Strategies on initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Ledenyov, Dimitri O. and Ledenyov, Viktor O.

James Cook University, Townsville, Australia

18 February 2014

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Dimitri O. Ledenyov and Viktor O. Ledenyov

Abstract – This research considers the strategies on the initial public offering of company equity at the stock exchanges in the imperfect highly volatile global capital markets with the nonlinearities. We provide the IPO definition and compare the initial listing requirements on the various markets. We analyze the IPO techniques: the fixed-price offerings, auctions, book-building. We focus on the IPO initial underpricing, long-run performance and after market liquidity problems. 1. We propose that the information absorption by the investors occurs in the evolving learning process about the company's value, taking to the consideration the fundamental purpose of investing and the responsibilities of investors. 2. We think that the information absorption capacity by the investors on the IPOs impacts the investor's investment decisions and serves as a pre-determinant for the successful IPO deal completion. We propose the Ledenyov theory on the origins of the IPO underpricing and long term underperformance effects, which states that the IPO underpricing and long term underperformance can be explained by the changing information absorption capacity by the investors on the IPO value. 3. We think that the IPO winning virtuous investment strategies can only be selected by the investors with the highest information absorption capacity through the decision making process on the IPO investment choices at the selected stock exchange in the imperfect highly volatile global capital markets with the nonlinearities; applying the econophysical econometrical analysis with the use of the inductive, deductive and abductive logics in the frames of the strategic choice structuring process, that is the winning through the distinctive choices process.

JEL: D44, G00, G01, G10, G12, G14, G15, G18, G24, G30, G31, G32, H2, M10, O16, O18 .
PACS numbers: 89.65.Gh, 89.65.-s, 89.75.Fb .
Keywords: Information absorption, initial public offering (IPO), listing requirements, mechanism choices, direct costs, underwriting, audit fees, selling commission, legal expenses, indirect costs, certification, grading, market cycles, valuation, underpricing, overpricing, long term under-performance, long term over-performance, investment strategy, inductive logics, deductive logics, abductive logics, strategic choice structuring process, nonlinearities, econophysics, econometrics, stock exchanges, imperfect highly volatile global capital markets.

Introduction

Let us begin with the definition of the *Initial Public Offering* (*IPO*) as one of the business transformation processes, described in the contemporary academic literature.

Wikipedia (2014) provides the following *IPO* definition: "An *initial public offering (IPO)* or stock market launch is a type of public offering where shares of stock in a company are sold to the general public, on a securities exchange, for the first time. Through this process, a *private company* transforms into a *public company*. *Initial public offerings* are used by companies to raise expansion capital, to possibly monetize the investments of early private investors, and to become publicly traded enterprises. A company selling shares is never required to repay the capital to its public investors. After the *IPO*, when shares trade freely in the open market, money passes between public investors. Although an *IPO* offers many advantages, there are also significant disadvantages, chief among these are the costs associated with the process and the requirement to disclose certain information that could prove helpful to competitors, or create difficulties with vendors.

Details of the proposed offering are disclosed to potential purchasers in the form of a lengthy document known as a *prospectus*. Most companies undertake an *IPO* with the assistance of an *investment banking firm* acting in the capacity of an *underwriter*. *Underwriters* provide several services, including help with correctly assessing the *value of shares* (*share price*), and establishing a *public market for shares* (*initial sale*). Alternative methods such as the *Dutch auction* have also been explored. In terms of size and public participation, the most notable example of this method is the *Google IPO*. *China* has recently emerged as a major *IPO* market, with several of the largest *IPOs* taking place in that country."

Chang-Yi Hsu, Jean Yu, Shiow-Ying Wen (2013) explain: "*Initial public offering* (*IPO*) is one of the popular methods which corporation uses to finance their equity. *IPOs* can be either small or large companies to raise expansion capital and become publicly traded enterprises. Numerous studies provide that common stocks of *IPOs* usually get high abnormal returns during the initial period, and then underperform during the post-issue period. There is no behavioral theory to explain why investors would react so. Investors' behavior is difficult to be predicted and measured directly."

Boeh, Southam (2011) notice: "The *IPO* is a key milestone that facilitates access to the public capital market and provides investors with a liquid security with an established market price. The decision to pursue an *IPO* is made by the *top management team (TMT)* and *board* in consultation with investment bankers. In the *US*, after filing a registration statement with the

Securities and Exchange Commission (SEC), the *underwriters (UW)* typically market the security using a *book-building process* (see *Benveniste and Spindt (1989)*).”

Jiang, Leger (2009) present the *IPO* definition: “*Initial public offering (IPO)* refers to the first sale of stocks by an unlisted company to the public. Stock exchange listing (followed by public trading in open market) allows the creation of market prices and liquidity. Information asymmetry and agency problems in the market make the valuation of *IPOs* more difficult than that of listed common stocks so an essential part of the *IPO* process is the discovery of an appropriate issue price. *IPO* pricing must compensate for both direct costs (such as underwriting and information disclosure fees) and indirect costs (such as unknown risks specific to the offering, as distinct from systemic risks generally involved in pricing listed common stocks). The complex and special nature of *IPO* pricing is reflected in an ‘*IPO* underpricing’ phenomenon, in which statistically significant positive abnormal returns are widely observed in the first day of trading.”

Hopp, Dreherdo (2007) state: “One form of raising capital is selling a company’s shares on capital markets – i.e., going public. Going public is generally done through *Initial Public Offering (IPO)* where shares are sold to investors, usually at a price below those prevailing on the first day of trading (see *Ibbotson (1975)* for early evidence).”

Pritsker (2004, 2006) writes: “Two of the principle functions of a well performing financial system are to facilitate *risk sharing* among investors, and *capital formation* by firms. The *initial public offering (IPO)* process serves both of these functions by allowing the initial owners of a firm to raise capital while simultaneously transferring and sharing some of the firm’s risk with the wider investing public.”

Mira (2004) suggests: “The *initial public offering (IPO)* is the process in which a company offers its shares to the public and becomes a public company. Raising capital through *IPO* plays an important role in corporate finance and enables economic growth. Indeed, in the past decade, over $500 billion were raised through *IPOs* in the *US* markets.”

We would like to comment that the *initial public offering* of company equity at stock exchanges has been researched in the research articles, reports, presentations and books by a big number of prominent scientists from the top universities (see the compiled chronological list of most frequently cited research articles): The auction of long-term government securities has been researched in *Berney (1964)*. The experimental studies of discrimination versus competition in sealed-bid auction markets have been completed in *Smith (1967)*. The cycle of research works by *Eugene F. Fama* has been devoted to the dynamics of stock prices changes, including the *IPOs*. The adjustment of stock prices to new information has been investigated in *Fama, Fisher,* *Jensen, Roll (1969)*. A review of theory and empirical work on the efficient capital markets has been conducted in *Fama (1970)*. The cross-section of expected stock returns has been studied in *Fama, French (1992)*. The common risk factors in the returns on the stocks and bonds have been listed in *Fama, French (1993)*. The multifactor explanations of asset pricing anomalies have been suggested in *Fama, French (1996)*. The market efficiency, long-term returns, and behavioral finance have been researched in *Fama (1998)*. The obtained research results over the years of intensive research have been shortly reviewed in *Fama, Hansen, French (2013)*. The stock market mechanism have been investigated in *Akerlof (1970)*. The small business and the new issues market for equities have been characterized in *Stoll, Curley (1970)*. The problems of valuation of the unseasoned equity issues in *1965-1969* in *Logue (1973)*. The complicated question: What's special about the role of the underwriter reputation and market activities in the *IPOs*?, has been clearly answered in *Logue, Rogalski, Seward, Foster-Johnson (2001).* The further evidences on the short-run results for the new issues investors have been presented in *Reilly (1973)*. The pricing of initial equity issues with the focus on the *French* sealed-bid auction has been discussed in *McDonald, Jacquillat (1974)*. The hot *IPOs* issue markets have been selected in *Ibbotson, Jaffe (1975)*. The price performance of common stocks new issues has been analyzed in *Ibbotson (1975)*. The mechanisms of the initial public offering have been researched in *Ibbotson, Sindeler, Ritter (1988)*. The transactions cost approach to the theory of financial intermediation has been explored in *Benston, Smith (1976)*. The theory of the firm, including the managerial behavior, agency costs and ownership structure, has been formulated in *Jensen, Meckling (1976)*. The agency costs of free cash flow, corporate finance, and takeovers have been studied in *Jensen (1986)*. The risk, uncertainty, and divergence of opinion have been selected as the topics of research in *Miller (1977)*. The informational asymmetries, financial structure, and financial intermediation have been investigated in *Leland, Pyle (1977)*. The seasoning process of new corporate bond issue has been researched in *Weinstein (1978)*. The prospect theory of the decision making under the risk has been proposed in *Kahneman, Tversky (1979)*. The auctions of shares have been described in *Wilson (1979)*. The measurement of security price performance has been done in Brown*, Warner (1980)*. The price discounts on the new equity issues in the *UK* and their relationship to the investor subscription in the period *1965 - 1975* have been studied in *Buckland, Herbert, Yeomans (1981)*. The rational expectations, information acquisition, and competitive bidding have been researched in *Milgrom (1981)*. A theory of the auctions and competitive bidding has been created in *Milgrom, Weber (1982)*. The optimal auction design has been suggested in *Myerson (1981)*. A model of the demand for the investment banking advising as well as the distribution services for the new issues have been described in *Baron (1982)*. The flow of information has been researched in *Dretske (1983)*. The valuable research contributions by *Jay R. Ritter* are well known and highly regarded among the scientists. The innovation and communication: Signaling with partial disclosure in *Bhattacharya, Ritter (1983).* The "hot issue" market of *1980* has been researched in *Ritter (1984)*. The signaling and the valuation of unseasoned new issues: have been discussed in *Ritter (1984)*. The investment banking, reputation, and the underpricing of initial public offerings have been discussed in *Beatty, Ritter (1986)*. The costs of going public process have been calculated in *Ritter (1987)*. The buying and selling behavior of the individual investors at the turn of the year have been characterized in *Ritter (1988)*. The long-run underperformance of initial public offerings has been evaluated in *Ritter (1991)*. The measurement of the abnormal performance of the stocks has been completed in *Chopra, Lakonishok, Ritter (1992)*. The turn-of-the-year effect has been explained in *Ritter (1992)*. The going public problems have been discussed in *Hanley, Ritter (1992)*. The market's problems with the pricing of initial public offerings have been indentified in *Ibbotson, Sindelar, Ritter (1994)*. The international insights on the initial public offerings have been given in *Loughran, Ritter, Rydqvist (1994)*. The certain information about the initial public offerings has been summarized in *Ibbotson, Ritter (1995)*. The new issue puzzle has been indentified in *Loughran, Ritter (1995)*. The costs of raising capital have been estimated in *Lee, Lochhead, Ritter, Zhao (1996)*. The long-term market overreaction together with the effect of the low-priced stocks has been considered in *Loughran, Ritter (1996)*. The operating performance of firms, conducting the seasoned equity offerings, has been analyzed in *Loughran, Ritter (1997)*. The new issue puzzle has been uncovered in *Loughran, Ritter (1995)*. The initial public offerings have been characterized in *Ritter (1998a, b)*. The institutional affiliation and the role of venture capital, using the evidences from the initial public offerings in *Japan*, have been researched in *Hamao, Packer, Ritter (1998)*. The valuation of the *IPOs* has been discussed in *Kim, Ritter (1999)*. The seven percent solution in the case of the *IPOs* has been proposed in *Chen, Ritter (2000)*. The institutional affiliation and the role of venture capital with the evidences from the initial public offerings in *Japan* have been researched in *Hamao, Packer, Ritter (2000)*. The future of the new issues market has been forecasted in *Ritter (2002)*. A review of the *IPO* activity, pricing and allocations has been made in *Ritter, Welch (2002)*. The decline of inflation and the bull market of *1982 - 1999* have been well described in *Ritter, Warr (2002)*. The question: Why don't the issuers get upset about the leaving money on the table in the *IPOs*?, has been answered in *Loughran, Ritter (2002)*. The behavioral finance has been described in *Ritter (2003a)*. The differences between the *European IPOs* market and the *American IPOs* market have been found to exist in *Ritter (2003b)*. The research topics on the investment banking and securities issuance have been studied in *Ritter (2003c)*. The *IPO* quiet periods have been studied in *Ritter, Bradley, Jordan (2003)*. The *IPO* quiet periods have been found to exist in *Ritter, Bradley, Jordan, Wolf (2004)*. The question: Why has the *IPO* underpricing changed over the time?, has been answered in *Ritter, Loughran (2004)*. The recent developments in the corporate finance have been discussed in *Ritter (2005)*. The economic growth and the equity returns have been researched in *Ritter (2005)*. Some facts about the *2004 IPO* market have been documented in *Ritter (2005)*. The short interest, institutional ownership, and stock returns have been researched in *Ritter, Asquith, Pathak (2005)*. The question: Do the today's trades affect the tomorrow's *IPO* allocation?, has been replied in *Ritter, Nimalendran, Donghang Zhang (2007)*. The affiliated mutual funds and the allocation of initial public offerings have been considered in *Ritter, Donghang Zhang (2007)*. The analyst behavior, following the *IPOs*, has been studied in *Bradley, Jordan, Ritter (2008)*. The forensic finance has been discussed in *Ritter (2008)*. The testing theories of capital structure and the estimation of the speed of adjustment have been researched in *Ritter, Huang (2009)*. The economic consequences of the *IPO* spinning have been discussed in *Ritter, Xiaoding Liu (2010)*. The marketing of seasoned equity offerings has been described in *Ritter, Xiaohui Gao (2010)*. The local underwriter oligopolies and the *IPO* underpricing have been discussed in *Ritter, Xiaoding Liu (2011)*. The equilibrium in the initial public offerings market has been described in *Ritter (2011)*. The *post-IPO* employment and the revenue growth for the *US IPOs* in the time period from *1996* up to *2010* have been researched in *Ritter, Kenney, Patton (2012)*. The *Europe's* second markets for the small companies have been analyzed in *Ritter, Vismara, Paleari (2012)*. The problem on the re-energizing of the *IPO* market has been considered in *Ritter (2013)*. The question: Where have all the *IPOs* gone?, has been answered in *Ritter, Xiaohui Gao, Zhongyan Zhu (2013)*. The economies of scope and the *IPOs* activity in *Europe* have been characterized in *Ritter, Signori, Vismara (2013)*. The corporate financing and investment decisions in the case, when the firms have information that the investors do not have, has been considered in *Myers, Majluf (1984)*. The continuous auction and insider trading problems have been researched in *Kyle (1985)*. The asset pricing and the bid-ask spread have been investigated in *Amihud, Mendelson (1986)*. The shareholders and the stock prices of the *IPOs* with the evidences from *Japan* have been characterized in *Amihud, Mendelson, Uno (1999)*. The allocations, adverse selection and cascades in the *IPOs* with the evidences from the *Tel Aviv* stock exchange in *Israel* have been studied in *Amihud, Hauser, Kirsh (2001, 2003)*. The investment banking, reputation, and underpricing of the initial public offerings have been overviewed in *Beatty, Ritter (1986)*. A study of the executive compensation, ownership, and board structure at the initial public offerings, including the managerial incentives, monitoring, and risk bearing, has been completed in *Beatty, Zajac (1994)*. The issuer expenses and legal liability in the initial public offerings have been researched in *Beatty, Welch (1996)*. The capital raising, underwriting and the certification hypothesis have been described in *Booth, Smith (1986)*. An empirical study on the efficiency of the *British* primary market and the *Swedish* primary market with a particular accent on the problem of an access to the mentioned stock markets has been completed in *Ridder (1986)*. The question: Why new issues are underpriced?, has been comprehensively discussed in *Rock (1986)*. The problems on the large shareholders and the corporate control have been analyzed in *Shleifer, Vishny (1986)*. The selected topics on the investor protection and equity markets have been characterized in *Shleifer, Wolfenzon (2002)*. The information quality and the valuation of new *IPOs* issues have been considered in *Titman, Trueman (1986)*. The coalition-proof of the *Nash* equilibria has been proposed in *Bernheim, Peleg, Whinston (1987)*. The auctions and bidding techniques have been examined in *McAfee, McMillan (1987)*. An examination of the mispricing, returns and uncertainty for the initial public offerings has been done in *Miller, Reilly (1987)*. The underpricing of new *IPOs* issues and the choice of auditor as a signal of the investment banker's reputation has been studied in *Balvers, McDonald, Miller (1988)*. The investment banker prestige and the underpricing of initial public offerings have been investigated in *Johnson, Miller (1988)*. The anatomy of the initial public offerings of common stocks has been presented in *Tinic (1988)*. The signaling by the underpricing in the *IPO* market has been detected in *Allen, Faulhaber (1989)*. The initial public offerings underpricing has been researched in *Barry (1989)*. The role of venture capital in the creation of public companies, based on the evidence from the going-public process, has been revealed in *Barry, Muscarella, Peavy, Vetsuypens (1990)*. The cycle of research articles co-authored by *Lawrence M. Benveniste* clarifies a big number of important research problems in the *IPO* science. The problem: How investment bankers determine the offer price and allocation of new issues has been studied in *Benveniste, Spindt (1989)*. A comparative analysis of the *IPO* proceeds under the alternative regulatory environments has been made in *Benveniste, Wilhelm (1990)*. The price stabilization as a bonding mechanism in the new equity issues has been shown in *Benveniste, Busaba, Wilhelm (1996)*. An analysis of competing strategies for the *IPOs* such as the book-building vs. the fixed price has been completed in *Benveniste, Busaba (1997)*. The research on the initial public offerings, going by the book, has been made in *Benveniste, Wilhelm (1997)*. The complex question: Who benefits from the secondary market price stabilization of the *IPOs?,* has been delicately answered in *Benveniste, Erdal, Wilhelm (1998)*. The evidence of information spillovers in the production of investment banking services has been presented in *Benveniste, Ljungqvist, Wilhelm, Yu (2003)*.

The signaling and the pricing of new *IPO* issues have been considered in *Grinblatt, Hwang (1989)*. A direct test of the *Rock's* model of the pricing of unseasoned issues has been conducted in *Koh, Walter (1989)*. The optimal multi unit auctions have been investigated in *Maskin, Riley (1989)*. A few research papers by *Chris J. Muscarella* have been considered as of particular research interest, because of the uncovered theoretical mechanisms and practical causes of the underpricing effect. A simple test of the *Baron's* model of the *IPO* underpricing has been suggested in *Muscarella, Vetsuypens (1989a)*. The underpricing of second initial public offering has been investigated in *Muscarella, Vetsuypens (1989b)*. Some new empirical evidences on the firm age, uncertainty, and *IPO* underpricing have been presented in *Muscarella, Vetsuypens (1990)*. The underpricing at stock exchanges in *Germany* in *1977 - 1987* has been researched in *Uhlir (1989)*. The series of research articles by *Ivo Welch* has to be highlighted certainly, because of the innovative research proposals. The seasoned offerings and the pricing of new issues have been researched in *Welch (1989)*. The sequential sales, learning and cascades have been investigated in *Welch (1992)*. The theory and practical evidences on the equity valuation, following the *IPO,* has been presented in *Welch (1996)*. A review on the *IPO* activity, pricing and allocations has been completed in *Welch, Ritter (2002)*. The initial public offerings and underwriter reputation have been analyzed in *Carter, Manaster (1990)*. The underwriter reputation, initial returns, and the long run performance of *IPO* stocks have been investigated in *Carter, Dark, Singh (1998)*. The empirical estimates of beta, when the investors face an estimation risk, have been made in *Clarkson, Thompson (1990)*. The evaluation methods have been reviewed in *Husson, Jacquillat (1990)*. The winner's curse problem, interest costs and the underpricing of initial public offerings have been researched in *Levis (1990)*. The equity issues and stock price dynamics have been considered in *Lucas, McDonald (1990)*. The structure and governance of venture capital organizations, which invest in the *IPOs*, have been analyzed in *Sahlman (1990)*. A lawyer's guide to the operation of underwriting syndicates has been written by *Allen (1991)*. Some remarks on the measurement of the information content of stock trades have been presented in *Hasbrouck (1991)*. The investor sentiment and the closed-end fund puzzle have been highlighted in *Lee, Shleifer, Thaler (1991)*. The venture capitalists certification in the initial public offerings have been explained in *Megginson, Weiss (1991)*. The introduction to the corporate finance have been made in *Megginson, Smart (2009)*. The problems on the auditor credibility and the initial public offerings have been solved in *Menon, Williams (1991)*. The pre-play communication, participation restrictions and efficiency in the initial public offerings have been discussed in *Spatt, Srivastava (1991)*. The long run efficiency of the *IPO* pricing has been considered in *Cotter (1992)*. The litigation risk, intermediation, and the underpricing of initial public offerings have been studied in *Hughes, Thakor (1992)*. Theory and evidence on the effect of the secondary market on the pricing of the initial public offerings have been presented in *Mauer, Senbet (1992)*. The elaborate research ideas on the *IPOs* have been proposed in a series of research articles by *Reena Aggarwal* The aftermarket performance of the initial public offerings in *Latin America* has been researched in *Aggarwal, Leal, Hernandez (1993)*. The question: Why the initial public offerings are underpriced has been answered, using the evidences from *Switzerland* in *Kunz, Aggarwal (1994)*. The stabilization activities by the underwriters after the initial public offerings have been investigated in *Aggarwal (2000)*. The price discovery in the initial public offerings as well as the role of the lead underwriter in the initial public offerings have been documented in *Aggarwal, Conway (2000)*. The empirical evidences on the institutional allocations in the initial public offerings have been presented in *Aggarwal, Prabhala, Puri (2002)*. The strategic *IPO* underpricing, information momentum, and lockup expiration selling have been studied in *Aggarwal, Krigman, Womack (2002)*. The allocation of the initial public offerings and flipping activity have been researched in *Aggarwal (2003)*. The effect of the trading system on the underpricing of initial public offerings has been investigated in *Affleck-Graves, Hegde, Miller, Reilly (1993)*. The theory and evidences on the common stock offerings across the business cycle have been presented in *Choe, Masulis, Nanda (1993)*. The auctions of divisible goods have been researched in *Back, Zender (1993)*. The auctions of divisible goods with the endogenous supply have been researched in *Back, Zender (2001)*. The cycle of research articles by *Thomas J. Chemmanur* stems the idea of the *IPO* waves. A dynamic model on the pricing of initial public offerings has been suggested in *Chemmanur (1993)*. The question: Why include warrants in new equity issues?, has been answered in the theory of unit *IPOs* in *Chemmanur, Fulghieri (1997)*. A theory of the going-public decision has been proposed in *Chemmanur, Fulghieri (1999)*. A dynamic model of the choice between the fixed-price offerings and the auctions in the *IPOs* and privatizations has been proposed in *Chemmanur, Liu (2003)*. The institutional trading, allocation sales, and private information in the *IPOs* have been discussed in *Chemmanur, Hu (2007)*. The topics on the product market advertising and new equity issues have been discussed in *Chemmanur, Yan (2009)*. The role of institutional investors in the seasoned equity offerings has been highlighted in *Chemmanur, He, Hu (2009)*. The going public decision and the product market have been reviewed in *Chemmanur, He, Nandy (2010)*. The heterogeneous beliefs, short sale constraints, and an economic role of the underwriter in the *IPOs* have been explained in *Chemmanur, Krishnan (2012)*. The theory and evidences on the *IPO* waves, product market competition, and going public decision have been presented in *Chemmanur, He (2012)*. The long-term market overreaction or biases in the computed returns have been revealed in *Conrad, Kaul (1993)*. The short-run and long-run performance of the *Korean IPOs* in *1980-1990* have been researched in *Dhatt, Kim, Lim (1993)*. The *IPO* underpricing and the insurance against legal liability have been described in *Drake, Vetsuypens (1993)*. The options, short sales, and market completeness have been researched in *Figlewski, Webb (1993)*. The underpricing of the initial public offerings and the partial adjustment phenomenon have been researched in *Hanley (1993)*. Evidence on the strategic allocation of initial public offerings has been given in *Hanley, Wilhelm (1995)*. The *Japanese* initial public offerings at the time of the *Japan's* financial markets restructuring have been researched in *Hebner, Hiraki (1993)*. The implications for the stock market efficiency have been studied in *Jegadeesh, Weinstein, Titman (1993a)*. An empirical investigation of the *IPO* returns and subsequent equity offerings have been conducted in *Jegadeesh, Weinstein, Welch (1993b)*. The winner's curse, legal liability, and long-run price performance of the initial public offerings in *Finland* have been investigated in *Keloharju (1993)*. The strategic behavior and underpricing in the uniform price auctions, including the evidences from the *Finnish* treasury auctions, have been described in *Keloharju, Nyborg, Rydqvist (2004)*. The *post-IPO* performances in France have been studied in *Leleux (1993)*. The post-issue performance of the *IPOs* in the *European IPO* markets has been studied in *Leleux, Muzyka (1997)*. The *UK* experience as far as the long-run performance of the initial public offerings in *1980 - 1988* has been shared in *Levis (1993)*. The *UK IPO* market in *2000* has been analyzed in *Levis (2004)*. The cycle of exceptional research articles by *Tim Loughran* presents the important research results on the short- and long- term performances of the *IPOs*. The underperformance of the initial public offerings, comparing the *NYSE* vs. *NASDAQ* data, has been analyzed in *Loughran (1993)*. The international insights on the initial public offerings have been presented in *Loughran, Ritter, Rydqvist (1994)*. The new issue puzzle has been researched in *Loughran, Ritter (1995)*. The operating performance of firms, conducting the seasoned equity offering, has been investigated in *Loughran, Ritter (1997)*. The uniformly least powerful tests of market efficiency have been completed in *Loughran, Ritter (2000)*. The problem: Why don't the issuers get upset about leaving the money on the table in the *IPOs*?, has been discussed in *Loughran, Ritter (2002)*. The question: Why has the *IPO* underpricing changed over time?, has been considered in *Loughran, Ritter (2003, 2004)*. The underwriter price support and the *IPO* underpricing puzzle have been uncovered in *Ruud (1993)*. The compensation, participation, restrictions, and the underpricing of initial public offerings with the clear evidences from Sweden have been provided in *Rydqvist (1993)*. A reputation based model in the case of the *New Zealand IPO* underpricing has been discussed in *Vos, Cheung (1993)*. The accounting choices by the issuers of the initial public offerings have been reviewed in *Friedlan (1994)*. The post-issue operating performances of *IPO* firms have been analyzed in *Jain, Kini (1994)*. The underpricing of the *Canadian* initial public offerings in *1971 – 1992* has been researched in *Jog, Srivastava (1994)*. The voluntary disclosure of management earnings forecasts in the *IPOs* as well as the impact on the underpricing and post-issue return performance in *Jog, McConomy (1999)*. The question: Why the initial public offerings are underpriced has been answered, using the evidences from *Switzerland* in *Kunz, Aggarwal (1994)*. The topics on the venture capitalists and the decision to go public have been described in *Lerner (1994)*. The pricing of initial public offerings with the focus on the tests of the adverse-selection and the signaling theories has been discussed in *Michaely, Shaw (1994)*. The conflict of interest and the credibility of underwriter analyst recommendations have been investigated in *Michaely, Womack (1999)*. The aftermarket support and underpricing of the initial public offerings have been researched in *Schultz, Zaman (1994)*. The pseudo market timing and the long-run underperformance of the *IPOs* have been discussed in *Schultz (2003)*. The underwriter price support and the *IPO* underpricing puzzle have been considered in *Degeorge (1995)*. The application of the book-building method in the *IPOs* has been described in *Degeorge, Derrien, Womack (2005)*. The private communications on the *IPO* underpricing, long term performance and emerging issues markets have been conducted in *Gerstein (1995, 1996)*. The optimal investment, monitoring, and staging of venture capital have been described in *Gompers (1995)*. The topics on the venture capital and the creation of public companies have been researched in *Gompers, Lerner (1997)*. The really long-term performance of the initial public offerings in the *pre-Nasdaq* era have been considered in *Gompers, Lerner (2001, 2003a, b)*. The aftermarket performance of the initial public offerings in *Korea* has been explained in *Kim, Krinsky, Lee (1995)*. The going public techniques in the *1980s* with the evidences from Sweden have been explained in *Rydqvist, Högholm (1995)*. The underperformance in the long-run stock returns, following the seasoned equity offerings, has been discussed in *Spiess, Affleck-Graves (1995)*. The *IPO* and the first seasoned equity sale, including the issue proceeds, owner/manager's wealth, and under-pricing signal, have been researched in *Spiess, Pettway (1997)*. The long-run performance of stock returns, following the debt offerings, has been described in *Spiess, Affleck-Graves (1999)*. The insider ownership and the decision to go public have been characterized in *Zingales (1995)*. The series of research articles by *Brad M. Barber* deals with the long-run abnormal stock returns. The detection of the long-run abnormal stock returns, using the test statistics, has been described in *Barber, Lyon (1996a, 1997)*. The problem: How can the long-run abnormal stock returns be both positively and negatively biased?, has been solved in *Barber, Lyon (1996b)*. The effect of attention on the buying behaviour of the individual and institutional investors has been characterized in *Barber, Odean (2008)*. The ownership dispersion, costly information, and *IPO* underpricing have been investigated in *Booth J R, Chua (1996)*. The technology shocks, regulation, and the *IPO* market have been researched in *Booth J R, Booth L (2003)*. The *German* perspective on the emission of shares has been provided in *Borggreve, Dobrikat (1996)*. The principles of corporate finance, including the *IPO*, have been discussed in *Brealey, Myers (1996)*. The market microstructure, asset pricing and stock returns have been analyzed in *Brennan, Subrahmanyam (1996)*. The international methods of the initial public offerings allocation have been reviewed in *Chowdhry, Sherman (1996)*. The stabilization, syndication, and pricing of the *IPOs* have been discussed in *Chowdhry, Nanda (1996)*. The liquidity, information, and infrequently traded stocks have been considered in *Easley, Kiefer, O'Hara, Paperman (1996)*. The treatise on the law of securities regulation has been written by *Hazen (1996)*. The bank information monopolies as well as the mix of private and public debt claims have been discussed in *Houston, James (1996)*. The stock analyst valuations, following the initial public offerings, have been analyzed in *Houston, James, Karceski (2004)*. The market-to-book ratios, equity retention, and management ownership in *Finnish* initial public offerings have been researched in *Keloharju, Kulp (1996)*. The coordination, identity and learning by the firms before the *IPO* decision have been described in *Kogut, Zander (1996)*. The measurement of the long-horizon security price performance has been done in *Kothari, Warner (1996, 1997)*. The capital markets research has been performed in *Kothari (2001)*. The *Australian IPO* underpricing in the short and long run has been studied in *Lee, Taylor, Walter (1996)*. The expected and realized returns for the *Singaporean IPOs* in the short- and long- time terms have been evaluated in *Lee, Taylor, Walter (1996)*. The discriminatory treasury auctions versus uniform treasury auctions: have been researched in *Nyborg, Sundaresan (1996)*. The effect of removing price limits and introducing auctions upon short-term *IPO* returns in the case of the *Japanese IPOs* has been investigated in *Pettway, Kaneko (1996)*. The approaches to the prediction of stock results has been described in *Périer (1996)*. The short and long-run performance of the initial public offerings in the *Austrian* stock market have been discussed in *Aussenegg (1997)*. The cycle of research works by *Alon Brav* has been devoted to the short- and long- time performances of the *IPOs*. The research on the long-run performance of the initial public offerings, using the evidences from the venture and non-venture capital-backed companies has been presented in *Brav, Gompers (1997)*. The long-horizon *IPO* returns study, using the *Bayesian* approach, have been completed in *Brav (2000)*. The question: Is the abnormal return, following the equity issuances, anomalous?, has been answered in *Brav, Geczy, Gompers (2000)*. The insider trading subsequent to the initial public offerings with the evidence from the expirations of lockup provisions has been analyzed in *Brav, Gompers (2002)*. The role of lockups in the initial public offerings has been described in *Brav, Gompers (2003)*. The underpricing, ownership and control in the initial public offerings of equity securities in the *UK* have been explained in *Brennan, Franks (1997)*. The investment and operating performances of the *Japanese* initial offerings have been characterized in *Cai, Wei (1997)*. Some topics on the persistence in the mutual funds performance have been discussed in *Carhart (1997)*. The pricing of initial public offers of corporate straight debt has been selected a a main subject of research in *Datta, Iskandar-Datta, Patel (1997)*. Some issues on the returns to the contrarian investment, including the tests of the naïve expectations hypotheses, have been discussed in *Dechow, Sloan (1997)*. The relation between the analysts' forecasts of the long-term earnings growth and the stock price performance, following the equity offerings, has been derived in *Dechow, Hutton, Sloan (2000)*. The *German* capital market has been researched in *Ehrhardt (1997)*. An analysis of the stock market performance of new issues in *New Zealand* has been done in *Firth (1997)*. The bank underwriting of debt securities with the modern evidences has been described in *Gande, Puri, Saunders, Walter (1997)*. The bank entry, competition, and market for the corporate securities underwriting have been reviewed in *Gande, Puri, Saunders (1999)*. The regulation "A" initial public offerings on the Internet have been researched in *Gregg (1997)*. A general approach to the characterization of the components of the bid-ask spread has been discussed in *Huang, Stoll (1997)*. The evaluation of the *IPOs* in *Canada* has been described in *Kooli (2000)*. The legal determinants of external finance have been defined in *La Porta, Lopez-de-Silanes, Shleifer, Vishny (1997)*. The law and the finance have been researched in *La Porta, Lopez-de-Silanes, Shleifer, Vishny (1998)*. The investor protection and the corporate valuation have been investigated in *La Porta, Lopez-de-Silanes, Shleifer (2002)*. The question: What works in the securities laws? , has been answered in *La Porta, Lopez-de-Silanes, Shleifer (2006)*. The problem: Do firms knowingly sell overvalued equity?, has been solved in *Lee (1997)*. The research articles series by *Alexander P. Ljungqvist* perpetuates his original research ideas on the *IPO* pricing. The pricing of the initial public offerings, using the further evidences from *Germany*, has been researched in *Ljungqvist (1997)*. The hot markets, investor sentiment, and *IPO* pricing have been uncovered in *Ljungqvist, Nanda, Singh (2001)*. The *IPO* allocations have been studied in *Ljungqvist, Wilhelm (2002)*. The *IPO* pricing in the dot-com bubble have been described in *Ljungqvist, Wilhelm (2003)*. The role of *US* banks and *US* investors in the process of the global integration in the primary equity markets has been explained in *Ljungqvist, Jenkinson, Wilhelm (2003)*. The banking relationships and analyst recommendations during the competition for the securities underwriting mandates have been shown in *Ljungqvist, Marston, Wilhelm*

(2003). The hot markets, investor sentiment, and *IPO* pricing have been highlighted in *Ljungqvist, Nanda, Singh (2003, 2006)*. The *IPO* underpricing has been selected as a subject of discussion in *Ljungqvist (2006)*. The ownership and operating performance of companies that go public have been researched in *Mikkelson, Partch, Shah (1997)*. An empirical investigation of the impact of the *IPO* mispricing on the underwriter market value has been conducted in *Nanda, Youngkeol Yun (1997)*. The timing and subsequent performance of the initial public offerings (*IPOs*) on the *Johannesburg* stock exchange have been described in *Page, Reyneke (1997)*. The analysis of valuation changes of the initial public offerings has been presented in *Rajan, Servaes (1997a)*. The effect of the market conditions on the initial public offerings has been described in *Rajan, Servaes (1997b)*. The *IPO* underpricing as the tax-efficient compensation has been discussed in *Rydqvist (1997)*. The size effect on the German capital market has been explained in *Stehle (1997)*. The *German* stock exchanges and capital market have been characterized in *Stehle, Ehrhardt (1999)*. The long-run stock performance of *German* initial public offerings and seasoned equity issues have been analyzed in *Stehle, Ehrhardt, Przyborowsky (2000)*. The *German* re-unification, changing capital market conditions, and performance of *German* initial public offerings have been considered in *Steib, Mohan (1997)*. An empirical investigation of the underpricing in *Chinese IPOs* has been conducted in *Su, Fleisher (1997)*. The going public decision making process and related problems have been described in *Arkebauer (1998)*. The evidence on the price stabilization and underpricing in the early *IPO* returns has been described in *Asquith, Jones, Kieschnick (1998)*. The demand reduction and inefficiency in the multi - unit auctions have been researched in *Ausubel, Cramton (1998a)*. The auctioning of securities has been described in *Ausubel, Cramton (1998b)*. The venture capital and the structure of capital markets have been described in *Black, Gilson (1998)*. The investor psychology and security market under- and over- reactions have been studied in *Daniel, Hirshleifer, Subrahmanyam (1998)*. The corporate governance and the financial performance have been researched in *Goergen (1998)*. The prediction of the control concentration in the *German* and *UK IPOs* have been described in *Goergen, Renneboog (2002)*. The pricing of high-yield debt *IPOs* has been investigated in *Helwege, Kleiman (1998)*. The ownership structure, speculation, and shareholder intervention have been characterized in *Kahn, Winton (1998)*. The uniform price auctions have been described in *Malvey, Archibald (1998)*. The going public decision process and the ownership structure of the firm have been discussed in *Mello, Parsons (1998)*. The underpricing and aftermarket performance of *IPOs* in *Shanghai, P. R. China* have been discussed in *Mok, Hui (1998)*. An empirical analysis: Why do the companies go public?, has been completed in *Pagano, Panetta, Zingales (1998)*. The choice of the stock ownership structure, including the

agency costs, monitoring and the decision to go public issues, have been researched in *Pagano, Röell (1998)*. The privatization of the initial public offerings in *Malaysia*, including the initial premium and long-term performance, have been investigated in *Paudyal, Saadouni, Briston (1998)*. The asset pricing in the segmented capital markets, using the preliminary evidences from *China*-domiciled companies, has been researched in *Poon, Firth, Fung (1998)*. The earnings management and the performances of seasoned equity offerings have been discussed in *Rangan (1998)*. The *IPO* underpricing, trading volume, and investor interest have been researched in *Reese (1998)*. The empirical evidence on the long-run performance of the initial public offerings in Germany has been provided in *Sapusek (1998)*. The *IPO*-mechanisms, monitoring and ownership structure have been reviewed in *Stoughton, Zechner (1998)*. The security design and the allocation of voting rights, using the evidences from the *Australian IPO* market, have been researched in *Taylor, Whittred (1998)*. The earnings management and the underperformance of seasoned equity offerings have been researched in *Theoh, Welch, Wong (1998a)*. The earnings management and the long-run market performance of initial public offerings have been considered in *Theoh, Welch, Wong (1998b)*. The initial public offerings on the *Spanish* stock exchange have been analyzed in *Ansotegui, Fabregat (1999).* The initial public offerings in Spain have also been considered in *Arcas, Ruiz (1999).* An analysis of executive compensation, ownership, and control in closely held firms have been researched in *Baker, Gompers (1999).*

The equity share in the new issues and the aggregate stock returns have been investigated in *Baker, Wurgler (2000)*. The determinants of board structure at the initial public offering have been identified in *Baker, Gompers (2001)*. The international cross-listing and visibility have been described in *Baker, Nofsinger, Weaver (2002)*. The long-run performance analysis of a new sample of the *UK IPOs* has been done in *Brown (1999)*. The cycle of research articles by *Francesca Cornelli* reflects the practical to the *IPO* book building techniques. The book building and strategic allocations of the *IPOs* have been discussed in *Cornelli, Goldreich (1999)*, *Cornelli, Goldreich (2001)*. The question: How informative is the order book?, has been answered, considering the *IPO* book building methods in *Cornelli, Goldreich (2002)*, *Cornelli, Goldreich (2003)*. The investor sentiment in the *pre-IPO* markets has been described in *Cornelli, Goldreich, Ljungqvist (2006)*. The relation between the analysts' forecasts of the long-term earnings growth and the stock price performance, following the equity offerings, has been established in *Dechow, Hutton, Sloan (1999)*. The research articles cycle by *Field* estimate the *IPO* investments returns. The implementation of the anti-takeover provisions and dual class shares before the *IPO* has been discussed with the aim to find the proper means to continue to control the newly public firms in *Field (1999)*. The expiration of the *IPO* share lockups has been described in *Field, Hanka (2001)*. The underpricing in the *IPOs*, including the control, monitoring, or liquidity issues, has been researched in *Field, Sheehan (2001)*. The takeover defenses of *IPO* firms have been explained in *Field, Karpoff (2002)*. The *IPO* underpricing and the outside block holdings have been researched in *Field, Sheehan (2002)*. The problem of the institutional investment versus the individual investment in the *IPOs* has been discussed in *Field, Lowry (2009)*. An analysis of *IPO* auctions has been done in *Kandel, Sarig, Wohl (1999)*. The long-run performance of *IPOs* has been analyzed in *Khurshed, Mudambi, Goergen (1999)*. The short-run price performance of investment trust *IPOs* on the *UK* main market has been researched in *Khurshed, Mudambi (2002)*. The persistence of the *IPO* mispricing and the predictive power of flipping have been researched in *Krigman, Shaw, Womack (1999)*. The question: Why do the firms switch underwriters?, has been answered in *Krigman, Shaw, Womack (2001)*. The *IPO* underpricing explanations with the implications from the investor application and allocation schedules have been suggested in *Lee, Taylor, Walter (1999)*. The improved methods for the tests of the long-run abnormal stock returns have been proposed in *Lyon, Barber, Tsai (1999)*. The question: What makes a company a good candidate for the going public process, including the criteria, advantages, and disadvantages, related to the going public process, has been discussed in *Olson, Nelson (1999)*. The managerial ownership and the performance of the firms with the evidences from the *UK* have been described in *Short, Keasey (1999)*. The globalization, corporate finance, and cost of capital have been considered in *Stulz (1999)*. The limits of the financial globalization have been set in *Stulz (2005)*. The securities laws, disclosure, and national capital markets in the age of financial globalization have been described in *Stulz (2009)*. The going public decision and the development of financial markets have been researched in *Subramanyam, Titman (1999)*. A comparison of current approaches to the identification of the unexpected accruals has been done in *Thomas, Zhang (1999)*. The question: What drives the initial market performance of the *Italian IPOs*?, has been replied during an empirical investigation on the underpricing and price support in *Arosio, Giudici, Paleari (2000)*. The problem: Why do (or did?) the Internet-stock *IPOs* leave so much money on the table?, has been considered in *Arosio, Giudici, Paleari (2001)*. The privatization versus private sector initial public offerings in *Poland* have been researched in *Aussenegg (2000)*. The accuracy of the price-earnings and discounted cash flow methods of the *IPO* equity valuation has been found in *Berkman, Bradbury, Ferguson (2000)*. The treasury auctions: have been researched in *Binmore, Swierzbinski (2000)*. The question: Do underwriters encourage the stock flipping?, including a new explanation for the under-pricing of *IPOs*, has been answered in *Boehmer, Fishe (2000)*. The equilibrium rationing in the initial public offerings of equity has been researched in *Boehmer, Fishe (2001)*. The problem: Who receives the *IPO* allocations?, has been researched, conducting the analysis of 'regular' investors, in *Boehmer, Fishe (2005)*. The identification of the hot and cold *IPO* markets has been done, using a regime switching model, in *Brailsford, Heaney, Powell, Shi (2000)*. The modeling of the behavior of the new issue market has been completed in *Brailsford, Heaney, Shi (2004)*. The post-issue market performance of the *IPOs* in *P. R. China's* new stock markets has been studied in *Chen, Firth, Kim (2000)*. The information effects of analyst activity at the announcement of the new equity issues have been considered in *D'Mello, Ferris (2000)*. The timing of the initial public offerings has been discussed in *Draho (2000)*. The factors, affecting the investment bank initial public offering market share, have been listed in *Dunbar (2000)*. The withdrawn *IPOs* that return to the market for a second time have been researched in *Dunbar, Foerster (2008)*. The ownership structure and initial public offerings in the small economies such as Portugal have been studied in *Duque, Almeida (2000)*. The research articles cycle by *B Espen Eckbo* presents an objective analysis on the *IPO* returns. The resolution of the new issues puzzle has been suggested in *Eckbo, Masulis, Norli (2000)*. The leverage, liquidity, and long-run *IPO* returns have been researched in *Eckbo, Norli (2001)*. The liquidity risk, leverage, and long-run *IPO* returns have been analyzed in *Eckbo, Norli (2002, 2005)*. The corporate finances have been discussed in *Eckbo (2008)*. The question: When the underwriter is the market maker, accenting on the examination of trading in the *IPO* aftermarket?, has been replied in *Ellis, Michaely, O'Hara (2000)*. The shares trading at the *Nasdaq* stock exchange has been researched in *Ellis, Michaely, O'Hara (2002)*. An empirical examination of the *Italian* situation with the *IPOs*, including the asymmetric information flows and the underpricing, has been conducted in *Fabrizio (2000)*. The capital markets have been studied in *Foerster (2000)*. An equilibrium theory of rationing has been proposed in *Gilbert, Klemperer (2000)*. The question: Does the presence of venture capitalists improve the survival profile of *IPO* firms?, has been answered in *Jain, Kini (2000)*. The initial and after market performances of the *IPOs* in the emerging markets, using the evidences from the *Istanbul* stock exchange in *Turkey*, have been researched in *Kiymaz (2000)*. The prices, liquidity, and the information content of trades have been investigated in *Koskie, Michaely (2000)*. The busted *IPOs* and windows of misopportunity have been considered in *Lewis, Seward, Foster-Johnson (2000)*. The investments at the *German* stock exchanges have been evaluated in *Löffler (2000)*. The performance of the shares by the *Deutschen Telekom AG* at the *German* stock exchanges has been researched in *Reuschenbach (2000)*. An empirical study on the benchmark - sensitivity of the *IPO*-long-run performance in *Germany* has been completed in *Sapusek (2000)*. The timing of the initial public offerings has been investigated in *Schultz (2000)*. The pseudo market timing and the long-run underperformance of *IPOs* have been studied in *Schultz (2001)*. The question: Do the individuals closest to the *Internet* firms believe they are overvalued?, has been replied in *Schultz, Zaman (2001)*. The *Internet* direct public offerings have been regarded as the new opportunities for the small business capital finance in *Sinclair (2000)*. The cycle of research papers by *Ann E. Sherman* has been written with the particular accent on the *IPO* methods. The numerous advantages of the *IPO* book building method have been listed in *Sherman (2000)*. The global trends in the *IPO* methods, comparing the book building versus the auctions, have been analyzed in *Sherman (2001, 2003)*. The *IPO* underpricing and participation limits with the costly information have been researched in *Sherman, Titman (2002)*. The problem on the control as a motivation for the underpricing together with a comparison of the dual- and single- class *IPOs* has been researched in *Smart, Zutter (2000)*. The long-run stock performance of the *German* initial public offerings and seasoned equity issues have been considered in *Stehle, Ehrhardt, Przyborowsky (2000)*. The essays on the initial public offerings, including the empirical findings from the *Helsinki* stock exchange, have been written by *Westerholm (2000)*. The *IPO*-related organizational change and the long-term performance have been studied in *Von Eije, de Witte, van der Zwaan (2000)*. The problems on the evolution of overconfidence and the entrepreneurs have been analyzed in *Bernardo, Welch (2001)*. An empirical analysis on the venture capital and the *IPO* lockup expiration have been completed in *Bradley, Jordan, Ha-Chin Yi, Roten (2001)*. The partial adjustment to the public information and the *IPO* underpricing have been studied in *Bradley, Jordan (2002)*. The *IPOs* have been discussed in *Bradley, Jordan, Ritter (2003)*. The analyst behavior following the *IPOs*, including the "bubble period" evidence, has been analyzed in *Bradley, Jordan, Ritter (2008a)*. The question: Are there long-run implications of analysts' coverage for the *IPOs*?, has been replied in *Bradley, Chan, Kim, Singh (2008b)*. The empirical analysis on the option to withdraw the *IPOs* during the premarket time period has been conducted in *Busaba, Benveniste, Guo (2001)*. The effects of founder management among the *IPO*-stage new ventures have been characterized in *Certo, Covin, Daily, Dalton (2001)*. The *IPOs* underpricing and the *IPOs* long-term performance in *P. R. China* have been researched in *Chan, Wang, Wei (2001)*. The *IPO* initial returns and the underwriter reputation in the 1990s have been researched in *Cooney, Singh, Carter, Dark (2001)*. The question: Do the *IPO* charters maximize the firm value? Has been discussed in the frames of the antitakeover protection schemes in the *IPOs* in *Daines, Klausner (2001)*. The problem: Why do the option introductions depress the stock prices?, has been answered during an empirical study on the diminishing short-sale constraints in *Danielsen, Sorescu (2001)*. The research on the *IPO* performance and earnings expectations with the application of *French* evidences has been conducted in *Degeorge, Derrien*

(2001a). The long term performance of stocks at the stock exchanges in France has been investigated in *Degeorge, Derrien (2001b)*. The problem: Why was the *Internet IPO* underpricing so severe?, has been replied in *DuCharme, Rajgopal, Sefcik (2001)*. An empirical investigation on the underpricing of the venture and non-venture capital *IPOs* has been completed in *Francis, Hasan (2001)*. The stocks performances at the stock exchanges have been researched in *Gerke, Fleischer (2001)*. The theory and evidences on the underpricing and entrepreneurial wealth losses have been presented in *Habib, Ljungqvist (2001)*. The liquidity and the initial public offering underpricing problems have been researched in *Hahn, Ligon (2004)*. The question: Do the investment banks compete in the *IPOs*?, has been answered in *Hansen (2001)*. The managerial optimism and the corporate finance have been studied in *Heaton (2001)*. The initial public offerings in the hot and cold markets have been researched in *Helwege, Liang (2001, 2004)*. The clustering of the initial public offerings, information revelation and underpricing have been investigated in *Hoffmann-Burchardi (2001)*. The law and finance analysis of the initial public offerings has been completed in *Holmén, Högfeldt (2001)*. The divergence of opinions, uncertainty, and quality of initial public offerings have been reviewed in *Houge, Loughran, Suchanek, Yan (2001)*. The decomposition and testing of the long-term returns in the case of the *Danish IPOs* have been made in *Jakobsen, Sørensen (2001)*. A number of research articles by *Tim Jenkinson* has been written with a particular attention to the *European IPOs*. The theory and multiple evidences on how companies raise the equity finance have been documented in *Jenkinson, Ljungqvist (2001)*. The *European IPO* book-building has been selected as a main theme of discussion in *Jenkinson, Jones (2004)*. The important question: Why are the *European IPOs* so rarely priced outside the indicative price range?, has been raised in *Jenkinson, Morrison, Wilhelm (2006)*. The economics of the *IPO* stabilization, syndicates and naked shorts has been described in *Jenkinson, Jones (2007)*. The *12* secrets of investing in the *IPOs* have been revealed in *Killian, Smith, Smith (2001)*. The interesting research articles cycle by *Michelle Lowry* explains the *IPO* valuation techniques. The biases in the *IPO* pricing process have been characterized in *Lowry, Schwert (2001)*. The *IPO* market cycles, including the problem of sequential learning on the *IPO* bubbles, have been characterized in *Lowry, Schwert (2002)*. The litigation risk and the *IPO* under-pricing have been considered in *Lowry, Shu (2002)*. The question: Why does the *IPO* volume fluctuate so much?, has been answered in *Lowry (2003)*. The stocks performances at the stock exchanges have been researched from the *German* perspective in *Mager (2001)*. The technological innovation and the initial public offerings have been correlated in *Maksimovic, Pichler (2001)*. The question: Are the *IPOs* underpriced?, has been replied in *Purnanandam, Swaminathan (2001)*. The underpricing and overpricing of the

IPOs in the *German* capital markets have been described in *Rehkugler, Schenek (2001)*. The modification of the company property rights structure at the stock exchange has been discussed in *Schatt, Roy (2001)*. The activities by the company's stock holders during the *IPO* have been analyzed in *Schatt, Broye (2003)*. The question: Do the individual closest to the *Internet* firms believe they are overvalued?, has been answered in *Shultz, Zaman (2001)*. The research articles by *Sentis* explain the recent trends in the *IPOs* from the *French* perspective. The operation performances of companies during the *IPO* in *France* in *1991 - 1995* have been researched in *Sentis (2001)*. The initial public offerings, including the good, the bad and the liars problems have been investigated in *Sentis (2002)*. The international approach to the introduction of various companies at the stock exchange has been analyzed in *Sentis (2004)*. The discussions on the ownership structure and the performance of firms with the evidences from *France* have been presented in *Severin (2001)*. The *IPOs* and the product quality problems have been correlated in *Stoughton, Wong, Zechner (2001)*. The question: What determines the *IPO* gross spreads in *Europe*?, has been replied in *Torstila (2001)*. The clustering of the *IPO* gross spreads together with the international evidences has been considered in *Torstila (2003)*. The post-*IPO* capital expenditures and the market feedback have been studied in *Van Bommel, Vermaelen (2001)*. The initial returns and the long-run performance of private equity-backed initial public offerings on the *Amsterdam* stock exchange have been described in *Van Frederikslust, Van der Geest (2001)*. The question: Why do the *IPO* underwriters allocate the extra shares, when they expect to buy them back?, has been replied in *Zhang (2004)*. An optimal *IPO* mechanism has been suggested in *Biais, Bossaerts, Rochet (2002)*. The *IPO* auctions: *English, Dutch, ... French* and *Internet* have been researched in *Biais, Faugeron-Crouzet (2002)*. The detection of the financial time series turning points has been conducted in the frames of the new *CUSUM* approach in application to the *IPO* cycles, in *Blondell, Hoang, Powell, Shi (2002)*. The problem on the choice of the *IPO* versus the takeover with the empirical evidences has been researched in *Brau, Francis, Kohers (2002)*. The initial public offerings together with the evidences from the *British, Swedish* and *French* property share markets have been characterized in *Brounen, Eichholtz (2002)*. The prices and the winners curse have been studied in *Bulow, Klemperer (2002)*. The strategic share allocation, information content of pre-listing characteristics, listing-day trading activities, and under-pricings of *IPOs* have been researched in *Cheng, Mak, Chan (2002)*. The valuation of *IPOs* by the investment banks and the stock market have been investigated in *Deloof, de Maeseneire, Inghelbrecht (2002)*. The auctions vs. the book building in addition with the control of underpricing in the hot *IPO* markets have been discussed in *Derrien, Womack (2002)*. The use of the forecasts of earnings to simultaneously estimate the growth and the rate of return on the equity investments have been researched in *Easton, Taylor, Shroff, Sougiannis (2002)*. The *PE* rations, *PEG* rations, and estimating the implied expected rate of return on the equity capital have been selected as the topics of the research in *Easton (2004)*. The use of the forecasts of earnings to estimate and compare the cost of capital across the regimes has been discussed in *Easton (2006)*. The effect of the analysts' optimism on the estimates of the expected rate of return, implied by the earnings forecasts, has been characterized in *Easton, Sommers (2007)*. The *IPO* at the stock exchange in *France* have been studied in *Faugeron-Crouzet, Ginglinger (2002)*. The board composition, share ownership, and 'underpricing' of the *UK IPO* firms have been reviewed in *Filatotchev, Bishop (2002)*. The question: How the stock flippers affect the *IPO* pricing and stabilization?, has been raised in *Fishe (2002)*. The divergence of opinion and the *IPO* long-term performance have been investigated in *Gao, Mao, Zhong (2002)*. The pricing of the initial public offerings in *Europe* has been researched in *Giudici, Roosenboom (2002)*. The pricing of the initial public offerings on the 'new' *European* stock markets has also been investigated in *Giudici, Roosenboom (2005)*. The divergence of opinion, uncertainty, and quality of the initial public offerings have been considered in *Houge, Loughran, Suchanek, Xuemin Yan (2002)*. The ownership control and the operating performance in an emerging market with the multiple evidences from the *Thai IPO* firms have been discussed in *Kim, Kitsabunnarat, Nofsinger (2002)*. The underpricing and the long-term performance of the initial public offerings at *Germany's* new market in *1997 – 2001* have been researched in *Kiss, Stehle (2002)*. The ownership structure pre- and post - *IPOs* and the operating performance of the *JASDAQ* companies have been researched in *Kutsuna, Okamura, Cowling (2002)*. The question: What is special about the roles of underwriter reputation and market activities in the initial public offerings?, has been replied in *Logue, Rogalski, Seward, Foster-Johnson (2002)*. A survey of recent literature on the multi unit auctions has been written by *Martimort (2002)*. The corporate supervision in the *Netherlands* has been described in *Moerland (2002)*. The *IPOs* underpricing at the stock exchanges and the reputation of the underwriters in *Germany* have been discussed in *Schiereck, Wagner (2002)*. The cross-section of the *European IPO* returns has been analyzed in *Schuster (2002)*. The *IPOs* insights from the seven *European* countries have been presented in *Schuster (2003)*. The auctioning divisible goods problem has been discussed in *Wang, Zender (2002)*. The endogeneity of the *IPOs* being underwritten by the prestigious underwriters has been highlighted in *Xie (2002)*. The residual income risk, intrinsic values and share prices have been described in *Baginski, Wahlen (2003)*. The law firm prestige and the performance in the *IPOs*, including the problem of the underwriters' counsel as gatekeeper, have been analyzed in *Barondes, Nyce, Sanger (2003)*. Some immodest proposals on the *IPO* reform have been made in

Bartlett, Shulman (2003). The institutional participation in the *IPOs* has been discussed in *Binay, Pirinsky (2003).* The strategic price discounting and rationing in the uniform price auctions have been studied from the *French* point of view in *Bourjade (2003, 2008)*. The all-stars analyst turnover, investment bank market share, and the performance of the initial public offerings have been analyzed in *Clarke, Dunbar, Kahle (2003)*. The auctions versus the book building and the control of underpricing in hot *IPO* markets have been considered in *Derrien, Womack (2003).* The *25* years of the *Dutch IPOs*, including the examination of frequently cited *IPO* anomalies within the main sectors and during the hot and cold issue periods, have been discussed in *Doeswijk, Hemmes, Venekamp (2005)*. The *Italian* perspective on the *IPO* underpricing and after-market liquidity has been given in *Ellul, Pagano (2003)*. The short and long-run performances of high-tech initial public offerings in the *European* new *IPO* markets have been analyzed in *Goergen, Khurshed, McCahery, Renneboog (2003)*. The initial and aftermarket performances of *IPOs* with the evidences from the *Athens* stock exchange have been given in *Gounopoulos (2003)*. The contingent effects of inter-organizational partnerships on the *IPO* success have been described in *Gulati, Higgins (2003)*. The effects of upper echelon affiliations on the underwriter prestige have been found in *Higgins, Gulati (2003)*. The strategic underwriting in the initial public offerings has been considered in *Hoberg (2003)*. The analysts forecasts examination, including the biased earnings forecasts, has been done in *Hong, Kubik (2003)*. The *IPO* structuring problem with the empirical evidences on the primary and secondary portion has been studied in *Huyghebaert, Van Hulle (2003)*. The privatization of the initial public offerings, using the *Polish* experience, has been researched in *Jelic, Briston (2003)*. The auctions versus the book-building methods in the *Japanese IPOs* have been discussed in *Kaneko, Pettway (2003)*. The question: Are the financial assets priced locally or globally?, has been answered in *Karolyi, Stulz (2003)*. The post-*IPO* performance and the exit of venture capitalists have been reviewed in *Kraus, Burghof (2003)*. The recommendations on the choice of the investment bank, when going public, have been made in *Lemmens (2003, 2007)*. The *Internet* & capital raising as a perfect match have been discussed in *Lemmens (2004, 2007).* The underpricing or overvaluation of the initial returns have been researched, using the evidences from the *EASDAQ* and *Euro N M,* have been presented in *Manigart, de Maeseneire (2003).* The long term performance of initial public offerings in the *German* capital markets has been investigated in *Neuhaus, Schremper (2003)*. The *Greek* initial public offerings in *1994 – 2002* have been analyzed in *Nounis (2003)*. The rise and fall of *Internet* stock prices have been estimated in *Ofek, Richardson (2003)*. The evaluation of the riskiness of the initial public offerings in *1980 – 2000* has been done in *Peristiani (2003)*. The underpricing, stock allocation, ownership structure and post-listing liquidity of newly listed firms have been researched in *Pham, Kalev, Steen (2003)*. The research articles series by *Roosenboom* includes the thoughtful discussions on the *IPOs* issues from the *Dutch* perspective. The takeover defenses and the *IPO* firm value in the *Netherlands* have been considered in *Roosenboom, van der Goot (2003)*. The earnings management and the initial public offerings have been analyzed, using the evidences from the *Netherlands*, in *Roosenboom, van der Goot, Mertens (2003)*. The effect of ownership and control on the market valuation has been characterized, applying the evidences from the initial public offerings in the *Netherlands*, in *Roosenboom, van der Goot (2005)*. The question: How do the underwriters value the *IPOs*?, has been replied, using an empirical analysis of the *French IPO* market, in *Roosenboom (2007)*. The control as a motivation for the underpricing, have been researched, completing a comparison on the dual- and single-class *IPOs*, in *Smart, Zutter (2003)*. The post-*IPO* capital expenditures and the market feedback have been investigated in *Van Bommel, Vermaelen (2003)*. The risk, quality of intermediaries and legal liability in the *Netherlands IPO* market have been researched in *Van der Goot (2003).* The question: Do the expert informational intermediaries add value?, has been replied, using the evidences from the auditors in the microcap *IPOs*, in *Weber, Willenborg (2003)*. The monitoring as a motivation for the *IPOs* underpricing has been studied in *Arugaslan, Cook, Kieschnick (2004)*. The shareholder diversification and the *IPOs* problems have been discussed in *Bodnaruk, Kandel, Massa, Simonov (2004)*. The initial public offerings have been researched, using the evidences from the *UK*, in *Burrowes, Jones (2004)*. The *IPO* underpricing in *Italy* has been characterized in *Cassia, Giudici, Paleari, Redondi (2004)*. The valuation of firms listed on the *Nuovo Mercato* has been described in *Cassia, Paleari, Vismara (2004)*. The *IPOs* valuation accuracy and infinity horizon forecast, using the empirical evidences from *Europe*, have been discussed in *Cassia, Vismara (2009)*. The long-run abnormal return after the *IPOs* and optimistic analysts' forecasts have been found to exist in *Chahine (2004a)*. The *IPOs* underpricing versus the gross spreads have been researched, using the new evidences on the effects of sold shares at the time of *IPOs*, in *Chahine (2004b)*. The offering price clusters and the underpricing in the *US* primary market have been considered in *Chiang, Harikumar (2004)*. The question: Do the initial public offering firms purchase the analysts' coverage with the underpricing?, has been clearly answered in *Cliff, Denis (2004)*. The development of the secondary market liquidity for the *NYSE*-listed *IPOs* has been described in *Corwin, Harris, Lipson (2004)*. The value enhancing capital budgeting and the firm-specific stock return variation have been characterized in *Durnev, Morck, Yeung (2004)*. The question: How do the firms and underwriters choose each other?, has been replied in *Fernando, Gatchev, Spindt (2004)*. The capital markets have been precisely characterized in *Foerster (2004)*. A legal and economic analysis of the preferential allocation of shares in the initial public offerings, including the spinning and underpricing effects, has been completed in *Griffith (2004)*. A proposal to restrict the manipulative strategy in the *IPOs* auctions has been discussed in *Ganor (2004)*. The liquidity and initial public offering underpricing have been studied in *Hahn, Ligon (2004)*. The laddering in the initial public offerings has been indentified in *Hao (2004)*. The initial public offerings in the hot and cold markets have been characterized in *Helwege, Liang (2004)*. The strategic underwriting in the initial public offers has been investigated in *Hoberg (2004)*. The aftermarket performance of the initial public offerings in *Canada* has been researched in *Kooli, Suret (2004)*. The role of allocation rules in the divisible good auctions has been described in *Kremer, Nyborg (2004a)*. The underpricing and market power in the uniform price auctions have been discussed in *Kremer, Nyborg (2004b)*. The question: Why does the book-building drive out the auction methods of the *IPO* issuance?, has been researched, using the evidences from *Japan,* in *Kutsuma, Smith (2004)*. The short sale constraints and overpricing have been investigated in *Lamont (2004)*. The grandstanding, certification and the underpricing of the venture capital backed *IPOs* have been discussed in *Lee, Wahal (2004)*. The law and economics of the *IPO* favoritism and regulatory spin have been researched in *Levy (2004)*. The *IPO* underpricing und long term performance in *Germany* have been investigated in *Lubig (2004)*. The question: How do the exchanges select the stocks for the option listing has been discussed in *Mayhew, Mihov (2004)*. The short sale constraints, overvaluation, and introduction of options have been selected as the topics of research in *Mayhew, Mihov (2005)*. A proposal to restrict the manipulative strategy in the auction *IPO's* has been made in *Mira (2004)*. The grandstanding, certification and the underpricing of venture capital backed *IPOs* have been discussed in *Peggy, Wahal (2004)*. The discussion on the brokers as the network "architects" in the *IPOs* deals on the *US IPO* market has been conducted in *Pollock, Porac, Wade (2004)*. The subject on the signalling value of the *IPOs'* prestigious affiliates has been investigated in *Pollock, Chen, Jackson, Hambrick (2005)*. The research articles series by *Matt Pritsker* formulates the theory of *IPO* underpricing and underperformance. The implications for the equilibrium asset returns, shock absorption and liquidity in the case of big investors have been discussed in *Pritsker (2004)*. A fully-rational liquidity-based theory of *IPO* underpricing and underperformance has been created in *Pritsker (2004, 2005, 2006)*. The problem: Are the *IPOs* really underpriced has been evaluated in *Purnanandam, Swaminathan (2004)*. The *IPO* stocks at the stock exchanges in *Germany* have been estimated in *Rath, Tebroke, Tietze (2004)*. The problem: Are the *IPO* allocations for the sale?, has been researched, using the multiple evidences from the mutual fund industry, in *Reuter*

(2004). The nanotech *IPOs* have been investigated in *Rice (2004)*. The use of the electronic *Dutch* auction in the case, when the nanotech company goes public, has been discussed in *Rice (2006)*. The performance of the venture-backed *IPOs* on the *Europe's* new stock markets has been researched with the application of the evidences from *France, Germany* and the *UK* in *Rindermann (2004)*. The valuation of new firms in the uncertain markets has been studied in *Sanders, Boivie (2004)*. The effect of bank relationships on the firm's cost of equity in its *IPO* has been selected to research in *Schenone (2004)*. The operating performance of the *French IPO* firms has been researched in *Serve (2004)*. The *IPO* market timing has been discussed in *Alti (2005)*. The problem: How persistent is the impact of market timing on capital structure?, has been researched in *Alti (2006)*. The long-run performance of the initial public offerings in the *Spanish* capital market has been considered in *Alvarez, Gonzalez (2005)*. The right timing of the initial public offerings has been set in *Benninga, Helmantel, Sarig (2005)*. The problem on the forecasting of the market capitalization prior to an initial public offering has been researched, using the *Google's* evaluation as an example, in *Berg, Neumann, Rietz (2005)*. The stock market liquidity and the cost of issuing equity have been discussed in *Butler, Grullon, Weston (2005).* The *Dutch* auction technique has been well described, using the *Google IPO* as an example, in *Choo (2005)*. The role of the *IPO* underwriting syndicates, including the pricing, information production, and underwriter competition, has been investigated in *Corwin, Schultz (2005)*. The question: Who leaves the money on the table?, has been answered during the research on the *IPO* pricing in the hot market conditions in *Derrien (2005)*. The initial public offerings of the listed firms have been studied in *Derrien, Kecskés (2006)*. The venture capitalist certification of the *IPOs* has been described in *Dolvin (2005)*. The long-run performance of the initial public offerings has been researched, applying the evidences in *Switzerland*, in *Drobetz, Kammermann, Wälchli (2005)*. The *Italian* perspective on the corporate and investment banking has been provided in *Forestieri (2005)*. The *Dutch* auction approach as an alternative to the firm commitment underwriting has been discussed with particular attention to the characteristic example of the *Google, Inc* in *Hess (2005)*. The moral hazard and the initial public offering problems have been researched in *Hurt (2005)*. The question: What the *Google* can't tell us about the *Internet* auctions (and what it can)?, has been replied in *Hurt (2006)*. A closer examination of the problem: Are the *IPOs* underpriced?, has been conducted in *Jagannathan, Gao (2005)*. The *IPO* industry clustering has been discussed in *Jain, Kini (2005)*. The long-run *IPO* performance analysis of the *German* and *Spanish* family-owned businesses has been analyzed in *Jaskiewicz, Gonzàlez, Menéndez, Schiereck (2005)*. The inelastic banking capacity in the primary issue market has been researched, showing the situations, when the good *IPOs* may draw into the bad

IPOs, in *Khanna, Noe, Sonti (2005, 2008)*. The asymmetric information flows in the *IPO* aftermarket has been detected in *Li, McInish, Wongchoti (2005a)*. The underpricing, share retention, and *IPO* aftermarket liquidity have been researched in *Li, Zheng, Melancon (2005b)*. The application of the tilting of the supply schedule to enhance the competition in the uniform price auctions has been discussed in *LiCalzi, Pavan (2005)*. The geography of the equity analysis has been discussed in *Malloy (2005)*. The *Greek IPO* initial returns and the price cap constraints have been studied, using the evidences from the *Athens* stock exchange in *1994-2003*, in *Nounis (2005)*. The initial returns, long run performance, and characteristics of issuers have been studied, researching the differences in the *Indian IPOs* after the fixed price and book building processes, in *Pandey (2005)*. The rationing in the *IPOs* has been explained in *Parlour, Rajan (2005)*. The rational *IPO* waves have been detected in *Pastror, Veronesi (2005)*. The research problems on the entrepreneurial learning, the *IPO* decision, and the *post-IPO* drop in the firm profitability have been described in *Pastor, Taylor, Veronesi (2009)*. The question: Who benefits from the *IPO* underpricing?, has been answered with the use of the evidences from the hybrid book building offerings, in *Pons-Sanz (2005)*. The global trends in the *IPO* methods have been investigated, comparing the book building technique versus the auctions with the endogenous entry technique, in *Sherman (2005)*. The problem of the natural selection in the financial markets has been researched *Yan (2005)*. The question: Is the *Dutch* auction *IPO* a good idea?, has been replied in *Anand (2006)*. The underpricing and the aftermarket performance of the initial public offerings in the case of *Austria* have been researched in *Aussenegg (2006)*. The *IPO* pricing with the book building and a *when-issued* market have been discussed in *Aussenegg, Pichler, Stomper (2006)*. The entrepreneur's choice between the private ownership and the public ownership has been selected for a discussion in *Boot, Gopalan, Thakor (2006)*. The analysts' selective coverage and the subsequent performance of newly public firms have been discussed in *Das, Guo, Zhang (2006)*. The valuation issues have been discussed in *Damodaran (2006)*. The *IPO* underpricing and the after-market liquidity have been researched in *Ellul, Pagano (2006)*. A survey of the *European IPO* market has been conducted in *Gajewski, Gresse (2006)*. The explanation of the diversity in the shareholder lockup agreements has been given in *Goergen, Renneboog, Khurshed (2006)*. The new development of the *Chinese* capital market have been characterized in *Hong (2006)*. The question: Why do the *IPO* auctions fail?, has been replied in *Jagannathan, Sherman (2006)*. The strength of analyst coverage, following the *IPOs*, has been analyzed in *James, Karceski (2006)*. The earnings management and the long-run performance of the *Spanish* initial public offerings have been documented in *Pastor-Llorca, Poveda-Fuentes (2006)*. The theory of corporate finance has been proposed in *Tirole (2006)*.The *IPO* investment strategies and the pseudo market timing have been researched in *Trauten, Schulz (2006)*. The cycles in the *IPO* market have been detected in *Yung, Colak, Wang (2006)*. The information uncertainty and the analyst forecast behavior have been investigated in *Zhang (2006)*. The effects of "risk-factor" disclosure on the pricing of the *IPOs* and the long run returns have been characterized in *Arnold, Fishe, North (2007)*. The simple *FAQs* about the *Dutch* auctions as well as the *Google IPO* have been answered in *Berkeley (2007)*. The currying favors to win the *IPO* mandates have been listed in *Derrien (2007)*. An event study approach to the short-sale constraints and the idiosyncratic volatility puzzle has been revealed in *Doran, Jiang, Peterson (2007, 2009)*. The differences in the institutional and legal environments, which may explain the cross-country variations in the *IPO* underpricing, have been discussed in *Hopp, Dreherdo (2007)*. The blank check *IPOs* have been considered in *Jog, Sun (2007)*. The question: Why are the *IPOs* underpriced?, has been answered, applying the evidences from *Japan's* hybrid auction-method offerings, in *Kerins, Kutsuna, Smith (2007)*. The problems on the adverse selection, public information and underpricing in the *IPOs* have been considered in *Leite (2007)*. The research article by *Paleari* deserve to be mentioned in view of the significant contribution to the understanding of the *IPO* pricing. The over-optimism in the case of the *IPOs* pricing has been described in *Paleari, Vismara (2007)*. The going public decision making process, has been studied with the evidences from the *IPOs* in *Italy* and in the *UK* in *Paleari, Pellizzoni, Vismara (2008)*. The explanation on the simultaneous consolidation and fragmentation of the *Europe's* stock markets has been given in *Paleari, Ritter, Vismara (2010)*. The financial statement analysis and the security valuation have been studied in *Penman (2007)*. The discussion: How do the underwriters value the *IPOs*?, has been conducted with an empirical analysis of the *French IPO* market, in *Thomas (2007)*. The hot issue *IPO* markets and its consequences for the issuing firms and investors in the case of the *UK* market in *2000* have been described in *Toniato (2007)*. The *IPO* underpricing, firm quality, and analyst forecasts have been discussed in *Zheng, Stangeland (2007)*. The credit ratings and *IPO* pricing problems have been researched in *An, Chan (2008)*. The *IPOs* in the global capital markets have been discussed in *Casotti, Motta (2008)*. The network embeddedness, specialization choices and performance in the investment banking industry have been in *Farina (2008)*. The question: Do the banks price their informational monopoly?, has been answered in *Hale, Santos (2008)*. The *Google IPO* has been described in *Hild (2008)*. The problem: Do the investors overweight the personal experience?, has been uncovered, using the evidence from the *IPO* subscriptions, in *Kaustia, Knupfer (2008)*. The subscription patterns, offer prices and the underpricing of the *IPOs* have been discussed in *Khurshed, Pande, Singh (2008)*. The grading, transparent books and initial public offerings have been researched in *Khurshed, Paleari, Pande,* *Vismara (2011)*. The price of rapid exit in the venture capital-backed *IPOs* has been estimated in *Rossetto (2008)*. An international perspective on the motivations for the public equity offers has been provided in *Kim, Weisbach (2008)*. A globally unique concept on the grading of the initial public offerings in the *India's* capital markets has been formulated in *Poudyal (2008)*. The analysis into the *IPO* underpricing and clustering in the *Hong Kong* equity market has been done in *Yongyuan Qiao (2008)*. The cycles in the *IPO* market have been studied in *Yung, Colak, Wang (2008)*. The strategic waiting periods in the *IPO* markets has been identified in *Colak, Gunay (2011)*. The short-term timing of the initial public offerings has been researched in *Bouis (2009)*. The *UK IPO* underpricing and venture have been described in *Coakley, Hadass, Wood (2009)*. The question: How do the investment banks value the *IPOs*?, has been answered in *Deloof, De Maeseneire, Inghelbrecht (2009)*. An event study of the *Shanghai* stock exchange *A-shares* has been conducted with the precise characterization of the impact on the *IPO* performance by the reforming *IPO* allocation regulations in *Jiang, Leger (2009)*. The shareholding by the venture capitalists and patent applications of the *Japanese* firms in the pre- and post- *IPO* periods has been described in *Zhang (2009)*. The venture capital affiliation with the underwriters and the underpricing of the initial public offerings in *Japan* have been researched in *Arikawa, Imad'eddine (2010)*. The question: Does the university affiliation reduces the uncertainty of the *IPOs*?, has been answered in *Bonardo, Paleari, Vismara (2010)*. The valuation of the university-based firms, including the effects of academic affiliation on the *IPO* performance, has been researched in *Bonardo, Paleari, Vismara (2010)*. The role of the international markets in the *IPOs* has been discussed in *Caglio, Weiss-Hanley, Marietta-Westberg (2010)*. The *IPO* pricing has been investigated in *Cogliati, Paleari, Vismara (2010)*. The strategic *IPOs* and the product market competition have been studied in *Chod, Lyandres (2010)*. The information content of the *IPO* grading has been researched in *Deb, Marisetty (2010)*. The venture capital, ownership structure, accounting standards and *IPO* underpricing have been studied, using the evidences from *Germany*, in *Elston, Yang (2010)*.The detection of the hot and cold cycles, using the *Markov* regime switching model has been made, applying the evidences from the *Chinese A*-share *IPO* market in *Guo, Brooks, Shami (2010)*. The competitive effects of the *IPOs* have been analyzed in *Hsu, Reed, Rocholl (2010)*. The absorptive capacity and the post-acquisition inventor productivity of the companies have been researched in *Hussinger (2010, 2012)*. The question: Why don't issuers choose the *IPO* auctions?, has been answered, considering the complexity of indirect mechanisms, in *Jagannathan, Jirnyi, Sherman (2010)*. An empirical analysis on the *IPO* underpricing and the distance of company from the stock exchange has been completed in *Pennacchio, Del Monte, Acconcia (2010)*. The underpricing and the firms' distance from the financial centre, have been studied, using the evidences from the three *European* countries, in *Acconcia, Del Monte, Pennacchio (2011)*. The causal effect of the venture capital backing on the underpricing of the Italian *IPOs* has been documented in *Pennacchio (2013)*. The after-market performance of the initial public offerings in the *Indian IPO* market in *2002 - 2006* has been analyzed in *Sahoo, Rajib (2010)*. The *IPO* market cycles in *P. R. China*, have been researched, using the analysis on both the investor sentiment and the government's market timing, in *Shao, Wu, Qin, Wang (2010)*. The results of the frequent *IPO* investments have been provided in *Yao-Min Chiang, Hirshleifer, Yiming Qian, Sherman (2010)*. The impact of the initial public offering coalition on the deal completion has been evaluated in *Boeh, Southam (2011)*. The *IPOs* with and without the allocation discretion, have been researched, using the empirical evidences, in *Bubna, Prabhala (2011)*. The rise of the *IPO* activity around the *World* has been covered in *Doidge, Karolyi, Stulz (2011)*. The role by the private equity backing in the *Italian IPOs*, including the subjects of the underpricing, wealth loss for the pre-existing shareholders and cost of going public, has been researched in *Ferretti, Meles (2011)*. The monetary policy and share pricing business in *Nigeria* have been studied in *Adesoye, Atanda (2012)*. The different analysts reports on the orphan *IPOs* versus the non-orphan *IPOs* have been analyzed in *Boissin (2012)*. The success factors for taking the firms public with the *SPACs* have been discussed with particular attention to the fast track *IPO* in *Cumming, Hass, Schweizer (2012)*. A comparative analysis of the *SPACs* and the *IPOs* has been made in *Datar, Emm, Ince (2012)*. The application of the mandatory *IPO* grading to improve the pricing efficiency has been described in *Jacob (2012)*. The question: What the all-cash companies tell us about the *IPOs* and the acquisitions?, has been replied in *Rodrigues, Stegemoller (2012)*. An analysis of returns from stocks with low price/earnings ratio has been completed in the frames of the study on the initial public offering of the stocks in *Brazil* in *Saturnino, Saturnino, Lucena, Caetano, dos Santos (2012)*. The analysts' forecast on the *IPO* firms during the global financial crisis has been discussed in *Chang-Yi Hsu, Jean Yu, Shiow-Ying Wen (2013)*. The *IPO* cycles in *China's A*-share *IPO* market have been detected, using the three regimes of the *Markov* switching model, in *Zhiqiang Hu, Yizhu Wang (2013)*. The institutional changes in the *SPACs* have been described in *Lakicevic, Shachmurove, Vulanovic (2013)*.

In this empirical research, we prefer to limit our research considerations by setting the boundary conditions: *The initial public offerings take place at the global stock exchanges in the diffusion-type financial systems in the imperfect highly volatile global capital markets with the induced nonlinearities.* Since the time, when the first *financial systems* were established to govern the money markets in *Bagehot (1873, 1897), Fisher (1892)*, the *diffusion theory* has been frequently applied to accurately characterize the *diffusion - type financial systems* in the *finances.* The multiple evidences of the fact that the *diffusion processes* have the considerable influences on the various *econophysical* and *econometrical parameters* of the *diffusion-type financial systems* have been described in *Bachelier (1900), Volterra (1906), Slutsky (1910, 1912, 1913, 1914, 1915, 1922a, b, 1923a, b c, 1925a, b, 1926, 1927a, b, 1929, 1935, 1937a, b, 1942), 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)*, *Akerlof, Stiglitz (1966), Rothschild, Stiglitz (1976), Stiglitz, Weiss (1981), Richiardi, Gallegati, Greenwald, Stiglitz (2007), Jaffee, Russell (1976)*, *Leland, Pyle (1977), Bernanke (1979, 2002, 2004, 2007, 2009a, b, c, d, e, 2010a, b, 2012a, b, 2013a, b, c, d, e, f, g, h, 2014), Bernanke, Blinder (1992), Bernanke, Gertler (1995), Bernanke, Reinhart (2004), Bernanke, Reinhart, Sack (2004), Bernanke, Blanchard, Summers, Weber (2013)*, *Shiller, Pound (1989), Conley, Hansen, Luttmer, Scheinkman (1997)*, *Stock, Watson (2002), Xiaohong Chen, Hansen, Carrasco (2009), Ledenyov D O, Ledenyov V O (2013f, g, h, i).*

The authors would like to make an additional comment that the *diffusion theory* in the *econophysics* has been frequently complemented by the numerous important research discoveries from the theoretical and experimental researches on the *diffusion phenomena* in the *physics, chemistry* and *mathematics* in *Abramenkov, Fogel', Slyozov, Tanatarov, O. P. Ledenyov (2012), Ledenyov V O, Ledenyov D O, Ledenyov O P (2012f), Ledenyov D O, Ledenyov V O (2012e).*

Finally, let us say that this short condensed research article has been written, keeping in the mind the following research topics discussion order:

1. The theories on the initial public offering of company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities;
2. The valuation of the initial public offering of company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities;
3. The underpricing of the initial public offering of company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities;
4. The long term performance of the initial public offering of company equity at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities;

5. The information absorption by the investors on the company equity value in time of the initial public offering at the stock exchanges in the imperfect highly volatile global capital markets with the induced nonlinearities.

Theories on initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Beginning the discussion on the initial public offerings, let us comment that, in *Europe*, the first *IPO* was the public offering of the *Vereenigde Oost-Indische Compagnie* (*Dutch East India Company*) in *The Netherlands* in *1602* in *Joseph Penso de la Vega (1668, 1996)*, *Wikipedia (2014)*, *Shiryaev (1998a)*. In the *United States*, the first *IPO* was the public offering of the *Bank of North America* around *1783* in *Wikipedia (2014)*. Let us continue the discussion on the theories and practices on the initial public offering, explaining the main reasons for the *IPOs*.

Welch, Ritter (2002) write: “The first question must be "*why do firms go public*?" In most cases, the primary answer is the desire to raise equity capital for the firm and to create a public market in which the founders and other shareholders can convert some of their wealth into cash at a future date. Nonfinancial reasons, such as increased publicity, play only a minor role for most firms: absent cash considerations, most entrepreneurs would rather just run their firms than concern themselves with the complex public market process. This still leaves the question of why *IPOs* are the best way for entrepreneurs to raise capital, and why the motivation to do an *IPO* is stronger in some situations or times (see Table 1) than in others. Stepping outside our own sample, *Gompers and Lerner (2001)* report that there were fewer *U.S. IPOs* from *1935 - 1959* than the *683* in *1969* alone, and *La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997)* report wide differences in *IPO* activity across countries.”

Welch, Ritter (2002) distinguish the two big categories of theories on the going public decisions: “**1. Life cycle theories:**

a) The first formal theory of the going public decision appeared in *Zingales (1995)*. He observed that it is much easier for a potential acquirer to spot a potential takeover target when it is public. Moreover, entrepreneurs realize that acquirers can pressure targets on pricing concessions more than they can pressure outside investors. By going public, entrepreneurs thus help facilitate the acquisition of their company for a higher value than what they would get from an outright sale. In contrast, *Black and Gilson (1998)* point out that entrepreneurs often regain control from the venture capitalists in venture capital-backed companies at the *IPO*. Thus, many *IPOs* are not so much exits for the entrepreneur as they are for the venture capitalists.

b) *Chemmanur and Fulghieri (1999)* develop the more conventional wisdom that *IPOs* allow more dispersion of ownership, with its advantages and disadvantages. *Pre-IPO* "angel" investors or venture capitalists hold undiversified portfolios, and therefore are not willing to pay as high a price as diversified public-market investors. There are fixed costs associated with going public, however, and proprietary information cannot be costlessly revealed—after all, small investors cannot take a tour of the firm and its secret inventions. Thus, early in its life cycle a firm will be private, but if it grows sufficiently large, it becomes optimal to go public.

c) Public trading per se has costs and benefits. *Maksimovic and Pichler (2001)* point out that a high public price can attract product market competition. Public trading, however, can in itself add value to the firm, as it may inspire more faith in the firm from other investors, customers, creditors, and suppliers. Being the first in an industry to go public sometimes confers a first-mover advantage. The quintessential company often cited as an example is *Netscape*. However, *Spyglass* was a browser company that went public two months before *Netscape*---and quickly faltered under *Netscape's* competition. *Schultz and Zaman (2001)* report that many internet firms that went public in the late *1990s* pursued an aggressive acquisition strategy, which they interpret as an attempt to pre-empt competitors.

2. Market-timing theories

a)Lucas and McDonald (1990) develop an asymmetric information model where firms postpone their equity issue if they know they are currently undervalued. If a bear market places too low a value on the firm, given the knowledge of entrepreneurs, then they will delay their *IPOs* until a bull market offers more favorable pricing. In *Choe, Masulis, and Nanda (1993)*, firms avoid issuing in periods where few other good-quality firms issue. Other theories have argued that markets provide valuable information to entrepreneurs ("information spillovers"), who respond to increased growth opportunities signaled by higher prices (*Subramanyam and Titman (1999), Schultz (2000)*).

b) We suggest that in addition to these rational theories for *IPO* volume fluctuations, a plausible semi-rational theory without asymmetric information can also explain cycles in issuing activity: entrepreneurs' sense of enterprise value derives more from their internal perspective, their day-to-day involvement with the underlying business fundamentals, and less so from the public stock market. Sudden changes in the value of publicly traded firms are not as quickly absorbed into the private sense of value held by entrepreneurs. Thus entrepreneurs adjust their valuation with a lag. As a result, even if the market price is driven by irrational public sentiment or the entrepreneur's price is driven by irrational private sentiment, entrepreneurs are more inclined to sell shares *after* valuations in the public markets have increased."

Welch, Ritter (2002) note: "We interpret the evidence on the going public decision as suggesting that firms go public in response to favorable market conditions, but only if they are beyond a certain stage in their life cycle. Perhaps the most important unanswered question is why issuing volume drops so precipitously following stock market drops. Although offer prices are lowered, many firms withdraw their offering rather than proceed with their *IPO*. In other words, why is there quantity adjustment, rather than price adjustment? This is a puzzle not only for the *IPO* market, but for follow-on offerings as well."

Tab. 1 shows a number of *IPOs*, first-day returns, gross proceeds, amount of money left on the table, and long run performance by cohort year, *1980-2001* in *Welch, Ritter (2002).*

Year	Number of IPOs	Average First-day Return	Aggregate Gross Proceeds, millions	Aggregate Money Left on the Table, millions	Average 3-year Buy-and-hold Return		
					IPOs	Market-adjusted	Style-adjusted
1980	70	14.5%	$2,020	$408	88.2%	35.5%	17.1%
1981	191	5.9%	$4,613	$264	12.8%	-26.2%	-7.4%
1982	77	11.4%	$1,839	$245	32.2%	-36.5%	-48.7%
1983	442	10.1%	$15,348	$1,479	15.4%	-38.7%	2.5%
1984	172	3.6%	$3,543	$86	27.7%	-51.3%	3.0%
1985	179	6.3%	$6,963	$354	7.6%	-39.5%	7.3%
1986	378	6.3%	$19,653	$1,030	18.6%	-20.4%	14.3%
1987	271	6.0%	$16,299	$1,019	-1.8%	-18.9%	4.5%
1988	97	5.4%	$5,324	$186	55.7%	8.3%	51.3%
1989	105	8.1%	$6,773	$336	51.1%	16.8%	32.5%
1990	104	10.8%	$5,611	$454	12.2%	-34.1%	-32.4%
1991	273	12.1%	$15,923	$1,788	31.5%	-1.7%	5.8%
1992	385	10.2%	$26,373	$2,148	34.8%	-2.3%	-19.4%
1993	483	12.8%	$34,422	$3,915	44.9%	-7.8%	-23.9%
1994	387	9.8%	$19,323	$1,650	74.1%	-8.3%	1.0%
1995	432	21.5%	$28,347	$5,033	24.8%	-62.3%	-14.1%
1996	621	16.7%	$45,940	$7,383	25.6%	-57.0%	8.6%
1997	432	13.8%	$31,701	$4,664	67.7%	6.8%	41.0%
1998	267	22.3%	$34,628	$5,352	27.1%	9.1%	12.2%
1999	457	71.7%	$66,770	$37,943	-46.2%	-32.9%	-74.2%
2000	346	56.1%	$62,593	$27,682	-64.7%	-36.4%	-42.6%
2001	80	14.0%	$34,344	$2,973	n.a.	n.a.	n.a.
1980-1989	1,982	7.4%	$82,476	$5,409	20.8%	-24.7%	6.9%
1990-1994	1,632	11.2%	$101,652	$9,954	44.7%	-7.2%	-12.7%
1995-1998	1,752	18.1%	$140,613	$22,436	36.0%	-32.3%	11.6%
1999-2000	803	65.0%	$129,363	$65,625	-53.8%	-34.3%	-61.2%
2001	80	14.0%	$34,344	$2,973	n.a.	n.a.	n.a.
1980-2001	6,249	18.8%	$488,448	$106,397	22.6%	-23.4%	-5.1%

Tab. 1. *Number of IPOs, first-day returns, gross proceeds, amount of money left on the table, and long run performance by cohort year, 1980-2001 (after Welch, Ritter (2002)).*

Roosenboom, van der Goot (2003) analyzed the *IPOs* on the *Euronext Amsterdam* in *The Netherlands:* "We analyze a sample of *111 IPOs* on *Euronext Amsterdam* during the years *1984-1999*." Tab. 2 provides the summary statistics for *111 IPOs* on the *Euronext Amsterdam* from *January 1984* to *December 1999*, and Fig. 1 shows the time distribution of *IPOs* in the *Netherlands* in *Roosenboom, van der Goot (2003).*

	Average	Median	Standard deviation	Maximum	Minimu m
Market capitalization (million Euro)	426.77	61.99	1,507.99	13,453.20	11.54
Total assets (million Euro)	162.61	35.10	368.41	2,205.37	2.29
Proceeds (million Euro)	89.38	21.70	212.47	1,476.563	2.18
Primary offering (%)	33.83	23.40	33.42	100.00	0.00
Underpricing (%)	9.45	2.50	19.77	97.73	-31.24
Sales growth (%)	39.25	24.21	50.81	308.03	-33.96
Return on sales (%)	11.24	12.39	25.25	61.18	-199.77
Leverage (%)	12.26	6.23	16.28	95.20	0.00
Company age (years)	28.08	15.00	32.44	152.00	0.50
Pre-IPO management ownership (%)	44.35	33.05	40.52	100.00	0.00
Market-to-book ratio	6.19	3.63	6.96	41.53	0.57

Tab. 2. *Summary statistics for 111 IPOs on Euronext Amsterdam from January 1984 to December 1999 (after Roosenboom, van der Goot (2003)).*

Figure 1: Time distribution of IPOs in the Netherlands

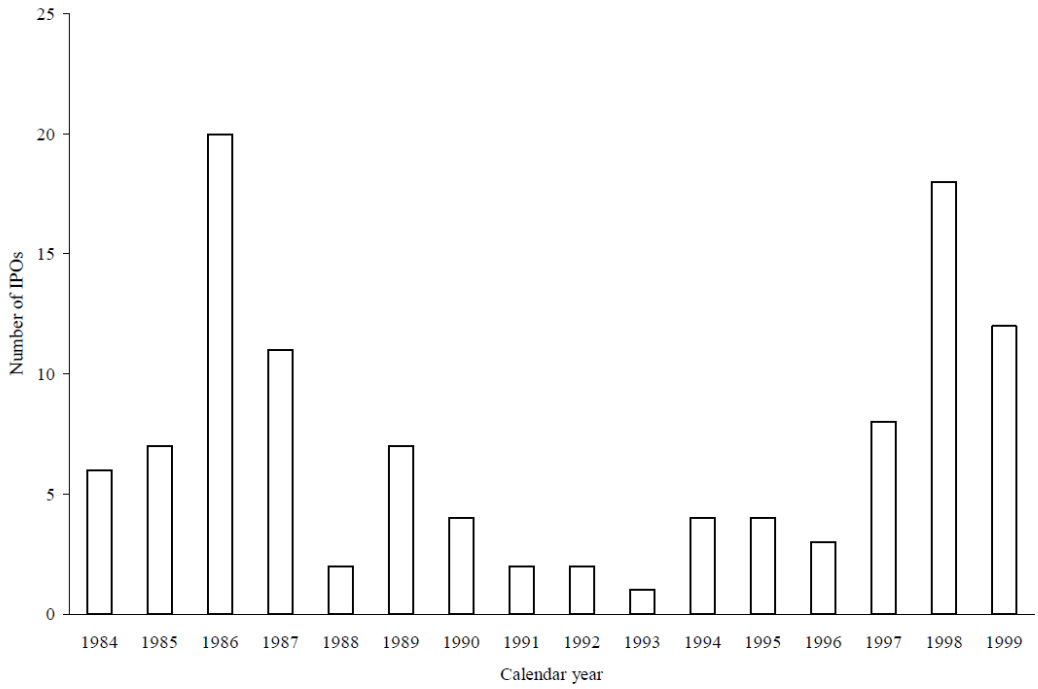

Fig. 1. *Time distribution of IPOs in the Netherlands (after Roosenboom, van der Goot (2003)).*

Let us continue with the research statements by *Gajewski, Gresse (2006)*: “In recent years, the market for *initial public offerings* (*IPOs*) in *Europe* has been characterized by several important developments. Two major characteristics of this period are the outperformance of ‘new economy’ *IPOs* and the growth of book-building as the favourite choice among *IPO* underwriting procedures. Another striking feature of the landscape of *European IPOs* is its ‘cyclicality’. In the late *90s*, the growth of the internet bubble induced a large number of new economy firms to go public, resulting in a hot issue market from *1998* to *2000*. This *IPO*-euphoria period was also characterized by high levels of initial returns, meaning that most *IPO* companies “left money on the table”. Nevertheless, since *2000*, with the substantial decline of most *New Markets*, primary markets have become more apathetic than ever on most stock exchanges. Finally, with the introduction of the *Euro* in twelve *European* countries, investors in new listings tend to establish their financial strategies at a *European* level instead of clustering in national markets.”

Tab. 3 shows the *IPOs* number of domestic firms per year and per country with the investment funds excluded in *Gajewski, Gresse (2006).*

<table>
<tr><th></th><th>1995</th><th>1996</th><th>1997</th><th>1998</th><th>1999</th><th>2000</th><th>2001</th><th>2002</th><th>2003</th><th>2004</th><th>Total</th></tr>
<tr><td>Austria</td><td>4</td><td>2</td><td>4</td><td>2</td><td>4</td><td>7</td><td>6</td><td>3</td><td>8</td><td>2</td><td>42</td></tr>
<tr><td>Belgium*</td><td>1</td><td>3</td><td>13</td><td>18</td><td>17</td><td>7</td><td rowspan="4">36</td><td rowspan="4">15</td><td rowspan="4">14</td><td rowspan="4">20</td><td rowspan="4">800</td></tr>
<tr><td>France</td><td>22</td><td>59</td><td>82</td><td>226</td><td>68</td><td>76</td></tr>
<tr><td>Netherlands</td><td>6</td><td>7</td><td>15</td><td>22</td><td>17</td><td>9</td></tr>
<tr><td>Portugal</td><td>16</td><td>5</td><td>7</td><td>10</td><td>5</td><td>4</td></tr>
<tr><td>Finland</td><td>10</td><td>7</td><td>12</td><td>12</td><td>27</td><td>19</td><td>9</td><td>2</td><td>0</td><td>1</td><td>99</td></tr>
<tr><td>Germany</td><td>20</td><td>20</td><td>35</td><td>67</td><td>134</td><td>134</td><td>21</td><td>6</td><td>0</td><td>6</td><td>443</td></tr>
<tr><td>Greece</td><td>18</td><td>20</td><td>12</td><td>23</td><td>37</td><td>52</td><td>21</td><td>15</td><td>13</td><td>9</td><td>220</td></tr>
<tr><td>Italy</td><td>12</td><td>15</td><td>13</td><td>21</td><td>33</td><td>48</td><td>18</td><td>13</td><td>10</td><td>9</td><td>192</td></tr>
<tr><td>Poland</td><td>21</td><td>18</td><td>62</td><td>57</td><td>28</td><td>13</td><td>9</td><td>5</td><td>5</td><td>32</td><td>250</td></tr>
<tr><td>Spain**</td><td>0</td><td>4</td><td>7</td><td>8</td><td>10</td><td>5</td><td>2</td><td>1</td><td>1</td><td>2</td><td>40</td></tr>
<tr><td>Sweden</td><td>16</td><td>17</td><td>50</td><td>32</td><td>47</td><td>44</td><td>19</td><td>8</td><td>4</td><td>5</td><td>242</td></tr>
<tr><td>Switzerland</td><td>6</td><td>6</td><td>13</td><td>17</td><td>17</td><td>23</td><td>14</td><td>5</td><td>1</td><td>3</td><td>105</td></tr>
<tr><td>Turkey</td><td>30</td><td>25</td><td>29</td><td>20</td><td>9</td><td>36</td><td>1</td><td>5</td><td>4</td><td>12</td><td>171</td></tr>
<tr><td>United Kingdom</td><td>285</td><td>347</td><td>217</td><td>169</td><td>161</td><td>366</td><td>236</td><td>219</td><td>194</td><td>413</td><td>2,607</td></tr>
<tr><td>Total</td><td>467</td><td>555</td><td>571</td><td>704</td><td>614</td><td>843</td><td>392</td><td>297</td><td>254</td><td>514</td><td>5,211</td></tr>
</table>

General source: WFE (WFE European statistics are originally provided by FESE.)

**Source*: WFE for 1996-2004, Euronext Brussels for 1995.

***Source*: Bolsa de Madrid.

Tab. 3. *IPOs: Number per year and per country domestic firms only - investment funds excluded (after Gajewski, Gresse (2006)).*

Tab. 4 shows the *IPOs*: New capital raised per year and per country - investment funds excluded; Tab. 5 presents the data on the *IPOs*: End-of-year market value per year and per country domestic firms only - investment funds excluded in *Gajewski, Gresse (2006).*

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Austria	1,421	99	2,732	118	609	2,013	500	1,146	1,496	1,900	12,034
Belgium	136	832	487	1,003	2,178	7,163					
France	153	957	7,332	12,283	6,923	11,663	39,148*	3,696*	600*	9,642*	182,640*
Netherlands	3,954	3,004	7,011	13,821	21,222	28,972					
Portugal	0	0	0	0	0	460					
Finland	40	91	545	342	238	628	0	0	0	0	1,885
Germany	3,537	10,332	2,528	3,228	12,964	25,556	2,882	214	0	6	61,247
Greece	60	337	60	919	899	2,843	1,060	92	61	95	6,426
Italy	3,645	1,611	818	578	1,436	6,807	4,383	1,986	550	2,630	24,444-
Poland	297	39	261	208	107	335	1	2	0	2251	3,501
Spain**	na	1,004	926	4,829	25,151	67,532	19,230	5,690	10,938	21,658	156,959
Sweden	1,806	2,514	1,259	514	538	10,881	301	3,631	0	1,039	22,483
Switzerland	1,395	670	1,664	9,258	9,769	24,361	2,624	8	0	1,530	51,279
Turkey	12	22	76	128	85	2729	0	667	383	1,336	5,437
United Kingdom	3,375	14,293	1,074	5,692	7,355	15,186	10,791	8,229	6,546	10,644	83,186

Source: WFE (WFE European statistics are originally provided by FESE.)

Statistics include domestic firms only and exclude investment funds. All figures are in €.

* Statistics for all Euronext.

** Statistics for BME.

Tab. 4. *IPOs: New capital raised per year and per country- investment funds excluded (after Gajewski, Gresse (2006)).*

	1997	1998	1999	2000	2001	2002	2003	2004	Total
Austria	2,732	125	642	2,044	570	55	4,637	76	10,881
Belgium	3,109	5,461	4,754	16,941					
France	37,019	41,821	29,003	54,820	109,640*	7,620*	919*	26,582*	469,618
Netherlands	7,011	12,829	30,004	28,972					
Portugal	2,539	1,306	3,192	46,076					
Finland	1,478	2,800	10,852	8,160	1,881	17,801	988	317	44,277
Germany	2,526	3,278	12,964	25,556	2,882	223	0	1,996	49,425
Greece	354	177	307	1,391	9,847	796	645	392	13,909
Italy	3,065	14,270	84,930	50,023	10,586	19,971	33,664	71,111	287,620
Poland	5,488	8,959	3,414	1,549	647	111	338	8,693	29,198
Spain**	na	10,136	25,151	406	116	136	94	186	36,224
Sweden	11,843	7,159	58,928	46,456	5,805	2,871	613	1,322	134,998
Switzerland	9,583	9,249	9,769	19,682	6,609	2,023	1,270	1,530	59,715
Turkey	285	256	85	3	0	201	30	1,428	2,287
United Kingdom	100,097	67,811	125,537	336,690	168,603	93,397	52,661	38,606	983,403

Source: WFE (WFE European statistics are originally provided by FESE).

Statistics include domestic firms only and exclude investment funds. All figures are in €.

* Statistics for all Euronext

** Statistics for BME

Tab. 5. *IPOs: End-of-year market value per year and per country domestic firms only- investment funds excluded (after Gajewski, Gresse (2006)).*

Gajewski, Gresse (2006) describe the current stock exchange listing process on the *European* stock exchanges: "A request for a stock exchange listing must be made on the basis of an introduction prospectus whose contents are subject to regulation and which is generally filed a few months (*120* days on average according to *Schuster (2003)*) before the admission date. Typically, a universal or an investment bank, called 'the underwriter', is involved in developing the admission statement and is in charge of the underwriting and floatation process. The underwriter is chosen by the *IPO* candidate after a so-called 'beauty contest' at which banks or other financial institutions present their proposals for the *IPO*. For most *IPOs*, the underwriter assembles a banking syndicate, i.e. a combination of several banks or financial institutions. As the 'lead manager', the underwriter is responsible for implementing the *IPO* while other members of the syndicate only undertake underwriting or placement functions. The banks that make up the syndicate are also selected through a 'beauty contest' in which individual banks present their estimates of the firm's value, the issue price, the demand for the issuer's shares as well as the costs of the issue. In order to compile the *IPO* prospectus, lawyers, together with the underwriting bank, conduct due diligence, that is an examination of the company regarding its legal, financial, and commercial aspects. The legal due diligence includes an examination of the company's major contracts, liabilities, patents and other legal facts. The commercial due diligence contains an analysis of the issuing company's fields of business, market positions, development strategies, human resources, management, etc. Financial due diligence entails financial statements, auditors' reports for cases in which audited accounts are required, investment planning, etc. While due diligence is exclusively for internal use, it serves as a basis for the offering prospectus, which, at the minimum, contains information on the shares to be admitted, general information about the issuer and associated companies, a description of the issuer's business activities, a presentation of the issuer's net assets, financial position and results of operations. The actual minimum content of the admission document and listing requirements are usually defined by the regulatory body of the primary market and differ from country to country (cf. I.2). The next step of the floatation process is to obtain the approval of the admission authority, i.e. the market supervisor or the exchange itself or both. Lastly, the initial pricing and placement of the shares are organized either by the underwriter or in co-ordination with the exchange, depending on the institutional setting (*cf. I.3*)."

Gajewski, Gresse (2006) add: "Main markets are characterized by three common requirements, specifically *accounting records history, capital size* and *floating capitalisation*."

Tabs. 6a, b, c show the *IPO* listing requirements on the *European* regulated markets, and Tab. 7 represents the *IPO* mechanisms by country in *Gajewski, Gresse (2006).*

Country	Exchange	Admission authority	Main Market	Parallel Market	New Market
Austria	Vienna Stock Exchange (VSE)	VSE	**Official Market** ***General Standard*** Shares with a par value Market value > EUR 2.9 millions Free float > EUR 725,000 Non par value shares Total number of shares > 20,000 Market value > EUR 725,000 Free float > 10,000 shares Financial statements for the 3 preceding business years ***Prime Standard*** Same as General Standard Accounting in accordance with U.S. GAAP and IFRS	**Semi-Official Market** ***General Standard*** Shares with a par value Market value > EUR 725,000 Free float > EUR 181,250 Non par value shares Total number of shares > 10,000 Market value > EUR 362,500 Free float > 2,500 shares Financial statements for the 1 preceding business years ***Prime Standard*** Same as General Standard Accounting in accordance with U.S. GAAP and IFRS	---
Belgium ***until April 2005***	Euronext	CBF	**Premier Marché** Market value > EUR 15 millions Value of the shares offered to the public > EUR 5 millions Free float > 25% Filed audited accounts over a period of 3 years prior to the date of the listing Financial reporting in accordance with Belgian standards and IFRS	**Second Marché** Now reserved to listing of real-estate investment certificates Closed in 2005 Market value > EUR 1 million Filed audited accounts	**Nouveau Marché** Created in 1997 – Closed in 2005 High-growth companies Capitalisation > EUR 2 millions At least 3 years of existence Issuance > EUR 5 millions Capital increase > 50% of offered shares Free float > 25% (10% in some cases) Lock-up period for managers: na
France ***until February 2005***	Euronext	AMF and Euronext Paris	**Premier Marché** Market capitalisation > EUR 700/800 millions Filed audited accounts over a period of 3 years prior to the date of the listing Number of shares distributed to the public > 25% or > 600,000 shares	**Second Marché** Created in 1983 – closed in 2005 Market capitalisation > EUR 12/15 millions Filed audited accounts over a period of 2 years prior to the date of the listing Number of shares distributed to the public > 10% and > EUR 4.5 millions	**Nouveau Marché** Created in 1996 – closed in 2005 High-growth companies Shareholders' equity > EUR 1.5 millions Issuance > 100,000 shares and > EUR 5 millions Free float > 20% Capital increase > 50% of offered shares Lock up period: 3 years for 80% of the shares until 1998; from 1998 to 2003 80% during 1 year or 100% during 6 months; since 2003 1 year for 100% of the shares
Netherlands ***until April 2005***	Euronext	Euronext Amsterdam	**Officiële Markt** Shareholders' equity > EUR 5 millions Number of shares distributed to the public > 10% Filed audited accounts over a period of 3 years prior to the date of the listing 6-month lock-up period for managers		**Euro.NM Amsterdam** Created in 1997 in replacement of the Official Parallel Market (closed in 1994) – closed in 2005 High-growth companies Shareholders' equity > EUR 5 millions Filed audited accounts over a period of 3 years prior to the date of the listing (1 year only for new economy companies) Number of shares distributed to the public > 100,000 and > 20% Capital increase > 50% of offered shares Lock-up period for managers: 3 years applicable to 80% of the shares
Portugal ***until April 2005***	Euronext	CMVM	**Main Market** Market capitalisation > EUR 2.5 millions Total number of shares > 500,000 Number of shares distributed to the public > 25% Filed audited accounts over a period of 3 year prior to the date of the listing	**Second Market** Closed in 2005 Market capitalisation > EUR 625,000 Number of shares distributed to the public > 10% Filed audited accounts over a period of 2 year prior to the date of the listing	**Novo Mercado** Closed in 2005 High-growth companies Shareholders' equity > EUR 1.5 millions Market capitalisation > EUR 2.5 millions Number of shares distributed to the public > 100,000 and > 20% Capital increase > 50% of offered shares Lock up period
Belgium, France, Netherlands, Portugal ***Since 2005***	Euronext	CMF AMF CMCM	**Eurolist** Number of shares distributed to the public > 25% Filed audited accounts over a period of 3 year prior to the date of the listing		**Alternext** Unregulated market. No requirement on size, sector, growth. 2-year track record at least ***With public offer*** Float > EUR 2.5 millions Prospectus to be approved by the AMF ***Without public offer*** No float requirement Offering circular with no authority approval
Finland	Helsinki Stock Exchange (HSE)	HSE	**Main List** Capital ressources > EUR 2 millions Shareholders' equity > EUR 4 millions Filed audited accounts over a period of 3 years prior to the date of the listing Number of shares distributed to the public > 25% Voting rights in the general public > 10%	**I List** No size requirement Filed audited accounts over a period of 2 years prior to the date of the listing Number of shares distributed to the public > 15%	**NM List** Market capitalisation > EUR 2 millions Filed audited accounts over a period of 1 year prior to the date of the listing Number of shares distributed to the public > 15% Voting rights in the general public > 10% 3-year business plan lock-up period for main shareholders if existence length < 3 years

Tab. 6a. *Listing requirements on European regulated markets (after Gajewski, Gresse (2006)).*

Germany	Deutsche Börse	Frankfurt Stock Exchange	**Official Market** ***General Standard*** Market value > EUR 1.25 millions Free float > 25% Filed audited accounts over a period of 3 years prior to the date of the listing Financial reporting in accordance with German standards ***Prime Standard*** Same as General Standard Financial reporting in accordance with U.S. GAAP and IFRS	**Regulated Market – General Standard** Number of shares distributed to the public > 10,000 3 years of existence Filed audited accounts over a period of 1 year prior to the date of the listing Financial reporting in accordance with German standards	**Neuer Markt** Created in 1997 – closed in 2003 Shareholders' equity > EUR 1.5 millions At least 2 designated sponsors Issuance > 100,000 shares Issuance > EUR 250,000 in nominal value Expected market value > EUR 5 millions Free float > 20% Capital increase against cash > 50% of offered shares 6-month lock-up period for pre-IPO shareholders Financial reporting in accordance with U.S. GAAP and IFRS
Greece	Athens Stock Exchange (ASE)	ASE Capital Market Commission (CMC) for firms not complying age requirements	**Main Market** Shareholders' equity > GRD 4 billions (EUR 11.74 millions) 25% of the equity should be distributed to at least 2,000 shareholders owning less than 2% of the capital Filed audited accounts over a period of 3 years prior to the date of the listing	**Parallel Market** Shareholders' equity > GRD 1 billion (EUR 2.93 millions) 20% of the equity should be distributed to at least 1,000 shareholders Capital increase > 80% of offered shares Filed audited accounts over a period of 2 year prior to the date of the listing	**New Market (NEHA)** Created in 1999 New-technology firms Shareholders' equity > GRD 200 millions (EUR 587,000) Issuance > 100,000 shares Issuance > GRD 250 millions (EUR 734,000) At least 150 shareholders must own less than 2% of the capital. Capital increase > 80% of offered shares Filed audited accounts over a period of 2 year prior to the date of the listing Lock-up period for shareholders owning >5%: 80% of the shares during 1 year and 50% during 2 years At least 1 market maker
Italy	Borsa Italiana	CONSOB and Borsa Italiana	**Borsa (MTA)** ***Blue Chips*** Market capitalisation > EUR 800 millions Number of shares distributed to the public > 25% 3 years of accounting records Filed audited accounts over a period of 1 year prior to the date of the listing ***Ordinary*** Market capitalisation > EUR 20 millions and < EUR 800 millions Number of shares distributed to the public > 25% 3 years of accounting records Filed audited accounts over a period of 1 year prior to the date of the listing ***Star*** Market capitalisation > EUR 20 millions and < EUR 800 millions Number of shares distributed to the public > 35% for newly listed companies (>20% for transferred companies) 3 years of accounting records Filed audited accounts over a period of 1 year prior to the date of the listing	**Mercato Expandi** Market capitalisation > EUR 1 million Number of shares distributed to the public > 10% 2 years of accounting records Filed audited accounts over a period of 1 year prior to the date of the listing Turnover > EUR 750,000 Last net earnings > EUR 100,000 Financial debt / consolidated gross operating margin > 4	**Nuovo Mercato** High-growth companies Market capitalisation > EUR 3 millions Issuance > 100,000 shares Issuance > EUR 5 millions Filed audited accounts over a period of 1 year prior to the date of the listing Number of shares distributed to the public > 30% Capital increase > 50% of offered shares Lock-up period for pre-IPO shareholders and managers: 1 year applicable to 80% of the shares (2 years for start-up companies)
Poland	Warsaw Stock Exchange (WSE)	WSE	**Main market** Total book value > PLN 65 millions Market capitalisation > PLN 40 millions Free float > PLN 32 millions Free float > 25% or > 500,000 shares of value > PLN 70 millions Number of shareholders > 500 Filed audited accounts over a period of 3 year prior to the date of the listing	**Parallel Market** Total book value > PLN 22 millions Market capitalisation > PLN 14 millions Free float > PLN 11 millions Free float > 10% or > 200,000 shares of value > PLN 35 millions Number of shareholders > 300 Filed audited accounts over a period of 2 year prior to the date of the listing	---
Spain	BME	CNMV	**Primer Mercado** Shareholders' equity > EUR 1.5 millions excluding stakes > 25% belonging to 2 shareholders At least 100 shareholders must own a stake < 25% of the capital Filed audited accounts over a period of 3 year prior to the date of the listing Distributed dividend > 6% of the capital	**Segundo Mercado** Shareholders' equity > EUR 250,000 Public float > 20%	**Nuevo Mercado** Operational since 2000 *Information not available*

Tab. 6b. *Listing requirements on European regulated markets (after Gajewski, Gresse (2006)).*

Sweden	Stockholms-börsen (OMX)	OMX	**A – List** Market capitalisation > SEK 300 millions 3 years of verifiable history and accounting records Documented profitability Number of shares distributed to the public > 25% Voting rights in the general public > 10% At least 2,000 shareholders Lowest share price on the first listing day: SEK 25	**O – List** No history requirement No requirement on market value Number of shares distributed to the public > 10% Voting rights in the general public > 10% At least 300 shareholders Lowest share price on the first listing day: SEK 25	---
Switzerland	Swiss Exchange (SWX)	SWX	**Main Market** Capital resources > CHF 25 millions No requirement on market capitalisation since 2001 Filed audited accounts over a period of 3 years prior to the date of the listing (possible exceptions) Number of shares distributed to the public > 25% and > CHF 25 millions	**Local Caps** Capital resources > CHF 2.5 millions No requirement on market value Filed audited accounts over a period of 2 years prior to the date of the listing Number of shares distributed to the public > 20% and > CHF 5 millions	**New Market** Created in 1999 – closed in 2004 High-growth companies Shareholders' equity > CHF 2.5 millions Market capitalisation > CHF 8 millions Operating and financial track record over a period of 1 year prior to the date of the listing Accounts in accordance with U.S. GAAP and IFRS Number of shares distributed to the public > 20% Capital increase > 50% of offered shares 6-month lock-up period
Turkey	Istanbul Stock Exchange (ISE)	ISE	**National Market / Second National Market / New Economy Market** Paid-in or issued capital > TRL 1.25 billions Free float > 15% if capital<TRL 750 billions, > 10% if capital within range of TRL 750-1,500 billions, > 5% if capital > TRL 1.5 trillions At least 3 calendar years of existence (2 years if free float > 25%) Filed audited accounts over a period of 1 year prior to the date of the listing Positive earned profits before tax in the last 2 years (previous year only if free float > 25%)		
United Kingdom	LSE	FSA (UKLA) LSE	**Main market** Market value > GBP 700,000 Number of shares distributed to the public > 25% Filed audited accounts over a period of 3 years ending no later than 6 months prior to the date of the listing Financial reporting in accordance with UK GAAP, U.S. GAAP and IFRS		**Alternative Investment Market (AIM)** Created in 1995. Unregulated market. No requirement on size, floating capitalisation, age, sector, growth. Admission is only subject to the approval of the *Nominated Adviser* in charge of the IPO.

Tab. 6c. *Listing requirements on European regulated markets (after Gajewski, Gresse (2006)).*

Country	Exchange	Book-building institutional only	Book-building with public offer	Fixed-price offering	Auction
Austria	VSE	yes	no	no	no
Belgium	Euronext Brussels	yes	yes	no	no
Finland	HSE	yes	yes	no	no
France	Euronext Paris	yes (*placement*)	yes	yes	Various types organised by the exchange (*direct admission, minimum price offer, open price offer)*
Germany	Deutsche Börse	yes	no	yes	not any more
Greece	ASE	yes	no	no	no
Italy	Borsa Italiana	yes (*with fixed price* and with open price***)	no	yes	no
Netherlands	Euronext Amsterdam	yes	no	yes	yes
Poland	WSE	yes	yes	yes	yes
Portugal	Euronext Lisbon	yes	yes	yes (*offer for sale*)	yes (*offer for sale*)
Spain	BME	no	yes***	no	no
Sweden	OMX	yes	yes	yes	no
Switzerland	SWX	yes	yes	yes	not any more
Turkey	ISE	yes	no	yes	yes (sale on the ISE)
United Kingdom	LSE	yes (*placing*)	yes	yes (*offer for sale at fixed price, offer for subscription at fixed price*)	yes (*offer for sale by tender offer, offer for subscription by tender offer, open offer*)

* Before 1999, in the Italian book-building procedures, a fixed price was offered to institutions at the end of the marketing period prior to actual order submission. In 1999, this practice was abandoned in favour of the book-building with open price.

** Since 1999, book-building with open price has been the general practice in Italy. The final price is determined after collecting orders from institutions, so that they do not know at which price they will effectively buy the shares.

*** Since 1992, when Royal Decree 291/1992 was published.

Tab. 7. *IPO mechanisms by country (after Gajewski, Gresse (2006)).*

Doidge, Karolyi, Stulz (2011) performed the research on the *IPO* and came up with the following observation: "*Global IPOs* are a way for firms to exploit the better institutions of foreign countries to have a successful or more profitable *IPO*."

Tab. 8 shows the *IPO* activity in terms of *IPO* number for the top *25* countries around the world: *1990* to *2007* in *Doidge, Karolyi, Stulz (2011).*

	Panel a. IPO counts.		
Country	All IPOs	Domestic IPOs	Global IPOs
United States	6,126	4,931	1,195
India	4,867	4,777	90
Japan	2,234	2,130	104
Canada	2,225	2,020	205
China	1,764	1,300	464
United Kingdom	1,650	1,356	294
Australia	1,558	1,400	158
Hong Kong	822	541	281
Taiwan	822	808	14
South Korea	779	752	27
France	750	503	247
Malaysia	722	697	25
Germany	573	288	285
Singapore	488	404	84
Thailand	408	333	75
Indonesia	273	189	84
Pakistan	249	247	2
Italy	244	54	190
Greece	185	148	37
Norway	179	123	56
Poland	175	133	42
Israel	155	13	142
Sweden	143	53	90
Brazil	128	60	68
Netherlands	120	26	94
Total: top 25	*27,639*	*23,286*	*4,353*
Rest of world	*1722*	*836*	*886*
Total: all countries	*29,361*	*24,122*	*5,239*

Tab. 8. *IPO activity in terms of IPO number for the top 25 countries around the world: 1990 to 2007 (after Doidge, Karolyi, Stulz (2011)).*

Tab. 9 shows the *IPO* activity in terms of *IPO* value for the top *25* countries around the world: *1990* to *2007* in *Doidge, Karolyi, Stulz (2011).*

	Panel b. IPO proceeds.			
Country	All IPOs	Domestic IPOs	Global IPOs: total	Global IPOs: global only
United States	$647.7	$352.3	$295.4	$61.6
China	$254.6	$110.1	$144.5	$133.1
Japan	$204.1	$135.2	$68.9	$22.1
United Kingdom	$196.3	$77.1	$119.2	$68.9
France	$122.3	$9.7	$112.6	$54.3
Germany	$106.6	$27.6	$79.0	$45.0
Italy	$84.2	$9.7	$74.5	$32.4
Australia	$76.3	$34.4	$41.9	$18.8
Canada	$68.6	$47.7	$20.9	$15.2
Hong Kong	$63.6	$12.9	$50.7	$43.6
South Korea	$58.2	$46.1	$12.1	$10.5
Russian Fed	$43.6	$13.9	$29.7	$29.7
Spain	$41.5	$3.2	$38.3	$18.4
Netherlands	$39.6	$4.1	$35.5	$28.2
Brazil	$39.3	$14.9	$24.4	$23.3
Switzerland	$37.1	$9.6	$27.5	$20.2
Sweden	$33.9	$3.4	$30.5	$17.3
India	$32.2	$17.8	$14.4	$12.5
Taiwan	$27.1	$25.5	$1.6	$1.5
Bermuda	$26.5	$0.1	$26.4	$26.4
Thailand	$22.9	$11.0	$11.9	$6.5
Singapore	$20.3	$7.9	$12.4	$10.5
Indonesia	$20.3	$5.0	$15.3	$9.9
Mexico	$19.6	$7.0	$12.5	$10.2
Norway	$18.6	$6.7	$11.9	$8.6
Total: top 25	*$2,305.1*	*$992.8*	*$1312.3*	*$728.7*
Rest of world	*$249.5*	*$84.7*	*$164.8*	*$129.4*
Total: all countries	*$2,554.6*	*$1,077.5*	*$1,477.1*	*$858.1*

Tab. 9. *IPO activity in terms of IPO value for the top 25 countries around the world: 1990 to 2007 (after Doidge, Karolyi, Stulz (2011)).*

Fig. 2 shows the total *IPO* activity: *1990* to *2007 in Doidge, Karolyi, Stulz (2011).*

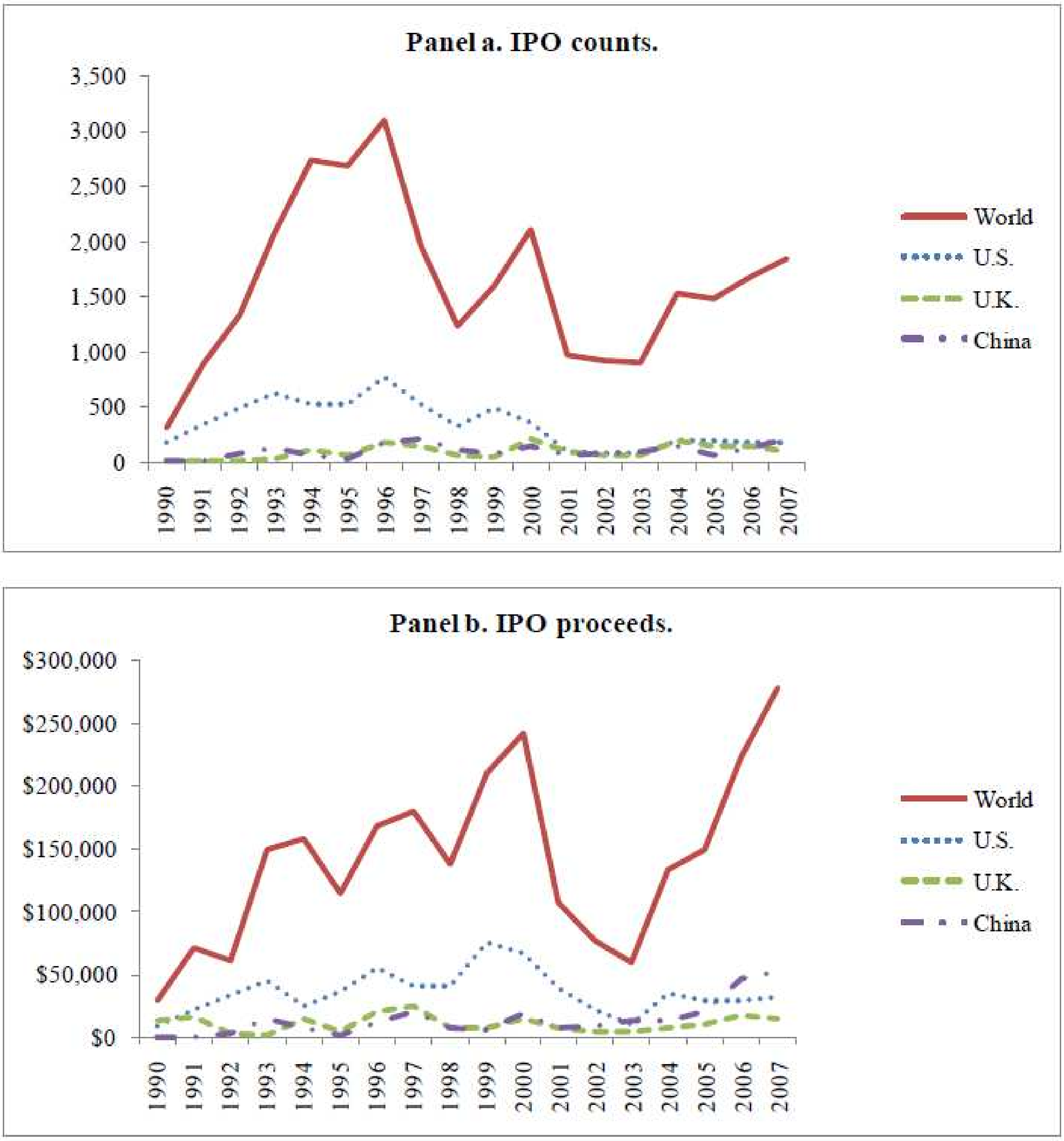

Fig. 2. *Total IPO activity: 1990 to 2007 (after Doidge, Karolyi, Stulz (2011)).*

Let us add a few words about the *online IPO* by reviewing the various authors' opinions on the subject of research interest.

Bourjade (2003, 2008) writes: "More recently, *Open IPO*, a new, web-based underwriter has proposed to sell shares using a uniform price auction. The extensive use of this mechanism is due to the backing of leading economists and policy makers, who have asserted that uniform price auctions are the most efficient multi-unit auction format. Their conclusions are based on the generalization of the single-unit auctions literature to multi-unit auctions." *Bourjade (2003,* *2008)* describes the *IPO valuation process*: "After all bids are submitted, the seller and the underwriter meet and set the *offering price* subject to the seller's preferred ownership structure which usually involves pro-rata rationing. They provide empirical evidence that secondary market liquidity and ownership dispersion are fundamental in determining the *offering price*." *Bourjade (2003, 2008)* turns to the *Open IPO* statements to describe the factors, which may impact the *public offering price:* "Depending on the outcome of negotiations between the underwriters and us, the *public offering price* may be lower, but will not be higher, than the *clearing price*. The bids received in the auction and the *resulting clearing price* are the principal factors used to determine the *public offering price* of the stock that will be sold in this offering. *The public offering price may be lower than the clearing price depending on a number of additional factors, including general market trends or conditions, the underwriters' assessment of our management, operating results, capital structure and business potential and the demand and price of similar securities of comparable companies.* The underwriters and us may also agree to a *public offering price* that is lower than the clearing price in order to facilitate a wider distribution of the stock to be sold in the offering."

Lemmens (2004, 2007) explains: "The most important advantage of an *IPO* is first of all the possibility to raise new capital ("*primary offering*"). This money can be used to finance the growth of the existing activities or to diversify the activities (new investments or acquisitions). An increase in capital reduces the proportion of the debts compared to the balance total, allowing the firm to borrow more easily in the future and at a lower rate. Another advantage of an *IPO* is that it facilitates the expansion process. When acquiring another company, the shareholders of this company will prefer stock in your company instead of money. Such a transaction is therefore more easily for a public company, as the value of this stock is known for all economic agents. Other advantages of *IPOs* are the increased publicity (more attention from the press, better image,…) and the possibility to award employees with options in order to motivate them."

Lemmens (2004, 2007) writes: "The largest amounts of online capital raised in the future will be done with *IPOs*. There are several advantages of *online IPOs* compared to *traditional IPOs*: *a reduction in costs, an increased availability of capital, a fair allocation of the shares and more flexibility for investors*. The disadvantages are parallel with *online DPOs*: *less marketing, possible lack of liquidity, problems of adverse selection, regulatory problems, problems concerning the bidding strategy* and *possibly unrealistically high stock price*. Of these disadvantages, the lack of confidence of investors is the most important one. Investors will need to learn to trust online investment bankers before the number of online *IPOs* starts growing significantly."

Tab. 10 shows the stock performance in an average *US IPO*, and Fig. 3 demonstrates the performance of *Google* stock in the first week of trading in *Hild (2008).*

Year	Total Number of IPOs	No. of IPOs Doubling in Value	Average First-Day Return	Money Left on the Table (millions)	Gross Proceeds	Average Percentage of Firm Sold	Percentage of Tech Stocks	Percentage of IPOs with EPS<0	Average First-Day Return for EPS<0	Average First-Day Return for EPS≥0
1980–89	1,982	9	7.4 percent	$5,409	$82,476	30.5 percent	26 percent	19 percent	9.1 percent	6.8 percent
1990–94	1,632	6	11.2 percent	$9,954	$101,652	34.7 percent	23 percent	26 percent	10.8 percent	11.4 percent
1995–98	1,752	34	18.1 percent	$22,436	$140,613	32.0 percent	37 percent	37 percent	19.2 percent	17.4 percent
1999–2000	803	182	65.0 percent	$65,625	$129,363	22.4 percent	72 percent	79 percent	72.0 percent	43.5 percent
2001	80	0	14.0 percent	$2,973	$34,344	26.3 percent	29 percent	49 percent	13.3 percent	11.6 percent
1980–2001	6,249	231	18.8 percent	$106,397	$488,448	29.0 percent	34.5 percent	34 percent	31.4 percent	12.5 percent

Tab. 10. *Stock performance in average US IPO (after Hild (2008)).*

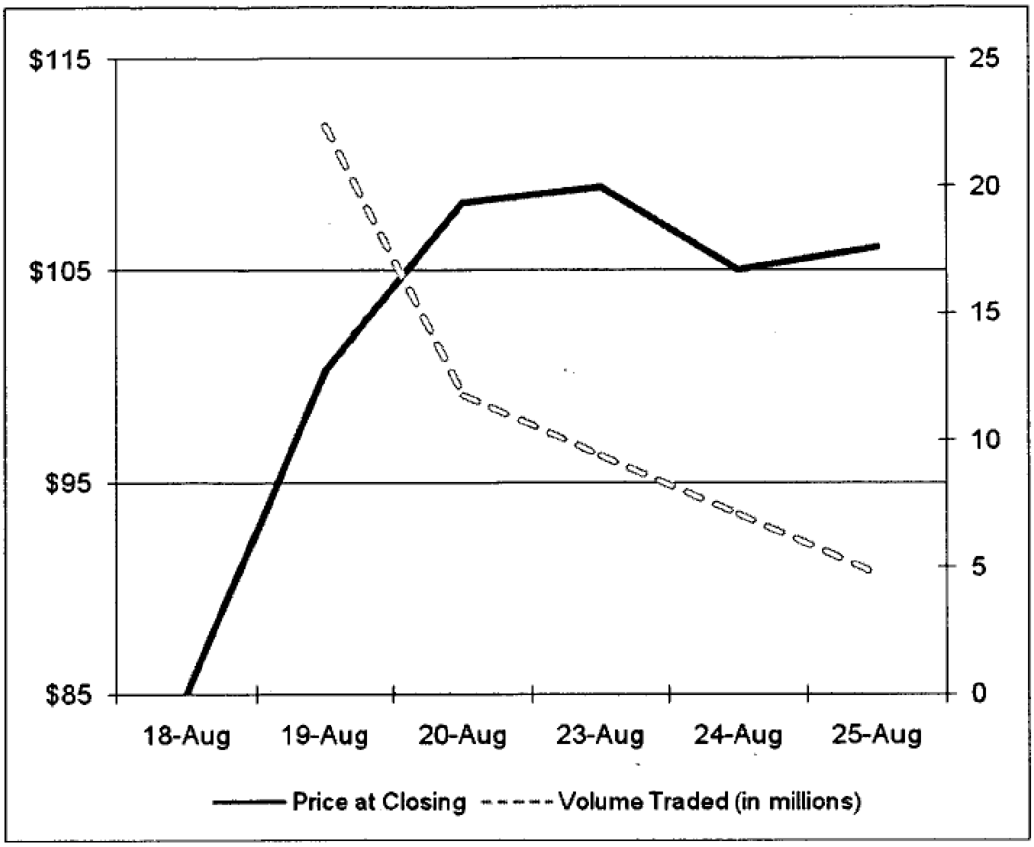

Fig. 3. *Performance of Google stock in first week of trading (after Hild (2008)).*

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, 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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.*

Valuation of initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Cogliati, Paleari, Vismara (2010) performed the original research on the valuation of the *IPOs*: "There exist two approaches to firm valuation. In direct valuation, the firm's value is estimated from its fundamentals; in relative valuation, it is estimated from the prices of comparable firms. In both approaches, the valuation faces specific difficulties related to the *IPO* timing decision. For example, firms may schedule their *IPO* in order to take advantage of "windows of opportunity". These are periods of market buoyancy during which other companies in the same industry tend to be overvalued *Loughran and Ritter (1995)*. Thus, investors risk over-paying for stock in firms priced using relative valuation methodologies. Besides, firms may decide to go public when they are able to display positive growth opportunities, and thus induce optimistic valuations. To do this, firms may time their *IPO* for when transitory earnings are high, since investors have difficulty distinguishing between transitory and permanent earnings (this is the signal-jamming explanation given by *Stein (1989)*). Finally, managers may window-dress accounting numbers to make their firms look better *Teoh et al. (1998)*. Again, investors risk over-valuation of such firms."

Cogliati, Paleari, Vismara (2010) state: "We find that the *Discounted Cash Flow (DCF)* is the model of direct valuation that is most widely used to price *IPOs*. Specifically, we investigate a sample of *184 IPOs* priced using a *DCF* model to address a basic research question: at what rates were the *IPO* firms *expected* to grow by their underwriters?"

Cogliati, Paleari, Vismara (2010) propose an equation to value the *IPO* with the *DCF* model:

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

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

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

Cogliati, Paleari, Vismara (2010) make a remark: "Estimation errors (i.e., the difference between implied and realized growth) increase with *IPO* firms' leverage, pre-*IPO* earnings, and underpricing, while decrease with age, size, and book-to-market ratios."

Tab. 11 shows the notation and definition of the variables in *Cogliati, Paleari, Vismara (2010).*

Notation	Definition
	Panel A: Notation used in the reverse-engineered DCF model
EV_t	Enterprise Value at time t
E_t	Equity value at time t
D_t	Value of outstanding Debt at time t
$FCFF_t$	Free Cash Flows to the Firm at time t
$E_t[FFCF_{t+i}]$	Expected Free Cash Flows to the Firm (estimated at time t for time $t+i$)
$WACC$	Weighted Average Cost of Capital
g_1	Growth rate during the first stage ("extra growth") of the DCF model
g_2	Growth rate during the second stage ("stable growth") of the DCF model
T	Duration of the first stage of the DCF model (years)
$FCFF_{IPO}$	Free Cash Flows to the Firm prior to the IPO, as reported in the prospectus
EV_{IPO}	Enterprise Value at IPO: $EV_{IPO} = E_{IPO} + D_{IPO} - CI_{IPO}$
E_{IPO}	Equity value at IPO price: $E_{IPO} = p_{IPO} \cdot (NSH_{pre} + NSH_{new})$
D_{IPO}	Value of outstanding Debt before the IPO, as reported in the prospectus
CI_{IPO}	Cash Inflow at the IPO due to the subscription of newly issued shares: $CI_{IPO} = p_{IPO} \cdot NSH_{new}$
NSH_{pre}	Number of shares existing prior to the IPO
NSH_{new}	Number of newly issued shares (primary offer)
p_{IPO}	Offer price: $p_{IPO} = (EV_{IPO} - D_{IPO})NSH_{pre}$
v_{IPO}	Fair price: $v_{IPO} = \left(EV_{IPO}^{actual\ FCFF} - D_{IPO}\right)NSH_{pre}$
$EE_{i,j}$	Estimation Error for firm j in year i $EE_{i,j} = \left(E_{IPO}[FCFF_{i,j}] - FCFF_{i,j}\right)/ E_{IPO}[FCFF_{i,j}]$
$O.V.I.$	Over-Valuation Index (O.V.I.): $(p_{IPO} - v_{IPO})/ p_{IPO}$
	Panel B: Definition of the variables used in the empirical analysis
Short-Term Implied Growth Rate (g_1)	The short-term extra-growth rate (g_1) implicit in IPO prices, derived through the reverse-DCF model (Equation 7)
Estimation Error (EE)	Estimation Errors, defined as the difference between estimated and actual cash flows, scaled by estimated cash flows: $EE_{i,j} = \frac{E_{IPO}[FCFF_{i,j}] - FCFF_{i,j}}{E_{IPO}[FCFF_{i,j}]} = \frac{FCFF_{IPO,j} \cdot (1+g_1)^i - FCFF_{i,j}}{FCFF_{IPO,j} \cdot (1+g_1)^i}$
AGE	Natural log of one plus the firm's age, measured as calendar year of the IPO minus the calendar year of founding.
SIZE	Natural log of pre-IPO sales (€m)
LEVERAGE	Book value of debt divided by the book value of equity at the IPO.
P/E	Price-to-earnings ratio at the IPO
Book to Market (B2M)	The ratio between the book and market values of equity. Book value is the pre-IPO book value of equity plus the capital inflow at the IPO (primary offer); market value is the number of shares outstanding after the IPO times the offer price.
D_VC	Venture Capital dummy, equal to 1 if one or more venture capitalists are pre-IPO shareholders.
SECTOR ER	Extra return in the firm's sector over the 6 months prior to listing (the extra return of the European Datastream sector index divided by the European Datastream index).
MOMENTUM	Market momentum, measured as Datastream Country Market index return over the 6 months prior to the listing, for each firm in the sample.
D_BUBBLE	Internet Bubble, equal to 1 if the company went public during the period 1999-2001, 0 otherwise.
DILUTION	The ratio between the number of newly issued shares and the number of pre-IPO shares.
PARTICIPATION	The ratio between the number of existing shares sold by existing shareholders and the number of pre-IPO shares.
UNDERPRICING	Stock return on the first day of trading.

Tab. 11. *Notation and definition of variables (after Cogliati, Paleari, Vismara (2010)).*

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.

Underpricing of initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Hopp, Dreherdo (2007) define the ***underpricing*** of company's equity as: "*Underpricing* relates to the fact that shares traded publicly for the first time substantially jump in price on the first trading day. Thus, investors are willing to pay higher prices for shares when trading begins than investors paid for their share allocation from the investment bank that accompanied the prospective *IPO*. As substantial amounts of money are left on the table when personal shares are sold too low and the prices for retained shares are diluted, *underpricing* is costly to firm owners (*Ljungqvist (2006)*). The academic literature points out several reasons for the prevailing existence of *underpricing* in capital markets. According to *Ljungqvist (2006)*, *IPO underpricing* can in general be attributed to asymmetric information, institutional factors, control considerations and behavioral aspects. *Ritter (1984)* argues that *underpricing* is related to the ex ante uncertainty about the future value of a firm going public. Hence, the level of *underpricing* can be regarded as a compensation for the risk bearing of investors."

Tab. 12 shows the variations of *IPOs* and *IPO* underpricing *in Hopp, Dreherdo (2007).*

Country	(1) Number of IPOs	(2) Average Underpricing	(3) Median Underpricing	(4) Max. Underpricing	(5) Min. Underpricing	(6) Variation in IPO activity	(7) Variation in Underpricing
Australia	185	18.99%	15.68%	89.67%	-1.18%	9.44	23.00%
Austria	34	2.45%	-0.04%	6.34%	-18.71%	1.08	6.00%
Belgium	46	9.86%	4.69%	9.48%	2.17%	4.46	2.00%
Canada	684	34.19%	9.07%	18.00%	1.33%	28.84	6.00%
China	856	16.73%				62.19	
Denmark	33	11.74%	8.05%	16.31%	-2.74%	2.12	7.00%
Finland	44	14.06%	1.77%	20.58%	-13.42%	3.50	8.00%
France	462	12.25%	4.90%	15.50%	0.00%	27.21	4.00%
Germany	513	37.83%	14.59%	33.00%	-3.50%	43.44	8.00%
Greece	341	37.50%				14.81	
Hong Kong, China	343	6.77%	14.60%	40.72%	-1.31%	10.38	13.00%
India	168	66.06%	18.88%	39.00%	9.00%	21.45	10.00%
Indonesia	125	6.14%	8.70%	45.72%	-8.00%	8.55	15.00%
Ireland	6	9.78%	9.78%	22.86%	-0.44%	0.49	10.00%
Italy	183	14.88%	5.14%	59.80%	-3.71%	10.44	15.00%
Japan	1178	18.71%	33.03%	102.28%	2.82%	51.69	32.00%
Korea, Rep.	167	33.96%	39.70%	93.99%	0.00%	9.72	25.00%
Malaysia	182	56.24%	63.98%	137.47%	-12.07%	10.13	50.00%
Netherlands	88	13.96%	7.13%	21.85%	-4.32%	5.72	7.00%
New Zealand	30	11.96%	13.07%	135.12%	-24.00%	1.86	40.00%
Norway	81	10.40%	7.42%	53.85%	-7.42%	5.34	17.00%
Philippines	44	11.90%	15.63%	75.66%	-17.94%	3.32	23.00%
Portugal	14	17.59%	17.77%	28.71%	1.78%	1.31	11.00%
Singapore	178	10.52%	19.97%	75.06%	-19.60%	11.72	27.00%
Spain	75	14.66%	12.90%	18.90%	-9.45%	3.75	8.00%
Sweden	183	17.83%	9.30%	72.20%	-0.37%	10.46	18.00%
Switzerland	57	17.32%	8.33%	50.93%	-2.31%	4.16	14.00%
Taiwan	444	3.99%	2.41%	18.64%	-14.21%	27.19	9.00%
Thailand	196	14.81%	25.85%	62.67%	-23.33%	10.21	25.00%
United Kingdom	838	13.92%	7.81%	20.42%	2.61%	42.65	5.00%
United States	6554	22.06%	20.19%	72.05%	7.29%	226.27	15.00%

Tab. 12. *Cross country variation of IPOs and IPO underpricing (after Hopp, Dreherdo (2007)).*

Gajewski, Gresse (2006) write: "*Initial underpricing* is positively linked to *information asymmetry* in the after-market. It produces higher turnover immediately after the *IPO* but has no effect on trading volumes after the first year of trading, so that this liquidity effect cannot be put down to the ownership structure but is more likely attributable to the *interest underpriced stocks* generate." *Gajewski, Gresse (2006)* explain: "Initial performance can be measured by the difference between the post-listing equilibrium price (*EP*) and the final offering price (*OP*) divided by the offering price:

$$\boldsymbol{U} = \frac{\boldsymbol{EP} - \boldsymbol{OP}}{\boldsymbol{OP}} = \frac{\boldsymbol{EP}}{\boldsymbol{OP}} - 1,$$

$$\boldsymbol{U} = \ln\left(\frac{\boldsymbol{EP}}{\boldsymbol{OP}}\right).$$

A main problem is the choice of the equilibrium price *EP*, i.e. the trading price matching the offer and the demand for the shares after the *IPO*. When the market is sufficiently liquid, *EP* generally corresponds to the *first-day closing price*. In other cases, the equilibrium may be obtained a couple of days after the *IPO*. For that reasons, some authors measure initial returns over a five day or one week horizon (Table 9). The raw initial return U can be considered a measure of *underpricing*, assuming that the normal return under efficiency would be *0* and that the equity risk is equivalent to the market risk. Other methods relax these assumptions and adjust raw returns."

Gajewski, Gresse (2006) note: "Three adjustment methods are used in the literature:

1) The initial return adjusted for a market index return

$$\boldsymbol{U_m} = \frac{\boldsymbol{EP} - \boldsymbol{OP}}{\boldsymbol{OP}} - \frac{\boldsymbol{I}_1 - \boldsymbol{I}_0}{\boldsymbol{I}_0} = \frac{\boldsymbol{EP}}{\boldsymbol{OP}} - \frac{\boldsymbol{I}_1}{\boldsymbol{I}_0},$$

$$\boldsymbol{U_m} = \ln\left(\frac{\boldsymbol{EP}}{\boldsymbol{OP}}\right) - \ln\left(\frac{\boldsymbol{I}_1}{\boldsymbol{I}_0}\right),$$

where $\boldsymbol{I_1}$ is the market index closing price on the first trading day, and $\boldsymbol{I_0}$ is the index closing value the day before;

2) The initial return adjusted for systematic risk,

$$\boldsymbol{U_S} = \frac{\boldsymbol{EP} - \boldsymbol{OP}}{\boldsymbol{OP}} - \beta \frac{\boldsymbol{I}_1 - \boldsymbol{I}_0}{\boldsymbol{I}_0},$$

where $\boldsymbol{\beta}$ is the systematic risk;

3) The raw initial return adjusted for the return of a control portfolio *Ritter (1991)* and *Affleck-Graves et al. (1993)*

$$\boldsymbol{U_P} = \frac{\boldsymbol{EP} - \boldsymbol{OP}}{\boldsymbol{OP}} - \boldsymbol{R_P},$$

where $\boldsymbol{Rp}$ is the return of a reference portfolio.

Moreover, some papers *Keloharju (1993); Husson and Jacquillat (1990)* calculate the return that would be obtained by an uninformed investor participating in all the *IPOs.* Considering that the market movements are too small to affect the initial returns significantly, most studies measure *IPO* underpricing with raw returns and select the closing price at the end of the first day of quotation as the equilibrium price. Adjusted returns are preferred when the delay between the *IPO* date and the determination of the first equilibrium price is too long *Périer (1996)*. The most widely utilized adjusted measure is ***Um***, which implicitly standardizes systematic risk to *1*. As pointed out by *Kooli (2000)*, the limits of the second model (***Us***) lie in the difficult and biased estimation of *beta*."

Toniato (2007) explains: “The initial post-*IPO* abnormal returns will be computed as in *Aggarwal et al. (1993)*. For this purpose firstly, the total return on each of the studied companies’ stock (Rs_t) and on their benchmarks (Rb_t) are estimated for the period from the offer price until the t^{th} day of trading as

$$\boldsymbol{R}_{S_t} = \left(\frac{\boldsymbol{P}_{S_t}}{\boldsymbol{P}_{S_0}} \right) - 1,$$

$$\boldsymbol{R}_{b_t} = \left(\frac{\boldsymbol{P}_{b_t}}{\boldsymbol{P}_{b_0}} \right) - 1,$$

where Ps_t and Pb_t are the closing market price of each of the companies’ stock and of the benchmarks on the t^{th} day of trading. Ps_0 and Pb_0 are the offer price at which the company’s shares floated in the market and the opening market price of the benchmark on the day of the *IPO* respectively. From these two returns the market adjusted abnormal return from the opening price until the end of the t^{th} day of trading is computed, for all clinical study companies, as

$$\boldsymbol{MAAR}_t = 100 \bullet \left\{ \left[\frac{\left(1 + \boldsymbol{Rs}_t\right)}{\left(1 + \boldsymbol{Rb}_t\right)} \right] - 1 \right\}.$$

Khurshed and Mudambi (2002) draw attention to the fact that the use of *MAAR* as an abnormal return measure assumes that the systematic risk of the *IPO* company is the same as that of the benchmark. Therefore, upward-biased *MAARs* might be generated when the assumption is not satisfied. Nonetheless, *Khurshed and Mudambi (2002)* also indicate that this matter is unlikely to affect the essence of the performance results.”

The *underpricing* variable in the *IPO* process has also been defined 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.

Ritter (2006) defines the *underpricing* and the *money on the table* as:

$$\boldsymbol{Underpricing} = 100\% \bullet (\textbf{\textit{closing price-offer price)/offer price,}}$$

Money on the table=number of shares sold(closing price-offer price).

Loughran, Ritter (2004) write: "The reasons that *IPOs* are underpriced vary, depending on the environment. In the *1980s*, it is conceivable that the *winner's curse problem* and *dynamic information acquisition* were the main explanations for *underpricing* that averaged *7%* in the *US*. During the internet bubble, we think that these were not the main reasons for *underpricing*. Instead, *analyst coverage* and *side payments to CEOs* and *venture capitalists* became of significant importance."

Discussing the ***analyst coverage problem***, *Loughran, Ritter (2004)* continue to explain: "Underwriters, as intermediaries, advise the issuer on pricing the issue, both at the time of issuing a preliminary prospectus that includes a file price range, and at the pricing meeting when the final offer price is set. If underwriters receive compensation from both the issuer (the gross spread) and investors, they have an incentive to recommend a lower offer price than if the compensation was merely the gross spread." The ***analyst coverage problem*** has been found to exist in *Boissin (2012)*: "We find that investors and market participants pay attention to analyst coverage when *IPOs* have large underwriting syndicates and are highly *underpriced*."

Considering the ***CEOs and venture capitalists side payments problem***, *Loughran, Ritter (2004)* propose a *spinning hypothesis of IPO underpricing*: "We introduce a new agency explanation for *IPO underpricing*, the spinning hypothesis, which is based on a conflict of interest between decision-makers and other pre-*IPO* shareholders. It posits that decision-makers are willing to hire underwriters with a history of underpricing because the decision-makers receive side payments. The decision-makers are the individuals who choose the managing underwriters, especially the lead underwriter, for an *IPO*. These decision-makers are the general partners of the lead venture capital firm (if a firm is financed with venture capital money) and the top managers of the issuing firm. The other pre-issue shareholders are the limited partners of venture capital firms and other minority shareholders."

Fig. 4 demonstrates the number of *IPOs* (bars) and average first-day returns (diamonds) by calendar year in *Loughran, Ritter (2004)*.

Fig. 5 depicts the average first-day returns by age of the firm at the time of IPO in *Loughran, Ritter (2004)*.

Tab. 13 provides some information on a number of *IPOs*, first day returns, number of managing underwriters, amount of money left on the table, valuation levels, and sales by year (means) in *Loughran, Ritter (2004)*.

Tab. 14 shows the average first-day returns on the *IPOs* categorized by proceeds, assets, sales, age, industry, *VC*-backing, share overhang, and underwriter prestige in *Loughran, Ritter (2004)*.

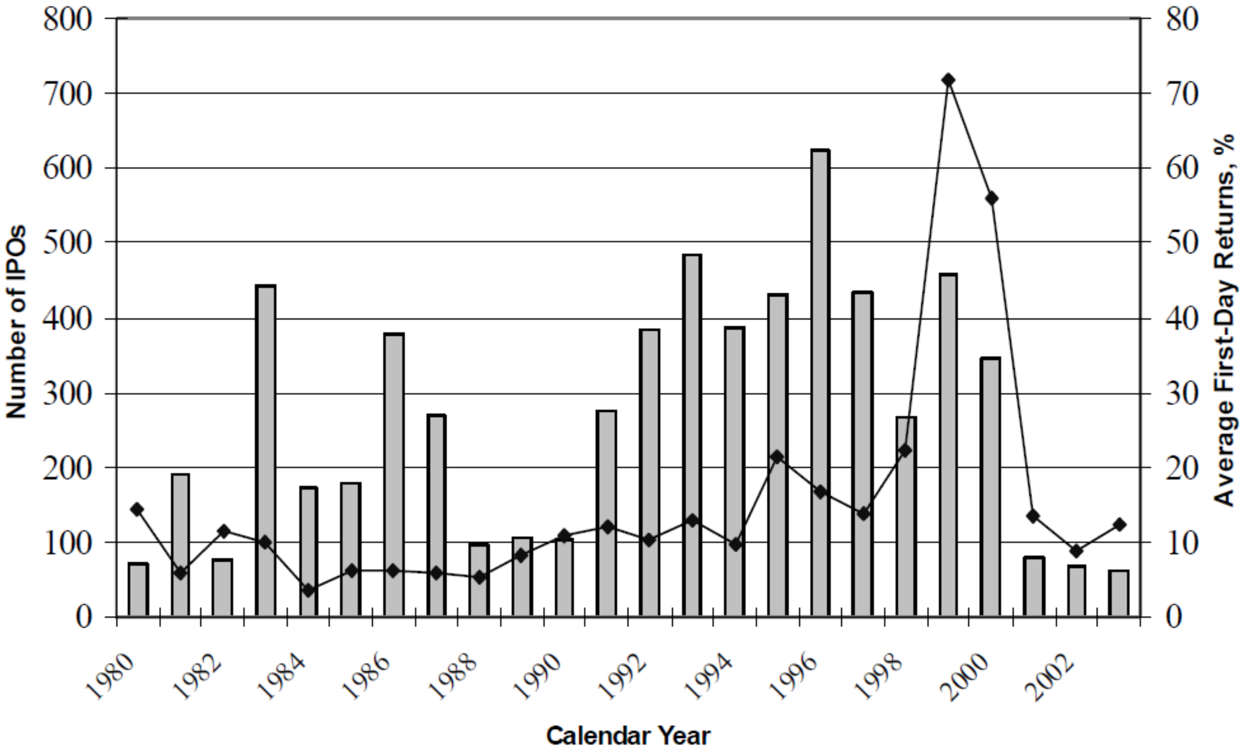

Fig. 4. *Number of IPOs (bars) and average first-day returns (diamonds) by calendar year (after Loughran, Ritter (2004)).*

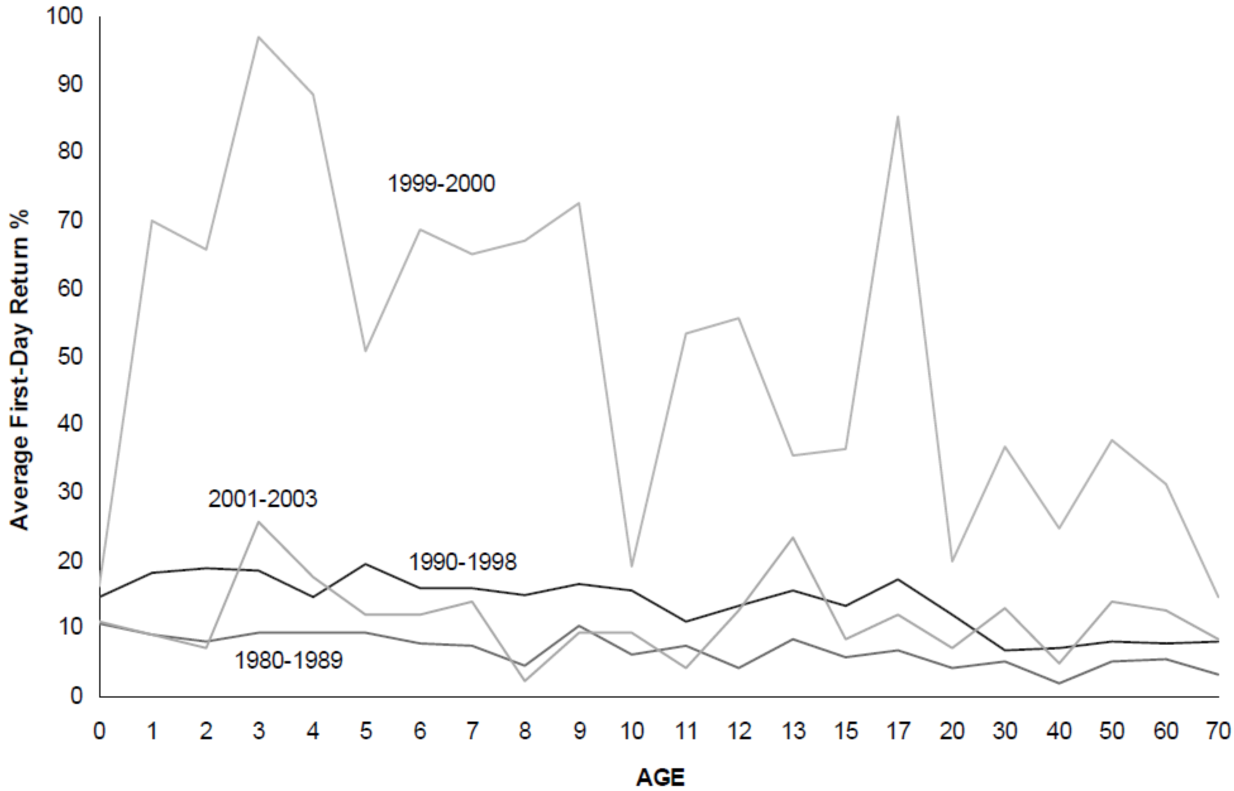

Fig. 5. *Average first-day returns by age of firm at time of IPO (after Loughran, Ritter (2004)).*

Year	Number of IPOs	First-Day Return	Number of Managing Underwriters	Millions of 2003 Dollars: Money on the Table	Post-Issue Valuation: Offer Price	Post-Issue Valuation: Market Price	Sales
1980	70	14.5%	1.4	$5.6	$145	$181	$77
1981	191	5.8%	1.3	$1.4	$102	$109	$55
1982	77	11.4%	1.4	$3.3	$111	$126	$41
1983	442	10.1%	1.5	$3.5	$151	$165	$92
1984	172	3.6%	1.5	$0.5	$89	$91	$84
1985	179	6.3%	1.5	$2.0	$188	$194	$202
1986	378	6.3%	1.5	$2.9	$182	$194	$171
1987	271	6.0%	1.8	$3.9	$219	$234	$248
1988	97	5.4%	1.7	$2.0	$306	$315	$300
1989	105	8.1%	1.6	$3.3	$229	$245	$241
1990	104	10.8%	1.9	$4.4	$206	$225	$365
1991	274	12.0%	2.0	$6.6	$211	$236	$237
1992	385	10.2%	2.0	$5.8	$217	$237	$222
1993	484	12.8%	2.1	$8.4	$269	$304	$263
1994	387	9.8%	2.0	$4.5	$179	$193	$204
1995	434	21.5%	2.3	$12.1	$268	$320	$211
1996	623	16.7%	2.4	$12.3	$330	$392	$160
1997	437	14.0%	2.5	$11.3	$287	$334	$181
1998	268	22.2%	2.9	$21.1	$540	$652	$332
1999	457	71.7%	3.4	$86.2	$890	$1,519	$368
2000	346	56.1%	3.7	$82.8	$963	$1,635	$270
2001	80	13.5%	4.4	$30.9	$2,084	$2,239	$2,130
2002	67	8.9%	4.7	$17.3	$1,147	$1,239	$1,137
2003	63	12.2%	4.0	$16.0	$575	$645	$380
1980-1989	1,982	7.3%	1.5	$2.8	$170	$181	$149
1990-1998	3,396	14.8%	2.3	$10.0	$281	$325	$222
1999-2000	803	65.0%	3.6	$84.7	$921	$1,569	$326
2001-2003	210	11.7%	4.4	$22.1	$1,332	$1,442	$1,289
Total	6,391	18.7%	2.3	$17.5	$361	$474	$248

Tab. 13. *Number of IPOs, first day returns, number of managing underwriters, amount of money left on the table, valuation levels, and sales by year (means) (after Loughran, Ritter (2004)).*

Segmented by	1980-1989 Return	N	1990-1998 Return	N	1999-2000 Return	N	2001-2003 Return	N
Proceeds								
Small	7.4%	880	12.1%	1,551	32.7%	232	12.4%	77
Large	7.3%	1,102	17.0%	1,845	78.1%	571	11.3%	133
Assets								
Small	9.0%	1,095	16.8%	1,519	71.0%	458	12.0%	50
Large	4.5%	717	13.1%	1,825	57.2%	344	11.6%	160
Sales								
Low	9.2%	1,003	18.3%	1,545	73.0%	560	12.5%	52
High	5.2%	944	11.7%	1,805	46.6%	240	11.5%	157
Age								
Young (0-7 years old)	9.0%	1,003	17.1%	1,640	75.2%	536	14.6%	72
Old (8 years and older)	5.8%	942	12.7%	1,681	45.2%	263	10.1%	134
Industry								
Tech and internet-related	10.2%	576	22.2%	1,081	80.6%	585	16.4%	60
Non-technology	6.2%	1,406	11.3%	2,315	23.1%	218	9.8%	150
Segmented by venture capital backing								
Non VC-backed	7.1%	1,437	13.8%	2,000	38.5%	316	9.4%	125
VC-backed	8.0%	545	16.1%	1,397	82.2%	487	15.0%	85
Segmented by source of shares offered								
Exclusively sold by firm	7.7%	868	13.8%	1,999	69.4%	681	11.7%	147
Including secondary shares	7.1%	1,114	16.1%	1,396	40.4%	122	11.7%	63
Segmented by share overhang								
Low	7.8%	885	11.8%	1,846	26.1%	134	7.2%	87
High	7.0%	1,097	18.3%	1,550	72.7%	669	14.8%	123
Segmented by underwriter prestige								
Low-prestige	9.1%	1,119	12.9%	1,302	35.1%	151	12.2%	45
High-prestige	5.1%	863	15.9%	2,094	71.9%	652	11.5%	165
Segmented by the offer price relative to the file price range								
Revised up	20.5%	246	32.0%	777	119.0%	362	24.3%	42
OP within range	7.8%	1,181	12.3%	1,750	26.8%	296	10.3%	116
Revised down	0.5%	544	4.3%	867	7.9%	145	4.5%	52
All	7.3%	1,982	14.8%	3,396	65.0%	803	11.7%	210

Tab. 14. *Average first-day returns on IPOs categorized by proceeds, assets, sales, age, industry, VC-backing, share overhang, and underwriter prestige (after Loughran, Ritter (2004)).*

Tab. 15 shows the pre-issue *CEO* ownership in dollar values and percentage, *1996-2000*; and Tab. 16 highlights the mean and median first-day returns, median age, sales, *EPS*, and share overhang, and industry representation vs the underwriter prestige in *Loughran, Ritter (2004)*.

Year	Number of IPOs	Median Pre-Issue Number of CEO Shares	Median Offer Price	Median CEO Pre-Issue Dollar Value, Millions	Median Pre-Issue % CEO Ownership
1996	623	723,591	$12.00	$8.68 m	10.4%
1997	437	880,401	$11.75	$10.34 m	12.8%
1998	268	1,188,677	$12.50	$14.86 m	11.8%
1999	457	1,394,336	$14.00	$19.52 m	8.0%
2000	346	1,554,172	$14.00	$21.76 m	5.3%

Tab. 15. *Pre-issue CEO ownership in dollar values and percentage, 1996-2000 (after Loughran, Ritter (2004)).*

	1980-1989		1990-1998		1999-2000		2001-2003	
	Return	N	Return	N	Return	N	Return	N
Mean first-day returns								
Low prestige	9.1%	1,119	12.9%	1,302	35.1%	151	12.2%	45
High prestige	5.1%	863	15.9%	2,094	71.9%	652	11.5%	165
Median first-day returns								
Low prestige	2.5%	1,119	7.1%	1,302	12.2%	151	11.1%	45
High prestige	1.2%	863	8.7%	2,094	37.5%	652	8.3%	165
Median Age								
Low prestige	6 years	1,115	7 years	1,298	5 years	151	9 years	45
High prestige	9 years	849	8 years	2,050	5 years	649	14 years	162
Median trailing sales (millions)								
Low prestige	$21.5	1,086	$25.8	1,268	$9.1	150	$44.1	45
High Prestige	$80.2	861	$71.7	2,082	$17.3	650	$269.4	164
Median trailing 12-month EPS								
Low prestige	$0.38	1,099	$0.25	1,302	-$0.58	151	-$0.25	45
High prestige	$0.59	855	$0.27	2,094	-$1.18	652	$0.02	165
Median share overhang								
Low prestige	2.28	1,119	1.96	1,302	2.91	151	2.00	45
High prestige	2.82	863	2.44	2,094	4.31	652	2.97	165
Percentage with an offer price above the maximum of the file price range								
Low prestige	9%	1,110	11%	1,302	28%	151	9%	45
High prestige	17%	861	30%	2,094	49%	652	23%	165
Percentage tech and internet-related								
Low prestige	30.6%	1,119	28.3%	1,302	68.9%	151	33.3%	45
High prestige	27.1%	863	34.0%	2,094	72.8%	652	27.3%	165
All	7.3%	1,982	14.8%	3,396	65.0%	803	11.7%	210

Tab. 16. *Mean and median first-day returns, median age, sales, EPS, and share overhang, and industry representation categorized by underwriter prestige (after Loughran, Ritter (2004)).*

Toniato (2007) stated that the *IPO underpricing* was documented in *Stoll, Curley (1970)* for the first time: "*Stoll and Curley (1970)* were the pioneers in documenting the systematically abnormal first-day returns of *IPOs*. In the following years the same phenomenon was observed in the UK *Buckland, Herbert and Yeomans (1981)* and later in virtually every capital market in world. Furthermore, contrary to the idea that the market would learn and rectify this anomaly with time, *Ritter and Welch (2002)* document a significant trend of increase in this pattern of underpricing over time."

The existing *underpricing theories* are discussed below in details in *Toniato (2007)*:

"1) Some researchers explain *IPO underpricing* by proposing it is a signalling mechanism. This theory is based on *an asymmetry of information between issuers and investors*; which generates a lemons problem since only low quality issuers will be willing to sell their shares at the average price. The model, therefore, predicts that high quality issuers will signal their superiority by selling shares at a price lower than the market believes they are worth. These high quality issuers are believed to be compensated for their sacrifice in the future when "a higher price at the seasoned offering eventually compensates firms for the intentionally low *IPO* price" *Welch (1989)*. However, further research contested this theory and found no evidence of *underpriced IPOs* consistently returning to the market for seasoned offerings *Michaely, Shaw (1994)*.

2) Another theory based on *asymmetry of information* and one of the most compelling models in explaining *IPO* performance is the one created by *Rock (1986)*. The model applies the concept of a winner's curse to the *IPO* market. According to this theory, investors can be classified as 'informed' or 'uniformed'. The former are investors who are willing to incur the costs to assess the future performance of new issues and the latter are investors who do not spend resources on the analysis of *IPOs* and indiscriminately invest in all new issues. Since informed investors will only apply for *underpriced IPOs* and uninformed investors apply to all; *underpriced issues* will be oversubscribed while the overpriced issues will be relatively undersubscribed. Consequently, the investor who applies for all new issues finds himself in the long run holding a much larger amount of *overpriced IPOs*. Hence, if all *IPOs* are priced at the underlying value, uninformed investors make systematic losses and leave the market. *Rock's model*, therefore, anticipates that underwriters will systematically underprice all issues fearing that otherwise the uninformed investor might leave the *IPO* market ensuing shorter liquidity and a decrease in profitability for investment banks. The model found support in empirical studies including *Keloharju (1993), Koh and Walter (1989)* and recently in the UK *Khurshed and Mudambi (2002)* who find no significant underpricing in investment trusts *IPOs* and conclude that this partially due to the smaller differential of information between uninformed and informed investors about this type of firm.

3) *Baron (1982)* offers an explanation which focuses on the *asymmetry of information* not between investors and underwriters but *between issuing firms and underwriters*. The model assumes that investment bankers have more information about the demand for *IPO* shares in the market and therefore the issuer could only monitor the work of the underwriter for a cost. This makes it optimal for the issuer to allow a certain degree of underpricing. This model found some

empirical support in the work of *Khurshed and Mudambi (2002)*. However, *Muscarella and Vetsuypens (1989)* found that when investment banks themselves go public the underpricing is as large as on other types of firms, casting doubt on the validity of the theory.

4) Models which do not rely on the asymmetry of information include the theory that *investment bankers possess a monopsony power over small issuing firms*, which can be used to lower the risk of losses for investment banks. This model also infers that underwriters can use this power to distribute *underpriced IPOs* to favoured clients. In tune with this prediction *Cornelli and Goldreich (2001)* in the *UK* and *Aggarwal, Prabhala and Puri (2002)* in the *US* conclude that underwriters favor institutional investors on the allocation of shares. However, other recent research contested this idea and found that "underpricing has little or no effect on outside block ownership" *Field and Sheehan (2002).*

5) Finally, *Tinic (1988)* provides a further model not dependent on the *asymmetry of information*. The author develops a litigation theory which predicts that *issuers and underwriters use underpricing as form of insurance against legal action.* The model assumes an implied agreement between all parts involved in an *IPO*, where investors are rewarded with excess returns in the short run in exchange for neglecting small errors related to disclosure requirement for issuing firms. *Drake and Vetsuypens (1993)* challenged the model finding that on average sued *IPOs* actually had higher *underpricing* than those not sued.

Tab. 17 presents an international evidence of *short-run underpricing* in *Toniato (2007).*

Country	Reference(s)	Sample size	Time period	Average initial return
Australia	Lee, Taylor and Walter (1996)	266	1976-89	11.90%
Austria	Aussenegg (1997)	67	1964-96	6.50%
Brazil	Aggarwal, Leal and Hernandez (1993)	62	1979-90	78.50%
Canada	Jog and Srivastava (1994)	258	1971-92	5.40%
Chile	Aggarwal, Leal and Hernandez (1993)	19	1982-90	16.30%
Finland	Keloharju (1993)	85	1984-92	9.60%
Germany	Ljungqvist (1997)	170	1978-92	10.90%
Japan	Hebner and Hiraki (1993); Hamao, Packer and Ritter (1998)	975	1970-96	24.00%
Korea	Dhatt, Kim and Lim (1993)	347	1980-90	78.10%
New Zealand	Vos and Cheung (1993)	149	1979-91	28.80%
Sweden	Ridder (1986); Rydqvist (1993)	213	1970-91	39.00%
United Kingdom	Levis (1993)	2,133	1959-90	12.00%
United States	Ibbotson, Sindelar and Ritter (1994)	13,308	1960-96	15.80%

Sources: Loughran, Ritter, Rydqvist (1994), Ritter (1998) as well as the listed authors for each study.

Tab. 17. *International evidence of short-run underpricing (after Toniato (2007)).*

Toniato (2007) "Theoretical models explaining the long run behaviour of IPOs are less plentiful than the ones relating to the short run behaviour. *Khurshed, Mudambi and Goergen (1999)* separates these theories in three groups:

1) one which provides behaviour and expectations-based explanations for the phenomenon,

2) one which bases its explanations in the agency theory, and

3) a final group which deem the observed underperformance a result of mis-measurement."

Tab. 18 presents an international evidence of the *long-run performance of IPOs* in *Toniato (2007).*

Country	Reference	Sample size	Time period	Average initial return
Australia	Lee, Taylor and Walter (1996)	266	1976-89	-46.50%
Austria	Aussenegg (1997)	67	1964-96	-27.30%
Brazil	Aggarwal et al. (1993)	62	1979-90	-47.00%
Canada	Kooli and Suret (2004)	445	1991-98	-16.86%
Chile	Aggarwal et al. (1993)	19	1982-90	-23.70%
Finland	Keloharju (1993)	85	1984-92	-21.10%
Germany	Ljungqvist (1997)	170	1978-92	-12.10%
Japan	Cai and Wei (1997)	975	1970-96	-27.00%
Korea	Dhatt, Kim and Lim (1993)	347	1980-90	2.00%
New Zealand	Firth (1997)	143	1979-87	-10.00%
Sweden	Loughran, Ritter and Rydqvist (1994)	162	1980-90	1.20%
United Kingdom	Levis (1993)	712	1980-88	-8.10%
United States	Loughran and Ritter (1995)	4,753	1970-90	-20.00%

Sources: Kooli and Suret (2004), Loughran, Ritter and Rydqvist (1994), Ritter (1998) as well as the listed authors of each study.

Tab. 18. *International evidence of long-run performance of IPOs (after Toniato (2007)).*

Yongyuan Qiao (2008) researched both the time series properties of the level of *IPO* shares *underpricing* and the volume of *IPO* shares selling in *Hong Kong* equity market from *November, 1999* to the end of *2005*.

Fig. 6 shows a total number of *IPOs* at *Hong Kong Stock Exchange;* Fig. 7 demonstrates an average *IPO* capitalization at *Hong Kong Stock Exchange;* Fig. 8 provides some information on an average *IPO* underpricing levels across the countries *in Yongyuan Qiao (2008).*

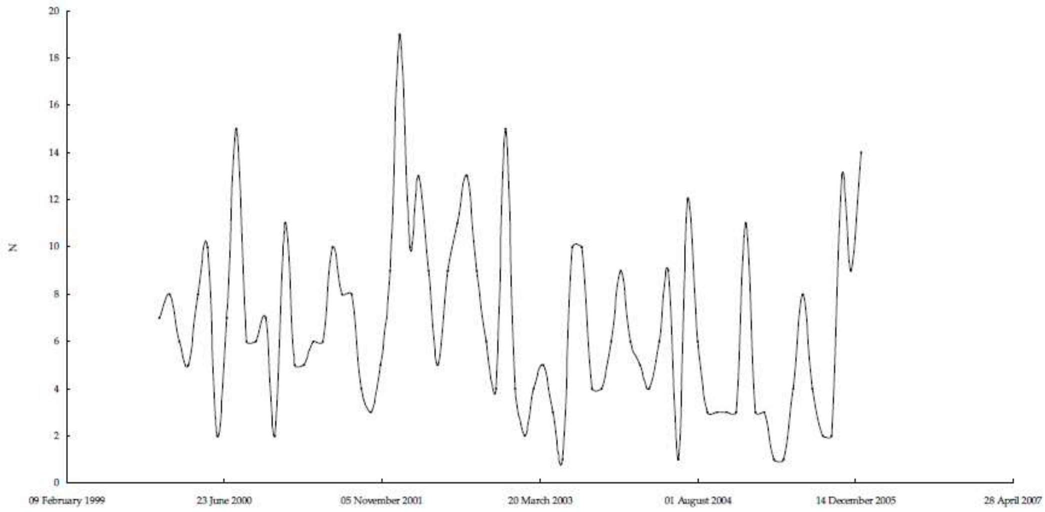

Fig. 6. *Number of IPOs at Hong Kong Stock Exchange (after Yongyuan Qiao (2008)).*

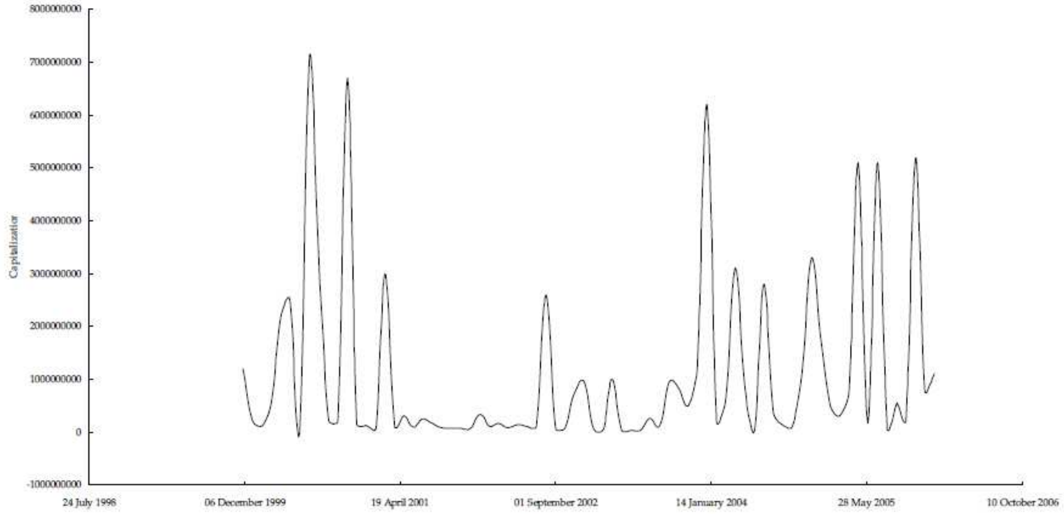

Fig. 7. *Average IPO capitalization at Hong Kong Stock Exchange (after Yongyuan Qiao (2008)).*

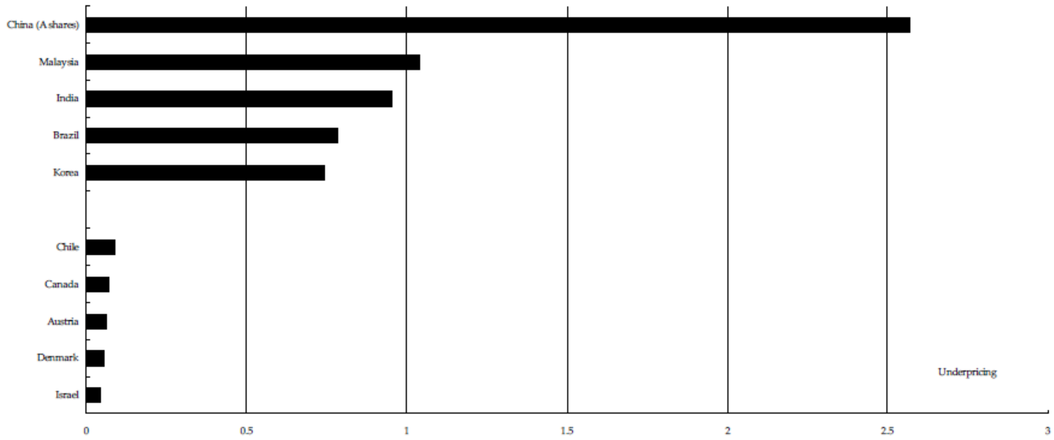

Fig. 8. *Average IPO underpricing levels across countries (after Yongyuan Qiao (2008)).*

Pennacchio, Del Monte, Acconcia (2010) suggested that *the original hypothesis that the distance of a firm from the main financial centre affects underpricing positively: The higher is the distance; the higher are the information imperfections among players involved in the Initial Public Offering and the higher is the uncertainty about the true value of the listing firm*. This research proposal is in an agreement with the theoretical approach that explains the underpricing in the context of the *asymmetric information* flows theory.

Tab. 19 shows the determinants of underpricing in *Italy, France and Germany (1999 - 2009)* in *Pennacchio, Del Monte, Acconcia (2010).*

	1	2	3	4	5
Distance	0.019***	0.021***	0.021***	0.003***	0.013
	(0.006)	(0.006)	(0.008)	(0.001)	(0.012)
Revision	6.75***	6.93***			
	(2.42)	(2.54)			
Size	-0.83**	-0.52	-1.01***	0.36	-2.05**
	(0.34)	(0.37)	(0.33)	(0.23)	(0.91)
Age	-3.52**	-2.44*	-2.69*	-0.22	-3.91**
	(1.47)	(1.39)	(1.45)	(0.45)	(1.79)
Index Return	0.92**	1.04**	1.15**	0.19***	0.34
	(0.40)	(0.45)	(0.57)	(0.08)	(0.46)
Index Volatility	0.016*	0.016*	0.015*	0.02***	0.11***
	(0.009)	(0.01)	(0.008)	(0.006)	(0.021)
Reputation	-6.63**	-6.11**			
	(2.59)	(2.67)			
Greenshoe	-072**	-0.65**			
	(0.33)	(0.31)			
Oversubscription	9.95*	10.85*			
	(5.99)	(5.85)			
Range	-0.34	-0.038			
	(0.04)	(0.045)			
Service Sector		5.07*	3.79	-2.82***	7.18
		(2.90)	(3.05)	(0.96)	(5.61)
Financial Sector		6.89**	7.5**	1.04	-9.75***
		(2.80)	(3.38)	(1.55)	(4.05)
Fees		2.32*			
		(1.31)			
Constant	14.11	1.62	11.73**	-5.20	34.39**
	(9.78)	(9.56)	(5.69)	(4.01)	(16.49)
R^2	0.4656	0.5014	0.2755	0.0786	0.1606
F-statistic	12.36	12.56	2.8	3.78	7.03
Observations	134	124	134	332	308

Notes: Figures in parentheses are standard errors.
***, **, * Significant at 1%, 5% and 10%.

Tab. 19. *Determinants of underpricing in Italy, France and Germany (1999-2009) (after Pennacchio, Del Monte, Acconcia (2010)).*

Pennacchio (2013) proposes that: "The *underpricing* difference is actually due to the causal effect of *venture capital backing* and that the raw comparison of the sample means underestimates such an effect. The result is consistent with the *certification hypothesis, that is, certifying that the value of issuing firms reflects all relevant inside information, venture capital backing reduces the asymmetric information problem that arises in the IPO process*."

Tab. 20 shows the *Italian IPOs* by year of listing, and Tab. 21 demonstrates the characteristics of the *VC* backed and *non-VC* backed *IPOs* in *Pennacchio (2013).*

Year	Total Number of IPOs	Venture capital backed IPOs		Market Return
		Number	% of total IPOs	
1999	27	9	33.3	22.3
2000	42	12	28.6	1.7
2001	17	4	23.5	-26.2
2002	5	1	20.0	-26.0
2003	4	2	50.0	11.8
2004	8	4	50.0	16.9
2005	15	6	40.0	13.3
2006	21	8	38.1	17.5
2007	28	12	42.9	-7.7
2008	6	3	50.0	-48.4
2009	4	2	50.0	19.5
2010	8	2	25.0	-13.2
2011	2	0	0.0	-26.2
2012	1	0	0.0	0.9
	188	65	34.6	

Tab. 20. *Italian IPOs by year of listing after Pennacchio (2013)).*

	VC backed IPOs		non-VC backed IPOs	
	Mean	Median	Mean	Median
Panel A: Firm characteristics				
Age	20.9	13	25.2	16
Capitalization (Market value)	326	176	1082	230
Total asset	235	77	1946	102
Net asset (Patrimonio Netto)	73	24	413	21
Revenue	238	89	569	104
Offer proceeds	120	60	340	79
Debt Equity	0.84	0.74	2.1	0.84
Roe (%)	38	0.37	60	0.44
Ros (%)	-1.8	0.11	13	0.14
Panel B: Offering characteristics				
Oversubscription	1.2	1.08	1.3	1.14
Greenshoe (%)	11.3	11.1	10.7	11.5
Range	26.5	25	32.2	25
Revision	0.27	0.32	0.28	0.36
Share offered	37.1	35.1	32.1	30
Underwriter reputation	9.4	3.9	9.6	3.9
Gross spread	4	4.15	3.8	3.95

Tab. 21. *Characteristics of VC backed and non-VC backed IPOs (after Pennacchio (2013)).*

Pennacchio (2013) writes: "The provided empirical evidence indicates that *venture capital backing* play an important role in the reduction of *information asymmetries* between issuing firms and outside investors, and consequently of the *IPO underpricing*. Given that the *underpricing is considered as the main indirect cost of floatation*, the result suggests that an efficient venture capital industry may help to overcome the so called "funding gap" – the financing problems faced by new and small firms – with wide advantages for the overall economy."

Tab. 22 presents the regression analysis: The effect of venture capital backing on the *IPO underpricing* in *Pennacchio (2013).*

Y = underpricing	(1)	(2)	(3)	(4)	(5)
Venture Backing	-2.87** (-2.59)	-3.16*** (-3.19)	-4.63* (-1.89)	-6.02** (-2.19)	-7.13** (-1.97)
Bank Uw			-4.51* (-1.84)	-4.52** (-1.98)	-4.23* (-1.74)
Venture Backing – Underwriter reputation			0.22 (1.03)	0.22 (1.14)	0.21 (1.15)
Size		-1.27** (-2.79)	-1.79** (-2.38)	-2.03*** (-2.66)	-1.24* (-1.88)
Age		-1.35* (-1.84)	-1.54** (-2.17)	-1.51** (-2.16)	-0.93* (-1.69)
Underwriter Reputation		-0.06 (-1.17)	-0.16* (-1.85)	-0.15* (-1.81)	-0.18*** (-2.62)
Distance			0.02*** (3.66)	0.02*** (3.74)	0.01*** (4.52)
Range			0.06*** (3.22)	0.06*** (3.55)	0.06*** (3.37)
Fees			1.59 (1.61)	1.57* (1.75)	1.85** (2.04)
Greenshoe			-0.34** (-2.29)	-0.34** (-2.55)	-0.33** (-2.00)
Revision			7.70*** (8.13)	8.03*** (9.94)	7.29*** (7.90)
Constant	7.63*** (7.67)	61.06*** (15.38)	0.54 (0.06)	4.98 (0.98)	4.69 (0.92)
Year Dummies	yes	yes	yes	yes	Yes
Industry Dummies	no	no	yes	yes	yes
Observations	181	181	168	163	148
Pseudo R^2	0.16	0.20	0.42	-	-
Wald Test (p-value)	-	-	-	0.05	0.06

***, **, * statistically significant at 1, 5 and 10% level.

Tab. 22. *Regression analysis: the effect of venture capital backing on the IPO underpricing (after Pennacchio (2013)).*

Pennacchio, Del Monte, Acconcia (2010) note: "*IPO* process involves both direct costs (underwriting and audit fees, selling commission, legal expenses, etc.) and indirect costs. Underpricing is considered the larger indirect cost."

Pritsker (2004, 2006) proposed a fully-rational liquidity-based theory of *IPO underpricing* and *underperformance*: "In the model, underwriters need to sell a fixed number of shares at the *IPO* or in the aftermarket. To maximize revenue and avoid selling into the aftermarket where they can be exploited by large investors, underwriters distort share allocations towards investors with market power, and set the *IPO* offer price below the aftermarket trading price. Large investors who receive *IPO* share allocations sell them slowly afterwards to reduce their trade's price-impact. This curtails the shares that are available to small price-taking investors, causing them to bid up prices and bid down returns. In some simulations, the distorted share allocations and slow unwinding behavior generate post-*IPO* return underperformance that persists for several years."

Zhang J X (2009) makes an interesting remark that the level of *underpricing* reduces in the case of the decrease of the degree of *information asymmetry* about the firm at the time of the *IPO*: "The information about the firm is disclosed so as to inform investors about the firm's value at the time of the *IPO*. Correct information about the quality of innovation of a firm at the time of the *IPO* can exhibit important information about its attainment in the *IPO* market. Therefore, if credible information on the value of a firm is provided at the time of the IPO, information asymmetry and the underpricing of the firms will be reduced *Rock (1986)*. At the time of the *IPO*, information asymmetry as to the firm's value will decrease with the disclosure of accurate information about the value of the firm's innovation stock. This decrease in information asymmetry will be associated with an identical decrease in the underpricing of market valuations."

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.

Long term performance of initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Von Eije, de Witte, van der Zwaan (2000) study the ***long term- performance* of *IPOs*** in the *Netherlands*: "The shareholders that stay with the company after the *IPO* and the new shareholders, however, do not necessarily profit from the listing. Much empirical literature on *initial public offerings (IPOs)* that addresses the *long-term performance* of *IPOs* suggests that these stockholders may not profit from the *IPO* because the *IPO* companies show *underperformance*." *Von Eije, de Witte, van der Zwaan (2000*) present a short review on the origins of *IPO underperformance:* "Several explanations arise for this anomalous phenomenon.

Ritter [1991, 1997] suggests various reasons for *underperformance*. Issuer's timing, risk mismeasurement, fads as well as the fact that mainly optimistic investors will be prepared to buy overpriced new *IPO* stock may all contribute to long term underperformance. *Welch [1989, 1996]* proposes that low quality *(underperforming)* companies cannot mimic the signals of high quality companies of which the owners issue *IPO*-shares at a discount and then wait patiently before selling the remainder of the firm in a seasoned equity offering. *Hughes and Thakor [1992]* suggest that *long-term underperformance* originates from potential legal liabilities of misrepresenting the quality of the *IPO-shares. Carter, Dark and Singh [1998]* attribute lower performance to lower underwriter's quality. *Teoh, Welch and Wong [1998],* finally, explain underperformance from *window dressing* before the company goes public." *Von Eije, de Witte, van der Zwaan (2000)* highlight the idea that *IPO* can induce the certain changes within the company: "In this article we present the results of a survey on *IPO*-related organizational change amongst *27* corporate officers of companies that received a listing at the *Amsterdam Stock Exchange* during *1987-1997... Long-term performance* is not only based on company products, markets and financing, but originates also from within the company. This research finds that an *IPO (or* the preparation for an *IPO)* can cause changes within a company. These IPO-related changes are not necessarily financial but they can contribute positively to long-term performance."

Cogliati, Paleari, Vismara (2010) write: "The aftermarket performance is measured using *Buy-and-Hold Abnormal Returns (BHAR)*, see *Loughran and Ritter (1995)*, which are calculated for stock *i* over a time period *T* as follows

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

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

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

Trauten, Schulz (2006) researched the *IPOs* long time performances in *Germany:* "We study the performance of an investment in each *IPO* by comparing the buy-and-hold return of each *IPO* to the buy-and-hold benchmark return irrespective of the *IPO* point in calendar time. As we ignore calendar time, this analysis resembles an event study methodology. Several different approaches to measuring long-term performance of stocks in event time are discussed in the literature. Among the most established methodologies are the *Buy-and-Hold Abnormal Return approach (BHAR)* firstly mentioned by *Cusatis, Miles and Woolridge (1993)*, the

Cumulative Abnormal Return approach (CARs) by *Fama et al. (1969)* and the *Wealth Relative method by Ritter (1991).*

In the case of each *IPO* investments strategies, *Trauten, Schulz (2006)* use the following formulas to calculate the *buy-and-hold abnormal return* and the *mean of the buy-and-hold abnormal returns*:

$$\boldsymbol{BHAR_{H,i}} = \left(\prod_{h=1}^{H}\left(\boldsymbol{R_{i,t}}+1\right)\right)-\left(\prod_{h=1}^{T}\left(\boldsymbol{R_{B,i,t}}+1\right)\right),$$

$$\overline{\boldsymbol{BHAR}}{}_{H}^{S} = \sum_{i=1}^{N}\boldsymbol{w_i}\left[\left(\prod_{h=1}^{H}\left(\boldsymbol{R_{i,t}}+1\right)\right)-\left(\prod_{h=1}^{T}\left(\boldsymbol{R_{B,i,t}}+1\right)\right)\right],$$

where *Ri,t* is the total return of firm *i* in the calendar month *t,* following the *IPO*,

$R_{B,i,t}$ is the total return of a benchmark portfolio for firm *i* in calendar month *t* for a maximum holding period *H,*

w_i = *1/N* in case of investment strategy *1*,

w_i = market value of firm *i* at the end of the *IPO* month / sum of market values of all firms at the end of the respective *IPO* months in case of investment strategy *2*.

In the case of *IPO*-portfolio investment strategies, *Trauten, Schulz (2006)* calculate the *excess buy-and-hold abnormal return* of investment strategies *S={3,4}* for a formation period of *F* months and a sample period of $\tau = T$ calendar months

$$\boldsymbol{BHAR_{F,T}^{S}} = \prod_{\tau=1}^{T}\left[\left(\sum_{i_\tau=1}^{N_{F,\tau}}\boldsymbol{w_{i,\tau}}\bullet\boldsymbol{R_{i,\tau}}\right)+1\right]-\prod_{\tau=1}^{T}\left[\left(\sum_{i_\tau=1}^{N_{F,\tau}}\boldsymbol{w_{i,\tau}}\bullet\boldsymbol{R_{b,i,\tau}}\right)+1\right],$$

where $R_{i,\tau}$ = return of firm *i* in calendar month τ,

$R_{b,t,\tau}$ = return of the benchmark portfolio *b* for firm *i* in calendar month τ,

NF,τ = number of firms that went public in the *F* months prior to calendar month τ,

$w_{i,\tau}$ = *1* in case of each *IPO* is weighted equally (equally weighted strategy *3*),

$w_{i,\tau}$ = market value of firm *i* in calendar month τ divided by the sum of the market values of all firms *NF,τ* in calendar month τ (value weighted strategy *4*).

Tab. 23 provides some information on the research works to study the long-run performance of *IPOs* in *Trauten, Schulz (2006).*

Author(s) (year)	Sample period	Number of IPOs	Benchmark	Holding period (months)	Excess return (%)		Calculation method
Ehrhardt (1997)	1960-1990	159	Size-portfolio (ew)	36	-0.6		BHAR
		159	Size-portfolio (mvw.)	36	-3.8		BHAR
Ljungqvist (1997)	1970-1990	189	mvwDAFOX	36	-12.1	*	WR
Stehle/Ehrhardt (1999)	1960-1992	187	Size-portfolio (ew)	36	-5.0		BHAR
			Size-portfolio (mvw)	36	1.5		BHAR
Sapusek (2000)	1983-1993	142	Benchmark firms (by size)	60	-34.7		CAR
			DAX	60	1.8		CAR
Stehle/Ehrhardt/	1960-1992	187	Market portfolio (ew)	36	-5.0		BHAR
Przyborowsky (2000)			Market portfolio (mvw)	36	1.54		BHAR
			Benchmark firms [a)]	36	-11.6		BHAR
			Benchmark firms [b)]	36	-3.4		BHAR
Gerke/Fleischer (2001)	1997-2000	263 (NM)	Nemax All-Share	12	96.6	***	BHAR
Rehkugler/Schenek (2001)	1983-1996	450	CDAX	36	-8.5		CAR
Mager (2001)	1987-1997	152	ewDAFOX	36	-13.5		CAR
				60	-41.3	**	CAR
Neuhaus/Schremper	1995-2000	27 (AH)	CDAX	36	-31.8	**	BHAR
(2003)		25 (NM)	CDAX	36	-72.9	***	BHAR
Rath/Tebroke/Tietze (2004)	1997-2001	301 (NM)	CDAX	36	-87.8	***	BHAR
Lubig (2004)	1997-2002	326 (NM)	Nemax All-Share	24	5.0		BHAR

Tab. 23. *Long-run performance of IPOs in Germany (after Trauten, Schulz (2006)).*

Among a big number of interesting researches on the *long term performance* of *IPOs*, it is necessary to higlight the research in *Serve (2004),* who investigated a change in the operating performance of *115* firms that go public on the *French New Market* over the period *1996-2000*: "A significant decline in operating performance subsequent to the *Initial Public Offering (IPO)* is found. Companies appears to sustain sales growth but not capital expenditure after the *IPO*. Additionally, there is a significant negative relation between *post-IPO* change in operating performance and equity retention by the original ownership."

The *long term performance of the initial public offering* of company equity at 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.

Information absorption by investors on company equity value in time of initial public offering of company equity at stock exchanges in imperfect highly volatile global capital markets with induced nonlinearities

Let us explain that the *absorption theory* has been created to understand the *nature of absorption processes* of *different chemical compounds* in the various *physical – chemical systems*, which have been observed in the well known experiments in the *physics* and *chemistry*. This theory has been further developed by the prominent researchers at the world class research institutions and top league universities in a number of countries over the centuries. Let us emphasis some of the completed theoretical and experimental research projects to study the *absorption phenomena* in the material sciences:

1. The *absorption* of the *different radioactive chemical elements and their isotopes* in the *soft condensed matter* in the *nuclear physics* have been researched in *Ledenyov O P, Neklyudov (2013), Neklyudov, Dovbnya, Dikiy, Ledenyov O P, Lyashko (2013), Neklyudov, Ledenyov O P, Fedorova, Poltinin (2013a, b), Neklyudov, Fedorova, Poltinin, Ledenyov O P (2013), Ledenyov O P, Neklyudov, Poltinin, Fedorova (2012a, b), Neklyudov, Ledenyov O P, Fedorova, Poltinin (2012)*.

2. The *absorption* of the *electromagnetic signals* in the *condensed matter* (the *metals* and *superconductors*) at the *ultrasonic frequencies* in the *solid state physics* has been investigated in *Ledenyov O P (2012a, b, c), Ledenyov V O, Ledenyov D O, Ledenyov O P, Tikhonovsky (2012), Ledenyov O P, Fursa V P (2012), Shepelev, Ledenyov O P, Filimonov (2012a, b, c, d, e)*.

3. The *absorption* of the *electromagnetic signals* in the *sub-surface layers* in the *condensed matter* (the *high temperature superconducting ceramics* and *dielectrics*) at the *ultra high frequencies* in the *solid state physics* has been studied in *Ledenyov D O, Mazierska, Allen, Jacob (2012), Leong, Mazierska, Jacob, Ledenyov D O, Batt (2012), Mazierska, Ledenyov D O, Jacob, Krupka (2012), Jacob, Mazierska, Ledenyov D O, Krupka (2012), Mazierska, Krupka, Jacob, Ledenyov D O (2012), Jacob, Mazierska, Leong, Ledenyov D O, Krupka (2012), Jacob, Mazierska, Krupka, Ledenyov D O, Takeuchi (2012), Mazierska, Jacob, Ledenyov D O, Krupka (2012), Ledenyov D O (2013), Ledenyov D O, Ledenyov V O (2012e).*

In the *econophysics*, the *absorption phenomena* can frequently be observed in the frames of the evolving learning process at the various practical settings and applications in the economics and finances. A new perspective on the learning and innovation with the particular research focus on the *absorptive capacity* has been presented in *Cohen, Levinthal (1990), Farina (2008), Hussinger (2010, 2012)*. There are a few innovative studies, which have been focused on *the knowledge and information absorptive capacity* by the firm in *Farina (2008)*: "According to *Cohen and Levinthal's (1990)* "*absorptive capacity*" concept, firms' ability to get knowledge and information from their external environment is a function of the firms' specialization choices and experiences. In particular, firms operating in many market segments are likely to possess more internal capabilities than firms operating in few market segments since, as the volume and complexity of information in the environment increase, the organization needs to have correspondingly high levels of information processing capacity (*Miller and Chen (1994); Hambrick, (1982); Khandwalla (1973)*)." *Farina (2008)* continues to explain: "In fact firms' ability to use network ties for accessing information about opportunities and choices otherwise not available is depending on internal resource endowments and in particular on "*absorptive capacity*". In our case, the *absorption effect* has place during the information absorption process by the investors on the company equity value at the *IPO*. Therefore, the influence by the *absorption process* on the investors decisions, regarding the *IPOs* is in the scope of our present research interest. In our opinion, every company creates the *barriers to entry*; defines the *strategic boundaries*; and encounters the *limits to growth*, using the *accumulated knowledge base (the firm-level technology absorption capacity)*, in the specific industry in *Chandler (1962, 1998; 1977, 1993; 1980; 2001; 2005)*. In an analogy with the above described research results, we would like to highlight the fact that the investors learn about the listed company by *absorbing the information on the company, aiming* to *get the deep and broad knowledge on the company's barriers to entry; strategic boundaries; and limits to growth* in the process of investment decision making. The learning processes by the individual and institutional investors have been discussed in *Yao-Min Chiang, Hirshleifer, Yiming Qian, Sherman (2010)*: "This evidence indicates that *individual investors* are subject to *naïve reinforcement learning*. When individual investors receive high returns from previous auctions, they become more optimistic about receiving high returns from future auctions, making them more likely to participate in future auctions and to bid more aggressively. In sharp contrast, there is little sign that *institutional bidders* are subject to this bias. Their decisions to participate in an *IPO* auction are unrelated to their past returns. Furthermore, their returns do not decline with experience as they bid in more auctions, and their auction selection and bid shaving abilities do not deteriorate with experience." Here, let us consider the meanings of the *deep knowledge* and the *broad knowledge* as described in *Moldoveanu, Martin (2001)*: "The *general knowledge* – knowledge that can be easily taught and transferred by means of formalized dialects – and *specific knowledge* – knowledge that cannot be easily encoded and transferred. However, within each different kind of knowledge we can talk of a distinction between the depth of the knowledge and the breadth of the knowledge. *Knowledge is deep when it is of the sort that can answer many concatenated 'why?' questions*. The physicist's and the mathematician's knowledge are examples of deep knowledge. It has a hierarchical structure, with a few basic propositions at the top of the hierarchy, from which all other propositions follow by self-evident steps. *Knowledge is broad when it can be used to answer many questions of the type: 'what?', 'where?', 'who?' and 'how?'*. The economist's and the biologist's knowledge are examples of broad knowledge. There are few key fundamental; assumptions that can compress all of this knowledge, which consists of a large set of empirical findings and basic causal mechanisms which only work when certain conditions come about."

We would like to make the following research proposals:

1. We propose that the *information absorption* by the investors occurs in the *evolving learning process* about the company's equity value, taking to the consideration the *fundamental purpose of investing* and the *responsibilities of investors*. The *fundamental purpose of investing* is explained in *Porter (2013)*: "The *fundamental purpose of investing* is to deploy capital to productive uses in the real economy." The *responsibilities of investor* are discussed in *Porter (2013)*: "Beyond allocating capital, investors also play a vital role in monitoring what companies are doing, pushing for transparency, and intervening to catalyze change if the capital employed isn't generating the economic value it should." We would like to add that the investors have to invest the capital into the companies, which create the "*shared value*," generating the economic value in a way that also produces the value for the society by addressing its challenges.

2. We think that the *information absorption* capacity by the investors on the company equity value at the *IPO* impacts the investor's *investment decisions* and serves as a *pre-*

determinant of the successful IPO deal completion. We propose the ***Ledenyov theory on the origins of the underpricing and long term underperformance effects***, 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*, 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 the 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*;

3. In agreement with the recent scientific findings in the research on the strategy selection problems 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), Grant (2001), Besanko, Shanley, Dranove (2007), Gavetti, Rivkin (2007), Teece, Winter (2007), Martin (1998-1999b, 2005-2006b);* we think that the ***winning virtuous investment strategies*** can only be selected by the investors with the *highest information absorption capacity* through the decision making process on the *IPO* investment choices at the selected stock exchange in the imperfect highly volatile global capital markets with the nonlinearities; applying the *econophysical econometrical analysis* in *Amemiya (1985), Greene (2008)* with the use of 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 *Martin (1998-1999a, 2005-2006a, 2004, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013),* as well as aiming to get the certain financial return and make a positive social impact in the local community and society in *Foerster (2004), Hull (2005-2006).*

4. We advocate for the responsible investing as in *Porter (2013): "Directing capital to companies that can use it productively is ultimately the most profound benefit investors can have on society."* We have the strategic vision that the best time moment for the *Initial Public Offering* of the *company's equity* at the *selected stock exchange* in the *global capital markets* with the *nonlinearities* can only be selected, using the *Vacheron Constantin Patrimony Traditionnelle Caliber 2755* high precision timepiece.

Conclusion

This innovative research considers the complicated problem of *the initial public offering* of the *company equity* at the *stock exchanges* in the *global capital markets* with the *nonlinearities*. We compare the initial listing requirements on the *main, parallel, new,* and *unregulated growth markets*. We analyze the *IPO* techniques: the *fixed-price offerings, auctions,* and *book-building issues*. We focus on the *IPO initial underpricing, long-run performance* and *after market liquidity problems*. We made the following original research propositions:

1. We propose that the *information absorption* by the investors occurs in the *evolving learning process* about the company's value, taking to the consideration the *fundamental purpose of investing* and the *responsibilities of investors*. The *fundamental purpose of investing* is explained in *Porter (2013)*: "The *fundamental purpose of investing* is to deploy capital to productive uses in the real economy." The *responsibilities of investor* are discussed in *Porter (2013)*: "Beyond allocating capital, investors also play a vital role in monitoring what companies are doing, pushing for transparency, and intervening to catalyze change if the capital employed isn't generating the economic value it should." We would like to add that the investors have to invest the capital into the companies, which create the "*shared value*," generating the economic value in a way that also produces the value for the society by addressing its challenges.

2. We think that the *information absorption* capacity by the investors on the *IPOs* impacts the investor's *investment decisions* and serves as a *pre-determinant of the successful IPO deals completion*. We propose the ***Ledenyov theory on the origins of the underpricing and long term underperformance effects***, 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*, depending on both:

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

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

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

3. In agreement with the recent scientific findings in the research on the strategy selection problems 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), Grant (2001), Besanko, Shanley, Dranove (2007), Gavetti, Rivkin (2007), Teece, Winter (2007), Martin (1998-1999b, 2005-2006b);* we think that the ***winning virtuous investment strategies*** can only be selected by the investors with the *highest information absorption capacity* through the decision making process on the *IPO* investment choices at the selected stock exchange in the imperfect highly volatile global capital markets with the nonlinearities; applying the *econophysical econometrical analysis* in *Amemiya (1985), Greene (2008)* with the use of 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 *Martin (1998-1999a, 2005-2006a, 2004, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013),* as well as aiming to get the certain financial return and make a positive social impact in the local community and society in *Foerster (2004), Hull (2005-2006).*

4. We advocate for the responsible investing as in *Porter (2013): "Directing capital to companies that can use it productively is ultimately the most profound benefit investors can have on society."* We have the strategic vision that the best time moment for the *Initial Public Offering* of the *company's equity* at the *selected stock exchange* in the *global capital markets* with the *nonlinearities* can only be selected, using the *Vacheron Constantin Patrimony Traditionnelle Caliber 2755* high precision timepiece.

Acknowledgement

The *authors* think that the young scientists, professors, subject experts and business leaders would find themselves absorbed by our enormously informative research article on the virtuous winning strategies towards the *initial public offerings* of company equities at the various stock exchanges in the global capital markets with the *nonlinearities*.

The *first author's* knowledge on the origins of the *nonlinearities* in the complex systems in the electrical, electronic, and computer engineering as well as the financial engineering has been strongly influenced by the intensive scientific collaboration with *Prof. Janina E. Mazierska, Personal Chair, Electrical and Computer Engineering Department, James Cook University, Townsville, Australia* and *former Dean, Electrical and Computer Engineering Department, James Cook University, Townsville, Australia,* and *former IEEE Director Region 13 in Australia,* and *IEEE Fellow*. *Prof. Janina E. Mazierska* helped the first author to develop both the logical mathematical analysis skills and the abstract scientific thinking ability to tackle the complex scientific problems on *the nonlinearities in the microwave superconductivity* as well as on *the nonlinearities in the finances*, applying the interdisciplinary scientific knowledge together with the advanced computer modeling skills during the innovative research projects at *James Cook University* in *Townsville, Australia* in *2000 – 2014* after the graduation from *V. N. Karazyn Kharkov National University* in *Kharkov, Ukraine* in *1994 – 1999*.

The *first author* would like to thank the professional stuff at the central library at the *James Cook University* in *Townsville* in *Australia* for providing all the necessary support with the literature search on the subjects of his multidisciplinary research interest in the electronic databases, replying to his numerous requests timely and making everything possible to help the first author to complete his highly innovative research at the *James Cook University* in *Townsville* in *Australia* in *2000 – 2014*.

The *second author* appreciates *Prof. Roger L. Martin, former Dean of Rotman School of Management, University of Toronto* for the multiple exchanges by the thoughtful scientific opinions as well as his assistance with the high level organization of intensive research work on the *North American IPOs database compiling* at the financial laboratory and the scientific library at *Rotman School of Management, University of Toronto* in *Canada* in *2005 – 2006*.

The *second author* would like to appreciate a series of long hours thoughtful discussions on the *IPO* techniques and trends in *Western Europe* and *North America* in *20* and *21st* centuries with *Prof. Geoffrey G. Jones, Harvard Business School,* which took place at the *University of*

Toronto in *Canada in 2006*. The minutes of our scientific discussions have been recorded and analyzed in the process of the research article writing at the later date.

The *second author* takes this opportunity to thank all the researchers from the leading league universities and institutions and business partners from the hi-tech industries, who made the significant research contributions on the topic of our research interest in time of the numerous scientific discussions, invited presentations and international conferences over the last *20* years since the time of his graduation from *V. N. Karazyn Kharkov National University* in *Kharkov, Ukraine* in *1988 – 1993*.

We are very grateful to *Prof. Michael E. Porter, Bishop William Lawrence University Professor and Dean of Harvard Business School, Harvard University*, who contributed his valuable efforts and time to write the interesting informative research articles and to provide us with his professional expertise and exceptional quality professional advices in the field of *competitive strategy*.

We acknowledge the numerous "meetings without the ties" with the *Australian* philosophers, professors, scientists, businessmen, lawyers and political leaders in the relaxing trusted mutual-respect atmosphere during the *Yara valley* and *Mornington-Peninsula limo wine tours* by *Limo Wine Tours Co.* (*www.limowinetours.com.au*), which inspired the first author to complete the highly innovative research article at James Cook University in Townsville in *Australia* in *2014*.

*E-mail: dimitri.ledenyov@my.jcu.edu.au

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