# Tunisian Financial System: a Growth Factor

Imene Ben Fredj and Christophe Schalck

EconomiX (University of Paris X-Nanterre)

July 2004

# TUNISAN FINANCIAL SYSTEM: A GROWTH FACTOR

**Imène Ben Fredj**[†]
**Christophe Schalck**[‡]

**Summary**

The relationship between financial development and economic growth were the subject of many recent theorical and empirical works [Shepherd, Hasan and Klapper, 2004; Gylfason, 2004; Rioja and Valev, 2003; Driffill, 2004; Haas, 2002; Carlin and Mayer, 2000]. These authors generally focused their analysis of the link finance- growth on the mature financial systems. As the Tunisian economy knew a long period of financial repression before starting the phases of liberalization, it would be more judicious to start by McKinnon and Shaw's theory of "financial deepening" (1973) to then determinate the impact of Tunisian financial system development on economic growth. Indeed, McKinnon and Shaw were the first authors to analyze positive effects of financial liberalization policy on economic performance of less developed countries. To check the relevance of this assumption in Tunisian's context, we built a model inspired of the model of King and Levine (1993) who by measuring instruments of economic and financial development appears good indicators of Tunisian economy's financiarisation. The results of the empirical study on Tunisia stemming from causality tests within B-VAR framework nuance McKinnon and Shaw's theorical contribution. Reciprocal relationships are only finding between the ratio of investment on the GDP and the loans granted to private and public sectors. The economic role of State is highlighted, over the period of pre-reforms as well as during the recent time.

Keywords: financial repression, financial deepening, economic development, finance and growth, B-VAR

JEL Classification: E44, G21, O16

[†] University Paris X- Nanterre (MODEM) and FSEGT, imene.ben_fredj@u-paris10.fr
[‡] University Paris X- Nanterre (MODEM), christophe.schalck@u-pais10.fr

## 1. Introduction

The relationship between financial development and economic growth was the subject of many recent theorical and empirical works [Shepherd, Hasan and Klapper, 2004; Gylfason, 2004; Rioja and Valev, 2003; Driffill, 2004; Haas, 2002; Carlin and Mayer, 2000]. These authors generally focused their analysises of the link finance- growth on the mature financial systems. As the Tunisian economy knew a long period of financial repression before starting the phases of liberalization, it would be more judicious to start by McKinnon and Shaw's theory of "financial deepening" (1973) to then determinate the impact of Tunisian financial system development on economic growth. McKinnon and Shaw were the first authors to analyze negative effects of financial repression's policy on economic performance. They built their theory on a model which connects the monetary or economic growth to saving development and thus to financial system development. They defined financial liberalization as an effective and simple means to accelerate economic growth rate of less developed countries (LDC). This theory quickly found an important echo near international organizations and some LDC that started to install financial liberalization mechanisms: abandoning the administration of creditor and debtor rates, suppression of interventions considered excessive of Official Authorities, opening of the economy to foreign trade... It is still thus, at the beginning of the Nineties, where some profess, in front of the regression of LDC, the bankruptcy of any model interventionist and the benefits of liberalism.

For the majority of LDC, the simple and effective solution, which enables them to leave the financial distress, lies in the application of the liberal model namely the installation of a process of financial liberalization. Being a simple and universal concept, this process was applying by much country, in particular in Latin America and in the Southeast Asia; this expected to record a higher level of growth. The lifting of lawful constraints weighing on the banking structure was established with different intensities and degrees. Nevertheless, which are the effects of these changes on the operation of financial systems? Did the countries which adopted a liberal policy, really reach a stage of economic growth more sustained? In the countries of the Latin America such as Chile, financial liberalization was total and induced with a failure resounding. The Chilean economy knew successive ruins of as well banks as firms. The government was obliged to re-establish a minimum authorized capital but the credit institutions in difficulty did not receive any help of the monetary authorities and consequently no guarantee of the deposits of the agents could be assured. As for the countries of Southeast Asia like South Korea and Taiwan, this process introduced gradually and involved a light improvement of the saving. This technique enables these two countries to reach a stage of exceptional economic development.

Tunisia also takes sides with these countries and it applied since 1986 the mechanisms of financial liberalization while starting by giving up the fixing of the interest rates by the Official Authorities, namely the Central Bank of Tunisia. How Tunisia did start its liberal policy? Did it adopt a total liberalization or rather partial? Which were the impacts of such a policy on the country development in other words, it contributed to stimulate or on the contrary to slow down economic growth?

To study the relationship between finance and growth, King and Levine (1993) base themselves on a model of growth in Solow, i.e. with an exegetic technical progress. This approach is implicitly present in the empirical study of Boulila and Trabelsi (2002) on Tunisia; this study shows that a bilateral relation between finance and growth exists only between the credit and private investment during the period 1962-1997. However, the endogenous theories of growth appeared in the years 1980 highlight the role of the State in the accumulation of the capital. Insofar as the economic development of Tunisia were done with a significant public sector and where the financiarisation occurred under the impulse of the State, it would be interesting to see whether there are causality relationship between the financial development, the private capital, and the public capital and if these links were modified with the reforms of 1986. While being located from another point of view, we resume the study of King and Levine (1993) by incorporating an endogenous model of growth. New explanatory variables appear thus. The analysis of the relationship between finance and growth in Tunisia is carrying out through a double analysis: the calculation of the correlations and the estimate of a B-VAR.

This contribution was organized in the following way: section 2 clarifies the bases of the theory of "the financial deepening" largely developed by McKinnon and Shaw (1973), checks the validity of his assumptions in the Tunisian context and presents certain recent work justifying our step. Section 3 develops on the one hand the problems arising from financial liberalization and on the other hand, the debates present in the literature, section 4 formulates the empirical indicators of growth and the financial development and analyzes causalities between these variables through a B-VAR, and section 5 concludes.

## 2. A harmful financial repression to the growth

The model of " financial deepening " of McKinnon and Shaw regards the monetary expansion as being the result of the increase in saving, which justifies their principal normative conclusion namely the abandoning of reaching a ceiling of interest rates in favor of their liberalization. According to the liberal model, the expansion of the money supply by the growth of the saving, is not sufficient, other measurements should be adopted. It is in particular about the lowering of the obligatory reserves and the renunciation of state intervention in credit allocation, which, partly, is precisely made possible thanks to the seigneur age that the State exerts by the means of the obligatory reserves on the banking structure.

### 2.1. The supremacy of currency in LDC

McKinnon and Shaw (1973) define M2 in order to include the term deposits**,** savings deposits, currant accounts and chequebook. They consider, as in "Money in A theory of finance", that the request for money is a positive function of saving. They affirm that the segmentation of LDC, implying a dispersion of rates yields of investments, blocks the rise of capital markets.
In such an environment, the currency constitutes the only financial asset, beside the real goods, being used like holds value. Therefore, the currency is the central element of the process saves investment and consequently the condition necessary to the economic growth. The importance

of the currency as a financial reserve of value compared to other financial assets remains a constant in LDC. From this observation, McKinnon and Shaw develop their research of the optimal management of the currency which aims at showing the inefficiency of traditional managements and which, according to them lead to a financial repression.

**Tab. 1 The currency in the broad sense of M2 in Tunisia**
**(Current figures in Million Dinars)**

| | 1980 | 1985 | 1987 | 1990 | 1995 | 2002 |
|---|---|---|---|---|---|---|
| **M2** | 1.445 | 3.162 | 3.813 | 5.570 | 7.803 | 17.042 |

Source: Financial statistics of International Monetary Funds (IMF)

Table 1 shows the dominating place which M2 occupies. The evolution of M2 is marked between 1980 and 1985 (M2 multiplied by more than twice) rather than during the period 1990 and 1995 (less supported variation) which proves that the role of the aggregate M2 was more significant before engaging the reforms of 1986. The progress of an economy arouses a permanent movement of the currency that allows instigating the cycles of businesses. Rioja and Valev (2003, 2004) showed that the increasing relationship between financial development and economic growth is not uniform but varies according to the evolution of the countries, which depends mainly on economic agents' behavior. In order to lead to this result, they distinguish, in their formed sample of 74 countries, three categories of areas (low, intermediate and raised). In the first group, the rise of financial markets has a dubious effect on growth. For the second category, the financial development has an impact more raised on economic activity. Finally, for the last group, an additional improvement of financial system has as a positive effect on growth but less significant as the precedent. It is for this reason that one can speak about regional factors influencing economic growth.

### 2.2. The management of interest rates and obligatory banking reserves

#### 2.2.1. Misdeeds of reaching a ceiling of interest rates

McKinnon and Shaw note that the high levels of inflation, which characterize the many LDC, push economic agents to prefer goods refuges to the currency as a value reserve. Based on this observation, the two authors deduce that the high interest rates are the principal condition for financial development and thus for economic growth. The accumulation of a monetary saving supports, initially, the self-financing of projects of investment of agents with surplus and establishes, then, the prerequisites to a true financial intermediation: the agents with surplus, which invest in the improvement of their productive capital, will encourage other agents with surplus to lend to them. However, an optimization of the portfolios of the economic agents can be carrying out only within one money market. The economy would leave the self-financing in incentive thus to a better allocation of resources and a development of the investment virtuous cycle. On another hand, a financial repression policy combined with a strong inflation would

have reflected harmful successive effects. Indeed, such a policy would imply negative real rates ((1) and (2)) and thus a reduction in deposits (5). This situation would compromise the creditor activity of banks (6) while encouraging the surplus credit demand (4). The credit rationing would engage, in its turn, a series of indirect negative effects. On the one hand, the practice of usury would take seat and the political nepotism would continue more as a decisive criterion in the credit granting. In addition, the economic concentration would be favored since the credits would go preferably to large companies that, in addition to profits from privileged relationship, would be the only ones being able to offer under rarefaction conditions of sufficient guarantees credit; such a climate would discourage the innovation.
The reaching a ceiling of interest rates leads ultimately to a bad allocation of resources, therefore to a deceleration of growth (11), additional source of contraction of financial system (12). According to McKinnon and Shaw, the reaching a ceiling of interest rates can also cause inflation. Indeed, it would lead -as mentioned above- at negative real interest rates and, so to a reduction in the saving and thus in the growth of money demand. However, according to the quantitative theory used, if this growth were to be lower than that of money offer (5), the economy would be subject to a rising of prices (7).

The analysis, which proceeds, leads the two authors to propose the liberalization of the interest rates like principal instrument of the "financial deepening". The monetary assets would become, by this skew, of the attractive stores of value able to engage the virtuous cycle mentioned above.

**Tab. 2 Interest, inflation and growth rates in Tunisia (expressed as an annual percentage)**

| | **1983** | **1987** | **1992** | **1995** | **1997** | **2001** | **2002** |
|---|---|---|---|---|---|---|---|
| Interest rates real | -4.40 | 0.02 | Free | Free | Free | Free | Free |
| Inflation rates | 8.90 | 8.00 | 6.30 | 7.80 | 4.60 | 1.90 | 2.8 |
| Growth rates | 4.68 | 4.90 | 7.80 | 2.34 | 5.44 | 4.76 | 1.66 |

Source: The IMF, INS (National Institute of Statistics)

The effect of the interest rate on the inflation and growth rates well validated in the case of Tunisia (except the year 1995). Indeed, any increase in the real interest rate on the deposits is accompanied by a reduction of inflation and an improvement of economic growth rate. Year 2002 is remembering by a fall of growth rate 1.66% against 4.76% into 2001 following the events of September 11 and April 11 (the catastrophe of Djerba). Gylfason (2004) develops a new empirical conception of the relationship between inflation, financial sphere and economic growth. It shows that the maintenance of one long-term growth justifies the top priority of managers namely the price stability.

By looking further into the reflection on economic policies and while referring to Shleifer and Vishny (2000), Allen and Gale (2000), Levine (2000), we can confirm that a financial system

associated with an adequate lawful framework contributes considerably to stimulate economic growth (Haas, 2002). Vast empirical work such as those of Demirgüc-Kunt and Maksimovic (2000), Beck, and Levine (2000) proved the importance of institutional aspect. Levine (1998) examined the positive impact of the legal environment on financial development and in particular, on the expansion of financial intermediaries, which allows to maintain a level constant of long-term growth. De Avila (2003) also analyzes the link between financial sphere and real sphere by examining the effect which the process of harmonization of banking rules in the United States on growth had been lasting these forty last years. This study leads to the existence of a positive impact in the long term of the capital control liberalization and the banking legislation deregulation. The analysis of the principal channels through which the policies installation can affect the indicators of growth shows that the process of harmonization stimulates growth via the improvement of efficiency level of financial intermediation.

### 2.2.2. Consequences of the mode of obligatory reserves

The normal use of the obligatory reserves as an instrument of monetary policy consists in controlling the surplus offer of currency and thus inflation. Some LDC converts these reserves of instrument of monetary control into instrument of financial repression. The central Banks of these countries impose high rates of obligatory reserves in order to financing the deficits of State and specialized agencies activity (3). In other words, the State exerts a right of seigneur age on banking structure. This denaturizing obligatory reserves function leads to credit banking rationing and to inflation (McKinnon and Shaw, 1973).

By forcing high obligatory reserves to finance public deficit, the State reduces banks capacity to lend (9). This rationing, in addition, is accentuated by the fact that the central Bank remunerates obligatory reserves by very low or null rates. While thus harming the output of part of banking assets, the trade banks cannot offer sufficiently high remunerative rates, deposits are reduced (10) and credits to the economy weaken (6). Based on these observations, we can conclude that the coordinated suppression of reaching a ceiling of interest rates of obligatory reserves is essential to be able to overcome financial repression and particularly to face the problem of inflation. That is why the direct intervention of central Bank via specialized agencies and government itself should put an end to the control of inflation. The tax reforms which aim at reducing the budget deficit of State, often covered by the seigneur age practiced on banking structure, are then of primary importance to lead to a total financial liberalization.

**Tab. 3 Rates of obligatory reserves and offer credit by Tunisian banks**

| | **1980** | **1989** | **2002** |
|---|---|---|---|
| **Rates of obligatory reserves** | 3% | 2% | 2% et 1% |
| **Credits to the economy (1)*** | 1156279 | 4668304 | 17122207 |
| **Monetary Deposits and quasi-monetary** | 1113696 | 4193862 | 13815479 |
| **(1) / (2)** | 104% | 111% | 124% |

Source: Data built starting from the Financial Statistics of TCB and other confidential sources * current figures of end of period in thousands of dinars

The rate of obligatory reserves was the subject of frequent modifications according to the cash flow statement of the banks and the deficit of Tunisian government. Until May 1973, the obligatory reserves were calculated on the total of the deposits of month end and its rate was fixed at 8%. However, as from March 31, 1980, the deposits placed in the foreign accounts in devises belonging to non-residents were deducted from the plate of obligatory reserves. The rate applied to this new plate dropped to 3% in 1980. From June 16, 1989, banks applied a rate equal to 2% of the plate consisted sight deposits in accounts resident and term accounts. Since May 16, 2002, the rate applied to incur sight deposits is always 2%; on the other hand, the banks use a rate of 1% on term deposits instead of 2%. Credits offered by banks know an increase with each modification with the fall in the obligatory reserves rate since banks devote a less part of their deposits to the central Bank, if there is a credit demand. As shows it above the data of the table, the credit granted to the economy passed from 104% of the deposits in 1980 to 111% in 1989 to reach 124% into 2002.

The strong influence, positive or negative, of the decrees of the State on the performance of economies aroused the interest of economists. Mayer and Sussman (2001) start from a national analysis of the relationship between financial development, government decisions and economic growth to then reach an international analysis, which makes it possible to compare a multitude of financial systems. Although the regulations of the adopted policies are generally strong and restrictive, a total prudence in the respect of aims by the Official Authorities is always recommended. Nevertheless, Rajan and Zingales (2003) affirm that, in addition to these factors of lawful origin, there are other factors, which can also justify the evolution of financial systems such as the creation of groups whose interest is opposing to the opening domestic economies and with the development of the financial systems intern likely to instigate competition.

### 2.2.3. Evolution of financial system in a liberal economy

The two preceding sections showed the normative character of the analysis of McKinnon and Shaw. Initially, the financial system must be released in order to reach a sufficiently level high real interest rate, stimulating the formation of saving and thus of money supply necessary to economic development. In the second time, the central Bank must use the monetary policy i.e. the management of the obligatory reserves only in order to stabilize the price level and not as a mean of financing of specialized agencies or budget deficit of the State. It is advisable, now, to understand how we conceive the application of these standards in the context of repressed financial systems. The control of inflation by the reduction in the inflationary financing obliges to seek another source of financing of the governmental deficit. To manage to ensure a non-inflationary financing of public expenditure, McKinnon and Shaw propose the adoption of tax reforms. Indeed, the saving does not increase at the same rhythm as the income, the government is then with having to choose between tax levy and board of notes to finance its deficit, without a suitable tax policy and because of the absence of a capital market able to finance the long term in LDC. Measurements described up to now allowing the liberalization of the financial system and guaranteeing the stabilization of the saving and its level in growth, constitute, according to the liberal approach, the stage avoidable of the development of long-term stocks market. The development of the stocks market is regarding as an instrument, which can solve the problems

induced by financial repression. Jayarante and Strahan (1996) prove that these problems can directly affect economic growth by examining the restrictions weighing on banking industry in United States. They announce that the changes observed on growth level are the result of the changes of banking sector. The improvements of the quality of credits banking, and not the increase in the volume of credits banking, seem to be responsible for a fast and accelerated growth. However, such a strategy, namely the reinforcement of financial markets, often adopted by LDC in the hope to attract international investors, has like consequence only one aggravation of financial repression. A stepped policy appears as the only practicable solution in a repressed economy, which would like to obtain a modern financial system.
Driffil (2003) re-examines this bond between financial markets and growth. The economic theory shows that in the presence of problems of moral risk and unfavorable selection in the financial transactions, the most developed financial markets facilitate the economic growth more quickly. However, it is less clear than measurements of financial development, largely used in empirical research, are adequate. The data employed cover generally a short period but, while being interested in the long term, the non-financial factors, which improve the outputs of production, appear more significant and the potential role of financial markets seems less significant. The question of knowing if finance and growth are bounding by, a causality relation thus remains suspends.

Tunisia today, as the majority of the Eastern European countries of the South and Mediterranean, left the Structural Plans of Adjustment carried out under international financial institutions. The tax reforms engaged by the government, particularly the institution of the value added tax (VAT), allowed an adjustment of finance public, a re-establishment of the external accounts and a significant retreat of inflation. Moreover, because of additional tax related to operations of privatization, the public deficit was brought back from 2.3% of the GDP in 1999 to 1.6% of the GDP into 2000. Inflation and deficit were contained during the first eight months of year 2003 within the limits of 2% and 1.5% respectively. However, of the thorough reforms will be possible. The International Monetary Funds thus suggested several pasts: widening of the taxable amount, suppression of the grants on the foodstuffs (with destination mainly of the middle class), reduction in the wage bill of the public office, etc.

## 3. Problems arising from financial liberalization

A repressed economy is characterized by:

- underdeveloped channels of saving and/or a negative and unstable saving;
- financial intermediaries not ensuring an optimal allowance of the saving collected ;
- firms discouraged from investing because of bad financial policies, which reduces the outputs, or make them excessively unstable.

In front of all these distortions comes the idea to release the financial markets to support the growth of the investment and consequently the economic development of the country." The paradigm of financial repression seems to constitute, by some aspects a grain of truth but also vast an exaggeration ", (Dornbush and Reynoso, 1989). Some relation-keys that melt the approach of McKinnon and Shaw must then be revised.

### 3.1. The increasing relation between interest rate and saving

The whole of the theory of financial repression supposes an increasing relation between real interest rate and saving. This assumption takes only the substitution effect into account, which implies an increase in saving when its remuneration increases. However, what does income effect happen which led to a negative bond between saving and real interest rate? By adding this income effect, the relation between the two variables becomes ambiguous. It is advisable to mention that in their model, McKinnon and Shaw recommend that saving is so weak in developing countries that the increase in its remuneration can only have a positive effect.

**Tab. 4 Interest Rate and Saving in Tunisia**
**(Current figures in Million Dinars)**

| | 1980 | 1981 | 1983 | 1985 | 1987 | 1997 | 2002 |
|---|---|---|---|---|---|---|---|
| **Deposit Rate** | 2.50 | 4.00 | 4.50 | 5.35 | 7.22 | Libre | Libre |
| **Bank deposits*** | 494729 | 609442 | 775979 | 1103199 | 1686981 | 5654754 | 10118780 |

Source : IMF, Financial Statistics of the TCB * quasi-monetary deposit and banks

This positive relation is well checked in Tunisia. Indeed, the preceding table shows that, during the period of administration's rates, i.e. since independence and up to 1987 (date of total liberalization of creditor interest rates and partial liberalization of debtor interest rates), the saving collected by Tunisian deposit banks rises with the level of creditor interest rates. Nevertheless, are these deposits directed towards new investment opportunity? The volume of the financial investments in 1997 was about 5151.8 million dinars whereas in 2002, it becomes equal to 6922.8 million dinars. One can thus conclude that the bank deposits increase more quickly than investments what means than the liberalization of the interest rates does always not imply an improvement of the economic situation of the country as it is the case in Tunisia. The real interest rate of equilibrium can also be negative because of three factors (in addition to the situation of financial distress): the demand for investment can be very weak, saving can be positive in spite of negative real interest rates and finally, there are non-financial distortions in the economy (overestimated exchange rate...). Consequently, if we seek real positive interest rates, we introduce significant disturbances into the economy and handicap the economic development.

### 3.2. Perfection of thé financial marketings

The approach of MacKinnon and Shaw is founded on the implicit assumption that the money market is a perfect market. Is this always the case? Stiglitz and Weiss (1981) showed that, even on competitive markets of the banking financing, it could exist a credit rationed, which means that financial liberalization can prove ineffective. This is due to the imperfections of the credit market, which is the principal market. The structure of the credit markets is different from ordinary markets where are swapped non-financial products. On the opposite, the financial markets are intended to swap funds with the purpose of drawing some from the outputs in the

future. There is thus a variable defect risk from one loan to another and which poses the problem of the collection of information by the lender. Does this lender can firstly determine with precision the risk associated to each borrower and secondly act perfectly according to the knowledge of these risks? In the most probable case i.e. when the lender does not manage to ensure these tasks, informational imperfections can easily lead to processes of anti-selection. In other words, if information is imperfect, the credit institution for example the bank can raise its creditor rates, will thus sanction all its debtors and give up profitable projects. This behavior has two main consequences

- firms will prefer riskier projects (high level of the interest rate)
- bank will attract bad borrowers who will be not very sensitive to their insolvency.

### 3.3. The transitory rigidity of the banks and the government

The rise of the interest rates induced by financial liberalization can pose a transitory problem for the banking sector and the government, this problem comes from the necessary time to their adaptation to the new interest rates. Structurally, banks offer loans of an average maturity higher than that of the collected deposits. If these loans are granted to fixed rates and rates of the deposits increase consecutively with financial liberalization, then it will follow from there a provisional reduction of the banking margin related to impossibility for banks to immediately reflect the increase of their resources cost. So the banking structure can undergo significant losses related to its processing of maturity change and be thus in a situation of transitory brittleness. For the government, the rise of the interest rates is not without incidence on the budget deficit. Indeed, the public deficit can more hollow out with the increase in the weight of the public debt. The phenomenon can be amplified if financial liberalization cuts down tax incomes taken on the banking sector or reduces the share of the Treasury bills in the assessment of banks.
V R. Bencivenga and B D. Smith (1990) prove in their model that there can be an optimal degree of financial repression because the absence of direct financial markets doing the government to bailout his budget deficit. They conclude that economies having a significant budget deficit do not take an interest to set up a process of financial liberalization. Fiscal expenditures in Tunisia were largely higher than tax incomes what could explain the choice of the Tunisian economy to adopt a progressive step (partial liberalization then total).

Roubini and Sala-I-Martin (1992) show the possible existence of an optimal degree of financial repression for countries where the public deficit must be bail out, issue still supported by the analysis of Benceivenga and Smith (1992). Is this the best solution for developing countries? A recent study of Shepherd, Hasan and Klapper (2004) allows to identify other transmission systems, which come from the development of the financial system and banking community, and to research the optimal threshold of financial repression. The analysis of a sample made up of 49 developed and developing countries during the period 1993-2000 shows that policies which promote and encourage the development of the banks of small size support the revival of the economic growth in the two types of country. Whereas protect them from competition with the products from market leads to unfavourable economic consequences.

### 3.4. The absence of an abstract financial system in the liberal model

The approach of McKinnon and Shaw does not take the presence of an abstract financial sector into account that is one of the structural aspects most characteristic of the economies in the process of development. For those who recommend the financial liberalization, this financial dualism is only one misadventure of financial repression and the fragmentation of the economy. "The abstract sector which only constitutes an imperfect substitute with indirect financial credits will have to face the increased competition of an organized financial sector more liberal ", Shaw affirms clearly that the abstract financial system loses of its importance with financial liberalization.

The World Bank (1989) completely adheres to this point of view: "The existence of abstract markets is often a sign of financial repression". On the one hand, official sector and abstract sector would be thus substitutable and the growth of the first would lead inevitably to the disappearance of the second. On the other hand, the existence of an abstract financial sector allows an adjustment between offer and application for the credit (Taylor 1983). Loans on this market are thus substitutable with bank deposits. The rise of the rates pulled by the suppression of the restrictive rules stimulates the growth and has as consequence an increase in the credit costs on this market. It is thus not guaranteed that financial liberalization supports the growth according to the relative effectiveness of the formal and abstract sectors. Far being a handicap for the economic development, the abstract sector can consequently urge on the growth of the economy.

Using other works, we note that the presence of the abstract sector cannot block the development of countries; at least it does not affect it. In this direction, Carlin and Mayer (2000) propose an empirical approach allowing to explain how the capitalization of countries, the structures of property and the characteristics of industries are related to the economic activity of the various areas. Activity is measured by the volume of the shares issued on the formal market. Carlin and Mayer show that there is always a positive relation between the growth of industry and financial systems (in presence or absence of the abstract markets), but the importance of this relation depends on the level of the economic development. Indeed, in countries with strong GDP per capita, the addition of the equity results from the asymmetry of information, this centralizes the right of property and stipulates the engagement of the other participants. On the contrary, in countries with weak GDP per capita, the banking sectors are significant to promote the financing via banks and the dispersion of property requires the control of the problems of agency.

Various studies also show that the expansion of the financial system (formal banks and markets) can affect the productivity and the accumulation of the capital in various manners in the industrialized and developed countries (Acemoglu, Aghion and Ziliboth, 2002). This assumption is tested for 74 countries and the results arise as follows: finance has a strong positive influence on the productivity growth, mainly in the most developed countries. In the least developed economies, the effect of finance on the growth proceeds mainly through the accumulation of the capital. However, in countries with average incomes and in particular with income raised, the financial development improves the productivity growth.

## 4. Growth and financial development: empirical elements

Which are the consequences of financial liberalization on the Tunisian financial system? Does it lead to the revival of the growth of the Tunisian economy, or on the contrary does it its repression?
Numbers empirical researches analyze these effects from quantitative and qualitative point of view and show, in particular, the role of public capital in the economic growth. Generally, the results affirm the positive role that plays by public capital in the determination of the level of output per capita and the growth rates. Other work stresses the negative effect of high public expenditure on the revival of the growth. An abundant literature underlines the increasing relation between the effectiveness of the public capital and the process of growth. Aschauer (1998) develops impact of the various aspects of the public capital in the accumulation of the output by worker. It presents an extension of the neo-classic growth model and poses three assumptions. First is that private physical capital and human capital are regarded as inputs of the production function. Secondly, the financing resources of physical capital affect the level of productivity. Lastly, the efficiency of public capital combined with the quantity of physical capital is taken into account to determine the effective stock of physical capital. An average increase in physical capital financed by external debts is supposed to decrease the economic growth whereas a simultaneous increase in the quantity and effectiveness of public capital are supposed to have a neutral impact on the growth.

The public sector being a deciding factor of the financiarisation of the Tunisian economy, a study of the relations between development of the financial sphere, private capital and public capital seems to be useful and necessary to understand the phases of growth in Tunisia. The relations between finance and growth in Tunisia are studied through a double analyse : a study of the correlations, and an estimate of a B-VAR over the period 1963 to 2003, the variables of growth are quaterlied by the algorithm of McGrattan (1992) when it is necessary. Insofar as this study seeks to measure the impact of the reforms of financial liberalization on the Tunisian growth, we distinguish two sub-periods: 1963-1986 and 1987-2003.

### 4.1. Indicators of growth and financial development

To study the relations between the economic growth and finance in Tunisia, it is initially necessary to clarify the variables that will be taken into account in this study.

#### 4.1.1. Measurements of the economic growth

The economic growth is evaluated using a standard model of endogenous growth, i.e. using the formalization of Barro and Sala-I-Martin (1992). The macroeconomic production function is a Cobb-Douglas function with constant returns. So Y is the GDP in volume per capita, K physical stock of capital per capita, and G public expenditures per capita, the endogenous model of growth is written as follows:

$$Y = AK^{\alpha}G^{(1-\alpha)} \qquad (1)$$

Taking logarithms and differencing yields:

$$GY = \alpha\, GK + (1 - \alpha)\, GG \qquad (2)$$

where GY is the growth rate of real per capital GDP, GK is the growth rate per capita physical capital stock and GG is the growth rate per capita public expenditures.

The estimate of physical capital is that Vikram and Dhareshwar (1993), but this estimate stops in 1990. In addition, we continue the estimate for the data of 1991 to 2003 starting from the traditional formulation of the accumulation of the capital.

$$K_t = (1-\delta)K_{t-1} + I_t \qquad (3)$$

Where $I_t$ is the investment in the year t and $\delta$ is the depreciation rate of capital. We use the apparent rate of depreciation since the years 1985 in Tunisia, which is 7%[1]. We also use the investment by product like Proxy of the growth of the inventories of capital (INV). There are thus four indicating variables of growth GY, GK, INV, GG.

### 4.1.2. Measurements of the financial development

We use the indicating variables of the financial development of King and Levine (1993) with which we add the variables related to the financing of public expenditures by the Tunisian financial sector.

There are thus six indicating variables of the financial development. The first variable corresponds to the size of the financial intermediaries. The literature generally uses the share of the liquid assets on GDP (LLY) like variable representative of this size. The second variable translates the importance of the trade banks in the financial system (BANK) by the intermediary of the banking capital ratios on total financial capital. The other variables represent the importance of the financing of the public and private sector carried out by the banking structure. We distinguish the share of the receivable amounts to the firms deprived in the domestic credit (PRIVATE), the ratio of the amounts receivable to the firms deprived on GDP (PRIVY); and in a reciprocal way, the share of the amounts receivable in the State in the domestic credit (PUBLIC) and the ratio of the amounts receivable in the State on GDP (PUBLY). The two last variables are additions compared to the existing studies and are the corollary with the explicit introduction of the role of the State into the analysis. They make it possible to apprehend the role of the State in the economy since they translate the financial impulse given by the public sector to the growth and the accumulation of the capital.

### 4.1.3. The study of the correlations

We can note the existence of a link between the real sphere and the financial sphere through the study of the correlations. Our study shows that the auto-correlations of the same period between the variables financial and real (resulting from the production function) are weak even negative, which translates little of connect contemporary between the two spheres. Nevertheless, variable

[1] This rate is issued of Vikram and Dhareshwar (1993).

INV seems more sensitive to the financial conditions since it is correlated to 0,87 with PRIVY and 0,84 with LLY. The correlations between the financial and real variables are however more significant during the time 1987-2003. It is also noted that the financial variables are strongly correlated between them (up to 0,95). Insofar as the frequency of the study is quarterly, delays can exist in the adjustments of the variables. Therefore we examine the delayed correlations. The study shows that the real variables (mainly growth of the GDP) are advanced indicators of the financial variables: the evolution on a given date of GY predicts those of the financial variables on a later date. Only the variable PUBLIC constitutes an advanced indicator of the growth and accumulation of capital, whether it is deprived or public (appendix 2b) which does not fit exactly in the optics of the model of McKinnon and Shaw. These correlations indicate that it is the evolution of the real variables which determinate that of the financial variables. Nevertheless, the role of the State on the accumulation of the capital and the growth appear significant since the appropriations allocated with the government seem to support the real variables. Within sight of these results, more pushed study of the relations and causalities between the real and financial variables, in particular the variables translating the role of the government, is justified.

### 4.2. Lesson of a B-VAR

In order to as well as possible exploit the results of a B-VAR, it is necessary to characterize the series and to specify methodology employed.

#### 4.2.1. Characterization of series

A good specification of the model implies a study of the stationary character and the presence of a deterministic tendency. Consequently, unit root tests were carried out (tests of Dickey-Fuller increased and Phillips - Perron). The results show that the real variables are stationnary except for the variable investment. Conversely, the results of the tests indicate that the financial variables are nonstationary but they show the stationary from the series in difference first. We will thus use the differences first variable investment (DINV) and those of the financial variables (DBANK, DLLY, DPRIVATE, DPRIVY, DPUBLIC, DPUBLY) for the continuation of our study.

The no stationary character of the series invites to seek the presence of one or more stationary linear combinations between these variables. However, the existence of a relation of co integration between the variables implies a study starting from a model with correction of errors and not starting from a VAR. In addition, we test the existence of these relations using the usual test of Johansen and Juselius (1990) of the Likelhood ratio. This test is given by the statistics as follows:

$J_{LR} = -T\sum_i \ln(1-\lambda_i)$ où T is observations et $\lambda_r$ is the Likelhood

The results show the non-cointegration from the series except for the variables PRIVATE and PUBLIC over the complete period, which are cointegred with the variables of accumulation of the capital. These relations of co integration disappear in sub-periods whereas others appear.

Insofar as a study in terms of VAR can not be done using cointegred series, we chose to apply methodology B-VAR to the financial series, which were cointegred with no real series by a given sample. Consequently, the variables taken into account are :

- the whole of real variables (GY, GK, GG, DINV) and financial variables DBANK, DLLY, DPRIVY, DPUBLY for the period 1963-2003 ;
- the whole of real variables and financial variables DPRIVATE and DPUBLIC for the period 1963-1986 ;
- the whole of real variables and financial variables DPRIVATE, DPUBLIC, DPRIVY, and DPUBLY over the period 1987-2003.

### 4.2.2. Methodology B-VAR

The methodology of B-VAR (Bivariate VAR) corresponds to the study of the interactions between two variables. More precisely it is a question here of seeing whether these variables are influenced mutually. For this purpose, we apply tests of causality to Granger with a bivariate model. A representation B-VAR with p delay, can be formulated way as follows:

$$Y_t = \mu + \sum_{i=1}^{p} \phi Y_{t-i} + \varepsilon_t$$

where Y is made of two variables $Y_1$ and $Y_2$, $\mu$ is the vector of the constants, are the matrices of coefficients and $\phi_i$ is the vector of the not correlated errors.

The financial variables and the ratio of investment on the GDP are taken of difference first so as to be stationary. The test of Granger in a bivariate model indicates that the variable $Y_2$ is the cause of $Y_1$ if the predictibility of $Y_1$ is improved when information relating to the current price of $Y_2$ is built-in in the analysis. Thus, the block of the delayed variables $Y_{2t-i}$ is regarded as exogenic compared to the block of the delayed variables $Y_{1i-1}$, if the fact of adding the $Y_{2t}$ block significantly does not improve the determination of the variables $Y_{1t}$. This consists in carrying out a test of restriction on the coefficients of the $Y_{2t}$ variables of the representation VAR. If one writes the matrix of the coefficients $\phi_i$ as follows :

$$\phi_i = \begin{bmatrix} \phi_{11}^i & \phi_{12}^i \\ \phi_{21}^i & \phi_{22}^i \end{bmatrix}$$

Granger test corresponds to the test of the following hypothesis $H_o$:

* $Y_{2t}$ do not cause $Y_{1t}$ if $\phi^1{}_{12} = \phi^2{}_{12} = \ldots = \phi^p{}_{12} = 0$

* $Y_{1t}$ do noy cause $Y_{2t}$ if $\phi^1{}_{22} = \phi^2{}_{22} = \ldots = \phi^p{}_{22} = 0$

If we accept the two hypothesis that $Y_{2t}$ cause $Y_{1t}$ and that $Y_{1t}$ cause $Y_{2t}$, we also call of feed-back effect .

### 4.2.3. Results and limits

We applied tests of Granger in a structure B-VAR gathering a financial variable and a real variable. We thus tested on each variable representing the financial development that this one caused, by the various variables of economic growth over the various periods.

The results are synthesized in the tables, which follow. They confirm those of Boulila and Trabelsi (2002) since they highlight a retroactive loop between the rate of investment (DINV) and the loans at the private sector (DPRIVY) over the period 1963-2003. Our results show in addition that loans to public sector (DPUBLY) play a role in the growth of the investment since they also show the existence of a retroactive loop. The analysis of sub-periods indicates that these directional bi-causalities are recent and seem related to financial liberalization is thus to moderate for the Tunisian case.

**Causality tests in the B-VAR**

Period of 1963-2003 [a]

| Variables | F => G [b] | G => F |
|---|---|---|
| | $\phi^{i}_{12} = 0$ | $\phi^{i}_{22} = 0$ |
| GY DBANK | 0.099 | 0.100 |
| GY DLLY | 0.375 | 1.388 |
| GY DPRIVY | 0.472 | 0.300 |
| GY DPUBLY | 0.350 | 0.289 |
| GK DBANK | 0.197 | 0.277 |
| GK DLLY | 0.217 | 0.636 |
| GK DPRIVY | 0.202 | 0.891 |
| GK DPUBLY | 0.382 | 0.616 |
| GG DBANK | 0.098 | 0.224 |
| GG DLLY | 0.126 | 0.096 |
| GG DPRIVY | 0.178 | 0.259 |
| GG DPUBLY | 0.129 | 0.160 |
| DINV DBANK | 2.819* | 0.558 |
| DINV DLLY | 1.647 | 2.232** |
| DINV DPRIVY | 2.463* | 2.130** |
| DINV DPUBLY | 2.833* | 3.345* |

1963-1986

| Variables | F => G | G=> F |
|---|---|---|
| | $\phi^{i}_{12} = 0$ | $\phi^{i}_{22} = 0$ |
| GY DPRIVATE | 1.503 | 1.611 |
| GY DPUBLIC | 1.579 | 1.541 |
| GK DPRIVATE | 0.244 | 1.330 |
| GK DPUBLIC | 0.222 | 1.262 |
| GG DPRIVATE | 1.452 | 0.686 |
| GG DPUBLIC | 1.490 | 0.649 |
| DINV DPRIVATE | 1.329 | 0.119 |
| DINV DPUBLIC | 1.488 | 0.111 |

1987-2003

| Variables | F => G | G => F |
|---|---|---|
| | $\phi^{i}_{12} = 0$ | $\phi^{i}_{22} = 0$ |
| GY DPRIVATE | 0.124 | 0.649 |
| GY DPRIVY | 0.861 | 0.432 |
| GY DPUBLIC | 0.160 | 0.404 |
| GY DPUBLY | 0.281 | 0.560 |
| GK DPRIVATE | 1.148 | 0.594 |
| GK DPRIVY | 1.405 | 1.178 |
| GK DPUBLIC | 0.692 | 0.265 |
| GK DPUBLY | 0.317 | 0.285 |
| GG DPRIVATE | 0.605 | 1.968* |
| GG DPRIVY | 0.807 | 2.381 |
| GG DPUBLIC | 0.840 | 0.977 |
| GG DPUBLY | 0.763 | 0.621 |
| DINV DPRIVATE | 1.834 | 4.882 |
| DINV DPRIVY | 2.584* | 2.324** |
| DINV DPUBLIC | 3.126* | 4.136* |
| DINV DPUBLY | 2.887* | 3.542* |

(a) The order of lag is determined by using information criteria;

(b) F=Finance, G=Economique Growth

Tables show Fischer statistics.

*, ** significant at the 0,05 level and at the 0,10 level.

As opposed to what could let believe the study of the correlations, the influence of public expenditures or loans granted to the State is not significant during the pre time 1986. Nevertheless, the impact of the budgetary decisions on the financial development increased since the reforms since the results show a causality of the growth of the public expenditure. (GG) towards the variation of loans granted to the private sector. Moreover, we note the interaction between the loans granted by the financial system to the State and the ratio of investment on GDP.

The limit of the model applied lies in the absence of significant indicator of the role of the financial intermediation in Tunisia. As an approach of the financial intermediation, Harrison, Sussman and Zeira (1999) introduced a new variable, which represents the cost of the financial intermediation. The theorical part of this contribution shows how the specialization of the financial intermediaries leads to the development of the real sphere. The most significant result is that the differences in the productivities between countries are amplified by the financial intermediation. The empirical part is based on the data of the banking incomes in the United States to measure the cost of the financial intermediation and to prove the positive impact of the financial development on the real development. The authors conclude that impact of specialization exists and is significantly positive. On the one hand, this variable is affected by the level of output due for this purpose, and on the other hand, it shows how the financial sector influences the real sector.

## 5. Conclusion

The concept of financial repression applies to developing countries generally characterized by dualistic financial systems with fragmentary nature. This dualism results by strong rigidities and thus in a dispersion in the structure of interest rates real. In absence of a liberal policy, the fundamental financial instrument is the monetary credit as the obvious preponderance of the deposit banks in the financial landscape of these countries proves it.

In a repressed financial system, interest rates are generally directly fixed by the monetary authorities at low levels. Financial repression can be still identified by the adoption of a mode fraught with obligatory reserves. The most significant consequence of these forms of financial repression is the weakness of interest rates. Economic agents do not know any more where to invest the currency because they do not manage to obtain guide prices of the needs for the economy. It is difficult to establish a cost of the capital of a given economy since there is not reference to equilibrium. The strong specialization of the activities of the financial intermediaries and in fact of banks (deposit banks, development banks, insurance companies...) also results from financial repression. McKinnon and Schaw (1973) showed the harmful effect of the maintenance of the debtor and creditor rates on levels with the lower part of the rates of inflation. Particularly when this control is associated requirements of high obligatory reserves and a restrictive policy at the entry, the financial development cannot be ensured and consequently we attend a decline of the growth. The concept of financial liberalization appeared in the writings of McKinnon and Shaw presents the liberalization of the financial sector like an effective and simple means to accelerate the economic growth in developing countries, which, allured by the simplicity of its implementation, start to found a policy of financial liberalization. Tunisia is one of countries, which adopted, since 1986, the optics of McKinnon and Shaw, which makes it possible to leave the financial distress. Nevertheless, fearing harmful effect that can result from a total liberalization, the Tunisian economy led with much prudence its liberal policy while following a step by step.

In order to determine the links between the financial sector and the real sector, we validated the model of King and Levine (1993) but all while incorporating in it an endogenous model of growth being given the character dominating of the public sector in the Tunisian economy. The results of our estimates show that, after the introduction of the reforms initiated since 1986, the growth of the loans to the public sector and the public expenditure affects the growth of the investment positively and consequently stimulates the growth of the economic activity.

The taking into account of two sub-periods aims at integrating on the one hand, the institutional factors that characterize Tunisia, and on the other hand, the specificity of the policies adopted by the Tunisian government during these two periods. We thus took the critic of the model of King and Levine addressed by Arestis and Demetriades (1996) into account that re-examine the question of causality between the financial development and the economic growth. They show that the specific factors of countries (financial system based on banks or markets) have an influence on the nature of the relation between finance and the growth. This paper initially

criticizes the contribution of King and Levine (1993) which considers neither the institutional factors nor the characteristic of the structures of their financial sectors. In a second place, it tests causality between the finance and the growth of 12 countries that defer on the level from their capitalizations and their institutional characteristics. In all the cases, the results justify the interest granted to the institutional considerations and the structures of the financial sphere.

Our study could be extended within the framework of a VECM so as to take causalities of short term and long term into account. It could also return in account the new elements of research, which try to explain the nature of the relations, which can exist between the indicators of the financial sphere and the indicators of the real sphere according to different optics' (the legal and lawful framework, the regional factors, the specificity of the financial systems, cost of intermediation,..). Indeed, although these studies generally released the existence of a strong positive relation between these two sizes, extension of the financial system (associate with a coherent lawful system) as condition of the development remains in suspends.

## Bibliographie


**ALLEN. F** et **GALE. D**, (2001), «Comparative Financial Systems: A survey », New York University

**AMABLE. B** et **CHATELAIN. J. B**, (1995), "Efficacité des Systèmes Financiers et Développement Economique", Economie Internationale, 1er trimestre

**ARESTIS. P** et **DEMETRIADES. P**, (1996), "Finance and Growth: Institutional Considerations and Causality", Department of economics Working Paper, n°5

**AVALLONE. V et NICOLAS. F**, (2003), "Théorie de la Croissance: Les Leçons pour les Pays en Développement, Revue Sélective de la Littérature Théorique et Empirique", Economie Internationale, Document de Travail de la cdc, septembre, n°75

**AVILA. D. R**, (2003), "Finance and Growth in the EU: New Evidence from the Liberalization and Harmonisation of the Banking Industry", ECB. Working Paper, n°266, septembre

**ASCHAUER. D. A**, (1998), "Public Capital and economic Growth: Issues of Quantity, Finance and Efficiency", avril, Working Paper, n°233

**BACCOUCHE. R, BOUAZIZET. R** et **GOAIED. M**, (1997), "Croissance Potentielle et Fluctuations Conjoncturelles en Tunisie", Economie Internationale, n°69, 1er trimestre

**BALIAMOUNE-LUTZ. M et LUTZ. S. H**, (2004), "Rural-Urban Inequality in Africa: A Panel Study of the Effcts of Trade Liberalization and Financial Deepening", février, ZEI Working Paper n° B04-06

**BANQUE MONDIALE,** (1989), World development Report, Oxford University press, New York

**BANQUE CENTRALE DE TUNISIE,** (1963-2003), "Rapports Annuels" et "Statistiques Financières"

**BARRO. R. J**, (1996), « Determinants of economic Growth: A Cross-Country Empirical Study », août, Havard University, Department of Economics, Working Paper n° w5698

**BARRO. R. J**, (1998), « Notes on Growth Accounting», juillet, Havard University, Department of Economics, Working Paper n°w6654

**BARRO. R. J**, (1999), "Inequality, Growth, and Investment", mars, Havard University, Department of Economics, Working Paper n°w7038

**BANQUE CENTRALE DE TUNISIE**,(1963- 2003), "Rapports annuels", "Statistiques financières"

**BECK. T, LEVINE. R**, (2000), "New Firm Formation and Industry Growth. Does Having Market-of Bank-Based System Matter?", Papers 2383, World Bank, Country Economics Department

**BECK. T, LEVINE. R** et **LOAYZA. N,** (2000), "Finance and Sources of Growth", Journal of Financial Economics, janvier, vol 58, n°1-2, pp. 261-300

**BENCIVENGA. V** et **SMITH. B. D**, (2000), "Secondary Capital Markets, Long-Run Growth, and the Term Structure of Asset Yields", International Economic Review, août, vol 41, n°3

**BENCIVENGA. V** et **SMITH. B**, (1991), "Financial Intermediation and Endogenous Growth", Review of Economic Studies, avril, vol 58, n°2, pp. 195-209

**BERGER. A, HASAN. I** et **KLAPPER. L. F**, (2004), "Further Evidence on the Link between Finance and Growth: An International Analysis of Community Banking and Economic Performance", Forthcoming, Journal of Financial Services Research

**BERNANKE. B** et **GERTLER. M**, (1989), « Agency Costs, Net Worth and Business Fluctuations", American Economic Review, vol 79, n°1, pp. 31-41

**BERNANKE. B** et **GERTLER. M**, (1990), "Financial Fragility and Economic Performance", Quarterly Journal of Economics, février, vol 105, pp. 87-114

**BERTHELEMY. J. C** et **VAROUDAKIS. A**, (1998), « Développement Financier, Réformes Financières et Croissance : Une Approche en Données de Panel », Revue Economique

**BOYD. J** et **PRESCOTT. E**, (1986), "Financial Intermediary Coalitions", Journal of Economic Theory, avril, vol 38, n°2, pp. 211-232

**BOULILA G. TRABELSI M**. (2002): "Financial Development and Long-Run Growth: Granger Causality in a bivariate VAR Structure, Evidence from Tunisia: 1962-1997", FSEGT Working Paper, septembre

**BURKETT. P et DUTT. A. K**, (1991), « Interest Rate Policy, Effective Demand, and Growth in LDC's », International Review of Applied Economics, vol 5, n°2, pp. 127-153

**CARLIN. W** et **MAYER. C**, (2000), "Finance, Investment and Growth", juin, Contemporary Corporate Governance Conference

**COLLIER. P et GUNNUIG. J. W**, (1997), "Explaining African Performance", mimeo, Centre for the Study of African Economics, University of Oxford, Department of Economics, Free University, Amsterdam

**COURAKIS. A. S**, (1984), "Constraints on Banks Choices and Financial Repression in Less Developed Countries", août, Brasenose College, Oxford

**DEMIRGÜÇ-KUNT. A** et **LEVINE. R**, (2001), "Financial Structure and Economic Growth: A cross-Country Comparison of Banks, Markets, and Development", Cambridge (Massachusetts), MIT Press

**DEMIRGÜC-KUNT. A** et **MAKSIMOVIC. V,** (2000), "Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm-Level Data", Tha World Bank Group, Working Paper

**DIAMOND. D** et **DYBVIG. P**, (1983), "Bank Runs, Deposit Insurance, and Liquidity", Journal of Political Economy, juin, vol 93, n°3, pp. 401-663

**DIAMOND. D**, (1984), "Financial Intermediation and Delegated Monitoring", Review of Economic Studies, juillet, vol 23, n°3, pp. 393-414

**DIAZ-ALEJANDRO. C**, (1984), « Good-Bye Financial Repression, Hello Financial Crash », Journal of Development Economics, vol 19, n°1-2, pp. 1-24

**DOLAR. V** et **MEH. C**, (2002), « Financial Structure and Economic Growth : A Non-Technical Survey », Document de travail, n°2002-24, Banque du Canada

**DORNBUSH** et **REYNOSO**, (1989), "Financial Factors in Economic Development", The John Hopkins University Press, Baltimore

**DRIFFIL. J,** (2003), "growth and Finance", Manchester School, juillet, vol 71, pp. 363-380

**EBOUE. C**, (1990), « Les effets macroéconomiques de la répression financière dans les P. E. D », Economie Appliquée, Tome LXIII, n°4, pp. 93-121

**ESCHENBACH. F**, (2004), "Finance and Growth: A Survey of the Theorical and Empirical Literature", mars, Tinbergen Institute Discussion Paper n° 039/2

**FONDS MONETAIRE INTERNATIONAL**, (1963- 2003), "Rapports Annuels"

**GOLDSMITH. R**, (1969), "Financial Structure and Development", Yale University Press, New Haven

**GREENWOOD. J** et **JOVANIC. B**, (1990), "Financial Development, Growth, and the Distribution of income", Journal of Political Economy, octobre, vol 98, n°5, pp. 1076-1107

**GREENWOOD. J** et **SMITH. B**, (1995), "Financial Markets in Development, and the Development of Financial Markets", Rochester Center for Economic Research, working Paper n°406, août

**GREGORIO. J. D** et **GUIDOTTI. P. E**, (1995), "Financial Development and Economic Growth", World Development, vol 23, pp. 433-448

**GURLEY. J** et **SHAW. G**, (1960), "Money in a Theory of Finance", The Brookings Institution, Washington DC

**GYLFASON. T,** (2004), "Monetary and Fiscal Management, Finance and Growth", Fiscal Policy, Macroeconomics and Growth, CESIFO Working Paper, n°1118, janvier

**HARRISON. P, SUSSMAN. O** et **ZEIRA. J**, (1999), "Finance and Growth: Theory and new Evidence", juillet, Working Paper n°99-35

**HAAS. R. T. A**, (2002), "Finance, Law and Growth during transition: a survey", DNB Staff Report, janvier, n°74

**JAYARANTE. J** et **STRAHAN, P. E**, (1996), "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation", Quarterly Journal of Economics, août

**KING R.G., LEVINE R**, (1993), "Finance and Growth: Schumpeter might be right", Quarterly Journal of Economics, août, vol 108, n°3, pp.717-738

**JOHANSON S., JUSELIUS K**, (1990), "Maximum Likehood Estimation and Inference of Cointegration with Application to the Demand for Money", Oxford Bulletin of Economics and Statistics, n°52

**JUNG. W. S**, (1986), « Financial Development and Economic Growth: International evidence », Economic Development and Cultural Change, vol 34, n°2

**LEVINE. R**, (1996), « Financial Development and Economic Growth: View and Agenda », Banque Mondiale, Working paper n°1678, Washington

**LEVINE. R**, (1998), "Law, Finance, and Economic Growth", Journal of Financial Intermediation, vol 8, n°1

**MAYER. C** et **SUSSMAN. O**, (2001), "The assessment: Finance, Law and Economic Growth", Oxford Review of Economic Policy, vol 17, n°4

**MCGRATTAN. E**, **KEHOE. P. J** et **CHARI. V. V**, (2004), "Business Cycle Accounting", mars, Working Paper n° w10351

**MCKINNON. R**, (1973), « Money and Capital in Economic Development » The Brookings Institution, Washington DC

**MCKINNON,** (1988), "Financial Liberalization in Retrospect: Interest Rate Policies in LDC's", The State of development Economics: Progress and Perspectives, ed. by G. Ranis et T. P Shultz, Basil Blackwell, New York

**MCKINNON. J. G**. (1991), "Critical Value for Cointegration Tests", Long Run Equilibrium Relationships, Engle and Granger (dir.), Oxford University Press

**ODEDOKUM. M. O**, (1996), "Alternative Econometric Approaches for Analysing the Role of the Financial Sector in Economic Growth: Time-Series Evidence from LDCs", Journal of Development Economics, vol 50, pp.119-146

**PAGANO. M**, (1993), « Financial Development and Economic Growth in Underdeveloped Countries », Economic Development and Cultural Change, janvier, vol 14, n°2, pp. 174-189

**PARK. Y. C**, (1993), « The Role of Finance in Economic Development in South Corea and Taiwan », Finance and Development: Issues and Experience, Cambridge University Press, Cambridge

**RIOJA. F** et **VALEV. N**, (2004), "Finance and the Sources of Growth at Various Stages of Economic Development", Economic Inquiry, Forthcoming, Department of Economics and Georgia State University

**RIOJA. F** et **VALEV. N**, (2003), "Does One Size Fit All?: A Reexamination of the Finance and Growth Relationship", janvier, Department of Economics and Georgia State University, Working Paper

**ROUBINI. N** et **SALA-I-MARTIN. X**, (1992), "A Growth Model of Inflation, Tax Evasion, and Financial Growth", mai, Working Paper n° 4062

**ROUBINI. N** et **SALA-I-MARTIN. X**, (1991), "Financial Repression and Economic Growth", octobre, Working Paper n° w3876

**ROUSSEAU. P. L** et **WACHTEL. P**, (2002), "Inflation Thresholds and the Finance-Growth Nexus", Forthcoming, Journal of International Money and Finance

**SACHSIDA. A**, (2001), « A Causality Test Between Financial Deepening and Growth », mai, UCB Department of Economics, Working Paper

**SAVVIDES. A**, (1995), "Economic growth in Africa", World Development, vol 23, n°3, pp.449-458

**SAINT-PAUL. G**, (1992), "Technological Choice, Financial Markets and Economic Development", European Economic Review, mai, vol 36, n°4, pp. 763-781

**SHAW. E**, (1973), "Financial Deepening in Economic Development", Oxford University Press, New York

**SPEARS. A**, (1992), "The Role of Intermediation in Economic Growth in Sub-Saharan Africa", Canadian Journal of Economic Theory, octobre, vol 21, n°2, pp. 265-293

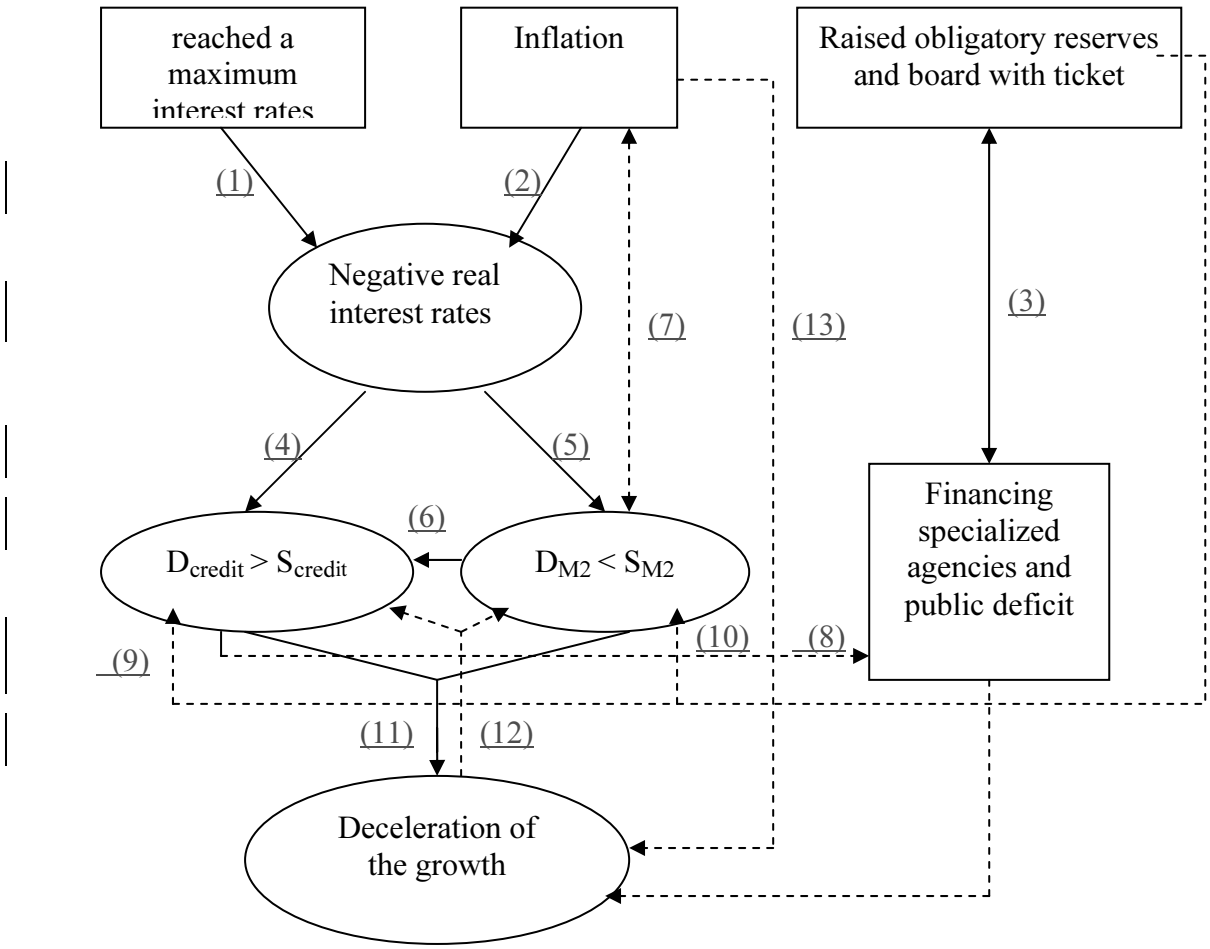
**TAYLOR. L**, (1983), "Structuralist Macroeconomics: Applicable Models for the Third Wore", New York, Basic Books

**VIKRAM N., DHARESHWAR A**, (1993), "A new Database on Physical Capital Sotck: Sources, Methodology and Results", Rivista de Analisis Economico, vol 8, n°1

**WILLIAMSON. S**, (1987), "Costly Monitoring, Loan Contracts, and Equilibrium Credit Rationing", Quarterly Journal of Economics, février, vol 102, n°1, pp. 133-145

## Annexes

### Annexe 1 : The impact of the financial repression (McKINNON, 1980)



**Annexe 2a : The contemporaneous correlations**

1963-2003

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | -0,007 | -0,132 | -0,081 | -0,126 | -0,081 | -0,225 |
| GK | -0,326 | -0,421 | -0,193 | -0,438 | -0,193 | -0,633 |
| GG | -0,232 | -0,245 | -0,143 | -0,258 | -0,143 | -0,222 |
| INV | 0,742 | 0,843 | 0,642 | 0,875 | -0,646 | 0,687 |

1963-1986

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | -0,143 | -0,387 | -0,122 | -0,385 | 0,123 | -0,361 |
| GK | -0,322 | -0,477 | -0,023 | -0,541 | 0,022 | -0,720 |
| GG | 0,303 | 0,175 | 0,439 | 0,123 | -0,439 | -0,141 |
| INV | 0,532 | 0,908 | 0,353 | 0,924 | -0,354 | 0,856 |

1987-2003

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | 0,300 | 0,077 | 0,318 | 0,108 | -0,326 | -0,264 |
| GK | 0,463 | 0,439 | 0,720 | 0,554 | -0,738 | -0,365 |
| GG | -0,822 | -0,881 | -0,559 | -0,870 | 0,547 | 0,003 |
| INV | -0,457 | -0,535 | 0,324 | -0,455 | -0,336 | -0,631 |

**Annexe 2b : The lagged correlations**

1963-2003

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | -0,135(+18) | -0,060(+0) | -0,3373(+16) | -0,109(+0) | 0,338(-16) | -0,244(-18) |
| GK | -0,326(+0) | -0,421(+0) | -0,193(+0) | -0,438(+0) | -0,193(+0) | -0,633(+0) |
| GG | -0,212(+0) | -0,245(+0) | 0,143(+0) | -0,258(+0) | -0,143(+0) | -0,222(+0) |
| INV | 0,742 | 0,843 | 0,642 | 0,875 | -0,646 | 0,687 |

1963-1986

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | -0,431(+16) | -0,387(+0) | -0,422(+16) | -0,385(+0) | 0,423(-16) | -0,487(-3) |
| GK | -0,322(+0) | -0,477(+0) | -0,023(+0) | -0,541(+0) | 0,022(+0) | -0,720(+0) |
| GG | 0,303(+0) | 0,175(+0) | 0,439(+0) | 0,123(+0) | -0,439(+0) | -0,141(+0) |
| INV | 0,532(+0) | 0,908(+0) | 0,353(+0) | 0,924(+0) | -0,354(+0) | 0,856(+0) |

1987-2003

| | BANK | LLY | PRIVATE | PRIVY | PUBLIC | PUBLY |
|---|---|---|---|---|---|---|
| GY | 0,300(+0) | 0,374(+14) | 0,318(+0) | 0,316(+13) | -0,326(+0) | -0,322(-5) |
| GK | 0,627(+18) | 0,439(+0) | 0,720(+0) | 0,554(+0) | -0,738(+0) | -0,365(+0) |
| GG | -0,822(+0) | -0,881(+0) | -0,672(+3) | -0,870(+0) | 0,687(-13) | 0,518(-17) |
| INV | -0,659(+13) | -0,535(+0) | 0,787(+18) | -0,455(+0) | -0,778(+18) | -0,631(+0) |

**Annexe 3a : Stationnarity tests**

| Variable | Lag | C/T[a] | ADF | PP | T |
|---|---|---|---|---|---|
| GY | 2 | C | -5,726 | -5,095 | 0 |
| GK | 1 | C | -2,621 | -2,577** | 0 |
| GG | 4 | C | -3,100* | -4,132 | 0 |
| INV | 1 | C | -1,077 | 0,666 | 1 |
| BANK | 4 | C+T | -2,029 | -2,663 | 1 |
| LLY | 1 | C+T | -1,571 | -0,941 | 1 |
| PRIVAT | 1 | C | -2,083 | -1,640 | 1 |
| PRIVY | 2 | C+T | -2,293 | -1,917 | 1 |
| PUBLIC | 4 | C+T | -2,293 | -1,917 | 1 |
| PUBLY | 3 | C+T | -1,161 | -2,868 | 1 |

[a]C/T : Constant and / or trend.

The critical valeus are McKinnon values (1991)

*, ** significant at the 0,05 level and at the 0,10 level.

**Annexe 3b : The cointegration tests**

| Variable | $\Pi_0$ | 1963-2003 | 1963-1986 | 1987-2003 |
|---|---|---|---|---|
| Y ; BANK | r =0 | 9.414 | 19.604* | 9.240 |
| | r<=1 | 0.104 | 2.256 | 0.001 |
| Y ; LLY | r =0 | 7.478 | 29.054* | 15.203 |
| | r <= 1 | 0.146 | 0.321 | 0.461 |
| Y ; PRIVATE | r =0 | 12.473 | 7.831 | 4.250 |
| | r <=1 | 2.235 | 3.316 | 0.322 |
| Y ; PRIVY | r =0 | 9.532 | 16.331* | 5.955 |
| | r <=1 | 0.528 | 0.022 | 0.199 |
| Y ; PUBLIC | r =0 | 12.572 | 7.896 | 4.679 |
| | r <=1 | 2.290 | 3.343 | 0.500 |
| Y ; PUBLY | r =0 | 7.448 | 4.270 | 4.132 |
| | r <=1 | 2.555 | 0.141 | 0.224 |
| K ; BANK | r =0 | 4.138 | 22.726* | 9.837 |
| | r <=1 | 0.065 | 1.772 | 1.596 |
| K ; LLY | r =0 | 6.505 | 43.894* | 15.488* |
| | r <=1 | 0.047 | 8.920 | 0.040 |
| K ; PRIVATE | r =0 | 18.749* | 14.913 | 12.203 |
| | r <=1 | 2.463 | 3.433 | 0.957 |
| K ; PRIVY | r =0 | 8.388 | 26.001* | 6.955 |
| | r <=1 | 0.095 | 8.578 | 0.461 |
| K ; PUBLIC | r =0 | 19.045* | 15.062 | 10.099 |
| | r <=1 | 2.511 | 3.468 | 1.034 |
| K ; PUBLY | r =0 | 6.186 | 18.566* | 9.829 |
| | r <=1 | 0.211 | 4.682* | 0.412 |

* a cointegration relation exists

| Variable | $\Pi_0$ | 1963-2003 | 1963-1986 | 1987-2003 |
|---|---|---|---|---|
| G ; BANK | r =0 | 7.136 | 10.467 | 17.404* |
| | r<=1 | 1.836 | 0.002 | 3.867 |
| G ; LLY | r =0 | 9.578 | 32.332* | 15.898* |
| | r <= 1 | 3.846 | 0.088 | 2.185 |
| G ; PRIVATE | r =0 | 19.847* | 10.256 | 13.897 |
| | r <=1 | 6.154* | 0.739 | 1.531 |
| G ; PRIVY | r =0 | 15.031 | 20.128* | 13.491 |
| | r <=1 | 5.333 | 0.930 | 1.350 |
| G ; PUBLIC | r =0 | 19.889* | 10.148 | 13.179 |
| | r <=1 | 6.173* | 0.730 | 1.494 |
| G ; PUBLY | r =0 | 6.836 | 13.641 | 12.886 |
| | r <=1 | 2.183 | 0.634 | 1.075 |
| INV ; BANK | r =0 | 7.730 | 6.947 | 17.077* |
| | r <=1 | 1.612 | 0.001 | 1.879 |
| INV ; LLY | r =0 | 4.317 | 25.262* | 12.611 |
| | r <=1 | 0.318 | 4.699* | 0.673 |
| INV ; PRIVATE | r =0 | 12.387 | 8.162 | 11.781 |
| | r <=1 | 2.084 | 0.777 | 3.178 |
| INV ; PRIVY | r =0 | 9.888 | 20.623* | 9.453 |
| | r <=1 | 0.171 | 4.452* | 0.221 |
| INV ; PUBLIC | r =0 | 12.401 | 8.185 | 13.064 |
| | r <=1 | 2.084 | 0.766 | 3.631 |
| INV ; PUBLY | r =0 | 3.773 | 16.585* | 12.425 |
| | r <=1 | 0.399 | 0.050 | 1.658 |

* a cointégration relation exists.