen.de/23090/ .

3485. Piterbarg V 2010a Funding beyond discounting: Collateral agreements and derivative pricing *Risk Magazine* **23** (2) pp 97 – 102.

3486. Piterbarg V May 2010b Effects of funding and collateral *Global Derivatives and Risk Management Conference* Paris France.

3487. Bianchetti M October 31 2011 The Zeeman effect in finance: Libor spectroscopy and basis risk management *Market Risk Management* Intesa Sanpaolo Milan Italy, *MPRA Paper no 42247* Munich University Germany pp 1 – 23
http://mpra.ub.uni-muenchen.de/42247/ .

3488. Bianchetti M, Mattia C March 28 2012 Interest rates after the credit crunch: Multiple-curve vanilla derivatives and SABR *Market Risk Management* Intesa Sanpaolo Milan Italy, *MPRA Paper no 42248* Munich University Germany pp 1 – 27
http://mpra.ub.uni-muenchen.de/42248/ .

3489. Calice G, Ioannidis Ch, Williams J 2011 Credit derivatives and the default risk of large complex financial institutions *CESIFO Working Paper no 3583* Category 7: Monetary Policy and International Finance pp 1 – 46
www.CESifo-group.org/wp .

3490. Coşkun Y 2011 The limitations of transparency policy in OTC markets and derivatives trading *Journal of Securities Operations and Custody* **4** (2) pp 122 – 133.

3491. Lahusen R, Speyer B 2011 Dérivés de crédit: La transformation d'un métier traditionnel de la banque *Allianz AG*, *Deutsche Bank Research* Frankfurt Germany *Revue D'économie Financière* **78** (1) pp 39 – 53.

3492. Lijun Bo, Ying Jiao, Xuewei Yang December 13 2011 Credit derivatives pricing with default density term structure modeled by Lévy random fields *Department of Mathematics* Xidian University Xi'an P R China *HAL – CCSd* hal-00651397 version 1, arXiv:1112.2952v1 [q-fin.PR] 13 Dec 2011 pp 1 – 21
www.arxiv.org 1112.2952v1.pdf .

3493. Ojo M May 24 2011 Capital, liquidity standards and macro prudential policy tools in financial supervision: Addressing sovereign debt problems *MPRA Paper no 31096* Munich University Germany pp 1 – 21
http://mpra.ub.uni-muenchen.de/31096/ .

3494. Ojo M April 30 2012 Bailouts and longer term refinancing operations (LTROs): When temporary cures generate longer term economic concerns *Covenant University*, *MPRA Paper no 38483* Munich University Germany pp 1 – 32
http://mpra.ub.uni-muenchen.de/38483/ .

3495. Rennie A, Lipton A 2011 Technical introduction *Chapter 2* ISBN 9780199546787 pp 17 – 36.

3496. Avino D, Lazar E 2012 Rethinking capital structure arbitrage *ICMA Centre* University of Reading Henley School of Business UK, *MPRA Paper no 42850* Munich University Germany pp 1 – 28
http://mpra.ub.uni-muenchen.de/42850/ .

3497. Heller D, Vause N 2012 Collateral requirements for mandatory central clearing of over-the-counter derivatives *BIS Working Papers no 373* Switzerland.

3498. Roman A, Şargu A C 2012 Credit risk transfer mechanisms in the EU banking sector *Revista Economică Supplement no 4/2012 Journal of Economic-Financial Theory and Practice* Romania ISSN: 1582-6260 pp 552 – 560
http://economice.ulbsibiu.ro/revista.economica .

3499. Tim Leung, Peng Liu October 2 2012 Risk premia and optimal liquidation of credit derivatives *Columbia University*, *Johns Hopkins University* arXiv:1110.0220v2 [q-fin.PR] 2 Oct 2012 pp 1 – 30
www.arxiv.org 1110.0220v2.pdf .

3500. Yildirim B D, Coskun Y, Caglar O, Yildirak K 2012 How dangerous is the counterparty risk of OTC derivatives in Turkey? *Capital Markets Board of Turkey* Istanbul Turkey, *MPRA Paper no 40600* Munich University Germany pp 1 – 11
http://mpra.ub.uni-muenchen.de/40600/ .

3501. Heckinger R, Mengle D 2013 Understanding derivatives - Markets and infrastructure: Derivatives overview *Federal Reserve Bank of Chicago* USA pp 1 – 11.

3502. Heckinger R, Ruffini I, Wells K 2014 Understanding derivatives - Markets and infrastructure: Over-the-Counter (OTC) derivatives *Federal Reserve Bank of Chicago* USA pp 27 – 38.

3503. Steigerwald R S 2013 Understanding derivatives - Markets and infrastructure: Central Counterparty *Federal Reserve Bank of Chicago* USA pp 12 – 26.

Foreign currencies investment, foreign currencies exchange rates valuation, ultra high frequency electronic trading, foreign currencies exchange, financial capital investment product, financial capital investment medium in finances:

3504. Ellis H, Metzler L (editors) 1949 Readings in the theory of international trade *Blakiston* Philadelphia USA.

3505. Machlup F 1949 The theory of foreign exchanges *in* Readings in the theory of international trade Ellis H, Metzler L (editors) *Blakiston* Philadelphia USA.

3506. Robinson J 1949 The foreign exchanges *in* Readings in the theory of international trade Ellis H, Metzler L (editors*) Blakiston* Philadelphia USA.

3507. Friedman M 1953 The case for flexible exchange rates *in* Essay in positive economics *University of Chicago Press* Chicago USA.

3508. Friedman M (editor) 1953 Essays in positive economics *Chicago University Press* Chicago USA.

3509. Baumol W 1957 Speculation, profitability, and stability *Review of Economics and Statistics* **39** pp 263 – 271.

3510. Debreu G 1959 Theory of value *Cowles Foundation Monograph* vol **17** *John Wiley & Sons Inc* New York USA.

3511. Shiryaev A N 1961 The problem of the most rapid detection of a disturbance in a stationary process *Soviet Mathematical Doklady* **2** pp 795 – 799.

3512. Shiryaev A N 1963 On optimal methods in quickest detection problems *Theory of Probability and its Applications* **8** (1) pp 22 – 46.

3513. Shiryaev A N 1964 On Markov sufficient statistics in non-additive Bayes problems of sequential analysis *Theory of Probability and its Applications* **9** (4) pp 670 – 686.

3514. Shiryaev A N 1965 Some exact formulas in a 'disorder' problem *Theory of Probability and its Applications* **10** pp 348 – 354.

3515. Grigelionis B I, Shiryaev A N 1966 On Stefan's problem and optimal stopping rules for Markov processes *Theory of Probability and its Applications* **11** pp 541 – 558.

3516. Shiryaev A N 1967 Two problems of sequential analysis *Cybernetics* **3** pp 63 – 69.

3517. Liptser R S, Shiryaev A N 1977 Statistics of random processes *Springer-Verlag* New York USA.

3518. Shiryaev A N 1972 Random processes *Moscow State University Press* Russian Federation.

3519. A. N. Shiryaev A N 1973, 1974 Probability, statistics, random processes *Moscow State University Press* vols **1**, **2** Russian Federation.

3520. Shiryaev A N 1978, 2008b Optimal stopping rules 1st edition, 3rd edition *Springer ISSN 0172-4568 Library of Congress Control Number: 2007934268* Berlin Germany pp 1 – 217.

3521. Shiryaev A N 1988 Probability *Springer-Verlag* Berlin Heidelberg Germany.

3522. Shiryaev A N 1995 Probability 2nd edition *Springer - Verlag* ISBN 0-387-94549-0 New York USA pp 1 – 621.

3523. Shiryaev A N 1998a Foundations of stochastic financial mathematics vol **1** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 1 – 492.

3524. Shiryaev A N 1998b Foundations of stochastic financial mathematics vol **2** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 493 – 1017.

3525. Shiryaev A N 1999 Essentials of stochastic finance: Facts, models, theory *Advanced Series on Statistical Science & Applied Probability* vol **3** *World Scientific Publishing Co Pte Ltd* Kruzhilin N (translator) ISBN 981-02-3605-0 Singapore pp 1 – 834.

3526. Shiryaev A N, Spokoiny V G 2000 Statistical experiments and decisions: Asymptotic theory *World Scientific Publishing Co Pte Ltd* ISBN 9810241011 Singapore pp 1 – 283.

3527. Graversen S E, Peskir G, Shiryaev A N 2001 Stopping Brownian motion without anticipation as close as possible to its ultimate maximum *Theory of Probability and its Applications* **45** pp 125 – 136 MR1810977
http://www.ams.org/mathscinetgetitem?mr=1810977 .

3528. Kallsen J, Shiryaev A N 2001 Time change representation of stochastic integrals *Theory of Probability and its Applications* **46** pp 579 - 585 MR1978671 http://www.ams.org/mathscinet-getitem?mr=1978671 .

3529. Kallsen J, Shiryaev A N 2002 The cumulant process and Esscher's change of measure *Finance Stoch* **6** pp 397 – 428 MR1932378
http://www.ams.org/mathscinetgetitem?mr=1932378 .

3530. Shiryaev A N 2002 Quickest detection problems in the technical analysis of the financial data *Proceedings Mathematical Finance Bachelier Congress* Paris France (2000) *Springer* Germany pp 487 – 521 MR1960576
http://www.ams.org/mathscinet-getitem?mr=1960576 .

3531. Jacod J, Shiryaev A N 2003 Limit theorems for stochastic processes *2nd edition* Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences] **288** *Springer* Berlin Germany *MR1943877*
http://www.ams.org/mathscinetgetitem?mr=1943877 .

3532. Shiryaev A N 2004 Kolmogorov and modern mathematics *International Conference at Mathematical Institute named after V A Steklov June 16-21, 2003* Russian Academy of Sciences Moscow Russian Federation ISBN 5-98419-003-6 pp 1 – 195.

3533. Shiryaev A N, Grossinho M R, Oliveira P E, Esquível M L (editors) 2006 Stochastic finance *Springer* Germany ISBN-10:0-387-28262-9 pp 1 – 364.

3534. Peskir G, Shiryaev A N 2006 Optimal stopping and free-boundary problems *Lectures in Mathematics* ETH Zürich *Birkhäuser* Switzerland MR2256030
http://www.ams.org/mathscinet-getitem?mr=2256030 .

3535. Feinberg E A, Shiryaev A N 2006 Quickest detection of drift change for Brownian motion in generalized Bayesian and mini-max settings *Statistics & Decisions* **24** (4) pp 445 – 470.

3536. Kabanov Yu, Lipster R, Stoyanov J 2006 The Shiryaev festschrift: From stochastic calculus to mathematical finance *Springer* Germany pp 1 – 668.

3537. du Toit J, Peskir G, Shiryaev A N 2007 Predicting the last zero of Brownian motion with drift *Cornell University* NY USA pp 1- 17
http://arxiv.org/abs/0712.3415v1 .

3538. Shiryaev A N 2008a Generalized Bayesian nonlinear quickest detection problems: on Markov family of sucient statistics *Mathematical Control Theory and Finance Proceedings of the Workshop of April 10–14 2007* Lisbon Portugal Sarychev A et al (editors) *Springer* Berlin Germany pp 377 – 386.

3539. Eberlein E, Papapantoleon A, Shiryaev A N 2008 On the duality principle in option pricing: Semimartingale setting *Finance Stoch* **12** pp 265 – 292
http://www.ams.org/mathscinet-getitem?mr=2390191 .

3540. Shiryaev A N, Novikov A A 2009 On a stochastic version of the trading rule "Buy and hold" *Statistics & Decisions* **26** (4) pp 289 – 302.

3541. Eberlein E, Papapantoleon A, Shiryaev A N 2009 Esscher transform and the duality principle for multidimensional semimartingales *The Annals of Applied Probability* vol **19** no 5 pp 1944 – 1971
http://dx.doi.org/10.1214/09-AAP600 http://arxiv.org/abs/0809.0301v5 .

3542. Shiryaev A N, Zryumov P Y 2009 On the linear and nonlinear generalized Bayesian disorder problem (discrete time case) optimality and risk – modern trends in mathematical finance *The Kabanov Festschrift* Delbaen F et al (editors) *Springer* Berlin Germany pp 227 – 235.

3543. Gapeev P V, Shiryaev A N 2010 Bayesian quickest detection problems for some diffusion processes *Cornell University* NY USA pp 1 – 25
http://arxiv.org/abs/1010.3430v2 .

3544. Karatzas I, Shiryaev A N, Shkolnikov M 2011 The one-sided Tanaka equation with drift *Cornell University NY USA*
http://arxiv.org/abs/1108.4069v1 .

3545. Shiryaev A N, Zhitlukhin M V 2012 Optimal stopping problems for a Brownian motion with a disorder on a finite interval *Cornell University NY USA* pp 1 – 10 http://arxiv.org/abs/1212.3709v1 .

3546. Zhitlukhin M V, Shiryaev A N 2012 Bayesian disorder detection problems on filtered probability spaces *Theory of Probability and Its Applications* **57** (3) pp 453 – 470.

3547. Feinberg E A, Mandava M, Shiryaev A N 2013 On solutions of Kolmogorov's equations for nonhomogeneous jump Markov processes *Cornell University* NY USA pp 1 – 15 http://arxiv.org/abs/1301.6998v3 .

3548. Fama E F 1965 The behavior of stock market prices *Journal of Business* **38** pp 34 – 105.

3549. Fama E F, Blume M 1966 Filter rules and stock market trading profits *Journal of Business* **39** pp 226 – 241.

3550. Fama E F 1970 Efficient capital markets: A review of theory and empirical work *Journal of Finance* **25** (2) pp 383 – 417.

3551. Fama E 1984 Forward and spot exchange rates *Journal of Monetary Economics* **14** pp 319 – 338.

3552. Fama E, French K 1988 Permanent and temporary components of stock prices *Journal of Political Economy* **96** pp 246 – 273.

3553. Fama E F, French K R 1996 Multifactor explanations of asset pricing anomalies *Journal of Finance* **51** (1) pp 55 – 84.

3554. Fama E F 1998 Market efficiency, long-term returns, and behavioral finance *Journal of Financial Economics* **49** pp 283 – 306.

3555. Fama E, Hansen L P, Shiller R 2013 Lectures: 2013 Nobel prize in economic sciences http://www.youtube.com/watch?v=WzxZGvrpFu4 , www.nobelprize.org .

3556. Demsetz H 1968 The cost of transacting *Quarterly Journal of Economics* **82** pp 33 – 53.

3557. Radner R 1968 Competitive equilibrium under uncertainty *Econometrica* **36** pp 31 – 58.

3558. Bates J M, Granger C W J 1969 The combination of forecasts *Operations Research Quarterly* **20** pp 451 – 468.

3559. Akerlof G A 1970 The market for lemons: Qualitative uncertainty and the market mechanism *Quarterly Journal of Economics* **84** (3) pp 488 – 500.

3560. Akerlof G A (29 August) 2014 Writing the "The Market for 'Lemons'": A Personal Interpretive Essay". Nobelprize.org. Nobel Media AB 2014. Web. 29 Aug 2014. http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2001/akerlof-article.html?utm_source=facebook&utm_medium=social&utm_campaign=facebook_page

3561. Arrow K 1970 Essays in the theory of risk bearing *Markham* Chicago USA.

3562. Black F 1971 Toward a fully automated exchange *Financial Analysts Journal* **27** pp 29 – 35 and pp 86 – 87.

3563. Black F, Scholes M 1973 The pricing of options and corporate liability *Journal of Political Economics* **81** pp 637 – 654.

3564. Black F 1986 Noise *Journal of Finance* **41** (3) pp 529 – 543.

3565. Merton R C 1973 Theory of rational option pricing *Bell Journal of Economics and Management Science* **4** pp 141 – 183.

3566. Newbold P, Granger C W J 1974 Experience with forecasting univariate time series and the combination of forecasts *Journal of the Royal Statistical Society* **137** pp 131 – 165.

3567. Fleming J M 1975 Floating exchange rates, asymmetrical intervention and the management of international liquidity *IMF* Washington USA http://www.imf.org .

3568. Shapiro A C 1975 Exchange rate changes, inflation, and the value of the multinational corporation

3569. Dooley M P, Shafer J R 1976 Analysis of short-run exchange rate behaviour: March 1973 to September 1975 *Federal Reserve Board International Finance Discussion Paper no 123* Federal Reserve Board USA.

3570. Dornbusch R 1976 Expectations and exchange rate dynamics *Journal of Political Economy* **84** (6) pp 1161 – 1176.

3571. Dornbusch R 1987 Exchange rates and prices *American Economic Review* **77** (1) pp 93 – 106.

3572. Frankel J A 1976 A monetary approach to the exchange rate: Doctrinal aspects and empirical evidence *Scandinavian Journal of Economics* **78** pp 200 – 224.

3573. Frankel J A 1979 On the mark: A theory of floating exchange rates based on real interest differentials *American Economic Review* **69** pp 610 – 622.

3574. Frankel J A 1982a In search of the exchange risk premium: A six currency test assuming mean-variance optimization *Journal of International Money and Finance* **1** pp 255 – 274.

3575. Frankel J A 1982b A test of perfect substitutability in the foreign exchange market *Southern Economic Journal* **49** pp 406 – 416.

3576. Frankel J A (editor) 1983 Exchange rate and international macroeconomics *University of Chicago Press* Chicago USA.

3577. Frankel J A, Froot K 1987 Using survey data to test standard propositions regarding exchange rate expectations *American Economic Review* **77** (1) pp 133 – 153.

3578. Frankel J A, Froot K 1990a Chartists, fundamentalists, and trading in the foreign exchange market *American Economic Review* **80** pp 181 – 185.

3579. Frankel J A, Froot K 1990b Chartists, fundamentalists, and the demand for dollars *in* Private behavior and government policy in interdependent economies Courakis A, Taylor M P *Clarendon* Oxford UK.

3580. Frankel J A, Froot K 1990c Exchange rate forecasting techniques, survey data, and implications for the foreign exchange market *Working Paper no 3470* National Bureau of Economic Research Cambridge Massachusetts USA.

3581. Frankel J A, Goldstein M, Mason P 1991 Characteristics of a successful exchange rate system *IMF* Washington USA http://www.imf.org .

3582. Frankel J A 1992 In search of the exchange rate premium: A six-currency test assuming mean-variance optimization *Journal of International Money and Finance* **1**.

3583. Frankel J A (editor) 1993 On exchange rates *MIT Press* Cambridge MA USA.

3584. Frankel J A, Rose A K 1994 A survey of empirical research on nominal exchange rates *NBER Working Paper no 4865* NBER USA.

3585. Frankel J A, Rose A 1995 Empirical research on nominal exchange rates *in* Handbook of international economics Grossman G, Rogoff K (editors) *Elsevier Science* vol **3** pp 1689 – 1729.

3586. Frankel J A, Galli G, Giovannini A (editors) 1996 Introduction *in* The microstructure of foreign exchange markets *University of Chicago Press* Chicago USA ISBN: 0-226-26000-3 pp 1 – 15 http://www.nber.org/books/fran96-1 , http://www.nber.org/chapters/c11360 .

3587. Frankel J A, Galli G, Giovannini A (editors) 1996 The microstructure of foreign exchange markets *University of Chicago Press* Chicago USA.

3588. Frankel J A, Poonawala J 2004 The forward market in emerging currencies: Less biased than in major currencies *Working Paper* Harvard University USA.

3589. Garman M 1976 Market microstructure *Journal of Financial Economics* **3** pp 257 – 275.

3590. Grossman S 1976 On the efficiency of competitive stock markets when agents have diverse information *Journal of Finance* **31** pp 573 – 585.

3591. Grossman S, Stiglitz J 1980 On the impossibility of informationally efficient markets *American Economic Review* **70** pp 393 – 408.

3592. Grossman S, Miller M 1988 Liquidity and market structure *Journal of Finance* **43** pp 617 – 633.

3593. Kouri P J K 1976 The exchange rate and the balance of payments in the short run and in the long run: A monetary approach *The Scandinavian Journal of Economics* **78** (2) pp 280 – 304.

3594. McKinnon R 1976 Floating exchange rates, 1973-74: The emperor's new clothes *Carnegie-Rochester Conference Series on Public Policy* **3** pp 79 – 114.

3595. Mussa M 1976 The exchange rate, the balance of payments, and monetary and fiscal policy under a regime of controlled floating *Scandinavian Journal of Economics* **78** pp 229 – 248.

3596. Mussa M 1979 Empirical regularities in the behaviour of exchange rates and theories of the foreign exchange market *in* Brunner K, Meltzer A H (editors) Policies for employment, prices and exchange rates *Carnegie-Rochester Conference Series on Public Policy* **11** *North-Holland Publishing Company Elsevier* Amsterdam The Netherlands pp 9 – 57.

3597. Mussa M 1981 The role of official intervention *Group of Thirty* New York NY USA.

3598. Mussa M 1984 The theory of exchange rate determination *in* Exchange rates in theory and practice Bilson J, Marston R (editors) *University of Chicago Press* Chicago USA.

3599. Williamson J 1976 Exchange rate flexibility and reserve use *Scandinavian Journal of Economics* **78** (2) pp 327 – 339.

3600. Branson W 1977 Asset markets and relative prices in exchange rate determination *Sozialwissenschaftliche Annalen* **1** pp 69 – 89.

3601. Branson W, Halttunen H, Masson P 1977 Exchange rates in the short run: The Deutschemark rate *European Economic Review* **10** pp 303 – 324.

3602. Branson W, Henderson D 1985 The specification and influence of asset markets *in* Handbook of international economics vol **2** Jones R, Kenen P (editors) *North-Holland Publishing Company* Amsterdam The Netherlands.

3603. Clark, Logue, Sweeney (editors) 1977 The effects of exchange rate adjustment *Department of the Treasury* Washington DC USA.

3604. Girton L, Henderson D 1977 Central bank operations in foreign and domestic assets under fixed and flexible exchange rates *in* The effects of exchange rate adjustment Clark P, Logue D, Sweeney R (editors) *Department of the Treasury* Washington DC pp 151 – 179.

3605. Cornell W B, Dietrich J K 1978 The efficiency of the market for foreign exchange under floating exchange rates *Review of Economics and Statistics* **60** (1) pp 111 – 120.

3606. Cornell W B 1982 Money supply announcements, interest rates, and foreign exchange *Journal of International Money and Finance* **1** pp 201 – 208.

3607. Stoll H R 1978 The supply of dealer services in securities markets *Journal of Finance* **33** pp 1133 – 1151.

3608. Stoll H R 1985 The stock exchange specialist system: An economic analysis *Monograph Series in Finance and Economics: Monograph 1985-2* New York University NY USA.

3609. Stoll H 1989 Inferring the components of the bid-ask spread: Theory and empirical tests *Journal of Finance* **44** pp 115 – 134.

3610. Stoll H R 1995 The importance of equity trading costs: Evidence from securities firms' revenues *in* Global equity markets: Technological, competitive, and regulatory challenges Schwartz R (editor) *Irwin* Homewood Illinois USA pp 98 – 120.

3611. Huang R, Stoll H 1996 Dealer versus auction markets: A paired comparison of execution costs on NASDAQ and the NYSE *Journal of Financial Economics* **41** pp 313 – 357.

3612. Huang R, Stoll H 1997 The components of the bid-ask spread: A general approach *Review of Financial Studies* **10** pp 995 – 1034.

3613. Stoll H R 1998 Reconsidering the affirmative obligation of market-makers *Financial Analysts Journal* **54** (5) pp 72 – 82.

3614. Stoll H R, Schenzler Ch 2005 Trades outside the quotes: Reporting delay, trading option, or trade size? *Journal of Financial Economics*.

3615. Stoll H R 2006 Electronic trading in stock markets *Journal of Economic Perspectives* **20** (1) pp 153 – 174.

3616. Blanchard O 1979 Speculative bubbles, crashes, and rational expectations *Economics Letters* **14** pp 387 – 389.

3617. Brunner K, Meltzer A H (editors) 1979 Policies for employment, prices and exchange rates *Carnegie-Rochester Conference Series on Public Policy **11** North-Holland Publishing Company Elsevier* Amsterdam The Netherlands.

3618. Deardorff A 1979 One way arbitrage and its implications for the foreign exchange markets *Journal of Political Economy* **87** pp 351 - 364.

3619. Goodman S 1979 Foreign exchange rate forecasting techniques: Implications for business and policy *The Journal of Finance* **34** pp 415 – 424.

3620. Aliber R (October) 1980 The integration of the offshore and domestic banking system *Journal of Monetary Economics* vol **6** issue 4 pp 509 – 526.

3621. Aliber R 2002 The new international money game 6th edition *University of Chicago Press* Chicago USA.

3622. Allen P, Kenen P 1980 Asset markets, exchange rates, and economic integration *Cambridge University Press* New York USA.

3623. Amihud Y, Mendelson H 1980 Dealership markets: Market making with inventory *Journal of Financial Economics* **8** pp 31 – 53.

3624. Amihud Y, Ho T, Schwartz R (editors) 1985 Market making and the changing structure of the securities industry *Lexington* Massachusetts USA.

3625. Amihud Y 1994a Evidence on exchange rates and valuation of equity shares *in* Exchange rates and corporate finance Amihud Y, Levich R M (editors) *Business One Irwin* Homewood IL USA.

3626. Amihud Y 1994b Exchange rates and the valuation of equity shares *in* Exchange rates and corporate performance Amihud Y, Levich R M (editors) *Irwin* New York USA pp 49 – 59.

3627. Amihud Y, Levich R M (editors) 1994 Exchange rates and corporate finance *Business One Irwin* Homewood IL USA.

3628. Hansen L P, Hodrick R J 1980 Forward exchange rates as optimal predictors of future spot rates: An econometric analysis *Journal of Political Economy* **88** (5) pp 829 – 853.

3629. Hellwig M 1980 On the aggregation of information in complete markets *Journal of Economic Theory* 26 pp 279 – 312.

3630. Hellwig M 1982 Rational expectations equilibrium with conditioning on past prices: A mean-variance example *Journal of Economic Theory* 26 pp 279 – 312.

3631. Krugman P 1980 Vehicle currencies and the structure of international exchange *Journal of Money, Credit, and Banking* **12** pp 503 – 526.

3632. Krugman P 1984 The international role of the dollar: Theory and prospect *in* Exchange rate theory and practice Bilson J, Marston R (editors) *University of Chicago Press* Chicago USA pp 261 – 278.

3633. Krugman P 1991 Target zones and exchange rate dynamics *Quarterly Journal of Economics* **106** (3) pp 669 – 682.

3634. Krugman P, Miller M 1993 Why have a target zone? *Carnegie-Rochester Conference Series on Public Policy* **38** pp 279 – 314.

3635. Krugman P 1999 The return of depression economics *W W Norton & Company* New York USA.

3636. Callier P 1981 One way arbitrage, foreign exchange and securities markets: A note *Journal of Finance* **36** pp 1177 – 1186.

3637. Cohen K, Maier S, Schwartz R, Whitcomb D 1981 Transaction costs, order placement strategy , and existence of the bid - ask spread *Journal of Political Economy* **89** (2) pp 287 – 305.

3638. Cox J C, Ingersoll Jr J E, Ross S A 1981 The relation between forward and futures prices *Journal of Financial Economics* **9** pp 321 – 346.

3639. Diamond D, Verrecchia R 1981 Information aggregation in a noisy rational expectations economy *Journal of Financial Economics* **9** pp 221 – 235.

3640. Diamond D 1982 Aggregate demand management in search equilibrium *Journal of Political Economy* **90** pp 881 – 894.

3641. Fieleke N (February) 1981 Foreign-currency positioning by US firms: Some new evidence *Review of Economics and Statistics* **63** no 1 pp 35 – 43.

3642. Ho Th, Stoll H 1981 Optimal dealer pricing under transaction and return uncertainty *Journal of Financial Economics* **9** (1) pp 47 – 73.

3643. Ho Th, Stoll H 1983 The dynamics of dealer markets under competition *Journal of Finance* **38** pp 1053 – 1074.

3644. Loosignian A M 1981 Foreign exchange futures *Dow Jones - Irwin* Homewood IL USA.

3645. Mussa M 1981 The role of official intervention *Group of Thirty* New York NY USA.

3646. Stigum M 1981 Money market calculations: Yields, break - evens, and arbitrage *Dow Jones - Irwin* Homewood IL USA.

3647. Stigum M 1990 The money market *Dow Jones - Irwin* Homewood IL USA.

3648. Dooley M, Isard P 1982 A portfolio balance rational expectations model of the Dollar-Mark exchange rate *Journal of International Economics* **12** pp 257 – 276.

3649. Hansen L 1982 Large sample properties of generalized method of moments estimators *Econometrica* **50** pp 1029 – 1054.

3650. Hodder J E 1982 Exposure to foreign exchange-rate movements *Journal of International Economics* **13** (11) pp 375 – 386.

3651. Milgrom P, Stokey N 1982 Information, trade and common knowledge *Journal of Economic Theory* **26** pp 17 – 27.

3652. Taylor D 1982 Official intervention in the foreign exchange market, or, bet against the central bank *Journal of Political Economy* **90** (2) pp 356 – 368.

3653. Bigman D, Taya T (editors) 1983 Exchange rate and trade instability *Ballinger* Cambridge Massachusetts USA.

3654. Copeland T E, Galai D 1983 Information effects on the bid-ask spread *The Journal of Finance* **38** pp 1457 – 1469.

3655. Dooley M P, Shafer J R 1983 Analysis of short-run exchange rate behaviour: March 1973 to November 1981 *in* Exchange rate and trade instability Bigman D, Taya T (editors) *Ballinger* Cambridge Massachusetts USA pp 43 - 69.

3656. Edwards S 1983 The demand for international reserves and exchange rate adjustments: The case of LDCs, 1964–1972 *Economica* **50** pp 269 – 280.

3657. French K R 1983 A comparison of futures and forward prices *Journal of Financial Economics* **12** pp 311 – 342.

3658. Garman M B, Kohlhagen S W 1983 Foreign currency option values *Journal of International Money and Finance* **2** pp 231 – 237.

3659. Meese R A, Rogoff K 1983a Empirical exchange rate models of the seventies: Do they fit out of sample? *Journal of International Economics* **14** pp 3 – 24.

3660. Meese R A, Rogoff K 1983b The out-of-sample failure of empirical exchange rate models *in* Exchange rate and international macroeconomics Frankel J (editor) *University of Chicago Press* Chicago USA.

3661. Rogoff K 1984 On the effects of sterilized intervention: An analysis of weekly data *Journal of Monetary Economics* **14** pp 133 – 150.

3662. Rogoff K 1985 Can exchange rate predictability be achieved without monetary convergence? Evidence from the EMS *European Economic Review* **28** pp 93 – 115.

3663. Meese R A 1986 Testing for bubbles in exchange markets *Journal of Political Economy* **94** pp 345 – 373.

3664. Meese R A, Rogoff K 1988 Was it real? The exchange rate-interest differential relation of the modern floating-rate period *Journal of Finance* **43** pp 933 - 948.

3665. Meese R A 1990 Currency fluctuations in the post-Bretton Woods era *Journal of Economic Perspectives* **4** pp 117 – 134.

3666. Obstfeld M, Rogoff K 1995 Exchange rate dynamics redux *Journal of Political Economy* **103** pp 624 – 660.

3667. Rogoff K 1996 The purchasing power parity puzzle *Journal of Economic Literature* **34** pp 647 – 668.

3668. Obstfeld M, Rogoff K (August) 1998 Risk and exchange rates *NBER Working Paper 6694 NBER USA in* Helpman E, Sadka E (editors) Contemporary economic policy: Essays in honor of Assaf Razin *Cambridge University Press* Cambridge U.K.

3669. Robinson P 1983 Nonparametric estimators for time series *Journal of Time Series Analysis* **4** pp 185 – 207.

3670. Adler M, Dumas B 1984 Exposure to currency risk: Definition and measurement *Financial Management* **13** pp 41 – 50.

3671. Backus D 1984 Empirical models of the exchange rate: Separating the wheat from the chaff *Canadian Journal of Economics* **17** pp 826 – 846.

3672. Bilson J, Marston R (editors) 1984 Exchange rate theory and practice *University of Chicago Press* Chicago USA.

3673. Booth L D 1984 Bid-ask spreads in the market for forward exchange *Journal of International Money and Finance* **3** (2) pp 209 – 222.

3674. Engel Ch M, Frankel J A 1984a Why interest rates react to money announcements: An answer from the foreign exchange market *Journal of Monetary Economics* **13** pp 31 – 39.

3675. Engel Ch M, Frankel J A 1984b Do asset demand functions optimize over the mean and variance of the real returns? A six-currency test *Journal of International Economics* **17**.

3676. Engel Ch M, Hamilton J D 1990 Long swings in the dollar: Are they in the data and do markets know it? *American Economic Review* **80** pp 689 – 713.

3677. Engel Ch M 1992 Can the Markov switching model forecast exchange rates? *NBER Working Paper no 4210* NBER USA.

3678. Engel Ch M 1995 The forward discount anomaly and the risk premium: A survey of recent evidence *Technical Report 5312* National Bureau of Economic Research USA.

3679. Engel Ch M 1996 The forward discount anomaly and the risk premium: A survey of recent evidence *Journal of Empirical Finance* **3** (2) pp 123 – 191.

3680. Engel Ch M 1999 On the foreign exchange risk premium in sticky-price general equilibrium models *in* International finance and financial crises: Essays in honor of Robert P. Flood Isard P, Razin A, Rose A (editors) *IMF* and *Kluwer* The Netherlands.

3681. Devereux M, Engel Ch M 1999 The optimal choice of exchange-rate regime: Price setting rules and internationalized production *NBER Working Paper 6992* NBER USA.

3682. Devereux M B, Engel Ch M 2002 Exchange rate pass-through, exchange rate volatility, and exchange rate disconnect *Journal of Monetary Economics* **49** pp 913 – 940.

3683. Devereux M B, Shi S 2005 Vehicle currency *Working Paper* University of British Columbia Vancouver Canada http://www.econ.ubc.ca/devereux/vc2.pdf .

3684. Engel Ch M, West K (May) 2004a Accounting for exchange rate variability in present value models when the discount factor is near one *American Economic Review* **94** pp 118 – 125.

3685. Engel Ch M, West K (August) 2004b, 2005 Exchange rates and fundamentals *Working Paper 10723* NBER USA*, Journal of Political Economy* **113** pp 485 – 517.

3686. Engel Ch M, West K D 2006 Taylor rules and the Deutschmark - Dollar real exchange rate *Journal of Money, Credit, and Banking* **38** (5) pp 1175 – 1194.

3687. Engel Ch M, Mark N, West K D 2007 Exchange rate models are not as bad as you think *NBER Working Paper* NBER USA.

3688. Garner C K, Shapiro A C 1984 A practical method of assessing foreign exchange risk *Midland Corporate Finance Journal* pp 6 – 17.

3689. Loopesko B 1984 Relationships among exchange rates, intervention, and interest rates: An empirical investigation *Journal of International Money and Finance* **3** pp 257 – 277.

3690. Roll R 1984 A simple implicit measure of the effective bid - ask spread in an efficient market *The Journal of Finance* **39** pp 1127 – 1139.

3691. French K, Roll R 1986 Stock return variances: The arrival of information and the reaction of traders *Journal of Financial Economics* **17** pp 5 – 26.

3692. Roll R 1988 R^2 *Journal of Finance* **43** pp 541 – 566.

3693. Urich T, Watchel P 1984 The effects of inflation and money supply announcements on interest rates *Journal of Finance* **39** pp 1177 – 1188.

3694. White H, Domowitz I 1984 Nonlinear regression with dependent observations *Econometrica* **52** (1) pp 143 – 161.

3695. Bahmani-Oskooee M, Das S 1985 Transaction costs and the interest parity theorem *Journal of Political Economy* **93** pp 793 – 799.

3696. Cohen K, Conroy R, Maier S 1985 Order flow and the quality of the market *in* Market making and the changing structure of the securities industry Amihud Y, Ho T, Schwartz R (editors) *Lexington* Massachusetts USA.

3697. Glosten L R, Milgrom P (March) 1985 Bid, ask, and transaction prices in a specialist market with heterogeneously informed agents *Journal of Financial Economics* **14** pp 71 – 100.

3698. Glosten L R, Harris L 1988 Estimating the components of the bid - ask spread *Journal of Financial Economics* **21** pp 123 – 142.

3699. Glosten L R 1989 Insider trading, liquidity, and the role of the monopolist specialist *Journal of Business* **62** (2) pp 211 – 235.

3700. Glosten L R 1994 Is the electronic open limit order book inevitable? *Journal of Finance* **49** pp 1127 – 1162.

3701. Hakkio C, Pearce D 1985 The reaction of exchange rates to economic news *Economic Inquiry* **23** pp 621 – 635.

3702. Hardouvelis G A 1985 Exchange rates, interest rates, and money-stock announcements: A Theoretical exposition *Journal of International Money and Finance* **4** pp 443 – 454.

3703. Jones R, Kenen P (editors) 1985 Handbook of international economics *North-Holland Publishing Company* Amsterdam The Netherlands.

3704. Kearney C, Macdonald R 1985 Intervention and sterilization under floating exchange rates: The UK 1973-1983 *European Economic Review* **30**.

3705. Kyle A 1985 Continuous auctions and insider trading *Econometrica* **53** pp 1315 – 1335.

3706. Kyle A 1989 Informed speculation with imperfect competition *Review of Economic Studies* **56** pp 317 – 356.

3707. Kyle A, Xiong W 2001 Contagion as a wealth effect *Typescript* Duke University North Carolina USA.

3708. Levich R M 1985 Empirical studies of exchange rates: Price behaviour, rate determination and market efficiency *in* Handbook of international economics Jones R W, Kenen P B (editors) vol **2** *North-Holland Publishing Company* Amsterdam The Netherlands.

3709. McInish T H, Wood R A 1985 An analysis of transactions data for the Toronto Stock Exchange *The Journal of Banking and Finance* **14** pp 441 – 458.

3710. Dominguez K M 1986 Are foreign exchange forecasts rational? New evidence from survey data *Economic Letters* **21** pp 277 – 281.

3711. Dominguez K M 1990 Market responses to coordinated central bank intervention *Carnegie-Rochester Series on Public Policy* **32** pp 121 – 163.

3712. Dominguez K M 1992 Exchange rate efficiency and the behavior of international asset markets *Garland* New York USA.

3713. Dominguez K M 1993 Does central bank intervention increase the volatility of foreign exchange rates? *Technical Report 4532* National Bureau of Economic Research Cambridge MA USA.

3714. Dominguez K M, Frankel J 1993a Does foreign-exchange intervention matter? The portfolio effect *American Economic Review* **83** (5) pp 1356 – 1369.

3715. Dominguez K M, Frankel J 1993b Does foreign-exchange intervention work? *Institute for International Economics* Washington DC USA.

3716. Dominguez K M, Frankel J A 1993c Foreign exchange intervention: An empirical assessment *in* On exchange rates Frankel J A (editor) *MIT Press* Cambridge MA USA.

3717. Dominguez K M 1998 Central bank intervention and exchange rate volatility *Journal of International Money and Finance* **18** pp 161 – 190.

3718. Dominguez K M 2003a The market microstructure of central bank intervention *Journal of International Economics* **59** pp 25 – 45.

3719. Dominguez K M 2003b Foreign exchange intervention: Did it work in the 1990s? *in* Dollar overvaluation and the World economy Bergsten C F, Williamson J (editors) *Institute for International Economics* Washington DC USA.

3720. Bollerslev T 1986 Generalized autoregressive conditional heteroskedasticity *Journal of Econometrics* **21** pp 307 – 328.

3721. Baillie R, Bollerslev T 1989 The daily message in exchange rates: A conditional variance tale *Journal of Business and Economic Statistics* **7** pp 297 – 305.

3722. Baillie R, Bollerslev T 1990 Intra-day and inter market volatility in foreign exchange rates *Review of Economic Studies* **58** pp 565 – 585.

3723. Bollerslev T 1990 Modeling the coherence in short-run nominal exchange rates: A multivariate generalized ARCH model *Review of Economics and Statistics* **72** pp 498 – 595.

3724. Bollerslev T, Chou R Y, Jayaraman N, Kroner K F 1990 ARCH modeling in finance: A review of the theory and empirical evidence *Journal of Econometrics* **52** (1) pp 5 – 60.

3725. Bollerslev T, Domowitz I 1991 Price volatility, spread variability and the role of alternative market mechanisms *Review of Futures Markets* **10** pp 78 – 102.

3726. Baillie R T, Bollerslev T 1991 Intra - day and inter - market volatility in foreign exchange rates *Review of Economic Studies* **58** pp 565 – 585.

3727. Bollerslev T, Domowitz I (September) 1993 Trading patterns and prices in the interbank foreign exchange market *Journal of Finance* **48** (4) pp 1421 – 1443.

3728. Bollerslev T, Melvin M 1994 Bid - ask spreads and volatility in the foreign exchange market: An empirical analysis *Journal of International Economics* **36** pp 355 – 372.

3729. Andersen T, Bollerslev T 1994 Intraday seasonality and volatility persistence in foreign exchange and equity markets *Working Paper no 186* Department of Finance Northwestern University USA.

3730. Bollerslev T, Engle R F, Nelson D B 1995 ARCH models *in* Handbook of econometrics vol **4** *North-Holland Publishing Company* New York USA.

3731. Andersen T, Bollerslev T 1998 Deutsche mark-dollar volatility: Intraday activity patterns, macroeconomic announcements, and longer run dependencies *Journal of Finance* **53** pp 219 – 266.

3732. Bollerslev T, Cai J, Song F 2000 Intraday periodicity, long-memory volatility, and macroeconomic announcement effects in the US treasury bond market *Journal of Empirical Finance* **7** pp 37 – 55.

3733. Andersen T G, Bollerslev T, Diebold F X, Labys P 2000 Exchange rate returns standardized by realized volatility are (nearly) Gaussian *Multinational Finance Journal* **4** pp 159 – 179.

3734. Andersen T, Bollerslev T, Diebold F, Vega C (September) 2001, 2003 Micro effects of macro announcements: Real-time price discovery in foreign exchange *Typescript* Northwestern University USA; *American Economic Review* **93** pp 38 – 62.

3735. Andersen T, Bollerslev T, Diebold F X, Labys P 2001 The distribution of realized exchange rate volatility *Journal of the American Statistical Association* **96** (453) pp 42 – 55.

3736. Andersen T G, Bollerslev T, Diebold F X, Labys P 2003 Modeling and forecasting realized volatility *Econometrica* **71** pp 579 - 625.

3737. Andersen T G, Bollerslev T, Diebold F X 2007 Roughing it up: Including jump components *in* The measurement, modeling and forecasting of return volatility Review *of Economics and Statistics* **89** pp 701 – 720.

3738. Engle R F 1982 Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation *Econometrica* **50** pp 987 – 1007.

3739. Engle R F, Bollerslev T 1986 Modeling the persistence of conditional variance *Econometrics Reviews* **5** pp 1 – 50.

3740. Engle R F, Granger C 1987 Cointegration and error correction: Representation, estimation and testing *Econometrica* **55** pp 251 – 276.

3741. Engle R F, Rodriguez A P 1989 Tests of international CAPM with time varying co-variances *Journal Of Applied Econometrics* **4**.

3742. Engle R F, Ito T, Lin Wen-Ling 1990 Meteor showers or heat waves? Heteroskedastic intra-daily volatility in the foreign exchange market *Econometrica* **58** pp 525 – 542.

3743. Engle R F, Russell J R 1995 Forecasting transaction rates: The autoregressive conditional duration model *Proceedings of the First International Conference on High Frequency Data in Finance* (*HFDF-1*) vol **4** *Research Institute for Applied Economics Olsen & Associates* Zürich Switzerland.

3744. Engle R F, Gallo G M 2006 A multiple indicators model for volatility using intra-daily data *Journal of Econometrics* **131** pp 3 – 27.

3745. Evans G 1986 A test for speculative bubbles in the sterling-dollar exchange rate *American Economic Review* **76** pp 621 – 636.

3746. Flood E Jr, Lessard D R 1986 On the measurement of operating exposure to exchange rates: A conceptual approach *Financial Management* **15** pp 25 – 37.

3747. Grammatikos T, Saunders A, Swary I 1986 Returns and risks of US Bank foreign currency activities *Journal of Finance* **41** (3) pp 671 – 682.

3748. Harris L 1986 A transaction data survey of weekly and intraday patterns in stock returns *Journal of Financial Economics* **16** pp 99 – 117.

3749. Harris L 1990 Statistical properties of the roll serial covariance bid/ask spread estimator *Journal of Finance* **45** pp 579 – 590.

3750. Hart O D, Kreps D M 1986 Price destabilizing speculation *Journal of Political Economy* **94** pp 927 – 952.

3751. Lyons R K 1986 Tests of the foreign exchange risk premium using the expected second moments implied by option pricing *International Finance Discussion Papers 290* Board of Governors of the Federal Reserve System USA.

3752. Lyons R K (March) 1988 Tests of the foreign exchange risk premium using the expected second moments implied by option pricing *Journal of International Money and Finance Elsevier* **7** (1) pp 91 – 108.

3753. Lyons R K (November) 1990 Whence exchange rate overshooting: Money stock or flow? *Journal of International Economics Elsevier* **29** (3 - 4) pp 369 – 384.

3754. Lyons R K 1991 Private beliefs and information externalities in the foreign exchange market *NBER Working Papers 3889* National Bureau of Economic Research Inc.

3755. Lyons R K (January) 1992 Floating exchange rates in Peru, 1950-1954 *Journal of Development Economics Elsevier* **38** (1) pp 99 – 118.

3756. Lyons R 1993a Information intermediation in the microstructure of the foreign exchange market *NBER Working Paper #3889* Berkeley Business School USA.

3757. Lyons R 1993b Tests of microstructural hypothesis in the foreign exchange market *NBER Working Paper #4471* Berkeley Business School USA.

3758. Lyons R K 1993c Optimal transparency in a dealership market with an application to foreign exchange *NBER Working Papers 4467* National Bureau of Economic Research Inc.

3759. Baldwin R E, Lyons R K (January) 1994 Exchange rate hysteresis? Large versus small policy misalignments *European Economic Review Elsevier* **38** (1) pp 1 – 22.

3760. Lyons R 1994 Foreign exchange volume: Sound and fury signifying nothing? *Berkeley Business School* USA.

3761. Lyons R K 1995 Tests of microstructural hypotheses in the foreign exchange market *Journal of Financial Economics Elsevier* **39** (2 - 3) pp 321 – 351.

3762. Lyons R K, Rose A K (September) 1995 Explaining forward exchange bias . . . intraday *Journal of Finance American Finance Association* **50** (4) pp 1321 – 1329.

3763. Lyons R K 1996a Foreign exchange volume: Sound and fury signifying nothing? *in* The microstructure of foreign exchange markets *National Bureau of Economic Research Inc* pp 183 – 208.

3764. Lyons R K (July) 1996b Optimal transparency in a dealer market with an application to foreign exchange *Journal of Financial Intermediation Elsevier* **5** (3) pp 225 – 254.

3765. Lyons R K 1997a Explaining trading volume in foreign exchange: Lessons from Tokyo *FRBSF Economic Letter* Federal Reserve Bank of San Francisco issue December 26.

3766. Lyons R K (May) 1997b A simultaneous trade model of the foreign exchange hot potato *Journal of International Economics Elsevier* **42** (3 - 4) pp 275 – 298.

3767. Lyons R K 1997c Profits and position control: A week of FX dealing *Research Program in Finance Working Papers RPF-273* University of California at Berkeley.

3768. Lyons R K (February) 1998a Profits and position control: A week of FX dealing *Journal of International Money and Finance Elsevier* **17** (1) pp 97 – 115.

3769. Lyons R K (December) 1998b Introduction to the international market microstructure issue *Journal of International Financial Markets, Institutions and Money Elsevier* **8** (3 - 4) pp 219 – 223.

3770. Lyons R K (Summer) 2001 New perspective on FX markets: Order-flow analysis *International Finance Wiley Blackwell* **4** (2) pp 303 – 320.

3771. Fan M, Lyons R (July) 2001 Customer-dealer trading in the foreign exchange market *Typescript* UC Berkeley USA.

3772. Killeen W, Lyons R, Moore M (September) 2001 Fixed versus flexible: Lessons from EMS order flow *NBER Working Paper 8491* NBER USA.

3773. Killeen W, Hau H, Moore M 2001 The euro as an international currency: Explaining puzzling first evidence from the foreign exchange markets *Journal of International Money and Finance*.

3774. Lyons R K (October) 2002 Theoretical perspective on euro liquidity *Economic Policy* CEPR & CES & MSH **17** (35) pp 571 – 597.

3775. Lyons R K 2002 Foreign exchange: Macro puzzles, micro tools *Economic Review* Federal Reserve Bank of San Francisco pp 51 – 69.

3776. Lyons R K 2003 Explaining and forecasting exchange rates with order flows *Economie Internationale* CEPII research center issue 96 pp 107 – 127.

3777. Fan M, Lyons R K, 2003, Customer trades and extreme events in foreign exchange *in* Central banking, monetary theory and practice: Essays in honor of Charles Goodhart Mizen P (editor) vol **2** pp 160 – 179 *Edward Elgar* Cheltenham UK.

3778. Killeen W P, Lyons R K, Moore M J (June) 2006 Fixed versus flexible: Lessons from EMS order flow *Journal of International Money and Finance Elsevier* **25** (4) pp 551 – 579.

3779. Lyons R K (January) 2006 The microstructure approach to exchange rates *MIT Press* edition 1 vol **1** ISBN 026262205x Cambridge MA USA.

3780. O'Hara M, Oldfield G 1986 The microeconomics of market making *Journal of Financial and Quantitative Analysis* **21** pp 361 - 376.

3781. Burdett K, O'Hara M 1987 Building blocks: An introduction to block trading *Journal of Banking and Finance* **13** pp 397 – 419.

3782. O'Hara M 1995, 1998 Market microstructure theory *Blackwell Business* Cambridge MA USA, *John Wiley and Sons Inc* USA.

3783. Shleifer A 1986 Do demand for stock slope down? *Journal of Finance* **41** (3) pp 579 – 590.

3784. Shleifer A, Summers L 1990 The noise trader approach to finance *Journal of Economic Perspectives* **4** (2) pp 19 – 33.

3785. Sweeney R 1986 Beating the foreign exchange market *The Journal of Finance* **41** pp 163 – 182.

3786. DeLong B, Shleifer A, Summers L, Waldmann R 1990 Positive feedback investment strategies, and destabilizing rational speculation *Journal of Finance* **45** pp 379 – 396.

3787. Bilson J F, Hsieh D 1987 The profitability of currency speculation *International Journal of Forecasting* **3** pp 115 – 130.

3788. Glassman D 1987 Exchange rate risk and transactions costs: Evidence from bid-ask spreads *Journal of International Money and Finance* **6** (4) pp 479 – 490.

3789. Gerlach S 1987 Exchange rates: A review essay *Journal of Monetary Economics* **19** pp 137 –142.

3790. Hasbrouck J, Ho T S H 1987 Order arrival, quote behaviour and the return - generating process *The Journal of Finance* **42** (4) pp 1035 – 1048.

3791. Hasbrouck J 1988 Trades, quotes, inventories, and information *Journal of Financial Economics* **22** pp 229 – 252.

3792. Hasbrouck J 1991 Measuring the information content of stock trades *Journal of Finance* **46** pp 179 – 207.

3793. Hasbrouck J, Sofianos G 1993 The trades of market makers: An empirical analysis of NYSE specialists *Journal of Finance* **48** pp 1565 – 1593.

3794. Hasbrouck J, Seppi D 2001 Common factors in prices, order flows, and liquidity *Journal of Financial Economics* **59** pp 383 – 411.

3795. Hodrick R 1987 The empirical evidence on the efficiency of forward and futures foreign exchange markets *in* Fundamentals of pure and applied economics vol **24** *Harwood Academic Publishers* New York USA.

3796. Ito T, Roley V 1987 News from the US and Japan: Which moves the Yen/Dollar exchange rate? *Journal of Monetary Economics* **19** pp 255 – 277.

3797. Ito T, Roley V V 1990 Intraday Yen/Dollar exchange rate movements: News or noise? *Journal of International Financial Markets, Institutions and Money* vol **1** no 1.

3798. Canova F, Ito T 1991 The time series properties of the risk premium in the Yen/Dollar exchange market *Journal of Applied Econometrics* **6** pp 125 – 142.

3799. Ito T, Engle R F, Lin W-L 1992 Where does the meteor shower come from? The role of stochastic policy coordination *Journal of International Economics* **32** pp 221 – 240.

3800. Ito T, Lin W 1992 Lunch break and intraday volatility of stock returns: An hourly data analysis of Tokyo and New York stock markets *Economics Letters* **39** pp 85 - 90.

3801. Ito T, Isard P, Symansky St, Bayoumi T 1996 Exchange rate movements and their impact on trade and investment in the APEC region *IMF Occasional Paper no 145* International Monetary Fund.

3802. Ito T, Lyons R K, Melvin M T 1998 Is there private information in the FX market? The Tokyo experiment *Journal of Finance American Finance Association* **53** (3) pp 1111 – 1130.

3803. Ito T (April) 2002 Is foreign exchange intervention effective? The Japanese experience in the 1990s *NBER Working Paper no 8914* NBER MA USA.

3804. Ito T 2005a The exchange rate in the Japanese economy: The past, puzzles, and prospects *Japanese Economic Review* **56** no 1 pp 1 – 38.

3805. Ito T 2005b The Yen and the Japanese economy: 2004 *in* Dollar adjustment: How far? Against what? Bergsten F, Williamson J (editors) *Institute of International Economics* Washington DC pp 171 – 196.

3806. Ito T, Hashimoto Y 2006 Intraday seasonality in activities of the foreign exchange markets: Evidence from the electronic broking system *Journal of Japanese and International Economics* **20** pp 637 – 664.

3807. Mendelson H 1987 Consolidation, fragmentation, and market performance *Journal of Financial and Quantitative Analysis* **22** pp 189 – 208.

3808. Newey W, West K 1987 A simple positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix *Econometrica* **55** pp 703 – 708.

3809. Rubinstein A, Wolinsky A 1987 Middlemen *Quarterly Journal of Economics* **102** pp 581 – 593.

3810. Taylor M P 1987 Covered interest parity: A high-frequency, high-quality data study *Economica* **54** (216) pp 429 – 438.

3811. Taylor M P 1989 Covered interest arbitrage and market turbulence *Economic Journal* **99** pp 376 – 391.

3812. Allen H, Taylor M P 1989 Chartists, noise and fundamentals: A study of the London foreign exchange market *Working Paper no 341* Centre for Economic Policy Research London UK.

3813. Taylor M P, Allen H 1992 The use of technical analysis in the foreign exchange market *Journal of International Money and Finance* **11** (3) pp 304 – 314.

3814. Taylor M P 1995 The economics of exchange rates *Journal of Economic Literature* **33** pp 13 – 47.

3815. Sarno L, Taylor M P 2000 Official intervention in the foreign exchange market *University of Oxford* UK.

3816. Sarno L, Taylor M P 2001a Official intervention in the foreign exchange market: Is it effective and if so how does it work? *Journal of Economic Literature* **39** pp 839 – 868.

3817. Sarno L, Taylor M P 2001b The microstructure of the foreign exchange market. A selective survey of the literature *Princeton Studies in International Economics Series no 89 Princeton University Press* Princeton NJ USA.

3818. Taylor M P 2005 Official foreign exchange intervention as a coordinating signal to the Dollar-Yen market *Pacific Economic Review* **10** pp 73 – 82.

3819. Sager M, Taylor M P 2005 Order flow and exchange rate movements *Typescript* University of Warwick UK.

3820. Reitz S, Taylor M P 2006 The coordination channel of foreign exchange intervention: A non-linear microstructural analysis *Deutsche Bundesbank Discussion Paper no 08/2006* Germany.

3821. Sager M, Taylor M P 2006 Under the microscope: The structure of the foreign exchange market *International Journal of Finance and Economics* **11** pp 81 – 95.

3822. Sager M J, Taylor M P 2008 Commercially available order flow data and exchange rate movements: Caveat emptor *Journal of Money, Credit and Banking* **40** (4) pp 583 – 625.

3823. Schulmeister St 1987 An essay on exchange rate dynamics *Research Unit Labor Market and Employment Discussion Paper no 87-8* Wissenschaftzentrum Berlin fur Sozialforschung Berlin Germany.

3824. Melvin M, Taylor M P 2009 The crisis in the foreign exchange market *Journal of International Money and Finance* **28** (8) pp 1317 – 1330.

3825. Newey W, West K A 1987 Simple, positive semidefinite, heteroskedasticity and autocorrelation consistent covariance matrix *Econometrica* **55** pp 703 – 708.

3826. Wolff Ch C P 1987 Forward foreign exchange rates, expected spot rates, and premia: A signal-extraction approach *Journal of Finance* **42** (2) pp 395 – 406.

3827. Admati A, Pfleiderer P 1988 A theory of intraday patterns: Volume and price variability *The Review of Financial Studies* **1** pp 3 – 40.

3828. Admati A, Pfleiderer P 1989 Divide and conquer: A theory of intraday and day - of - the - week mean effects *The Review of Financial Studies* **2** (2) pp 189 – 223.

3829. Boothe P 1988 Exchange rate risk and the bid-ask spread *Economic Inquiry* ***XXVI*** pp 485 – 492.

3830. Choi J Y, Salandro D, Shastri K 1988 On the estimation of bid - ask spreads: Theory and evidence *Journal of Financial Analysis* **23** pp 219 – 230.

3831. Clinton K 1988 Transactions costs and covered interest arbitrage: Theory and evidence *Journal of Political Economy* **96** pp 358 - 370.

3832. Goodhart Ch A E 1988 The foreign exchange market: A random walk with a dragging anchor *Economica* **55** (220) pp 437 – 460.

3833. Goodhart Ch A E (October) 1989 "News" and the foreign exchange market *Proceedings of Manchester Statistical Society* Manchester UK pp 1 – 79.

3834. Goodhart Ch A E, Demos A (Winter) 1990 Reuters screen images of the foreign exchange market: The Deutschemark / Dollar spot rate *Journal of International Securities Markets* **4** pp 333 – 348.

3835. Goodhart Ch A E, Curcio R (January) 1991 The clustering of bid / ask pries and spreads in the foreign exchange market *Discussion Paper 110* Financial Markets Group London School of Economics and Political Science London UK.

3836. Goodhart Ch A E, Demos A 1991a Reuters screen images of the foreign exchange market: The Yen / Dollar and Sterling / Dollar spot market *Journal of International Securities Markets* **5** Spring pp 35 – 64.

3837. Goodhart Ch A E, Demos A (September 2nd) 1991b The Asian surprise in the forex markets *Financial Times* p 13.

3838. Goodhart Ch A E, Figliuoli L 1991 Every minute counts in financial markets *Journal of International Money and Finance* **10** (1) pp 23 – 52.

3839. Goodhart Ch A E 1992 News effects in a high-frequency model of the Sterling-Dollar exchange rate *Journal of Applied Econometrics* **7**.

3840. Goodhart Ch A E, Hall S, Henry S, Pesaran B 1993 News effects in a high frequency model of the Sterling-Dollar exchange rate *Journal of Applied Econometrics* **8** pp 1 – 13.

3841. Goodhart Ch A E, Hesse T 1993 Central bank forex intervention assessed in continuous time *Journal of International Money and Finance* **12** pp 368 – 389.

3842. Goodhart Ch A E, Ito T, Payne R 1995, 1996 One day in June, 1993: A study of the working of Reuters 2000-2 electronic foreign exchange trading system *National Bureau of Economic Research* Cambridge MA USA pp 1 – 133, *in* The microstructure of foreign exchange markets Frankel J, Galli G, Giovannini A (editors) *University of Chicago Press* Chicago IL USA pp 107 – 179.

3843. Goodhart Ch A E, O'Hara M 1995 High frequency data in financial markets: Issues and applications *Introductory Lecture Proceedings of the First International Conference on High Frequency Data in Finance* (*HFDF-1*) *Research Institute for Applied Economics Olsen & Associates* Zürich Switzerland.

3844. Goodhart Ch A E, Payne R G 1996 Microstructural dynamics in a foreign exchange electronic broking system *Journal of International Money and Finance* **15** (6) pp 829 – 852.

3845. Goodhart Ch A E, O'Hara M 1997 High frequency data in financial markets: Issues and applications' *Journal of Empirical Finance* **4** pp 73 – 114.

3846. Goodhart Ch A E, Love R, Payne R, Rime D 2002 Analysis of spreads in the Dollar/Euro and Deutschemark/Dollar foreign exchange markets *Economic Policy* **17** (35) pp 537 – 552.

3847. Hardouvelis G 1988 Economic news, exchange rates, and interest rates *Journal of International Money and Finance* **7** pp 23 – 25.

3848. Lewis K 1988 Testing the portfolio balance model: A multilateral approach *Journal of International Economics* **7** pp 273 – 288.

3849. Lewis K 1995 Puzzles in international financial markets *in* Handbook of international economics Grossman G, Rogoff K (editors) vol **3** *North Holland Publishing Company* Amsterdam The Netherlands.

3850. Baldwin R, Krugman P 1989 Persistent trade effects of large exchange rate shocks *The Quarterly Journal of Economics* **104** (4) pp 635 – 654.

3851. Baxter M, Stockman A 1989 Business cycles and the exchange rate regime: Some international evidence *Journal of Monetary Economics* **23** pp 377 – 400.

3852. Dooley M, Lizondo S, Mathieson D 1989 The currency composition of foreign exchange reserves *IMF Staff Papers* **36** no 2 pp 385 – 434.

3853. Giovannini A 1989 How do fixed exchange rate regimes work? Evidence from the gold standard, Bretton Woods and the EMS *in* Blueprints for exchange rate management Miller M, Eichengreen B, Portes R (editors) *Academic* New York USA.

3854. Golub S 1989 Foreign currency government debt, asset markets, and the balance of payments *Journal of International Money and Finance* **8** pp 285 – 294.

3855. Humpage O 1989 On the effectiveness of exchange market intervention *Federal Reserve Bank of Cleveland* USA.

3856. Leach C, Madhavan 1989 Price experimentation and market structure *Working Paper* Wharton School University of Pennsylvania USA.

3857. Leahy M 1989 The profitability of US intervention *Technical Report 343* Board of Governors Federal Reserve Bank Washington DC USA.

3858. Miller M, Eichengreen B, Portes R (editors) 1989 Blueprints for exchange rate management *Academic* New York USA.

3859. Van Hagen J 1989 Monetary targeting with exchange rate constraints: The Bundesbank in the 1980s *Federal Reserve Bank of St Louis* USA.

3860. Allen H L, Taylor M P 1990 Charts, noise and fundamentals in the London foreign exchange market *Economic Journal* **100** (Supplement) pp 49 – 59.

3861. Allen H L, Karjalainen R 1999 Using genetic algorithms to find technical trading rules *Journal of Financial Economics* **51** pp 245 – 271.

3862. Courakis A, Taylor M P (editors) 1990 Private behavior and government policy in interdependent economies *Clarendon* Oxford UK.

3863. Diebold F X, Nason J 1990 Nonparametric exchange rate prediction? *Journal of International Economics* **28** pp 315 – 332.

3864. Flood R, Hodrick R 1990 On testing for speculative bubbles *Journal of Economic Perspectives* **4** pp 85 – 101.

3865. Flood R, Rose A 1995 Fixing exchange rates: A virtual quest for fundamentals *Journal of Monetary Economics* **36** pp 3 – 37.

3866. Flood R, Taylor M 1996 Exchange rate economics: What's wrong with the conventional macro approach? *in* The microstructure of foreign exchange markets Frankel J, Galli G, Giovannini A (editors) *The University of Chicago Press* Chicago USA pp 261 – 294.

3867. Flood R, Marion N 2001 Holding international reserves in an era of high capital mobility in Brookings Trade Forum 2001 Collins S, Rodrik D (editors) *Brookings Institution Press* Washington DC USA.

3868. Foster D, Viswanathan S 1990 A theory of inter-day variations in volumes variances, and trading costs in securities markets *Review of Financial Studies* **3** pp 593 – 624.

3869. Foster D, Viswanathan S 1993 Variations in trading volume, return volatility, and trading costs: Evidence on recent price formation models *Journal of Finance* **48** 187 – 211.

3870. Holthausen R W, Leftwich R W, Mayers D 1990 Large-block transactions, the speed of response, and temporary and permanent stock-price effects *Journal of Financial Economics* **26** (1) pp 71 – 95.

3871. De Long J B, Shleifer A, Summers L H, Waldmann R J 1990 Noise trader risk in financial markets *Journal of Political Economy* **98** (4) pp 703 – 738.

3872. Domowitz I (June) 1990 The mechanics of automated trade execution systems *Journal of Financial Intermediation* **1** pp 167 – 194.

3873. Domowitz I 1993 A taxonomy of automated trade execution systems *Journal of International Money and Finance* **12** (6) pp 607 – 631.

3874. Domowitz I, Steil B (September) 1999 Automation, trading costs and the structure of the securities trading industry *Brookings-Wharton Papers on Financial Services* pp 33 – 92.

3875. Johansen S, Juselius K 1990 Maximum likelihood estimation and inference on cointegration with applications to the demand for money *Oxford Bulletin of Economics and Statistics* **52** (2) pp 169 – 210.

3876. Johansen S 1991 Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models *Econometrica* **59** (6) pp 1551 – 1580.

3877. Johansen S 1992 Cointegration in partial systems and the efficiency of single equation analysis *Journal of Econometrics* **52** pp 389 – 402.

3878. Jorion P 1990 The exchange-rate exposure of United-States multinationals *Journal of Business* **63** pp 331 – 345.

3879. Jorion P 1991 The pricing of exchange rate risk in the stock market *Journal of Financial and Quantitative Analysis* **26** (3) pp 363 – 376.

3880. Jorion P 1996 Risk and turnover in the foreign exchange market *in* The microstructure of foreign exchange markets Frankel J A, Galli G, Giovannini A (editors) *University of Chicago Press* Chicago USA pp 19 – 37.

3881. Lo A W, MacKinley A C 1990 An econometric analysis of nonsynchronous trading *Journal of Econometrics* **45** pp 181 – 211.

3882. Melino A, Turnbull S M 1990 Pricing foreign currency options with stochastic volatility *Journal of Econometrics* **45** pp 239 – 265.

3883. Melino A, Turnbull S M 1995 Misspecification and the pricing and hedging of long-term foreign currency options *Journal of International Money and Finance* **14** pp 373 – 393.

3884. Mishkin F 1990 What does the term structure tell us about future inflation? *Journal of Monetary Economics* **25** (1) pp 77 – 95.

3885. Müller U A, Dacorogna M M, Olsen R B, Pictet O, Schwarz M, Morgenegg C 1990 Statistical study of foreign exchange rates, empirical evidence of a price scaling law, and intraday analysis *Journal of Banking and Finance* **14** pp 1189 – 1208.

3886. Müller U A, Dacorogna M M, Dave R D, Pictet O V, Olsen R B, Ward J R 1993 Fractals and intrinsic time - A challenge to econometricians *Technical Report UAM 1993-08-16 Research Institute for Applied Economics Olsen & Associates* Zurich Switzerland.

3887. Müller U A, Dacorogna M M, Dave R D, Olsen R B, Pictet O V, von Weizsäcker J E 1995 Volatilities of different time resolutions - Analyzing the dynamics of market components *Preprint UAM 1995-01-12 Research institute for Applied economics Olsen & Associates* Zurich Switzerland.

3888. Roell A 1990 Dual capacity trading and the quality of the market *Journal of Financial Intermediation* **1** pp 105 – 124.

3889. Seppi D 1990 Equilibrium block trading and asymmetric information *Journal of Finance* **45** pp 73 – 94.

3890. Bali T 1991 An empirical comparison of continuous time models of the short term interest rate *Journal of Futures Markets* **19** (7) pp 777 – 797.

3891. Bhattacharya U, Spiegel M 1991 Insiders, outsiders, and market breakdowns *Review of Financial Studies* **4** pp 255 – 282.

3892. Black S 1991 Transaction costs and vehicle currencies *Journal of International Money and Finance* **10** pp 512 - 527.

3893. Bossaerts P, Hillion P 1991 Market microstructure effects of government intervention in the foreign exchange market *Review of Financial Studies* **4** pp 513 – 541.

3894. Burnham J B 1991 Current structure and recent developments in foreign exchange markets *in* Recent developments in international banking and finance Khonry S J (editor) *Elsevier Science Publishing North Holland Publishing Company* pp 123 – 163.

3895. Campbell J, LaMaster S, Smith V, Van Boening M 1991 Off-floor trading, disintegration, and the bid-ask spread in experimental markets *Journal of Business* **64** pp 495 – 522.

3896. Campbell J, Lo A, MacKinlay A 1997 The econometrics of financial markets *Princeton University Press* USA.

3897. Chinn M D 1991 Some linear and non-linear thoughts on exchange rates *Journal of International Money and Finance* **10** pp 214 – 230.

3898. Chinn M D, Meese R A 1995 Banking on currency forecasts: How predictable is change in money *Journal of International Economics* **38** pp 161 – 178.

3899. Chowdhry B, Nanda V 1991 Multimarket trading and market liquidity *Review of Financial Studies* **4** pp 483 – 511.

3900. Edwards S 1991 Real exchange rates, devaluation, and adjustment – Exchange rate policy in developing countries *MIT Press* USA.

3901. Froot K A, Obstfeld M 1991 Exchange rate dynamics under stochastic regime shifts: A unified approach *Journal of International Economics* **31** pp 203 – 229.

3902. Froot K A, Rogoff K 1995 Perspectives on PPP and long-run real exchange rates *in* Handbook of international economics Grossman G, Rogoff K (editors) *Elsevier Science* Amsterdam pp 1647 – 1688.

3903. Froot K A, Ramadorai T (August) 2002 Currency returns, institutional investor flows, and exchange rate fundamentals *NBER Working Paper 9101* NBER USA.

3904. Froot K A, Donohue 2004 Decomposing the persistence of international equity flows *Finance Research Letters* pp 154 – 170.

3905. Froot K A, Ramadorai T 2005 Currency returns, intrinsic value, and institutional-investor flows *Journal of Finance* **60** pp 1535 – 1566.

3906. Georg Th, Kaul G, Nimalendran M 1991 Estimation of the bid-ask spread and its components: A new approach *Review of Financial Studies* **4** pp 623 – 656.

3907. Grabbe J O 1991 International financial markets 2nd edition *Elsevier Science Publishing Co Inc* New York USA.

3908. Harvey C R, Huang R D Volatility in the foreign currency futures market *Review of Financial Studies* **4** pp 543 – 569.

3909. Khonry S J (editor) 1991 Recent developments in international banking and finance *Elsevier Science Publishing North Holland Publishing Company* The Netherlands.

3910. Kim O, Verrecchia R 1991 Trading volume and price reactions to public announcements *Journal of Accounting Research* **29** pp 302 – 321.

3911. Kim O, Verrecchia R 1994 Market liquidity and volume around earnings announcements *Journal of Accounting and Economics* **17** pp 41 – 67.

3912. Kim O, Verrecchia R 1997 Pre-announcement and event-period information *Journal of Accounting and Economics* **24** pp 395 – 419.

3913. Klein M 1991 Managing the dollar: Has the Plaza agreement mattered? *Journal of Money, Credit, and Banking* **23** pp 742 – 751.

3914. Klein M, Rosengren E 1991 Foreign exchange intervention as a signal of monetary policy New England *Economic Review* pp 39 – 50.

3915. Lease R, Masulis R, Page J 1991 An investigation of market microstructure impacts on event study returns *The Journal of Finance* **46** pp 1523 – 1536.

3916. LeBaron B 1991 Technical trading rules and regime shifts in foreign exchange *Technical Report* University of Wisconsin - Madison WI USA.

3917. Lee Ch M C, Ready M J 1991 Inferring trade direction from intraday data *Journal of Finance* **46** pp 733 – 746.

3918. Messe R A, Rose A K 1991 An empirical assessment of nonlinearities in models of exchange rate determination *Review of Economic Studies* **58** 603-2-19.

3919. Subrahmanyam A 1991 Risk aversion, market liquidity, and price efficiency *Review of Financial Studies* **4** pp 417 – 442.

3920. Spiegel M, Subrahmanyam A 1992 Informed speculation and hedging in a non-competitive securities market *Review of Financial Studies* **5** (2).

3921. Spiegel M, Subrahmanyam A 1995 On intraday risk premia *Journal of Finance* **50** pp 319 - 339.

3922. Williamson J (May) 1991 Advice on the choice of an exchange rate policy *Working Paper no 3* ICEG.

3923. Bekaert G, Hodrick R J 1992 Characterizing predictable components in excess returns on equity and foreign exchange markets *The Journal of Finance* **47** pp 467 – 511.

3924. Choi J J, Elyasiani E, Kopecky K J 1992 The sensitivity of bank stock returns to market, interest and exchange rate risk *Journal of Banking and Finance* **16** (5) pp 983 – 1005.

3925. Choi J J, Elyasiani E 1997 Derivatives exposure and the interest rate and exchange rate risks of US banks *Journal of Financial Services Research* **12** (2/3) pp 267 – 286.

3926. Curcio R, Goodhart Ch 1992 When support / resistance levels are broken, can profits be made? Evidence from the foreign exchange market *Discussion Paper no 142* Financial Markets Group London School of Economics London UK.

3927. Curcio R, Goodhart Ch, Guillaume D, Payne R 1997 Do technical trading rules generate profits? Conclusions from the intra-day foreign exchange market *International Journal of Finance and Economics* **2** (4) pp 267 – 280.

3928. De Grauwe P, Decupere D 1992 Psychological barriers in the foreign exchange market *Journal of International and Comparative Economics* **1** (2) pp 87 – 101.

3929. De Grauwe P, Grimaldi M 2006a The exchange rate in a behavioural framework *Princeton University Press* Princeton USA.

3930. De Grauwe P, Grimaldi G 2006b Exchange rate puzzles: A tale of switching attractors *European Economic Review* **50** pp 1 – 33.

3931. Edison H J 1992, 1993 The effectiveness of central bank intervention: A survey of the post - 1982 literature *Working Paper* Federal Reserve Board of Governors Washington DC USA, *Princeton Studies in International Economics* **18** Princeton University Princeton NJ USA.

3932. Edison H J, Liang H 1999 Foreign exchange intervention and the Australian dollar: Has it mattered? *IMF Working Paper WP/03/99*.

3933. Edison H J (September) 2003 Are foreign exchange reserves in Asia too high? *in* World economics outlook (September 2003) *International Monetary Fund* Washington DC USA.

3934. Flood M D 1994 Market structure and inefficiency in the foreign exchange market *Journal of International Money and Finance* **13** (2) pp 131 – 158.

3935. Flood M D, Rose A K 1995 Fixing exchange rates: A virtual quest for fundamentals *Journal of Monetary Economics* **36** pp 3 – 37.

3936. Flood M D, Huisman R, Koedijk K, Mahieu R (December) 1996 Price discovery in multiple-dealer financial markets: The effect of pre-trade transparency *Typescript* Concordia University.

3937. Flood M D, Huisman R, Koedijk K, Mahieu R 1998 Quote disclosure and price discovery in multiple dealer financial markets *Review of Financial Studies*.

3938. Gosh A 1992 Is it signaling? Exchange intervention and the Dollar Deutsche-mark rate *Journal Of International Economics* **32**.

3939. Guillaume D M, Dacorogna M M, Dave R R, Müller U A, Olsen R B, Hamon O V, Jacquillat B 1992 Le marche Francais des actions *Presses Universitaires de France* Paris France.

3940. Guillaume D M, Pictet O V, Dacorogna M M 1995 On the intra-day performance of GARCH processes *Proceedings of the First International Conference on High Frequency Data in Finance* (*HFDF-1*) vol **3** *Research Institute for Applied Economics Olsen & Associates* Zürich Switzerland.

3941. Guillaume D M, Dacorogna M M, Dave R R, Müller U A, Olsen R B, Pictet O V 1997 From the bird's eye to the microscope: A survey of new stylized facts of the intra - daily foreign exchange markets *Finance and Stochastics* **1** (2) pp 95 – 129.

3942. Hansen B 1992 Tests for parameter instability in regressions with I (1) processes *Journal of Business and Economic Statistics* **10** pp 321 – 335.

3943. Holden C, Subrahmanyam A 1992 Long-lived private information and imperfect competition *Journal of Finance* **47** pp 247 – 270.

3944. Neal R 1992 A comparison of transaction costs between competitive market maker and specialist market structures *Journal of Business* **65** pp 317 – 334.

3945. Pesaran M H, Samiei H 1992 Estimating limited - dependent rational expectations models with an application to exchange rate determination in a target zone *Journal of Econometrics* **53** pp 141 – 163.

3946. Rhee S G, Chang R P 1992 Intra–day arbitrage opportunities in foreign exchange and Euro-currency markets *Journal of Finance* **47** pp 363 – 379.

3947. Svensson L E O 1992 An interpretation of recent research on exchange rate target zones *Journal of Economic Perspectives* **6** (1) pp 19 – 44.

3948. Svensson L E O 1993 Assessing target zone credibility *European Economic Review* **37** pp 763 – 802.

3949. Bertola G, Svensson L E O 1993 Stochastic devaluation risk and the empirical fit of target zone models *Review of Economic Studies* **60** pp 689 – 712.

3950. Rose A K, Svensson L E O 1994 European exchange rate credibility before the fall *European Economics Review* **38** pp 1185 – 1216.

3951. Taylor S J 1992 Rewards available to currency futures speculators: Compensation for risk or evidence of inefficient pricing? *Economic Record* **68** pp 105 – 116.

3952. Zhou B 1992a High frequency data and volatility in foreign exchange rates *Manuscript* Department of Finance Sloan School of Management MIT Cambridge MA USA.

3953. Zhou B 1992b Forecasting foreign exchange rates subject to de-volatilization *Working Paper no 3510* Sloan School of Management Massachusetts Institute of Technology Cambridge MA USA.

3954. Zhou B 1997 Currency exchange in a random search model *Review of Economic Studies* **64** pp 289 – 310.

3955. Bank for International Settlements 1993 Survey of foreign exchange market activity *Monetary and Economic Department Bank for International Settlements* Basel Switzerland www.bis.org .

3956. Bank for International Settlements (May) 1999 Central bank survey of foreign exchange market activity in April 1998 *Monetary and Economics Department Bank for International Settlements* Basel Switzerland
www.bis.org .

3957. Bank for International Settlements (October) 1999 A review of financial market events in autumn 1998 *Committee on the Global Financial System Bank for International Settlements* Basel Switzerland
www.bis.org .

3958. Bank for International Settlements (June) 2001 70th *annual report Bank for International Settlements* Basel Switzerland
www.bis.org .

3959. Bank for International Settlements 2002 Central bank survey of foreign exchange market activity in April 2001 *Monetary and Economics Department Bank for International Settlements* Basel Switzerland
www.bis.org .

3960. Bank for International Settlements 2004 Triennial central bank survey: Foreign exchange and derivatives market activity in 2004 *Monetary and Economics Department Bank for International Settlements* Basel Switzerland www.bis.org .

3961. Bank for International Settlements (March) 2005 Triennial central bank survey of foreign exchange and derivatives market activity in 2004 *Bank for International Settlements* Basel Switzerland ISSN 1814-7356

www.bis.org .

3962. Bank for International Settlements (May) 2005 Foreign exchange market intervention in emerging markets: motives, techniques and implications *BIS Paper no 24* ISSN 1609-0381 pp 1 – 307 Monetary and Economic Department *Bank for International Settlements* Basel Switzerland

www.bis.org .

3963. Bank for International Settlements (December) 2007 Triennial central bank survey of foreign exchange and derivatives market activity in 2007 *Bank for International Settlements* Basel Switzerland ISSN 1814-7356

http://www.bis.org/publ/rpfxf07t.pdf?noframes=1 .

3964. Bank for International Settlements 2010 Triennial central bank survey. Foreign exchange and derivatives market activity in 2010 *Bank for International Settlements* Basel Switzerland ISSN 1814-7356

www.bis.org .

3965. Bertola G, Svensson L E O 1993 Stochastic devaluation risk and the empirical fit of target zone models *Review of Economic Studies* **60** pp 689 – 712.

3966. Biais B 1993 Price formation and equilibrium liquidity in fragmented and centralized markets *Journal of Finance* **48** pp 157 – 184.

3967. Chan Y-S, Weinstein M 1993 Reputation, bid-ask spread and market structure *Financial Analysts Journal* July/August pp 57 – 62.

3968. Cheung Y - W 1993 Exchange rate risk premiums *Journal of International Money and Finance* **12** pp 182 – 194.

3969. Cheung Y-W, Ng L 1996 A causality-in-variance test and its application to financial market prices *Journal of Econometrics* **72** pp 33 – 48.

3970. Cheung Y - W, Chinn M 1998 Integration, cointegration, and the forecast consistency of structural exchange rate models *Journal of International Money and Finance* **17** pp 813 – 830.

3971. Cheung Y-W, Wong C Y-P 1999 Foreign exchange traders in Hong Kong, Tokyo, and Singapore *in* Advances in pacific basin financial markets vol **5** Bos Th, Fetherstone Th A (editors) *JAI Press* Greenwich Connecticut pp 111 – 134.

3972. Cheung Y - W, Wong C 2000 A survey of market practitioners' views on exchange rate dynamics *Journal of International Economics* **51** pp 401 – 423.

3973. Cheung Y - W, Chinn M D 2001 Currency traders and exchange rate dynamics: A survey of the US market *Journal of International Money and Finance* **20** (4) pp 439 – 471.

3974. Cheung Y-W, Chinn M D, Marsh I W 2004 How do UK-based foreign exchange dealers think their market operates? *International Journal of Finance and Economics* **9** pp 289 – 306.

3975. Cheung Y - W, Chinn M, Pascual A G 2004, 2005 Empirical exchange rate models of the nineties: Are any fit to survive? *IMF Working Paper WP/04/73* IMF Washington USA, *Journal of International Money and Finance* **24** pp 1150 – 1175.

3976. Dacorogna M M, Müller U A, Nagrel R J, Olsen R B, Pictet O V 1993 A geographical model for the daily and weekly seasonal volatility in the FX market *Journal of International Money and Finance* **12** (4) pp 413 – 438.

3977. Dacorogna M M, Müller U A, Pictet O V. de Vries C G (March 17) 1995 The distribution of external foreign exchange rate returns in extremely large data sets *Preprint UAM 1992-10-22* Research Institute for Applied Economics *Olsen and Associates* Zurich Switzerland.

3978. Dominguez K M E, Frankel J A 1993 Does foreign exchange intervention work? Institute for International Economics Washington DC USA.

3979. Dominguez K M E 1998 Central bank intervention and exchange rate volatility Journal of International Money and Finance **17** pp 161 – 190.

3980. Dominguez K M E 2006 When do central bank interventions influence intra-daily and longer-term exchange rate movements? *Journal of International Money and Finance* **25** (7) pp 1051 – 1071.

3981. Dominguez K M E, Panthaki F 2006 What defines 'news' in foreign exchange markets? *Journal of International Money and Finance* **25** (1) pp 168 – 198.

3982. Ederington L, Lee J 1993 How markets process information: News releases and volatility *Journal of Finance* **48** pp 1161 – 1191.

3983. Edin P A, Vredin A 1993 Devaluation risk in target zones: Evidence from the Nordic countries *Economic Journal* **103** pp 161 – 175.

3984. Goldstein M, Folkerts-Landau D, Garber P, Rojas-Suarez L, Spencer M 1993 International capital markets Parts I and II *The International Monetary Fund* Washington DC USA.

3985. Griffiths M D, White R W (June) 1993 Tax - induced trading and the turn - of - the - year anomaly: An intraday study *The Journal of Finance* **48** (2) pp 575 – 598.

3986. Grimes A 1993 International reserves under floating exchange rates: Two paradoxes explained *The Economic Record* **69** pp 411 – 415.

3987. Harris M, Raviv A 1993 Differences of opinion make a horse race *Review of Financial Studies* **6** pp 473 – 506.

3988. Klein M W 1993 The accuracy of reports of foreign exchange intervention *The Journal of International Money and Finance* **12** (6) pp 644 – 653.

3989. Levich R M, Thomas L R 1993 The significance of technical trading-rule profits in the foreign exchange market: A bootstrap approach *Journal of International Money and Finance* **12** pp 451 – 474.

3990. Matsuyama K, Kiyotaki N, Matsui A 1993 Toward a theory of international currency *Review of Economic Studies* **60** pp 283 – 320.

3991. Romer D 1993 Rational asset-price movements without news *American Economic Review* **83** pp 1112 – 1130.

3992. Schmidt H, Iversen P, Treske K 1993 Parkett oder computer? *Zeitschrift für Bankrecht und Bankwirtschaft* **5** pp 209 – 221.

3993. Schmidt H, Iversen P 1993 Automating German equity trading: Bid-ask spreads on competing systems *Journal of Financial Services Research* **6** pp 373 – 397.

3994. Schmidt H, Oesterhelweg O, Treske K 1996 Deutsche Börsen im leistungsvergleich: IBIS und BOSS-CUBE *Kredit und Kapital* **29** pp 90 – 122.

3995. Wolinsky A 1990 Information revelation in a market with pair wise meetings *Econometrica* **58** pp 1 – 23.

3996. Ammer J, Brunner A 1994 Are banks market timers or market makers? Explaining foreign exchange trading profits *International Finance Discussion Paper #484* Board of Governors of the Federal Reserve System USA.

3997. Andrew R, Broadbent J 1994 Reserve bank operations in the foreign exchange market: Effectiveness and profitability *Research Discussion Paper 9406* Reserve Bank of Australia Sydney Australia.

3998. Backus D, Kehoe P, Kydland F 1994 Dynamics of the trade balance and the terms of trade: The J-curve? *American Economic Review* **84** pp 84 – 103.

3999. Bakker A, Boot H, Sleijpen O, Vanthoor W (editors) 1994 Monetary stability through international cooperation *Kluwer Academic Publishers* Dordrecht The Netherlands.

4000. Bartov E, Bodnar G M 1994 Firm valuation, earnings expectations, and the exchange rate exposure effect *Journal of Finance* **44** (5) pp 1755 – 1785.

4001. Bartov E, Bodnar G M 1995 Foreign currency translation reporting and the exchange-rate exposure effect *Journal of International Financial Management & Accounting* **6** (2) pp 93 – 115.

4002. Berry T, Howe K 1994 Public information arrival *Journal of Finance* **49** pp 1331 – 1346.

4003. Bessembinder H (June) 1994 Bid - ask spreads in the inter-bank foreign exchange markets *Journal of Financial Economics* **35** (3) pp 317 – 348.

4004. Ball C, Roma A 1994 Target zone modelling and estimation for European monetary system exchange rates *Journal of Empirical Finance* **1** pp 385 – 420.

4005. Brousseau V, Czarnecki M O (August 16) 1994 Modelling exchange rates: The stable model *Preprint* Ecole Polytechnique Paris France.

4006. De Jong F 1994 A univariate analysis of EMS exchange rates using a target zone model *Journal of Applied Econometrics* **9** pp 35 – 45.

4007. De Jong F, Nijman Th, Röell A 1995 A comparison of the cost of trading French shares on the Paris bourse and on SEAQ *International European Economic Review* **39** pp 1277 – 1301.

4008. De Jong F, Nijman Th, Röell A 1996 Price effects of trading and components of the bid-ask spread on the Paris bourse *Journal of Empirical Finance* **3** pp 193 – 213.

4009. De Jong F, Mahieu R, Schotman P 1998 Price discovery in the foreign exchange market: An empirical analysis of the Yen / Dmark rate *Journal of International Money and Finance* **17** pp 5 – 27.

4010. De Jong F, Ligterink J, Macrae V 2006 A firm specific analysis of the exchange rate exposure of Dutch firms *Journal of International Financial Management and Accounting* **17** (1) pp 1 – 28.

4011. De Jong F, Verschoor W F C, Zwinkels R C J 2010 Heterogeneity of agents and exchange rate dynamics: Evidence from the EMS *Journal of International Money and Finance* **29** (8) pp 1652 – 1669.

4012. Degryse H, de Jong F, van Kervel V 2011 The impact of dark trading and visible fragmentation on market quality *Discussion Paper 8630 CEPR*.

4013. Dini L 1994 Turbulence in the foreign exchange markets: Old and new lessons *in* Monetary stability through international cooperation Bakker A, Boot H, Sleijpen O, Vanthoor W (editors) *Kluwer Academic Publishers* Dordrecht The Netherlands.

4014. Fialkowski D, Petersen 1994 Posted versus effective spreads: Good prices or bad quotes? *Journal of Financial Economics* **35** pp 269 – 292.

4015. Glass G R 1994 Multinet *Panel Discussion*: Clearing house arrangements in the foreign exchange markets *Federal Reserve Board's International Symposium*: Banking and payment services Washington DC USA.

4016. Grünbichler A, Longstaff F, Schwartz E 1994 Electronic screen trading and the transmission of information: An empirical examination *Journal of Financial Intermediation* **3** pp 166 – 187.

4017. Hansch O, Naik N, Viswanathan S (November) 1994 Trading profits, inventory control and market share in a competitive dealer market *Typescript* Duke University USA.

4018. Hirschleifer D, Subrahmanyam A, Titman S 1994 Security analysis and trading patterns when some investors receive information before others *Journal of Finance* **49** pp 1665 – 1698.

4019. Hogan K C Jr, Melvin M 1994 Sources of meteor showers and heat waves in the foreign exchange market *Journal of International Economics* **37** pp 239 – 247.

4020. Jones C, Kaul G, Lipson M 1994 Transactions, volume, and volatility *Review of Financial Studies* **7** pp 631 – 651.

4021. Jones C, Lipson M 1999 Execution costs of institutional equity orders *Journal of Financial Intermediation* **8** pp 123 – 140.

4022. Kraus A, Smith M (September) 1994 Beliefs about beliefs *Working Paper* University of British Columbia Vancouver Canada.

4023. Massib M, Phelps B 1994 Electronic trading, market structure and liquidity *Financial Analysts Journal* pp 39 – 50.

4024. Mendelson M, Peake J (September) 1994 Equity markets in economies in transition *Journal of Banking and Finance* **15** (5) pp 913 – 929.

4025. Naidu G N, Rozeff M 1994 Volume, volatility, liquidity and efficiency of the Singapore stock exchange before and after automation *Pacific-Basin Finance Journal* **2** pp 23 – 42.

4026. Nieuwland F G M C, Verschoor W F C, Wolff C C P 1994 Stochastic jumps in EMS exchange rates *Journal of International Money and Finance* **13** pp 699 – 727.

4027. Pictet O V, Dacorogna M M, Muller U A, De Vries C G 1994 The distribution of external foreign exchange rate returns and extremely large data sets *Olsen and Associates Research Group* Zurich Switzerland.

4028. Sharpe W A (Fall) 1994 The Sharpe ratio *Journal of Portfolio Management* pp 49 – 58.

4029. Silber W L 1994 Technical trading: When it works and when it doesn't *The Journal of Derivatives* **1** (3).

4030. Slezak S 1994 A theory of the dynamics of security returns around market closures *Journal of Finance* **49** pp 1163 – 1211.

4031. Szpiro G G 1994 Exchange rate speculation and chaos inducing intervention *Journal of Economic Behavior and Organization* **24** pp 363 – 368.

4032. Yadav P, Pope P, Paudyal K 1994 Threshold autoregressive modeling in finance: The rice differences of equivalent assets *Mathematical Finance* **4** (2) pp 205 – 221.

4033. Walsh E J 1994 Operating income, exchange rate changes, and the value of the firm: An empirical analysis *Journal of Accounting, Auditing and Finance* **9** (4) pp 703 – 724.

4034. Wei, Sh-J (May) 1994 Anticipations of foreign exchange volatility and bid-ask spreads *Working Paper no 4737* National Bureau of Economic Research Cambridge Massachusetts USA.

4035. Watanabe T 1992 The signaling effect of foreign exchange intervention: The case of Japan *Bank of Japan* Tokyo Japan.

4036. Watanabe T, Harada K 2004 Effects of the Bank of Japan's intervention on yen/dollar exchange rate volatility *Journal of the Japanese and International Economies*.

4037. Watanabe T, Yabu T (June) 2007 The great intervention and massive money injection: The Japanese experience 2003-2004 *Working Paper* Institute of Economic Research Hitotsubashi University Japan.

4038. Almekinders G J 1995 Foreign exchange intervention: Theory and evidence *E Elgar* Brookfield VT USA.

4039. Chiang T, Jiang C 1995 Foreign exchange returns over short and long horizons *International Review of Economics & Finance* **4** pp 267 – 282.

4040. Dumas B, Solnik B 1995 The world price of foreign exchange risk *Journal of Finance* **50** pp 445 – 479.

4041. Ederington L, Lee J 1995 The short-run dynamics of price adjustment to new information *Journal of Financial and Quantitative Analysis* **30** pp 117 – 134.

4042. Evertsz C J G 1995 Self - similarity of high - frequency USD/DEM exchange rates *Proceedings of the First International Conference on High Frequency Data in Finance* (*HFDF-1*) vol **3** *Research Institute for Applied Economics Olsen & Associates Zürich* Switzerland.

4043. Faruqee H 1995 Long-run determinants of the real exchange rate: A stock-flow perspective *IMF Staff Papers* **42** (1) pp 80 – 107.

4044. Frino A, McCorry M 1995 Why are spreads tighter on the Australian Stock Exchange than the NYSE? An electronic open limit order book versus the specialist structure *Working Paper* University of Sydney Australia.

4045. Frino A, McInish Th, Toner M 1998 The liquidity of automated exchanges: New evidence from German bund futures *Journal of International Financial Markets, Institutions and Money* **8** pp 225 – 241.

4046. Ghysels E, Jasiak J 1995 Trading patterns: Time deformation and stochastic volatality in foreign exchange markets *Proceedings of the First International Conference on High Frequency Data in Finance* (*HFDF-1*) vol **1** *Research Institute for Applied Economics Olsen & Associates Zürich* Switzerland.

4047. Grossman G, Rogoff K (editors) 1995 Handbook of international economics *Elsevier Science* The Netherlands.

4048. Havrilesky T 1995 The pressures on American monetary policy 2nd edition *Kluwer Academic Publishing* Boston USA.

4049. Hong H, Wang J (July) 1995 Trading and returns under periodic market closures *Working Paper* Massachusetts Institute of Technology USA.

4050. Isard P 1995 Exchange rate economics *Cambridge University Press* Cambridge UK.

4051. Kandel E, Pearson N 1995 Differential interpretation of public signals and trade in speculative markets *Journal of Political Economy* **103** pp 831 – 872.

4052. Lewis K K 1995 Are foreign exchange intervention and monetary policy related and does it really matter? *Journal of Business* **68** pp 185 – 214.

4053. Lin J-C, Sanger G, Booth G 1995 Trade size and components of the bid-ask spread *Review of Financial Studies* **8** pp 1153 – 1183.

4054. Mantegna R N, Stanley H E 1995 Scaling behaviour in economic index *Nature* vol **376** pp 46 – 49.

4055. Mark N 1995 Exchange rates and fundamentals: Evidence on long-horizon predictability *American Economic Review* **85** pp 201 – 218.

4056. Mark N, Wu Y 1998 Rethinking deviations from uncovered interest parity: The role of covariance risk and noise *Economic Journal* **108** pp 1686 – 1706.

4057. Mark N 2001 International macroeconomics and finance *Blackwell Publishers* Oxford UK.

4058. Mark N 2009 Changing monetary policy rules, learning, and real exchange rate dynamics *Journal of Money, Credit and Banking*.

4059. Obstfeld M, Rogoff K 1995 Exchange rate dynamics redux *Journal of Political Economy* **103** pp 624-660.

4060. Obstfeld M, Rogoff K (August) 1998 Risk and exchange rates *NBER Working Paper 6694 in* Contemporary economic policy: Essays in honor of Assaf Razin; Helpman E, Sadka E (editors) *Cambridge University Press* Cambridge UK.

4061. Osler C L 1995 Exchange rate dynamics and speculator horizon *Journal of International Money and Finance* **14** (5) pp 695 – 720.

4062. Osler C L 1998 Short-term speculators and the puzzling behavior of exchange rates *Journal of International Economics* **45** pp 37 – 57.

4063. Carlson J A, Osler C L (March) 1999 Determinants of currency risk premiums *Federal Reserve Bank of New York Staff Reports Series* no 70.

4064. Kevin C P H, Osler C L 1999 Methodical madness: Technical analysis and the irrationality of exchange-rate forecasts *Economic Journal* **109** (458) pp 636 – 661.

4065. Osler C L 2000 Support for resistance: Technical analysis and intraday exchange rates *Federal Reserve Bank of New York Economic Policy Review* **6** (2) pp 53 – 68.

4066. Osler C L 2003 Currency orders and exchange-rate dynamics: Explaining the success of technical analysis *Journal of Finance* **58** (5) pp 1791 – 1819.

4067. Osler C L 2005 Stop-loss orders and price cascades in currency markets *Journal of International Money and Finance* **24** (2) pp 219 – 241.

4068. Carlson A J, Osler C L 2005 Short-run exchange rate dynamics: Theory and evidence.

4069. Osler C L 2006 Macro lessons from microstructure *International Journal of Finance and Economics* **11** (1) pp 55 – 80.

4070. Osler C L 2008 Foreign exchange microstructure: A survey *in* Springer encyclopedia of complexity and system science *Springer* Germany.

4071. Osler C L 2009 Market microstructure, foreign exchange *in* Encyclopedia of complexity and system science Meyers R A (ed.) *Springer* pp 5404 – 5438.

4072. Osler C L, Vandrovych V 2009 Hedge funds and the origins of private information in currency markets *Typescript* Brandeis University.

4073. Osler C L, Yusim R 2009 Intraday dynamics of foreign-exchange spreads *Typescript* Brandeis University.

4074. Osler C L, Mende A, Menkhoff L 2011 Price discovery in currency markets *Journal of International Money and Finance* **30** (8) pp 1696 – 1718.

4075. Osler C L, Savaser T 2011 Extreme returns: The case of currencies *Journal of Banking and Finance* **35** (11) pp 2868 – 2880.

4076. Dahl Ch, Carlson J A, Osler C L 2011 Short-run exchange-rate dynamics: Theory and evidence *Research Paper* Brandeis University.

4077. Osler C L 2012 Currency market microstructure, the carry trade, and technical trading *Annual Review of Financial Economics* **4** (1).

4078. Peiers B (October) 1995 Informed traders, intervention, and price leadership: A deeper view of the microstructure of the foreign exchange market *University California Los Angeles* California USA.

4079. Prasad A M, Rajan M 1995 The role of exchange and interest risk in equity valuation: A comparative study of international stock markets *Journal of Economics and Business* **47** (5) pp 457 – 472.

4080. Schnidrig R, Würtz D (March) 1995 Investigation of the volatility and autocorrelation function of the USD/DEM exchange rate on operational time scales *Proceedings of the First International Conference on High Frequency Data in Finance* (HFDF-1) vol **3** *Research Institute for Applied Economics Olsen & Associates* Zürich Switzerland.

4081. Schwartz R (editor) 1995 Global equity markets: Technological, competitive, and regulatory challenges *Irwin* Homewood Illinois USA.

4082. Shyy G, Lee J 1995 Price transmission and information asymmetry in bund futures markets: LIFFE vs DTB *Journal of Futures Markets* **15** pp 87 – 99.

4083. Shyy G, Vijayraghavan V, Scott-Quinn B 1996 A further investigation of the lead-lag relationship between the cash market and stock index futures market with the use of bid/ask quotes: The case of France *Journal of Futures Markets* **16** pp 405 – 420.

4084. Vivex X 1995 The speed of information revelation in a financial market mechanism *Journal of Economic Theory* **67** pp 178 – 204.

4085. Zaheer A, Zaheer S (December) 1995 Catching the wave: Alertness, responsiveness, and market influence in global electronic networks *Typescript* University of Minnesota USA.

4086. Bonser – Neal C, Tanner G 1996 Central bank intervention and volatility of foreign exchange rates: Evidence from options market *Journal of International Money and Finance* vol **15** pp 853 – 878.

4087. Claassen E M 1996 Global monetary economics *Oxford University Press* Oxford UK.

4088. Danker D, Haas R A, Henderson D W, Symanski S, Tryon R W 1996 Small empirical models of exchange market intervention: Applications to Germany, Japan, and Canada *Journal of Policy Modeling* **9**.

4089. Dukas S P, Fatemi A M, Tavakkol A 1996 Foreign exchange rate exposure and the pricing of exchange rate risk *Global Finance Journal* **7** (2) pp 169 – 189.

4090. Dwyer G, Locke P, Yu W 1996 Index arbitrage and nonlinear dynamics between the S&P 500 futures and cash *Review of Financial Studies* **9** (1) pp 301 – 332.

4091. Easley D, Kiefer N, O'Hara M, Paperman J 1996 Liquidity, information and infrequently traded stocks *Journal of Finance* **51** pp 1405 – 1436.

4092. Easley D, Kiefer N, O'Hara M 1997a The information content of the trading process *Journal of Empirical Finance* **4** pp 159 – 185.

4093. Easley D, Kiefer N, O'Hara M 1997b One day in the life of a very common stock *Review of Financial Studies*.

4094. Easley D, O'Hara M, Srinivas P S 1998 Option volume and stock prices: Evidence on where informed traders trade *Journal of Finance* **53** pp 431 – 465.

4095. Flemming J, Ostdiek B, Whaley R 1996 Trading costs and the relative rates of price discovery in stocks, futures and options markets *Journal of Futures Markets* **16** pp 353 – 387.

4096. Gagnon J E 1996 Net foreign assets and equilibrium exchange rates: Panel evidence *Board of Governors of the Federal Reserve System International Finance Discussion Papers 574* USA.

4097. Ghashghaie S, Breymann W, Peinke J, Talkner P, Dodge Y (June) 1996 Turbulent cascades in foreign exchange markets *Nature* **381** (27) pp 767 – 770.

4098. Hsieh D, Kleidon A 1996 Bid-ask spreads in foreign exchange markets: Implications for models of asymmetric information *in* The Microstructure of foreign exchange markets Frankel J A, Galli G, Giovannini A (editors) *University of Chicago Press* Chicago pp 41 – 65.

4099. Ingersoll J E Jr 1996 Valuing foreign exchange rate derivatives with a bounded exchange process *Review of Derivatives Research* **1** pp 159 – 181.

4100. Kaminsky G, Lewis K 1996 Does foreign exchange intervention signal future monetary policy? *Journal Of Monetary Economics* **37** pp 285 – 312.

4101. LeBaron B (March) 1996 Technical trading rule, profitability and foreign exchange intervention *Working Paper 5505* NBER USA pp 1 – 18.

4102. MacDonald R, Marsh I W 1996 Currency forecasters are heterogeneous: Confirmation and consequences *Journal of International Money and Finance* **15** (5) pp 665 – 685.

4103. Madrigal V 1996 Non-fundamental speculation *Journal of Finance* **51** pp 553 – 578.

4104. Pirrong C 1996 Market liquidity and depth on computerized and open outcry trading systems: A comparison of DTB and LIFFE bund contracts *Journal of Futures Markets* **16** pp 519 – 543.

4105. Rosenberg M 1996 Currency forecasting: A guide to fundamental and technical models of exchange rate determination *Irwin Professional Publishing* Chicago USA.

4106. Tsang Sh-K 1996 A study of the linked exchange rate system and policy options for Hong Kong *Hong Kong Policy Research Institute* Hong Kong P R China.

4107. Tsang Sh-K 1998 The case for adopting the convertible reserves system in Hong Kong *Pacific Economic Review* **3** pp 265 – 275.

4108. Tsang Sh-K, Sin Ch-Y, Cheng Y-Sh 1999 The robustness of Hong Kong's linked exchange rate system as a currency board arrangement *The 54th European Meeting of the Econometric Society* Hong Kong P R China.

4109. Tsang Sh-K 1999a A study of the linked exchange rate system and policy options for Hong Kong *Hong Kong Policy Research Institute Ltd* Hong Kong P R China.

4110. Tsang Sh-K 1999b Fixing the exchange rate through a currency board arrangement: Efficiency risk, systemic risk and exit cost *Asian Economic Journal* **13** pp 239 – 266.

4111. Tsang Sh-K, Yue Ma 2002 Currency substitution and speculative attacks on a currency board system *Journal of International Money and Finance* **21** (1) pp 53 – 78.

4112. Vermeiren D, Ková T Z 1996 Foreign exchange risk management and auditing *Basic Documentation Version 1.0a* Prague CNB – Banking Supervision 1996.

4113. Balke N, Fomby T 1997 Threshold cointegration *International Economic Review* **38** pp 627 – 646.

4114. Balke N, Wohar M 1998 Nonlinear dynamics and covered interest rate parity *Empirical Economics* **23** pp 535 – 559.

4115. Bhattacharya U, Weller P 1997 The advantage to hiding one's hand: Speculation and central bank intervention in the foreign exchange market *Journal of Monetary Economics* **39** pp 251 – 277.

4116. Campbell J Y, Lo A W, MacKinlay A C 1997 The econometrics of financial markets *Princeton University Press* Princeton New Jersey USA.

4117. Campbell J Y, Viceira L 2002 Strategic asset allocation: Portfolio choice for long term investors *Clarendon Lectures in Economics Oxford University Press* Oxford UK.

4118. Chamberlain S, Howe J S, Popper H 1997 The exchange rate exposure of US and Japanese banking institution *Journal of Banking and Finance* **21** (6) pp 871 – 892.

4119. Clarida R H, Taylor M P 1997 The term structure of forward exchange premiums and the forecastability of spot exchange rates: Correcting the errors *Review of Economics and Statistics* **79** pp 353 – 361.

4120. Clarida R H, Sarno L, Taylor M P, Valente G 2003 The out-of-sample success of term structure models as exchange rate predictors: A step beyond *Journal of International Economics* **60** pp 61 – 83.

4121. Copejans M, Domowitz I 1997 The performance of an automated trading market in an illiquid environment *Working Paper* Duke University, Northwestern University USA.

4122. DeGennaro R, Shrieves R 1997 Public information releases, private information arrival, and volatility in the foreign exchange market *Journal of Empirical Finance* **4** pp 295 – 315.

4123. Dewachter H 1997 Sign predictions of exchange rate changes: Charts as proxies for Bayesian inferences *Review of World Economics* **133** (1) pp 39 – 55.

4124. Dewachter H 2001 Can Markov switching models replicate chartist profits in the foreign exchange market? *Journal of International Money and Finance* **20** pp 25 – 41.

4125. Dewachter H, Lyrio M 2005 The economic value of technical trading rules: A nonparametric utility-based approach *International Journal of Finance and Economics* **10** pp 41 – 62.

4126. Embrechts P, Klueppelberg C, Mikosch T 1997 Modeling external events for insurance and finance *Springer - Verlag* Berlin Germany.

4127. Evans M D D (November) 1997 The microstructure of foreign exchange dynamics *Typescript* Georgetown University USA.

4128. Evans M D D, Lyons R K 1999, (February) 2002a Order flow and exchange rate dynamics *Typescript* UC Berkeley, *Journal of Political Economy* **110** (1) pp 170 – 180.

4129. Evans M D D, Lyons R K 2001a Why order flow explains exchange rates *Unpublished Manuscript* University California Berkeley USA.

4130. Evans M D D, Lyons R K (July) 2001b Portfolio balance, price impact, and secret intervention *NBER Working Paper 8356* NBER USA.

4131. Evans M D D (February) 2001c, 2002b FX trading and exchange rate dynamics *NBER Working Paper 8116; Journal of Finance* **57** (6) pp 2405 – 2447.

4132. Evans M D D, Lyons R K (July) 2002c Time-varying liquidity in foreign exchange *Journal of Monetary Economics Elsevier* **49** (5) pp 1025 – 1051.

4133. Evans M D D, Lyons R K (November) 2002d Informational integration and FX Trading *Journal of International Money and Finance* **21** (6) pp 807 – 831.

4134. Evans M D D, Lyons R K (January) 2003 How is macro news transmitted to exchange rates? *NBER Working Paper 9433* National Bureau of Economic Research Inc USA.

4135. Cao H, Evans M, Lyons R (August) 2003 Inventory information *NBER Working Paper 9893* NBER USA http://www.nber.org/papers/w9893, *Journal of Business*, USA.

4136. Evans M D D, Lyons R K (March) 2004a A new micro model of exchange rate dynamics *NBER Working Papers 10379* National Bureau of Economic Research Inc USA http://www.nber.org/papers/w10379 .

4137. Evans M D D, Lyons R K 2004b, 2007 Exchange rate fundamentals and order flow *Working Papers gueconwpa~05-05-03* Department of Economics Georgetown University; *Working Paper 13151* National Bureau of Economic Research Cambridge MA USA http://www.nber.org/papers/w13151 .

4138. Evans M D D, Lyons R K 2005a Meese-Rogoff redux: Micro-based exchange-rate forecasting *NBER Working Paper 11042* National Bureau of Economic Research http://www.nber.org/papers/w11042, *American Economic Review Papers and Proceedings* **95** (2) pp 405 – 414.

4139. Evans M D D, Lyons R K 2005b Do currency markets absorb news quickly? *Working Paper 11041* NBE USA pp 1 – 25, *Journal of International Money and Finance* **24** (2) pp 197 – 217.

4140. Evans M D D, Lyons R 2005c Are different-currency assets imperfect substitutes? *in* Exchange rate economics: Where do we stand? DeGrauwe P (editor) *MIT Press* Cambridge USA.

4141. Evans M D D, Lyon R K 2005d, 2006 Understanding order flow NBER Working Paper 11748 NBER USA http://www.nber.org/papers/w11748, *International Journal of Finance & Economics John Wiley & Sons Inc* **11** (1) pp 3 – 23.

4142. Evans M D D 2005 Where are we know? Real-time estimates of the macroeconomy *International Journal of Central Banking* **1** (6) pp 127 – 175.

4143. Evans M D D, Hnatkovska V 2005 International capital flows, returns and world financial integration *NBER Working Paper* NBER USA.

4144. Evans M D D, Lyons R K 2008 How is macro news transmitted to exchange rates? *Journal of Financial Economics* **88** (1) pp 26 – 50.

4145. Evans M D D, Lyons R K 2009 Forecasting exchange rate fundamentals with order flow *Working Paper* Georgetown University USA.

4146. Evans M D D 2010 Order flows and the exchange rate disconnect puzzle *Journal of International Economics* **80** (1) pp 58 – 71.

4147. Evans M D D 2011 Exchange-rate dynamics *Princeton University Press* USA.

4148. Fleming M, Remolona E 1997 What moves the bond market? *Federal Reserve Bank of New York Economic Policy Review* **3** pp 31 – 50.

4149. Fleming M, Remolona E 1999 Price formation and liquidity in the US treasury market *Journal of Finance* **54** pp 1901 – 1915.

4150. Fleming M (September) 2002 Price discovery in the US treasury market: The impact of order flow and liquidity on the yield curve *Typescript* New York Federal Reserve Bank New York USA.

4151. Fleming M 2003 Measuring treasury market liquidity *Federal Reserve Bank of New York Economic Policy Review* **9** pp 83 – 108.

4152. Franke G, Hess D 1997, 2000 Information diffusion in electronic and floor trading *Working Paper* Universität Konstanz Germany, *Journal of Empirical Finance* **7** (5) pp 455 – 478.

4153. Goldberg L, Tenorio R 1997 Strategic trading in a two-sided foreign exchange auction *Journal of International Economics* **42** pp 299 – 326.

4154. Gosh A R, Ostry J D, Gulde A M, Wolf H C 1997 Does the exchange rate regime matter for inflation and growth? *IMF* Washington USA http://www.imf.org .

4155. Harris J, Schultz P 1997 The importance of firm quotes and rapid executions: Evidence from the January 1994 SOES rule change *Journal of Financial Economics* **45** pp 135 – 166.

4156. Hartmann P 1997 The currency denomination of international trade after European Monetary Union *Typescript* European Central Bank.

4157. Hartmann Ph 1998 Do Reuters spreads reflect currencies' differences in global trading activity? *Journal of International Money and Finance* **17** (5) pp 757 – 784.

4158. Hartmann P 1998 Currency competition and foreign exchange markets: The dollar, the yen, and the euro *Cambridge University Press* Cambridge UK.

4159. Hartmann P 1999 Trading volumes and transaction costs in the foreign exchange market: Evidence from daily dollar-yen spot data *Journal of Banking and Finance* **23** pp 801 – 824.

4160. Hung J 1997 Intervention strategies and exchange rate volatility: A noise trading perspective *Journal of International Money and Finance* **16** (5) pp 779 – 793.

4161. Kirilenko A 1997 Endogenous trading arrangements in emerging foreign exchange markets *Typescript* International Monetary Fund USA.

4162. Lamoureux C, Schnitzlein C 1997 When it's not the only game in town: The effect of bilateral search on the quality of a dealer market *Journal of Finance* **52** pp 683 – 712.

4163. Madhavan A, Smidt S 1991 A Bayesian model of intraday specialist pricing *Journal of Financial Economics* **30** pp 99 – 134.

4164. Madhavan A, Smidt S 1993 An analysis of changes in specialist inventories and quotations *Journal of Finance* **48** (5) pp 1595 – 1628.

4165. Leach J, Madhavan A 1993 Price experimentation and security market structure *Review of Financial Studies* **6** pp 375 – 404.

4166. Keim D, Madhavan A 1996 The upstairs market for large-block transactions: Analysis and measurement of price effects *Review of Financial Studies* **9** pp 1 – 36.

4167. Madhavan A, Cheng M 1997 In search of liquidity: Block trades in the upstairs and downstairs market *Review of Financial Studies* **10** pp 175 – 203.

4168. Madhavan A, Richardson M, Roomans M 1997 Why do security prices change? A transaction-level analysis of NYSE stocks *Review of Financial Studies* **10** pp 1035 – 1064.

4169. Madhavan A, Sofianos G 1997 An empirical analysis of NYSE specialist trading *Journal of Financial Economics* **48** pp 189 – 210.

4170. Madhavan A (March) 2000 Market microstructure: A survey *University of Southern California* USA.

4171. Madhavan A 2000 Market microstructure: A survey *Journal of Financial Markets* **3** pp 205 – 258.

4172. Madhavan A (October) 2000 In search of liquidity in the internet era *9th Annual Financial Markets Conference of the Federal Reserve Bank of Atlanta* USA.

4173. Martens M 1997 Interaction between financial markets *Tinbergen Institute Research Series no 139* Rotterdam The Netherlands.

4174. Montiel P J 1997 Exchange rate policy and macroeconomic management tin ASEAN countries in macroeconomic issues facing ASEAN countries *International Monetary Fund* Washington USA.

4175. Pagano M, Roell A 1997 Front running: Market professionals as quasi-insiders *Typescript* Tilburg University.

4176. Peiers B 1997 Informed traders, intervention, and price leadership: A deeper view of the microstructure of the foreign exchange market *Journal of Finance* **52** pp 1589 – 1614.

4177. Reiss P, Werner I (February) 1997 Interdealer trading: Evidence from London *Stanford Graduate School of Business Research Paper no 1430* University of Stanford California USA.

4178. Sweeney R J 1997 Do central banks lose on foreign exchange intervention? A review article *Journal of Banking & Finance* **21** pp 1667 – 1684.

4179. Sweeney R J 2000 Does the Fed beat the foreign exchange market? *Journal of Banking & Finance* **24** pp 665 – 694.

4180. Szakmary A, Mathur I 1997 Central bank intervention and trading rule profits in foreign exchange markets *Journal of International Money and Finance* **16** pp 513 – 535.

4181. Vogler K 1997 Risk allocation and interdealer trading *European Economic Review* **41** pp 417 – 441.

4182. Wei S, Kim J (November) 1997 The big players in the foreign exchange market: Do they trade on information or noise? *NBER Working Paper 6256* NBER USA.

4183. Werner I (September) 1997 A double auction model of interdealer trading *Research Paper no 1454* Stanford University California USA.

4184. Wren-Lewis S (July) 1997 The choice of exchange rate regime *Economic Journal*.

4185. Abhyankar A H 1998 Linear and nonlinear Granger causality: Evidence from the UK stock index futures market *Journal of Futures Markets* **18** (5) pp 519 – 540.

4186. Abrams R K, Beato P 1998 The prudential regulation and management of foreign exchange risk *International Monetary Fund* Washington DC USA.

4187. Anthony M, MacDonald R 1998 On the mean reverting properties of target zone exchange rates: Some evidence from the ERM *European Economic Review* **42** pp 1493 – 1523.

4188. Anthony M, MacDonald R 1999 The width of the band and exchange rate mean reversion: Some further ERM-Based Results *Journal of International Money and Finance* **18** pp 411 – 428.

4189. Bjønnes G H, Rime D (December) 1998 FX trading ... live: Impact of new trading environments *Typescript* Norwegian School of Management University of Oslo Norway.

4190. Bjønnes G H, Rime D (March) 2001 FX trading live! Dealer behavior and trading systems in foreign exchange markets *Typescript* Norwegian School of Management University of Oslo Norway
www.uio.no/~dagfinri .

4191. Bjønnes G H, Rime D 2005 Dealer behavior and trading systems in foreign exchange markets *Journal of Financial Economics* **75** (3) pp 571 – 605.

4192. Bjønnes G H, Rime D, Solheim H O A 2005 Liquidity provision in the overnight foreign exchange market *Journal of International Money and Finance* **24** (2) pp 177 – 198.

4193. Bjønnes G H, Osler C, Rime D (September 15) 2007 Asymmetric information in the interbank foreign exchange market *3rd Annual Conference on Market Microstructure* Budapest Hungary.

4194. Bjønnes G H, Osler C L, Rime D 2011 Sources of information advantage in the foreign exchange market *Working Paper* Norges Bank Norway.

4195. Blennerhasset M, Bowman R G 1998 A change in market microstructure: The switch to electronic screen trading on the New Zealand stock exchange *Journal of International Financial Markets, Institutions and Money* **8** pp 261 – 276.

4196. Bodnar G, Hayt G, Marston R 1998 Wharton survey of financial risk management by US non-financial firms *Financial Management* **27** (4) pp 70 – 91.

4197. Caramazza F, Aziz J 1998 Fixed or flexible? Getting the exchange rate right in the 1990s *IMF* Washington USA
http://www.imf.org .

4198. Chang Y, Taylor S 1998 Intraday effects of foreign exchange intervention by the Bank of Japan *Journal of International Money and Finance* **18** pp 191 – 210.

4199. Choi J J, Hiraki T, Takezawa N 1998 Is foreign exchange risk priced in the Japanese stock market *Journal of Financial and Quantitative Analysis* **33** pp 361 – 382.

4200. Chow E H, Chen H L 1998 The determinants of foreign exchange rate exposure: Evidence on Japanese firms *Pacific-Basin Finance Journal* **6** (1/2) pp 153 – 174.

4201. Clark P B, Macdonald R 1998 Exchange rates and economic fundamentals: A methodological comparison of BEERS and FEERS *IMF Working Paper WP/98/67* IMF USA.

4202. Covrig V, Melvin M 1998, 2002 Asymmetric information and price discovery in the FX market: Does Tokyo know more about the yen? *Typescript* Arizona State University, *Journal of Empirical Finance* **9** pp 271 – 285.

4203. Eddelbuttel D, McCurdy T 1998 The impact of news on foreign exchange rates: Evidence from high frequency data *Typescript* University of Toronto Canada.

4204. Edison H (February) 1998 On foreign exchange intervention: An assessment of the US experience *Typescript* Board of Governors of the Federal Reserve System USA.

4205. Fleming J, Kirby C, Ostdiek B 1998 Information and volatility linkages in the stock, bond, and money markets *Journal of Financial Economics* **49** pp 111 – 137.

4206. Garfinkel J, Nimalendran M 1998 Market structure and trader anonymity: An analysis of insider trading *Working Paper* Loyola University of Chicago University of Florida USA.

4207. George E 1998 Exchange rates: An intractable aspect of monetary policy *Bank of England Quarterly Bulletin* (May 1998) **38** no 2.

4208. Hansch O, Naik N, Viswanathan S 1998 Do inventories matter in dealership markets? Evidence from the London stock exchange *Journal of Finance* **53** pp 1623 – 1656.

4209. Hau H 1998 Competitive entry and endogenous risk in the foreign exchange market *Review of Financial Studies* **11** pp 757 – 788.

4210. Hau H, Killeen W, Moore M (July) 2000, 2002a The Euro as an international currency: Explaining puzzling first evidence from the foreign exchange markets *CEPR Discussion Paper no 2510* CEPR, *Journal of International Money and Finance* **21** (3) pp 351 – 383.

4211. Hau H, Killeen W, Moore M (April) 2002b Euro's forex role: How has the Euro changed the foreign exchange market? *Economic Policy* pp 151 – 191.

4212. Hau H, Rey H (December) 2002 Exchange rates, equity prices, and capital flows *NBER Working Paper 9398* NBER USA.

4213. Hau H, Rey H 2003 Can portfolio rebalancing explain the dynamics of equity returns, equity flows, and exchange rates? *American Economic Review*.

4214. He J, Ng L K 1998 The foreign exchange exposure of Japanese multinational corporations *Journal of Finance* **53** (2) pp 733 – 753.

4215. Helpman E, Sadka E (editors) 1998 Contemporary economic policy: Essays in honor of Assaf Razin *Cambridge University Press* Cambridge U.K.

4216. Hong Kong Monetary Authority 1998 Strengthening of currency board arrangements in Hong Kong *Quarterly Bulletin November* pp 1 – 5.

4217. Isard P, Faruqee H 1998 Exchange rate assessment: Extensions of the macroeconomic balance approach *IMF Occasional Paper no 167* IMF Washington USA.

4218. Isard P, Faruqee H, Kincaid G R, Fetherston M 2001 Methodology for current account and exchange rate assessments *IMF Occasional Paper no 209* International Monetary Fund Washington USA.

4219. Kanas A 1998 Testing for a unit root in ERM exchange rates in the presence of structural breaks: Evidence from the boot-strap *Applied Economics Letters* **5** pp 407 – 410.

4220. Lee R 1998 What is an exchange? The automation, management and regulation of financial markets *Oxford University Press* Oxford UK.

4221. Litterman R, Winkelmann K (January) 1998 Estimating covariance matrices *Goldman Sachs Risk Management Series*.

4222. Lui Y - H, Mole D 1998 The use of fundamental and technical analyses by foreign exchange dealers: Hong Kong evidence *Journal of International Money and Finance* **17** pp 535 – 545.

4223. Menkhoff L 1998 The noise trading approach — Questionnaire evidence from foreign exchange *Journal of International Money and Finance* **17** pp 547 – 564.

4224. Gehrig Th, Menkhoff L 2000, 2004 The use of flow analysis in foreign exchange: Exploratory evidence *Typescript* Department of Economics University of Freiburg Germany, *Journal of International Money and Finance* **23** (4) pp 573 – 594.

4225. Mende A, Menkhoff L (March) 2003 Different counterparties, different foreign exchange trading? The perspective of a median bank.

4226. Mende A, Menkhoff L 2006 Profits and speculation in intra-day foreign exchange trading *Journal of Financial Markets* **9** (3) pp 223 – 245.

4227. Menkhoff L, Taylor M P 2007 The obstinate passion of foreign exchange professionals: Technical analysis, *Warwick Economic Research Papers no 769* Department Of Economics The University of Warwick UK pp 1 – 61, *Journal of Economic Literature* **45** (4) pp 936 – 972.

4228. Frömmel M, Mende A, Menkhoff L 2008 Order flows, news, and exchange rate volatility *Journal of International Money and Finance* **27** (6) pp 994 – 1012.

4229. Menkhoff L, Schmeling M 2008 Local information in foreign exchange markets *Journal of International Money and Finance* **27** (8) pp 1383 – 1406.

4230. Menkhoff L, Osler C L, Schmeling M (May 11) 2010 Limit-order submission strategies under asymmetric information *CESIFO Working Paper no 3054* Category 7: Monetary Policy and International Finance Department of Economics Leibniz University Hannover Germany pp 1 – 42.

4231. Menkhoff L 2010 High-frequency analysis of foreign exchange interventions: What do we learn? *Journal of Economic Surveys* **24** (1) pp 85 – 112.

4232. Menkhoff L, Schmeling M 2010 Trader see, trader do: How do (small) FX traders react to large counterparties' trades? *Journal of International Money and Finance*.

4233. Miller K D, Reuer J J 1998 Asymmetric corporate exposures to foreign exchange rate changes *Strategic Management Journal* **19** (12) pp 1183 – 1191.

4234. Miville M, DiMillo J 1998 Survey of the Canadian foreign exchange and derivatives markets *Bank of Canada Review Winter 1995-1996* Financial Markets Department Bank of Canada Ottawa Canada.

4235. Nagayasu J 1998 Japanese effective exchange rates and determinants: Prices, real interest rates, and actual and optimal current accounts *IMF Working Paper WP/98/86* IMF USA.

4236. Neely Ch 1998 Technical analysis and the profitability of US foreign exchange intervention *Federal Reserve Bank of St Louis Review* **80** pp 3 – 17.

4237. Neely Ch J 2000a The practice of central bank intervention: Looking under the hood *Central Banking* **XI** pp 24 – 37.

4238. Neely Ch J 2000b Are changes in foreign exchange reserves well correlated with official intervention? *Economic Review of the Federal Reserve Bank of St Louis September/October* pp 17 – 30.

4239. Neely C J 2004 Forecasting foreign exchange volatility: Why is implied volatility biased and inefficient? And does it matter? *Working Paper 2002-017D* Federal Reserve Bank of St Louis MO USA.

4240. Neely Ch J 2005 An analysis of recent studies of the effect of foreign exchange intervention *Federal Reserve Bank of St Louis Review November/December* **87** (6) pp 685 – 717.

4241. Pesaran M, Hasem P M, Smith R P 1998 Structural analysis of co-integrating VARs *Journal of Economic Survey* **12** (5) pp 471 – 505.

4242. Portes R, Rey H 1998 The emergence of the Euro as an international currency *Economic Policy* **26** pp 307 – 332.

4243. Rey H 2001 International trade and currency exchange *Review of Economic Studies* **68** pp 443 – 464.

4244. Reiss P, Werner I 1998 Does risk sharing motivate interdealer trading? *Journal of Finance* **53** pp 1657 – 1704.

4245. Sarkar A, Tozzi M (January) 1998 Electronic trading on futures exchanges *Current Issues in Economics and Finance* Federal Reserve Bank of New York **4** (1).

4246. Viswanathan S, Wang J 1998 Why is interdealer trade so pervasive in financial markets? *Working Paper* Duke University North Carolina USA.

4247. Viswanathan S, Wang J D 2000 Inter-dealer trading in financial markets *Working Paper* Duke University Durham North Carolina USA.

4248. Vitale P 1998 Two months in the life of several gilt-edged market makers on the London Stock Exchange *Journal of International Financial Markets, Institutions, & Money* **8** pp 301 – 326.

4249. Vitale P 1999 Sterilized central bank intervention in the foreign exchange market *Journal of International Economics* **49** pp 245 – 267.

4250. Vitale P 2000 Speculative noise trading and manipulation in the foreign exchange market *Journal of International Money and Finance* **19** pp 689 – 712.

4251. Vitale P 2003 Foreign exchange intervention: How to signal policy objectives and stabilize the economy *Journal of Monetary Economics* **50** pp 841 – 870.

4252. Vitale P 2004 A guided tour of the market microstructure approach to exchange rate determination *CEPR Working Paper 4530*.

4253. Vitale P 2006 A market microstructure analysis of foreign exchange intervention *Working Paper series no 629 / MAY 2006* European Central Bank Frankfurt am Main

Germany ISSN 1561-0810 (print) ISSN 1725-2806 (online) pp 1 - 59 http://ssrn.com/abstract_id=902528 http://www.ecb.int .

4254. Yao J 1998 Market making in the interbank foreign exchange market *Salomon Center Working Paper #S-98-4* New York University NY USA.

4255. Alberola E, Cervero S G, Lopez H, Ubide A 1999 Global equilibrium exchange rates: Euro, Dollar, "ins", "outs", and other major currencies in a panel cointegration framework *IMF Working Paper WP/99/175* IMF USA.

4256. Bos Th, Fetherstone Th A (editors) 1999 Advances in pacific basin financial markets *JAI Press* Greenwich Connecticut USA.

4257. Carrera J 1999 Speculative attacks to currency target zones: A market microstructure approach *Journal of Empirical Finance* **6** pp 555 – 582.

4258. Chaboud A P, LeBaron B (July)1999 Foreign exchange market trading volume and Federal Reserve intervention *Typescript* Brandeis University, *Journal of Banking and Finance*.

4259. Chaboud A P, LeBaron B 2001 Foreign exchange market trading volume and Federal Reserve intervention *Journal of Futures Markets* **21** pp 851 – 860.

4260. Chaboud A P, Humpage O (January) 2005 An assessment of the impact of Japanese foreign exchange intervention: 1991-2004 *International Finance Discussion Paper 824* Board of Governors of the Federal Reserve System USA.

4261. Chaboud A P, Chernenko S, Wright J 2008 Trading activity and macroeconomic announcements in high-frequency exchange rate data *Journal of the European Economic Association* **6** pp 589 – 596.

4262. Chaboud A P, Chiquoine B, Hjalmarsson E, Vega C 2009 Rise of the machines: Algorithmic trading in the foreign exchange market *International Finance Discussion Papers 980* Federal Reserve Board of Governors USA.

4263. Chaboud A P, Chiquoine B, Hjalmarsson E, Loretan M 2009 Frequency of observation and the estimation of integrated volatility in deep and liquid financial markets *Federal Reserve Board of Governors* USA.

4264. Fiess N, MacDonald R 1999 Technical analysis in the foreign exchange market: A cointegration-based approach *Multinational Finance Journal* **3** (3) pp 147 – 172.

4265. Fiess N, MacDonald R 2002 Towards the fundamentals of technical analysis: Analyzing the information content of high, low and close prices *Economic Modelling* **19** (3) pp 353 – 374.

4266. Fleming M, Lopez J 1999 Heat waves, meteor showers, and trading volume: An analysis of volatility spillovers in the US Treasury market *Federal Reserve Bank of New York Staff Reports #82* NY USA.

4267. Freihube Th, Kehr C-H, J. Krahnen J, Theissen E 1999 Was leisten die kursmakler? Eine empirische untersuchung am beispiel der Frankfurter wertpapierbörse *Kredit und Kapital* **32** pp 426 – 460.

4268. Grammig J, Schiereck D, Theissen E 1999 Informationsbasierter aktienhandel über *IBIS Working Paper* Johann Wolfgang Goethe-Universität Frankfurt *Zeitschrift für betriebswirtschaftliche Forschung* Germany.

4269. Isard P, Razin A, Rose A (editors) 1999 *IMF* and *Kluwer* The Netherlands.

4270. Jeanne O, Rose A (April) 1999 Noise trading and exchange rate regimes *NBER Working Paper #7104* NBER USA, *Quarterly Journal of Economics*.

4271. Kandel E, Marx L 1999 Payments for order flow on Nasdaq *Journal of Finance* **54** pp 35 – 66.

4272. LeBaron B 1999 Technical trading rule profitability and foreign exchange intervention *Journal of International Economics* **49** pp 125 – 214.

4273. Marks J 1999 The impact of the internet on users and suppliers of financial services *Brookings-Wharton Papers on Financial Services* pp 147 – 185.

4274. Macey J, O'Hara M 1999 Globalization, exchange governance and the future of exchanges *Brookings-Wharton Papers on Financial Services* pp 1 – 32.

4275. Naik N Y, Neuberger A, Viswanathan S 1999 Trade disclosure regulation in markets with negotiated trades *Review of Financial Studies* **12** (4) pp 873 – 900.

4276. Naik N Y, Yadav P 1999 The effects of market reform on trading costs of public investors: Evidence from the London stock exchange *Working Paper* London Business School and University of Strathclyde UK.

4277. Payne R (January) 1999, 2003 Informed trade in spot foreign exchange markets: An empirical investigation *Typescript* London School of Economics and Political Science London UK, *Journal of International Economics* **61** (2) pp 307 – 329.

4278. Payne R, Vitale P 2003, A transaction level study of the effects of central bank intervention on exchange rates *Journal of International Economics* **61** pp 331 – 352.

4279. Moore M J, Payne R 2011 On the sources of private information in FX markets *Journal of Banking and Finance* **35** (5) pp 1250 – 1262.

4280. Love R, Payne R 2004, 2008 Macroeconomic news, order flows, and exchange rates *Typescript* London School of Economics and Political Science London UK, *Journal of Financial and Quantitative Analysis* **43** pp 467 – 488.

4281. Rigobon R (September) 1999 On the measurement of the international propagation of shocks *NBER Working Paper 7354* NBER USA.

4282. Saar G (July) 1999 Demand uncertainty and the information content of order flow *Typescript Johnson School* Cornell University NY USA.

4283. Scalia A, Vacca V (October) 1999 Does market transparency matter? A case study *Banca d'Italia Discussion Paper 359* Bank of Italy Rome Italy.

4284. Scalia A (August) 2004 Is foreign exchange intervention effective? Some micro-analytical evidence from Central Europe *Typescript* Bank of Italy Rome Italy.

4285. Scalia A 2008 Is foreign exchange intervention effective? Some micro-analytical evidence from the Czech Republic *Journal of International Money and Finance* **27** (4) pp 529 – 546.

4286. Shapiro C, Varian H 1999 Information rules *Harvard Business School Press* Harvard University USA.

4287. Theissen E 1999 Floor versus screen trading: Evidence from the German stock market *Département Finance et Economie Groupe HEC* France, *Johann Wolfgang Goethe-Universität* Frankfurt/Main Frankfurt Germany pp 1 – 37.

4288. Vayanos D 1999 Strategic trading and welfare in a dynamic market *Review of Economic Studies* **66** pp 219 – 234.

4289. Vayanos D 2001 Strategic trading in a dynamic noisy market *Journal of Finance* **56** pp 131 – 171.

4290. Wang J 1999 Asymmetric information and the bid-ask spread: An empirical comparison between automated order execution and open outcry auction *Journal of International Financial Markets, Institutions and Money* **9** pp 115 – 128.

4291. Aliber R Z, Chowdhry Bh, Yan Sh 2000 Transactions costs in the foreign exchange market *University Of Chicago, The Anderson Graduate School of Management UCLA, University of Arizona* USA http://www.escholarship.org/uc/item/4qw3p6rp .

4292. Ausloos M 2000 Statistical physics in foreign exchange currency and stock markets *Physica A* **285** pp 48 – 65.

4293. Baillie R, Humpage O, Osterberg W 2000 Intervention from an information perspective *Journal of International Financial Markets, Institutions and Money* **10** pp 407 – 421.

4294. Carlson J, Osler C 2000 Rational speculators and exchange rate volatility *European Economic Review* **44** pp 231 – 253.

4295. Carlson J (August) 2002 One minute in the life of the DM/$: Public information in an electronic market *Typescript* Purdue University USA.

4296. Ebrahim S K 2000 Volatility transmission between foreign exchange and money markets *Working Paper 2000-16* Bank of Canada Ottawa Canada.

4297. Eichengreen B, Mathieson D J 2000 The currency composition of foreign exchange reserves: Retrospect and prospect *IMF Working Paper 00/131* International Monetary Fund Washington DC USA.

4298. Greenspan A (October) 2000 Remarks [on e-finance] *9th Annual Financial Markets Conference of the Federal Reserve Bank of Atlanta* USA.

4299. Hüfner F P 2000 The British foreign exchange reserves puzzle *ZEW Discussion Papers no 00-55* ZEW - Zentrum für Europäische Wirtschaftsforschung / Center for European Economic Research http://hdl.handle.net/10419/24403 .

4300. Fujiwara I (June) 2000 Liquidity and leverage risk in the Dollar/Yen market *Typescript* Nuffield College Oxford UK.

4301. Kanas A 2000 Volatility spillovers between stock returns and exchange rate changes: International evidence *Journal of Business Finance and Accounting* **27** pp 447 – 467.

4302. Kaul A, Mehrotra V, Morck R 2000 Demand curves for stock do slope down: New evidence from an index weights adjustment *Journal of Finance* **55** pp 893 – 912.

4303. Kim S-J, Kortian T, Sheen J 2000 Identifying central bank intervention and exchange rate volatility – Australian evidence *Journal of International Financial Markets Institutions and Money* vol **10** pp 381 – 405.

4304. Kim S-J, Sheen J 2002 The determinants of foreign exchange intervention by central banks: Evidence from *Australia Journal of International Money and Finance* vol **21** pp 619 – 649.

4305. Kim S-J 2003 Monetary policy, foreign exchange intervention, and the exchange rate in a unifying framework *Journal of International Economics* **60** pp 355 – 386.

4306. Lane Ph R, and Milesi-Ferretti G M 2000 The transfer problem revisited: Net foreign assets and real exchange rates *Hong Kong Institute for Monetary Research Working Paper 6/2000*.

4307. Lo Ch-K (editor) 2000 Financial markets in Hong Kong *Springer* Singapore.

4308. Lee C, Swaminathan B 2000 Price momentum and trading volume *The Journal of Finance* **55** pp 2017 – 2069.

4309. Ma Y, Kanas A 2000 Testing nonlinear relationship among fundamentals and exchange rates in the ERM *Journal of International Money and Finance* **19** (1) pp 135 – 152.

4310. Ma Y, Tsang Sh-K, Yiu M S, Wai-Yip Alex Ho 2010 A target-zone model with two types of assets *Working Paper* Hong Kong Institute for Monetary Research Hong Kong P R China.

4311. Martin A D 2000 Exchange rate exposure of the key financial institutions in the foreign exchange market *International Review of Economics and Finance* **9** (3) pp 267 – 286.

4312. Martin A D, Mauer L J 2003 Exchange rate exposures of US banks: A cash flow-based methodology *Journal of Banking and Finance* **27** (5) pp 851 – 865.

4313. Martin A D, Mauer L J 2005 A note on common methods used to estimate foreign exchange exposure *Journal of International Financial Markets, Institutions & Money* **15** (2) pp 125 – 140.

4314. McCallum B (April) 2000 Theoretical analysis regarding a zero lower bound on nominal interest rates *NBER Working Paper no 7677* NBER USA.

4315. Melvin M, Yin X 2000 Public information arrival, exchange rate volatility, and quote frequency *Economic Journal* **110** pp 644 – 661.

4316. Melvin M, Melvin B P 2003 The global transmission of volatility in the foreign exchange market *The Review of Economics and Statistics* **85** pp 670 – 679.

4317. Melvin M, Taylor M P 2009 The crisis in the foreign exchange market *Journal of International Money and Finance* **28** (8) pp 1317 – 1330.

4318. Naranjo A, Nimalendran M 2000 Government intervention and adverse selection costs in foreign exchange markets *Review of Financial Studies* **13** pp 453 – 477.

4319. Ng A 2000 Volatility spillover effects from Japan and the US to the Pacific-Basin *Journal of International Money and Finance* **19** pp 207 – 233.

4320. Ramaswamy R, Samiei H (June) 2000 The Yen-Dollar rate: Have interventions mattered? *IMF Working Paper no 00/95* IMF USA.

4321. Rime D (March) 2000 Private or public information in foreign exchange markets? An empirical analysis *Typescript* University of Oslo Norway www.uio.no/~dagfinri .

4322. Rime D 2001 Private or public information in foreign exchange markets? An empirical analysis *Typescript Central Bank of Norway* Oslo Norway.

4323. Rime D 2003 New electronic trading systems in the foreign exchange markets *in* New economy handbook Jones D C (editor) chap 21 *Academic Press* San Diego USA pp 471 – 504.

4324. Akram Q, Rime D, Sarno L (February) 2005 Arbitrage in the foreign exchange market: Turning on the microscope *Working Paper no 2005/12* Norges Bank Norway.

4325. Rime D, Sarno L, Sojli E 2006 Exchange rate dynamics and order flow: A step beyond *Typescript* Warwick University UK.

4326. Rime D, Sarno L, Sojli E 2007 Exchange rate forecasting, order flow and macroeconomic information *Working Paper no 2* Norges Bank Norway.

4327. Rime D, Sarno L, Sojli E 2010 Exchange rate forecasting, order flow and macroeconomic information *Journal of International Economics* **80** (1) pp 72 – 88.

4328. Schwartz A J 2000 The rise and fall of foreign exchange market intervention *NBER Working Paper W7751* National Bureau of Economic Research Cambridge MA USA.

4329. US General Accounting Office (May) 2000 On-line trading: Better investor protection information needed on brokers' web sites *US General Accounting Office* USA.

4330. Allayannis G, Ofek E 2001 Exchange rate exposure, hedging, and the use of foreign currency derivatives *Journal of International Money and Finance* **20** pp 273 – 296.

4331. Anderson H, Vahid F 2001 Market architecture and nonlinear dynamics of Australian stock and futures indices *Australian Economic Papers* **40** (4) pp 541 – 566.

4332. Brandt M W, Edelen R, Kavajecz K A 2001 Liquidity in the US treasury market: Asymmetric information and inventory effects *Manuscript* Department of Finance The Wharton School University of Pennsylvania USA.

4333. Brown G W 2001 Managing foreign exchange risk with derivatives *Journal of Financial Economics* **60** pp 401 – 448.

4334. Cai J, Cheung Y - L, Lee R S K, Melvin M 2001 Once-in-a-generation Yen volatility in 1998: Fundamentals, intervention, and order flow *Journal of International Money and Finance* **20** (3) pp 327 – 347.

4335. Claessens S, Forbes K 2001 International and financial contagion *Springer*.

4336. Clark T, McCraken M 2001 Evaluating long-horizon forecasts *Working Paper no 01-14* Federal Reserve Bank of Kansas City USA.

4337. Collins S, Rodrik D (editors) 2001 Brookings Trade Forum 2001 *Brookings Institution Pres*s Washington DC USA.

4338. Corsetti G, Pesenti P, Roubini N (May) 2001 Does one Soros make a difference? The role of a large trader in currency crises *NBER Working Paper 8303*NBER USA, *Review of Economic Studies*.

4339. Coval J D, Shumway T 2001 Is sound just noise? *The Journal of Finance* **56** pp 1887 – 1910.

4340. Croushore D, Stark T 2001 A real-time data set for macroeconomists *Journal of Econometrics* **105** pp 111 – 130.

4341. Dacorogna M M, Gencay R, Mueller U A, Olsen R B, Pictet O V 2001 An introduction to high-frequency finance *Academic Press* San Diego CA USA.

4342. D'Souza C (March) 2001 A market-microstructure analysis of FX intervention in Canada *Working Paper* Financial Markets Division Bank of Canada Ottawa Canada.

4343. Duarte M, Stockman A (July) 2001 Rational speculation and exchange rates *NBER Working Paper 8362* NBER USA.

4344. Fischer S 2001 Exchange rate regimes: Is the bipolar view correct? Finance and Development 2/2001 *IMF* Washington USA http://www.imf.org.

4345. Galati G 2001 Why has global FX turnover declined? Explaining the 2001 triennial survey *BIS Quarterly Review* (December) pp 39 – 47.

4346. Griffin J M, Stulz R M 2001 International competition and exchange rate shocks: A cross-country industry analysis of stock returns *Review of Financial Studies* **14** pp 215 – 241.

4347. Guembel A, Sussman O 2001 Optimal exchange rates: A market-microstructure approach *Typescript* Said Business School Oxford University Oxford UK.

4348. Hong Y 2001 A test for volatility spillover with application to exchange rates *Journal of Econometrics* **103** pp 183 – 224.

4349. Lane P 2001 The new open-economy macroeconomics: A survey *Journal of International Economics* **54** pp 235 – 266.

4350. Montgomery J D, Popper H A 2001 Information sharing and central bank intervention in the foreign exchange market *Journal of International Economics* **55** pp 295 – 316.

4351. Moore M, Roche M (May) 2001 Liquidity in the forward exchange market *Journal of Empirical Finance* **8** pp 157 – 170.

4352. Moore M, Roche M 2002 Less of a puzzle: A new look at the forward forex market *Journal of International Economics* **58** pp 387 – 411.

4353. Rey H 2001 International trade and currency exchange *Review of Economic Studies* **68** pp 443 – 464.

4354. Sato S, Hawkins J 2001 Electronic finance: An overview of the issues *BIS Paper no 7* Switzerland.

4355. Sinn H, Westermann F (July) 2001 Why has the euro been falling? An investigation into the determinants of the exchange rate *NBER Working Paper 8352* NBER USA.

4356. Tse Y, Zabotina T 2001 Transaction costs and market quality: Open outcry versus electronic trading *Journal of Futures Markets* **21** (8) pp 713 – 735.

4357. Williamson R 2001 Exchange rate exposure and competition: Evidence from the automotive industry *Journal of Financial Economics* **59** pp 441 – 475.

4358. Yamaguchi Y 2001 The implications of electronic trading in financial markets *Committee on the Global Financial System* Bank for International Settlements ISBN 92-9131-613-X pp 1 – 37.

4359. Aguiar M (March) 2002 Informed speculation and the choice of exchange rate regime *Typescript* University of Chicago USA.

4360. Beine M et al 2002 Central bank intervention and foreign exchange rates: New evidence from FIGARCH estimations *Journal of International Money and Finance* **21**.

4361. Cavallo M, Perri F, Roubini N, Kisselev K (March) 2002 Exchange rate overshooting and the costs of floating *Typescript* New York University.

4362. Chari V, Kehoe P, McGrattan E 2002 Can sticky price models generate volatile and persistent real exchange rates? *Review of Economic Studies* **69** pp 533 – 564.

4363. Chari A 2006 Heterogeneous market making in foreign exchange markets: Evidence from individual bank responses to central bank interventions *Journal of Money, Credit, and Banking*.

4364. Chordia T, Roll R, Subrahmanyam A 2002 Order imbalance, liquidity, and market returns *Journal of Financial Economics* **65** (1) pp 111 – 130.

4365. Daníelsson J, Payne R 2002 Real trading patterns and prices in spot foreign exchange markets *Journal of International Money and Finance* **21** (2) pp 203 – 222.

4366. Danielsson J, Payne R, Luo J (July) 2002 Exchange rate determination and inter-market order flow effects *Typescript* Financial Markets Group London School of Economics and Political Science London UK.

4367. Daníelsson J, Love R 2006 Feedback trading *International Journal of Finance and Economics* **11** (1) pp 35 – 53.

4368. Daníelsson J, Payne R 2011 Liquidity determination in an order-driven market *European Journal of Finance*.

4369. Deutsche Bundesbank (January) 2002 Capital flows and the exchange rate *Deutsche Bundesbank Monthly Report* pp 15 – 26.

4370. Doyne F J, Joshi Sh 2002 The price dynamics of common trading strategies *Journal of Economic Behavior and Organization* **49** pp 149 – 171.

4371. Fatum R, Hutchison M 2002 Is foreign exchange intervention an alternative to monetary policy? Evidence from Japan *Working Paper 02-11* Department of Economics University of Copenhagen Denmark.

4372. Fatum R, King M R 2005 Rules versus discretion in foreign exchange intervention: Evidence from official Bank of Canada high-frequency data *Working Paper 05-06* Department of Economics University of Copenhagen Denmark.

4373. King M R, Sarno L, Sojli E 2010 Timing exchange rates using order flow: The case of the Loonie *Journal of Banking and Finance* **34** (12) pp 2917 – 2928.

4374. King M R, Rime D 2010 The $4 trillion question: What explains FX growth since the 2007 survey? *BIS Quarterly Review* **4** pp 27 – 42.

4375. King M R, Mallo C 2010 A user's guide to the Triennial Central Bank Survey of foreign exchange market activity *BIS Quarterly Review* **4** pp 71 – 83.

4376. King M R, Osler C, Rime D 2011 Instruments, players and the foreign exchange trading environment' *in* The handbook of exchange rates James J, Marsh I W, Sarno L (editors) *John Wiley & Sons Inc* USA.

4377. King M R, Osler C, Rime D 2011 Foreign exchange market structure, players and evolution *Working Paper no 2011 / 10* Norges Bank Oslo Norway ISSN 1502-8143 ISBN 978-82-7553-616-5 pp 1 – 47.

4378. King M R, Osler C, Rime D 2012 The market microstructure approach to foreign exchange: Looking back and looking forward *Working Paper 2012 / 54* Ivey Business School University of Western Ontario, Brandeis International Business School Brandeis University, Norges Bank Oslo Norway pp 1 – 40.

4379. Kantelhardt J, Zschiegner St, Koscielny-Bunde E, Havlin Sh, Bunde A, Stanley E 2002 Multifractal de-trended fluctuation analysis of nonstationary time series *Physica A* **316** pp 87 – 114.

4380. Galati G 2002 Settlement risk in foreign exchange markets and CLS Bank *BIS Quarterly Review* **4** pp 55 – 65.

4381. Girardin E, Horsewood N 2002 New transmission mechanisms and instruments of monetary policy at near zero interest rates: The case of Japan in the 1990s *in* Essays in honour of Maxwell J. Fry Dickinson D, Mullineux A (editors) *Edward Elgar* UK.

4382. Huang R, Cai J, Wang X 2002 Information-based trading in the interdealer market *Journal of Financial Intermediation* **11** pp 269 – 296.

4383. Jeanne O, Rose A 2002 Noise trading and exchange rate regimes *Quarterly Journal of Economics* **117** pp 537 – 569.

4384. Kaul A, Mehrotra V (June) 2002 Ticker or trade? How prices adjust in international markets *Typescript* University of Alberta Edmonton Alberta Canada.

4385. Obadan M I 2002 Towards exchange rate stability in Nigeria *The Year 2002 One-Day Seminar of the Nigerian Economic Society (NES)* Federal Palace Hotel Lagos Nigeria.

4386. Ryan S, Worthington A C 2002 Time-varying market, interest rate and exchange rate risk in Australian Bank portfolio stock returns: A GARCH-M approach *Discussion Papers and Working Paper Series no 112* School of Economics and Finance Queensland University of Technology Brisbane Queensland Australia.

4387. Abreu D, Brunnermeier M K 2003 Bubbles and crashes *Econometrica* **71** (1) pp 173 – 204.

4388. Aliber R Z, Chowdry B, Yan S 2003 Some evidence that a Tobin tax on foreign exchange transactions may increase volatility *European Finance Review* **7** pp 481 – 510.

4389. Bacchetta P, van Wincoop E (February) 2003 Can information dispersion explain the exchange rate disconnect puzzle? *NBER Working Paper 9498* NBER USA.

4390. Bergsten C F, Williamson J (editors) 2003 Dollar overvaluation and the World economy *Institute for International Economics* Washington DC USA.

4391. Bergsten C F, Williamson J (editors) 2005 Dollar adjustment: How far? Against what? *Institute of International Economics* Washington DC USA.

4392. Bodnar G M, Wong M H F 2003 Estimating exchange rate exposures: Issues in model structure *Financial Management* **32** pp 35 – 67.

4393. Burstein A T, Neves J, Rebelo S (September) 2003 Distribution costs and real exchange rate dynamics during exchange rate-based stabilizations *Journal of Monetary Economics* vol **50** (6) pp 1189 – 1214.

4394. Carpenter A, Wang J (January) 2003 Sources of private information in FX trading *Typescript* University of New South Wales Sydney Australia.

4395. Choi C, Baek S-G 2004 Exchange rate regimes and international reserves *Working Paper*.

4396. Derviz A 2003 Asset return dynamics and the FX risk premium in a decentralized dealer market *Typescript* Czech National Bank*, European Economic Review*.

4397. Dominguez K M E 2003 The market microstructure of central bank intervention *Journal of International Economics* **59** pp 25 – 45.

4398. Dominguez K M E, Panthaki F 2006 What defines “News” in foreign exchange markets? *Journal of International Money and Finance* **25** pp 168 – 198.

4399. Doukas J A, Hall P H, Lang L H P 2003 Exchange rate exposure at the firm and industry level *Financial Markets, Institutions & Instruments* **12** (5) pp 291 – 347.

4400. Fatum R, Hutchison M M 2003 Is sterilized foreign exchange intervention effective after all? An event study approach *Economic Journal* **113** pp 390 – 411.

4401. Fatum R, Hutchison M M 2006 Effectiveness of official daily foreign exchange market operations in Japan *Journal of International Money and Finance* **25** pp 199 – 219.

4402. Faust J, Rogers J H, Wright J H 2003 Exchange rate forecasting: The errors we've really made *Journal of International Economics* **60** (1) pp 35 – 59.

4403. Gordon M 2003 Estimates of time-varying term premia for New Zealand and Australia *Discussion Paper Series DP2003/06* Reserve Bank of New Zealand New Zealand.

4404. Humpage O F 2003 Government intervention in the foreign exchange market *Federal Reserve Bank of Cleveland Working Paper 0315* USA.

4405. Koutmos G, Martin A D 2003 Asymmetric exchange rate exposure: theory and evidence *Journal of International Money and Finance* **22** (3) pp 365 – 384.

4406. Laurenceson J, Chai J C H 2003 Financial reform and economic development in China *Edward Elgar* Cheltenham UK.

4407. Mathisen J 2003 Estimation of the equilibrium real exchange rate for Malawi *IMF Working papers 03/104* IMF USA.

4408. Okunev J, White D 2003 Do momentum-based strategies still work in foreign currency markets? *Journal of Financial and Quantitative Analysis* **38** pp 425 – 447.

4409. Peng W, Shu Ch, Chow K (May) 2003 The Yen exchange rate and net foreign assets *Research Department* Economic Research Division Hong Kong Monetary Authority pp 1 – 19.

4410. Rogers J M, Siklos P L 2003 Foreign exchange market intervention in two small open economies: The Canadian and Australian experience *Journal of International Money and Finance*.

4411. Spiegel M 2003 Japanese foreign exchange intervention *Federal Reserve Bank of San Francisco Newsletter* 2003-36 San Francisco USA.

4412. Westerhoff F H 2003 Market-maker, inventory control and foreign exchange dynamics *Quantitative Finance* **83** (3) pp 363 – 369.

4413. Wright J H 2003 Bayesian model averaging and exchange rate forecasts *International Finance Discussion Papers no 779* Board of Governors of the Federal Reserve System USA.

4414. Aitken M, Frino A, Hill A, Jarnecic E 2004 The impact of electronic trading on bid - ask spreads: Evidence from futures markets in Hong Kong, London, and Sydney *Journal of Futures Markets* **24** (7) pp 675 – 696.

4415. Anwar T 2004 Recent macroeconomic developments and implications for poverty and employment in Pakistan: The cost of foreign exchange reserve holdings in South Asia Australia South Asia *ASARC Working Paper 2004-14 2* Research Centre The Research School of Pacific & Asian Studies The National Institute of Economics and Business Australian National University Canberra Australia pp 1 – 23.

4416. Bacchetta P, van Wincoop E (January) 2004 A scapegoat model of exchange rate fluctuation *NBER Working Paper 10245* NBER USA.

4417. Bacchetta P, van Wincoop E 2006 Can information dispersion explain the exchange rate disconnect puzzle? *American Economic Review* **93** pp 552 – 576.

4418. Bartram S M 2004 Linear and nonlinear foreign exchange rate exposures of German nonfinancial corporations *Journal of International Money and Finance* **23** (4) pp 673 – 699.

4419. Bartram S M, Bodnar G M 2004 The foreign exchange exposure puzzle *Johns Hopkins University Working Paper* USA.

4420. Bartram S M, Brown G, Minton B 2005 Resolving the exposure puzzle: The many facets of exchange rate exposure *Working Paper* Lancaster University UK, University of North Carolina at Chapel Hill, Ohio State University USA.

4421. Bartram S M, Karolyi G A 2006 The impact of the introduction of the Euro on foreign exchange rate risk exposures *Journal of Empirical Finance* **13** (4-5) pp 519 – 549.

4422. Bhanumurthy N R 2004 Microstructures in the Indian foreign exchange market *Working Paper* Delhi University India.

4423. Brandt M W, Kavajecz K A 2004 Price discovery in the US treasury market: The impact of order flow and liquidity on the yield curve *Journal of Finance* **59** (6) pp 2623 – 2654.

4424. Breedon F, Vitale P 2004 An empirical study of information and liquidity effects of order flow on exchange rates *CEPR Working Paper 4586*.

4425. Cashin P, Cespedes L, Sahay R 2004 Commodity currencies and the real exchange rate *Journal of Development Economies* vol **75** pp 239 – 268.

4426. De Wet W A, Gebreselasie T G 2004 The exchange rate exposure of major commercial banks in South Africa *The African Finance Journal* **6** (2) pp 21 – 35.

4427. Dunne P, Hau H, Moore M (November) 2004 Macroeconomic order flows: Explaining equity and exchange rate returns *Typescript*.

4428. Fratzscher M 2004 Exchange rate policy strategies and foreign exchange interventions in the group of three economies in Dollar adjustment: How far? Against what? Bergsten C F, Williamson J (editors) *Institute for International Economics* Washington DC USA.

4429. Hahm J H 2004 Interest rate and exchange rate exposures of banking institutions in pre-crisis Korea *Applied Economics* **36** (13) pp 1409 – 1419.

4430. Hui Ch-H, Neely Ch J, Higbee J (November) 2004, (June) 2007 Foreign exchange volatility is priced in equities *Working Paper 2004-029F* Research Division Federal Reserve Bank of St Louis MO USA http://research.stlouisfed.org/wp/2004/2004-029.pdf pp 1 – 39.

4431. Hui Ch-H, Yeung V, Fung L, Lo Ch-F 2007 Valuing foreign currency options with a mean-reverting process: a study of Hong Kong dollar *Working Paper 08/2007* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China, Physics Department The Chinese University of Hong Kong P R China pp 1 – 28.

4432. Hui Ch-H, Fong T 2007 Is the Hong Kong dollar exchange rate "bounded" in the convertibility zone? *Working Paper 13/2007* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 - 14.

4433. Hui Ch-H, Genberg H, Chung T-K 2009 Liquidity, risk appetite and exchange rate movements during the financial crisis of 2007-2009 *Working Paper 11/2009* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 23.

4434. Kim K, Yoon S-M 2004 Multifractal features of financial markets *Physica A* **344** pp 272 – 278.

4435. Nagayasu J 2004 The effectiveness of Japanese foreign exchange interventions during 1991-2001 *Economics Letters* **84** pp 377 – 381.

4436. National Bank of Poland 2004 Turnover in the Polish foreign exchange and OTC derivatives markets in April 2004 Result Summary *National Bank of Poland* Warsaw Poland.

4437. National Bank of Poland 2007 Turnover in the Polish foreign exchange and OTC derivatives markets in April 2007 Result Summary *National Bank of Poland* Warsaw Poland.

4438. Reinhart C M, Rogoff K S 2004 The modern history of exchange rate arrangements: A reinterpretation *Quarterly Journal of Economics* **119** (1) pp 1 – 48.

4439. Rigobon R, Sack B 2004 The impact of monetary policy on asset prices *Journal of Monetary Economics* **51** pp 1553 – 1575.

4440. Simatele M 2004 Foreign exchange intervention and the exchange rate in Zambia *Economics Studies Goteborg University* Sweden.

4441. Akram Q F, Rime D, Sarno L 2005 Arbitrage in the foreign exchange market: Turning on the microscope *Working Paper ANO 2005/12* ISSN 0801-2504 (printed) 1502-8143 (online) Norges Bank Oslo Norway.

4442. Ates A, Wang G H 2005 Information transmission in electronic versus open-outcry systems: An analysis of US equity index futures markets *Journal of Futures Markets* **25** (7) pp 679 – 715.

4443. Bauwens L, Omrane W B, Giot P 2005 News announcements, market activity and volatility in the euro/dollar foreign exchange market *Journal of International Money and Finance* **24** (7) pp 1108 – 1125.

4444. Campa J M, Goldberg L S 2005 Exchange rate pass through into import prices *Review of Economics and Statistics November* **87** (4) pp 679 – 690.

4445. Campa J M, Goldberg L S 2006a Distribution margins, imported inputs, and the sensitivity of the CPI to exchange rates *NBER Working Paper no 12121* NBER USA.

4446. Campa J M, Goldberg L S 2006b Pass-through of exchange rates to consumption prices: What has changed and why? *Working Paper* Federal Reserve Bank of New York USA.

4447. Chui M, Gerlach S, Yu I W 2005 The recent appreciation of the Hong Kong dollar *BIS Papers* **23** pp 150 – 155.

4448. DeGrauwe P (editor) 2005 Exchange rate economics: Where do we stand? *MIT Press* Cambridge USA.

4449. Dueker M, Neely Ch J 2005 Can Markov switching models predict excess foreign exchange returns? *Journal of Banking and Finance*.

4450. Eichengreen B 2005 Sterling's past, Dollar's future: Historical perspectives on reserve currency competition *NBER Working Paper no 11336* National Bureau of Economic Research Cambridge MA USA.

4451. Fung J K W, Lien D, Tse Y M, Tse Y K 2005 Effects of electronic trading on the Hang Seng index futures market international *Review of Economics and Finance* **14** (4) pp 415 – 425.

4452. Hau H, Rey H 2005 Exchange rates, equity prices and capital flows *Review of Financial Studies*.

4453. Hull J C (2005-2006) Private communications on the electronic trading strategies in the foreign currencies exchange markets *Electronic Trade Laboratory Rotman School of Management* University of Toronto Canada.

4454. Hull J C 2012a Options, futures, and other derivatives *Prentice Hall* 8th edition ISBN: 0-13-216484-9 USA pp 1 – 816.

4455. Hull J C 2012b Risk management and financial institutions *John Wiley and Sons Inc* 3rd edition ISBN: 978-1-1182-6903-9 USA pp 1 – 672.

4456. Hull J C 2010 Fundamentals of futures and options markets *Prentice Hall* 7th edition ISBN-10: 0136103227 ISBN-13: 978-0136103226 USA pp 1 – 624.

4457. Inoue A, Kilian L 2005 In-sample or out-of-sample tests of predictability: Which one should we use? *Econometric Reviews* **23** (4) pp 371 – 402.

4458. Marsh I W, O'Rourke C 2005 Customer order flow and exchange rate movements: Is there really information content? *Working Paper* Cass Business School UK.

4459. Newsome J 2006 La criée ou le tout électronique: Le marché décide *Revue D'économie Financière* pp 1 – 5.

4460. Vaubel R 2005 Foreign exchange accumulation by emerging and transition economies: An explanation and critique *in* Aspekte der internationalen ökonomie El-Shagi M, Rübel G (editors) *Wiesbaden* Gabler Germany pp 77 – 84.

4461. Yu I-W, Fung L, Hongyi Ch (November) 2005 Exchange rate risk premiums in Hong Kong dollar: A signal-extraction approach *Research Department* Economic Research Division Hong Kong Monetary Authority pp 1 – 16.

4462. Alexander K, Barbosa A 2006 The impact of electronic trading and exchange traded funds on the effectiveness of minimum variance hedging *ICMA Centre Discussion Paper in Finance DP2006-04* University of Reading UK pp 1 – 23.

4463. Bacchetta P, van Wincoop E 2006 Can information heterogeneity explain the exchange rate determination puzzle? *American Economic Review* **96** (3) pp 552 – 576.

4464. Bayoumi T, Lee J, Jayanthi S 2006 New rates from new weights IMF Staff Papers vol **53** no 2 *IMF* Washington USA.

4465. Boyen M M, Van Norden S 2006 Exchange rates and order flow in the long run *Finance Research Letters* **3** (4).

4466. Cai F, Howorka E, Wongswan J 2006 Transmission of volatility and trading activity in the global interdealer foreign exchange market: Evidence from electronic broking services (EBS) data *International Finance Discussion Papers* Board of Governors of the Federal Reserve System USA.

4467. Cai F, Howorka E, Wongswan J 2008 Informational linkages across trading regions: Evidence from foreign exchange markets *Journal of International Money and Finance* **27** (8) pp 1215 – 1243.

4468. Cao H H, Evans M D D, Lyons R K 2006 Inventory information *Journal of Business* **79** (1) pp 325 – 364.

4469. Carlson J A, Lo M 2006 One minute in the life of the DM/US$: Public news in an electronic market *Journal of International Money and Finance* **25** (7) pp 1090 – 1102.

4470. Charlebois M, Sapp St 2006 Temporal patterns in foreign exchange returns and options *Richard Ivey School of Business* University of Western Ontario Canada.

4471. Chu C, Mo Y K, Wong G, Lim P 2006 Financial integration in Asia *Hong Kong Monetary Authority Quarterly Bulletin* **49**.

4472. Gilbert C, Rijken H 2006 How is futures trading affected by the move to a computerized trading system? Lessons from the LIFFE FTSE 100 contract *Journal of Business Finance and Accounting* pp 1 – 31.

4473. Jeon J, Oh Y, Yang D Y 2006 Financial market integration in East Asia: Regional or global *Asian Economic Papers* **5** (1) pp 73 – 89.

4474. Escribano A, Pascual R 2006 Asymmetries in bid and ask responses to innovations in the trading process *Empirical Economics* **30** pp 913 – 946.

4475. Kaul A, Sapp S 2006 Y2K fears and safe haven trading of the US dollar *Journal of International Money and Finance* **25** (5) pp 760 – 779.

4476. Killeen W P, Lyons R K, Moore M J 2006 Fixed versus flexible: Lessons from EMS order flow *Journal of International Money and Finance* **25** (4) pp 551 – 579.

4477. Kim S, Lee J W, Shin K 2006 Regional and global financial integration in East Asia *Working Paper Series 0602* Institute of Economic Research Korea University South Korea.

4478. Kočenda E, Valachy J 2006 Exchange rate volatility and regime change: Visegrad comparison *Journal of Comparative Economics* **34** (4) pp 727 – 753.

4479. Kočenda E, Kutan A M, Yigit T 2008 Fiscal convergence in the European Union *North-American Journal of Economics and Finance* **19** (3) pp 319 – 330.

4480. Kočenda E, Poghosyan T 2009 Macroeconomic sources of foreign exchange risk in new EU members *Journal of Banking and Finance* **33** (11) pp 2164 – 2173.

4481. LeBaron B 2006 Agent-based computational finance vol **2** Tesfatsion L, Judd K L (editors) *North-Holland Publishing Company / Elsevier* Amsterdam The Netherlands.

4482. Mende A 2006 09/11 on the USD/EUR foreign exchange market *Applied Financial Economics* **16** (3) pp 213 – 222.

4483. Mende A, Menkhoff L 2006 Profits and speculation in intra-day foreign exchange trading *Journal of Financial Markets* 9 (3) pp 223 – 245.

4484. Muller A, Verschoor W F C 2006 Foreign exchange risk exposure: Survey and suggestions *Journal of Multinational Financial Management* **16** (4) pp 385 – 410.

4485. Norouzzadeh P, Rahmani B A 2006 Multifractal de-trended fluctuation description of Iranian-US dollar exchange rate *Physica A* **367** pp 328 – 336.

4486. Pelham M 2006 Automation creates level playing field for FX traders *The Banker* (August) pp 30 – 33.

4487. Rodrik D 2006 The social cost of foreign exchange reserves *NBER Working Paper no 11952* National Bureau of Economic Research Cambridge MA USA.

4488. Sager M J, Taylor M P 2006 Under the microscope: The structure of the foreign exchange market *International Journal of Finance and Economics* **11** (1) pp 81 – 95.

4489. Starks L T, Wei K D 2006 Foreign exchange rate exposure and short-term cash flow sensitivity *Working Paper* University of Texas TX USA.

4490. Tabak B, Cajueiro D 2006 Assessing inefficiency in euro bilateral exchange rates *Physica A* **367** pp 319 – 327.

4491. Taylor A, Farstrup A 2006 Active currency management: Arguments, considerations, and performance for institutional investors *CRA Rogers Casey International Equity Research* Darien Connecticut USA.

4492. Taylor J B (September 14) 2006 Lessons from the recovery from the 'lost decade' in Japan: The case of the great intervention and money injection *ESRI international Conference* Cabinet Office Government of Japan Tokyo Japan.

4493. Tesfatsion L, Judd K L (editors) 2006 *North-Holland Publishing Company / Elsevier* Amsterdam The Netherlands.

4494. Wong A 2006 Analyzing foreign exchange reserve diversification *Institute for International Economics Working Paper* Institute for International Economics Washington DC USA.

4495. Adebiyi M A (July) 2007 An evaluation of foreign exchange intervention and monetary aggregates in Nigeria (1986 - 2003) *Department of Economics* University of Lagos Nigeria *MPRA Paper no 3817* pp 1 – 21 http://mpra.ub.uni-muenchen.de/3817/ .

4496. Barker W 2007 The global foreign exchange market: Growth and transformation *Bank of Canada Review* (Autumn) pp 3 – 12.

4497. Bhansali V 2007 Volatility and the carry trade *Journal of Fixed Income* **17** (3) pp 72 - 84.

4498. Broz J L, Frieden J, Weymouth S 2007 Exchange rate policy attitude: Direct evidence from survey data *IMF* Washington USA http://www.imf.org .

4499. Burnside C, Eichenbaum M S, Rebelo S 2007 The returns to currency speculation in emerging markets *American Economic Review Papers and Proceedings* **97** (2) pp 333 – 338.

4500. Burnside C, Eichenbaum M S, Rebelo S 2009 Understanding the forward premium puzzle: A microstructure approach *American Economic Journal: Macroeconomics* **1** (2) pp 127 – 154.

4501. Burnside C 2012 Carry trades and risk *in* The handbook of exchange rates James J, Marsh I W, Sarno L (editors) *John Wiley & Sons Inc.* USA.

4502. Canto B, Kräussl R 2007 Electronic trading systems and intraday non-linear dynamics: An examination of the FTSE 100 cash and futures returns *CFS Working Paper no 2007/20* Center for Financial Studies an der Johann Wolfgang Goethe-Universität Frankfurt am Main Leibniz Information Centre for Economics Germany pp 1 – 45 http://hdl.handle.net/10419/25521 www.ifk-cfs.de www.econstor.eu .

4503. Chi J, Tripe D, Young M (24-25 September) 2007 Do exchange rate affect the stock performance of Australian Banks? 12th Finsia-Melbourne Centre for Financial Studies Banking and Finance Conference Melbourne Australia.

4504. Christodoulou G, O'Connor P 2007 The foreign exchange and over-the-counter derivatives markets in the United Kingdom *Bank of England Quarterly Bulletin* (Q4) pp 548 – 563.

4505. Dreher A, Vaubel R 2007 Foreign exchange intervention and the political business cycle: A panel data analysis *KOF Working Paper 159* KOF Swiss Economic Institute Swiss Federal Institute of Technology Zurich Switzerland pp 1 – 28 www.kof.ethz.ch .

4506. DuCharme M 2007 First steps in foreign exchange transaction cost analysis *Journal of Performance Measurement* pp 19 – 27.

4507. Egstrup R, Fischer B D (4th Quarter) 2007 Foreign exchange and derivatives markets in 2007 Monetary review *Danmarks Nationalbank* Copenhagen Denmark
http:// www. natioanlbanken.dk/DNUK/Publications.nsf .

4508. Fleming M J, Mizrach B 2007 The microstructure of a US treasury ECN: The BrokerTec platform pp 1 – 40 http://ssrn.com/abstract=1433488 .

4509. Fung L, Yu I W 2007 Assessing the credibility of the convertibility zone of the Hong Kong dollar *Working Paper 19/2007* Hong Kong Monetary Authority Hong Kong P R China.

4510. Genberg H, He D, Leung F 2007 Recent performance of the Hong Kong dollar linked exchange rate system *Research Note 02/2007* Hong Kong Monetary Authority Hong Kong P R China.

4511. Genberg H, He D, Leung F 2007 The 'Three refinements' of the Hong Kong dollar linked exchange rate system two years on *Hong Kong Monetary Authority Quarterly Bulletin* **51** pp 5 – 11.

4512. Genberg H, Hui C H 2009 The credibility of the LINK from the perspective of modern financial theory *Working Paper 02/2009* Hong Kong Monetary Authority Hong Kong P R China.

4513. Hong Kong Monetary Authority (December) 2007 The foreign exchange and derivatives markets in Hong Kong *Hong Kong Monetary Authority Quarterly Bulletin* Hong Kong P R China.

4514. Jiang J, Ma K, Cai X 2007 Scaling and correlations in foreign exchange market *Physica A* **375** pp 274 – 280.

4515. Leung F, Ng P 2007 Is the Hong Kong dollar real exchange rate misaligned? *Working Paper 21/2007* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 31.

4516. Leung F, Ng P 2008 Impact of IPO activities on the Hong Kong dollar interbank market *Working Paper 2008-11* Hong Kong Monetary Authority Hong Kong P R China.

4517. Mitchell M, Pedersen L H, Pulvino T 2007 Slow moving capital *American Economic Review* 97 (2) pp 215 – 220.

4518. Pasquariello P 2007 Informative trading or just costly noise? An analysis of central bank interventions *Journal of Financial Markets* **10** pp 107 – 143.

4519. Sahminan S 2007 Effects of exchange rate depreciation on commercial bank failures in Indonesia *Journal of Financial Stability* **3** (2) pp 175 – 193.

4520. Scarlat E, Stan Cr, Cristescu C 2007 Self-similar characteristics of the currency exchange rate in an economy in transition *Physica A* **370** pp 188 – 198.

4521. Van Wincoop E, Tille C 2007 International capital flows *NBER Working Paper 33* NBER USA.

4522. Wong J, Wong E, Fong T, Choi K-F 2007 Testing for collusion in the Hong Kong banking sector *Working Paper 01/2007* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 20.

4523. Wong E, Wong J, Leung Ph 2008 The foreign exchange exposure of Chinese banks *Working Paper 07/2008* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 25.

4524. Yu I-W, Fung L, Tam Ch-S 2007 Assessing financial market integration in Asia equity markets *Working Paper 04/2007* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 37.

4525. Acemoglu D, Rogoff K, Woodford M (editors) 2008 NBER macroeconomics annual 2008 *University of Chicago Press* Cambridge MA USA.

4526. Baglioni A, Monticini A 2008 The intraday price of money: Evidence from the e-MID market *Journal of Money, Credit and Banking* **40** (7).

4527. Barndorff-Nielsen O E, Hansen P R, Lunde A, Shephard N 2008 Realized kernels in practice: Trades and quotes *Econometrics Journal* **4** pp 1 – 33.

4528. Bartram S M (January) 2008 What lies beneath: Foreign exchange rate exposure, hedging and cash flows *Department of Accounting and Finance* Management School Lancaster University UK MPRA Paper no 6661 pp 1 – 31 http://mpra.ub.uni-muenchen.de/6661/ .

4529. Beaupain R, Durré A 2008 The inter-day and intra-day patterns of the overnight market: Evidence from an electronic platform *ECB Working Paper no 988*.

4530. Berger D W, Chaboud A P, Chernenko S V, Howorka E, Wright J H 2008 Order flow and exchange rate dynamics in electronic brokerage system data *Journal of International Economics* **75** (1) pp 93 – 109.

4531. Brunnermeier M K, Nagel S, Pedersen L H 2008 Carry trades and currency crashes *NBER Macroeconomics Annual 2008* NBER USA.

4532. Burnside A C 2008 Comment on "Carry trades and currency crashes" *in* NBER chapters *NBER Macroeconomics Annual 2008* Acemoglu D, Rogoff K, Woodford M (editors) National Bureau of Economic Research Inc USA.

4533. Burnside A, Eichenbaum M, Kleshchelski I, Rebelo S, Hall L, Hall H 2008 Do Peso problems explain the returns to the carry trade? *NBER Working Papers 14054* NBER USA.

4534. Chinn M D, Moore M J 2008 Private information and the monetary model of exchange rates: Evidence from a novel data set http://www.imf.org/External/NP/seminars/eng/2007/macrofin/index.htm .

4535. Chinn M D, Moore M J 2011 Order flow and the monetary model of exchange rates: Evidence from a novel data set *Journal of Money, Credit and Banking* **43** (8) pp 1599 – 1624.

4536. Gagnon J E, Chaboud A 2008 What Can the Data Tell Us About Carry Trades in Japanese Yen? *FRB International Finance Discussion Paper 899*.

4537. Lam L, Fung L, Yu I-W 2008 Comparing forecast performance of exchange rate models *Working Paper 08/2008* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 23.

4538. Lien K 2008 Day trading and swing trading the currency market: Technical and fundamental strategies to profit from market moves *John Wiley and Sons* New York USA.

4539. Lindley R 2008 Reducing foreign exchange settlement risk *BIS Quarterly Review* **3** pp 53 – 65.

4540. Liu L-G, Tsang A 2008 Exchange rate pass-through to domestic inflation in Hong Kong *Working Paper 02/2008* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 23.

4541. Liu Q, Fung H-G, Tse Y 2008 An analysis of price linkages among DJIA index, futures, and exchange-traded fund markets *Review of Futures Markets*.

4542. Lo I, Sapp S G 2008 The submission of limit orders or market orders: The role of timing and information in the Reuters D2000-2 system *Journal of International Money and Finance* **27** (7) pp 1056 – 1073.

4543. Lo I, Sapp S G 2010 Order aggressiveness and quantity: How are they determined in a limit order market? *Journal of International Financial Markets, Institutions and Money* **20** (3) pp 213 – 237.

4544. Ramadorai T 2008 What determines transaction costs in foreign exchange markets? International *Journal of Finance and Economics* **13** (1) pp 14 – 25.

4545. Sebastião H M C V 2008 The partial adjustment factors of FTSE 100 stock index and stock index futures: The informational impact of electronic trading systems *Working Paper no 7* Faculdade de Economia da Universidade de Coimbra Portugal pp 1 – 48.

4546. Terada T, Higashio N, Iwasaki J 2008 Recent trends in Japanese foreign-exchange margin trading *Bank of Japan Review no 2008-E-3* Tokyo Japan.

4547. Adrian T, Etula E, Shin H S 2009 Risk appetite and exchange rates *Staff Report no 361* Reserve Bank of New York NY USA.

4548. Bacchetta Ph, Mertens E, Van Wincoop E 2009 Predictability in financial markets: What do survey expectations tell us? *Journal of International Money and Finance* **28** (3) pp 406 – 426.

4549. Baba N, Packer F 2009 From turmoil to crisis: Dislocations in the FX swap market before and after the failure of Lehman Brothers *BIS Working Papers 285* Bank for International Settlements Basel Switzerland.

4550. Brunnermeier M K, Nagel S, Pedersen L H 2009 Carry trades and currency crashes *in* NBER macroeconomics annual 2008 vol **23** Acemoglu D, Rogoff K, Woodford M (editors) *University of Chicago Press* Cambridge MA USA pp 313 – 347.

4551. Brunnermeier M, Crockett A, Goodhart C, Persaud A D, Shin H 2009 The fundamental principles of financial regulation *Geneva Reports on the World Economy 11* Preliminary Conference Draft www.voxeu.org/reports/Geneva11.pdf .

4552. Bubák V, Zikes F 2009 Distribution and dynamics of Central-European exchange rates: Evidence from intraday data *Czech Journal of Economics and Finance* **4** pp 334 – 359.

4553. Bubák V, Kočenda E, Žikeš F 2010 Volatility transmission in emerging European foreign exchange markets *CESIFO Working Paper no 3063* pp 1 – 36.

4554. De Zwart G, Markwat T, Swinkels L, van Dijk D 2009 The economic value of fundamental and technical information in emerging currency markets *Journal of International Money and Finance* **28** (4) pp 581 – 604.

4555. Ding L 2009 Bid-ask spread and order size in the foreign exchange market: An empirical investigation *International Journal of Finance and Economics* **14** (1) pp 98 – 105.

4556. Gallardo P, Heath A (March) 2009 Execution methods in foreign exchange markets *BIS Quarterly Review* pp 83 – 91.

4557. Gençay R, Gradojevic N 2009 Informed trading in an electronic foreign exchange market *The Rimini Centre for Economic Analysis* Bologna University Italy pp 1 – 12.

4558. Jiang Zh-Q, Zhou W-X 2009 De-trended fluctuation analysis of inter-trade durations *Physica A* **388** pp 433 – 440.

4559. Hattori M, Shin H S 2009 Yen carry trade and the subprime crisis *IMF Staff Papers* IMF USA.

4560. He D, Zhang Z, Wang H 2009 Hong Kong's financial market interactions with the US and mainland China in crisis and tranquil times *Working Paper 10/2009* Research Department Market Research Division Hong Kong Monetary Authority Hong Kong P R China pp 1 – 27.

4561. Heath A, Whitelaw J June 2011 Electronic trading and the Australian foreign exchange market *Bulletin* Reserve Bank of Australia Canberra Australia pp 41 – 48.

4562. McGuire P, von Peter G 2009 The US dollar shortage in global banking *BIS Quarterly Review (March 2009)* pp 47 – 63.

4563. Meyers R A (editor) 2009 Encyclopedia of complexity and system science *Springer.*

4564. Muller A, Verschoor W F 2009 The effect of exchange rate variability on US shareholder wealth *Journal of Banking & Finance* pp 1963 – 1972.

4565. Nolte I, Nolte S 2009 Customer trading in the foreign exchange market. Empirical evidence from an Internet trading platform *Working Paper 09-01* FERC.

4566. Nolte I, Nolte S 2011 How do individual investors trade? *European Journal of Finance* pp 1 – 27.

4567. Serban A F (November) 2009 Combining mean reversion and momentum trading strategies in foreign exchange markets *Department of Economics* West Virginia University USA pp 1 – 30.

4568. Simwaka K, Mkandawire L 2009 The efficacy of foreign exchange market intervention in Malawi *Reserve Bank of Malawi MPRA Paper no 15946* pp 1 – 39
http://mpra.ub.uni-muenchen.de/15946/ .

4569. Breedon F, Vitale P 2010 An empirical study of portfolio-balance and information effects of order flow on exchange rates *Journal of International Money and Finance* **29** (3) pp 504 – 524.

4570. Breedon F, Rime D, Vitale P 2011 Carry trades, order flow and the forward bias puzzle *Working Paper* Norges Bank Oslo Norway.

4571. Dunne P, Hau H, Moore M 2010 International order flows: Explaining equity and exchange rate returns *Journal of International Money and Finance* **29** (2) pp 358 – 386.

4572. Fukuda Sh-I, Kon Y (February) 2010 Macroeconomic impacts of foreign exchange reserve accumulation: Theory and international evidence ADBI *Working Paper Series no 197* Asian Development Bank Institute Tokyo Japan
http://www.adbi.org/working-paper/2010/02/19/3515.macroeconomic.impact.forex.reserve.accumulation/ .

4573. Liu L-Zh, Qian X-Y, Lu H-Y 2010 Cross-sample entropy of foreign exchange time series *Physica A* **389** pp 4785 – 4792.

4574. Maurer K-O, Schäfer C 2010 Analysis of binary trading patterns in Xetra *CFS Working Paper no 2010/12* Center for Financial Studies an der Johann Wolfgang Goethe-Universität Frankfurt am Main Leibniz Information Centre for Economics Germany pp 1 – 22.

4575. Nightingale S, Ossolinski C, Zurawski A December 2010 Activity in global foreign exchange markets *RBA Bulletin* pp 45 – 51.

4576. Pasquariello P 2010 Central bank intervention and the intraday process of price formation in the currency markets *Journal of International Money and Finance* **29** (6) pp 1045 – 1061.

4577. Yiu M S, Ho W-Y A, Ma Y, Tsang Sh-K 2010 An analytical framework for the Hong Kong dollar exchange rate dynamics under strong capital inflows *Working Paper 05/2010* Hong Kong Monetary Authority Hong Kong P R China.

4578. Diamond R (April 4) 2011 Banks' profits could take hit in fight over forex fees *Pensions and Investments*.

4579. Durčáková J 2011 Foreign exchange rate regimes and foreign exchange markets in transitive economies *Prague Economic Papers* **4** pp Prague Check Republic pp 309 – 328.

4580. Heimer R Z, Simon D 2011 Facebook finance: How social interaction propagates active investing *Working Paper* Brandeis University.

4581. Marzo M, Zagaglia P P 2011 Trading directions and the pricing of euro interbank deposits in the long run *Working Paper 11-20* The Rimini Centre for Economic Analysis University of Bologna Italy.

4582. Moore M J, Payne R 2011 On the sources of private information in FX markets *Journal of Banking and Finance* **35** (5) pp 1250 – 1262.

4583. Plantin G, Shin H H 2011 Carry trades, monetary policy and speculative dynamics *Princeton University* USA.

4584. Rafferty B 2011 Currency returns, skewness and crash risk *Working Paper* Duke University North Carolina Durham USA.

4585. Wang Y, Wu Ch, Pan Zh 2011 Multifractal de-trending moving average analysis on the US dollar exchange rates *Physica A* **390** pp 3512 – 3523.

4586. Banti Ch, Phylaktis K, Sarno L 2012 Global liquidity risk in the foreign exchange market *Journal of International Money and Finance* **31** (2) pp 267 – 291.

4587. James J, Marsh I W, Sarno L (editors) 2012 The handbook of exchange rates *John Wiley & Sons Inc* USA.

4588. Mancini L, Ranaldo A, Wrampelmeyer J 2012 Liquidity in the foreign exchange market: Measurement, commonality, and risk premiums *Journal of Finance*.

4589. Sheng A (February) 2012a Hong Kong's global challenge - How to build on success pp 1 – 3
http://www.fungglobalinstitute.org/en/hong-kong's-global-challenge-how-build-success ,
http://www.fungglobalinstitute.org/en/experts/andrew-sheng .

4590. Sheng A (August) 2012b The future of central banking *Fung Global Institute* Hong Kong P R China, *Central Banking Publications* London UK
http://riskbooks.com/the-future-of-central-banking ,
http://www.fungglobalinstitute.org/en/future-central-banking ,
http://www.fungglobalinstitute.org/en/experts/andrew-sheng .

4591. Sheng A (April) 2014 Invited speech *6th London School of Economics Asia Forum 2014* Kuala Lumpur Malaysia
http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20140403_1540_plenary4.mp4 .

4592. Trenca I, Plesoianu A, Căpusan R 2012 Multifractal structure of Central and Eastern European foreign exchange markets *Faculty of Economics and Business Administration Babes-Bolyai University, Faculty of Finance, Insurance, Banking and Stock Exchange Academy of Economic Studies* pp 784 – 790.

4593. Wang D-H, Yu X-W, Suo Y-Y 2012 Statistical properties of the Yuan exchange rate index *Physica A* **391** pp 3503 – 3512.

4594. Lassmann A 2013 Exchange rate transmission and export activity at the firm level *Working Paper 331* KOF Swiss Economic Institute Swiss Federal Institute of Technology Zurich Switzerland pp 1 – 39 www.kof.ethz.ch .

4595. Ingves St, Danielsson J, Goodhart Ch (July 7) 2014 Towards a safer and more stable financial system: Stefan Ingves *Public Lecture London School of Economics and Political Science* London UKhttp://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20140707_1830_saferStableFinancial.mp4 .

<u>Intellectual property investment, intellectual property exchange in finances:</u>

4596. Plant A 1934a The economic theory concerning patents for inventions *Economica* **1** pp 30 – 51.

4597. Plant A 1934b The economic aspects of copyright in books *Economica* **1** pp 167 – 195.

4598. Callmann R 1947 Unfair competition without competition?: The importance of the property concept in the law of trade-marks *University of Pennsylvania Law Review* **95** 443 ff.

4599. Penrose E T 1951 The economics of the international patent system *John Hopkins University Press* Baltimore MD USA.

4600. Prager F D 1952 The early growth and influence of intellectual property *Journal of the Patent Office Society* pp 106 – 110.

4601. Arrow K J 1962 Economic welfare and the allocation of resources for invention *in* The Rate and Direction of Inventive Activity: Economic and Social Factors Nelson R R (editor) *Princeton University Press* New York USA.

4602. Scherer F M 1965 Firm size, market structure, opportunity and the output of patented invention *American Economic Review* **55** pp 1097 – 1125.

4603. Scherer F M 1984 Innovation and growth: Schumpeterian perspectives *MIT Press* Cambridge MA USA.

4604. Baxter W F 1966 Legal restrictions on exploitation of the patent monopoly: An economic analysis *Yale Law Journal* **76** pp 267 – 370.

4605. Hurt, Schuchman 1966 The economic rationale for copyright *American Economic Review* **56** pp 421 – 432.

4606. Barzel Y 1968 Optimal timing of innovations *Review of Economics and Statistics* **50** pp 348 – 355.

4607. Nordhaus W 1969 Invention, growth and welfare: A theoretical treatment of technological change *MIT Press* Cambridge MA USA.

4608. Bowman W S Jr 1973 Patent and antitrust law: A legal and economic appraisal *University of Chicago Press* Chicago USA.

4609. Bowman W S Jr 1977 The incentive to invent in competitive as contrasted to monopolistic industries *Journal of Law and Economics* **20** pp 227 – 228.

4610. Taylor C, Silberston Z A 1973 The economic impact of the patent system *Cambridge University Press* Cambridge UK.

4611. Roffe P 1974 Abuses of patent monopoly: A legal appraisal *World Development* **2** (9) pp 15 – 26.

4612. Adelman M 1977 Property rights theory and patent-antitrust: The role of compulsory licensing *New York University Law Review* **52** pp 977 – 1013.

4613. Loury G C 1979 Market structure and innovation *Quarterly Journal of Economics* **93** (3) pp 395 – 410.

4614. Cheung St N S 1982 Property rights in trade secrets *Economic Inquiry* **20** pp 40 – 53.

4615. Gilbert R J, Newbery D M G 1982 Preemptive patenting and the persistence of monopoly *American Economic Review* **72** (3) pp 514 – 526.

4616. Gilbert R J, Newberry D M G 1984 Preemptive patenting and the persistence of monopoly: Reply *American Economic Review* **74** pp 251 – 253.

4617. Gilbert R J, Shapiro C 1990 Optimal patent protection and breadth *Rand Journal of Economics* **21** pp 106 – 112.

4618. Mackaay E 1982 Economics of information and law *Kluwer-Nijhoff* Boston USA pp 1 – 293.

4619. Mackaay E 1985a De hersenschim als rustig bezit - Moet Alle informatie voorwerp van eigendom zijn? (The chimera as peaceful possession - Must all information be the object of a property right?) *Computerrecht* pp 12 – 16.

4620. Mackaay E 1985b Informational goods - Property of a mirage *Computer Law and Practice* pp 193 – 197.

4621. Mackaay E 1986 Les Biens informationnels ou le droit de suite dans les idées (Informational goods or the droit de suite in ideas) *in* l'Appropriation de l'Information Chamoux J-P (editor) *Librairies Techniques* pp 26 – 48.

4622. Mackaay E 1989 Les droits intellectuels - Entre propriété et monopole (Intellectual property rights - Between property and monopoly *Journal des Économistes et des Études Humaines* **1**.

4623. Mackaay E 1990a Les droits intellectuels - Entre propriété et monopole (Intellectual property rights - Between property and monopoly) *Revue des Économistes et des Études Humaines* **1** pp 61 – 358.

4624. Mackaay E 1990b Economic incentives in markets for information and innovation *Harvard Journal of Law and Public Policy* **13** pp 867 – 909.

4625. Mackaay E 1991a La propriété est-elle en voie d'extinction? (Is property about to become extinct?) *in* Nouvelles Technologies et Propriété Mackaay E (editor) *Éd Thémis* Montréal Canada, *LITEC* Paris France pp 217 – 247.

4626. Mackaay E 1991b Economisch-filosofische aspecten van de intellectuele rechten (The economic and philosophical aspects of intellectual property rights) *in* De Sociaal Economische Rol van Intellectuele Rechten Van Hoecke M (editor) *Story-Scientia* Brussels Belgium pp 1 – 30.

4627. Mackaay E (editor) 1991c Nouvelles technologies et propriété (New technologies and property rights) *Éd. Thémis* Montréal Canada, *LITEC* Paris France.

4628. Mackaay E 1992a An economic view of information law *in* Information Law Towards the 21st Century Korthals Altes W F, Dommering E J, Hugenholtz P B, Kabel J J C (editors) *Kluwer* Deventer pp 43 – 65.

4629. Mackaay E 1992b Los derechos intelectuales: Entre propriedad y monopolio (Intellectual property rights: Between property and monopoly) *DAT Derecho de la Alta Tecnologia* pp 1 – 15.

4630. Mackaay E 1994 Legal hybrids: Beyond property and monopoly? *Columbia Law Review* **94** pp 2630 – 2643.

4631. Sieghart P 1982 Information technology and intellectual property *European Intellectual Property Review* pp 187 – 188.

4632. Ashford N A, Heaton G E 1983 Regulation and technological innovation in the chemical industry *Law and Contemporary Problems* **46** pp 109 – 157.

4633. Ashford N A et al 1985 Using regulation to change the market for innovation *Harvard Environmental Law Review* **9** pp 419 – 466.

4634. Baird D G 1983 Common law intellectual property and the legacy of International News Service v Associated Press *University of Chicago Law Review* **50** pp 411 – 429.

4635. Beck R L 1983 The prospect theory of the patent system and unproductive competition *Research in Law and Economics* **5** pp 193 – 209.

4636. Fudenberg D, Gilbert R J, Stiglitz J E, Tirole J 1983 Preemption, leapfrogging and competition in patent races *European Economic Review* **77** pp 176 – 183.

4637. Wright B D 1983 The economics of invention incentives: Patents prizes and research contracts *American Economic Review* ***73*** pp 691 – 707.

4638. Mossinghoff G J 1984 The importance of intellectual property protection in international trade *Boston College International and Comparative Law Review* **7** pp 235 – 249.

4639. Adelstein R P, Peretz St I 1985 The competition of technologies in markets for ideas: Copyright and fair use in evolutionary perspective *International Review of Law and Economics* **5** pp 209 – 238.

4640. Cave J 1985 A further comment on preemptive patenting and the persistence of monopoly *American Economic Review* **75** pp 256 – 258.

4641. David P A 1985 New technology, diffusion, public policy and industrial competitiveness center for economic policy research Stanford University California USA.

4642. David P A 1993 Intellectual property and the panda's thumb: patents, copyrights and trade secrets in economic theory and history *in* Global Dimensions of Intellectual Property Rights in Science and Technology *National Academy Press* Washington USA.

4643. Farrell J, Saloner G 1985 Standardization, compatibility and innovation *Rand Journal of Economics* **16** pp 70 – 83.

4644. Farrell J 1989 Standardization and intellectual property *Jurimetrics Journal* **30** pp 35 - 50.

4645. Gallini N, Winter R A 1985 Licensing in the theory of innovation *Rand Journal of Economics* **16** pp 237 – 252.

4646. Gallini N 1992 Patent policy and costly imitation *Rand Journal of Economics* **23** pp 52 – 63.

4647. Judd K 1985 On the performance of patents *Econometrica* **53** pp 567 – 585.

4648. Lehmann M 1985 The theory of property rights and the protection of intellectual and industrial property *IIC* **16** pp 525 – 540.

4649. Lehmann M 1989 Property and intellectual property - Property rights as restrictions on competition in furtherance of competition *IIC* **20** pp 1 – 15.

4650. Lehmann M 1990 La teoría de los 'property rights' y la protección de la propriedad intelectual e industrial (The property rights theory and the protection of intellectual and industrial property) Revista General de Derecho pp 544 – 545.

4651. Pendleton M 1985 Intellectual property, information- based society and a new international economic order - the policy options? *European Intellectual Property Review* pp 31 – 34.

4652. Samuelson P 1985 Creating a new kind of intellectual property: Applying lessons of the chip law to computer programs *Minnesota Law Review* **70** pp 471 – 531.

4653. Department of Trade and Industry 1986 Intellectual property and innovation *Her Majesty's Stationary Office* London UK pp 1 – 78.

4654. Hay F 1986 Canada's role in international negotiations concerning intellectual property *Laws Research in Law and Economics* **8** pp 239 – 263.

4655. Mansfield E 1986 Patents and innovation: An empirical study *Management Science* **32** pp 173 – 181.

4656. Priest G L 1986 What economists can tell lawyers about intellectual property: Comment on Cheung *Research in Law and Economics* **8** pp 19 – 24.

4657. Evenson R E, Putnam J D 1987 Institutional change in intellectual property rights *American Journal of Agricultural Economics* **69** pp 403 – 409.

4658. Menell P S 1987 Tailoring legal protection for computer software *Stanford Law Review* 39 pp 1329 – 1372.

4659. Menell P S 1989 An analysis of the scope of copyright protection for application programs *Stanford Law Review* **41** pp 1045 – 1104.

4660. Menell P S 1994 The challenges of reforming intellectual property protection for computer software *Columbia Law Review* **94** pp 2644 – 2654.

4661. Menell P S 1998 An epitaph for traditional copyright protection of network features of computer software *The Antitrust Bulletin* **43** pp 651 – 713.

4662. Rozek R P 1987 Protection of intellectual property rights: Research and development decisions and economic growth *Contemporary Policy Issues* **5** (3) pp 54 – 65.

4663. Sirilli G 1987 Patents and inventors: An empirical study *Research Policy* **16** pp 157 – 174.

4664. Tullock G 1987 Intellectual property *in* Direct protection of innovation Kingston W (editor) *Kluwer Academic Publishers* Dordrecht pp 171 – 199.

4665. Feinberg R M 1988 Intellectual property, injury and international trade **22** (2) *Journal of World Trade Law* pp 45 – 56.

4666. Feinberg R M, Rousslang D J 1990 The economic effects of intellectual property right infringements *Journal of Business* **63** pp 79 – 90.

4667. Hughes J 1988a The philosophy of intellectual property *Georgetown Law Journal* **77** 287 ff.

4668. Hughes J 1988b The Personality Interest of Artists and Inventors in Intellectual Property *Cardozo Arts and Entertainment Law Journal* pp 81 – 181.

4669. Merges R P 1988 Commercial success and patent standards: Economic perspectives on innovation *California Law Review* **76** pp 803 – 876.

4670. Merges R P 1992 Rent control in the patent district: Observations on the Grady-Alexander thesis *Virginia Law Review* **78** pp 359 – 381.

4671. Merges R P 1994a Intellectual property rights and bargaining breakdown: The case of blocking patents *Tennessee Law Review* **62** pp 75 – 106.

4672. Merges R P 1994b Of property rules, coase and intellectual property *Columbia Law Review* **94** pp 2655 – 2673.

4673. Merges R P 1995a Expanding boundaries of the law: Intellectual property and the costs of commercial exchange: A review essay *Michigan Law Review* **93** pp 1570 – 1615.

4674. Merges R P 1995b The economic impact of intellectual property rights: An overview and guide *Journal of Cultural Economics* **19** pp 103 – 117.

4675. Merges R P 1996a Contracting into liability rules: Intellectual property rights and collective rights organizations *California Law Review* **84** pp 1293 – 1393.

4676. Merges R P 1996b Property rights theory and the commons: The case of scientific research *Social Philosophy and Policy* **13** pp 144 – 167.

4677. Merges R P, Menell P S, Lemley M A, Jorde Th M 1997 Intellectual property in the new technological age *Aspen Publishers Inc* New York USA.

4678. Von Hippel E 1988 The sources of innovation *Oxford University Press* New York USA.

4679. Walker Ch E, Bloomfield M A (editors) 1988 Intellectual property rights and capital formation *University Press of America* Lanham MD USA pp 1 – 189.

4680. Beier F-K, Shricker G 1989 GATT or WIPO? New ways in the international protection of intellectual property *IIC Studies Weinheim* **11** VCH-Verlagsgesellschaft.

4681. Besen St M, Kirby Sh N 1989a Private copying, appropriability, and optimal copying royalties *Journal of Law and Economics* **32** pp 255 – 280.

4682. Besen St M, Kirby Sh N 1989b Compensating creators of intellectual property: Collectives that collect *Rand Corporation no R-3751-MF*.

4683. Besen St M, Raskind L J 1991 An Introduction to the Law and Economics of Intellectual Property *Journal of Economic Perspectives* **5** pp 3 – 27.

4684. Besen St M, Kirby Sh N, Salop St 1992 An economic analysis of copyright collectives *Virginia Law Review* **78** pp 383 – 411.

4685. Braga C A 1989 The economics of intellectual property rights and the GATT *Vanderbilt Journal of Transnational Law* **22** pp 243 – 264.

4686. Centner T J 1989 Invent in America: Pitfalls for foreigners under US intellectual property rights legislation *Canadian Journal of Agricultural Economics* **37** pp 1307 – 1313.

4687. Centner T J, White F C 1989 Protecting inventors' intellectual property rights in biotechnology *Western Journal of Agricultural Economics* **14** pp 189 – 199.

4688. Davis L N 1989 Skydd for innovationer (Protecting innovations) *in* Foretaget - et Kontraksekonomisk Analys Bjurggren P-O, Skogh G (editors) *SNS forlag* Stockholm Sweden pp 151 – 158.

4689. Krauss M I 1989 Property, monopoly and intellectual rights *Hamline Law Review* **12** pp 305 – 320.

4690. Palmer T G 1989 Intellectual property: A non-Posnerian law and economics approach *Hamline Law Review* **2** pp 261 – 304.

4691. Palmer T G 1990 Are patents and copyrights morally justified? The philosophy of property rights and ideal objects *Harvard Journal of Law and Public Policy* **13** pp 817 – 865.

4692. Brenner R 1990 Inventions et innovations dans le monde des affaires et des sciences (Inventions and innovations in business and science) *Études Françaises* **26** pp 51 – 78.

4693. Chin J, Grossman G M 1990 Intellectual property rights and north-south trade *in* The Political Economy of International Trade Jones R W, Krueger A O (editors) *Basil Blackwell Publishers* Cambridge MA USA.

4694. Easterbrook F H 1990 Intellectual property is still property *Harvard Journal of Law and Public Policy* **13** pp 108 – 118.

4695. Gilbert R, Shapiro C 1990 Optimal patent length and breadth *The RAND Journal of Economics* **21** pp 106 – 112.

4696. Klemperer P 1990 How Broad Should the Scope of Patent Protection Be? *RAND Journal of Economics* **21** pp 113 – 130.

4697. Rushing F W, Brown C G (editors) 1990 Intellectual property rights in science, technology and economic performance *Westview Press* Boulder CO USA pp 1 – 354.

4698. Caves R E, Whinston M D, Hurwitz M A 1991 Patent expiration, entry, and competition in the U.S. pharmaceutical industry *Brookings Papers on Economic Activity: Microeconomics* pp 1 – 48.

4699. Coombe R J 1991 Objects of property and subjects of politics: Intellectual property laws and democratic dialogue *Texas Law Review* **69** pp 1853 – 1880.

4700. Heald P J 1991 Federal intellectual property law and the economics of preemption *Iowa Law Review* **76** pp 959 – 1010.

4701. Scotchmer S 1991 Standing on the shoulders of giants: Cumulative research and the patent Law *Journal of Economic Perspectives* **5** pp 29 – 41.

4702. Segerstrom P 1991 Innovation, imitation and economic growth *Journal of Political Economy* **99** (4) pp 807 – 827.

4703. Teijl R, Holzhauer R W 1991 De toenemende complexiteit van het intellectuele eigendomsrecht. Een economische analyse (The growing complexity of intellectual property law. An economic analysis) *in* Rechtseconomische Verkenningen Deel **1** *Kluwer* Deventer.

4704. Deardorff A V 1992 Welfare effects of global patent protection *Economica* **59** pp 35 – 51.

4705. Gallini N 1992 Patent policy and costly imitation *RAND Journal of Economics* **23** pp 52 – 63.

4706. Gordon W J 1992a On owning information: Intellectual property and the restitutionary impulse *Virginia Law Review* **78** pp 149 – 281.

4707. Gordon W J 1992b Of harms and benefits: Torts, restitution and intellectual property *Journal of Legal Studies* **21** pp 449 – 482.

4708. Gordon W J 1993 A property right in self-expression: Equality and individualism in the natural law of intellectual property *Yale Law Journal* **102** pp 1533 – 1609.

4709. Grady M F, Alexander J I 1992 Patent law and rent dissipation *Virginia Law Review* **78** pp 305 – 350.

4710. Quaedvlieg A A 1992 The Economic Analysis of Intellectual Property Law *in* Information Law Towards the 21st Century Korthals Altes, W F, Dommering E J, Hugenholtz P B, Kabel J J C (editors) *Kluwer* Deventer pp 379 – 393.

4711. Aoki K 1993-1994 Authors, inventors and trademark owners: Private intellectual property and the public domain (parts 1 and 2) *Columbia - VLA Journal of Law and the Arts* **18** pp 197 – 267.

4712. Aoki K 1996a (Intellectual) property and sovereignty: Notes toward a cultural geography of authorship *Stanford Law Review* **48** pp 1293 – 1355.

4713. Aoki K 1996b Foreword: innovation and the information environment: Interrogating the entrepreneur *Oregon Law Review* **75** pp 1 – 18.

4714. Becker L C 1993 Deserving to own intellectual property *Chicago-Kent Law Review* **68** pp 609 – 629.

4715. Brennan T J 1993 Copyright, property and the right to deny *Chicago-Kent Law Review* **68** pp 675 – 714.

4716. Carter St L 1993 Does it matter whether intellectual property is property? *Chicago-Kent Law Review* **68** pp 715 – 723.

4717. Chou Chien-Fu, Shy O 1993 The crowding-out effects of long duration of patents *Rand Journal of Economics* **24** pp 304 – 312.

4718. Helpman E 1993 Innovation, imitation and intellectual property rights *Econometrica* **61** (6) pp 1247 – 1280.

4719. Kay J 1993 The economics of intellectual property rights *International Review of Law and Economics* **13** (4) pp 337 – 348.

4720. Lanjouw J 1993 Patent protection: Of what value and how long? *NBER Working Paper 4475* National Bureau of Economic Research USA.

4721. Lanjouw J, Pakes A, Putnam J 1998 How to count patents and value intellectual property: The uses of patent renewal and application data *Journal of Industrial Economics* **46** pp 405 – 432.

4722. Lanjouw J O, Schankerman M 2001a Characteristics of patent litigation: A window on competition *RAND Journal of Economics* 32 (1) pp 129 – 151.

4723. Lanjouw J O, Schankerman M December 2001b Enforcing intellectual property rights *STICERD - Economics of Industry Paper no EI/30* Suntory and Toyota International Centres for Economics and Related Disciplines LSE London UK pp 1 – 44

http://sticerd.lse.ac.uk/dps/ei/ei30.pdf .

4724. Nelson R R 1993 National innovation systems: A comparative analysis *Oxford University Press* New York USA.

4725. Nelson R R 1994 Intellectual property protection for cumulative systems technology *Columbia Law Review* **94** pp 2674 – 2677.

4726. Barlow J P 1994 The framework for economy of ideas: Rethinking patents and copyrights in the digital age *1994 WIRED* pp 83 – 97.

4727. Dam K W 1994 Economic underpinnings of patent law *Journal of Legal Studies* **23** pp 247 – 271.

4728. Dam K W 1995 Some economic considerations in the intellectual property protection of software *Journal of Legal Studies* **24** pp 321 – 377.

4729. Japan Institute of Intellectual Property 1994 Report on the basic issues concerning economic effects of intellectual property *Japan Institute of Intellectual Property* Tokyo Japan.

4730. Karjala D S 1994 Misappropriation as a third intellectual property paradigm *Columbia Law Review* **94** pp 2594 – 2609.

4731. Lerner J 1994 The importance of patent scope: An empirical analysis *RAND Journal of Economics* **25** pp 319 – 333.

4732. Lerner J 1995 Patenting in the shadow of competitors *Journal of Law and Economics* **38** pp 463 – 496.

4733. Lerner J 2002 150 years of patent protection *American Economic Review* **92** (2) pp 221 – 225.

4734. Chang H F 1995 Patent scope, antitrust policy and cumulative innovation *Rand Journal of Economics* **26** pp 34 – 57.

4735. Lemley M A 1995 Intellectual property and shrink-wrap licenses *Southern California Law Review* **68** 1239 ff.

4736. Gould D M, Gruben W C 1996 The role of intellectual property rights in economic growth *Journal of Development Economics* **48** (2) pp 323 – 350.

4737. Matutes C, Regibeau P, Rockett K 1996 Optimal patent design and the diffusion of innovations *Rand Journal of Economics* **27** pp 60 – 83.

4738. Brousseau E, Bessy Ch September 19 - 21 1997 The governance of intellectual property rights: Patents and copyrights in France and in the US *Inaugural Conference for the International Society for New Institutional Economics The Present and Future of the New Institutional Economics* Washington University St Louis Missouri USA.

4739. Ginarte J C, Park W G 1997 Determinants of patent rights: A cross-national study *Research Policy* **26** (3) pp 283 – 301.

4740. Grindley P, Teece D 1997 Managing intellectual capital: Licensing and cross-licensing in semiconductors and electronics *California Management Review* **39** (2) pp 8 – 41.

4741. Park W G, Ginarte J C 1997 Intellectual property rights and economic growth *Contemporary Economic Policy* **15** (1) pp 51 – 61.

4742. Besen St M 1998 Intellectual property *in* The New Palgrave Dictionary of Economics and the Law Newman P (editor) London Macmillan UK pp 348 – 351.

4743. Maskus K 1998 The international regulation of intellectual property *Review of World Economics (Weltwirtschaftliches Archiv)* **134** (2) pp 186 – 208.

4744. Schankerman M 1998 How valuable is patent protection: Estimates by technology field *RAND Journal of Economics* **29** (1) pp 77 – 107.

4745. Templeman S 1998 Intellectual property *Journal of International Economic Law* **1** (4) pp 603 – 606.

4746. Reilly R F, Schweihs R P 1999 Valuing intangible assets *Mc Graw Hill* USA.

4747. Reilly R F 2013 The intellectual property valuation process *License Journal* **33** (2).

4748. Gallini N, Scotchmer S 2001 Intellectual property: When is it the best incentive system? *in* Innovation Policy and the Economy vol **2** Jaffe A, Lerner J, Stern S (editors) *MIT Press* Cambridge MA USA.

4749. Hall B, Zeidonis R 2001 The patent paradox revisited: An empirical study of patenting in the semiconductor industry, 1979-1999 *RAND Journal of Economics* **32** (1) pp 101 – 128.

4750. McCalman Ph 2001 Reaping what you sow: An empirical analysis of international patent harmonization *Journal of International Economics* **55** pp 161 – 185.

4751. Sakakibara M, Branstetter L 2001 Do stronger patents induce more innovation? Evidence from the 1988 Japanese patent law reforms *RAND Journal of Economics* **32** (1) pp 77 – 100.

4752. Scotchmer S 2001 The political economy of intellectual property treaties *Working Paper no E01-305* Institute of Business and Economic Research University of California at Berkeley California USA.

4753. Shapiro C 2001 Navigating the patent thicket: Cross licenses, patent pools and standard setting *in* Innovation Policy and the Economy Jaffe A, Lerner J, Stern S (editors) *MIT Press* vol **1** pp119 – 150.

4754. Boldrin M, Levine D K 2002 The case against intellectual property *American Economic Review Papers and Proceedings* **92** pp 209 – 212.

4755. Boldrin M, Levine D K 2004 IER Lawrence Klein lecture: The case against intellectual monopoly *International Economic Review* **45** pp 327 – 350.

4756. Boldrin M, Levine D K 2004a Rent Seeking and Innovation *Journal of Monetary Economics* **51** pp 127 – 160.

4757. Boldrin M, Levine D K 2004b Intellectual property and the scale of the market" http://www.dklevine.com/papers/scale22.pdf .

4758. Boldrin M, Levine D K 2005 The economics of ideas and intellectual property *Proceedings of the National Academy of Sciences* **102** pp 1252 – 1256
http://www.dklevine.com/papers/pnas18.pdf .

4759. Boldrin M, Levine D K 2006 Growth and intellectual property *NBER Working Paper no 12769* National Bureau of Economic Research Inc USA pp 1 – 29.

4760. Boldrin M, Levine D K February 6 2007 Appropriation and intellectual property Levine's *Working Paper Archive from David K. Levine* pp 1 – 21
http://www.dklevine.com/papers/marginalip.pdf .

4761. Grossman G, Lai E 2002, 2004 International protection of intellectual property *CESifo Working Paper no 790* CESifo Group Munich Germany pp 1 – 43, *American Economic Review* **94** (5) pp 1635 – 1653 DOI: 10.1257/0002828043052312

http://www.cesifo-group.de/portal/page/portal/DocB ... -10/cesifo_wp790.pdf ,
https://www.aeaweb.org/articles?id=10.1257/0002828043052312 .

4762. Lasinski M J 2002 Valuation of intellectual property assets in mergers and acquisitions *in* Intellectual Property Assets in Mergers and Acquisitions Bryer L, Simensky M (editors) *John Wiley and Sons Inc* USA.

4763. Maskus K E 2000a Intellectual property rights in the global economy *The Institute for International Economics* Washington DC USA.

4764. Maskus K E 2000b Parallel imports *The World Economy* **23** pp 1269 – 1284.

4765. Deli Yang 2003 The development of intellectual property in China *World Patent Information* **25** (2) pp 131 – 142.

4766. Menell P S 2003 Intellectual property: General theories *Levine's Working Paper Archive from David K. Levine* pp 1 – 60
http://www.dklevine.com/archive/ittheory.pdf .

4767. Anson W, Suchy D P, Ahya C 2005 Fundamentals of intellectual property valuation. A Primer for identifying and determining value *The American Bar Association* Chicago USA.

4768. Anson W, Noble D, Samala J 2014 IP valuation: What methods are used to value intellectual property and intangible assets? *Licensing Journal* **34** (2).

4769. Blair R D, Cotter T F June 2005 Intellectual property *Cambridge University Press* Cambridge UK ISBN: 9780521540674 pp 1 – 316.

4770. Ramello G 2005 Intellectual property and the markets of ideas *Review of Network Economics* **4** (2) pp 1 – 20.

4771. Smith G, Parr R 2005 Intellectual property, valuation, exploitation and infringement damages *John Willey and Sons Inc* NY USA.

4772. Andersen B (editor) January 1 2006 Intellectual property rights *Edward Elgar Publishing* ISBN:9781845422691 pp 1 – 384
DOI: http://dx.doi.org/10.4337/9781847201522 ,
https://www.elgaronline.com/view/9781845422691.xml .

4773. Hisamitsu Arai 2006 Japan's intellectual property strategy *World Patent Information* **28** (4) pp 323 – 326.

4774. Kamiyama Sh, Sheehan J, Martínez C 2006 Valuation and exploitation of intellectual property OECD Science, Technology and Industry *Working Paper no 2006/5 OECD Publishing* Paris France.

4775. Kanwar S 2006 Innovation and intellectual property rights *Working Paper no 142* Centre for Development Economics Delhi School of Economics India pp 1 – 16 http://www.cdedse.org/pdf/work142.pdf .

4776. Kumar J 2006 Intellectual property securitization: How far possible and effective *Journal of Intellectual Property Rights* **11**.

4777. Lakdawalla D, Philipson T, Wang Y R October 2006 Intellectual property and marketing *NBER Working Paper no 12577* National Bureau of Economic Research Inc pp 1 – 53
http://www.nber.org/papers/w12577.pdf .

4778. Moerman L, Laan S V 2006 Accounting for intellectual property: Inconsistencies and challenges *Journal of Intellectual Property* **11** (4).

4779. Aoki R, Schiff A 2007 Intellectual property access systems *Discussion Paper no a491* Institute of Economic Research Hitotsubashi University Japan.

4780. Bittelmeyer C 2007 Patente und finanzierung am kapitalmarkt *Deutsche Universitätsverlag* Wiesbaden Germany.

4781. Holland C J, III V A, Reed D M, Lee S H, Kimmel A I, Peterson W K 2007 Intellectual property, patents, trademarks, copyrights and trade secrets *Entrepreneur Media* Canada.

4782. Holland C J, Benedikt M B 2014 Intellectual property valuation *in* Intellectual Property in Business Transactions Weakley S L (editor) *CEB* California USA.

4783. Malackowski J E, Cardoza K, Gray C, Conroy R 2007 The intellectual property marketplace: Emerging transaction and investment vehicles *Licensing Journal* **27** (2).

4784. Menell P S, Scotchmer S 2007 Intellectual property law Chapter 19 *in* Handbook of Law and Economics **2** pp 1473 – 1570 *Elsevier*.

4785. Parr R 2007 Royalty rates for licensing intellectual property *John Willey and Sons Inc* NY USA.

4786. Siegel D, Wright M 2007 Intellectual property: The assessment *Oxford Review of Economic Policy* **23** (4) pp 529 – 540.

4787. Van Caenegem W May 2007 Intellectual property law and innovation *Cambridge University Press* Cambridge UK ISBN: 9780521837576 pp 1 – 240.

4788. Ruder D S 2008 Strategies for investing in intellectual property *Beard Books* Washington USA.

4789. Kite S 2009 Intellectual property may soon be traded as its own asset class' *Securities Industry News* **8** (3).

4790. Blakeney M, Ullrich H, Stauder D, Llewelyn D, MacQueen H, Justice Jacob, Justice Laddie, Chisum D, Benyamini A, Straus J, Llewellyn M, McCarthy T, Dworkin G, Soltysinski S, Lahore J, Dufty A, Ricketson S, Ginsburg J, Christie A, Goldstein P, Tapper C

B, Kamina P December 2010 Intellectual property in the new millennium Vaver D, Bently L (editors) *Cambridge University Press* Cambridge UK ISBN: 9780521173414 pp 1 – 322.

4791. Flanagan A, Montagnani M L (editors) January 2010 Intellectual property law *Edward Elgar Publishing* ISBN:9781848446274 pp 1 – 232
DOI: http://dx.doi.org/10.4337/9781849806701 ,
https://www.elgaronline.com/view/9781848446274.xml .

4792. Baker S, Pak Yee Lee, Mezzetti C 2011 Intellectual property disclosure as threat *International Journal of Economic Theory* **7** (1) pp 21 – 38.

4793. Bryer L G, Lebson S J, Asbell M D 2011 Intellectual property strategies for the 21st - century corporation. A shift in strategic and financial management *John Wiley & Sons Inc* New Jersey USA.

4794. Cottier T, Veron P 2011 Concise international and European IP law *Kluwer Law International* The Netherlands.

4795. McCoy M D, Barton R, McDermott R 2011 Royalty rate trends in patent and technology licensing *Licensing Journal* **31** (3).

4796. Palfrey J October 2011 Intellectual property strategy, vol 1 *The MIT Press* Cambridge MA USA ISBN: 9780262516792 pp 1 – 192
https://mitpress.mit.edu/books/intellectual-property-strategy .

4797. Bouchoux D E 2012 Intellectual property. The law of trademarks, copyrights, patents and trade secrets 4th edition *Recording for Blind & Dyslexic* Princeton New Jersey USA.

4798. George A 2012 Constructing intellectual property *Cambridge University Press* New York USA.

4799. Rüther F 2012 Patent aggregating companies. Their strategies, activities and options for producing companies *Springer Gabler* Wiesbaden Germany.

4800. Boldrin M, Levine D 2013 What's intellectual property good for? *Revue Économique* **64** (1) pp 29 – 53.

4801. Frey C B 2013 Intellectual property rights and the financing of technological innovation *Edward Elgar Publishing* Cheltenham Massachusetts USA.

4802. Howe H, Griffiths J, Sherman B, Pottage A, Gangjee D, Bently L, Hudson A, Dreier Th, Breakey H, Balganesh Sh, Carrier M, Burrell R, Hudson E, Lametti D, Dussollier S September 2013 Concepts of property in intellectual property law *Cambridge University Press* Cambridge UK ISBN: 9781107041820 pp 1 – 330.

4803. Buchanan J, Wilson B 2014 An experiment on protecting intellectual property *Experimental Economics* **17** (4) pp 691 – 716.

4804. Fawcett D 2014 Valuation of intellectual property *Licensing Journal* **34** (5).

4805. Gervais D (editor) 2014 Intellectual property, trade and development 2nd edition *Oxford University Pres*s Oxford UK ISBN: 9780199684700 pp 1 – 416
https://global.oup.com/academic/product/intellectual-property-trade-and-development-9780199684700?cc=us&lang=en& .

4806. Guellec D, Ménière Y 2014 Markets for patents: Actors, workings and recent trends *in* Patent Markets in the Global Knowledge Economy Madiès T, Guellec D, Prager J-C *Cambridge University Press* New York USA.

4807. Sople V D 2014 Managing intellectual property. The strategic imperative 4th edition *PHI* Delhi India.

4808. Schmitt Fr 2016 Intellectual property and investment funds, vol 1 *EIKV-Schriftenreihe zum Wissens- und Wertemanagement* European Institute for Knowledge and Value Management (EIKV) Luxembourg pp 1 – 177
https://www.econstor.eu/bitstream/10419/126181/1/846558815.pdf ,
http://hdl.handle.net/10419/126181 .

4809. Searle N, Brassell M August 2 2016 Economic approaches to intellectual property *Oxford University Press* Oxford UK ISBN: 9780198736264 pp 1 – 280
https://global.oup.com/academic/product/economics-for-intellectual-property-lawyers-9780198736264?cc=us&lang=en&

Investment bank, financial capital investment vehicle in finances:

4810. Howell P L 1953 Competition in investment banking *Journal of Finance* **8** (2) pp 278 – 282.

4811. O'Donnell L J 1957 The financial operations of a regional investment bank *Journal of Finance* **12** (1) pp 84 – 85.

4812. Pontecorvo G 1958 Investment banking and security speculation in the late 1920's *Business History Review* **32** (02) pp 166 – 191.

4813. Mandelker G, Raviv A 1977 Investment banking: An economic analysis of optimal underwriting contracts *Journal of Finance* **32** (3) pp 683 – 694.

4814. Beatty R P, Ritter J 1986 Investment banking, reputation, and the underpricing of initial public offerings *Journal of Financial Economics* **15** (1-2) p 213 – 232.

4815. Smith C 1986 Investment banking and the capital acquisition process *Journal of Financial Economics* **15** (1-2) pp 3 – 29.

4816. Keeley M C, Pozdena R June 19 1987 Uniting investment and commercial banking *FRBSF Economic Letter*.

4817. McDonough W J 1987 Financial innovations and the merging of commercial and investment banking activities *Research Paper no 139* Proceedings Federal Reserve Bank of Chicago USA.

4818. Walter I, Smith R C 1989 Investment banking in Europe after 1992 *Research Paper no 243 Proceedings* Federal Reserve Bank of Chicago USA.

4819. Carter R B, Dark F H 1992 An empirical examination of investment banking reputation measures *The Financial Review* **27** (3) pp 355 – 374.

4820. Chemmanur Th, Fulghieri P 1994 Investment bank reputation, information production, and financial intermediation *Journal of Finance* **49** (1) pp 57 – 79.

4821. Sussman O 1994 Investment and banking: Some international comparisons *Oxford Review of Economic Policy* **10** (4) pp 79 – 93.

4822. Clark M A April 1995 Commercial & investment banking: should this divorce be saved? *The Regional Economist* pp 5 – 9.

4823. Brockman P 1996 The role of reputation capital in the investment banking industry *Applied Economics Letters* **3** (7) p 455 – 458.

4824. Ferguson R 1996 An investment banking perspective on the future of the financial system Chapter *in* The Future of the Financial System *Reserve Bank of Australia* ISBN: 0 642 25621 7
http://www.rba.gov.au/publications/confs/1996/pdf/ferguson-r.pdf .

4825. Grant K C 1999 Internet investment banking and corporate debt issuance *Journal of Applied Corporate Finance* **12** (2) pp 4-4.

4826. Parkan C, Ming-Lu Wu 1999 Measurement of the performance of an investment bank using the operational competitiveness rating procedure *Omega* **27** (2) pp 201 – 217.

4827. Fleuriet M 2000 The location of investment banking business *Revue d'Économie Financière* **57** (2) pp 119 – 126.

4828. Anand B N, Galetovic A P July 01 2001 Investment banking and security market development: Does finance follow industry? *IMF Working Paper no 01/90* International Monetary Fund USA pp 1 – 26
http://www.imf.org/external/pubs/cat/longres.aspx?sk=15169 .

4829. Smith R C 2001 Strategic directions in investment banking-a retrospective analysis *Journal of Applied Corporate Finance* **14** (1) pp 111 – 124.

4830. Perez C 2002 Technological revolutions and financial capital *Elgar* Cheltenham UK.

4831. Benveniste L M, Ljungqvist A, Wilhelm W J, Xiaoyun Yu 2003 Evidence of Information spillovers in the production of investment banking services *Journal of Finance* **58** (2) pp 577 – 608.

4832. Ritter J 2003 Investment banking and securities issuance Chapter 05 *in* Handbook of the Economics of Finance 1 part 1 *Elsevier* The Netherlands pp 255 – 306.

4833. Sirri E 2004 Investment banks, scope, and unavoidable conflicts of interest Economic Review issue Q 4 pp 23 – 35.

4834. Abor J Summer 2005 The role of investment banking in raising capital in Ghana *Journal of International Financial Analyst* **5**.

4835. Morrison A D, Wilhelm Jr W J 2007 Investment of banking: Past, present, and future *Journal of Applied Corporate Finance* **19** (1) pp 42 – 54.

4836. Morrison A D, Wilhelm Jr W J November 15 2008a Investment banking: Institutions, politics, and law *Oxford University Press* ISBN: 9780199544189 pp 1 – 360 https://global.oup.com/academic/product/investment-banking-9780199544189?cc=us&lang=en& .

4837. Morrison A D, Wilhelm W J 2008b The demise of investment banking partnerships: Theory and evidence *Journal of Finance* **63** (1) pp 311 – 350.

4838. Brambilla C, Piluso G 2008 Italian investment and merchant banking up to 1914: Hybridising international models and practices *Discussion Paper no 69* Dipartimento di Economia e Management (DEM) University of Pisa Italy pp 1 – 42 http://www.ec.unipi.it/documents/Ricerca/papers/2008-69.pdf .

4839. Chindris-Vasioiu O 2008 Investment banking *Revista Economica* **42-43** (5-6) pp 42 – 54.

4840. Jaffee Dwight M, Perlow M 2008 Investment banking regulation after Bear Stearns *The Economists' Voice* **5** (5) pp 1 – 5.

4841. Bodnaruk A, Massa M, Simonov A 2009 Investment banks as insiders and the market for corporate control *Review of Financial Studies* **22** (12) pp 4989 – 5026.

4842. Bao J, Edmans A 2011 Do investment banks matter for M&A returns? *Review of Financial Studies* **24** (7) pp 2286 – 2315.

4843. Blundell-Wignall A 2011 On the necessity of separating investment and commercial banking *Intereconomics: Review of European Economic Policy* **46** (6) pp 298 – 299.

4844. Rubinton B J June 17 2011 Crowdfunding: Disintermediated investment banking *MPRA Paper no 31649* University Library of Munich Germany pp 1 – 23 http://mpra.ub.uni-muenchen.de/31649/ .

4845. Ziman I 2011 RAD applied in the context of investment banking *Informatica Economica* **15** (4) pp 134 – 146.

4846. Berzins J, Liu C H, Trzcinka Ch 2013 Asset management and investment banking *Journal of Financial Economics* **110** (1) pp 215 – 231.

4847. Clare A, Gulamhussen M A, Pinheiro C 2013 What factors cause foreign banks to stay in London? *Journal of International Money and Finance* **32** issue C pp 739 – 761.

4848. Erkan Celik I, Hacioglu U, Dincer H 2013 Regional development and effects of investment banks *International Journal of Finance & Banking Studies* **2** (1) pp 48 – 57.

4849. Bonin H 2014 From history to present: Investment banking at stake *HAL*.

4850. Grullon G, Underwood Sh, Weston J P 2014 Comovement and investment banking networks *Journal of Financial Economics* **113** (1) pp 73 – 89.

4851. Balluck K 2015 Investment banking: Linkages to the real economy and the financial system *Bank of England Quarterly Bulletin* **55** (1) pp 4 – 22.

4852. Corovei E-A 2015 Investment banks and their role in the financial crisis *Annals - Economy Series* **2** pages 118 – 123.

4853. Mishra R 2016 Asian infrastructure investment bank: An assessment *India Quarterly: A Journal of International Affairs* **72** (2) pp 163 – 176.

Hedge fund, financial capital investment vehicle in finances:

4854. Brown S J, Harlow V, Starks L 1996 Of tournaments and temptations: An analysis of managerial incentives in the mutual fund industry *Journal of Finance* **51** (1) pp 85 – 110.

4855. Brown S J, Goetzmann W N, Park J 1997 Conditions for survival: Changing risk and the performance of hedge fund managers and CTAs SSRN-id58477.pdf.

4856. Brown S J, Goetzmann W N, Ibbotson R G 1998 Offshore hedge funds: survival & performance 1989-1995 *Journal of Business* vol **72** pp 91 – 117.

4857. Brown S J, Goetzmann W N, Ibbotson R G 1999 Offshore hedge funds: Survival and performance 1989-1995 *The Journal of Business* vol **72** no 1 pp 91 – 117.

4858. Brown S J, Goetzmann W, Park J 2000 Hedge funds and the Asian currency crisis *Journal of Portfolio Management* **26** (4) pp 95 – 101.

4859. Brown S J 2001 Hedge funds: Omniscient or just plain wrong *Pacific-Basin Finance Journal* **9** (4) pp 301 – 311.

4860. Brown S J, Goetzmann W N, Park J 2001 Careers and survival: Competition and risk in the hedge fund and CTA industry *Journal of Finance* **61** pp 1869 – 1886.

4861. Brown S J, Goetzmann W N 2001 Hedge funds with style Yale International Center for Finance Working Paper No 00-29.

_4862._ Brown S J, Goetzmann W N 2003 Hedge funds with style *The Journal of Portfolio Management* vol **29** (2) pp 101 – 112.

_4863._ Brown S J, Fraser Th L, Liang B 2008 Hedge fund due diligence: A source of alpha in a hedge fund portfolio strategy
http://ssrn.com/paper=1016904.

_4864._ Brown S J, Goetzmann W N, Liang B, Schwarz Ch 2008 Mandatory disclosure and operational risk: Evidence from hedge fund registration *Journal of Finance* **63** (6) pp 2785 – 2815.

_4865._ Brown S J, Goetzmann W N, Liang B, Schwarz C 2010 Trust and Delegation *NBER Working Papers no 15529* National Bureau of Economic Research New York USA.

_4866._ Fung W, Hsieh D A 1997a Empirical characteristics of dynamic trading strategies: The case of hedge funds *Review of Financial Studies* **10** (2) pp 275 – 307.

_4867._ Fung W, Hsieh D A 1997b Investment style and survivorship bias in the returns of CTAs: The information content of track records *Journal of Portfolio Management* **24** pp 30 – 41.

_4868._ Fung W, Hsieh D A 1999a A primer on hedge funds *Journal of Empirical Finance* **6** (3) pp 309 – 331.

_4869._ Fung W, Hsieh D A 1999b Is mean-variance analysis applicable to hedge funds? *Economic Letters* **62** (1) pp 53 – 58.

_4870._ Fung W, Hsieh D A 2000a Measuring the market impact of hedge funds *Journal of Empirical Finance* **7** pp 1 – 36.

_4871._ Fung W, Hsieh D A 2000b Performance characteristics of hedge funds and commodity funds: Natural vs. spurious biases *The Journal of Financial and Quantitative Analysis* vol **35** no 3 pp 291 -307.

_4872._ Fung W, Hsieh D A 2001 The risk in hedge fund strategies: Theory and evidence from trend followers *Review of Financial Studies* **14** (2) pp 313 – 341.

_4873._ Fung W, Hsieh D A 2002a Risk in fixed-income hedge fund styles *Journal of Fixed Income* **12** no 2 pp 6 – 27.

_4874._ Fung W, Hsieh D A 2002b Asset-based style factors for hedge funds *Financial Analyst Journal* **58** no 5 pp 16 – 27.

_4875._ Fung W, Hsieh D A 2002c Benchmarks of hedge funds performance: information content and measurement bias *Financial Analyst Journal* **58** no 1 pp 22 – 34.

_4876._ Fung W, Hsieh D A 2003 The risks in hedge fund strategies: alternative alphas and alternative betas in The new generation of risk management for hedge funds and private equity funds Jaeger L editor pp 72 – 87 *Euromoney Institutional Investor PLC* London UK.

4877. Fung W, Hsieh D A 2004a Extracting portable alphas from equity long-short hedge funds *Journal of Investment Management* **2** no 4 pp 57 – 75.

4878. Fung W, Hsieh D A 2004b Hedge fund benchmarks: A risk-based approach *Financial Analysts Journal* **60** no 5 pp 65 – 80.

4879. Fung W, Hsieh D A 2006a The risk in hedge fund strategies: theory and evidence from long/short equity hedge funds *Duke University Working Paper* Raleigh North Carolina USA.

4880. Fung W, Hsieh D A 2006b Hedge funds: An industry in its adolescence *Federal Reserve Bank of Atlanta Economic Review* **91** Fourth Quarter pp 1 – 33.

4881. Fung W, Hsieh D A 2007 Hedge fund replication strategies: Implications for investors and regulators *Financial Stability Review* **10** pp 55-66.

4882. Fung W, Hsieh D A, Naik N, Ramadorai T 2006 Hedge funds: Performance, risk and capital formation *American Finance Association 2007 Chicago Meetings Paper* (July 19) http://ssrn.com/abstract=778124 (November 17, 2006).

4883. Fung W, Hsieh D A, Naik N Y, Ramadorai T 2008 Hedge funds: Performance, risk, and capital formation *Journal of Finance* **63** no 4 pp 1777 – 1803.

4884. Ackermann C, Ravenscraft D 1998 The impact of regulatory restrictions on fund performance: A comparative study of hedge funds and mutual funds *University of North Carolina Dissertation* Raleigh North Carolina USA.

4885. Ackermann C, McEnally R, Ravenscrat D 1999 The performance of hedge funds: Risk, returns and incentives *Journal of Finance* vol **53** pp 833 – 874.

4886. Eichengreen B, Mathieson D, Chadha B, Jansen A, Kodres L, Sharma S 1998 Hedge funds and financial market dynamics *International Monetary Fund Occasional Paper 166* Washington DC USA.

4887. Mathieson D, Chadha B, Jansen A, Kodres L, Eichengreen B, Sharma S 1998 Hedge fund and financial market dynamics *International Monetary Fund.*

4888. Edwards F R 1999 Hedge funds and the collapse of long-term capital management *Journal of Economic Perspectives* **13** (2) pp 189-210.

4889. Edwards F 2000a Measuring the market impact of hedge funds *Journal of Empirical Finance* **7** no 1 pp 1 – 36.

4890. Edwards F 2000b Performance characteristics of hedge funds and commodity funds: Natural vs. spurious biases *Journal of Financial and Quantitative Analysis* **35** no 3 pp 291 – 307.

4891. Edwards F, Caglayan M O 2001 Hedge fund and commodity fund investment styles in bull and bear markets *The Journal of Portfolio Management* **27** (4) pp 97 – 108.

4892. Edwards F 2003 The risks in hedge fund strategies: Alternative alphas and alternative betas in The new generation of risk management for hedge funds and private equity funds Jaeger L editor pp 72 – 87 London: *Euromoney Institutional Investor PLC*.

4893. Edwards F R, Gaon S 2003 Hedge funds: What do we know? *Journal of Applied Corporate Finance* **15** no 4 pp 58 – 71.

4894. Edwards F 2004a Extracting portable alphas from equity long-short hedge funds *Journal of Investment Management* **2** no 4 pp 57 – 75.

4895. Edwards F 2004b Hedge fund benchmarks: A risk-based approach *Financial Analysts Journal* **60** no 5 pp 65 – 80.

4896. Edwards F R 2006 Hedge funds and investor protection regulation *Economic Review Fourth Quarter* pp 35 – 48.

4897. Liang B 1999 On the performance of hedge funds *Financial Analysts Journal* **55** (4).

4898. Liang B 2000 Hedge funds: The living and the dead *The Journal of Financial and Quantitative Analysis* vol **35** no 3 pp 309 – 326.

4899. Liang B 2003 Hedge fund returns: Auditing and accuracy *Journal of Portfolio Management* vol **29** pp 111 – 122.

4900. Liang B 2004 Alternative investments: CTAs, hedge funds, and funds-of-funds *Journal of Investment Management* **3** (4) pp 76 – 93.

4901. President's Working Group on Financial Markets 1999 Hedge funds, leverage, and the lessons of long-term capital management *Report of the President's Working Group on Financial Markets*.

4902. Stonham P 1999 Too close to the hedge: The case of long term capital management LP Part one: Hedge fund analytics *European Management Journal* vol **17** pp 282 – 289.

4903. Stonham P 1999 Too close to the hedge: The case of long term capital management Part two: Near-collapse and rescue *European Management Journal* vol **17** issue 4 pp 382 – 390.

4904. Tatsaronis K 2000 Hedge funds *BIS Quarterly Review* vol **61** pp 61 – 71.

4905. Agarwal V, Naik N Y 2000 Performance evaluation of hedge funds with option based and buy-and-hold strategies *Working Paper London Business School* London UK.

4906. Agarwal V, Naik N Y 2004 Risks and portfolio decisions involving hedge funds *Review of Financial Studies* **17** (1) pp 63 – 98.

4907. Asness C, Krail R, Liew J 2001 Do hedge funds hedge? *Journal of Portfolio Management* **28** (1) pp 6 – 19.

4908. Braga M D 2001 Problematiche di performance measurement nell'hedge fund industry *Lettera Newfin* vol **14** no 2.

4909. Brealy R, Kaplanis E 2001 Hedge funds and financial stability: An analysis of factor exposures *International Finance* **4** (2) pp 161 – 187.

4910. Cochrane J H 2001 Asset pricing *Princeton University Press* USA.

4911. Brooks C, Kat H M 2001 The statistical properties of hedge fund index returns and their implications for investors *Journal of Alternative Investments* vol **5** no 3 pp 26 – 44.

4912. Amin G S, Kat H M 2001 Hedge fund performance 1990-2000: Do the "money machines" really add value? *ISMA Centre Discussion Papers in Finance 2001 - 05* University of Reading UK pp 1 – 33.

4913. Amin G S, Kat H M 2003a Hedge fund performance 1990-2000: Do the "money machines" really add value? *Journal of Financial and Quantitative Analysis* **38** (2) pp 251 – 274.

4914. Amin G, Kat H 2003b Stocks, bonds, and hedge funds: Not a free lunch! *The Journal of Portfolio Management* **29** (4) pp 113 - 120.

4915. Kat H M 2003 10 things that investors should know about hedge funds *Institutional Investor* pp 72 – 81.

4916. Kat H M, Menexe F 2003 Persistence in hedge fund performance: the true value of track record *Journal of Alternative Investments* vol **5** pp 66 – 72.

4917. Kat H M, Palaro H P 2005 Hedge fund returns – You can make them yourself! *Journal of Wealth Management* vol **8** no 2 pp 62 – 68.

4918. Kat H M, Palaro H P 2006 Replication and evaluation of funds of hedge funds returns *in* Fund of hedge funds: Performance, assessment, diversification and statistical properties editor Gregoriou G Chapter 3 *Elsevier Press* The Netherlands.

4919. Kat H M 2007 Alternative routes to hedge fund return replication *Journal of Wealth Management* **10** (3) pp 25 – 39.

4920. Kat H M 2010 Things that investors should know about hedge funds *Institutional Investor* pp 72 – 81.

4921. Capocci D, Hübner G 2001 L'Univers des hedge funds, une perspective empirique *Revue Bancaire et Financiere September* no 6 pp 361 – 369.

4922. Capocci D, Corhay A, Hübner G 2003 Hedge fund performance and persistence in bull and bear markets *Department of Management* Universite de Liege Belgium 0402018.pdf pp 1 – 40.

4923. Capocci D, Hübner G 2004 An analysis of hedge fund performance *Journal of Empirical Finance* **11** (1) pp 55 – 89.

4924. Kramer D 2001 Hedge fund disasters: Avoiding the next catastrophe *Alternative Investment Quarterly* **1**.

4925. Goetzmann W N, Ingersoll J Jr, Ross S A 2001 High-water marks and hedge fund management contracts *Yale International Center for Finance Social Science Research Network* pp 1 – 41
http://papers.ssrn.com/paper.taf?abstract_id=270290 .

4926. Anson M J P 2002 Hedge funds Chapter 29 *in* Fabozzi F and Markowitz H editors The Theory and Practice of Investment Management *John Wiley & Sons Inc* New York USA.

4927. Favre L, Galeano J-A 2002 Mean –modified Value-at-Risk optimization with hedge funds *Journal of Alternative Investments* Fall vol **5**.

4928. Gimbel Th, Gupta F, Pines D 2002 Entry and exit: The lifecycle of a hedge fund 0407002.pdf pp 1 – 12 *Credit Suisse Asset Management* New York USA.

4929. Ineichen A 2002 Absolute returns: Risks and opportunities of hedge fund investing *John Wiley & Sons Inc* Hoboken New Jersey USA pp 1 – 514.

4930. Kao D 2002 Battle for alphas: Hedge funds versus long-only portfolios *Financial Analysts Journal* **58** pp 16 – 36.

4931. Locho R 2002 Hedge funds and hope *The Journal of Portfolio Management* **28** pp 92 – 99.

4932. Schneeweis, Kazemi, Martin 2002 Understanding hedge fund performance: Research issues revisited - Part I *Journal of Alternative Investments* Winter pp 6 – 22.

4933. Weismann A 2002 Informationless investing and hedge fund measurement bias *Journal of Portfolio Management* Summer pp 80 – 91.

4934. Amenc N, El Bied S, Martellini L 2003 Evidence of predictability in hedge fund returns *Financial Analysts Journal* **59** pp 32 – 46.

4935. Amenc N, Géhin W, Martellini L, Meyfredi J - Ch 2007 The myths and limits of passive hedge fund replication *EDHEC Risk and Asset Management Research Centre Working Paper*.

4936. Amenc N, Géhin W, Martellini L, Meyfredi J - Ch, Ziemann V 2008 Passive hedge fund replication - Beyond the linear case *EDHEC Risk and Asset Management Research Centre Working Paper.*

4937. Bacmann J F, Scholz S 2003 Alternative performance measures for hedge funds *AIMA Journal* vol **1** pp 1 – 9.

4938. Bares P-A, Gibson R, Gyger S 2003 Performance in the hedge fund industry: An analysis of short and long-term persistence *Journal of Alternative Investments* **6** pp 25 – 41.

4939. Geman H, Kharoubi C 2003 Hedge funds revisited: Distributional characteristics dependence structure, and diversification *Journal of Risk* **5** (4) pp 55 – 74.

4940. Gregoriou G N 2003 Performance appraisal of funds of hedge funds using data envelopment analysis *Journal of Wealth Management* **5** pp 88 – 95.

4941. Gregoriou G N, Gueyie J P 2003 Risk adjusted performance of funds of hedge funds using a modified Sharpe ratio *Journal of Wealth Management* vol **6** pp 77 – 83.

4942. Gregoriou G N, Sedzro K, Zhu J 2005 Hedge fund performance appraisal using data envelopment analysis *European Journal of Operational Research* **164** (2) p 555.

4943. Gregoriou G N, Kooli M, Rouah F 2008 Survival of strategic, market defensive, diversified and conservative fund of hedge funds: 1994-2005 *Journal of Derivatives and Hedge Funds* vol **13** no 4 pp 273 – 286.

4944. Goetzmann W N, Ingersoll J E Jr, Ross S A 2003 High-water marks and hedge fund management contracts *Journal of Finance* **58** pp 1685 – 1717.

4945. Gulko L 2003 Performance metrics for hedge funds *Journal of Alternative Investments* vol **5** pp 88 – 95.

4946. Ennis, Sebastian 2003 A critical look at the case for hedge funds Journal of Portfolio Management **29** (4) pp 103 – 123.

4947. Schneeweis, Kazemi, Martin 2003 Understanding hedge fund performance: Research issues revisited - Part II *Journal of Alternative Investments* Spring pp 8 – 30.

4948. Popova I, Morton D P, Popova E 2003 Optimal hedge fund allocation with asymmetric preferences and distributions *Technical Report* University of Texas at Austin Texas USA.

4949. Popova I, Morton D P, Popova E 2006, Efficient fund of hedge fund construction under downside risk measures *Journal of Banking and Finance* **30** pp 503 – 518.

4950. Morton D P, Popova E, Popova I 2006 Efficient fund of hedge funds construction under downside risk measures *Journal of Banking & Finance* vol **30** (2).

4951. Agarwal V, Naik N J 2004 Risk and portfolio decisions involving hedge funds The Review of Financial Studies pp 63 – 98.

4952. Aggarwal R K, Jorion Ph 2010 Hidden survivorship in hedge fund returns *Financial Analysts Journal* vol **66** no 2.

4953. Bacmann J F, Gawron G 2004 Fat tail risk in portfolios of hedge funds and traditional investments *Working Paper RMF Investment Management*.

4954. Baquero G, ter Horst J, Verbeek M 2004 Survival, look-ahead bias, and persistence in hedge fund performance *Journal of Financial and Quantitative Analysis* **40** pp 493 – 517.

4955. ter Horst J, Verbeek M 2004 Fund liquidation, self-selection and look-ahead bias in the hedge fund industry *ERIM Rep Ser Research in Management* ERS-2004-104-F&A pp 1 – 32.

4956. ter Horst J, Verbeek M 2007 Fund liquidation, self-selection and look-ahead bias in the hedge fund industry *Review of Finance* **11** no 4 pp 605 – 632.

4957. Boido C., Riente E 2004 Hedge fund: dal mito alla realtà *Banche e Banchieri* vol **5** pp 406 – 420.

4958. Abreu D, Brunnermeier M 2002 Synchronization risk and delayed arbitrage *Journal of Financial Economics* **66** (2-3) pp 341 – 360.

4959. Brunnermeier M, Nagel S 2004 Hedge funds and the technology bubble *Journal of Finance* **59** pp 2013 – 2040.

4960. Brunnermeier M 2009 Deciphering the liquidity and credit crunch of 2007-2008 *Journal of Economic Perspectives* **23** (1) pp 77 – 100.

4961. Brunnermeier M, Pedersen L H 2009 Market liquidity and funding liquidity *Review of Financial Studies* **22** (6) pp 2201 – 2238.

4962. Feiger G, Botteron P 2004 Should you, would you, could you invest in hedge funds? *Journal of Financial Transformation* vol **10** pp 57 – 65.

4963. Getmansky M, Lo A W, Mei S X 2004 Sifting through the wreckage: Lessons from recent hedge-fund liquidations *Journal of Investment Management* **2** pp 6 – 38.

4964. Getmansky M, Lo A W, Makarov I 2004 An econometric model of serial correlation and illiquidity in the hedge fund returns *Journal of Financial Economics* vol **74** pp 529 – 609.

4965. Hedges J R 2004 Size vs performance in the hedge fund industry *Journal of Financial Transformation* vol **10** April pp 14 – 17.

4966. Huber C, Kaiser H 2004 Hedge fund factors with option-like structures: Examples and explanations *Journal of Wealth Management* **7** pp 49 – 60.

4967. Nguyen-Thi-Thanh Huyen 2004 Hedge fund behavior: An ex-post analysis *Working Paper LEO* Université d'Orléans Rue de Blois BP 6739 45067 Orléans Cedex 2 France.

4968. Nguyen-Thi-Thanh Huyen 2006 On the use data envelopment analysis in hedge fund performance appraisal *Working Paper LEO* Université d'Orléans Rue de Blois BP 6739 45067 Orléans Cedex 2 France pp 1 – 34 http://halshs.archives-ouvertes.fr/halshs-00120292/fr/ .

4969. Lhabitant F S 2004 Hedge funds with quantitative insights *John Wiley & Sons Inc* USA.

4970. Posthuma N, van der Sluis P J 2004 A critical examination of historical hedge fund returns Chapter 13 *in* Intelligent hedge fund investing: Successfully avoiding pitfalls through better risk evaluation Schachter B editor *Risk Books*.

4971. Al-Sharkas A A 2005 The return in hedge fund strategies *International Journal of Business* vol **10** no 3.

4972. Alexander C, Dimitriu A 2005 Detecting switching strategies in equity hedge funds *Journal of Alternative Investments* **8** pp 7 – 13.

4973. Carretta A, Mattarocci G 2005 The performance evaluation of hedge funds: a comparison of different approaches using European data *MPRA Paper No. 4294* Munich University Munich Germany pp 1 – 18
http://mpra.ub.uni-muenchen.de/4294/ .

4974. Chan N T, Getmansky M, Haas Sh M, Lo A W 2005 Systemic risk and hedge funds *The Risks of Financial Institutions* (NBER Book Chapter).

4975. Chan N T, Getmansky M, Haas Sh M, Lo A W 2006 Do hedge funds increase systemic risk? *Economic Review - Federal Reserve Bank of Atlanta* **91** (4) pp 49 – 80.

4976. Chan N T, Getmansky M, Lo A W, Haas Sh M 2007 Systemic risk and hedge funds *in* Carey M, Stulz R editors The Risks of Financial Institutions and the Financial Sector *University of Chicago Press* Chicago IL USA.

4977. Cremers J, Kritzman M, Page S 2005 Optimal hedge fund allocation *Journal of Alternative Investments* pp 70 – 81.

4978. Danielsson J, Taylor A, Zigrand J P 2005 Highwaymen or heroes: Should hedge funds be regulated?: A survey *Journal of Financial Stability* **1** (4) pp 522 – 543.

4979. Do V, Faff R, Wickramanayake J 2005 An empirical analysis of hedge fund performance: The case of Australian hedge funds industry *Journal of Multinational Financial Management* **15** (4-5) pp 377 – 393.

4980. Eling M, Schuhmacher F 2005 Performance-Maße für Hedgefonds-Indizes – wie geeignetist die Sharpe-Ratio? *Absolut Report no 29* December pp 36 – 43.

4981. Jaeger L, Wagner C 2005 Factor modelling and benchmarking of hedge funds: Can passive investments in hedge funds deliver? *Journal of Alternative Investments* **8** pp 9 – 36.

4982. Hodder J E, Jackwerth J C 2005 Incentive contracts and hedge fund management *Finance Department* School of Business University of Wisconsin-Madison USA; Department of Economics University of Konstanz Germany pp 1 – 34.

4983. Malkiel B G, Saha A 2005 Hedge funds: Risk and return *Financial Analysts Journal* **61** pp 80 – 88.

4984. Kaiser D G, Kisling K 2005 Der einfluss von kapitalbindungsfristen auf die Sharpe ratio aktienbasierter hedgefonds-strategien *Absolut Report no 28 10/2005* pp 26 – 33.

4985. Garbaravičius T 2005 Hedge funds and their implications for financial stability *ECB Occasional Paper Series 34*.

4986. Garbaravičius T, Dierick F 2005 Hedge funds and their implications for financial stability *ECB Occasional Paper no 34* August.

4987. Gilroy B M, Lukas E 2005 Economic theory in everyday life: Hedge funds *MPRA Paper No. 22047* Munich University Munich Germany pp 1 – 6
http://mpra.ub.uni-muenchen.de/22047/.

4988. Gupta A, Lang B 2005 Do hedge funds have enough capital? A value-at-risk approach *Journal of Financial Economics* **77** pp 219-253.

4989. Azman-Saini W N W 2006 Hedge funds, exchange rates and causality: Evidence from Thailand and Malaysia *MPRA Paper No. 716* Munich University Munich Germany http://mpra.ub.uni-muenchen.de/716/ .

4990. Baba N, Goko H 2006 Survival analysis of hedge funds *Bank of Japan Working Paper Series no 06-E-05*.

4991. Heidorn T, Hoppe C, Kaiser D G 2006a Hedgefondszertifikate in Deutschland - marktanalyse, strukturierungsvarianten und eignung für privatinvestoren *BankArchiv Ausgabe 2/2006* Germany pp 87 – 97.

4992. Heidorn T, Hoppe C, Kaiser D G 2006b Konstruktion und verzerrungen von hedgefonds-indizes in Busack M, Kaiser D G Editors Handbuch Alternative Investments Band 1 *Gabler Verlag* Wiesbaden Germany.

4993. Jagannathan R, Malakhov A, Novikov D 2006 Do hot hands exist among hedge fund managers? An empirical evaluation *Working Paper 12015 National Bureau of Economic Research* Cambridge Massachusetts USA
http://www.nber.org/papers/w12015 .

4994. Sadka R 2006 Momentum and post-earnings-announcement drift anomalies: The role of liquidity risk *Journal of Financial Economics* **80** pp 309 – 349.

4995. Boyson N M, Stahel Ch W, Stulz R M 2006 Is there hedge fund contagion? *Working Paper 12090 National Bureau of Economic Research* Cambridge Massachusetts USA http://www.nber.org/papers/w12090 .

4996. Boyson N M, Stahel Ch W, Stulz R M 2008 Hedge fund contagion and liquidity *Working Paper 14068 National Bureau of Economic Research* Cambridge Massachusetts USA pp 1 – 46
http://www.nber.org/papers/w14068 .

4997. Izzo P 2006 Moving the market: Economists see hedge-fund risks — Survey indicates concerns about a lack of oversight, use of borrowed money *Wall Street Journal* Oct. 13 p C3.

4998. Jackwerth J C, Hodder J E 2006 Incentive contracts and hedge fund management *MPRA Paper No. 11632* Munich University Munich Germany http://mpra.ub.uni-muenchen.de/11632/ .

4999. Ding B, Shawky H A 2006 The performance of hedge fund strategies and the asymmetry of return distributions *Center for Institutional Investment Management Working Paper* Department of Finance School of Business University at Albany USA.

5000. Heidorn Th, Hoppe Ch, Kaiser D G 2006 Heterogenität von Hedgefondsindizes *Working paper series HfB - Business School of Finance & Management* no 71 pp 1 – 39 http://nbn-resolving.de/urn:nbn:de:101:1-2008082777 , http://hdl.handle.net/10419/27839 .

5001. Adrian T 2007 Measuring risk in the hedge fund sector *Federal Reserve Bank of New York Current Issues in Economics and Finance* **13** (3).

5002. Becker Ch, Clifton K 2007 Hedge fund activity and carry trades in Research on Global Financial Stability: The use of BIS International Financial Statistics *CGFS Publications no 29* pp 156 – 175.

5003. Bowler B 2007 The emergence of synthetic hedge funds http://www.pacificprospect.com/jsp_2007/downloads/a/2.pdf .

5004. Billio M, Getmansky M, Pelizzon L 2007 Dynamic risk exposure in hedge funds working paper *University of Massachusetts* Amherst MA USA.

5005. Kambhu J, Schuermann T, Stiroh K 2007 Hedge funds, financial intermediation, and systemic risk *FRBNY Economic Policy Review* **13** pp 1 – 18.

5006. Kosowski R, Naik N Y, Teo M 2007 Do hedge funds deliver Alpha? A Bayesian and Bootstrap analysis *Journal of Financial Economics* **84** pp 229 – 264.

5007. Li Sh, Linton O 2007 Evaluating hedge fund performance: a stochastic dominance approach *Discussion Paper no 591 London School of Economics* London UK ISSN 0956-8549-591 pp 1 – 20.

5008. Smedts K, Smedts J 2007 Dynamic investment strategies of hedge funds **AFI 0622** *Department of Accountancy, Finance and Insurance (AFI)* Faculty of Economics and Applied Economics Catholic University of Leuven Naamsestraat 69 3000 Leuven Belgium pp 1 – 27.

5009. Stulz R M 2007 Hedge funds: Past, present and future *Journal of Economic Perspectives* **21** (2) pp 175 – 194.

5010. Goltz F, Martellini L, Vaissié M 2007 Hedge fund indices: Reconciling investability and representativity *European Financial Management* vol **13** no 2 pp 257 – 286.

5011. King M R, Maier P 2007 Hedge funds and financial stability: The state of the debate *Bank of Canada* http://www.bankofcanada.ca/wp-content/uploads/2010/01/dp07-9.pdf .

5012. Hakamada T, Takahashi A, Yamamoto K 2007 Selection and performance analysis of Asia-Pacific hedge funds *Journal of Alternative Investments* vol **10** (3) pp 7 – 29.

5013. Hasanhodzic J, Lo A 2007 Can hedge-fund returns be replicated?: The linear case *Journal of Investment Management* **5** (2) pp 5 – 45.

5014. Papademos L D 2007 Monitoring hedge funds: A financial stability perspective *Banque de France Financial Stability Review* – Special Issue on Hedge Funds no 10 pp 113 – 125.

5015. Weber A A 2007 Hedge funds: A central bank perspective (Deutsche Bundesbank) *Banque de France Financial Stability Review* – special issue on hedge funds no 10 April 2007 pp 1 – 8.

5016. Billio M, Getmansky M, Pelizzon L 2008 Non-parametric analysis of hedge fund returns: New insight from high frequency date *Working Paper no 1 1 /WP/2008* ISSN 1827-336X Ca'Foscari University of Venice Italy pp 1 – 41.

5017. Carlson M, Steinman J 2008 Market conditions and hedge fund survival *Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs* Federal Reserve Board Washington DC USA.

5018. Lo A W 2008 Hedge funds, systemic risk, and the financial crisis of 2007-2008 *Written testimony prepared for the U.S. House of Representatives Committee on Oversight and Government Reform* November 13, 2008 Hearing on Hedge Funds.

5019. McGuire P, Tsatsaronis K 2008 Estimating hedge fund leverage *BIS Quarterly Review no 260*.

5020. Kazemi H B, Tu F, Li Y 2008 Replication and benchmarking of hedge funds *Journal of Alternative Investments* vol **11** no 2 pp 40 – 59.

5021. Nahum R, Aldrich D 2008 Hedge fund operational risk: meeting the demand for higher transparency and best practices *Journal of Financial Transformation* **22** pp 104 – 107.

5022. Gray W 2008 Information exchange and the limits of arbitrage *MPRA Paper No 11918* Munich University Munich Germany pp 1 – 30 http://mpra.ub.uni-muenchen.de/11918/ .

5023. Gray W, Kern A 2008 Fundamental value investors: Characteristics and performance *MPRA Paper No 12620* Munich University Munich Germany pp 1 – 30

http://mpra.ub.uni-muenchen.de/12620/ .

5024. Gupta B, Szado E, Spurgin W 2008 Performance characteristics of hedge fund replication programs *Journal of Alternative Investments* vol **11** no 2 pp 61 – 68.

5025. Roncalli Th, Teiletche J 2008 An alternative approach to alternative beta *Journal of Financial Transformation* Cass-Capco Institute Paper Series on Risk http://www.thierry-roncalli.com/#gauss_l17 .

5026. Roncalli Th, Weisang G 2008 Tracking problems, hedge fund replication and alternative beta *MPRA Paper No. 37358* Munich University Munich Germany pp 1 – 67 http://mpra.ub.unimuenchen.de/37358/ .

5027. de los Rios A D, Garcia R 2008 Assessing and valuing the non-linear structure of hedge fund returns *Bank of Canada Working Paper* Ottawa Canada.

5028. Jackwerth J C, Kolokolova O, Hodder J E 2008 Recovering delisting returns of hedge funds *MPRA Paper No. 11641* Munich University Munich Germany http://mpra.ub.uni-muenchen.de/11641/ .

5029. Takahashi A, Yamamoto K 2008 Hedge fund replication *CIRJE-F-592* Graduate School of Economics University of Tokyo Japan pp 1 – 32 http://www.e.u-tokyo.ac.jp/cirje/research/03research02dp.html .

5030. Hedge Fund Working Group & Hedge Fund Standards Board 2008 Hedge fund standards: Final report *Hedge Fund Working Group & Hedge Fund Standards Board* http://www.hfsb.org/files/final_report.pdf .

5031. Bollen N P B, Pool V K 2009 Do hedge fund managers misreport returns? Evidence from the pooled distribution *Journal of Finance* **64** (5) pp 2257 – 2288.

5032. Brophy D J, Ouimet P P, Sialm C 2009 Hedge funds as investors of last resort? *Review of Financial Studies* **22** pp 541 – 574.

5033. Füss R, Kaiser D G, Strittmatter A 2009 Measuring funds of hedge funds performance using quantile regressions: Do experience and size matter? *Journal of Alternative Investments* vol **12** no 2 pp 41 – 53.

5034. Heidorn T, Kaiser D G, Roder C 2009 The risk of funds of hedge funds: An empirical analysis of the maximum drawdown *Journal of Wealth Management* vol **12** no 2 pp 89 – 100.

5035. Jaeger L 2009 Alternative beta strategies and hedge fund replication 1st edition *John Wiley & Sons Inc* New York USA.

5036. Khanniche S 2009 Evaluation of hedge fund returns value at risk using GARCH models *Working Paper 2009 - 46* Groupama Asset Management 58 bis rue de la Boétie 75008 Paris;

Université de Paris Ouest Nanterre La Défense 200 Avenue de la République 92001 Nanterre CEDEX France pp 1 – 39
http://economix.u-paris10.fr/ .

5037. Minsky B, Obradovic M, Tang Q, Thapar R 2009 Applying a global optimization algorithm to fund of hedge funds portfolio optimization *MPRA Paper No 17099* Munich University Munich Germany pp 1 – 24
http://mpra.ub.uni-muenchen.de/17099/ .

5038. Mitra S 2009 An introduction to hedge funds *Cornell University* NY USA pp 1 – 25 http://arxiv.org/abs/0904.2731v2 .

5039. Xiong J, Idzorek T M, Chen P, Ibbotson R 2009 Impact of size and flows on performance for funds of hedge funds *Journal of Portfolio Management* **35** (4) pp 118 – 130.

5040. Gibson R, Wang S 2010 Hedge fund alphas: do they reflect managerial skills or mere compensation for liquidity risk bearing? *Research Paper Series N°08 – 37* Swiss Finance Institute University of Genève Switzerland pp 1 – 66
http://ssrn.com/abstract=1304541 .

5041. Heidorn Th, Kaiser D G, Voinea A 2010 The value-added of investable hedge fund indices *Working paper series Frankfurt School of Finance & Management no 141* ISSN: 14369753 pp 1 – 58
http://hdl.handle.net/10419/36695 .

5042. Maillard S, Roncalli Th, Teiletche J 2010 The properties of equally weighted risk contributions portfolios *Journal of Portfolio Management* **36** (4) pp 60 – 70.

5043. Ramadorai T 2010 Investor interest and hedge fund returns http://www.cepr.org/pubs/dps/DP8092 .

5044. Sadka R 2010 Liquidity risk and the cross section of hedge fund returns *Journal of Financial Economics* **98** (1) pp 54 – 71.

5045. Titman S 2010 The leverage of hedge funds *Finance Research Letters* **7** pp 2 – 7.

5046. Wallerstein E, Tuchschmid N S, Zaker S 2010 How do hedge fund clones manage the real world*? Journal of Alternative Investments* vol **12** no 3 pp. 51 – 60.

5047. Ang A, Gorovyy S, van Inwegen G B 2011 Hedge fund leverage *Working Paper 16801 National Bureau of Economic Research* Cambridge Massachusetts USA http://www.nber.org/papers/w16801 .

5048. Cao Y, Ogden J P, Tiu C I 2011 Who benefits from funds of hedge funds? A critique of alternative organizational structures in the hedge fund industry (i) *Business Excellence and Management* vol **1** issue 1 pp 19 – 36.

5049. Cao Y, Ogden J P, Tiu C I 2012 Who benefits from funds of hedge funds? A critique of alternative organizational structures in the hedge fund industry (i) *Business Excellence and Management* vol **2** issue 1 pp 5 – 20.

5050. Freed M F, McMillan B 2011 Investible benchmarks & hedge fund liquidity *MPRA Paper No 32226* Munich University Munich Germany pp 1 – 16
http://mpra.ub.uni-muenchen.de/32226/ .

5051. Piluso F, Amerise I L 2011 The asset allocation of hedge funds during the financial crisis: An empirical investigation *MPRA Paper No 28178* Munich University Munich Germany pp 1 – 26
http://mpra.ub.uni-muenchen.de/28178/ .

5052. Eychenne K, Martinetti S, Roncalli Th 2011 Strategic asset allocation Lyxor *White Paper Series **6***
www.lyxor.com .

5053. Ben Dor B A, Eisenthal-Berkovitz Y, Xu J 2012 A quantitative framework for analyzing the performance of an individual hedge fund vs its peers *Barclays Research* UK.

5054. Bruder B, Roncalli Th 2012 Managing risk exposures using the risk budgeting approach *Working Paper*
www.ssrn.com/abstract=2009778 .

5055. Chakravarty S, Deb S S 2012 Capacity constraints and the opening of new hedge funds pp 1 – 59.

5056. Chen J, Tindall M L 2012 Hedge fund dynamic market sensitivity *Occasional Paper 12-01* Financial Industry Studies Department Federal Reserve Bank of Dallas Texas USA.

5057. Chen J, Tindall M L 2013 Understanding hedge fund alpha using improved replication methodologies *Occasional Paper 13-02* Financial Industry Studies Department Federal Reserve Bank of Dallas USA pp 1 – 21.

5058. Roncalli Th, Weisang G 2012 Risk parity portfolios with risk factors *MPRA Paper No 44017* Munich University Munich Germany pp 1 – 32
http://mpra.ub.uni-muenchen.de/44017/ .

5059. Hassine M, Roncalli Th 2013 Measuring performance of exchange traded funds *MPRA Paper No. 44298* Munich University Munich Germany pp 1 – 32
http://mpra.ub.uni-muenchen.de/44298/ .

5060. Agarwal V, Vikram N, Sugata R 2013 Institutional investment and intermediation in the hedge fund industry *CFR Working Paper no 13-03* Centre for Financial Research (CFR)

Leibniz Information Centre for Economics University of Cologne Germany pp 1 – 56 http://hdl.handle.net/10419/76876 .

5061. European Commission Working Document of the Commission Services (DG Internal Market): Consultation paper on hedge funds http://ec.europa.eu/internal_market/consultations/docs/hedgefunds/consultation_paper_en.pdf .

5062. Stock J H, Watson M W 2002 Macroeconomic forecasting using diffusion indexes *Journal of Business and Economic Statistics* **20** no 2 pp 147 – 162.

5063. Jorion P 2003 Portfolio optimization with tracking-error constraints *Financial Analysts Journal* **59** (5) pp 70 – 82.

5064. Gikhman I I, Skorokhod A V 2004 The theory of stochastic processes II *Springer-Verlag* Berlin Germany.

5065. Avramov D 2004 Stock return predictability and asset pricing models *Review of Financial Studies* **17** 699 – 738.

5066. Avramov D, Wermers R 2006 Investing in mutual funds when returns are predictable *Journal of Financial Economics* **81** pp 339 – 377.

5067. Avramov D, Chordia T 2006 Predicting stock returns *Journal of Financial Economics* **82** pp 387 – 415.

5068. Hull J C 2005-2006 Private communications on investment portfolio allocation *Rotman School of Management* University of Toronto Ontario Canada.

5069. Hull J C 2010 Fundamentals of futures and options markets *Prentice Hall* 7th Edition ISBN-10: 0136103227 ISBN-13: 978-0136103226 USA pp 1 – 624.

5070. Hull J C 2012a Options, futures, and other derivatives *Prentice Hall* 8th Edition ISBN: 0-13-216484-9 USA pp 1 – 816.

5071. Hull J C 2012b Risk management and financial institutions *John Wiley and Sons Inc* 3rd Edition ISBN: 978-1-1182-6903-9 USA pp 1 – 672.

5072. Schnoor I 2005-2006 Private communications on risk management *Rotman School of Management* University of Toronto Canada.

5073. Schnoor I 2006 Comparable analysis and data manipulation tools *The Marquee Group* Toronto Canada pp 1 – 66.

5074. Basel Committee on Banking Supervision 2006 International convergence of capital measurement and capital standards: A revised framework *Bank for International Settlements (BIS)* Switzerland
http://www.bis.org/publ/bcbsca.htm .

5075. Basel Committee on Banking Supervision 2009 Principles for sound stress testing practices and supervision - final paper *Bank for International Settlements (BIS)* Switzerland http://www.bis.org/publ/bcbs155.htm .

5076. Scherer B 2007 Portfolio construction & risk budgeting 3rd edition *Risk Books*.

5077. Xiaohong Chen, Hansen L P, Carrasco M 2009 Nonlinearities and temporal dependence *CIRANO ISSN 1198-8177* pp 1 – 33.

5078. Caporin M, Ranaldo A, Santucci de Magistris P 2011 On the predictability of stock prices: A case for high and low prices *Swiss National Bank Working Paper 2011 - 11* Swiss National Bank Börsenstrasse 15 Zurich Switzerland ISSN 1660-7716 (printed version) ISSN 1660-7724 (online version) pp 1 – 34.

5079. Derman E September 2016 My life as a quant: Reflections on physics and finance pp 1 – 308 ISBN-13: 978-0470192733.

5080. Whitehead Ch September 23 2016 Private communication on capital investment, hedge funds, and corporate law *VIII International Economic Forum: Innovations Investments Kharkiv Initiatives* Kharkiv Ukraine.

<u>Pension fund investment, financial capital investment vehicle in finances:</u>

5081. MacIntosh M R 1976 The great pension fund robbery *Canadian Public Policy* **2** (2) pp 256 – 261.

5082. Sharpe W F June 1976 Corporate pension funding policy *Journal of Financial Economics* pp 183 – 193.

5083. Treynor J May 1977 The principles of corporate pension finance *Journal of Finance* pp 627 – 638.

5084. Winklevass H E 1977 Pension mathematics: With numerical fluctuations *Richard D Irwin Inc* USA.

5085. Bulow J I 1979 Analysis of pension funding under Erisa *NBER Working Paper no 402* National Bureau of Economic Research Inc USA.

5086. Bulow J I August 1982 What are corporate pension liabilities *Quarterly Journal of Economics* **97**.

5087. Bulow J I, Morck R, Summers L 1987 How does the market value unfunded pension liabilities? *in* Issues in Pension Economics Bodie Z, Shoven J, Wise D (editors) *University of Chicago Press* Chicago USA.

5088. Bodie Z Fall 1980 An innovation for stable real retirement income *The Journal of Portfolio Management* pp 5 – 13.

5089. Bodie Z, Light J O, Morck R, Taggart Jr R H 1987 Corporate pension policy: An empirical investigation *in* Issues in Pension Economics Bodie, Shoven, Wise (editors) *University of Chicago Press* Chicago USA.

5090. Bodie Z, Shoven J, Wise D (editors) 1987 Issues in pension economics *University of Chicago Press* Chicago USA.

5091. Bodie Z October 1988 Pension fund investment policy *NBER Working Paper no 2752* National Bureau of Economic Research Inc USA
http://www.nber.org/papers/w2752.pdf .

5092. Bodie Z, Kane A, Marcus A J 1989 Investments *Irwin* Homewood Illinois.

5093. Black F September—October 1980 The tax consequences of long run pension policy *Financial Analysts Journal* pp 17 — 23.

5094. Black F, Dewhurst M P Summer 1981 A new investment strategy for pension funds *Journal of Portfolio Management.*

5095. Feldstein M S, Seligman S 1981 Pension funding, share prices and national savings *Journal of Finance* **36** pp 801 – 824.

5096. Feldstein M S 1982 Private pensions as corporate debt *in* Changing Roles of Debt and Equity in Financing U.S. Capital Formation Friedman B (editor) *University of Chicago Press* Chicago USA.

5097. Feldstein M S, Morck R I 1983 Pension funding decisions, interest rate assumptions, and share prices *in* Financial Aspects of the U.S. Pension System Bodie Z, Shoven S (editors) *University of Chicago Press* Chicago USA pp 177 – 207.

5098. Frankfurter G M, Hill J M 1981 A normative approach to pension fund management *Journal of Financial and Quantitative Analysis* **16** (4) pp 533 – 555.

5099. Tepper I March 1981 Taxation and corporate pension policy *Journal of Finance* pp 1 – 13.

5100. Harrison M J, Sharpe W F 1983 Optimal funding and asset allocation rules for defined benefit pension plans Chapter 4 *in* Financial Aspects of U.S. Pension Systems Bodie, Shoven (editors) *University of Chicago Press* Chicago USA.

5101. Friedman B M 1983 Pension funding, pension asset allocation and corporate finance: Evidence from individual company data *in* Financial Aspects of U.S. Pension Systems Bodie, Shoven (editors) *University of Chicago Press* Chicago USA.

5102. Kotlikoff L S, Smith D E 1983 Pensions in the American economy *NBER - University of Chicago Press* USA.

5103. Warshawsky M J 1987 The funding of private pension plans *Staff Studies Paper no 155* Board of Governors of the Federal Reserve System USA.

5104. Warshawsky M J November 1988 Pension plans: Funding, assets, and regulatory environment *Federal Reserve Bulletin* issue November pp 717 – 730.

5105. Warshawsky M J 1989 The adequacy of funding of private defined benefit pension plans *Finance and Economics Discussion Paper no 58* Board of Governors of the Federal Reserve System USA.

5106. Warshawsky M J 1990 Financial accounting for pensions: Measures of funding status *Finance and Economics Discussion Series Paper no 145* Board of Governors of the Federal Reserve System USA.

5107. Bernheim B D, Shoven J B 1985 Pension funding and saving *NBER Working Paper no 1622* National Bureau of Economic Research Inc USA pp 1 – 42.

5108. Ang J, Tsong-Yue Lai 1988 On optimal pension funding policy *Journal of Economics and Business* **40** (3) pp 229 – 238.

5109. Bernheim B D, Shoven J B 1988 Pension funding and saving Chapter *in* Pensions in the US Economy *National Bureau of Economic Research Inc* pp 85 – 114
http://www.nber.org/chapters/c6045 .

5110. Coggin T D, Fabozzi F J, Rahman S 1993 The investment performance of US equity pension fund managers: An empirical investigation *Journal of Finance* **48** pp 1039 – 1055.

5111. Haberman S, Joo-Ho Sung 1994 Dynamic approaches to pension funding *Insurance: Mathematics and Economics* **15** (2-3) pp 151 – 162.

5112. Mitchell O, Smith R S 1994 Pension funding in the public sector *The Review of Economics and Statistics* **76** (2) pp 278 – 290.

5113. Davis E P 1995 Pension funds. Retirement-income security and capital markets. An international perspective *Clarendon Press* London UK.

5114. Dyson A C L, Exley C J 1995 Pension fund asset valuation and investment *British Actuarial Journal* **1** (3) pp 471 – 557.

5115. Wahal S 1996 Pension fund activism and firm performance *Journal of Financial and Quantitative Analysis* **31** (1) pp 1 – 23.

5116. Brown G, Draper P, McKenzie E March 1997 Consistency of UK pension fund performance *Journal of Business Finance and Accounting* **24** pp 155 – 178.

5117. Cairns A J G, Parker G 1997 Stochastic pension fund modelling *Insurance: Mathematics and Economics* **21** (1) pp 43 – 79.

5118. Blake D 1998 Pension schemes as options on pension fund assets: Implications for pension fund management *Insurance: Mathematics and Economics* **23** (3) pp 263 – 286.

5119. Blake D, Lehmann B, Timmermann A 1999 Asset allocation dynamics and pension fund performance *Journal of Business* **72** pp 429 – 461.

5120. Cangiano M, Cottarelli C, Cubeddu L 1998 Pension development and reforms in transitional economies *IMF Working Paper no 151* IMF USA.

5121. Hemming R 1998 Should public pensions be funded? *IMF Working Paper no 98/35* International Monetary Fund USA.

5122. Mitchell O S 1998 Administrative costs in public and private pension plans *in* Privatizing Social Security Feldstein M (editor) *University of Chicago Press* Chicago USA pp 403 – 456.

5123. Clark G July 13 2000 Pension fund capitalism *Oxford University Press* Oxford UK ISBN: 9780199240487 pp 1 – 368.

5124. Clark G March 27 2003 European pensions and global finance *Oxford University Press* Oxford UK ISBN: 9780199253630 pp 1 – 272.

5125. Clark G L 2008 Pension fund governance: Expertise and organizational form Chapter 2 *in* Pension Fund Governance Evans J, Orszag M, Piggott J (editors) *Edward Elgar Publishing* UK ISBN: 9781847204851 pp 1 – 21
https://www.elgaronline.com/view/9781847204851.00010.xml .

5126. Sinn H-W 2000 Why a funded pension system is useful and why it is not useful *International Tax and Public Finance* **7** pp 389 – 410.

5127. Srinivas P S, Whitehouse E, Yermo J 2000 Regulating private pension funds' structure, performance and investments: Cross-country evidence *The World Bank - Social Protection Discussion Paper no 113*.

5128. Whitehouse E 2000 Paying for pensions, an international comparison of administrative charges in funded retirement-income systems *FSA Occasional Paper Series no 13*.

5129. Chapman R J, Gordon T J, Speed C A 2001 Pensions, funding and risk *British Actuarial Journal* **7** (04) pp 605 – 662.

5130. Head S J, Adkins D R, Cairns A J G, Corvesor A J, Cule D O, Exley C J, Johnson I S, Spain J G, Wise A J 2001 Pension fund valuations and market values *British Actuarial Journal* **7** (1) pp 103 – 122.

5131. Thomas A, Tonks I 2001 Equity performance of segregated pension funds in the UK *Journal of Asset Management* **1** (4) pp 321 – 343.

5132. Tonks I 2002 Performance persistence of pension fund managers *London School of Economics and Political Science London* UK pp 1 – 26
http://eprints.lse.ac.uk/24942/ .

5133. Besley T, Prat A 2003 Pension funds governance and the choice between defined Benefit and defined contribution plans *CEPR Discussion Paper no 3955*.

5134. Kakabadse N, Kakabadse A, Kouzmin A 2003 Pension fund trustees: Role and contribution *European Management Journal* **21** (3) pp 376 – 386.

5135. Bateman H, Mitchell O S 2004 New evidence on pension plan design and administrative expenses: The Australian experience *Journal of Pension Economics and Finance* **3** (1) pp 63 – 76.

5136. Bergstresser D, Desai M A, Rauh J 2004 Earnings manipulation and managerial investment decisions: Evidence from sponsored pension plans *NBER Working Paper no 10543* NBER USA.

5137. Eaton T V, Nofsinger J R 2004 The effect of financial constraints and political pressure on the management of public pension plans *Journal of Accounting and Public Policy* **23** pp 161 – 189.

5138. Munnell A H, Sundén A 2004 Coming up short: The challenge of 401(k) plans *The Brookings Institution Press* USA.

5139. Owadally M I, Haberman S 2004 The treatment of assets in pension funding *ASTIN Bulletin: The Journal of the International Actuarial Association* **34** (02) pp 425 – 433.

5140. Sundén A 2004 How do individual accounts work in the Swedish pension system? *Issue in Brief Center for Retirement Research no 22*.

5141. Cowling C A, Gordon T J, Speed C A 2005 Funding defined benefit pension schemes *British Actuarial Journal* **11** (1) pp 63 – 97.

5142. Diamond P 2005 Reforming public pensions in the US and the UK *UBS PRP Discussion Paper no 38*.

5143. Dobronogov A, Murthi M 2005 Administrative fees and costs of mandatory private pensions in transition economies *Journal of Pension Economics and Finance* **4** (1) pp 31 – 55.

5144. Franzoni F, Marin J January 25 2005 Pension plan funding and market efficiency *Working Paper no 31* Barcelona Graduate School of Economics Barcelona University Barcelona Spain pp 1 – 50
http://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/31.pdf .

5145. McCarthy D, Neuberger A 2005 The pension protection fund *Fiscal Studies* **26** (2) pp 139 – 167.

5146. Greco L G 2006 The optimal design of funded pensions *Financial Market Group* London School of Economics and Political Science London UK pp 1 – 47
http://eprints.lse.ac.uk/24519/.

5147. Miao Jerry C Y, Wang J L 2006 Intertemporal stable pension funding *Asia-Pacific Journal of Risk and Insurance* **1** (2) pp 1 – 15.

5148. Sweeting P 2006 Correlation and the pension protection fund *Fiscal Studies* **27** (2) pp 157 – 182.

5149. Perotti E, Schwienbacher A 2007 The political origin of pension funding *CEPR Discussion Paper no 6100* CEPR
www.cepr.org/active/publications/discussion_papers/dp.php?dpno=6100 .

5150. Antolin P 2008 Pension fund performance *OECD Working Paper no 20 on Insurance and Private Pensions* OECD Publishing DOI: 10.1787/240401404057 pp 1 – 20
http://www.oecd-ilibrary.org/finance-and-investment/pension-fund-performance_240401404057.

5151. Evans J, Orszag M, Piggott J (editors) January 1 2008 Pension fund governance *Edward Elgar Publishing* UK ISBN: 9781847204851 pp 1 – 288
https://www.elgaronline.com/view/9781847204851.xml.

5152. Impavido G 2008 Governance of public pension plans: The importance of residual claimants Chapter 6 *in* Pension Fund Governance Evans J, Orszag M, Piggott J (editors) *Edward Elgar Publishing* UK ISBN: 9781847204851 pp 1 – 19
https://www.elgaronline.com/view/9781847204851.00015.xml .

5153. Adam A, Moutos Th 2009 Pension funding in a unionized economy *Scottish Journal of Political Economy* **56** (2) pp 213 – 231.

5154. Inderst G January 1 2009 Pension fund investment in infrastructure *OECD Working Paper no 32 on Insurance and Private Pensions* OECD Publishing DOI: 10.1787/227416754242 pp 1 – 45
http://www.oecd-ilibrary.org/finance-and-investment/pension-fund-investment-in-infrastructure_227416754242 .

5155. Kleinow T 2011 Pension fund management and conditional indexation *ASTIN Bulletin: The Journal of the International Actuarial Association* **41** (1) pp 61 – 86.

5156. Munnell A, Aubry J-P, Quinby L 2011 Public pension funding in practice *Journal of Pension Economics and Finance* **10** (2) pp 247 – 268.

5157. Bovenberg L, Mehlkopf R 2014 Optimal design of funded pension schemes *Annual Review of Economics* **6** (1) pp 445 – 474.

5158. Rossi A G, Blake D, Timmermann A, Tonks I, Wermers R 2015 Network centrality and pension fund performance *CFR Working Paper no 15-16* pp 1 – 62
https://www.econstor.eu/bitstream/10419/123714/1/841338175.pdf .

5159. Garon J-D 2016 The commitment value of funding pensions *Economics Letters* **145** issue **C** pp 11 – 14.

5160. Dahlquist M, Setty O, Vestman R 2016 On the asset allocation of a default pension fund *CEPR Discussion Paper no 11052*.

5161. Mitsel A, Rekundal O 2016 Pension capital investment in the context of a private pension fund *Economic Studies Journal* issue **1** pp 112 – 125.

Mutual fund, financial capital investment vehicle in finances:

5162. Sharpe W January 1966 Mutual fund performance *The Journal of Business* **39** (1) pp 119 – 138
http://dx.doi.org/10.1086/294846 ,
http://www.jstor.org/stable/2351741?seq=1#page_scan_tab_contents .

5163. Treynor J L, Mazuy K K 1966 Can mutual funds outguess the market *Harvard Business Review* **44** pp 66 – 86.

5164. Treynor J L, Mazuy K K July-August 1996 Can mutual funds outguess the market? *Harvard Business Review* pp 131 – 136.

5165. Allerdice F B, Farrar D E 1967 Factors that affect mutual fund growth *Journal of Financial and Quantitative Analysis* **2** (4) pp 365 – 382.

5166. Jensen M June 1968 The performance of mutual funds in the period 1945-1964 *Journal of Finance* **23** pp 389 – 416.

5167. Arditti F D 1971 Another look at mutual fund performance *Journal of Financial and Quantitative Analysis* **6** (3) pp 909 – 912.

5168. Fama E June 1972 Components of investment performance *The Journal of Finance* **27** (3) pp 551 – 567.

5169. Maurice Joy O, Burr Porter R 1974 Stochastic dominance and mutual fund performance *Journal of Financial and Quantitative Analysis* **9** (1) pp 25 – 31.

5170. Scott D, Klemkosky R C 1975 Mutual fund performance and unrealized expectations *Journal of Business Research* **3** (1) pp 25 – 32.

5171. Fabozzi F, Francis J C March 1978 Beta as a random coefficient *Journal of Financial and Quantitative Analysis* **13** (1) pp 101 – 116.

5172. Fabozzi F, Francis J C December 1979 Mutual fund systematic risk for bull and bear markets: An empirical examination *The Journal of Finance* **34** (5) pp 1243 – 1250.

5173. Fabozzi F, Francis J C 1980 Stability of mutual fund systematic risk statistic *Journal of Business Research* **8** (2) pp 263 – 275.

5174. Kon S J, Jen F C May 1978 Estimation of the time-varying systematic risk and performance for mutual fund portfolios: An application of switching regression *The Journal of Finance* **33** (2) pp 457 – 475.

5175. Kon S J, Jen F C April 1979 The investment performance of mutual funds: An empirical investigation of timing, selectivity and market efficiency *Journal of Business* **52** (2) pp 263 – 289.

5176. Kon S J 1983 The market –timing performance of mutual fund managers *Journal of Business* **54** (3) pp 323 – 347.

5177. Kim T 1978 An assessment of the performance of mutual fund management: 1969–1975 *Journal of Financial and Quantitative Analysis* **13** (3) pp 385 – 406.

5178. Gatto M A, Geske R, Litzenberger R, Sosin H 1980 Mutual fund insurance *Journal of Financial Economics* **8** (3) pp 283 – 317.

5179. Miller T W, Gressis N 1980 Nonstationarity and evaluation of mutual fund performance *Journal of Financial and Quantitative Analysis* **15** (3) pp 639 – 654.

5180. Eckardt W L, Bagamery B D 1983 Short selling: the mutual fund alternative *Journal of Financial Research* **6** (3) pp 231 – 238.

5181. Cowen T, Kroszner R 1990 Mutual fund banking: A market approach *Cato Journal* **10** (1) pp 223 – 237.

5182. Cook W D, Hebner K J 1992 A multicriteria approach to mutual fund selection *Financial Services Review* **2** (1) pp 1 – 20.

5183. Grinblatt M, Titman S 1992 The persistence of mutual fund performance *Journal of Finance* **47** (5) pp 1977 – 1984.

5184. Grinblatt M, Titman S 1993 Performance measurement without benchmarks: An examination of mutual fund returns *Journal of Business* **66** (1) pp 47 – 68.

5185. Grinblatt M, Titman S, Wermers R 1995 Momentum investment strategies, portfolio performance and herding: A study of mutual fund behavior *American Economic Review* **85** pp 1088 – 1105.

5186. Hendricks D, Patel J, Zeckhauser R 1993 Hot hands in mutual funds: Short run persistence of performance, 1974-88 *Journal of Finance* **48** pp 93 – 130.

5187. Mack Ph R November 1993 Recent trends in the mutual fund industry *Federal Reserve Bulletin* pp 1001 – 1012.

5188. Wohlever J E 1993 Excess capacity in the mutual fund industry *Research Paper no 9318* Federal Reserve Bank of New York NY USA.

5189. Dickson J, Shoven J 1995 Taxation and mutual funds: An investor perspective *Tax Policy and the Economy* **9** pp 151 – 180.

5190. Dickson J, Shoven J, Sialm C 2000 Tax externalities of equity mutual funds *National Tax Journal* **53** pp 607 – 628.

5191. Malkiel B G 1995 Returns from investing in equity mutual funds *Journal of Finance* **50** pp 549 – 572.

5192. Neely M C 1995 Will the mutual fund boom be a bust for banks? *The Regional Economist* issue October pp 12 – 13.
https://www.stlouisfed.org/Publications/Regional-Economist/October-1995/Will-the-Mutual-Fund-Boom-Be-a-Bust-for-Banks .

5193. Chordia T 1996 The structure of mutual fund charges *Journal of Financial Economics* **41** (1) pp 3 – 39.

5194. Droms W G, Walker D A 1996 Mutual fund investment performance *The Quarterly Review of Economics and Finance* **36** (3) pp 347 – 363.

5195. Elton E J, Gruber M J, Blake Ch R 1996 Survivorship bias and mutual fund performance *Review of Financial Studies* **9** (4) pp 1097 – 1120.

5196. Livingston M, O'Neal E S 1996 Mutual fund brokerage commissions *Journal of Financial Research* **19** (2) pp 273 – 292.

5197. Livingston M, O'Neal E S 1998 The cost of mutual fund distribution fees *Journal of Financial Research* **21** (2) pp 205 – 218.

5198. Livingston M, Lei Zhou 2015 Brokerage commissions and mutual fund performance *Journal of Financial Research* **38** (3) pp 283 – 303.

5199. Lockwood L J 1996 Macroeconomic forces and mutual fund betas *The Financial Review* **31** (4) pp 747 – 763.

5200. Brown St, Goetzmann W 1997 Mutual fund styles *Journal of Financial Economics* **43** (3) pp 373 – 399.

5201. Carhart M 1997 On persistence in mutual fund performance *Journal of Finance* **52** (1) pp 57 – 82.

5202. Carhart M, Carpenter J N, Lynch A W, Musto D K 2002 Mutual fund survivorship *Review of Financial Studies* **15** (5) pp 1439 – 1463.

5203. Cortez M D C R, Armada M J D R 1997 On mutual fund performance evaluation *Portuguese Journal of Management Studies* **III** (3) pp 145 – 163.

5204. Cortez M D C R, Paxson D, Armada M J D R 1999 Persistence in Portuguese mutual fund performance *The European Journal of Finance* **5** (4) pp 342 – 365.

5205. Daniel K M, Grinblatt M, Titman S, Wermers R 1997 Measuring mutual fund performance with characteristic based benchmarks *Journal of Finance* **52** pp 1035 – 1058.

5206. Goetzmann W, Peles N 1997 Cognitive dissonance and mutual fund investors *Journal of Financial Research* **20** (2) pp 145 – 158.

5207. Goetzmann W, Brown St 1998 Mutual fund styles *Working Paper F-46* Yale School of Management USA
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6482 .

5208. Goetzmann W, Ivkovic Z, Rouwenhorst G 2001 Day trading international mutual funds: Evidence and policy solutions *Journal of Financial and Quantitative Analysis* **36** (3) pp 287 – 310.

5209. Malhotra K D, McLeod R W 1997 An empirical analysis of mutual fund expenses *Journal of Financial Research* **20** (2) pp 175 – 190.

5210. Tufano P, Sevick M 1997 Board structure and fee-setting in the US mutual fund industry *Journal of Financial Economics* **46** pp 321 – 355.

5211. Barclay M, Pearson N, Weisbach M 1998 Open end mutual funds and capital gains taxes *Journal of Financial Economics* **49** pp 3 – 43.

5212. Blake D, Timmermann A 1998 Mutual fund performance: Evidence from the UK *European Finance Review* **2** pp 57 – 77.

5213. Blake D, Timmermann A 2003 Performance persistence in mutual funds : An independent assessment of the studies prepared by Charles River Associates for the Investment Management Association *Financial Services Authority*
www.pensions-institue.org/reports .

5214. Fortune P 1998 Mutual fund myths *Regional Review* **Q 2** pp 5 – 7.

5215. Sirri E, Tufano P 1998 Costly search and mutual fund Flows *Journal of Finance* **53** (5) pp 1589 – 1622.

5216. Bogle J C 1999 Common sense on mutual funds: New imperatives for the intelligent investor *John Wiley & Sons Inc* USA.

5217. Chevalier J, Ellison G 1999 Are some mutual fund managers better than others? Cross-sectional patterns in behavior and performance *Journal of Finance* **54** (3) pp 875 – 899.

5218. James E, Ferrier G, Smalhout J, Vittas D 1999 Mutual funds and institutional investments: What is the most efficient way to set up individual accounts in a social security system? *NBER Working Paper no 7049* NBER USA.

5219. Khorana A, Servaes H 1999 The determinants of mutual fund starts *Review of Financial Studies* **12** (5) pp 1043 – 1074.

5220. Kulldorff M, Khanna A 1999 A generalization of the mutual fund theorem *Finance and Stochastics* **3** (2) pp 167 – 185.

5221. Latzko D A 1999 Economies of scale in mutual fund administration *Journal of Financial Research* **22** (3) pp 331 – 339.

5222. Blake C A, Morey M 2000 Morningstar ratings and mutual fund performance *Journal of Financial and Quantitative Analysis* **35** (3) pp 451 – 483.

5223. Chen H L, Jegadeesh N, Wermers R 2000 The value of active mutual fund management: An examination of the stockholdings and trades of fund managers *Journal of Financial and Quantitative Analysis* **35** (3) pp 343 – 368.

5224. Kim M, Shukla R, Tomas M 2000 Mutual fund objective misclassification *Journal of Economics and Business* **52** (4) pp 309 – 323.

5225. Wermers R 2000 Mutual fund performance: An empirical decomposition into stock picking talent, style, transactions costs, and expenses *Journal of Finance* **55** (4) pp 1655 – 1703.

5226. Wermers R 2003 Is money really "smart"? New evidence on the relation between mutual fund flows and performance persistence *Department of Finance* University of Maryland USA.

5227. Bollen N P B 2001 On the timing ability of mutual fund managers *Journal of Finance* **56** (3) pp 1075 – 1094.

5228. Kothari S P 2001 Evaluating mutual fund performance *Journal of Finance* **56** (5) pp 1985 – 2010.

5229. Teo M, Woo Sung-Jun 2001 Persistence in style-adjusted mutual fund returns *Manuscript* Harvard University Cambridge USA.

5230. Bergstresser D, Poterba J 2002 Do after-tax returns affect mutual fund inflows? *Journal of Financial Economics* **63** pp 381 – 414.

5231. Chan L K C, Hsiu-Lang Chen, Lakonishok J 2002 On mutual fund investment styles *Review of Financial Studies* **15** (5) pp 1407 – 1437.

5232. Otten R, Bams D 2002 European mutual fund performance *European Financial Management* **8** (1) pp 75 – 101.

5233. Pastor L, Stamburgh R 2002 Mutual fund performance and seemingly unrelated assets *Journal of Financial Economics* **63** (3) pp 315 – 350.

5234. Sengupta J 2003 Efficiency tests for mutual fund portfolios *Applied Financial Economics* **13** (12) pp 869 – 876.

5235. Berk J B, Green R C 2004 Mutual fund flows and performance in rational markets *Journal of Political Economy* **112** (6) pp 1269 – 1295.

5236. Kosowski R, Timmermann A, White H, Wermers R April 2004 Can mutual fund "stars" really pick stocks? New evidence from a bootstrap analysis *Discussion Paper* INSEAD.

5237. Mahoney P 2004 Manager-investor conflicts in mutual funds *Journal of Economic Perspectives* **18** (2) pp 161 – 182.

5238. Mamaysky H, Spiegel M, Zhang H 2004 Improved forecasting of mutual fund alphas and betas' *ICF Working Paper 04-23* Yale School of Management Yale University USA.

5239. Nanda V, Wang J, Zheng L 2004 Family values and the star phenomenon: Strategies of mutual fund families *Review of Financial Studies* **17** (3) pp 667 – 698.

5240. Prather L, Bertin W J, Henker Th 2004 Mutual fund characteristics, managerial attributes, and fund performance *Review of Financial Economics* **13** (4) pp 305 – 326.

5241. Anderson S C, Ahmed P 2005 Mutual funds: Fifty years of research findings Chapter 3 *in* Mutual Fund Fees and Expenses *Springer* pp 57 – 69.

5242. Barber B, Odean T, Zheng L 2005 Out of sight, out of mind: The effects of expenses on mutual fund flows *Journal of Business* 78 pp 2095 – 2120.

5243. Bollen N P B, Busse J A 2005 Short-term persistence in mutual fund performance *Review of Financial Studies*.

5244. Cuthbertson K, Nitzsche D, O'Sullivan N February 2005 Mutual fund performance: Skill or luck? *Cass Business School* City University London UK pp 1 – 50.

5245. Kacperczyk M, Sialm C, Zheng L 2005 On the industry concentration of actively managed equity mutual funds *Journal of Finance* **60** pp 1983 – 2011.

5246. Kacperczyk M, Sialm C, Zheng L 2008 Unobserved actions of mutual funds *Review of Financial Studies* **21** pp 2379 – 2416.

5247. Nitzsche D, Cuthbertson K, O'Sullivan N 2005 Mutual fund performance: Skill or luck? *Money Macro and Finance (MMF) Research Group Conference* pp 1 – 50
http://repec.org/mmfc05/paper4.pdf .

5248. Raychaudhuri A 2005 Persistence in the Indian mutual fund market *The IUP Journal of Financial Economics* **III** (1) pp 6 – 25.

5249. Busse J A, Irvine P J 2006 Bayesian alphas and mutual fund persistence *Journal of Finance* **61** (5) pp 2251 – 2288.

5250. Gaspar J, Massa M, Matos P 2006 Favoritism in mutual fund families? Evidence on strategic cross-fund subsidization *Journal of Finance* **61** (1) pp 73 – 104.

5251. Morey M, O'Neal E 2006 Window dressing in bond mutual funds *Journal of Financial Research* **29** pp 325 – 347.

5252. Alves C, Mendes V 2007 Are mutual fund investors in jail? *Applied Financial Economics* **17** (16) pp 1301 – 1312.

5253. Bollen N P B 2007 Mutual fund attributes and investor behavior *Journal of Financial and Quantitative Analysis* **42** (3) pp 683 – 708.

5254. Cohen L, Frazzini A, Malloy C 2007 The small world of investing: Board connections and mutual fund returns *Journal of Political Economy* **116** (5) pp 951 – 979.

5255. Chen Q, Goldstein I, Jiang W 2008 Directors' ownership in the US mutual fund industry *Journal of Finance* **63** (6) pp 2629 – 2677.

5256. Chen Q, Goldstein I, Jiang W 2009 Payoff complementarities and financial fragility: Evidence from mutual fund outflows *Working Paper* Duke University, University of Pennsylvania, Columbia University USA.

5257. Ferris S, Yan X 2007 Do independent directors and chairmen matter? The role of boards of directors in mutual fund governance *Journal of Corporate Finance* **13** (2-3) pp 392 – 420.

5258. Khorana A, Tufano P, Wedge L 2007 Board structure, mergers, and shareholder wealth: A study of the mutual fund industry *Journal of Financial Economics* **85** (2) pp 571 – 598.

5259. Khorana A, Servaes H, Tufano P 2008 Mutual fund fees around the world *Review of Financial Studies* **22** (3) pp 1279 – 1310.

5260. Meschke F 2007 An empirical examination of mutual fund boards *SSRN Paper 676901* SSRN USA.

5261. Haslem J A, Baker H K, Smith D M 2008 Performance and characteristics of actively managed retail equity mutual funds with diverse expense ratios *Financial Services Review* **17** pp 49 – 68.

5262. Jans R, Otten R 2008 Tournaments in the UK mutual fund industry *Managerial Finance* **34** (11) pp 786 – 798.

5263. Jin-Li Hu, Tzu-Pu Chang 2008 Decomposition of mutual fund underperformance *Applied Financial Economics Letters* **4** (5) pp 363 – 367.

5264. Kacperczyk M, Sialm C, Zheng L 2008 Unobserved actions of mutual funds *Review of Financial Studies* **21** (6) pp 2379 – 2416.

5265. Kacperczyk M, van Nieuwerburgh S, Veldkamp L 2014 Time-varying fund manager skill *Journal of Finance* **69** (4) pp 1455 – 1484.

5266. Kempf A, Ruenzi St 2008 Tournaments in mutual-fund families *Review of Financial Studies* **21** (2) pp 1013 – 1036.

5267. Kong S, Tang D 2008 Unitary boards and mutual fund governance *Journal of Financial Research* **31** (3) pp 193 – 224.

5268. Palmiter A, Taha A 2008 Mutual fund investors: Sharp enough? *Journal of Financial Transformation* **24** pp 113 – 121.

5269. Sophie Xiaofei Kong, Dragon Yongjun Tang 2008 Unitary boards and mutual fund governance *Journal of Financial Research* **31** (3) pp 193 – 224.

5270. Bergstresser D, Chalmers J M, Tufano P 2009 Assessing the costs and benefits of brokers in the mutual fund industry *Review of Financial Studies* **22** (10) pp 4129 – 4156.

5271. Coggins F, Beaulieu M-C, Gendron M 2009 Mutual fund daily conditional performance *Journal of Financial Research* **32** (2) pp 95 – 122.

5272. Cremers M, Driessen J, Maenhout P, Weinbaum D 2009 Does skin in the game matter? Director incentives and governance in the mutual fund industry *Journal of Financial and Quantitative Analysis* **44** (6) pp 1345 – 1373.

5273. Karoui A, Meier I 2009 Performance and characteristics of mutual fund starts *The European Journal of Finance* **15** (5-6) pp 487 – 509.

5274. Khorana A, Servaes H, Tufano P 2009 Mutual fund fees around the world *Review of Financial Studies* **22** (3) pp 1279 – 1310.

5275. Koehler J, Mercer M 2009 Selection neglect in mutual fund advertisements *Management Science* **55** (7) pp 1107 – 1121.

5276. Kuhnen C 2009 Business networks, corporate governance, and contracting in the mutual fund industry *Journal of Finance* **64** (5) pp 2185 – 2220.

5277. Lilian Ng, Qinghai Wang, Zaiats N 2009 Firm performance and mutual fund voting *Journal of Banking & Finance* **33** (12) pp 2207 – 2217.

5278. Qiang Bu, Lacey N 2009 On understanding mutual fund terminations *Journal of Economics and Finance* **33** (1) pp 80 – 99.

5279. Sialm C, Starks L 2009 Mutual fund tax clienteles *NBER Working Paper no 15327* National Bureau of Economic Research Inc USA pp 1 – 54
http://www.nber.org/papers/w15327.pdf .

5280. Evans R B 2010 Mutual fund incubation *Journal of Finance* **65** (4) pp 1581 – 1611.

5281. Hsuan-Chi Chen, Lai Ch W 2010 Reputation stretching in mutual fund starts *Journal of Banking & Finance* **34** (1) pp 193 – 207.

5282. Jin Zhang, Maringer D 2010 Index mutual fund replication *Working Paper no 35* COMISEF pp 1 – 27

www.comisef.eu .

5283. Soongswang A, Sanohdontree Y 2011 Equity mutual fund: Performances, persistence and fund rankings *Journal of Knowledge Management, Economics and Information Technology* **1** (6) p 27.

5284. English Ph C, Demiralp I, Dukes W P 2011 Mutual fund exit and mutual fund fees *Journal of Law and Economics* **54** (3) pp 723 – 749.

5285. Adams J C, Mansi S A, Nishikawa T 2012 Are mutual fund fees excessive? *Journal of Banking & Finance* **36** (8) pp 2245 – 2259.

5286. Bhojraj S, Young Jun Cho, Yehuda N 2012 Mutual fund family size and mutual fund performance: The role of regulatory changes *Journal of Accounting Research* **50** (3) pp 647 – 684.

5287. Cashman G D 2012 Convenience in the mutual fund industry *Journal of Corporate Finance* **18** (5) pp 1326 – 1336.

5288. Gottesman A, Morey M 2012 Mutual fund corporate culture and performance *Review of Financial Economics* **21** (2) pp 69 – 81.

5289. Sialm C, Starks L 2012 Mutual fund tax clienteles *Journal of Finance* **67** (4) pp 1397 – 1422.

5290. Christensen M 2013 Danish mutual fund performance *Applied Economics Letters* **20** (8) pp 818 – 820.

5291. Eisele A, Nefedova T, Parise G 2013 Predation versus Cooperation in Mutual Fund Families *Swiss Finance Institute Research Paper 13-19* Switzerland.

5292. Vidal-García J 2013 The persistence of European mutual fund performance *Research in International Business and Finance* **28** (C) pp 45 – 67.

5293. Agarwal V, Gay G, Ling L 2014 Window dressing in mutual funds *Review of Financial Studies* **27** (11) pp 3133 – 3170.

5294. Jingjing Yang, Jing Chi, Martin Young 2014 Mutual fund investment strategies and preferences *Chinese Economy* **47** (1) pp 5 – 37.

5295. Simutin M 2014 Cash holdings and mutual fund performance *Review of Finance* **18** (4) pp 1425 – 1464.

5296. Berk J B, van Binsbergen J H 2015 Measuring skill in the mutual fund industry *Journal of Financial Economics* **118** (1) pp 1 – 20.

5297. Chuprinin O, Massa M, Schumacher D 2015 Outsourcing in the international mutual fund industry: An equilibrium view *Journal of Finance* **70** pp 2275 – 2308.

5298. Gallaher S, Kaniel R, Starks L 2015 Advertising and mutual funds: From families to individual funds *CEPR Discussion Paper no DP10329.*

5299. Kopsch F, Han-Suck Song, Wilhelmsson M 2015 Determinants of mutual fund flows *Managerial Finance* pp 10 – 25.

5300. Meifen Qian, Bin Yu 2015 Do mutual fund managers manipulate? *Applied Economics Letters* **22** (12) pp 967 – 971.

5301. Ortiz C, Ramírez G, Vicente L 2015 Mutual fund trading and portfolio disclosures *Journal of Financial Services Research* **48** (1) pp 83 – 102.

5302. Panda B, Mahapatra R P, Moharana S 2015 Myth of equity mutual fund performance *Vision: The Journal of Business Perspective* **19** (3) pp 200 – 209.

5303. Sisli-Ciamarra E, Hornstein A 2015 Board overlaps in mutual fund families *Working Paper no 92* Department of Economics, International Business School Brandeis University Waltham MA USA
http://www.brandeis.edu/departments/economics/RePEc/brd/doc/Brandeis_WP92.pdf .

5304. Grinblatt M, Ikäheimo S, Keloharju M, Knüpfer S 2016 IQ and mutual fund choice *Management Science* **62** (4) pp 924 – 944.

5305. Matallín-Sáez J C, Soler-Domínguez A, Tortosa-Ausina E 2016 On the robustness of persistence in mutual fund performance The North American *Journal of Economics and Finance* **36** (C) pp 192 – 231.

<u>Angel investor, business angel, financial investment vehicle in finances:</u>

5306. Rubenstein A H 1958 Problems of financing and managing new research-based enterprises in New England *Federal Reserve Bank of Boston* MA USA.

5307. Wetzel Jr W E 1981 Informal risk capital in New England *in* Frontiers of Entrepreneurship Research Vesper K H (editor) *Babson College* Wellesley MA USA pp 217 – 245.

5308. Wetzel Jr W E 1983 Angels and informal venture capital *Sloan Management Review* **24** (4) pp 23 – 34.

5309. Wetzel Jr W E 1986 Informal risk capital: Knowns and unknowns *in* The Art and Science of Entrepreneurship Sexton D, Smilor R (editors) Cambridge MA USA.

5310. Wetzel Jr W E 1987 The informal venture capital market: Aspects of scale and market efficiency *Journal of Business Venturing* **2** (4) pp 299 – 313.

5311. Landström H 1992 The relationship between private investors and small firms: An agency theory approach *Entrepreneurship and Regional Development* **4** pp 199 – 223.

5312. Landström H 1993 Informal risk capital in Sweden and some international comparisons *Journal of Business Venturing* **8** pp 525 – 540.

5313. Landström H 1995 A pilot study on the investment decision-making behavior of informal investors in Sweden *Journal of Small Business Management* **33** (3) pp 67 – 76.

5314. Landström H 1998 Informal investors as entrepreneurs *Technovation* **18** pp 321 – 333.

5315. Landström H, Manigart S, Mason C, Sapienza H 1998 Contracts between entrepreneurs and investors: Terms and negotiation processes *in* Frontiers of Entrepreneurship Research Reynolds P D, Bygrave W D, Carter N M, Manigart S, Mason C M, Meyer G D, Shaver K G (editors) Babson College Babson Park MA USA pp 571 – 585.

5316. Landström H 2007 Handbook of research on venture capital *Edward Elgar Publishing* Cheltenham UK Northampton MA USA.

5317. Landström H, Mason C (editors) 2012 Handbook of research on venture capital: Volume 2 *Edward Elgar Publishing* Cheltenham UK Northampton MA USA.

5318. Landström H, Mason C 2016a Business angels as a research field Chapter 1 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 1 – 22
http://dx.doi.org/10.4337/9781783471720.00005 ,
https://www.elgaronline.com/view/9781783471713.00005.xml .

5319. Landström H, Mason C (editors) October 29 2016b Handbook of research on business angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 1 – 432
http://dx.doi.org/10.4337/9781783471720 ,
http://www.e-elgar.com/shop/isbn/9781783471713 ,
http://www.e-elgar.com/shop/handbook-of-research-on-business-angels .

5320. Mason C M, Harrison R T 1994 The informal venture capital market in the UK *in* Financing small firms Hughes A, Storey D J (editors) *Routledge* London UK pp 64 – 111.

5321. Mason C M, Harrison R T 1995 Closing the regional equity gap – The role of informal venture capital *Small Business Economics* **7** pp 153 – 172.

5322. Mason C M, Rogers A 1997 Understanding the business angel's investment decision *Working Paper no 14* Venture Finance Research Project Southampton University UK.

5323. Mason C M, Harrison R T 2000a The size of the informal venture capital market in the United Kingdom *Small Business Economics* **15** pp 137 – 148.

5324. Mason C M, Harrison R T 2000b Informal venture capital and the financing of emergent growth businesses Handbook of Entrepreneurship Sexton D, Landström H (editors) *Blackwell* Oxford UK pp 221 – 229.

5325. Mason C M, Harrison R T 2002 Is it worth it? The rates of return from informal venture capital investments *Journal of Business Venturing* **17** pp 211 – 236.

5326. Mason C M, Harrison R T 2003 Closing the regional equity gap? A critique of the Department of Trade and Industry's regional venture capital funds initiative *Regional Studies* **37** (8) pp 855 – 868.

5327. Mason C M, Stark D 2004 What do investors look for in a business plan?: A comparison of the investment criteria for bankers, venture capitalists and business angel *International Small Business Journal* **22** (3) pp 227 – 248.

5328. Mason C M 2006 Informal sources of venture finance *in* The life cycle of entrepreneurial ventures Parker S (editor) *Springer* New York USA pp 259 – 299.

5329. Mason C M 2007 Informal sources of venture finance *in* The Life Cycle of Entrepreneurial Ventures, Volume 3 Parker S (editor) *Springer* New York USA pp 258 – 300.

5330. Mason C M, Harrison R T 2008 Measuring business angel investment activity in the United Kingdom: A review of potential data sources *Venture Capital* **10** (4) pp 309 – 330.

5331. Mason C M 2009 Public policy support for the informal venture capital market: A critical review *International Small Business Journal* **27** (5) pp 536 – 556.

5332. Mason C M 2011a Business angels *in* World Encyclopedia of Entrepreneurship Dana L-P (editor) *Edward Elgar Publishing* Cheltenham UK.

5333. Mason C M 2011b Investment activity by Canadian angel group *The National Angel Capital Organization*.

5334. Mason C M, Harrison R T 2015 Business angel investment activity in the financial crisis: UK evidence and policy implications *Environment and Planning C: Government and Policy* **33** (1) pp 43 – 60.

5335. Mason C M 2016 Researching business angels: Definitional and data challenges Chapter 2 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 25 – 52
http://dx.doi.org/10.4337/9781783471720.00007 ,
https://www.elgaronline.com/view/9781783471713.00007.xml .

5336. Mason C M, Botelho T 2016 The role of the exit in the initial screening of the investment opportunities: The case of business angel syndicate gatekeepers *International Small Business Journal* **34** pp 157 – 175.

5337. Mason C M, Harrison R T, Botelho T 2016 Business angels and beyond: The changing nature of the early risk capital market Chapter 7 *in* International Research Handbook on Entrepreneurial Finance Hussain J G, Scott J S (editors) *Edward Elgar Publishing* Cheltenham UK, Northampton MA USA.

5338. Riding A, Duxbury L, Haines G 1994 Financing enterprise development: Decision-making by Canadian angels *Carleton University* Ottawa Canada.

5339. Coveney P, Moore K 1998 Business angels: Securing start-up finance *John Wiley and Sons Inc* Chichester UK.

5340. Lerner J 1998 Angel financing and public policy: An overview *Journal of Banking and Finance* **22** (6-8) pp 773 – 783.

5341. Lerner J 2009 Boulevard of broken dreams *Princeton University Press* Princeton NJ USA.

5342. Lerner J, Schoar A, Sokolinski St, Wilson K E August 2015 The globalization of angel investments *Working Paper 2015/09* Bruegel pp 1 – 45
http://bruegel.org/wp-content/uploads/2015/09/WP-2015-09-SG-210915.pdf .

5343. Prowse St 1998 Angel investors and the market for angel investments *Journal of Banking & Finance* **22** (6-8) pp 785 – 792.

5344. Aernoudt R 1999 Business Angels: Should they fly on their own wings? *Venture Capital* **1** (2) pp 187 – 195.

5345. Tashiro Y 1999 Business angels in Japan *Venture Capital* **1** (3) pp 259 – 273.

5346. Farrell H 2000 A literature review and industry analysis of informal investment in Canada: A research agenda on angels *Industry Canada* Ottawa Canada pp 1 – 57.

5347. Freear J, Sohl J E, Wetzel W 2000 Angels and non-angels: Are there differences? *in* Advances in Entrepreneurship vol **1** *Edward Elgar Publishing* Cheltenham UK, Northampton MA USA pp 520 – 534.

5348. Freear J, Sohl J E, Wetzel W 2002 Angles on angels: Financing technology-based ventures – a historical perspective *Venture Capital* **4** pp 275 – 287.

5349. Freear J, Sohl J 2012 Angels on angels and venture capital *in* Financing Economic Development in the 21st Century 2nd edition Kotval Z, White S (editors) *M E Sharpe Inc* pp 224 – 244.

5350. Kelly P, Hay M 2000 Deal-makers: Reputation attracts quality *Venture Capital* **2** (3) pp 183 – 202.

5351. Kelly P, Hay M 2003 Business angel contracts: The influence of context *Venture Capital* **5** (4) pp 287 – 312.

5352. Kelly P 2007 Business angels research: The road traveled and the journey ahead *in* Handbook of Research on Venture Capital Landström H (editor) *Edward Elgar* Cheltenham UK, Northampton MA USA pp 315 – 331.

5353. Prasad D, Bruton G, Vozikis G 2000 Signaling value to business angels: The proportion of the entrepreneur's net worth invested in a venture as a decision signal *Venture Capital* **2** (3) pp 167 – 182.

5354. Van Osnabrugge M 2000 A comparison of business angels and venture capital investment procedures: An agency theory-based analysis *Venture Capital* **2** (2) pp 91 – 109.

5355. Amis D, Stevenson H 2001 Winning angels: The seven fundamentals of early-stage investing *Financial Times Prentice Hall* London, New York UK, USA.

5356. Amis D, Stevenson H, Liechtenstein H 2003 Winning angels: Mentoren im netzwerk des erfolges *Signum Wirtschaftsverlag* Wien Austria.

5357. Benjamin G A, Margulis J 2001 The angel investor's handbook *Bloomberg Press* Princeton NJ USA.

5358. Sørheim R, Landström H 2001 Informal investors: A categorization with policy implications *Entrepreneurship and Regional Development* **13** (4) pp 351 – 370.

5359. Sørheim R 2003 The pre-investment behavior of business angels: a social capital approach *Venture Capital* **5** (4) pp 337 – 364.

5360. Brettel M 2002 German business angels in international comparison *Journal of Private Equity* **5** (2) p 53.

5361. Brettel M 2003 Business angels in Germany: A research note *Venture Capital: An International Journal of Entrepreneurial Finance* **5** (3) pp 251 – 268.

5362. Jensen M 2002 Angel investors: Opportunity amidst chaos *Venture Capital* **4** (4) pp 295 – 304.

5363. Payne W H, Macarty M J 2002 The anatomy of an angel investing network: Tech coast angels *Venture Capital* **4** (4) pp 331 – 336.

5364. Stadler H, Peters H H 2003 Business angels in Germany: An empirical study *Venture Capital* **5** (3) pp 269 – 276.

5365. Sohl J E 2003 The US angel and venture capital market: Recent trends and developments *The Journal of Private Equity* **6** pp 7 – 17.

5366. Sohl J E 2006 Angel investing: Changing strategies during volatile times *Journal of Entrepreneurial Finance* **11** (2) pp 27 – 48.

5367. Sohl J E, Hill L 2007 Women business angels: Insights from angel groups *Venture Capital* **9** (3) pp 207 – 222.

5368. Sohl J E 2012 The changing nature of the angel market *in* Handbook of Research on Venture Capital *Edward Elgar Publishing* UK.

5369. San Jose A, Roure J, Aernoudt R 2004 Business angel academies: Unleashing the potential for business angel investment *Venture Capital* **7** (2) pp 149 – 165.

5370. Jossi F July 2005 Angels we have heard on high *Fedgazette* pp 11 – 13.

5371. Månsson N, Landström H 2005 Business angels in a changing economy: The case of Sweden *Venture Capital* **8** (4) pp 281 – 301.

5372. Maula M, Autio E, Arenius P 2005 What drives micro-angel investments? *Small Business Economics* **25** (5) pp 459 – 475.

5373. EBAN (European Business Angel Network) (2005) European directory of business angel networks in Europe *EBAN* Brussels Belgium.

5374. Shane S A October 1 2005 Angel investing: A report prepared for the Federal Reserve Banks of Atlanta Cleveland Kansas City Philadelphia, Richmond North Carolina

SSRN: http://ssrn.com/abstract=1142687 .

5375. Shane S A January 1 2008 Angel groups: An examination of the angel capital association survey SSRN NY USA

http://ssrn.com/abstract=1142645.

5376. Shane S A 2009 Fool's gold: The truth behind angel investing in America *Oxford University Press* Oxford UK.

5377. Vance D E 2005 Raising capital *Springer* New York USA.

5378. Wiltbank R October 2005 Investment practices and outcomes of information angel investors *Venture Capital* **7** pp 343 – 357.

5379. Wiltbank R, Boeker W November 2007a Returns to angel investors in groups *Ewing Marion Kauffman Foundation*, *Angel Capital Education Foundation* pp 1 – 16.

5380. Wiltbank R, Boeker W 2007b Angel investor performance project: Data overview *Kauffman Symposium on Entrepreneurship and Innovation Data*.

5381. Wiltbank R, Read St, Dew N, Sarasvathy S D 2009 Prediction and control under uncertainty: Outcomes in angel investing *Journal of Business Venturing* **24** (2) pp 116 – 133.

5382. Wiltbank R 2009 Siding with angels: Business angel investing – promising outcomes and effective strategies *Research Report* National Endowment for Science Technology, and the Arts, British Business Angels Association London UK.

5383. Amatucci F, Sohl J 2006 Business angels: Investment processes, outcomes and current trends *in* Entrepreneurship: The Engine of Growth, Vol 2: The Process *Greenwood Publishing Group* pp 87 – 104.

5384. Heukamp F, Liechtenstein H, Wakeling N October 2006 Do business angels alter the risk-return equation in early stage investments? Business angels as seen by venture capitalists in the German speaking countries *IESE Research Paper no D/655* IESE Business School University of Navarra Barcelona Spain pp 1 – 33
http://www.iese.edu/research/pdfs/DI-0655-E.pdf .

5385. Mercil St 2006 Organizing angel investment to benefit angels, companies, and communities *Community Development Investment Review* Federal Reserve Bank of san Francisco **2** (3) pp 43 – 49
www.frbsf.org/cdinvestments ,
http://www.frbsf.org/publications/community/review/122006/mercil.pdf .

5386. Sudek R 2006 Angel investment criteria *Journal of Small Business Strategy* **17** (2) pp 89 – 103.

5387. Chahine S, Filatochev I, Wright M 2007 Venture capitalist, business angels, and performance of entrepreneurial IPOs in the UK and France *Journal of Business Finance and Accounting* **34** pp 505 – 528.

5388. Harrison R T, Mason C M 2007 Does gender matter? Women business angels and the supply of entrepreneurial finance *Entrepreneurship Theory and Practice* **31** (3) pp 445 – 472.

5389. Harrison R T, Mason C, Robson P 2010 Determinants of long-distance investing by business angels in the UK *Entrepreneurship & Regional Development* **22** (2) pp 113 – 137.

5390. Knyphausen-Aufseß D Z, Westphal R 2007 Do business angel networks deliver value to business angels? *Venture Capital* **10** (2) pp 149 – 169.

5391. Preston S L 2007 Angel financing for entrepreneurs: Early-stage funding for long-term success *Jossey-Bass*.

5392. Clark C 2008 The impact of entrepreneurs' oral "pitch" presentation skills on business angels' initial screening investment decision *Venture Capital* **10** (3) pp 257 – 279.

5393. Goldfarb B, Hoberg G, Kirsch D, Triantis A 2008 Does angel participation matter? An analysis of early venture financing *Working Paper 06-072* Robert H Smith School of Business http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1024186 .

5394. Ibrahim D 2008 The (not so) puzzling behavior of angel investors *Vanderbilt Law Review* **61** pp 1405 – 1452.

5395. Ibrahim D M 2011 Should angel-backed start-ups reject venture capital? *Legal Studies Research Paper no 1170* University of Wisconsin USA.

5396. Riding A L 2008 Business angels and love money investors: Segments of the informal market for risk capital *Venture Capital* **10** (4) pp 355 – 369.

5397. Collewaert V, Manigart S 2009 First-round valuation of angel-backed companies: The role of investor human capital *Working Paper no 2009/624* Faculty of Economics and Business Administration Ghent University Belgium

http://wps-feb.ugent.be/Papers/wp_09_624.pdf .

5398. Collewaert V, Manigart S, Aernoudt R 2010 Assessment of government funding of business angel networks in Flanders *Regional Studies* **44** (1) pp 119 – 130.

5399. Collewaert V 2016 Angel–entrepreneur relationships: Demystifying their conflicts Chapter 8 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 176 – 198

http://dx.doi.org/10.4337/9781783471720.00014 ,

https://www.elgaronline.com/view/9781783471713.00014.xml .

5400. DeGennaro R P, Dwyer G P 2009 Expected returns to angel investors *Working Paper* Federal Reserve Bank of Atlanta

http://www.clevelandfed.org/research/Conferences/2009/3-12-2009/DeGennaro_Dwyer-Revised.pdf.

5401. DeGennaro R, Dwyer G 2010 Expected returns to stock investments by angel investors in groups *FRB Atlanta Working Paper no 2010-14* Federal Reserve Bank of Atlanta USA

http://www.frbatlanta.org/documents/pubs/wp/wp1014.pdf .

5402. DeGennaro R P 2010, 2012 Angel investors and their investments *Working Paper*, *in* The Oxford Handbook of Entrepreneurial Finance *Oxford University Press 13* Oxford UK.

5403. Goldfarb B, Hoberg G, Kirsch D, Triantis A 2009 Does angel participation matter? An analysis of early venture financing *Working Paper* University of Maryland USA.

5404. Goldfarb B D, Hoberg G, Kirsch D, Triantis A J 2012 Does angel participation matter? An analysis of early venture financing *R H Smith Research Paper no 06-072*.

5405. Mehrotra V 2009 Fool's gold: The truth behind angel investing in America *The Economic Record* **85** (271) pp 495 – 496.

5406. Roach G 2009 Is angel investing worth the effort? A study of Keiretsu forum *Venture Capital* **12** (2) pp 153 – 166
http://dx.doi.org/10.1080/13691061003643276 .
5407. Wallisch M 2009 Unternehmensfinanzierung durch business angels *Zeitschrift für Wirtschaftsgeographie* **53** (1-2) pp 47 – 68.
5408. Wong A, Bhatia M, Freeman Z 2009 Angel finance: The other venture capital *Strategic Change* **18** (7-8) pp 221 – 230.
5409. Markova S, Petkovska-Mirčevska T 2010 Entrepreneurial finance: Angel investing as a source of funding high-growth start-up firms *Annals of the University of Petrosani: Economics* **10** (3) pp 217 – 224.
5410. Lahti T 2011a Angel investing: An examination of the evolution of the Finnish market *Venture Capital* **13** (2) pp 147 – 173.
5411. Lahti T 2011b Categorization of angel investments and explorative analysis of risk reduction strategies in Finland *Venture Capital* **13** (1) pp 49 – 74.
5412. Lahti T, Keinonen H 2016 Business angel networks: a review and assessment of their value to entrepreneurship Chapter 14 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 354 – 378
http://dx.doi.org/10.4337/9781783471720.00022 ,
https://www.elgaronline.com/view/9781783471713.00022.xml .
5413. Maxwell A L, Jeffrey S A, Lévesque M 2011 Business angel early stage decision making *Journal of Business Venturing* **26** (2) pp 212 – 225.
5414. Maxwell A L, Levesque M Jeffrey S 2014 The non-compensatory relationship between risk and return in business angel investment decisions *Academy of Management Proceedings* **2014** (1) 10463.
5415. Maxwell A L 2016 Investment decision-making by business angels Chapter 6 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 115 – 146
http://dx.doi.org/10.4337/9781783471720.00012 ,
https://www.elgaronline.com/view/9781783471713.00012.xml .
5416. OECD 2011 Financing high growth firms. The role of angel investors *OECD Publishing* Paris France.
5417. Johnson W C, Sohl J E 2012a Initial public offerings and pre-IPO shareholders: Angels versus venture capitalists *Journal of Developmental Entrepreneurship* (JDE) **17** (4) pp 1250022-1 – 1250022-23.

5418. Johnson W C, Sohl J E 2012b Angels and venture capitalists in the initial public offering market *Venture Capital* **14** (1) pp 27 – 42.

5419. Mitteness C, Sudek R, Cardon M S 2012 Angel investor characteristics that determine whether perceived passion leads to higher evaluations of funding potential *Journal of Business Venturing* **27** (5) pp 592 – 606.

5420. Scheela W, Jittrapanun T 2012 Do institutions matter for business angel investing in emerging Asian markets? *Venture Capital* **14** (4) pp 289 – 308.

5421. Wu Zhenyu, Yuan Wenlong, Wei Xueqi 2012 The effects of new ventures' resource strategies on angels' investing outcomes: Big gains and big losses in angel investments *Entrepreneurship Research Journal* **2** (3) pp 1 – 27.

5422. Festel G W, De Cleyn S H 2013 Founding angels as an emerging subtype of angel investment model in high-tech businesses *Venture Capital* **15** (3) pp 261 – 282.

5423. Florin J, Dino R, Huvaj M N 2013 Research on angel investing: A multilevel framework for an emerging domain of inquiry *Venture Capital* **15** (1) pp 1 – 27.

5424. Gregson G, Mann S, Harrison R 2013 Business angel syndication and the evolution of risk capital in a small market economy: Evidence from Scotland *Managerial and Decision Economics* **34** (2) pp 95 – 107.

5425. Hoyos J, Santos M S 2013 The informal investment context: Specific issues concerned with business angels *Investigaciones Regionales* (*Journal of Regional Research*) issue **26** pp 179 – 198.

5426. Zachary R, Mishra C S 2013 Research on angel investments: The intersection of equity investments and entrepreneurship *Entrepreneurship Research Journal* **3** (2) pp 160 – 170.

5427. Carpentier C, Suret J-M 2014 Business angels' perspectives on exit by IPO *CIRANO Working Paper no 2014s-21* CIRANO Montreal Canada pp 1 – 35.

5428. Carpentier C, Suret J-M 2016 The effectiveness of tax incentives for business angels Chapter 13 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 327 – 353

http://dx.doi.org/10.4337/9781783471720.00021 ,

https://www.elgaronline.com/view/9781783471713.00021.xml .

5429. Parhankangas A-L, Ehrlich M 2014 How entrepreneurs seduce business angels: An impression management approach *Journal of Business Venturing* **29** (4) pp 543 – 564.

5430. Zhujun Ding, Sunny Sun, Kevin Au 2014 Angel investors’ selection criteria: A comparative institutional perspective *Asia Pacific Journal of Management* **31** (3) pp 705 – 731.

5431. Altuntas B 2015 Turkey Chapter 14 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 151 – 155
http://dx.doi.org/10.1142/9789814733816_0014 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0014 .

5432. Anselmo E P, Amati L 2015 Italy Chapter 15 in Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide World Scientific Publishing Co Pte Ltd ISBN: 978-981-4733-05-2 pp 157 – 162
http://dx.doi.org/10.1142/9789814733816_0015 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0015 .

5433. Ashish D, Agarwal M 2015 India Chapter 21 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 215 – 224
http://dx.doi.org/10.1142/9789814733816_0021 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0021 .

5434. Banga F, Lewis D 2015 New Zealand Chapter 26 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 255 – 262
http://dx.doi.org/10.1142/9789814733816_0026 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0026 .

5435. Baumann B 2015 Switzerland Chapter 31 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 285 – 291
http://dx.doi.org/10.1142/9789814733816_0031 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0031 .

5436. Dollinger D T, Rhodes S 2015 Israel Chapter 6 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 61 – 73
http://dx.doi.org/10.1142/9789814733816_0006 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0006 .

5437. Finlay R, Witkin B 2015 Canada Chapter 24 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 243 – 248
http://dx.doi.org/10.1142/9789814733816_0024 ,

http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0024 .

5438. Gluntz Ph 2015 France Chapter 7 *in* Angels without Borders Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 75 – 82
http://dx.doi.org/10.1142/9789814733816_0007 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0007 .

5439. Gray N 2015 Scotland Chapter 12 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 123 – 137
http://dx.doi.org/10.1142/9789814733816_0012 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0012 .

5440. Green J 2015 Australia Chapter 16 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 163 – 175
http://dx.doi.org/10.1142/9789814733816_0016 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0016 .

5441. Gunther U 2015 Germany Chapter 11 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 115 – 122
http://dx.doi.org/10.1142/9789814733816_0011 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0011 .

5442. Hellmann Th, Thiele V 2015 Friends or foes? The interrelationship between angel and venture capital markets *Journal of Financial Economics* **115** (3) pp 639 – 653.

5443. Henyon H 2015 United Arab Emirates Chapter 19 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 195 – 201
http://dx.doi.org/10.1142/9789814733816_0019 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0019 .

5444. Hudson M 2015 United States Chapter 10 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 99 – 114
http://dx.doi.org/10.1142/9789814733816_0010 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0010 .

5445. Litzka B 2015 Austria Chapter 29 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 277 – 279
http://dx.doi.org/10.1142/9789814733816_0029 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0029 .
5446. May J, Liu M M (editors) 2015 Front Matter *in* Angels without borders: Trends and policies shaping angel investment worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 1 – 308
DOI: 10.1142/9789814733816_fmatter ,
http://www.worldscientific.com/worldscibooks/10.1142/9881 .
5447. May J, Manhong Mannie Liu 2015 Over the Horizon Chapter 32 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 293 – 295
http://dx.doi.org/10.1142/9789814733816_0032 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0032 .
5448. Mullett C 2015 South Africa Chapter 8 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 83 – 90
http://dx.doi.org/10.1142/9789814733816_0008 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0008 .
5449. Neira J P R 2015 Colombia Chapter 28 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 271 – 276
http://dx.doi.org/10.1142/9789814733816_0028 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0028 .
5450. Oker-Blom J D 2015 Finland Chapter 30 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 281 – 283
http://dx.doi.org/10.1142/9789814733816_0030 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0030 .
5451. Payne B 2015 Sources of capital for start-ups Chapter 2 *in* Angels without Borders Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* pp 7 – 24
http://dx.doi.org/10.1142/9789814733816_0002 ,

http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0002 .

5452. Poh-Kam Wong 2015 Singapore Chapter 23 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 233 – 242
http://dx.doi.org/10.1142/9789814733816_0023 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0023 .

5453. Protopopov I, Fokin K 2015 Russia Chapter 27 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 263 – 270
http://dx.doi.org/10.1142/9789814733816_0027 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0027 .

5454. Reijtenbagh R A G 2015 The Netherlands Chapter 22 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 225 – 231
http://dx.doi.org/10.1142/9789814733816_0022 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0022 .

5455. Roure J, San Jose A D 2015 Spain Chapter 18 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 187 – 194
http://dx.doi.org/10.1142/9789814733816_0018 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0018 .

5456. Roza J T D, Banha F 2015 Portugal Chapter 25 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 249 – 254
http://dx.doi.org/10.1142/9789814733816_0025 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0025 .

5457. Sidman Ch 2015 Crowdfunding and angel investing Chapter 5 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 43 – 57
http://dx.doi.org/10.1142/9789814733816_0005 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0005 .

5458. Silby W, Nicholas J 2015 Angel impact investing Chapter 4 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 33 – 41

http://dx.doi.org/10.1142/9789814733816_0004 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0004 .

5459. Tooth J 2015 United Kingdom Chapter 20 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 203 – 213
http://dx.doi.org/10.1142/9789814733816_0020 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0020 .

5460. Vossen R, Munck C 2015 Belgium Chapter 17 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 177 – 186
http://dx.doi.org/10.1142/9789814733816_0017 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0017 .

5461. Wallace P, Conti R 2015 Women angel investors Chapter 3 *in* Angels without borders: Trends and policies shaping angel investment worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 25 – 31
http://dx.doi.org/10.1142/9789814733816_0003 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0003 .

5462. Wang Jiani, Chen Su 2015 China Chapter 13 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 139 – 150
http://dx.doi.org/10.1142/9789814733816_0013 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0013 .

5463. Wang Jiani, Yi Tan, Manhong Liu 2016 Business angels in China: Characteristics, policies and international comparison Chapter 9 in Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 201 – 232
http://dx.doi.org/10.4337/9781783471720.00016 ,
https://www.elgaronline.com/view/9781783471713.00016.xml .

5464. Yeung A 2015 Hong Kong Chapter 9 *in* Angels without Borders: Trends and Policies Shaping Angel Investment Worldwide *World Scientific Publishing Co Pte Ltd* ISBN: 978-981-4733-05-2 pp 91 – 98
http://dx.doi.org/10.1142/9789814733816_0009 ,
http://www.worldscientific.com/doi/abs/10.1142/9789814733816_0009 .

5465. Zhujun Ding, Au K, Chiang F 2015 Social trust and angel investors' decisions: A multilevel analysis across nations *Journal of Business Venturing* **30** (2) pp 307 – 321.

5466. Avdeitchikova S, Landström H 2016 The economic significance of business angels: Toward comparable indicators Chapter 3 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 53 – 75
http://dx.doi.org/10.4337/9781783471720.00008 ,
https://www.elgaronline.com/view/9781783471713.00008.xml .

5467. Amatucci F M 2016 Women business angels: Theory and practice Chapter 5 in Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 92 – 112
http://dx.doi.org/10.4337/9781783471720.00010 ,
https://www.elgaronline.com/view/9781783471713.00010.xml .

5468. Estapé-Dubreuil G, Ashta A, Hédou J-P 2016 Micro-equity for sustainable development: Selection, monitoring and exit strategies of micro-angels *Ecological Economics* **130** (C) pp 117 – 129.

5469. Hornuf L, Schwienbacher A October 29 2016 Crowdinvesting: Angel investing for the masses? Chapter 15 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 381 – 398
http://dx.doi.org/10.4337/9781783471720.00024 ,
https://www.elgaronline.com/view/9781783471713.00024.xml .

5470. Lingelbach D 2016 Business angels in sub-Saharan Africa Chapter 11 in Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 256 – 281
http://dx.doi.org/10.4337/9781783471720.00018 ,
https://www.elgaronline.com/view/9781783471713.00018.xml .

5471. Murnieks Ch Y, Cardon M S, Sudek R, White T D, Brooks W T 2016 Drawn to the fire: The role of passion, tenacity and inspirational leadership in angel investing *Journal of Business Venturing* **31** (4) pp 468 – 484.

5472. Politis D 2016 Business angels as smart investors: A systematic review of the evidence Chapter 7 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 147 – 175
http://dx.doi.org/10.4337/9781783471720.00013 ,
https://www.elgaronline.com/view/9781783471713.00013.xml .

5473. Qoqiauri L 2016 Principles of venture and business-angel investments *Asian Economic and Financial Review* **6** (10) pp 583 – 601.

5474. Romaní G, Atienza M 2016 Business angels in developing economies: the experience of Latin America Chapter 12 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 282 – 324
http://dx.doi.org/10.4337/9781783471720.00019 ,
https://www.elgaronline.com/view/9781783471713.00019.xml .

5475. Scheela W 2016 Business angels in emerging economies: Southeast Asia Chapter 10 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 233 – 255
http://dx.doi.org/10.4337/9781783471720.00017 ,
https://www.elgaronline.com/view/9781783471713.00017.xml .

5476. Sørheim R, Botelho T 2016 Categorizations of business angels: An overview Chapter 4 *in* Handbook of Research on Business Angels *Edward Elgar Publishing* UK ISBN: 9781783471713 pp 76 – 91
http://dx.doi.org/10.4337/9781783471720.00009 ,
https://www.elgaronline.com/view/9781783471713.00009.xml .

Investment boutique firm, investment boutique bank, financial capital investment vehicle in finances:

5477. Thrift N 1994 On the social and cultural determinants of international financial centres: The case study of the City of London *in* Money, Power and Space Corbridge S, Thrift N, Martin R (editors) *Blackwell* Oxford UK pp 327 – 355.

5478. Luenberger D G 1997 Investment science *Oxford University Press* Oxford USA ISBN: 9780195108095.

5479. Hall S 2007 "Relational marketplaces" and the rise of boutiques in London’s corporate finance industry *Environment and Planning A* **39** (8) pp 1838 – 1854
http://journals.sagepub.com/doi/abs/10.1068/a38233?id=a38233& .

5480. Morrison A D, Wilhelm W J Winter 2007 Investment banking: Past, present and future *Journal of Applied Corporate Finance* **19** (1) pp 8 – 20.

5481. Office of Career Services August 2012 Investment banking boutique firms Columbia University NY USA pp 1 – 8
http://www.sipa.columbia.edu/resources_services/career_services/current_students/career_resources/documents/InvestmentBankingBoutiqueFirms.pdf .

5482. Weihong Song Wei Jie, Lei Zhou 2013 The value of “boutique” financial advisors in mergers and acquisitions *Journal of Corporate Finance* **20** (C) pp 94 – 114.

5483. Goodhart Ch, Schoenmaker D March 2016 The United States dominates global investment banking: Does it matter for Europe? *Policy Contributions Bruegel* issue **2016/06** pp 1 – 14
http://bruegel.org/wp-content/uploads/2016/03/pc_2016_06-1.pdf .
5484. Thomson Reuters 2016 Global investment banking review full year 2015 *Thomson Reuters Deals Business Intelligence* New York USA.
5485. Wikipedia 2016 Boutique investment bank Wikipedia Inc
https://en.wikipedia.org/wiki/Boutique_investment_bank .
Probability theory, statistics theory, Brownian movement theory, diffusion theory and chaos theory in econometrics, econophysics and physics:
5486. Huygens 1657 De ratiociniis in aleae ludo (On calculations in games of chance).
5487. Bernoulli J 1713 Ars conjectandi (The art of guessing).
5488. Bernoulli D 1738, 1954 Specimen theoria novae de mensura sortis *Commentarii Academiae Scientiarium Imperialis Petropolitanae* Petropoli vol **5** pp 175 – 192; Exposition of a new theory on the measurements of risk Sommer L (translator) *Econometrica* vol **22** pp 23 – 36.
5489. De Moivre 1730 Miscellanea analytica supplementum (The analytic method).
5490. De Laplace 1812 Théorie analytique des probabilities *Paris* France.
5491. Bunyakovsky V Ya 1825 Heat propagation in solids *Ph D Thesis* under Prof. Augustin -Louis Cauchy supervision *École Polytechnique* Paris France.
5492. Bunyakovsky V Ya 1846 Foundations of the mathematical theory of probability *St. Petersburg* Russian Federation.
5493. Connor J J, Robertson E F July 2000 Viktor Yakovlevich Bunyakovsky (December 16, 1804 - December 12, 1889) *School of Mathematics and Statistics* University of St Andrews Scotland UK
http://www-history.mcs.st-andrews.ac.uk/Biographies/Bunyakovsky.html .
5494. V Ya Bunyakovsky International Conference (August 20 - 21) 2004 Private communications with conference participants on V Ya Bunyakovsky's mathematical theory of probability and its applications in econophysics and econometrics during tour to Town of Bar Vinnytsia Region Ukraine *V Ya Bunyakovsky International Conference Institute of Mathematics of National Academy of Sciences of Ukraine (NASU)* Kyiv Ukraine www.imath.kiev.ua/~syta/bunyak .
5495. Brown R 1828 *Philosophical Magazine* N S **4** pp 161 – 173.
5496. Brown R 1829 *Philosophical Magazine* N S **6** pp 161 – 166.

5497. Chebyshev P L 1846 An experience in the elementary analysis of the probability theory *Crelle's Journal fur die Reine und Angewandte Mathematik*.

5498. Chebyshev P L 1867 Des valuers moyennes *Journal de Math'ematics Pures et Appliqu'ees* vol **12** pp 177 – 184.

5499. Chebyshev P L 1891 Sur deux theoremes relatifs aux probabilities *Acta Mathematica* vol **14**.

5500. Chebyshev P L 1936 Theory of probability: Lectures given in 1879 and 1880 Lyapunov A N (lecture notes writer) Krylov A N (editor) *Moscow - St Petersburg* Russian Federation.

5501. Markov A A 1890 On one problem by D I Mendeleev *Zapiski Imperatorskoi Akademii Nauk SPb* **62** pp 1 – 24.

5502. Markov A A 1899 Application des functions continues au calcul des probabilit´es *Kazan Bulletin* **9** (2) pp 29 – 34 Russian Federation.

5503. Markov A A 1900, 1912, 1913 Calculation of probabilities *St Petersburg* Russian Federation; Wahrscheinlichkeits-Rechnung *Teubner* Leipzig-Berlin Germany; 3rd edition *St Petersburg* Russian Federation.

5504. Markov A A 1906 Extension of law of big numbers on variables, depending from each other *Izvestiya Fiziko-Matematicheskogo Obschestva pri Kazanskom Universitete* 2nd series vol **15** (94) pp 135 – 156 Russian Federation.

5505. Markov A A 1907, 1910 Research on fine case of depending trials *Izvestiya Akademii Nauk SPb* 6th series vol **1** (93) pp 61 – 80; Recherches sur un cas remarquable d'epreuves dependantes *Acta Mathematica* **33** pp 87 – 104 Stockholm Sweden.

5506. Markov A A 1908, 1912, 1971 Extension of limit theorems of calculation of probabilities to sum of variables, connected in chain *Zapiski Akademii Nauk po Fiziko-Matematicheskomu Otdeleniyu* 8th series vol **25** (3); Ausdehnung der Satze uber die Grenzwerte in der Wahrscheinlichkeitsrechnung auf eine Summe verketteter Grossen Liebmann H (translator) *in* Wahrscheinlichkeitsrechnung Markov A A (author) pp 272 – 298 *Teubner B G* Leipzig Germany; Extension of the limit theorems of probability theory to a sum of variables connected in a chain Petelin S (translator) *in* Dynamic probabilities systems Howard R A (editor) vol **1** pp 552 – 576 *John Wiley and Sons Inc* New York USA.

5507. Markov A A 1910 Research on common case of trials, connected in chain *Zapiski Akademii Nauk po Fiziko-Matematicheskomu Otdeleniyu* 8th series vol **25** (93) Russian Federation.

5508. Markov A A 1911 On one case of trials, connected in complex chain *Izvestiya Akademii Nauk SPb* 6th series vol **5** (93) pp 171 – 186 Russian Federation.

5509. Markov A A 1912 On trials of connected in chain unobserved events *Izvestiya Akademii Nauk SPb* 6th series vol **6** (98) pp 551 – 572 Russian Federation.

5510. Markov A A 1913 Example of statistical research on text of "Eugene Onegin", illustrating interconnection of trials in chain *Izvestiya Akademii Nauk SPb* 6th series vol **7** (93) pp 153 – 162 Russian Federation.

5511. Fisher I 1892 Mathematical investigations in the theory of value and prices *Transactions of the Connecticut Academy* **9** pp 1 – 124.

5512. Einstein A 1905 On the movement of small particles suspended in a stationary liquid demanded by the molecular-kinetic theory of heat *Annalen der Physik* **17** pp 549 – 560.

5513. Einstein A 1956 Investigation on the theory of the Brownian motion Furth R (editor) *Dover* New York USA.

5514. Einstein A, Smolukhovsky M 1936 Brownian movement: Collection of research papers *ONTI* Moscow Russian Federation.

5515. Bowley A L 1924 The mathematical groundwork of economic *Clarendon Press* Oxford UK.

5516. Kolmogorov A N 1937 Markov chains with countable many states *Bulletin Moscow University* **1**.

5517. Kolmogorov A N 1938 On analytic methods in probability theory *in* Selected works of Kolmogorov A N vol **2** Probability theory and mathematical statistics Shiryaev A N (editor) *Springer* Germany.

5518. Kolmogorov A N 1947 The contribution of Russian science to the development of probability theory *Uchenye Zapiski Moskovskogo Universiteta* no 91.

5519. Kolmogorov A N 1956 Probability theory in Mathematics: Its contents, methods, and meaning *Academy of Sciences USSR* vol **2**.

5520. Kolmogorov A N 1956 Foundations of the theory of probability *Chelsea* New York USA.

5521. Kolmogorov A N 1985 Mathematics and mechanics Selected works vol **1** *Nauka Publishing House* Moscow Russian Federation.

5522. Kolmogorov A N 1986 Probability theory and mathematical statistics Selected works vol **2** *Nauka Publishing House* Moscow Russian Federation.

5523. Allen R G D 1938 Mathematical analysis for economists *Macmillan* London UK.

5524. Cramer H 1940 On the theory of stationary random processes *Ann Math* vol ***41*** pp 215 – 230.

5525. Cramer H 1946 Mathematical methods of statistics *Princeton University Press* USA.

5526. Cramer H, Leadbetter M 1967 Stationary and related stochastic processes. Sample function properties and their applications *John Wiley and Sons Inc* NY USA.

5527. Bemshtein S N 1946 Theory of probability 4th edition *Gostehizdat* Moscow Russian Federation.

5528. Hannan E J 1960 Time series analysis *Methuen* London.

5529. Hannan E J 1970 Multiple time series *John Wiley and Sons Inc* New York USA.

5530. Mandelbrot B B 1960 The Pareto-Levy law and the distribution of income *International Economic Review* no 1.

5531. Mandelbrot B B 1963a The stable Paretian income distribution when the apparent exponent is near two *International Economic Review* no 4.

5532. Mandelbrot B B 1963b The variation of certain speculative prices *Journal of Business* vol **36** pp 394 – 419.

5533. Mandelbrot B B 1965 Une classe de processus stochastiques homothetiques a soi: Application a la loi climatologique de H. E. Hurst Comptes Rendus de l'Academie des Sciences vol **240** pp 3274 – 3277 Paris France.

5534. Mandelbrot B B 1967a The variation of some other speculative prices Joural of Business vol **40** pp 393 – 413.

5535. Mandelbrot B B (April) 1967b Some noises with 1/f spectrum: A bridge between direct current and white noise *IEEE Transactions on Information* Theory USA.

5536. Mandelbrot B B, Taylor H M 1967 On the distribution of stock price difference *Operations Research* vol **15** no 6 pp 1057 – 1062.

5537. Mandelbrot B B, van Ness J W 1968 Fractional Brownian motions, fractional noises and applications *SIAM Review* vol **10** no 4 pp 422 – 437.

5538. Mandelbrot B B 1969 Robustness of the rescaled range R/S in the measurement of non-cyclic long-run statistical dependence *Water Resources Research* vol **5** no 5 pp 967 – 988.

5539. Mandelbrot B B, Wallis J R 1969 Computer experiments with fractional Gaussian noises I, II, III *Water Resources Research* vol **5** pp 228 – 267.

5540. Mandelbrot B B 1971 When can price be arbitrated efficiently? A limit of the validity of the random walk and martingale models *Review of Economics and Statistic* vol **53** pp 225 – 236.

5541. Mandelbrot B B 1972 Statistical methodology for non-periodic cycles: From the covariance to R/S analysis Annals of Economic and Social Measurement vol **1** no 3 pp 259 – 290.

5542. Mandelbrot B B 1975a Les objects fractals *Flammarion* Paris France.

5543. Mandelbrot B B 1975b Limit theorems on the self-normalized range for weakly and strongly dependent process *Zeitschrift Wahrscheinlichkeitsttheorie und Verwandte Gebiete* vol **31** pp 271 – 285.

5544. Mandelbrot B B 1977 Fractals: Form, chance and dimension *W H Freeman* San Francisco USA.

5545. Mandelbrot B B 1982 The fractal geometry of nature *W H Freeman* San Francisco USA.

5546. Mandelbrot B B 1997 Fractals and scaling in finance *Springer* New York USA.

5547. Mandelbrot B B, Hudson L March 7 2006 The misbehavior of markets: A fractal view of financial turbulence *Basic Books* pp 1 – 368 ISBN-13: 978-0465043576.

5548. Gnedenko B V, Khinchin A Ya 1961 An elementary introduction to the theory of probability *Freeman* San Francisco USA.

5549. Gnedenko B V 1988 The theory of probability *Mir* Moscow Russian Federation.

5550. Abramowitz M, Stegun I A (editors) 1964 Handbook of mathematical functions *National Bureau of Standards Applied Mathematics Series* vol **55** USA.

5551. Kubilius J 1964 Probabilistic methods in the theory of numbers American Mathematical Society Providence USA.

5552. Akhiezer N I, Glazman I M 1966 Theory of linear operators in Hilbert space *Nauka* Moscow Russian Federation.

5553. Lamperti J 1966 Probability *Benjamin* New York USA.

5554. Kai-Lai Chung 1967 Markov chains with stationary transition probabilities *Springer-Verlag* New York USA.

5555. Skorohod A V 1967 Random processes with independent increments *Nauka* Moscow Russian Federation.

5556. Gikhman I I, Skorohod A V 1968 Stochastic differential equations *Naukova Dumka* Kiev Ukraine.

5557. Gikhman I I, Skorohod A V 1969 Introduction to the theory of random processes 1st edition *Saunders* Philadelphia USA.

5558. Gikhman I I, Skorohod A V 1974-1979 Theory of stochastic processes vols **1**, **2**, **3** *Springer-Verlag* New York-Berlin USA-Germany.

5559. Breiman L 1968 Probability *Addison-Wesley* Reading MA USA.

5560. Feller W 1968 An introduction to probability theory and its applications vols **1**, **2** 3rd edition *John Wiley and Sons Inc* New York USA.

5561. Brush S G 1968, 1977 A history of random processes: 1. Brownian movement *in* Study history statistics and probability Kendall M G, Plackett R L (editors) **2** pp 347 – 382 London UK.

5562. Glesjer H 1969 A new test for heteroskedasticity *Journal of the American Statistical Association* **64** pp 316 – 323.

5563. Ash R B 1970 Basic probability theory *John Wiley and Sons Inc* New York USA.

5564. Ash R B 1972 Real analysis and probability *Academic Press* New York USA.

5565. Ash R B, Gardner M F 1975 Topics in stochastic processes *Academic Press* New York USA.

5566. Box G E P, Jenkins G M 1970 Time series analysis: Forecasting and control *Holden Day* San Francisco California USA.

5567. Renyi A 1970 Probability theory *North-Holland Publishing Company* Amsterdam The Netherlands.

5568. Isihara A 1971 Statistical physics *Academic Press* New York USA.

5569. Andreev A F February 1976 Diffusion in quantum crystals *Uspekhi Fizicheskih Nauk* (*UFN*) vol **118** (2) pp 251 – 271.

5570. Borovkov A A 1976 Wahrscheinlichkeitstheorie: Eine EinjUhrung 1st edition *Birkhiuser* Basel-Stuttgart Switzerland-Germany.

5571. Grangel C W J, Newbold P 1977 Forecasting economic time series *Academic Press* New York USA.

5572. Pugachev V S 1979b Theory of probability and mathematical statistics 1st edition *Nauka* Moscow Russian Federation, 2nd edition *Fizmatlit* Moscow Russian Federation ISBN 5–92210254–0 pp 1 – 496.

5573. Grangel C W J, Teräsvirta T 1993 Modeling nonlinear economic relationships *Oxford University Press* Oxford New York UK USA.

5574. Karlin S, Taylor H M 1981 A second course in stochastic processes *Academic Press* New York USA.

5575. Venttsel A D 1981 A course in the theory of stochastic processes *McGraw-Hill* New York USA.

5576. Yaglom A M, Yaglom I M 1983 Probability and information *Reidel Dordrecht*.

5577. Pagan A 1984 Econometric issues in the analysis of regressions with generated regressors *International Economic Review* **25** pp 221 – 247.

5578. Van Horne J C 1984 Financial market rates and flows *Prentice Hall* Englewood Cliffs NJ USA.

5579. Taylor S 1986 Modeling financial time series *John Willey and Sons Inc* New York USA.

5580. Tong H 1986 Nonlinear time series *Oxford University Press* Oxford UK.

5581. Sharkovsky A N, Maistrenko Yu L, Romanenko E Yu 1986 Differential equations and their applications *Naukova Dumka* Kiev Ukraine pp 1 – 280.

5582. Newey W, West K 1987 A simple positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix *Econometrica* **55** pp 703 – 708.

5583. Luukkonen R, Saikkonen P, Terasvirta T 1988 Testing linearity against smooth transition autoregressive models *Biometrika* **75** pp 491 – 499.

5584. Judge G, Hill C, Griffiths W, Lee T, Lutkepol H 1988 An introduction to the theory and practice of econometrics *John Wiley and Sons Inc* New York USA.

5585. Hardle W 1990 Applied nonparametric regression *Econometric Society Monograph Cambridge University Press* Cambridge UK.

5586. Tong H 1990 Nonlinear time series: A dynamical system approach *Clarendon Press* Oxford UK.

5587. Johansen S 1992 Cointegration in partial systems and the efficiency of single equation analysis *Journal of Econometrics* **52** pp 389 – 402.

5588. Pesaran M H, Potter S M (editors) 1993 Nonlinear dynamics, chaos and econometrics *John Willey and Sons Inc* New York USA.

5589. Banerjee A, Dolado J J, Galbraith J W, Hendry D F 1993 Cointegration, error correction, and the econometric analysis of nonstationary data *Oxford University Press* Oxford UK.

5590. Hamilton J D 1994 Time series analysis *Princeton University Press* Princeton, NJ USA.

5591. Peters E E 1994 Fractal market analysis: Applying chaos theory to investment and economics *John Wiley and Sons Inc* New York USA.

5592. Enders W 1995 Applied econometric time series *John Wiley and Sons Inc* New York USA.

5593. Johansen S 1995 Likelihood based inference in co-integrated vector autoregressive models *Oxford University Press* Oxford UK.

5594. Karatzas I, Shreve S 1995 Methods of mathematical finance *Columbia University Press* New York USA.

5595. Moore G E 1995 Lithography and the future of Moore's law *Proceedings SPIE Symposium Optical Microlithography Conference VIII* **2440** 2.

5596. Shiryaev A N 1995 Probability 2nd edition *Springer - Verlag* ISBN 0-387-94549-0 New York USA pp 1 – 621.

5597. Moore G E 2003 No exponential is forever – but we can delay forever *ISSCC*.

5598. Campbell J Y, Lo A W, MacKinlay A C 1996 The econometrics of financial markets *Princeton University Press* Princeton USA.

5599. Mosekilde E 1996 Topics in nonlinear dynamics: Applications to physics, biology and economic systems *World Scientific Publishing Pte Ltd* Singapore.

5600. Rogers L C G, Talay D (editors) 1997 Numerical methods in finance *Cambridge University Press* Cambridge UK.

5601. Campbell J, Lo A, MacKinlay C 1997 The econometrics of financial markets *Princeton University Press* Princeton NJ USA.

5602. Mosekilde E (1996-1997) Private communications on quantum chaos *Department of Physics* Technical University of Denmark Lyngby Denmark.

5603. Greene W H 1997, 2003 Econometric analysis 1st edition, 5th edition *Prentice Hall* Upper Saddle River USA.

5604. Hasem P M, Pesaran B 1997 Working with Microfit 4.0: Interactive econometric analysis *Oxford University Press* Oxford UK.

5605. Lo A W, MacKinlay A C 1997 The econometrics of financial markets *Princeton University Press* Princeton New Jersey USA.

5606. Anderson H M, Vahid F 1998 Testing multiple equation systems for common nonlinear factors *Journal of Econometrics* **84** pp 1 – 37.

5607. Escribano, Jorda 1999 Improved testing and specification of smooth transition regression models *in* Nonlinear time series analysis of economic and financial data Rothman (editor) *Kluwer Academic Press* Amsterdam The Netherlands.

5608. Hasem P M, Shin Y 1999 An autoregressive distributed lag modelling approach to cointegration analysis *in* Econometrics and economic theory in the 20th century: The Ranger Frisch centennial symposium Strom S, Holly A, Diamond P (editors) *Cambridge University Press* Cambridge UK www.econ.cam.ac.uk/faculty/pesaran/ADL.pdf .

5609. Hasem P M, Shin Y, Smith R J 2001 Bounds testing approaches to the analysis of level relationships *Journal of Applied Econometrics* **16** (3) pp 289 – 326.

5610. Potter S 1999 Non-linear time series modelling: An introduction *Typescript* Federal Reserve Bank of New York NY USA.

5611. Rothman (editor) 1999 Nonlinear time series analysis of economic and financial data *Kluwer Academic Press* Amsterdam The Netherlands.

5612. Hayashi F 2000 Econometrics *Princeton University Press* Princeton NJ USA.

5613. Durbin J, Koopman S J 2000 Time series analysis of non-Gaussian observations based on state-space models from both classical and Bayesian perspectives *Journal of Royal Statistical Society Series B* **62** pp 3 – 56.

5614. Durbin J, Koopman S J 2002 A simple and efficient simulation smoother for state space time series analysis *Biometrika* **89** pp 603 – 615.

5615. Durbin J, Koopman S J 2012 Time series analysis by state space methods 2nd edition *Oxford University Press* Oxford UK.

5616. Ilinski K 2001 Physics of finance: Gauge modelling in non-equilibrium pricing *John Wiley and Sons Inc* New York USA ISBN-10: 0471877387 pp 1 – 300.

5617. Nicolau J 2002 Stationary processes that look like random walks – The bounded random walk process in discrete and continuous time *Econometric Theory* **18** pp 99 – 118.

5618. Koop G 2003 Bayesian econometrics *John Wiley and Sons Inc* New York USA.

5619. Ledenyov V O, Ledenyov O P, Ledenyov D O 2002 A quantum random number generator on magnetic flux qubits *Proceedings of the 2nd Institute of Electrical and Electronics Engineers Conference IEEE-NANO 2002* Chicago Washington DC USA IEEE Catalog no 02TH86302002 Library of Congress number: 2002106799 ISBN: 0-7803-7538-6.

5620. Davidson R, MacKinnon J 2004 Econometric theory and methods *Oxford University Press* Oxford UK.

5621. Protter P E 2005 Stochastic integration and differential equations *Springer* Germany.

5622. Ledenyov V O, Ledenyov D O, Ledenyov O P 2006, 2012 Features of oxygen and its vacancies diffusion in superconducting composition $YBa_2Cu_3O_{7-\delta}$ near to magnetic quantum lines *Problems of Atomic Science and Technology* vol **15** no **1** pp 76 – 82 ISSN 1562-6016, Cornell University NY USA
www.arxiv.org 1206.5635v1.pdf .

5623. Demenok S L 2011 Fractal: Between the myth and craft *Rinvol, Academy of Culture Research Publishing Houses* St Petersburg Russian Federation pp 1 – 296 ISBN 978-5-903931-62-0.

5624. Wilson 2016 Non Western mathematics Public Lecture *London School of Economics and Political Science* London UK
http://media.rawvoice.com/lse_publiclecturesandevents/richmedia.lse.ac.uk/publiclecturesandevents/20160118_1830_nonWesternMathematics.mp4 .

Quantum diffusion in physics, econophysics and finances:

5625. Feynman R P, Hibbs A R 1965 Quantum mechanics and path integrals *McGraw-Hill* ISBN 0-07-020650-3.

5626. Andreev A F February 1976 Diffusion in quantum crystals *Uspekhi Fizicheskih Nauk* (*UFN*) vol **118** (2) pp 251 – 271.

5627. Kleinert H 2004 Path integrals in quantum mechanics, statistics, polymer physics, and financial markets 4th edition *World Scientific* Singapore ISBN 981-238-107-4.

Stability of investment portfolio in nonlinear dynamics, mathematics and finances:

5628. Lyapunov A M 1892, 1966, 1992 The general problem of the stability of motion *Ph D dissertation Imperial University of Kharkov* Kharkov Ukraine, Stability of motion *Academic Press* New-York & London USA & UK, The general problem of the stability of motion (Fuller A T translator) *Taylor & Francis* London UK.

5629. Kolmogorov A N, Petrovsky I G, Piskunov N S 1937 Research on the equation of diffusion, connected with increase of quantity of matter and its application to one biological problem *Moscow State University Bulletin: Mathematics and Mechanics* vol **1** p 1.

5630. Kolmogorov A N 1940 Wienersche spiralen und einige andere interessante kurven im Hilbertschen raum *DAN USSR* vol **26** no 2 pp 115 – 118.

5631. Kolmogorov A N 1941 Local structure of turbulence in non-compressed viscous liquid at very big Reynolds numbers *DAN USSR* vol **30** pp 299 – 303.

5632. Kolmogorov A N 1959 On the entropy on unit of time as metric invariant of automorphism *DAN USSR* vol **124** pp 754 – 755.

5633. Kolmogorov A N 1985 Mathematics and mechanics. Selected works vol **1** *Nauka Publishing House* Moscow Russian Federation.

5634. Kolmogorov A N 1986 Probability theory and mathematical statistics. Selected works vol **2** *Nauka Publishing House* Moscow Russian Federation.

5635. Alexandrov P S, Khinchin A Ya 1953 Andrei Nikolaevich Kolmogorov (To the 50th Birthday Anniversary) *Uspekhi Matematicheskih Nauk* (*UMN*) vol **8** no 3 pp 178-200.

5636. Gleick J 1988 Chaos: Making a new science *Penguin Books Ltd* USA ISBN 0 14 00.92501 pp 1 – 354.

5637. Ulam S M, von Neumann J 1947 *Bulletin American Mathematical Society* vol **53** no 11 p 1120.

5638. Kubo R 1957 Statistical-mechanical theory of irreversible processes *Journal Physics Society Japan* vol **12** p 570.

5639. Kubo R, Toda M, Hashitsume N 1983 Statistical physics *Springer* Heidelberg Germany.

5640. Kalman R E, Bertram J F 1960 Control system analysis and design via the second method of Lyapunov Journal of Basic Engineering **88** 371 – 394.

5641. Kalman R E 1963 Lyapunov functions for the problem of Lur'e in automatic control *Proc Natl Acad Sci USA* **49** (2) pp 201 – 205.

5642. Sharkovsky A N 1964 Co-existence of cycles of a continuous map of a line in itself *Ukrainian Mathematical Journal* vol **16** pp 61 – 71.

5643. Sharkovsky A N 1965 On the cycles and structure of continuous mapping *Ukrainian Mathematical Journal* vol **17** p 104.

5644. Sharkovsky A N, Maistrenko Yu L, Romanenko E Yu 1986 Differential equations and their applications *Naukova Dumka* Kiev Ukraine pp 1 – 280.

5645. May R 1974 Biological populations with Non-overlapping generations: Stable points, stable cycles, and chaos *Science* vol **186** pp 645 – 647.

5646. May R 1976 Simple mathematical models with very complicated dynamics *Nature* vol **261** pp 459 – 467.

5647. May R, Oster G F 1976 Bifurcations and dynamic complexity in simple ecological models *The American Naturalist* vol **110** pp 573 – 579.

5648. Li T-Y, Yorke J A 1975 Period three implies chaos *American Mathematics Monthly* vol **82** pp 982 – 985.

5649. Feigenbaum M J 1978 Quantitative universality for a class of nonlinear transformations *Journal of Statistical Physics* vol **12** no 1 pp 25 – 52.

5650. Feigenbaum M J 1979a The universal metric properties of nonlinear transformations *Journal of Statistical Physics* vol **21** no 6 pp 669 – 706.

5651. Feigenbaum M J 1979b The onset spectrum of turbulence *Physics Letters* vol **A74** no 6 pp 375 – 378.

5652. Feigenbaum M J 1980 The transition to aperiodic behaviour in turbulent systems *Communications Mathematical Physics* vol **77** no 1 pp 65 – 86.

5653. Feigenbaum M J, Kadanoff L P, Shenker S J 1982 Quasiperiodicity in dissipative systems: A renormalization group analysis *Physica* vol **D5** p 370.

5654. Lanford O A 1982 Computer-assisted proof of the Feigenbaum conjectures *American Mathematical Society Bulletin* vol **6** no 3 pp 427 – 434.

5655. Grebogi C, Ott E, Yorke J A 1982 Chaotic attractor in crisis *Physical Review Letters* vol **48** pp 1507 – 1510.

5656. Klimontovich Yu L 1982 Statistical physics *Nauka Publishers* Moscow Russian Federation.

5657. Klimontovich Yu L 1990 Turbulent movement and structure of chaos *Nauka Publishers* Moscow Russian Federation ISBN 5-02-014038-4 pp 320.

5658. Anishenko V S 1990 Complex oscillations in simple systems: Mechanisms of origination, structure and properties of dynamic chaos in radiophysics systems *Nauka Publishers* Moscow Russian Federation pp 1 – 312.

5659. Anishenko V S 2000 Introduction to Nonlinear Dynamics: Lectures by Soros Professor: Training Manual *College* Saratov Russian Federation.

5660. Anishenko V S, Vadivasova T E, Astakhov V V 1999 Nonlinear dynamics of chaotic and stochastic systems *Saratov University Publishing House* Saratov Russian Federation.

5661. Hsieh D 1991 Chaos and nonlinear dynamics *The Journal of Finance* vol **16** p 5.

5662. Strogatz S 1994 Nonlinear dynamics and chaos *Addison Wesley* NY USA.

5663. Gandolfo G 1996 Economic dynamics 3rd edition *Springer* Berlin Germany pp 407 – 428 ISBN 3-540-60988-1 .

5664. Kuznetsov S P 1996-1997 Private communications on dynamic chaos *Technical University of Denmark* Lyngby Copenhagen Denmark.

5665. Kuznetsov S P 2001 Dynamic chaos *Izdatel'stvo Fiziko-Matematicheskoi Literatury* Moscow Russian Federation pp 1 – 296.

5666. Mosekilde E 1996-1997 Private communications on quantum chaos *Department of Physics* Technical University of Denmark Lyngby Copenhagen Denmark.

5667. Mosekilde E 1996 Topics in nonlinear dynamics: Applications to physics, biology and economic systems *World Scientific Publishing Pte Ltd* Singapore.

5668. Peters E E 1996 Chaos and order in the capital markets: A new view of cycles, prices, and market volatility *John Wiley & Sons, Inc* 2nd edition NY USA ISBN 0-471-13938-6.

5669. Sauer T et al 1996 Chaos: An introduction to dynamic systems *Springer Verlag* NY USA.

5670. Shiryaev A N 1998a Foundations of Stochastic Financial Mathematics vol **1** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 1 – 492.

5671. Shiryaev A N 1998b Foundations of Stochastic Financial Mathematics vol **2** *Fazis Scientific and Publishing House* Moscow Russian Federation ISBN 5-7036-0044-8 pp 493 – 1017.

5672. Medvedeva N V 2000 Dynamics of the logistic function *Soros Educational Journal* vol **6** no 8 pp 121 – 127.

5673. Kuznetsov N V, Leonov G A 2005 On stability by the first approximation for discrete systems *2005 International Conference on Physics and Control* PhysCon 2005 Proceedings Volume 2005 pp 596 – 599 doi:10.1109/PHYCON.2005.1514053 .

5674. Nikulchev E V 2007 Geometric approach to modeling of nonlinear systems from experimental data ISBN 978-5-8122-0926-1 pp 1 – 162.

5675. Nikulchev E V 2011 Private communications on modeling of nonlinear systems *Int. Conference on Design of Engineering and Scientific Applications in Matlab* KhPI Kharkov Ukraine.

5676. Bunde A, Havlin S 2009 Fractal geometry: A brief introduction to «Encyclopedia of Complexity and Systems Science» *Springer* Berlin Heidelberg Germany.

5677. Smirnov A D 2010 Macrofinances II: Model of bulbs and crises *Economic Journal of High School of Economics* no 4 pp 401 – 439.

5678. Saratov group of theoretical nonlinear dynamics 2012 Information on the logistic equation.

5679. Ledenyov D O, Ledenyov V O 2012 3D Bifurcation diagram for accurate characterization of dynamic properties of combining risky investments in investment portfolio in nonlinear dynamic financial system *Software in Matlab R2012* Townsville Australia, Kharkov Ukraine.

<u>Wiener filtering theory, Pugachev filtering theory, Stratonovich optimal nonlinear filtering theory, Stratonovich-Kalman-Bucy filtering algorithm, Stratonovich-Kalman-Bucy filter, particle filter in econometrics, econophysics, electrical and computer engineering:</u>

5680. Edgeworth F I 1905 The law of error *Proceedings Cambridge Philosophic Society* vol **20** pp 36 – 65.

5681. Wiener N 1923 Differential space *Journal of Mathematical Physics Math Inst Tech* vol **2** pp 131 – 174.

5682. Wiener N 1930 Generalized harmonic analysis *Acta Math* vol **55** no 2 - 3 pp 117 – 258.

5683. Wiener N 1949 The extrapolation, interpolation and smoothing of stationary time series *John Wiley & Sons Inc* New York NY USA.

5684. Andronov A A, Vitt A A, Pontryagin L S 1933 On statistical consideration of dynamic systems *Soviet Journal of Experimental and Theoretical Physics* vol **3** no 3 pp 165 – 180.

5685. Ito K 1944 Stochastic integral *Proceedings Imperial Academy Tokyo* vol **20** pp 519 – 524.

5686. Ito K 1951a On a formula concerning stochastic differentials *Nagoya Mathematics Journal* vol **3** pp 55 – 65.

5687. Ito K 1951b On stochastic differential equations *Mem American Mathematical Society* vol **4** pp 1 – 51.

5688. Ito K, Xiong K 2000 Gaussian filters for nonlinear filtering problems *IEEE Transactions on Automatic Control* vol **45** no 5.

5689. Pugachev V S 1944 Random functions, defined by common differential equations *Works by Air Forces Military Academy named after Zhukovsky N E* vol **118** pp 3 – 36.

5690. Pugachev V S 1956a The use of canonical expansions of random functions in determining an optimum linear system *Automatics and Remote Control (USSR)* vol **17** pp 489 – 499.

5691. Pugachev V S 1956b On a possible general solution of the problem of determining optimum dynamic systems *Automatics and Remote Control (USSR)* vol **17** pp 585 – 589.

5692. Pugachev V S 1960 Theory of random functions and its application in problems of automatic control *State Publishing House of Physical Mathematical Literature* (*Fizmatlit*) Moscow Russian Federation pp 1 – 883.

5693. Pugachev V S 1961 Application of theory of Markov processes in analysis of accuracy of automatic systems *News Academy of Sciences USSR Energetics and Automatics* no 3 pp 46 – 57.

5694. Pugachev V S 1962 Theory of random functions and its application to problems of automatic control *Fizmatgiz* Moscow Russian Federation.

5695. Pugachev V S 1971 On distribution of computing number of random process *Works of 1st All Union Symposium on Statistics Problems in Technical Cybernetics* Moscow USSR February 14 - 18, 1967 *in* Nonlinear and optimal systems *Nauka* Moscow Russian Federation pp 374 – 381.

5696. Pugachev V S 1973, 1974, 1975 Stochastic systems *Nauka* Moscow Russian Federation issues 7-9, 11-12, 10.

5697. Pugachev V S (editor) 1974 Foundations of automatic control *Nauka* Moscow Russian Federation.

5698. Pugachev V S 1978 Estimation of variables and parameters in stochastic systems, described by differential equations *DAN USSR* vol **241** no 5 pp 1031 – 1034.

5699. Pugachev V S 1979a Estimation of state and parameters of continuous nonlinear systems *Automatics and Tele-mechanics* no 6 pp 63 – 79.

5700. Pugachev V S 1979b Theory of probability and mathematical statistics 1st edition *Nauka* Moscow Russian Federation, 2nd edition *Fizmatlit* Moscow Russian Federation ISBN 5–92210254–0 pp 1 – 496.

5701. Pugachev V S 1980a Estimation of Markov processes. Time series *Proceedings International Conference Nottingham March, 1979; North Holland Publishing House* Amsterdam New York London pp 389 – 400.

5702. Pugachev V S 1980b Finite distributions of processes, defined by stochastic differential equations, and extrapolation of these processes *DAN USSR* vol **251** no 1 pp 40 – 43.

5703. Pugachev V S 1981 The finite-dimensional distributions of a random process determined by a stochastic differential equation and their application to control problems *Problems of Control and Theory of Information* vol **10** no 2 pp 95 – 114.

5704. Pugachev V S 1982a Generalization of theory of conditional estimation and extrapolation *DAN USSR* vol **262** no 3 pp 535 - 538.

5705. Pugachev V S 1982b Conditionally optimal estimation in stochastic differential systems *Automatics* vol **118** no 6 pp 685 – 696.

5706. Pugachev V S 1984 Conditionally optimal filtering and extrapolation of continuous processes *Automatics and Tele-mechanics* no 2 pp 82 – 89.

5707. Pugachev V S 1985 Conditionally optimal estimation in systems with randomly varying structure *Proceedings of the 9th World Congress of IFAC Budapest Hungary July 2-6, 1984* vol **2** pp 773 – 777 *Pergamon Press* Oxford UK.

5708. Pugachev V S 1986 Approximate methods for findings finite-dimensional distributions of random sequences determined by difference equations *Problems of Control and Theory of Information* vol **15** no 2 pp 101 – 109.

5709. Pugachev V S, Sinitsyn I N 1986 Directions of development of mathematical support for stochastic systems research in Modern informatics techniques *Nauka* Moscow Russian Federation pp 166 – 174.

5710. Pugachev V S, Sinitsyn I N, Shin V I 1986a Conditionally optimal discrete filtering of processes in continuous - discrete systems *DAN USSR* vol **289** no 2 pp 297 - 301.

5711. Pugachev V S, Sinitsyn I N, Shin V I 1986b Problems of analysis and on-line conditionally optimal filtering of processes in nonlinear stochastic systems *Preprints of the 2nd IFAC Symposium on Stochastic Control Vilnius USSR* May 19-23, 1986 no 1 pp 4 – 18.

5712. Pugachev V S, Sinitsyn I N, Shin V I 1987a On one program realization of method of normal approximation in problems of analysis of nonlinear stochastic differential systems in Computers for numerous applications *Nauka* Moscow Russian Federation pp 55 - 60.

5713. Pugachev V S, Sinitsyn I N, Shin V I 1987b Program realization of method of normal approximation in problems of analysis of nonlinear stochastic systems *Automatics and Tele-mechanics* no 2 pp 62 – 68.

5714. Pugachev V S, Sinitsyn I N, Shin V I 1987c Problems of analysis and conditionally optimal filtering in real time scale processes in nonlinear stochastic systems (review) *Automatics and Tele-mechanics* no 12 pp 3 – 24.

5715. Pugachev V S, Sinitsyn I N (editors) 1989 Principles of development of dialogue packets of applied programs for research of linear and nonlinear stochastic differential systems. Software pack "StS Analysis" version **1** *Pre-print Institute of Informatics Problems Academy of Sciences USSR* Moscow Russian Federation.

5716. Pugachev V S, Sinitsyn I N 1990, 2004 Stochastic differential systems: Analysis and filtering *Nauka* Moscow Russian Federation pp 1 – 642, *Logos* Moscow Russian Federation ISBN 5-94010-199-2 pp 1 – 1000.

5717. Pugachev V S, Sinitsyn I N 1999 Lectures on functional analysis and applications *World Scientific* Singapore ISBN 9810237227 ISBN 9810237235 pp 1 – 730.

5718. Shannon C E 1948 A mathematical theory of communication *Bell System Technical Journal* **27** pp 379 – 423 and pp 623 – 656.

5719. Bode H W, Shannon C E 1950 A simplified derivation of linear least-squares smoothing and prediction theory *Proceedings IRE* vol **38** pp 417 – 425.

5720. Zadeh L A, Ragazzini J R 1950 An extension of Wiener's theory of prediction *Journal of Applied Physics* vol **21** pp 645 – 655.

5721. Booton R C 1952 An optimization theory for time-varying linear systems with nonstationary statistical inputs *Proceedings IRE* vol **40** pp 977 – 981.

5722. Davis R C 1952 On the theory of prediction of nonstationary stochastic processes *Journal of Applied Physics* vol **23** pp 1047 – 1053.

5723. Bartlett M S 1954 Problemes de l'analyse spectral des series temporelles stationnaires *Publ Inst Statist University Paris III–3* pp 119 – 134.

5724. Doob J L 1955 Stochastic processes *John Wiley & Sons Inc* New York N Y USA.

5725. Franklin G 1955 The optimum synthesis of sampled-data systems *Ph D Thesis* Department of Electrical Engineering Columbia University New York USA.

5726. Laning J H, Battin R H 1956 Random processes in automatic control *McGraw-Hill Book Company Inc* New York NY, USA.

5727. Lees A B 1956 Interpolation and extrapolation of sampled data *Trans IRE Prof Group on Information Theory* **IT-2** 1956 pp 173 – 175.

5728. Solodovnikov V V, Batkov A M 1956 On the theory of self-optimizing systems *Proc Heidelberg Conference on Automatic Control* pp 308 – 323.

5729. Newton G C Jr, Gould L A, Kaiser J F 1957 Analytical design of linear feedback controls *John Wiley & Sons Inc* New York USA.

5730. Tukey J W 1957 On the comparative anatomy of transformations *Annals of Mathematical Statistics* **28** pp 602 – 632.

5731. Rytov S M 1957 Development of theory of nonlinear oscillations in the USSR *Radio-Technique and Electronics* no 11 pp 1435 – 1450.

5732. Cramer H 1957 Mathematical methods of statistics *Princeton University Press* Princeton NJ USA.

5733. Bellman R E, Glicksberg I, Gross O A 1958 Some aspects of the mathematical theory of control processes *RAND Report R-313* pp 1 – 244.

5734. Blum M 1958 Recursion formulas for growing memory digital filters *Trans IRE Prof Group on Information Theory* **IT-4** pp 24 – 30.

5735. Darlington S 1958 Linear least-squares smoothing and prediction with applications *Bell System Tech Journal* vol **37** pp 1221 – 1294.

5736. Davenport W B Jr, Root W L 1958 An introduction to the theory of random signals and noise *McGraw-Hill Book Company Inc* New York NY USA.

5737. Sherman S 1958 Non-mean-square error criteria *Trans IRE Prof Group on Information Theory* **IT-4** pp 125 – 126.

5738. Shinbrot M 1958 Optimization of time-varying linear systems with nonstationary inputs *Trans ASME* vol **80** pp 457 – 462.

5739. Smith O J M 1958 Feedback control systems *McGraw-Hill Book Company Inc* New York USA.

5740. Kalman R E, Koepcke R W 1958 Optimal synthesis of linear sampling control systems using generalized performance indexes *Transactions of the ASME* vol **80** pp 1820 – 1826.

5741. Kalman R E, Koepcke R W 1959 The role of digital computers in the dynamic optimization of chemical reactors *Proceedings of the Western Joint Computer Conference* pp 107 – 116.

5742. Kalman R E, Bertram J E 1958 General synthesis procedure for computer control of single and multi-loop linear systems *Transactions of the AIEE* vol **77** II pp 602 – 609.

5743. Kalman R E, Bertram J E 1959 A unified approach to the theory of sampling systems *Journal of the Franklin Institute* vol **267** pp 405 – 436.

5744. Kalman R E 1960a On the general theory of control systems *Proceedings of the First International Conference on Automatic Control* Moscow USSR.

5745. Kalman R E 1960b A new approach to linear filtering and prediction problems *Journal of Basic Engineering Transactions ASME Series D* **82** pp 35 – 45; **59** pp 1551 – 1580.

5746. Kalman R E, Bucy R S 1961 New results in linear filtering and prediction theory *Journal of Basic Engineering Transactions ASME Series D* **83** pp 95 – 108.

5747. Kalman R E 1963 New methods in Wiener filtering theory *in* Proceedings of the First Symposium of Engineering Applications of Random Function Theory and Probability Bogdanoff J L, Kozin F (editors) *John Wiley and Sons Inc* New York USA pp 270 – 388.

5748. Merriam C W III 1959 A class of optimum control systems *Journal of the Franklin Institute* vol **267** pp 267 – 281.

5749. Stratonovich R L 1958 On a method of calculating quantum distribution functions *Soviet Physics Doklady* Band 2 pp 41.

5750. Stratonovich R L 1959a Optimum nonlinear systems which bring about a separation of a signal with constant parameters from noise *Radiofizika* **2** (6) pp 892 – 901.

5751. Stratonovich R L 1959b On the theory of optimal non-linear filtering of random functions *Theory of Probability and its Applications* **4** pp 223 – 225.

5752. Stratonovich R L 1960a Application of the Markov processes theory to optimal filtering *Radio Engineering and Electronic Physics* **5** (11) pp 1 – 19.

5753. Stratonovich R L 1960b Conditional Markov processes *Theory of Probability and its Applications* **5** pp 156 – 178.

5754. Stratonovich R L 1961 Selected problems in theory of oscillations in radio-technique *Soviet Radio* Moscow Russian Federation pp 1 – 558.

5755. Stratonovich R L 1964 New form of formulation of stochastic integrals and equations *Moscow State University Bulletin* Series 1 Mathematics and Mechanics Moscow Russian Federation.

5756. Stratonovich R L 1965 On value of information *Izvestiya of USSR Academy of Sciences: Technical Cybernetics* **5** pp 3 – 12.

5757. Stratonovich R L, Kuznetsov P I, Tikhonov V I 1965 Nonlinear transformation of stochastic processes *Pergamon Press* USA pp 1 – 500.

5758. Stratonovich R L 1966, 1968 Conditional Markov processes and their application in theory of optimal control *Moscow State University Publishing House* Moscow Russian Federation pp 1 – 319, Elsevier, The Netherlands.

5759. Stratonovich R L 1967a Topics in the theory of random noise, Vol **1** *Gordon and Breach* ISBN 0677007906, ISBN 9780677007908 pp 1 – 297.

5760. Stratonovich R L 1967b Topics in the theory of random noise, Vol **2** *CRC Press* ISBN 0677007906 ISBN 9780677007908 pp 1 – 330.

5761. Stratonovich R L 1975 Theory of information *Soviet Radio* Moscow Russian Federation pp 1 – 424.

5762. Bunkin F V et al 1997 In memory of Ruslan Leont'evich Stratonovich *Uspekhi Fizicheskih Nauk (UFN)* **40** pp 751 – 752.

5763. Romanovski Yu M 2007 Professor R L Stratonovich: Reminiscences of relatives, colleagues and friends *Publishing House of Computer Research Institute* Moscow-Izhevsk ISBN 978-5-93972-606-1 pp 1 – 174.

5764. Volterra V 1959 Theory of functionals and integral and integro-differential equations *Dover Publications Inc* New York USA.

5765. Middleton D 1960 An introduction to statistical communication theory *McGraw - Hill* New York USA.

5766. US Air Forces Office of Scientific Research 1960 – 2016 Full digital collection of technical research reports completed under US AFOSR contracts in 1960 – 2016 *US Air Forces Office of Scientific Research (US AFOSR)* Arlington DC USA.

5767. Friedman M 1962 The interpolation of time series by related series *Journal of the American Statistical Association* **57** pp 729 – 757.

5768. Kushner H J 1964a On the differential equations satisfied by the conditional densities of Markov processes with applications *Journal SIAM Control* Ser A vol **2** pp 106 – 119.

5769. Kushner H J 1964b On the dynamical equations of conditional probability density functions with applications to optimal stochastic control theory *Journal Math Anal Appl* vol **8** pp 332 – 334.

5770. Kushner H J 1967a Dynamical equations for optimal nonlinear filtering *Journal Differential Equations* vol **3** pp 179 – 190.

5771. Kushner H J 1967b Approximations to optimal nonlinear filters *IEEE Transactions on Automatic Contro*l vol **12**.

5772. Kushner H J, Budhiraja A S 2000 A nonlinear filtering algorithm based on an approximation of the conditional distribution *IEEE Transactions on Automatic Control* vol **45** no 3.

5773. Busy R S 1967 Optimal filtering for correlated noise *Journal of Mathematical Analysis and Applications* vol **20** no 1 pp 1 – 8.

5774. Fisher I R 1967 Optimal nonlinear filtering *in* Advances in control systems. Theory and application Leondes C T (editor) vol **5** pp 199 – 300 *Academic Press* New York London USA UK.

5775. Liptser R Sh, Shiryaev A N 1968 Nonlinear filtering of diffusive Markov processes *Steklov Institute Research Works Academy of Sciences USSR* vol **104** pp 135 – 180.

5776. Liptser R Sh, Shiryaev A N 1974 Statistics of random processes *Nauka* Moscow Russian Federation.

5777. Bryson A E, Ho Y C 1969 Applied optimal control: Optimization, estimation, and control *Blaisdell Publishing* Waltham Massachusetts USA.

5778. Jazwinski A H 1970 Stochastic processes and filtering theory *Academic Press* New York USA.

5779. Sorenson H W 1970 Least-squares estimation: from Gauss to Kalman *IEEE Spectrum* vol **7** pp 63 – 68.

5780. Bucy R S, Joseph P D 1970 Filtering for stochastic processes with applications to guidance *John Wiley & Sons Inc* New York USA.

5781. Wright-Patterson Air Forces Base (AFB) 1970 – 2016 Full extended complemented digital collection of technical research reports and research seminars minutes *Wright-Patterson Air Forces Base (AFB)* Ohio USA.

5782. Chow G C, Lin A 1971 Best linear unbiased interpolation, distribution, and extrapolation of time series by related series *Review of Economics and Statistics* **53** pp 372 – 375.

5783. Chow G C, Lin A 1976 Best linear unbiased estimation of missing observations in an economic time series *Journal of the American Statistical Association* **71** pp 719 – 721.

5784. Chow Y S, Teicher H 1978 Probability theory: Independence, interchangeability, Martingales *Springer-Verlag* New York USA.

5785. Maybeck P S 1972 The Kalman filter—An introduction for potential users ***TM-72-3*** *Air Force Flight Dynamics Laboratory* Wright-Patterson Air Forces Base (AFB) Ohio USA.

5786. Maybeck P S 1974 Applied optimal estimation—Kalman filter design and implementation *Air Force Institute of Technology* Wright-Patterson Air Forces Base (AFB) Ohio USA.

5787. Maybeck P S 1990 The Kalman filter: An introduction to concepts *Autonomous Robot Vehicles* editors I J Cox and G T Wilfong *Springer-Verlag* New York USA pp 194 – 204.

5788. Willner D 1973 Observation and control of partially unknown systems *Ph D Thesis Department of Electrical Engineering Massachusetts Institute of Technology* USA.

5789. Leondes C T, Pearson J O 1973 Kalman filtering of systems with parameter uncertainties: A survey *International Journal of Control* vol **17** no 4 pp 785 – 801.

5790. Akaike H 1974 A New look at the statistical model identification *IEEE Transactions on Automatic Control* **AC-19** pp 716 – 723.

5791. Athans M 1974 The importance of Kalman filtering methods for economics *Annals of Economic and Social Measurement* vol **3** no 1 pp 49 – 64.

5792. Dempster A P, Laird N M, Rubin D B 1977 Maximum likelihood estimation from incomplete data *Journal of the Royal Statistical Society* **14** pp 1 – 38.

5793. Griffiths L J 1977 A continuously adaptive filter implemented as a lattice structure *Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing* Hartford CT USA pp 683 – 686.

5794. Schwarz G 1978 Estimating the dimension of a model *Annals of Statistics* **6** pp 147 – 164.

5795. Falconer D D, Ljung L 1978 Application of fast Kalman estimation to adaptive equalization *IEEE Transactions Comm* vol **COM-26** pp 1439 – 1446.

5796. Anderson B D O, Moore J B 1979 Optimal filtering *Prentice-Hall* Englewood Cliffs NJ USA.

5797. Bozic S M 1979 Digital and Kalman filtering *Edward Arnold* London USA.

5798. Julier S J, Uhlmann J K 1997 A new extension of the Kalman filter to nonlinear systems *Proceedings of Aero-Sense: The 11th International Symposium on Aerospace/Defense Sensing, Simulation and Controls*.

5799. Priestley M B 1981 Spectral Analysis and Time Series *John Wiley and Sons Inc* USA.

5800. Geweke J F, Singleton K J 1981 Maximum likelihood confirmatory factor analysis of economic time series *International Economic Review* **22** p 1980.

5801. Fernandez R B 1981 A methodological note on the estimation of time series *Review of Economics and Statistics* **63** pp 471 – 476.

5802. Litterman R B 1983 A random walk, Markov model for the distribution of time series *Journal of Business and Economic Statistics* **1** pp 169 – 173.

5803. Meinhold R J, Singpurwalla N D 1983 Understanding the Kalman filter *The American Statistician* **37** (2) pp 123 – 127.

5804. Ahlbehrendt N, Kempe V 1984 Analyse stochastischer systeme *Academie-Verlag* Berlin Germany.

5805. Harvey A C, Pierse R G 1984 Estimating missing observations in economic time series *Journal of the American Statistical Association* **79** pp 125 – 131.

5806. Harvey A C 1987, 1994 Applications of the Kalman filter in econometrics *in* Advances in econometrics: Fifth World congress Bewley T F (editor) vol **1** *Econometric Society Monograph no 13 Cambridge University Press* Cambridge UK, Truman, Bewley (editor) *Cambridge University Press* Cambridge UK pp 1 – 285 ISBN 0-521-46726-8.

5807. Harvey A C 1989 Forecasting, structural time series models and the Kalman filter *Cambridge University Press* Cambridge UK.

5808. Lewis F 1986 Optimal estimation *John Wiley & Sons Inc* USA.

5809. Watson M W 1986 Univariate de-trending methods with stochastic trends *Journal of Monetary Economics* **18** pp 49 – 75.

5810. Lanning S G 1986 Missing observations: A simultaneous approach versus interpolation by related series *Journal of Economic and Social Measurement* **14** pp 155 – 163.

5811. Wolff Ch C P 1987 Forward foreign exchange rates, expected spot rates, and premia: A signal-extraction approach *Journal of Finance* **42** (2) pp 395 – 406.

5812. Burridge P, Wallis K F 1988 Prediction theory for autoregressive-moving average processes *Econometric Reviews* **7** pp 65 – 69.

5813. Proakis J G, Manolakis D G 1988 Introduction to digital signal processing *Macmillan* New York USA.

5814. Caines P E 1988 Linear stochastic systems *Wiley Series in Probability and Mathematical Statistics John Wiley & Sons* New York USA.

5815. de Jong P 1988 The likelihood for a state space model *Biometrika* **75** pp 165 – 169.

5816. de Jong P 1989 Smoothing and interpolation with the state space model *Journal of the American Statistical Association* **84** pp 1085 – 1088.

5817. de Jong P 1991 The diffuse Kalman filter *Annals of Statistics* **19** pp 1073 – 1083.

5818. de Jong P, Chu-Chun-Lin S 1994 Fast likelihood evaluation and prediction for nonstationary state space models *Biometrika* **81** pp 133 – 142.

5819. de Jong P, Penzer J 2004 The ARMA model in state space form *Statistics and Probability Letters* **70** pp 119 – 125.

5820. Franklin G F, Powell J D, Workman M L 1990 Digital control of dynamic systems *2nd edition Addison-Wesley* USA.

5821. Brockwell P J, Davis R A 1991 Time series: Theory and methods *Springer* Germany.

5822. Jang J-S R 1991 Fuzzy modeling using generalized neural networks and Kalman filter algorithm *Proceedings of the 9th National Conference on Artificial Intelligence (AAAI-91)* pp 762 – 767.

5823. Doran E 1992 Constraining Kalman filter and smoothing estimates to satisfy time varying restrictions *Review of Economics and Statistics* **74** pp 568 – 572.

5824. Brown R G, Hwang P Y C 1992, 1997 Introduction to random signals and applied Kalman filtering *3rd edition John Wiley and Sons Inc* New York USA.

5825. Gordon N J, Salmond D J, Smith A F M 1993 A novel approach to non-linear and non-Gaussian Bayesian state estimation *IEE-Proceedings* **F 140** pp 107 – 113.

5826. Tanizaki H 1993 Non-linear filters: Estimation and applications *Lecture Notes in economics and mathematical systems Springer Verlag* Germany.

5827. Pinheiro M, Coimbra C 1993 Distribution and extrapolation of a time series by related series using logarithms and smoothing penalties *Economica* **12** pp 359 – 374.

5828. Bar-Shalom, Xiao-Rong Li 1993 Estimation and tracking: Principles, techniques and software *Artech House* Boston USA.

5829. Farhmeir L, Tutz G 1994 Multivariate statistical modeling based generalized linear models *Springer-Verlag* New-York USA.

5830. Grimble M J 1994 Robust industrial control: Optimal design approach for polynomial systems *Prentice Hall* USA.

5831. Bomhoff E 1994 Financial forecasting for business and economics *Dryden* London UK.

5832. Lee J H, Ricker N L 1994 Extended Kalman filter based nonlinear model predictive control *Ind Eng Chem Res* vol **33** no 6 pp 1530 – 1541.

5833. Ricker N L, Lee J H 1995 Nonlinear model predictive control of the Tennessee Eastman challenge process *Computers & Chemical Engineering* vol **19** no 9 pp 961 – 981.

5834. Kleeman L 1995 Understanding and applying Kalman filtering *Department of Electrical and Computer Systems Engineering Monash University* Clayton Australia pp 1 – 37.

5835. Venegas F, de Alba E, Ordorica M 1995 An economist's guide to the Kalman filter *Estudious Economicos* **10** (2) pp 123 – 145.

5836. Golub G H, van Loan C F 1996 Matrix computations *3rd edition The John Hopkins University Press* USA.

5837. Hayes M H 1996 Statistical digital signal processing and modeling *John Wiley and Sons Inc* USA.

5838. Haykin S 1996 Adaptive filter theory *3rd edition Prentice-Hall* Inc Upper Saddle River New Jersey USA.

5839. Haykin S (editor) 2001 Kalman filtering and neural networks *Wiley Inter-Science* USA.

5840. Fuller W A 1996 Introduction to statistical time series *John Wiley & Sons Inc* USA.

5841. Roncalli Th 1996 TSM - Time series and wavelets for finance *Global Design* Paris France.

5842. Wells C 1996 The Kalman filter in finance *Advanced Studies in Theoretical and Applied Econometrics Kluwer Academic Publishers* vol **32** The Netherlands.

5843. Hodrick R, Prescott E C 1997 Postwar U.S. business cycle: An empirical investigation, *Journal of Money, Credit and Banking* **29** (1) pp 1 – 16.

5844. Krelle W 1997 How to deal with unobservable variables in economics *Discussion Paper no B 414 Bonn University* Germany.

5845. Babbs S H, Nowman K B 1999 Kalman filtering of generalized Vasicek term structure models *Journal of Financial and Quantitative Analysis* vol **34** no 1.

5846. Kim C J, Nelson C 1999 State-space models with regime-switching *MIT Press* Cambridge MA USA.

5847. Mantegna R N, Stanley H E 1999 Introduction to Econophysics *Cambridge University Press* Cambridge UK.

5848. Pitt M K, Shephard N 1999 Filtering via simulation: Auxiliary particle filters *Journal of the American Statistical Association* **94** (446) pp 590 – 599.

5849. Shiryaev A N 1999 Essentials of stochastic finance: Facts, models, theory Advanced Series on Statistical Science & Applied Probability vol **3** *World Scientific Publishing Co Pte* Ltd Kruzhilin N (translator) ISBN 981-02-3605-0 Singapore pp 1 – 834.

5850. Wanhammar L 1999 DSP integrated circuits *Academic Press* San Diego USA ISBN: 0-12-734530-2 p 85.

5851. Durbin J, Koopman, S J 2000 Time series analysis of non-Gaussian observations based on state-space models from both classical and Bayesian perspectives *Journal of Royal Statistical Society* Series **B 62** pp 3 – 56.

5852. Durbin J, Koopman S J 2002 A simple and efficient simulation smoother for state space time series analysis *Biometrika* **89** pp 603 – 615.

5853. Durbin J, Koopman S J 2012 Time series analysis by state space methods *2nd edition Oxford University Press* Oxford UK.

5854. Cuche N A, Hess M K 2000 Estimating monthly GDP in a general Kalman filter framework: Evidence from Switzerland *Economic & Financial Modelling Winter 2000* pp 153 – 193.

5855. Doucet A, de Freitas J F G, Gordon N J 2001 Sequential Monte Carlo methods in practice *Springer-Verlag* New York USA.

5856. Welch G, Bishop G 2001 An introduction to the Kalman filter *Department of Computer Science University of North Carolina at Chapel Hill* Chapel Hill USA.

5857. Arulampalam S, Maskell S, Gordon N J, Clapp T 2002 A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking *IEEE Transaction on Signal Processing* **50** (2) pp 174 – 188.

5858. Javaheri A, Lautier D, Galli A 2002 Filtering in finance *RBC Capital Markets Universit´e Paris IX Ecole Nationale Sup´erieure des Mines de Paris Ecole Nationale Sup´erieure des Mines de Paris* France Filteringinfinance.pdf pp 1 – 26.

5859. Doucet A, Tadic V B 2003 Parameter estimation in general state-space models using particle methods *Annals of the Institute of Statistical Mathematics* **55** (2) pp 409 – 422.

5860. Bahmani O, Brown F 2004 Kalman filter approach to estimate the demand for international reserves *Applied Economics* **36** (15) pp 1655 – 1668.

5861. Broto C, Ruiz E 2004 Estimation methods for stochastic volatility models: A survey, *Journal of Economic Surveys* **18** (5) pp 613 – 637.

5862. Ristic B, Arulampalam S, Gordon N J 2004 Beyond the Kalman Filter: Particle filters for tracking applications *1st edition Artech House* Boston USA.

5863. Cappé O, Moulines E 2005 On the use of particle filtering for maximum likelihood parameter estimation in *European Signal Processing Conference* Antalya Turkey.

5864. Ozbek L, Ozale U 2005 Employing the extended Kalman filter in measuring the output gap *Journal of Economic Dynamics and Control* **29** pp 1611 – 1622.

5865. Poyiadjis G, Doucet A, Singh S S 2005a Particle methods for optimal filter derivative: application to parameter estimation in *Proceedings IEEE International Conference on Acoustics, Speech, and Signal Processing*.

5866. Poyiadjis G, Doucet A, Singh S S 2005b Maximum likelihood parameter estimation in general state-space models using particle methods in *Proceedings of the American Statistical Association JSM 05*.

5867. Proietti T 2006 Trend–cycle decompositions with correlated components *Econometric Reviews* **25** pp 61 – 84.

5868. Litvin A, Konrad J Karl W C 2003 Probabilistic video stabilization using Kalman filtering and mosaicking *IS&T/SPIE Symposium on Electronic Imaging, Image and Video Communications and Proc*.

5869. van Willigenburg L G, De Koning W L 2004 UDU factored discrete-time Lyapunov recursions solve optimal reduced-order LQG problems *European Journal of Control* **10** pp 588 – 601.

5870. Voss H U, Timmer J, Kurths J 2004 Nonlinear dynamical system identification from uncertain and indirect measurements *International Journal Bifurcation and Chaos* **14** pp 1905 – 1933.

5871. Capp´e O, Moulines E, Ryd´en T 2005 Inference in hidden Markov models *Springer Series in Statistics Springer* New York USA.

5872. Fernàndez-Villaverde J, Rubio-Ramirez J F 2005 Estimating dynamic equilibrium economies: Linear versus non-linear likelihood *Journal of Applied Econometrics* 20 891910.

5873. Fernàndez-Villaverde J, Rubio-Ramrez J F 2007 Estimating macroeconomic models: A likelihood approach *Review of Economic Studies* **74** pp 1059 – 1087.

5874. Fernàndez-Villaverde J 2010 The econometrics of DSGE models *Journal of the Spanish Economic Association* **1** pp 3 – 49.

5875. Frühwirth-Schnatter S 2006 Finite mixture and Markov switching models *Springer Series in Statistics Springer* New York USA.

5876. Pasricha G K 2006 Kalman filter and its economic applications *MPRA Paper no 22734 Munich University Munich Germany* pp 1 – 14 http://mpra.ub.uni-muenchen.de/22734/ .

5877. Misra P, Enge P 2006 Global Positioning System signals, measurements, and performance *2nd edition* USA.

5878. Gamerman D, Lopes H F 2006 Markov chain Monte Carlo. Stochastic simulation for Bayesian inference *2nd edition Chapman & Hall* London UK.

5879. Pasricha G K 2006 Kalman filter and its economic applications *MPRA Paper no 22734 Munich University Munich Germany* pp 1 – 14
http://mpra.ub.uni-muenchen.de/22734/ .

5880. Rajamani M R 2007 Data-based techniques to improve state estimation in model predictive control *PhD Thesis* University of Wisconsin-Madison USA.

5881. Bignasca F, Rossi E 2007 Applying the Hirose-Kamada filter to Swiss data: Output gap and exchange rate pass-through estimates *Swiss National Bank working Papers 2007 – 10* Swiss National Bank Switzerland ISSN 1660-7716 pp 1 – 27.

5882. Andreasen M M 2008 Non-linear DSGE models, the central difference Kalman filter, and the mean shifted particle filter *CREATES Research Paper 2008-33* School of Economics and Management University of Aarhus Denmark pp 1 – 46.

5883. Olsson J, Cappé O, Douc R, Moulines E 2008 Sequential Monte Carlo smoothing with application to parameter estimation in nonlinear state space models *Bernoulli* **14** (1) pp 155 – 179.

5884. Roncalli T, Weisang G 2008 Tracking problems, hedge fund replication and alternative beta *MPRA Paper no 37358 Munich University Munich Germany* http://mpra.ub.unimuenchen.de/37358/ .

5885. Rajamani M R, Rawlings J B 2009 Estimation of the disturbance structure from data using semidefinite programming and optimal weighting *Automatica* **45** pp 142 – 148.

5886. Bationo R, Hounkpodote H 2009 Estimated changes in prices of coffee and cocoa: Kalman filter, Hodrick-Prescott filter and modeling from Markov switching *MPRA Paper no 26980 Munich University Munich Germany* pp 1 – 22 http://mpra.ub.unimuenchen.de/26980/ .

5887. Chang Y, Miller J I, Park J Y 2009 Extracting a common stochastic trend: Theory with some applications *Journal of Econometrics* **15** pp 231 – 247.

5888. Mapa D S, Sandoval M F B, Yap J E B 2009 Investigating the presence of regional economic growth convergence in the Philippines using Kalman filter MPRA *Paper no 20681 Munich University Munich Germany* http://mpra.ub.uni-muenchen.de/20681/ .

5889. Yakovenko V M, Rosser J B 2009 Colloquium: Statistical mechanics of money, wealth, and income *Cornell University* NY USA arXiv:0905.1518v1 [q-fin.ST].

5890. Chakrabarti B K, Chakrabarti A 2010 Fifteen years of econophysics research *Science and Culture* vol **76** nos 9-10 pp 293-295; *Cornell University* NY USA arXiv:1010.3401 [q-fin.ST].

5891. Francke M K , Koopman S J, de Vos A 2010 Likelihood functions for state space models with diffuse initial conditions *Journal of Time Series Analysis* **31** pp 407 – 414.

5892. Luati A, Proietti T 2010 Hyper-spherical and elliptical stochastic cycles *Journal of Time Series Analysis* **31** pp 169 – 181.

5893. Sinha S, Chatterje A, Chakraborti A, Chakrabarti B K 2010 Econophysics: An Introduction *Wiley-VCH* Berlin.

5894. Theoret R, and Racicot F - E 2010 Forecasting stochastic volatility using the Kalman filter: an application to Canadian interest rates and price-earnings ratio *MPRA Paper no 35911 Munich University Munich Germany* http://mpra.ub.uni-muenchen.de/35911/ .

5895. Winschel W, Kratzig M 2010 Solving, estimating, and selecting nonlinear dynamic models without the curse of dimensionality *Econometrica* **39** (1) pp 3 – 33.

5896. Xia Y, Tong H 2011 Feature matching in time series modeling *Statistical Science* **26** (1) pp 21 – 46.

5897. Jungbacker B, Koopman S J, van der Wel M 2011 Maximum likelihood estimation for dynamic factor models with missing data *Journal of Economic Dynamics and Control* **35** (8) pp 1358 – 1368.

5898. Moghaddam B A, Haleh H, Ebrahimijam S 2011 Forecasting trend and stock price with adaptive extended Kalman filter data *2011 International Conference on Economics and Finance Research* IPEDR vol **4** *IACSIT Press* Singapore.

5899. Aoyama H, Fujiwara Y, Iyetomi H, Sato A-H 2012 Preface *Progress of Theoretical Physics* Supplement No 194 pp i-ii.

5900. Darvas Z, Varga B 2012 Uncovering time-varying parameters with the Kalman-filter and the flexible least squares: A Monte Carlo study *Working Paper 2012 / 4 Department of Mathematical Economics and Economic Analysis Corvinus University of Budapest Hungary* pp 1 – 19.

5901. Hang Qian 2012 A flexible state space model and its applications *MPRA Paper No 38455 Munich University Munich Germany* pp 1 - 27 http://mpra.ub.uni-muenchen.de/38455/ .

5902. Proietti T, Luati A 2012a A maximum likelihood estimation of time series models: the Kalman filter and beyond *MPRA Paper no 41981 Munich University Munich German* pp 1 – 30
http://mpra.ub.uni-muenchen.de/41981/ .

5903. Proietti T, Luati A 2012b The generalised autocovariance function *MPRA Paper no 43711 Munich University Munich Germany* pp 1 – 30
http://mpra.ub.unimuenchen.de/43711/.

5904. Creal D 2012 A survey of sequential Monte Carlo methods for economics and finance *Econometric Reviews* vol **31** 3 pp 245 – 296.

5905. Matisko P, Havlena V 2012 Optimality tests and adaptive Kalman filter *Proceedings of 16th IFAC System Identification Symposium* Brussels Belgium.

5906. Durbin J, Koopman S J 2012 Time series analysis by state space methods *2nd edition Oxford University Press* Oxford UK.

5907. Wikipedia 2016 Kalman filter *Wikipedia Foundation, Inc.*

<u>Continuous time signals, analog signals, discrete time signals, digital signals, spectrum of signals in digital signal processing, physics and electronics engineering:</u>

5908. Maxwell J C 1890 Introductory lecture on experimental physics *in* Scientific papers of J C Maxwell Niven W D (editor) vols **1**, **2** Cambridge UK.

5909. Walsh J L 1923a A closed set of normal orthogonal functions *American J Math* **45** pp 5 – 24.

5910. Walsh J L 1923b A property of Haar's system of orthogonal functions *Math Ann* **90** p 3845.

5911. Wikipedia 2015d Joseph L Walsh *Wikipedia* USA
www.wikipedia.org .

5912. Gabor D 1946 Theory of communication Part 1 The analysis of information *J Inst Elect Eng* **93** pp 429 – 441.

5913. Shannon C E 1948 A mathematical theory of communication *Bell System Technical Journal* vol **27** pp 379 – 423, 623 – 656
http://cm.bell-labs.com/cm/ms/what/shannonday/paper.html .

5914. Bose R C, Shrikhande S S 1959 A note on a result in the theory of code construction *Information and Control* **2** (2) pp 183 – 194 doi:10.1016/S0019-9958(59)90376-6 CiteSeerX: 10.1.1.154.2879
http://dx.doi.org/10.1016%2FS0019-9958%2859%2990376-6
http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.154.2879 .

5915. Granger C W J, Hatanaka M 1964 Spectral analysis of economic time series *Princeton University Press* Princeton USA.

5916. Yuen C-K 1972 Remarks on the ordering of Walsh functions *IEEE Transactions on Computers* **21** (12) p 1452 doi:10.1109/T-C.1972.223524
http://dx.doi.org/10.1109%2FT-C.1972.223524 .

5917. Hwang K, Briggs F A 1984 Computer architecture and parallel processing *McGraw-Hill* New York USA.

5918. Orfanidis S J 1985 Optimum signal processing: An introduction 2nd edition *Macmillan* New York USA.

5919. Orfanidis S J 1995 Introduction to signal processing *Prentice-Hall* Englewood Cliffs NJ USA.

5920. Anceau F 1986 The architectures of microprocessors *Addison-Wesley* Wokingham England.

5921. Fountain T 1987 Processor arrays, architecture and applications *Academic Press* London UK.

5922. Chen C H (editor) 1988 Signal processing handbook *Marcel Dekker* New York USA.

5923. Kay S M 1988 Modern spectral estimation: Theory and application *Prentice-Hall* Englewood Cliffs NJ USA.

5924. Oppenheim A V, Schafer R W 1989 Discrete-time signal processing *Prentice-Hall* Englewood Cliffs NJ USA.

5925. Van de Goor A J 1989 Computer architecture and design *Addison-Wesley* Wokingham England.

5926. Priemer R 1991 Introductory signal processing *World Scientific* Singapore ISBN 9971509199.

5927. Jeruchim M C, Balaban Ph, Shanmugan K S 1992 Simulation of communication systems *Plenum Press* New York USA.

5928. Witte R A 1993, 2001 Spectrum and network measurements 1st edition *Prentice Hall Inc* Upper Saddle River NJ USA, 2nd edition *Noble Pub Corp* Atlanta GA USA ISBN 10 1884932169 LC TK7879.4.W58 2001 pp 1 – 297.

5929. Hsu P H 1995 Schaum's theory and problems: Signals and systems *McGraw-Hill* ISBN 0-07-030641-9.

5930. Simon M K, Hinedi S M, Lindsey W C 1995 Digital communication techniques – Signal design and detection *Prentice-Hall* Englewood Cliffs NJ USA.

5931. Simon M K, Alouini M S 2000 Digital communication over fading channels – A unified approach to performance analysis 1st edition *John Wiley and Sons Inc* USA.

5932. Proakis J G, Manolakis D G 1996 Digital signal processing 3rd edition *Prentice Hall* Upper Saddle River NJ USA.

5933. Lathi B P 1998 Signal processing and linear systems *Berkeley-Cambridge Press* ISBN 0-941413-35-7.

5934. Prisch P 1998 Architectures for digital signal processing *John Wiley and Sons Inc* Chichester UK.

5935. Gershenfeld N A 1999 The nature of mathematical modeling *Cambridge University Press* UK ISBN 0-521-57095-6.

5936. Wanhammar L 1999 DSP integrated circuits *Academic Press* San Diego California USA ISBN 0-12-734530-2 pp 1 – 561.

5937. Sklar B 2001 Digital communications 2nd edition *Prentice-Hall* Englewood Cliffs NJ USA.

5938. McMahon D 2007 Signals and systems demystified *McGraw Hill* New York USA ISBN 978-0-07-147578-5.

5939. Rice M 2008 Digital communications - A discrete-time approach *Prentice Hall* Englewood Cliffs NJ USA.

5940. Wikipedia 2015e Signal (electrical engineering) *Wikipedia Inc* USA
www.wikipedia.org .

5941. Wikipedia 2015f Continuous wave *Wikipedia Inc* USA

www.wikipedia.org .
5942. Wikipedia 2015g Discrete-time signal *Wikipedia Inc* USA
www.wikipedia.org .
5943. Wikipedia 2015h Hadamard code *Wikipedia* USA
www.wikipedia.org .
5944. Wikipedia 2016i Polarization *Wikipedia* USA
https://en.wikipedia.org/wiki/Polarization_(waves) .
5945. Wikipedia 2016j Circular polarization *Wikipedia* USA
https://en.wikipedia.org/wiki/Circular_polarization .
5946. Wikipedia 2016k In phase and quadrature components Wikipedia USA
https://en.wikipedia.org/wiki/In_phase_and_quadrature_components .
5947. Wikipedia 2016l Constellation diagram Wikipedia USA
https://en.wikipedia.org/wiki/Constellation_diagram .
5948. Matlab 2014 IQ diagram *MathSoft* California USA.
5949. Ledenyov D O, Ledenyov V O 2015a Nonlinearities in microwave superconductivity 8th edition *Cornell University* NY USA pp 1 – 923
www.arxiv.org 1206.4426v8.pdf .

Time Division Duplex/Frequency Division Duplex spread spectrum burst communications, UMTS/WCDMA/LTE wireless communications, WCDMA optical communications, digital signal processing in telecommunications, electronics engineering, and physics:

5950. Dixon R C 1976 Spread spectrum systems *Wiley-Blackwell* NY USA pp 1 – 318 ISBN-13: 978-0471216292.
5951. Viterbi A J May 1979 Spread spectrum communications - Myths and realities *IEEE Communications Magazine* pp 11 – 18.
5952. Pickholtz R L, Milstein L B May 1982 Theory of spread spectrum communication - A tutorial *IEEE Transactions on Communication* vol **COM-30** no 5 pp 855 – 884.
5953. Simon M K, Omura J K, Scholtz R A, Levitt B K 1985 Spread spectrum communications vols **1-3** *Computer Science Press* Inc USA.
5954. Simon M K, Omura J K, Scholtz R A, Levitt B K 1994 Spread spectrum communications handbook *The McGraw-Hill Companies* Inc NY USA ISBN-13: 978-0070576292.
5955. Simon H, Moher M 2008 Communication systems 5th edition *John Wiley & Sons Inc* USA pp 1 – 440 ISBN-13: 978-0471697909.
5956. Ledenyov V O 1998, 1999 Research consulting on spread spectrum systems *WaveRider* Calgary Alberta Canada.

5957. Ledenyov V O 2000, 2001 Research consulting on WCDMA systems *Nortel Networks* Calgary Alberta Canada.

5958. Rappaport T January 2010 Wireless communications principles and practice 2nd edition *Prentice-Hall Inc* pp 1 – 736 ISBN-13: 978-0130422323.

5959. Miao G, Zander J, Sung K-W, Slimane B 2016 Fundamentals of mobile data networks *Cambridge University Press* pp 1 – 322 ISBN 9781107143210.

<u>Quantum physics, electronics, mechanics:</u>

5960. Planck M 1900a Über eine Verbesserung der Wienschen Spektralgleichung On an improvement of Wien's equation for the spectrum *Verhandlungen der Deutschen Physikalischen Gesellschaft* **2** pp 202 – 204
http://archive.org/stream/verhandlungende01goog#page/n212/mode/2up .

5961. Planck M 1900b Zur Theorie des Gesetzes der Energieverteilung im Normalspektrum *Verhandlungen der Deutschen Physikalischen Gesellschaft* **2** p 237
http://archive.org/stream/verhandlungende01goog#page/n246/mode/2up .

5962. Planck M 1900c Entropie und Temperatur strahlender Wärme Entropy and temperature of radiant heat *Annalen der Physik* **306** (4) pp 719 – 737
http://adsabs.harvard.edu/abs/1900AnP...306..719P ,
https://dx.doi.org/10.1002%2Fandp.19003060410 .

5963. Planck M 1900d Über irreversible Strahlungsvorgänge On irreversible radiation processes *Annalen der Physik* **306** (1) pp 69 – 122
http://adsabs.harvard.edu/abs/1900AnP...306...69P ,
https://dx.doi.org/10.1002%2Fandp.19003060105 .

5964. Planck M 1901 Über das Gesetz der Energieverteilung im Normalspektrum On the law of distribution of energy in the normal spectrum *Annalen der Physik* **309** (3) pp 553 – 563.
http://adsabs.harvard.edu/abs/1901AnP...309..553P ,
https://dx.doi.org/10.1002%2Fandp.19013090310 ,
http://theochem.kuchem.kyoto-u.ac.jp/Ando/planck1901.pdf .

5965. Planck M 1903 Treatise on thermodynamics *Longmans, Green & Co* London UK
http://archive.org/stream/treatiseonthermo00planuoft#page/n7/mode/2up ,
http://openlibrary.org/books/OL7246691M .

5966. Planck M 1906 Vorlesungen über die Theorie der Wärmestrahlung *JA Barth* Leipzig Germany
http://lccn.loc.gov/07004527 .

5967. Planck M 1914 The theory of heat radiation 2nd edition *P Blakiston's Son & Co* http://openlibrary.org/books/OL7154661M .

5968. Planck M 1915 Eight lectures on theoretical physics *Dover Publications* ISBN 0-486-69730-4.

5969. Planck M 1943 Zur Geschichte der Auffindung des physikalischen Wirkungsquantums *Naturwissenschaften* **31** (14–15) pp 153 – 159
http://adsabs.harvard.edu/abs/1943NW.....31..153P ,
https://dx.doi.org/10.1007%2FBF01475738 .

5970. Einstein A 1905 Zur Elektrodynamik bewegter Körper On the electrodynamics of moving bodies *Annalen der Physik* Berlin Germany (in German) **322** (10) pp 891 – 921
http://onlinelibrary.wiley.com/doi/10.1002/andp.19053221004/pdf ,
http://adsabs.harvard.edu/abs/1905AnP...322..891E) ,
http://dx.doi.org/10.1002%2Fandp.19053221004 .

5971. Einstein A 1917 Zur Quantentheorie der Strahlung On the quantum mechanics of radiation *Physikalische Zeitschrift* (in German) **18** pp 121 – 128
http://adsabs.harvard.edu/abs/1917PhyZ...18..121E .

5972. Einstein A 1924 Quantentheorie des einatomigen idealen gases Quantum theory of monatomic ideal gases *Sitzungsberichte der Preussischen Akademie der Wissenschaften Physikalisch-Mathematische Klasse* (in German) pp 261 – 267
http://echo.mpiwg-berlin.mpg.de/MPIWG:DRQK5WYB .

5973. Einstein A, Podolsky B, Rosen N 1935 Can quantum-mechanical description of physical reality be considered complete? *Physical Review* American Physical Society **47** (10) pp 777 – 780
http://journals.aps.org/pr/pdf/10.1103/PhysRev.47.777 ,
http://adsabs.harvard.edu/abs/1935PhRv...47..777E ,
https://dx.doi.org/10.1103%2FPhysRev.47.777 .

5974. Bohr N 1922 The structure of the atom Nobel prize lecture *in* Niels Bohr A centenary volume French A P, Kennedy P J (editors) *Harvard University Press* Cambridge Massachusetts pp 91 – 97 ISBN 978-0-674-62415-3.

5975. Bohr N, Kramers H A, Slater J C 1924 The quantum theory of radiation *Philosophical Magazine* **6 76** (287) pp 785 – 802
http://www.cond-mat.physik.uni-mainz.de/~oettel/ws10/bks_PhilMag_47_785_1924.pdf,
https://dx.doi.org/10.1080%2F14786442408565262 .

5976. de Broglie L 1924, 1925 Recherches sur la théorie des quanta Researches on the quantum theory *Ph D Thesis* Sorbonne Paris France, *Annales de Physique* **10** (3) pp 22 – 128.

5977. de Broglie L 1926 Ondes et mouvements Waves and motions *Gauthier-Villars* Paris France.

5978. de Broglie L 1927 Rapport au 5e Conseil de Physique Solvay Brussels Belgium.

5979. de Broglie L 1928 La mécanique ondulatoire Wave mechanics *Gauthier-Villars* Paris France.

5980. Compton A 1926 X-Rays and electrons: An outline of recent X-Ray theory *D Van Nostrand Company Inc* New York USA
https://www.worldcat.org/oclc/1871779 .

5981. Compton A; Allison S K 1935 X-Rays in theory and experiment *D Van Nostrand Company Inc* New York USA
https://www.worldcat.org/oclc/853654 .

5982. Schrödinger E 1926 Quantisierung als Eigenwertproblem *Annalen der Phys* **384** (4) pp 273 – 376
http://onlinelibrary.wiley.com/doi/10.1002/andp.19263840404/pdf ,
http://adsabs.harvard.edu/abs/1926AnP...384..361S ,
https://dx.doi.org/10.1002%2Fandp.19263840404 .

5983. Fermi E 1934 Radioattività indotta da bombardamento di neutroni La Ricerca scientifica **1** (5) p 283 (in Italian)
http://www.phys.uniroma1.it/DipWeb/museo/collezione%20Fermi/documento2.htm .

5984. Fermi E, Amaldi E, d'Agostino O, Rasetti F, Segre E 1934 Artificial radioactivity produced by neutron bombardment *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences* **146** (857) p 483
http://adsabs.harvard.edu/abs/1934RSPSA.146..483F ,
https://dx.doi.org/10.1098%2Frspa.1934.0168 .

5985. Townes Ch 1939 Concentration of the heavy isotope of carbon and measurement of its nuclear spin *PhD thesis* Caltech California USA
http://thesis.library.caltech.edu/4202/ .

5986. Townes Ch, Schawlow A 1955 Microwave spectroscopy *McGraw-Hill* USA ISBN 978-0-07-065095-4.

5987. Gordon J, Zeiger H, Townes Ch 1955 The maser — new type of microwave amplifier, frequency standard, and spectrometer *Physical Review* **99** (4) p 1264
http://adsabs.harvard.edu/abs/1955PhRv...99.1264G ,

https://dx.doi.org/10.1103%2FPhysRev.99.1264 .

5988. Shimoda K, Wang T, Townes Ch 1956 Further aspects of the theory of the maser *Physical Review* **102** (5) p 1308

http://adsabs.harvard.edu/abs/1956PhRv..102.1308S ,

https://dx.doi.org/10.1103%2FPhysRev.102.1308 .

5989. Townes Ch H 1964 Nobel Prize in Physics Stockholm Sweden

http://nobelprize.org/nobel_prizes/physics/laureates/1964/townes-bio.html .

5990. Townes Ch H 1966 Obtaining of coherent radiation with help of atoms and molecules *Uspekhi Fizicheskih Nauk (UFN)* vol **88** no 3.

5991. Townes Ch H 1969 Quantum electronics and technical progress *Uspekhi Fizicheskih Nauk (UFN)* vol **98** no 5.

5992. Townes Ch 1995 Making waves *American Institute of Physics Press* New York USA ISBN 978-1-56396-381-0.

5993. Townes Ch 1999 How the laser happened: Adventures of a scientist *Oxford University Press* ISBN 978-0-19-512268-8.

5994. Schiff L I 1949 Quantum mechanics *McGraw - Hill Book Company Inc* New York USA pp 1 – 404.

5995. Blokhintsev D I 1954 Development of first nuclear reactor for nuclear power plant Moscow Russian Federation.

5996. Blokhintsev D I 2004 Foundations of quantum mechanics 7th edition *Lan' Publishing House* St Petersburg Russian Federation ISBN 5-8114-0554-5 pp 1 – 664.

5997. Prokhorov A M, Basov N G 1955 Molecular generator and amplifier *Uspekhi Fizicheskih Nauk (UFN)* vol **57** no 3 pp 485 – 501.

5998. Prokhorov A M, Fedorov V B 1963 *Soviet Journal of Experimental and Theoretical Physics JETP* **16** 1489.

5999. Prokhorov A M 1964 Nobel Prize in Physics Stockholm Sweden

http://nobelprize.org/nobel_prizes/physics/laureates/1964/prokhorov-bio.html .

6000. Prokhorov A M Quantum electronics 1965 *Uspekhi Fizicheskih Nauk (UFN)* vol **85** no 4 pp 599 – 604.

6001. Karlov N V, Prokhorov A M 1976 Laser's separation of isotopes *Uspekhi Fizicheskih Nauk (UFN)* vol **118** no 4 pp 583 – 609.

6002. Prokhorov A M 1979 To 25th anniversary of laser *Uspekhi Fizicheskih Nauk (UFN)* vol **128** no 3.

6003. Prokhorov A M (Editor in Chief), Buzzi J M, Sprangle P, Wille K 1992 Coherent radiation generation and particle acceleration *Research Trends in Physics Series American Institute of Physics Press* New York USA (Springer, Germany) ISBN 0-88318-926-7
http://www.springer-sbm.de/index.php?id=121&L=0 .
6004. Bardeen J 1956 Nobel Prize in Physics Stockholm Sweden
http://nobelprize.org/nobel_prizes/physics/laureates/1956/bardeen-bio.html .
6005. Bardeen J 1972 Nobel Prize in Physics Stockholm Sweden
http://nobelprize.org/nobel_prizes/physics/laureates/1972/bardeen-bio.html .
6006. Bardeen J 1990 Superconductivity and other macroscopic quantum phenomena *Physics Today* **43** (12) pp 25 – 31 doi: 10.1063/1.881218.
6007. Schawlow A, Townes Ch 1958 Infrared and optical masers *Physical Review* **112** (6) p 1940
http://dx.doi.org/10.1103%2FPhysRev.112.1940 ,
http://adsabs.harvard.edu/abs/1958PhRv..112.1940S .
6008. Schawlow A 1963 Modern optical quantum generators *Uspekhi Fizicheskih Nauk (UFN)* vol **81** no 12.
6009. Schawlow A 1964 Nobel Prize in Physics Stockholm Sweden
http://nobelprize.org/nobel_prizes/physics/laureates/1964/schawlow-bio.html .
6010. Gould R G 1959 The LASER, Light Amplification by Stimulated Emission of Radiation *in* Franken PA, Sands RH (editors) *The Ann Arbor Conference on Optical Pumping* The University of Michigan 15 June - 18 June 1959 p 128
https://www.worldcat.org/oclc/02460155 .
6011. Merzbacher E 1961 Quantum mechanics *John Willey and Sons Inc* New York USA pp 1 – 621.
6012. Josephson B D 1962 Possible new effects in superconductive tunneling *Physical Letters* vol **1** p 251.
6013. Josephson B D 1964 Coupled superconductors *Review Modern Physics* vol **36** p 216.
6014. Josephson B D 1965 Super currents through barriers *Advances in Physics* vol **14** p 419.
6015. Basov N G 1964 Nobel Prize in Physics Stockholm Sweden
http://nobelprize.org/nobel_prizes/physics/laureates/1964/basov-bio.html .
6016. Basov N G 1965 Semiconductor quantum generators *Uspekhi Fizicheskih Nauk (UFN)* vol **85** no 4.
6017. Landau L D, Lifshits E M 1977 Quantum mechanics 3rd edition *Pergamon Press* Oxford UK.

6018. Tesche C D, Clarke J 1977 DC SQUID: Noise and optimization *Journal of Low Temperature Physics* **29** pp 301 – 331.

6019. Clarke J 1989 Principles and applications of SQUIDs *Proc IEEE* **77** pp 1208 – 1223.

6020. Fulton T A, Dolan G J 1987 Observation of single-electron charging effects in small tunnel junctions *Phys Review Letters* **59** pp 109 – 112.

6021. Galindo A, Pascual P 1990, 1991 Quantum mechanics vols **1**, **2** *Springer-Verlag* Berlin Germany pp 1 – 417, 1 – 415.

6022. Grabert H, Devoret M H (editors) 1992 Single charge tunneling: Coulomb blockade phenomena in nanostructures *Plenum Press* New York USA.

6023. Yokoyama H, Ujihara K 1995 Spontaneous emission and laser oscillation in micro-cavities *CRC Press* Boca Raton USA ISBN 0-8493-3786-0.

6024. Alferov Zh I 1996 The history and future of semiconductor heterostructures *in* Proceedings 99th Nobel Symposium Arild June 4-8 1996 *Physica Scripta* **T68** 32.

6025. Mygind J 1997 Private communications on the new sources of noise in the single electron transistors *Department of Physics* Technical University of Denmark Lyngby Denmark.

6026. Milonni P W, Eberly J H 1998 Lasers *John Wiley and Sons Inc* USA ISBN 0-471-62731-3.

6027. Muck M 1998 Radio frequency superconducting quantum interference devices *Institute of Applied Physics* University of Giessen Germany.

6028. Bimberg D, Grundmann M, Ledentsov N N 1999 Quantum dot heterostructures *John Wiley and Sons Inc* New York USA.

6029. Loudon R 2001 The quantum theory of light 3rd edition *Oxford University Press* New York USA.

6030. Ledenyov V O, Ledenyov O P, Ledenyov D O 2002 A quantum random number generator on magnetic flux qubits *Proceedings of the 2nd Institute of Electrical and Electronics Engineers Conference IEEE-NANO 2002* Chicago Washington DC USA IEEE Catalog no 02TH86302002 Library of Congress number: 2002106799 ISBN: 0-7803-7538-6.

Wave function in Schrödinger quantum mechanical wave equation in quantum mechanics:

6031. de Broglie L 1924, 1925 Recherches sur la théorie des quanta Researches on the quantum theory *Ph D Thesis* Sorbonne Paris France, *Annales de Physique* **10** (3) pp 22 – 128.

6032. Schrödinger E 1926a Quantisierung als Eigenwertproblem *Annalen der Phys* **384** (4) pp 273 – 376 doi:10.1002/andp.19263840404 Bibcode:1926AnP...384..361S

https://dx.doi.org/10.1002%2Fandp.19263840404 ,

http://adsabs.harvard.edu/abs/1926AnP...384..361S .

6033. Schrödinger E 1926b An undulatory theory of the mechanics of atoms and molecules *Physical Review* **28** (6) pp 1049 – 1070 doi:10.1103/PhysRev.28.1049 Bibcode:1926PhRv...28.1049S
https://dx.doi.org/10.1103%2FPhysRev.28.1049 ,
http://adsabs.harvard.edu/abs/1926PhRv...28.1049S .

6034. Schrödinger E 1982 Collected papers on wave mechanics 3rd edition *American Mathematical Society* ISBN 978-0-8218-3524-1.

6035. Schrödinger E 1984 Collected papers *Friedrich Vieweg und Sohn* ISBN 3-7001-0573-8.

6036. Einstein A 1917 Zur Quantentheorie der Strahlung On the quantum mechanics of radiation *Physikalische Zeitschrift* (in German) 18 pp 121 – 128
http://adsabs.harvard.edu/abs/1917PhyZ...18..121E .

6037. Einstein A, Podolsky B, Rosen N 1935 Can quantum-mechanical description of physical reality be considered complete? *Physical Review* American Physical Society **47** (10) pp 777 – 780
http://journals.aps.org/pr/pdf/10.1103/PhysRev.47.777 ,
http://adsabs.harvard.edu/abs/1935PhRv...47..777E ,
https://dx.doi.org/10.1103%2FPhysRev.47.777 .

6038. Akhiezer A I, Berestetsky V B 1953 Quantum electrodynamics *Gostekhteorizdat* Moscow Russian Federation pp 1 – 428.

6039. Akhiezer A I, Berestetsky V B 1964 Quantum electrodynamics 3rd edition *Nauka* Moscow Russian Federation pp 1 – 624.

6040. Akhiezer A I, Berestetsky V B 1980 Quantum electrodynamics 4th edition *Nauka* Moscow Russian Federation pp 1 – 432.

6041. Berestetsky V B, Lifshits E M, Pitaevsky L P 1980 Quantum electrodynamics *Nauka* Moscow Russian Federation pp 1 – 704.

6042. Dirac P A M 1958 The principles of quantum mechanics 4th edition *Oxford University Press* UK.

6043. Merzbacher E 1961 Quantum mechanics *John Willey and Sons Inc* New York USA pp 1 – 621.

6044. Feynman R, Leighton R B, Sands M 1965 Feynman lectures on physics vol **3** *Addison-Wesley* USA ISBN 0-201-02118-8.

6045. Atkins P W 1974 Quanta: A handbook of concepts *Oxford University Press* UK ISBN 0-19-855493-1.

6046. Atkins P W 1977 Molecular quantum mechanics parts I and II: An introduction to quantum chemistry vol **1** *Oxford University Press* UK ISBN 0-19-855129-0.

6047. Atkins P W 1978 Physical chemistry *Oxford University Press* UK ISBN 0-19-855148-7.

6048. Landau L D, Lifshits E M 1977 Quantum mechanics 3rd edition *Pergamon Press* Oxford UK.

6049. Bransden B H, Joachain C J 1983 Physics of atoms and molecules *Longman* ISBN 0-582-44401-2.

6050. Resnick R, Eisberg R 1985 Quantum physics of atoms, molecules, solids, nuclei and particles 2nd edition *John Wiley & Sons Inc* USA ISBN 978-0-471-87373-0.

6051. Galindo A, Pascual P 1990, 1991 Quantum mechanics vols **1**, **2** *Springer-Verlag* Berlin Germany pp 1 – 417, 1 – 415.

6052. Shankar R 1994 Principles of quantum mechanics 2nd edition *Kluwer Academic/Plenum Publishers* ISBN 978-0-306-44790-7.

6053. Ballentine L 1998 Quantum mechanics: A modern development *World Scientific Publishing Co* Singapore ISBN 9810241054.

6054. Bransden B H, Joachain C J 2000 Quantum mechanics 2nd edition *Prentice Hall* PTR ISBN 0-582-35691-1.

6055. Liboff R 2002 Introductory quantum mechanics 4th edition *Addison Wesley* ISBN 0-8053-8714-5.

6056. Abers E, Pearson Ed 2004 Quantum mechanics *Addison Wesley Prentice Hall Inc* ISBN 978-0-13-146100-0.

6057. Blokhintsev D I 2004 Foundations of quantum mechanics 7th edition Lan' *Publishing House* St Petersburg Russian Federation ISBN 5-8114-0554-5 pp 1 – 664.

6058. Griffiths D J 2004 Introduction to quantum mechanics 2nd edition *Prentice Hall* NJ USA ISBN 0-13-111892-7.

6059. Vakarchuk I O 2004 Quantum mechanics *L’viv National University Publishing House* L’viv Ukraine.

6060. McMahon D 2006 Quantum mechanics demystified *McGraw Hill* USA ISBN (10) 0 07 145546 9.

6061. Halliday D 2007 Fundamentals of physics 8th edition *John Wiley & Sons Inc* NY USA ISBN 0-471-15950-6.

6062. Hand L N, Finch J D 2008 Analytical mechanics *Cambridge University Press* UK ISBN 978-0-521-57572-0.

6063. Teschl G 2009 Mathematical methods in quantum mechanics with applications to Schrödinger operators *American Mathematical Society* Providence USA ISBN 978-0-8218-4660-5.

6064. Zettili N 2009 Quantum mechanics: Concepts and applications *John Wiley & Sons Inc* NY USA ISBN 978-0-470-02678-6.

6065. Laloe F 2012 Do we really understand quantum mechanics *Cambridge University Press* UK ISBN 978-1-107-02501-1.

6066. Rylov Y A 2015 What is the wave function and why is it used in quantum mechanics? pp 1 – 18
http://gasdyn-ipm.ipmnet.ru/~rylov/yrylov.htm .

6067. Wikipedia 2015i Erwin Schrödinger *Wikipedia* USA
www.wikipedia.org .

6068. Wikipedia 2015j Schrödinger equation *Wikipedia* USA
www.wikipedia.org .

Artificial intelligence, electronics engineering and computer science:

6069. Turing A October 1950 Computing machinery and intelligence *Mind* **LIX** 236 pp 433 – 460 doi:10.1093/mind/LIX.236.433 ISSN 0026-4423.

6070. Rich E 1983 Artificial intelligence *McGraw-Hill* USA ISBN 0-07-052261-8.

6071. Winston P H 1984 Artificial intelligence *Addison-Wesley* Reading Massachusetts USA ISBN 0-201-08259-4.

6072. Haugeland J 1985 Artificial intelligence: The very idea *MIT Press* Cambridge MA USA ISBN 0-262-08153-9.

6073. Edelson E 1991 The nervous system *Chelsea House* New York USA ISBN 978-0-7910-0464-7.

6074. Jang J-S R July 1991 Fuzzy modeling using generalized neural networks and Kalman filter algorithm *Proceedings of the 9th National Conference on Artificial Intelligence AAAI-91* pp 762 – 767.

6075. Sun R, Bookman L (editors) 1994 Computational architectures: Integrating neural and symbolic processes *Kluwer Academic Publishers* Needham MA USA.

6076. John G H, Langley P 1995 Estimating continuous distributions in Bayesian classifiers *The 11th Conference on Uncertainty in Artificial Intelligence*.

6077. Dowe D L, Hajek A R 1997 A computational extension to the Turing test *Proceedings of the 4th Conference of the Australasian Cognitive Science Society*.

6078. Kohavi G J R 1997 Wrappers for feature subset selection *Artificial Intelligence* vol **97** no 1-2 pp 272 – 324.

6079. Mitchell T 1997 Machine learning *McGraw Hill* USA.

6080. Nilsson N 1998 Artificial intelligence: A new synthesis *Morgan Kaufmann Publishers* ISBN 978-1-55860-467-4.

6081. Nilsson N 2010 The quest for artificial intelligence: A history of ideas and achievements *Cambridge University Press* New York USA ISBN 978-0-521-12293-1.

6082. Poole D, Mackworth A, Goebel R 1998 Computational intelligence: A logical approach *Oxford University Press* New York USA ISBN 0-19-510270-3.

6083. Calmet J, Benhamou B, Caprotti O, Henocque L, Sorge V (editors) 2002 Artificial intelligence, automated reasoning, and symbolic computation *Springer-Verlag* Berlin Germany.

6084. Russell S J, Norvig P 2003 Artificial intelligence: A modern approach 2nd edition *Prentice Hall* Upper Saddle River New Jersey USA ISBN 0-13-790395-2.

6085. Luger G, Stubblefield W 2004 Artificial intelligence: Structures and strategies for complex problem solving 5th edition *The Benjamin Cummings Publishing Company Inc* ISBN 0-8053-4780-1.

6086. McNelis P D 2005 Neural networks in finance *Elsevier Academic Press* San Diego USA.

6087. Bach J 2008 Seven principles of synthetic intelligence *in* Artificial general intelligence 2008 Proceedings of the First AGI Conference Wang P, Goertzel B, Franklin S (editors) *IOS Press* pp 63 – 74 ISBN 978-1-58603-833-5.

6088. Neapolitan R, Jiang X 2012 Contemporary artificial intelligence *Chapman & Hall* CRC ISBN 978-1-4398-4469-4.

Deoxyribonucleic acid (DNA), digital DNA of economy of scale and scope in biology economics and finances:

6089. Miescher Fr 1871 Ueber die chemische Zusammensetzung der Eiterzellen (On the chemical composition of pus cells) *Medicinisch-chemische Untersuchungen* **4** pp 441 – 460.

6090. Kol'tsov N K December 12, 1927 The physical-chemical basis of morphology *3rd All-Union Meeting of Zoologist, Anatomists, and Histologists* Leningrad USSR.

6091. Watson J D, Crick F H 1953 A structure for deoxyribose nucleic acid *Nature* **171** (4356) pp 737 – 738 Bibcode:1953Natur.171..737W , doi:10.1038/171737a0 , PMID 13054692
http://www.nature.com/nature/dna50/watsoncrick.pdf ,
http://adsabs.harvard.edu/abs/1953Natur.171..737W ,
https://dx.doi.org/10.1038%2F171737a0 ,

https://www.ncbi.nlm.nih.gov/pubmed/13054692 .

6092. Watson J D 2002 Genes, girls, and Gamow: After the double helix *Random House* New York USA ISBN 0-375-41283-2 OCLC 47716375 .

6093. Watson J D 2004 DNA: The secret of life *Random House* New York USA ISBN 978-0-09-945184-6 .

6094. Gamow G July 2 1954a Letter to Martynas Ycas *Library of Congress* Washington USA www.loc.gov/exhibits/treasures/trr115.html .

6095. Gamow G 1954b Possible mathematical relation between deoxyribonucleic acid and proteins *Det Kongelige Danske Videnskabernes Selskab* Copenhagen Denmark pp 1 – 2.

6096. Library of Congress 2015 DNA: An "amateur" makes a real contribution *American Treasures of the Library of Congress* Library of Congress Washington USA www.loc.gov/exhibits/treasures/trr115.html .

6097. DeVinne (editor) (1985) DNA *American Heritage Dictionary* USA p 413 ISBN 0-395-32943-4 .

6098. Dahm R 2008 Discovering DNA: Friedrich Miescher and the early years of nucleic acid research *Hum Genet* **122** (6) pp 565 – 581 doi:10.1007/s00439-007-0433-0 PMID 17901982 https://dx.doi.org/10.1007%2Fs00439-007-0433-0 , https://www.ncbi.nlm.nih.gov/pubmed/17901982 .

6099. Wikipedia 2015i DNA Wikipedia California USA https://en.wikipedia.org/wiki/DNA .

6100. Ledenyov D O, Ledenyov V O 2016p Digital DNA of economy of scale and scope *MPRA Paper no 68960* Munich University Munich Germany, *SSRN Paper no SSRN-id2718931 Social Sciences Research Network* New York USA pp 1 – 58 http://mpra.ub.uni-muenchen.de/68960/ , http://ssrn.com/abstract=2718931 .

<u>Strategy theory in management, business administration, psychology, and mathematics:</u>

6101. Ueda 1904 Shogyo Dai Jiten (The dictionary of commerce) Japan.

6102. Ueda 1937 Keieikeizaigaku Saran (The science of business administration, Allgemeine Betriebswirtschaftslehre) Japan.

6103. Mano O 1968-1969 On the science of business administration in Japan *Hokudai Economic Papers* vol **1** pp 77 – 93.

6104. Mano O 1970 The development of the science of business administration in Japan since 1955 *Hokudai Economic Papers* vol **2** pp 30 – 42.

6105. Chandler A D Jr 1962, 1998 Strategy and structure: Chapters in the history of the American industrial enterprise *Beard Books* USA ISBN-10: 158798198X ISBN-13: 978-1587981982 pp 1 – 480.

6106. Chandler A D Jr 1977, 1993 The visible hand: The managerial revolution in American business *Belknap Press* ISBN-10 0674940520 ISBN-13 978-0674940529 pp 1 – 624.

6107. Chandler A D Jr, Daems H 1980 Managerial hierarchies: Comparative perspectives on the rise of the modern industrial enterprise *Harvard University Press* ISBN 9780674547414 .

6108. Chandler A D Jr 1994 Scale and scope: The dynamics of industrial capitalism *Belknap Press* USA ISBN-10: 0674789954 ISBN-13: 978-0674789951 pp 1 – 780.

6109. Chandler A D Jr 2001 Inventing the electronic century: The epic story of the consumer electronics and computer industries *Free Press* USA ISBN-10: 0743215672 ISBN-13: 978-0743215671 pp 1 – 336.

6110. Chandler A D Jr 2005 Shaping the industrial century: The remarkable story of chemical and pharmaceutical industries *Harvard University Press* Cambridge Massachusetts USA ISBN 0-674-01720-X pp 1 – 366.

6111. Andrews K R 1971a The concept of corporate strategy *Richard D Irwin* Homewood USA.

6112. Andrews K R 1971b New horizons in corporate strategy *McKinsey Quarterly* vol **7** no 3 pp 34 – 43.

6113. Andrews K R 1980 Directors' responsibility for corporate strategy *Harvard Business Review* vol **58** no 6 pp 30 – 42.

6114. Andrews K R 1981a Corporate strategy as a vital function of the board *Harvard Business Review* vol **59** no 6 pp 174 – 180.

6115. Andrews K R 1981b Replaying the board's role in formulating strategy *Harvard Business Review* vol **59** no 3 pp 18 – 23.

6116. Andrews K R 1984 Corporate strategy: The essential intangibles *McKinsey Quarterly* no 4 pp 43 – 49.

6117. Rumelt R P 1974 Strategy, structure and economic performance *Harvard Business School Press* Boston MA USA.

6118. Rumelt R P 1982 Diversification strategy and profitability *Strategic Management Journal* **3** pp 359 – 369.

6119. Porter M E March-April 1979 How competitive forces shape strategy *Harvard Business Review* **57** (2) pp 137 – 145.

6120. Porter M E 1980, 1998 Competitive strategy: Techniques for analyzing industries and competitors *Free Press* New York USA.

6121. Porter M E, Harrigan K R 1981 A framework for looking at endgame strategies *in* Strategic management and business policy Glueck B (editor) *McGraw-Hill* USA.

6122. Porter M E 1982a Cases in competitive strategy *Free Press* New York USA.

6123. Porter M E 1982b Industrial organization and the evolution of concepts for strategic planning: The new learning *in* Corporate strategy: The integration of corporation planning models and economics Taylor T H (editor) *North-Holland Publishing Company* Amsterdam The Netherlands.

6124. Porter M E, Salter M S March 1982, June 1986 Note on diversification as a strategy *Harvard Business School Background Note* Harvard University pp 382 – 129.

6125. Porter M E 1983 Analyzing competitors: Predicting competitor behavior and formulating offensive and defensive strategy *in* Policy, strategy, and implementation Leontiades M (editor) *Random House* USA.

6126. Porter M E 1985 Defensive strategy *Strategy* **7** (1).

6127. Porter M E, Millar V July 1985 How information gives you competitive advantage *Harvard Business Review* http://hbr.org/1985/07/how-information-gives-you-competitive-advantage/ar/1 .

6128. Porter M E 1985 Competitive advantage: Creating and sustaining superior performance *Free Press* New York USA

6129. Porter M E May 1987a The state of strategic thinking *Economist* London UK.

6130. Porter M E 1987b From competitive advantage to corporate strategy *Harvard Business Review* pp 43 – 59.

6131. Porter M E April 1991 America's green strategy *Scientific American* **264** (4).

6132. Porter M E 1991 Toward a dynamic theory of strategy *Strategic Management Journal* **12** pp 95 – 117.

6133. Montgomery C A, Porter M E (editors) 1991 Strategy: Seeking and securing competitive advantage *Harvard Business School Press* Boston Massachusetts USA.

6134. Porter M E 1994a Global strategy: Winning in the World-wide marketplace *in* The portable MBA in strategy Fahey L, Randall R M (editors) *John Willey & Sons* NY USA.

6135. Porter M E 1994b Competitive strategy revisited: A view from the 1990s *in* The relevance of a decade: Essays to mark the first ten years of the *Harvard Business School Press* Duffy P B (editor) *Harvard Business School Press* Boston Massachusetts USA.

6136. Porter M E, Van der Linde C 1995 Toward a new conception of the environment-competitiveness relationship *Journal of Economic Perspectives* **9** (4) pp 97 – 118.

6137. Porter M E 1996a What is strategy? *Harvard Business Review* **74** (6) pp 61 – 78.

6138. Porter M E December 1996b Tradeoffs, activity systems, and the theory of competitive strategy *Unpublished Work* Harvard University USA.

6139. Porter M E March February 1997 New strategies for inner-city economic development *Economic Development Quarterly* **11** (1).

6140. Schwab K, Conrnelius P, Porter M E 1999 The global competitiveness report *Oxford University Press* New York USA.

6141. Porter M E, Rivkin J W January 2000, March 2001 Competition & strategy: Course structure TN *Harvard Business School Teaching Note* Harvard University pp 700 – 091.

6142. Porter M E March 2001a Strategy and the Internet *Harvard Business Review* **79** (3) http://hbr.org/2001/03/strategy-and-the-internet/ar/1 .

6143. Porter M E 2001b The technological dimension of competitive strategy *in* Research on technological innovation, management and policy vol **7** Burgelman R A, Chesbrough H (editors) *JAI Press* Greenwich CT USA.

6144. Porter M E, Kramer M R 2002 The competitive advantage of corporate philanthropy *Harvard Business Review* **80** (12) pp 56 – 68.

6145. Porter M E, Sakakibara M 2004 Competition in Japan *Journal of Economic Perspectives* Winter Issue.

6146. Anand B N, Bradley S P, Ghemawat P, Khanna T, Montgomery C A, Porter M E, Rivkin J W, Rukstad M G, Wells J R, Yoffie D B June 2005, September 2008 Strategy: Building and sustaining competitive advantage *Harvard Business School Class Lecture* Harvard University USA pp 705 – 509.

6147. Porter M E, Kramer M R December 2006 Strategy and society: The link between competitive advantage and corporate social responsibility *Harvard Business Review* **84** (12).

6148. Porter M E January 2008 The five competitive forces that shape strategy *Special Issue on HBS Centennial Harvard Business Review* **86** (1)
http://hbr.org/2008/01/the-five-competitive-forces-that-shape-strategy/ar/1 .

6149. Porter M E, Kramer M R January-February 2011 Creating shared value *Harvard Business Review* Harvard Business School USA
https://hbr.org/2011/01/the-big-idea-creating-shared-value .

6150. Porter M December 2013 Fundamental purpose *Value Investor Insight* pp 8 – 20 www.valueinvestorinsight.com .

6151. Porter M E, Heppelmann J E November 2014 How smart, connected products are transforming competition *Harvard Business Review* November USA
http://hbr.org/2014/11/how-smart-connected-products-are-transforming-competition/ar/1 .
6152. Porter M E 2015 Strategy award *Thinkers50* London UK
www.thinkers50.org .
6153. Schendel D E, Hofer Ch W 1979 Strategic management. A new view of business policy and planning *Little Brown* Boston USA p 9.
6154. Yelle L E 1979 The learning curve: Historical review and comprehensive survey *Decision Sciences* **10** (2) pp 302 – 328.
6155. Schelling Th C 1980 The strategy of conflict *Harvard University Press* Cambridge USA.
6156. Dess G G, Davis P S 1984 Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance *Academy of Management Journal* **27** (3) pp 467 – 488.
6157. Schwenk C R 1984 Cognitive simplification processes in strategic decision making *Strategic Management Journal* **5** pp 111 – 128.
6158. Hambrick D C 1985 Turnaround strategies *in* Handbook of strategic management Guth W D (editor) *Warren, Gorham and Lamont* New York USA pp 10-1 to 10-32.
6159. Palepu K G 1985 Diversification strategy, profit performance and the entropy measure *Strategic Management Journal* **6** pp 239 – 255.
6160. Barney J B 1986 Strategic factor markets: Expectations, luck, and business strategy *Management Science* **32** (10) pp 1231 – 1241.
6161. Barney J B 1991 Firm resources and sustained competitive advantage *Journal of Management* **17** (1) pp 99 – 120.
6162. Miller D, Friesen P H 1986a Porter's (1980) generic strategies and performance: An empirical examination with American data, Part I: Testing Porter *Organization Studies* **7** pp 37 – 55.
6163. Miller D, Friesen P H 1986b Porter's (1980) generic strategies and performance: An empirical examination with American data, Part II: Performance implications *Organization Studies* **7** pp 255 – 261.
6164. Miller D 1988 Relating Porter's business strategies to environment and structure: Analysis and performance implications *Academy of Management Journal* **31** pp 280 – 308.
6165. Huff A S, Reger R K 1987 A review of strategic process research *Journal of Management* vol **13** no 2 p 211.

6166. Hill C W L, Snell S A 1988 External control, corporate strategy, and firm performance in research intensive industries *Strategic Management Journal* **9** pp 577 – 590.

6167. Baysinger B D, Hoskisson R E 1989 Diversification strategy and R&D intensity in large multiproduct firms *Academy of Management Journal* **32** pp 310 – 332.

6168. Rue L W, Holland P G 1989 Strategic management: Concepts and experiences 2nd edition *McGraw-Hill* Singapore; *Sage* Beverly Hills California USA.

6169. Cohen W M, Levinthal D A 1990 Absorptive capacity: A new perspective on learning and innovation *Administrative Science Quarterly* **35** pp 128 – 152.

6170. Goold M 1991 Strategic control in the decentralized firm *Sloan Management Review* **32** (2) pp 69 – 81.

6171. Goold M, Luchs K 1993 Why diversify? Four decades of managed thinking *Academy of Management Executive* **7** (3) pp 7 – 25.

6172. Goold M et al. 1994 Corporate level strategy: Creating value in the multi-business company *John Willey & Sons Inc* New York USA.

6173. Goold M, Campbell A September, October 1998 Desperately seeking synergy *Harvard Business Review* pp 131 – 143.

6174. Alexander M, Goold M, Collis D J, Campbell A, Lieberthal K, Montgomery C A, Palepu K, Prahalad C K, Stalk G, Khanna T, Hart S L, Shulman L F, Evans Ph 1992, 1995, 1996, 1997, 1998, 1999 Harvard Business Review on corporate strategy *Harvard University Press* Cambridge Massachusetts USA ISBN 1-57851-699-4.

6175. Yip G 1992 Total global strategy: Managing for worldwide competitive advantage *Prentice Hall* NY USA.

6176. Yip G 1998 Asian advantage: Key strategies for winning in the Asia-Pacific region *Addison Wesley/Perseus Books* USA.

6177. Yip G 2000 Strategies for Central and Eastern Europe *Macmillan Business* USA.

6178. Yip G 2007 Managing global customers *Oxford University Press* Oxford UK.

6179. Campbell A et al 1995 Corporate strategy: The quest for parenting advantage *Harvard Business Review* **73** (2) pp 120 – 132.

6180. Johnson G, Scholes K 1997 Exploring corporate strategy *Prentice- Hall* London UK.

6181. Johnson G, Scholes K, Whittington R 1998 Exploring corporate strategy *Simon & Shuster* UK ISBN 0-2736-8734-4.

6182. Johnson G, Scholes K, Whittington R 2002, 2003 Exploring corporate strategy 7th Edition *Prentice Hall* Pearson Education Limited UK ISBN 0-2736-8734-4.

6183. McKiernan P 1997 Strategy past, strategy futures *Long range planning* vol **30** no 5 p 792.

6184. Child J, Faulkner D 1998 Strategies of cooperation: Managing alliances, networks and joint ventures *Oxford University Press* Oxford UK.

6185. Hill C, Jones G 1998 Strategic management 1st edition *Houghton Mifflin Co* Boston USA.

6186. Hill C, Jones G 2004 Cases in strategic management 1st edition *Houghton Mifflin Co* Boston USA.

6187. Martin R L (1998-1999, 2005-2006) Private communications on the theory of strategy *Rotman School of Management* University of Toronto Canada.

6188. Moldoveanu M, Martin R L 2001 Agency theory and the design of efficient governance mechanisms *Joint Committee on Corporate Governance Meeting* Rotman School of Management University of Toronto Ontario Canada pp 1 – 57.

6189. Martin R L 2004 Strategic choice structuring: A set of good choices positions a firm for competitive advantage *Rotman School of Management* University of Toronto Canada pp 1 – 14
www.rotman.utoronto.ca strategicChoiceStructuring.pdf .

6190. Martin R L 2007 Becoming an integrative thinker *Rotman Magazine* Rotman School of Management University of Toronto Ontario Canada pp 4 – 9.

6191. Martin R L 2007 Designing the thinker *Rotman Magazine* Rotman School of Management University of Toronto Ontario Canada pp 4 – 8.

6192. Martin R L 2008 The opposable mind *Harvard Business Press* Cambridge Massachusetts USA.

6193. Martin R L 2009 The design of business *Harvard Business School Press* ISBN 1422177807 pp 1 – 256.

6194. Lafley A G, Martin R L 2013 Playing to win: How strategy really works *Harvard Business Review Press* ISBN-10: 142218739X ISBN-13: 978-1422187395 pp 1 – 272.

6195. Martin R L 2013 Strategy award *Thinkers50* London UK
www.thinkers50.org .

6196. Shiryaev A N 1999 Essentials of stochastic finance: Facts, models, theory *Advanced Series on Statistical Science & Applied Probability* vol **3** *World Scientific Publishing Co Pte Ltd* Kruzhilin N (translator) ISBN 981-02-3605-0 Singapore pp 383 – 395, 633 – 646.

6197. Laffont J-J, Tirole J 1999 Competition in telecommunications *MIT Press* USA.

6198. Grant R 2001 Corporate strategy: Managing scope and strategy content *in* Handbook of strategy and management Pettigrew A, Thomas H, Whittington R (editors) *Sage* Newbury Park California USA pp 72 – 98.

6199. Welch J 2001 Straight from the gut *Business Plus* ISBN-10: 0446528382 pp 1 – 496.

6200. Welch J 2001 Winning *Warner Business Books* USA.

6201. Choo C, Bontis N 2002 The strategic management of intellectual capital and organizational knowledge 1st edition *Oxford University Press* Oxford UK.

6202. Drejer A 2002 Strategic management and core competencies 1st edition *Quorum Books* Westport Connecticut USA.

6203. Sadler P 2003 Strategic management 1st edition *Kogan Page* Sterling VA USA.

6204. Gavetti G, Levinthal D A 2004 The strategy field from the perspective of management science: Divergent strands and possible integration *Management Science* vol **50** no 10 pp 1309–1318 ISSN 0025-1909 EISSN 1526-5501.

6205. Gavetti G, Rivkin J W 2007 On the origin of strategy: Action and cognition over time *Organization Science* vol **18** no 3 pp 420 – 439 ISSN 1047-7039 EISSN 1526-5455.

6206. Kim W C, Mauborgne R January–February 2004 Value innovation – The strategic logic of high growth *Harvard Business Review* **75** pp 103 – 112
http://hbr.org/2004/07/value-innovation-the-strategic-logic-of-high-growth/ar/1 .

6207. Kim W C, Mauborgne R 2005, 2015 Blue ocean strategy: How to create uncontested market space and make the competition irrelevant *Harvard Business School Press* Boston USA ISBN 978-1591396192, ISBN 978-1-62527-449-6 (expanded edition) pp 1 – 240, pp 1 – 287.
www.blueoceanstrategy.com ,
https://smart.ly/blue-ocean-strategy/ .

6208. Kim W C, Mauborgne R 2011 Strategy award *Thinkers50* London UK
www.thinkers50.org .

6209. Roney C 2004 Strategic management methodology 1st edition *Praeger* Westport Connecticut USA.

6210. Ireland R, Hoskisson R, Hitt M 2006 Understanding business strategy 1st edition *Thomson Higher Education* Mason OH USA.

6211. Besanko D, Shanley M, Dranove D 2007 Economics of strategy *John Wiley &Sons Inc* USA.

6212. Hitt M, Ireland R, Hoskisson R 2007 Management of strategy 1st edition *Thomson/South-Western* Australia.

6213. Kirkbride P S 2007 Developing a leadership and talent architecture *MBS Leader-casts* Melbourne Business School Melbourne Australia.

6214. Murphy T, Galunic Ch 2007 Leading in the age of talent wars *INSEAD Leader-casts* INSEAD France.

6215. Sekhar G 2007 Management information systems 1st edition *Excel Books* New Delhi India.

6216. Sull D 2007a Simple rules: Strategy as simple rules Part II *Public Lecture* London School of Economics and Political Science London UK.

6217. Sull D 2007b Closing the gap between strategy and execution: Strategy and its discontents *Public Lecture* London School of Economics and Political Science London UK.

6218. Sull D 2007c Closing the gap between strategy and execution: Making hard choices *Public Lecture* London School of Economics and Political Science London UK.

6219. Sull D 2007d Closing the gap between strategy and execution: The strategy loop in action *Public Lecture* London School of Economics and Political Science London UK.

6220. Sull D 2008 An iterative approach to the strategy *Public Lecture* London School of Economics and Political Science London UK.

6221. Teece D J, Winter S 2007 Dynamic capabilities: Understanding strategic change in organizations *Blackwell* Oxford UK.

6222. Samuels R 2008 Japan's grand strategy *Public Lecture on 13.10.2008* London School of Economics and Political Science London UK
http://www.lse.ac.uk/collections/LSEPublicLecturesAndEvents/events/2008/20080819t1316z001.htm
http://richmedia.lse.ac.uk/publicLecturesAndEvents/20081013_1830_japansGrandStrategy.mp3

6223. Chamberlain G P 2010 Understanding strategy *Create Space* Charleston South Carolina USA.

6224. Holt D, Cameron D 2010 Cultural strategy *Oxford University Press* Oxford UK ISBN 978-0-19-958740-7.

6225. Heracleous 2013 Quantum strategy by Apple Inc *Organizational Dynamics* **42** pp 92 – 99 www.elsevier.com/locate/orgdyn .

6226. Ive J, Foulkes N March 6 2015 The man behind the Apple watch *How to Spend It Financial Times* London UK
http://howtospendit.ft.com/articles/77791 .

6227. Ledenyov D O, Ledenyov V O 2015b Winning virtuous strategy creation by interlocking interconnecting directors in boards of directors in firms in information century *MPRA Paper no 61681* Munich University Munich Germany, *SSRN Paper no SSRN-id2553938 Social Sciences Research Network* New York USA pp 1 – 108

http://mpra.ub.uni-muenchen.de/61681/ ,
http://ssrn.com/abstract=2553938 .

6228. Ledenyov D O, Ledenyov V O 2015n Quantum strategy creation by interlocking interconnecting directors in boards of directors in modern organizations at time of globalization *MPRA Paper no 68404* Munich University Munich Germany, *SSRN Paper no SSRN-id2704417 Social Sciences Research Network* New York USA pp 1 – 104
http://mpra.ub.uni-muenchen.de/68404/ ,
http://ssrn.com/abstract=2704417 .

6229. Ledenyov D O, Ledenyov V O 2015o Multivector strategy vs quantum strategy by Apple Inc *MPRA Paper no 68730* Munich University Munich Germany, *SSRN Paper no SSRN-id2707662 Social Sciences Research Network* New York USA pp 1 – 109
http://mpra.ub.uni-muenchen.de/68730/ ,
http://ssrn.com/abstract=2707662 .

6230. Ledenyov D O, Ledenyov V O 2016q Quantum strategy synthesis by Alphabet Inc *MPRA Paper no 69405* Munich University Munich Germany, *SSRN Paper no SSRN-id2729207 Social Sciences Research Network* New York USA pp 1 – 104
http://mpra.ub.uni-muenchen.de/69405/ ,
http://ssrn.com/abstract=2729207 .

6231. Ledenyov V O, Ledenyov D O 2016s Forecast in capital markets *Lambert Academic Publishing* Saarbrücken Germany ISBN 978-3-659-91698-4; *MPRA Paper no 72286* Munich University Munich Germany; *SSRN Paper no SSRN-id2802085 Social Sciences Research Network* New York USA pp 1 – 260
www.lap-publishing.com ,
http://mpra.ub.uni-muenchen.de/72286/ ,
http://ssrn.com/abstract=2802085 .

6232. Grant R M 2016 Contemporary strategy analysis: Text and cases edition *John Wiley and Sons Inc* ISBN 1119120845 ISBN 9781119120841 pp 1 – 776.

<u>Game theory in strategy, management, business administration, psychology, and mathematics:</u>

6233. Cournot A A 1838, 1897 Recherches sur les principles mathematiques de la théorie des richesses Libraire des sciences politiques et sociales *M. Rivière & C.ie* Paris France, Researches into the mathematical principles of the theory of wealth *Macmillan* New York USA.

6234. Edgeworth F Y 1881 Mathematical psychics *Kegan Paul* London UK.

6235. von Neumann J 1928, 1959 Zur Theorie der Gesellschaftsspiele, On the theory of games of strategy *Mathematische Annalen* **100** (1) pp 295 – 320 doi:10.1007/BF01448847 , Contributions to the theory of games vol **4** pp 13 – 42 *Princeton University Press* Princeton USA.

6236. von Neumann J, Morgerstern O 1944 Theory of games and economic behavior *Princeton University Press* Princeton NJ USA pp 1 – (625)776 ISBN: 9780691130613
http://press.princeton.edu/titles/7802.html ;
https://en.wikipedia.org/wiki/Theory_of_Games_and_Economic_Behavior .

6237. Hayek F A September 1945 The use of scientific knowledge in society *American Economic Review* **35** no 4 .

6238. Marschak J 1946 Neumann's and Morgenstern's new approach to static economics *Journal of Political Economy* **54** pp 97 – 115.

6239. Nash J F 1950a Equilibrium points in n-person games *Proceedings of the National Academy of Sciences of the United States of America* **36** (1) pp 48 – 49 doi:10.1073/pnas.36.1.48.

6240. Nash J F 1950b The bargaining problem *Econometrica* **18** (2) pp 155 – 162 doi:10.2307/1907266 .

6241. Nash J May 1950c Non-cooperative games *Ph.D. thesis* Princeton University Princeton NJ USA
https://www.princeton.edu/mudd/news/faq/topics/Non-Cooperative_Games_Nash.pdf .

6242. Nash J 1951 Non-cooperative games *Annals of Mathematics* **54** (2) pp 286 – 295 doi:10.2307/1969529.

6243. Nash J F 1953 Two-person cooperative games *Econometrica* **21** (1) pp 128 – 140 doi:10.2307/1906951 .

6244. Shapley L S 1953 Stochastic games *Proceedings of National Academy of Sciences of the United States of America* vol **39** pp 1095–1100.

6245. Williams J D 1954 The compliant strategist: Being a primer on the theory of games of strategy *RAND Corporation* Santa Monica California USA ISBN 978-0-8330-4222-4 .

6246. Luce R D, Raiffa H 1957, 1989 Games and decisions: Introduction and critical survey *John Wiley and Sons Inc*, *Dover Publications* ISBN 978-0-486-65943-5 New York USA.

6247. Shubik M 1953a Game theory and operations research *Journal of the Research Society of America* **1** p 152.

6248. Shubik M March 1953b Non-cooperative games and economic theory *in* Report of Conference on the Theory of N-Person Games pp 20 – 23.

6249. Shubik M 1953c The role of game theory in economics *Kyklos* **7** (2) p 21.
6250. Shubik M 1954 Readings in game theory and political behavior *Doubleday* New York USA.
6251. Shubik M 1955 The uses of game theory in management science *Management Science* **2** (1) pp 40 – 54.
6252. Shubik M 1956 A game theorist looks at the antitrust laws and the automobile industry *Stanford Law Review* **8** (4) pp 594 – 630.
6253. Shubik M 1958a Economics and operations research: A symposium *The Review of Economics and Statistics* **40** (3) pp 214 – 220.
6254. Shubik M 1958b Simulation of the firm *The Journal of Industrial Engineering* vol **IX** no 5 pp 391 – 392.
6255. Shubik M 1958c Studies and theories of decision making *Administrative Science Quarterly* pp 289 – 306.
6256. Shubik M 1959 Strategy and market structure: Competition, oligopoly, and the theory of games *John Wiley and Sons Inc* NY USA.
6257. Shubik M 1975 Games for society, business and war *Elsevier* Amsterdam The Netherlands.
6258. Brewer G, Shubik M 1979 The war game *Harvard University Press* Cambridge USA.
6259. Shubik M, Levitan R 1980 Market structure and behavior *Harvard University Press* Cambridge USA.
6260. Shubik M 1981 Game theory models and methods in political economy *in* Handbook of Mathematical Economics vol **1** pp 285–330 doi:10.1016/S1573-4382(81)01011-4 .
6261. Shubik M 1987 A game-theoretic approach to political economy *MIT Press* Cambridge MA USA.
6262. Shubik M 1988 What is an application and when is theory a waste of time? *Management Science* **33** 12.
6263. Shubik M July 12 2000 Game theory: Some observations *Working Paper #132 Yale School of Management* Yale University New Haven CT06520 USA pp 1 – 7
http://papers.ssrn.com/paper.taf?abstract_id=238964 .
6264. Shubik M May 2001 Game theory and operations research: Some musings 50 years later *Working Paper#14 Yale School of Managemen*t Yale University New Haven CT06520 USA pp 1 – 12
http://papers.ssrn.com/abstract=271029 .

6265. Simon H A 1955 A behavioral model of rational choice *Quarterly Journal of Economics* **69** pp 99 – 118.

6266. Tucker A W, Luce R D (editors) 1959 Contributions to the theory of games vol **4** *Princeton University Press* Princeton NJ USA.

6267. Blackett P M S 1962 Studies of war *Oliver and Boyd* Edinborough Scotland UK.

6268. Farquharson R 1969 Theory of voting *Blackwell* ISBN 0-631-12460-8 .

6269. Morse P E, Kimball G E 1970 Methods of operations research *Peninsula Publishing* Los Altos California USA.

6270. Arrow K J 1971 Control in large organizations: Essays in the theory of risk-bearing *Markham Publishing Co*.

6271. Howard N 1971 Paradoxes of rationality: Games, metagames, and political behavior *MIT Press* Cambridge MA USA ISBN 978-0-262-58237-7 .

6272. Alchian A A, Demsetz H December 1972 Production, information costs, and economic organization *American Economic Review* **LXII** no 5 pp 777 – 795.

6273. Maynard Smith J, Price G R 1973 The logic of animal conflict *Nature* 246 (5427) pp 15 – 18 doi:10.1038/246015a0 .

6274. Maynard Smith J 1974 The theory of games and the evolution of animal conflicts *Journal of Theoretical Biology* **47** (1) pp 209–221 doi:10.1016/0022-5193(74)90110-6 .

6275. Maynard Smith J 1982 Evolution and the theory of games *Cambridge University Press* Cambridge UK ISBN 978-0-521-28884-2 .

6276. Aumann R J, Shapley L S 1974 Values of non-atomic games *Princeton University Press* Princeton NJ USA.

6277. Harsanyi J C 1974 An equilibrium-point interpretation of stable sets and a proposed alternative definition *Management Science* **20** (11) p 1472 doi:10.1287/mnsc.20.11.1472 .

6278. Selten R 1975 Reexamination of the perfectness concept for equilibrium points in extensive games *International Journal of Game Theory* **4** pp 25 – 55.

6279. Selten R, Harsanyi J C 1988 A general theory of equilibrium selection in games *MIT Press* Cambridge MA USA.

6280. Selten R 1988 Models of strategic rationality *Kluwer Academic Publishers*, *Springer* Theory and Decision Library Series C: Game Theory, Mathematical Programming and Operations Research Dordrecht-Boston-London The Netherlands, USA pp 1 – 336 ISBN 978-9-027-72663-6.

6281. Jensen M C, Meckling W H October 1976 Theory of the firm: Managerial behavior, agency costs, and ownership structure *Journal of Financial Economics* **3** no 4 pp 305 – 360.

6282. Jensen M C, Meckling W H Summer 1994, 1998 The nature of man *Journal of Applied Corporate Finance* vol **7** no 2 pp 4 – 19, Foundations of organizational strategy *Harvard University Press* Cambridge USA
http://papers.ssrn.com/abstract=5471 .

6283. Jensen M C 1995 Economics, organizations, and non-rational behavior *Economic Inquiry*.

6284. Morgenstern O 1976 The collaboration between Oskar Morgenstern and John von Neumann on the theory of games *Journal of Economic Literature* **14** (3) pp 805 – 816.

6285. Bicchieri C 1989 Self-refuting theories of strategic interaction: A paradox of common knowledge *Erkenntnis* **30** (1–2) pp 69–85 doi:10.1007/BF00184816 .

6286. Bicchieri C 1993 Rationality and coordination *Cambridge University Press* Cambridge UK ISBN 0-521-57444-7 .

6287. Bicchieri C, Jeffrey R, Skyrms B (editors) 1999 Knowledge, belief, and counterfactual reasoning in games The logic of strategy *Oxford University Press* New York USA ISBN 0195117158 .

6288. Bicchieri C 2006 The grammar of society: The nature and dynamics of social norms *Cambridge University Press* Cambridge UK ISBN 0521573726 .

6289. Fudenberg D, Tirole J 1991 Game theory *MIT Press* Cambridge MA USA ISBN 978-0-262-06141-4 .

6290. Myerson R B 1991 Game theory: Analysis of conflict *Harvard University Press* Cambridge USA.

6291. Gibbons R D 1992 Game theory for applied economists *Princeton University Press* Princeton NJ USA ISBN 978-0-691-00395-5 .

6292. Poundstone W 1992 Prisoner's dilemma: John von Neumann, game theory and the puzzle of the bomb *Anchor* ISBN 978-0-385-41580-4 .

6293. Fudenberg D, Tirole J 1993 Game theory *MIT Press* Cambridge Massachusetts USA.

6294. Ben David S, Borodin A, Karp R, Tardos G, Wigderson A 1994 On the power of randomization in on-line algorithms *Algorithmica* **11** (1) pp 2–14 doi:10.1007/BF01294260 .

6295. Osborne M J, Rubinstein A 1994 A course in game theory *MIT Press* Cambridge MA USA ISBN 978-0-262-65040-3 .

6296. Osborne M J 2004 An introduction to game theory *Oxford University Press* Oxford UK ISBN 978-0-19-512895-6 .

6297. Green J R, Mas-Colell A, Whinston M D 1995 Microeconomic theory *Oxford University Press* Oxford UK ISBN 978-0-19-507340-9 .

6298. Owen G 1995 Game theory: Third edition *Emerald Group Publishing* Bingley ISBN 0-12-531151-6 .

6299. Petrosyan L, Zenkevich N 1996 Game theory, optimization (3) *World Scientific Publishers* ISBN 978-981-02-2396-0 .

6300. Fernandez L F, Bierman H S 1998 Game theory with economic applications *Addison-Wesley* ISBN 978-0-201-84758-1 .

6301. Dutta P K 1999 Strategies and games: Theory and practice *MIT Press* Cambridge MA USA ISBN 978-0-262-04169-0 .

6302. Isaacs R 1999 Differential games: A mathematical theory with applications to warfare and pursuit, control and optimization *Dover Publications* NY USA ISBN 978-0-486-40682-4.

6303. Gintis H 2000 Game theory evolving: A problem-centered introduction to modeling strategic behavior *Princeton University Press* Princeton NJ USA ISBN 978-0-691-00943-8 .

6304. Camerer C 2003 Introduction. Behavioral game theory: Experiments in strategic interaction *Russell Sage Foundation* pp 1 – 25 ISBN 978-0-691-09039-9 .

6305. Miller J H 2003 Game theory at work: How to use game theory to outthink and outmaneuver your competition *McGraw-Hill* New York USA ISBN 978-0-07-140020-6 .

6306. Rasmusen E 2006 Games and information: An introduction to game theory 4th edition *Wiley-Blackwell* ISBN 978-1-4051-3666-2 .

6307. Bellhouse D 2007 The problem of Waldegrave *Journal Électronique d'Histoire des Probabilités et de la Statistique* **3** (2).

6308. Hansen P G, Hendricks V F (editors) 2007 Game theory: 5 questions *Automatic Press / VIP* New York, London USA, UK ISBN 978-87-991013-4-4 .

6309. Webb J N 2007 Game theory: Decisions, interaction and evolution Undergraduate mathematics *Springer* ISBN 1-84628-423-6 .

6310. Harrington J E 2008 Games, strategies, and decision making *Worth* ISBN 0-7167-6630-2.

6311. Fudenberg D, Levine D K (editors) 2008 A long-run collaboration on long-run games *World Scientific* Hackensack New Jersey USA pp 1 – 416 ISBN 978-981-281-846-1 .

6312. Leyton-Brown K, Shoham Y 2008 Essentials of game theory: A concise, multidisciplinary introduction *Morgan & Claypool Publishers* San Rafael CA USA ISBN 978-1-59829-593-1 .

6313. Shoham Y, Leyton-Brown K 2009 Multiagent systems: Algorithmic, game-theoretic, and logical foundations *Cambridge University Press* Cambridge UK ISBN 978-0-521-89943-7 .

6314. Leonard R 2010 Von Neumann, Morgenstern, and the creation of game theory *Cambridge University Press* New York USA ISBN 9780521562669 .

6315. Papayoanou P 2010 Game theory for business *Probabilistic Publishing* ISBN 978-0-9647938-7-3 .

6316. Julmi Ch 2012 Introduction to game theory *BookBooN* Copenhagen Denmark ISBN 978-87-403-0280-6 .

6317. Brandenburger A 2014 The language of game theory: Putting epistemics into the mathematics of games World Scientific Series in Economic Theory 5 *World Scientific* Hackensack NJ USA pp 1 – 300 ISBN 978-981-4513-43-2 .

6318. McCain R A 2014 Game theory: A nontechnical introduction to the analysis of strategy 3rd edition *World Scientific* Hackensack NJ pp 1-600 ISBN 978-981-4578-87-5 .

6319. RAND Corporation 2016 Digital archive of publications *RAND Corporation* USA.

Selected research papers in macroeconomics, microeconomics and nanoeconomics:

6320. Ledenyov V O, Ledenyov D O 2012a Shaping the international financial system in century of globalization *Cornell University* NY USA pp 1 – 20
www.arxiv.org 1206.2022.pdf .

6321. Ledenyov V O, Ledenyov D O 2012b Designing the new architecture of international financial system in era of great changes by globalization *Cornell University* NY USA pp 1 – 18
www.arxiv.org 1206.2778.pdf .

6322. Ledenyov D O, Ledenyov V O 2012a On the new central bank strategy toward monetary and financial instabilities management in finances: econophysical analysis of nonlinear dynamical financial systems Cornell University NY USA pp 1 – 8
www.arxiv.org 1211.1897.pdf .

6323. Ledenyov D O, Ledenyov V O 2012b On the risk management with application of econophysics analysis in central banks and financial institutions *Cornell University* NY USA pp 1 – 10
www.arxiv.org 1211.4108.pdf .

6324. Ledenyov D O, Ledenyov V O 2013a On the optimal allocation of assets in investment portfolio with application of modern portfolio management and nonlinear dynamic chaos theories in investment, commercial and central banks *Cornell University* NY USA pp 1 – 34 www.arxiv.org 1301.4881.pdf .

6325. Ledenyov D O, Ledenyov V O 2013b On the theory of firm in nonlinear dynamic financial and economic systems *Cornell University* NY USA pp 1 – 27

www.arxiv.org 1206.4426v2.pdf .
6326. Ledenyov D O, Ledenyov V O 2013c On the accurate characterization of business cycles in nonlinear dynamic financial and economic systems *Cornell University* NY USA pp 1 – 26 www.arxiv.org 1304.4807.pdf .
6327. Ledenyov D O, Ledenyov V O 2013d To the problem of turbulence in quantitative easing transmission channels and transactions network channels at quantitative easing policy implementation by central banks *Cornell University* NY USA pp 1 – 40
www.arxiv.org 1305.5656.pdf .
6328. Ledenyov D O, Ledenyov V O 2013e To the problem of evaluation of market risk of global equity index portfolio in global capital markets *MPRA Paper no 47708* Munich University Munich Germany pp 1 – 25
http://mpra.ub.uni-muenchen.de/47708/ .
6329. Ledenyov D O, Ledenyov V O 2013f Some thoughts on accurate characterization of stock market indexes trends in conditions of nonlinear capital flows during electronic trading at stock exchanges in global capital markets *MPRA Paper no 49964* Munich University Munich Germany pp 1 – 52
http://mpra.ub.uni-muenchen.de/49964/ .
6330. Ledenyov D O, Ledenyov V O 2013g On the Stratonovich - Kalman - Bucy filtering algorithm application for accurate characterization of financial time series with use of state-space model by central banks *MPRA Paper no 50235* Munich University Munich Germany pp 1 – 52, *SSRN Paper no SSRN-id2594333 Social Sciences Research Network* New York USA
http://sfm.finance.nsysu.edu.tw/php/Papers/CompletePaper/014-1856280412.pdf ,
http://mpra.ub.uni-muenchen.de/50235/ ,
http://ssrn.com/abstract=2594333 .
6331. Ledenyov D O, Ledenyov V O 2013h Tracking and replication of hedge fund optimal investment portfolio strategies in global capital markets in presence of nonlinearities *MPRA Paper no 51176* Munich University Munich Germany pp 1 – 92, *SSRN Paper no SSRN-id2588380 Social Sciences Research Network* New York USA
http://mpra.ub.uni-muenchen.de/51176/ ,
http://ssrn.com/abstract=2588380 .
6332. Ledenyov D O, Ledenyov V O 2013i Venture capital optimal investment portfolio strategies selection in diffusion - type financial systems in global capital markets with

nonlinearities *MPRA Paper no 51903* Munich University Munich Germany pp 1 – 81, , *SSRN Paper no SSRN-id2592989 Social Sciences Research Network* New York USA
http://mpra.ub.uni-muenchen.de/51903/ ,
http://ssrn.com/abstract=2592989 .

6333. Ledenyov D O, Ledenyov V O 2014a Mergers and acquisitions transactions strategies in diffusion - type financial systems in highly volatile global capital markets with nonlinearities *MPRA Paper no 61946* Munich University Munich Germany, *SSRN Paper no SSRN-id2561300 Social Sciences Research Network* New York USA pp 1 – 160
http://mpra.ub.uni-muenchen.de/61946/ ,
http://ssrn.com/abstract=2561300 .

6334. Ledenyov D O, Ledenyov V O 2014b Strategies on initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities *MPRA Paper no 53780* Munich University Munich Germany, *SSRN Paper no SSRN-id2577767 Social Sciences Research Network* New York USA pp 1 – 138
http://mpra.ub.uni-muenchen.de/53780/ ,
http://ssrn.com/abstract=2577767 .

6335. Ledenyov D O, Ledenyov V O 2014c On the winning virtuous strategies for ultra high frequency electronic trading in foreign currencies exchange markets *MPRA Paper no 61863* Munich University Munich Germany, *SSRN Paper no SSRN-id2560297 Social Sciences Research Network* New York USA pp 1 – 175
http://mpra.ub.uni-muenchen.de/61863/ ,
http://ssrn.com/abstract=2560297 .

6336. Ledenyov D O, Ledenyov V O 2014d On the fundamentals of winning virtuous strategies creation toward leveraged buyout transactions implementation during private equity investment in conditions of resonant absorption of discrete information in diffusion - type financial system with induced nonlinearities *MPRA Paper no 61805* Munich University Munich Germany pp 1 – 161, *SSRN Paper no SSRN-id2559168 Social Sciences Research Network* New York USA
http://mpra.ub.uni-muenchen.de/61805/ ,
http://ssrn.com/abstract=2559168 .

6337. Ledenyov D O, Ledenyov V O 2014e *MicroFX* foreign currencies ultra high frequencies trading software platform with embedded optimized Stratonovich – Kalman - Bucy filtering algorithm, particle filtering algorithm, macroeconomic analysis algorithm, market microstructure analysis algorithm, order flow analysis algorithm, comparative analysis algorithm, and artificial intelligence algorithm for near-real-time decision making / instant switching on / between optimal trading strategies *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6338. Ledenyov D O, Ledenyov V O 2014f *MicroLBO* software program with the embedded optimized near-real-time artificial intelligence algorithm to create winning virtuous strategies toward leveraged buyout transactions implementation and to compute direct/reverse leverage buyout transaction default probability number for selected public/private companies during private equity investment in conditions of resonant absorption of discrete information in diffusion - type financial system with induced nonlinearities *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6339. Ledenyov D O, Ledenyov V O 2015a Nonlinearities in microwave superconductivity 8th edition *Cornell University* NY USA pp 1 – 923
www.arxiv.org 1206.4426v8.pdf .

6340. Ledenyov D O, Ledenyov V O 2015b Winning virtuous strategy creation by interlocking interconnecting directors in boards of directors in firms in information century *MPRA Paper no 61681* Munich University Munich Germany, *SSRN Paper no SSRN-id2553938 Social Sciences Research Network* New York USA pp 1 – 108
http://mpra.ub.uni-muenchen.de/61681/ ,
http://ssrn.com/abstract=2553938 .

6341. Ledenyov D O, Ledenyov V O 2015c Information theory of firm *MPRA Paper no 63380* Munich University Munich Germany, *SSRN Paper no SSRN-id2587716 Social Sciences Research Network* New York USA pp 1 – 185
http://mpra.ub.uni-muenchen.de/63380/ ,
http://ssrn.com/abstract=2587716 .

6342. Ledenyov D O, Ledenyov V O 2015d Information money fields of cyclic oscillations in nonlinear dynamic economic system *MPRA Paper no 63565* Munich University Munich Germany, *SSRN Paper no SSRN-id2592975 Social Sciences Research Network* New York USA pp 1 – 40
http://mpra.ub.uni-muenchen.de/63565/ ,
http://ssrn.com/abstract=2592975 .

6343. Ledenyov D O, Ledenyov V O 2015e On the spectrum of oscillations in economics *MPRA Paper no 64368* Munich University Munich Germany, *SSRN Paper no SSRN-id2606209 Social Sciences Research Network* New York USA pp 1 – 48
http://mpra.ub.uni-muenchen.de/64368/ ,

http://ssrn.com/abstract=2606209 .

6344. Ledenyov D O, Ledenyov V O 2015f Digital waves in economics *MPRA Paper no 64755* Munich University Munich Germany, *SSRN Paper no SSRN-id2613434 Social Sciences Research Network* New York USA pp 1 – 55

http://mpra.ub.uni-muenchen.de/64755/ ,

http://ssrn.com/abstract=2613434 .

6345. Ledenyov D O, Ledenyov V O 2015g General information product theory in economics science *MPRA Paper no 64991* Munich University Munich Germany, *SSRN Paper no SSRN-id2617310 Social Sciences Research Network* New York USA pp 1 – 54

http://mpra.ub.uni-muenchen.de/64991/ ,

http://ssrn.com/abstract=2617310 .

6346. Ledenyov D O, Ledenyov V O 2015h Quantum macroeconomics theory *MPRA Paper no 65566* Munich University Munich Germany, *SSRN Paper no SSRN-id2627086 Social Sciences Research Network* New York USA pp 1 – 55

http://mpra.ub.uni-muenchen.de/65566/ ,

http://ssrn.com/abstract=2627086 .

6347. Ledenyov D O, Ledenyov V O 2015i Wave function in economics *MPRA Paper no 66577* Munich University Munich Germany, *SSRN Paper no SSRN-id2659054 Social Sciences Research Network* New York USA pp 1 – 71

http://mpra.ub.uni-muenchen.de/66577/ ,

http://ssrn.com/abstract=2659054 .

6348. Ledenyov D O, Ledenyov V O 2015j Quantum microeconomics theory *MPRA Paper no 67010* Munich University Munich Germany, *SSRN Paper no SSRN-id2667016 Social Sciences Research Network* New York USA pp 1 – 71

http://mpra.ub.uni-muenchen.de/67010/ ,

http://ssrn.com/abstract=2667016 .

6349. Ledenyov D O, Ledenyov V O 2015k Quantum theory of firm *MPRA Paper no 67162* Munich University Munich Germany, *SSRN Paper no SSRN-id2672288 Social Sciences Research Network* New York USA pp 1 – 73

http://mpra.ub.uni-muenchen.de/67162/ ,

http://ssrn.com/abstract=2672288 .

6350. Ledenyov D O, Ledenyov V O 2015l Wave function method to forecast foreign currencies exchange rates at ultra high frequency electronic trading in foreign currencies

exchange markets*MPRA Paper no 67470* Munich University Munich Germany, *SSRN Paper no SSRN-id2681183 Social Sciences Research Network* New York USA pp 1 – 156
http://mpra.ub.uni-muenchen.de/67470/ ,
http://ssrn.com/abstract=2681183 .

6351. Ledenyov D O, Ledenyov V O 2015m Quantum money *MPRA Paper no 67982* Munich University Munich Germany, *SSRN Paper no SSRN-id2693128 Social Sciences Research Network* New York USA pp 1 – 70
http://mpra.ub.uni-muenchen.de/67982/ ,
http://ssrn.com/abstract=2693128 .

6352. Ledenyov D O, Ledenyov V O 2015n Quantum strategy creation by interlocking interconnecting directors in boards of directors in modern organizations at time of globalization *MPRA Paper no 68404* Munich University Munich Germany, *SSRN Paper no SSRN-id2704417 Social Sciences Research Network* New York USA pp 1 – 104
http://mpra.ub.uni-muenchen.de/68404/ ,
http://ssrn.com/abstract=2704417 .

6353. Ledenyov D O, Ledenyov V O 2015o Multivector strategy vs quantum strategy by Apple Inc *MPRA Paper no 68730* Munich University Munich Germany, *SSRN Paper no SSRN-id2707662 Social Sciences Research Network* New York USA pp 1 – 109
http://mpra.ub.uni-muenchen.de/68730/ ,
http://ssrn.com/abstract=2707662 .

6354. Ledenyov D O, Ledenyov V O 2016p Digital DNA of economy of scale and scope *MPRA Paper no 68960* Munich University Munich Germany, *SSRN Paper no SSRN-id2718931 Social Sciences Research Network* New York USA pp 1 – 58
http://mpra.ub.uni-muenchen.de/68960/ ,
http://ssrn.com/abstract=2718931 .

6355. Ledenyov D O, Ledenyov V O 2016q Quantum strategy synthesis by Alphabet Inc *MPRA Paper no 69405* Munich University Munich Germany, *SSRN Paper no SSRN-id2729207 Social Sciences Research Network* New York USA pp 1 – 104
http://mpra.ub.uni-muenchen.de/69405/ ,
http://ssrn.com/abstract=2729207 .

6356. Ledenyov D O, Ledenyov V O 2016r Precise measurement of macroeconomic variables in time domain using three dimensional wave diagrams *MPRA Paper no 69609* Munich University Munich Germany, *SSRN Paper no SSRN-id2733607 Social Sciences Research Network* New York USA pp 1 – 52

http://mpra.ub.uni-muenchen.de/69609/ ,

http://ssrn.com/abstract=2733607 .

6357. Ledenyov V O, Ledenyov D O 2016s Forecast in capital markets *Lambert Academic Publishing* Saarbrücken Germany ISBN 978-3-659-91698-4; *MPRA Paper no 72286* Munich University Munich Germany; *SSRN Paper no SSRN-id2802085 Social Sciences Research Network* New York USA pp 1 – 260

www.lap-publishing.com ,

www.forecastcapitalmarkets.com ,

http://mpra.ub.uni-muenchen.de/72286/ ,

http://ssrn.com/abstract=2802085 .

6358. Ledenyov D O, Ledenyov V O 2012 3D Bifurcation diagram for accurate characterization of dynamic properties of combining risky investments in investment portfolio in nonlinear dynamic financial system *Software in Matlab R2012* Townsville Australia, Kharkov Ukraine.

6359. Ledenyov D O, Ledenyov V O 2015t *MicroID* software program with the embedded optimized near-real-time artificial intelligence algorithm to create the winning virtuous business strategies and to predict the director's election / appointment in the boards of directors in the firms, taking to the consideration both the director's technical characteristics and the interconnecting interlocking director's network parameters in conditions of the resonant absorption of discrete information in diffusion - type financial economic system with induced nonlinearities *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6360. Ledenyov D O, Ledenyov V O 2015u *MicroITF* operation system and software programs: **1)** the operation system to control the firm operation by means of the information resources near-real-time processing in the modern firms in the case of the diffusion - type financial economic system with the induced nonlinearities; **2)** the software program to accurately characterize the director's performance by means of a) the filtering of the generated/transmitted/received information by the director into the separate virtual channels, depending on the information content, and b) the measurement of the levels of signals in every virtual channel with the generated/transmitted/received information by the director, in the overlapping interconnecting interlocking directors networks in the boards of directors in the firms during the Quality of Service (QofS) measurements process; and **3)** the software program to create the winning virtuous business strategies by the interlocking interconnecting directors in the boards of directors in the modern firms in the case of the diffusion - type financial economic system with the induced nonlinearities, using the patented recursive artificial intelligence algorithm *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6361. Ledenyov D O, Ledenyov V O 2015v *MicroIMF* software program: the *MicroIMF* software program to make the computer modeling of **1)** the interactions between the information money fields of one cyclic oscillation and the information money fields of other cyclic oscillation(s) in the nonlinear dynamic economic system, **2)** the interactions between the information money fields of cyclic oscillation and the nonlinear dynamic economic system itself, and 3) the density distributions of the information money fields by different cyclic oscillations (the economic continuous waves) in the nonlinear dynamic economic system *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6362. Ledenyov D O, Ledenyov V O 2015w *MicroSA* software program **1)** to perform the spectrum analysis of the cyclic oscillations of the economic variables in the nonlinear dynamic economic system, including the discrete-time signals and the continuous-time signals; **2)** to make the computer modeling and to forecast the business cycles for **a)** the central banks with the purpose to make the strategic decisions on the monetary policies, financial stability policies, and **b)** the commercial/investment banks with the aim to make the business decisions on the minimum capital allocation, countercyclical capital buffer creation, and capital investments *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6363. Ledenyov D O, Ledenyov V O 2015x *DNACode* software program ***1)*** to model the Digital DNA's complex knowledge base structure for the selected economy of the scale and scope in the case of the G20 nations; ***2)*** to accurately forecast the generation/propagation of the Ledenyov discrete time digital waves of GIP(t)/GDP(t)/GNP(t)/PPP(t) (the discrete-time digital business cycles of GIP(t)/GDP(t)/GNP(t)/PPP(t)) in the G20 economies of the scales and scopes) *ECE James Cook University* Townsville Australia, Kharkov Ukraine.

6364. Ledenyov D O, Ledenyov V O 2016y *MacroSoft* software program, which creates the proposed three dimensional (3D) wave diagram to accurately characterize and to finely display the GIP(t), GDP(t), GNP(t), PPP(t) dependences for the G7 economies of the scales and scopes in the time domain for the two possible cases: 1) the continuous-time waves of GIP(t), GDP(t), GNP(t), PPP(t), and 2) the discrete-time waves of GIP(t), GDP(t), GNP(t), PPP(t).

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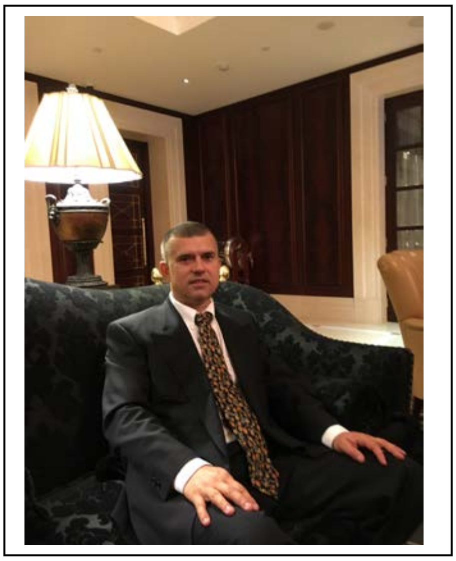
About Authors

Dimitri O. Ledenyov graduated from Department of Radio-Physics and Electronics at V. N. Karazin Kharkiv National University in Kharkiv, Ukraine in 1994 - 1999. Dimitri makes the research on the financial capital investment in the global capital markets in the economics and finances. He conducts the research on the microwave superconductivity at James Cook University in Townsville, Queensland, Australia in 2000 - 2017. He authored the numerous research papers, reviews and books in the social and natural sciences. He participated in a big number of the international conferences, symposiums, forums, seminars and business meetings around the World.



Viktor O. Ledenyov graduated from Department of Radio-Physics and Electronics at V. N. Karazin Kharkiv National University in Kharkiv, Ukraine in 1988 - 1993. Viktor makes the research on the financial capital investment in the global capital markets in the economics and finances. He conducts the research on the microwave superconductivity, the condensed matter physics, the telecommunications, the quantum computing at a number of the research institutions and universities in Europe and in North America in 1993 – 2017. He authored the numerous research papers, reviews and books in the social and natural sciences. He participated in a big number of the international conferences, symposiums, forums, seminars and business meetings around the World.

Investment in Capital Markets creates a strategic vision on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods. The book is written with a main goal to explain the pros and cons of the financial capital investment in the capital markets, discussing the sophisticated investment concepts and techniques in the simple understandable readable general format language. We would like to highlight the three interesting facts about the book: 1. It is centered on the consideration of the modern investment products, the investment vehicles and the investment mediums for the financial capital investment in the capital markets; 2. It is focused on the financial risk calculation and mitigation techniques for the financial capital investment in the financial capital markets. 3. It is aimed to describe the quantum winning virtuous investment strategies creation and execution techniques during the financial capital investment in the capital markets. The investors, financiers, economists, financial analysts, financial traders, financial advisers, lawmakers, policy analysts, subject experts, professors, and students will certainly enjoy a breathtaking splendid learning journey with the explained new ideas, established concepts and outlined future prospects toward the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

Key Features:

* Discovers the capital markets history from the ancient time to the present time.

* Formulates the general problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Solves the problem on the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods, using a number of the investment products, investment vehicles and investment mediums.

* Explains the theoretical fundamentals of the modern investment products, investment vehicles and investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Debates the practical applications of the modern investment products, investment vehicles and investment mediums for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Considers the modern financial risk calculation techniques during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Outlines the problem on the quantum winning virtuous investment strategies creation and execution during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Presents the algorithm for the quantum winning virtuous investment strategies creation and execution during the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.

* Discusses the practical perspectives on the limitless opportunities for the financial capital investment in the capital markets with the aim to get an increased return premium in the short and long time periods.