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The Impact of Financial Liberalization on the Performance of the Algerian Public Banks.

Thesis submitted as a partial fulfillment of the "Doctorate" degree in Economics

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Dedication

This thesis is a dedication to my husband, my dearest father and to my beloved tender mother who mean everything to me.

To my brothers who mean a lot to me.

To all my family -Guesmi and Boutayeba- who believed in me and supported me in practical and constant ways, their confidence in my abilities and their belief in the importance of this work have ensured its completion.

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I am extremely grateful to the almighty Allah who bestowed me the understanding and perseverance to make this accomplishment possible.

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Finally, I express my sincere gratitude to my parents for their prayers and their moral support.

Thanks a lot.

Abstract:

The main aim of this study is to investigate the impact of financial liberalization on the performance of the Algerian public banks. In order to achieve this goal, a quantitative analysis has been conducted for a panel data sample covering five public banks over the period (1997-2012). The model of this study includes the determinants of performance which are bank specific variables and macroeconomic variables. The banks' performance was proxied by using return on assets (ROA), return on equity (ROE), and net interest margin (NIM). Besides, the financial liberalization was also proxied by using: the size of intermediation, real interest rates, and bank concentration. The study showed evidence that both the size of intermediation and bank concentration impact positively the performance of Algerian public banks. In contrast, it showed that real interest rates do not impact this latter.

Keywords: financial liberalization, public banks' performance, panel data, Algeria.

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Introductory Chapter :

1.1. Preface:

According to a conventional view on the positive role of finance for growth, a good financial system with a well-functioning competitive market as well as a well-supporting financial institution is an essential ingredient for sustainable economic growth. Schumpeter (1911) contended that the services provided by financial intermediaries are essential drivers for innovation and growth. This line of argument was later formalized by Mckinnon (1973) and Shaw (1973), and popularized by their followers Fry (1988) and Pagano (1993). The Mckinnon-Shaw school of thought proposes that government restrictions on the operation of the financial system such as interest rate ceiling, direct programs and high reserve requirements may hinder financial deepening. This may in turn affect the quality and quantity of investments and hence has a significant negative impact on economic growth. Therefore, the Mckinon-Shaw financial repression paradigm implies that a poorly functioning financial system may retard economic growth.

Following the recommendations of the authors of financial repression school, several countries undertook programs of financial liberalization. This recent wave of financial liberalization started in the mid-1980s, with rising cross border financial flows among industrial economies and between industrial and developing economies. This was spurred by liberalization of capitals in many of these countries.

The opening of financial services and the structural reforms of domestic financial sector are two interwoven processes, both aimed at developing an efficient and competitive financial system to facilitate economic growth. The degree of financial integration has risen significantly in the 1990s where Algeria, like many other developing countries, made significant progress in building a modern financial sector. Algeria has embarked on economic and financial reforms in recognition that economic growth and stability are often associated with increasing financial deepening and adapting to rapid globalization. For the most part, the financial and monetary authorities have implemented financial sector liberalization programs. These programs have included deregulatory, interest rates liberalization and the gradual opening up of the financial sector for foreign participation, increasing competition and reduction of credit control. Therefore, from these important reforms, the importance of this study is derived. The research project analyses the implications of liberalization of financial services on the performance of the Algerian public banks. This entails determining the main components and measures of financial liberalization and how it does affect these banks.

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1.2. Research Problematic:

Financial sector plays a crucial role in providing investment opportunities. Also, it works to empower the economic relationship between countries. In Algerian economy, banking system is a major part of financial sector; thus, Algeria's financial system is seen as bank-based. Historically speaking, Algeria conducted many steps towards reforming their banks in order to find suitable environment, and to find less government intervention to strengthen the role of the banking sector. It is obvious that Algeria from the beginning of 1990s had worked seriously in order to apply a set of economic reforming programs. Consequently, this research explores the impact of financial liberalization on Algerian public bank's performance. Thus, the study focuses on the following questions: *does the financial liberalization impact the performance of the Algerian public banks?*

1.3. Research Hypothesis:

This study supposes that the financial liberalization does not impact the performance of the Algerian public banks.

1.4. Importance of the Study:

The recent financial crisis of 2008, has raised a series of important issues, amongst them is the question of the effectiveness of financial liberalization. In fact, many countries took important steps towards adopting financial liberalization which based on reforming all kinds of control on capitals and trying to save the suitable investment, tendering towards specialization, joining in global commerce organization, and other economic decisions. In fact, one of the principal objectives of implementing financial liberalization programs is to improve the performance of the banking industry in terms of enhancements in efficiency, productivity and competitiveness (Berger et al, 1997). Consequently, measuring the impact of financial liberalization policies on the banking sector performance is of a fundamental importance to assist policy makers in reconsidering and/or pursing their adopted policies. From here, the importance of the meaning the impact of financial liberalization on the public banks' performance in Algeria is derived.

Introductory Chapter :

1.5. Objectives of the Study:

The objectives of this study can be outlined by the following elements:

- ✓ To undertake detailed empirical evidence of individual developing countries which could address a number of important questions such as: what measures were implemented as part of the financial reforms? What were the outcomes of such policy re-orientations? Did these reforms facilitate and enhance the performance of banks?
- ✓ To cheek whether Algeria has fully or partially adopted financial liberalization process.
- ✓ To investigate which of the financial liberalization measures (Index) have been carried out by the Algerian authorities, especially in banking sector?
- ✓ To assess empirically the effects of financial liberalization measures on the performance of Algerian public banks.
- ✓ To discuss the results of the case study and identify the key causes of failure or success following the reforms.
- ✓ To compare the effects of deferent measures of financial liberalization on the performance of Algerian public banks.
- ✓ Based on the results and assessments of the study, we shall attempt to advance some policy options that could be strengthen the positive effects of financial liberalization on Algerian public banks.

1.6. Justification for the choice of subject:

We have chosen this topic for the following considerations:

- ✓ This study is motivated by the recent developments in the Algerian banking industry during the last two decades, due to the process of financial liberalization.
- ✓ This study focuses on banking industry, given to the important role played by this industry in the national economic development.
- ✓ Given to the relative lake of academic research on the impact of financial liberalization on the performance of Algerian public banks, this study is an attempt in this direction.
- ✓ There is a special and personal interest for the researcher in the fields of financial globalization and banking.

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1.7. Data and Methodology:

In this study, we use an empirical model in order to assess how the financial liberalization measures affect the performance of the Algerian public banks. For this purpose, the following independent variable is included: banking system liberalization measures. The dependent variable is the performance of the public banks. The performance is based on the following three variables: return on assets (ROA), return on equity (ROE), and net interest margin (NIM).

Our sample is a balanced panel data set. This later comprises five Algerian public banks for which the same variables were collected annually for sixteen years (1997-2012). Thus, this pooled data contains a total of eighty (5×16) observations. The study uses quantitative analysis; applying random panel data regression. Data are analyzed referring to statistical regression analysis using *Eviews 08* version.

1.8. Previous Studies:

Compared to a large number of studies linking financial liberalization to economic growth and financial fragility, there is relatively few research at the international level linking financial liberalization to banking sector efficiency and productivity, especially, for the Algerian case where studies were mostly focused on the effect of financial liberalization on economic growth, such as the study of Benallal (2014), Znasni (2013), and Chakouri (2006). In fact, the topic of the impact of financial liberalization on the Algerian public banks has not paid much attention by researchers. Nevertheless, one can mention the following previous studies:

- ✓ Alouani (2008), in his paper entitled "*les reformes financières dans la région MENA: une approche comparative, cas de la Tunisie, l'Algérie, le Maroc et l'Egypte*", has focused on financial development and bank performance in four countries of the MENA region using a descriptive approach. He studied the impact of liberalization on the investment, savings, and capital entry by exploring some criteria which are: the development of financial intermediation, components of the index of financial development, quantitative synthetic indicators of financial development, evaluation of bank efficiency ratios, market capitalization as a percentage of GDP, national saving rate, share of private sector credit and investment rate. He found that the financial systems in these counties are inefficient and relatively backward especially Algerian banks whose have particularly low ratios of performance.

Introductory Chapter :

- ✓ Benamraoui (2003), in his PhD thesis entitled: "*the effects of globalization of financial services on banking industry and stock market: an Algerian case study*", used descriptive approach and questionnaire method to analyze the effects of globalization of financial service on the banking industry and stock market in Algeria. He examined factors that affect banks and stock market operations either directly or indirectly during the transition from a centrally planned economy to a market- based one. He also analyzed the responses of banks to financial liberalization, financial innovation in terms of competition, profitability and efficiency. The researcher concluded that the globalization has more advantages than disadvantages to the Algerian banking sector as well as to the Algiers stock exchange. The removal of remaining regulatory obstacles would enable banks to benefit fully from the process of financial liberalization, and to be active instructions in the financial market.

- ✓ Jong-Kun (2002), in his paper entitled "*financial liberalization and foreign bank entry in MENA*", has analyzed the impact of financial liberalization and foreign bank entry on competitiveness and soundness of domestic banking system as well as credit growth in association with financial sector development, focusing on MENA region consisting of seventeen countries including Algeria. He found that financial sector development deepening is positively related to foreign bank presence and it has been driven mainly by expansion of domestic credit to private sector, rather than to public sector. He also observed from econometric evidence that financial liberalization accelerated by foreign bank entry and privatization of domestic state owned banks, contributed to net profitability and better capitalization for domestic banks, and that an increase in net profitability in a more capitalized bank, in turn, will lead to strengthen bank's lending ability to private sector.

- ✓ Jbili et al. (1997), in their paper entitled "*financial sector reforms in Algeria, Morocco, and Tunisia: a preliminary assessment*", had reviewed and assessed the sequencing of reforms and discussed econometric evidence of the impact of the reforms on saving in each of the three countries. They found that financial sectors in all three countries are still far away from achieving the dynamism, efficiency and depth of fully fledged market– based financial sectors in industrial countries. They also found that almost all financial indicators had negative effects on savings in Algeria, except the ratio of money to deposits, which increased from 0.12 to 0.61 after the reforms.

1.9. Difficulties of the Study:

As noted by Jbili et al. (1997): "*the scope for quantitative analysis is severely limited by data constraints*". This is indeed more apparent when using financial indicators and determinants which measure financial sector development at the micro-level. In our case, data on profits for banks and its determinants, for instance non-performing loans and interest margin, are rarely provided continuously by banks. Even though these data are available, it is neither easy to collect nor to get them.

1.10. Limitations of the Study:

The study is devoted chiefly to the case of Algeria, this later has embarked on applying financial liberalization policies after a repression period where state owned banks had the monopoly in collecting public saving and financing domestic investment. Moreover, Algeria is chosen as a case study rather than a group of selected countries in order to deepening the empirical study on Algeria.

The banking sector is a viable proxy for the financial system as a whole because much of early adjustment in a liberalization process occurs in the banking sector such as interest rates deregulation and private credit is made available more broadly. For this reason, the study is limited to capturing the changes in the banking sector during liberalization when banks may experience substantial gains, but they are also subject to the possibility of substantial losses or crisis as the financial system moves from a controlled to an open system.

The study links banking performance to profitability. This later enhances the performance of the selected banks in our sample which are the five public banks.

1.11. Structure of the Study:

In addition to the introduction chapter, four other chapters are developed in this thesis; chapter two provides a review of theoretical background related to the subject of this study. The third chapter deals with the empirical evidence on the measures of financial liberalization and its effects on banks performance. Chapter four focuses on the transition of Algerian banking system from the repression period into the liberalization period. Chapter five is devoted to assess empirically the impact of the financial liberalization measures on the performance of Algerian public banks. This chapter includes data and model specification, results and discussion. Finally the study concludes with some recommendations.

Chapter Two:

Theoretical Framework

✓ The importance of financial development sector.

✓ The impact of Financial Liberalization.

Chapter 2: Theoretical Framework

Introduction:

This chapter clarifies financial development and liberalization of financial services and their effects on banking performance from various scholars' points of view.

The opening to the outside and the internal structural reforms of the financial sector are two interdependent processes, both having as purpose the development of the financially competitive and efficient system, in order to facilitate economic growth and financial banking system stability. Where the financial sector has become the cornerstone of most economies around the world and as a result it has gained a lot of attention from economists, who research mainly the causes and impacts of its development.

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2.1. The importance of financial development sector:

Developing countries attach great importance to financial sector development and deepening in the pursuit of their poverty reduction goal.

Although economists disagree sharply about the role of the financial sector in economic growth, some of them argue that finance does not cause growth where "Finance is not even discussed in a collection of essays by the pioneers of development economics [Meier and Seers (1984)]" (Levine, 2004, 867).

At the other extreme, Nobel laureate Merton Miller (1998) argues that financial markets contribute to economic growth is a proposition too obvious for serious discussion.

2.1.1. Defining financial system:

A financial system has become the cornerstone of most economies around the world and as a result it has gained a lot of attention from economists, who research mainly the causes and impacts of its development.

According to Hubbard (1997) a financial system is « a network of markets and institutions that brings savers and borrowers together ». The main function of a financial system which is bringing savers and borrowers together can be performed either through direct financing or indirect financing. Direct financing takes place through financial markets (such as stock markets, bond markets, and derivatives markets) deficit spending units who issue debt (direct securities) and surplus spending units who buy and hold these financial assets (Gurley et al., 1955, 518). While indirect financing is done through financial intermediaries (such as banks, mutual funds, and insurance companies), they issue their own debt in seeking loan able funds from surplus units and allocate them to deficits units (Gurley et al., 1955, 519). The potential savers and borrowers consist of households, businesses and governments.

2.1.2. Structure of a Financial System:

A financial system can be classified as either bank based or market based. A bank based system highlights the positive role of banks in the allocation of funds in the economy, while a market based system highlights the positive role of the financial markets emphasizing their comparative advantage over banks in allocation efficiency (Beck and Levine, 2002).

Banking sector of an economy generally performs three very primary functions which include the facilitation of payment system, mobilization of savings and allocation of funds to stakeholders like government, investors, consumers, and business community who can utilize them for the generation of economic activities. By virtue of its pivotal role, the banking sector

can exert its positive influence on various segments of the economy. On the one side, it allocates funds for the highest value use while on the flip side, it limits the magnitude of risks and costs, thereby creating a level playing field for economic agents to flourish and generate economic activities. This aspect of banking sector gives it a privilege over other competing sector (Jaffe et al. (2001), Wachitel (2001)).

Besides debates concerning the role of financial development in economic growth, financial economists have debated the comparative importance of bank based and market based financial systems for over a century. (Gerschenkron, 1962; Goldsmith, 1969 ; Boot et al., 1997 and Demirguc- Kunt and Levine 2001)

In our study we concentrate on the Bank based system because the Algerian financial system is bank based.

Rajan et al., (1998) stress that powerful banks with close affinity to firms may be more effective at exerting pressure on firms to repay their debts than atomistic markets.

In sum, proponents of Bank-based systems argue that there are fundamental reasons for believing that market-based systems will not do a good job of acquiring information about firms and overseeing managers. This will hurt resource allocation and economic performance. Banks do not suffer from the same fundamental shortcomings as markets. Thus, they will do a correspondingly better job at researching firms, overseeing managers, and financing industrial expansion (Levine 2004, 883).

As a result, bank based arrangements can produce better improvement in resource allocation and corporate governing than market based institution (Stiglitz, 1985; Blide, 1993).

The theory of bank based financial system stresses the positive role of banks in development and growth, and also, emphasizes the draw backs of market based financial systems as discussed by Stiglitz (1985), Shleifer et al. (1997), De Anglo et al. (1983). The theory opines that banks can finance development more effectively than markets in developing economies, and in the case of state owned banks, market failures can be overcome, and allocation of savings can be undertaken strategically (Gerschenkron, 1962).

In fact, bank-based financial systems are in a much better position than market-based system to address agency Problems and short terms (Stiglitz, 1985; Singh, 1997).

Chapter 2: Theoretical Framework

2.1.3. The role of banking sector on economy:

Moving forward, the banking sector is expected to have a greater role in facilitating and catalyzing economic growth. As discussed, financial intermediaries can improve the (i) acquisition of information on firms, (ii) intensity with which creditors exert corporate control, (iii) Provision of risk-reducing arrangements, (iv) Pooling of capital, and (v) ease of making transacting (Levine, 2002).

Financial intermediaries can play a number of important roles in promoting the development of a healthy growing economy. First by they create money and organize the payments system of a country, this reduces the inefficiencies which are associated with barter. Secondly, financial intermediaries bring together economic agents who wish to save with those who which to invest. The financial saving can be channeled to economic units which are in deficit.

Banks reduce transaction costs associated with finding a firm or an individual who is seeking to borrow funds. It also can reduce the information costs and thus reduce the credit risk associated with lending for investment purposes.

The intermediary has the expertise to determine where it should invest and how much. Banks gains from diversification if one of its loans goes bad; this is likely to be cancelled out by others which have been a success. It reduces the illiquidity associated with direct lending. Financial intermediaries can create liquidity by borrowing in short term and lending long term. It have the advantage that they can put together large amount of finance where investment projects tend to be large in relation to the average amount which individuals wish to save (Gibson et al., 1992).

2.1.4. What is financial development?

There are many different ways in which the financial sector can be said to « develop » for example:

- ➢ The efficiency and competitiveness of the sector may improve.
- ➢ The range of financial services that are available may increase.
- ➢ The diversity of institutions which operate in the financial sector may increase.
- ➢ The amount of money that is intermediated through the financial sector may increase.
- ➢ The extent to which capital is allocated by private sector financial institutions, to private sector enterprise, responding to market signals,

> rather than government directed lending by state owned Banks, may increase.
>
> ➢ The regulation and stability of the financial sector may improve.
> ➢ Particularly important from a poverty reduction perspective, more of the population may gain access to financial services.

Financial development occurs when financial instruments markets and intermediaries ameliorate the effects of information enforcement, and transactions costs and therefore do a correspondingly better job at providing the five financial functions which are identified by Levine (1997).

To understand why financial sector development, under certain conditions, may be positively related to economic growth, it is necessary to understand   the critical function of the sector provides to the economy. The financial sector is unique because of the risk and uncertainty faced by both savers and investors (Stiglitz, 1998). Savers are often unable to select the investment project that best matches their personal risk appetite and without pooling their money, savers cannot take advantage of increasing returns to scale in investments (Stigliz, 1998).

Moreover, individual entrepreneurs or investors commonly lack sufficient capital to proceed with projects on their own. Commercial banks provide an intermediation service that brings savers and investors together, theoretically channeling investment funds to the uses that yield the highest rate of return, thus increasing specialization and the division of labor (Todaro, 2003).

The five basic channels, through which an efficient financial sector influences economic growth, may be represented by figure (1) below, which illustrates how financial arrangements provide five functions that affect savings and allocation decisions, and how these functions, then influence economic growth trough two channels, namely capital accumulation and capital productivity.

Chapter 2: Theoretical Framework

Figure (1): The Channels through which the financial

sector influences economic growth

Financial Sector

Mobilize Savings   Allocate resource   Exertcorporate control   Ease risk Management   Ease trading

Increased capital accumulation   Increased capital productivity

Economic Growth
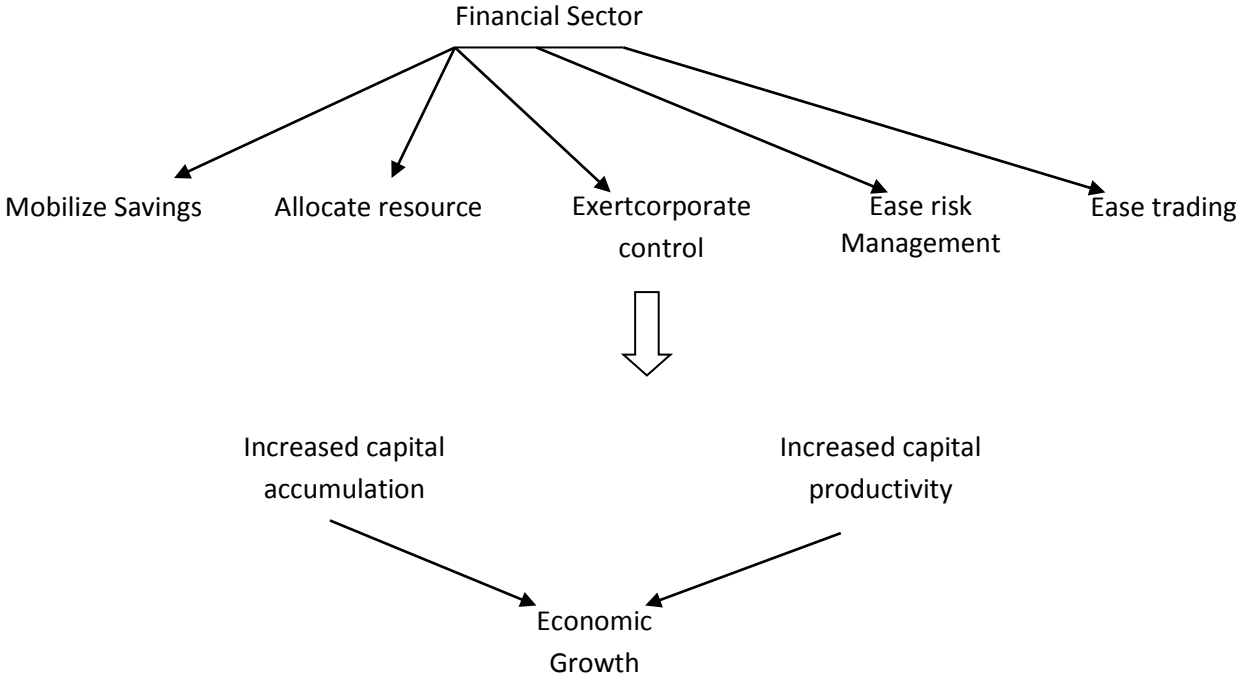
Source: Levine (1997) with some modifications.

Following Levine (1997), the meaning of the functions in Figure 2.1 can be elaborated as follows:

A- **The mobilization of savings** is perhaps the most obvious and important function of the financial sector. The provision of savings facilities enable households to store their money in a secure place, and allows this money to be utilized productivity by lending it to individuals or enterprises to finance investments, thus encouraging capital accumulation and promoting private sector development. As noted by Anderson (2003) the basis for accelerating economic growth is the allocation of resources to new and higher return projects. Also financial sectors exert corporate control and serves in the monitoring of investments to reduce the risk of resource mismanagement, so financial arrangements that improve corporate control and to promote faster capital accumulation and growth by improving the allocation of capital (Bencivenga et al., 1991).

Regarding **risk management**, banks are uniquely positioned to intermediate across maturities. Borrowers and lenders with different preferred maturities are not compelled to agree on a common maturity. This is possible because banks combine many household savings and, usually, all servers are not expected to withdraw their money at the same time. Also banks bear the risk of borrowing at volatile, short term interest rates and lending at stable

long-term interest rate. By doing so, they help to ensure that capital is allocated to the best projects (Bencivenga et al., 1991).

B- Easing Trade:

The core elements of Adam Smith's (1776) wealth of nations were the links between facilitating transactions, specialization, innovation and economic growth he argued that with greater specialization division of labor, workers are more likely to invent better machines or production processes (Smith, 1776, 3).

Smith (1776) focused on the role of money in lowering transaction costs, Permitting greater specialization, and fostering technological innovation this in terms of the way compared to barter.

The financial sector facilitates transactions in the economy, by providing the mechanisms to make and receive payments, and by reducing information costs. So by providing financial intermediation in this way, the financial sector reduces transactions costs, and facilitates the trading of goods and services between business and households. In doing this, the financial sector allows greater specialization which in turn facilitates productivity gains and allows more technological innovation and growth.

C- Risk is pooled, transferred, and reduced by commercial banks while liquidity and information increase through the use of progressively more sophisticated financial products and technology. Neoclassical growth models tell us that an increase in the efficient investment of savings in new and innovative projects is one of the main engines of economic growth.

2.1.5. The contribution of financial development (the relationship between FD and Economic growth):

There are both theoretical and empirical evidence suggesting that the development of financial sector accelerates economic growth. The idea that financial development plays a leading role in economic growth traces its origins to Schumpeter (1911) who argued that financial development induces economic growth. His main point was that through the services that financial intermediaries bring about, like mobilizing saving, managing risk, facilitating transactions or evaluating projects, technological and economic development is stimulated. Technological change is the key in Schumpeter's reasoning. His idea of "creative destruction" is a process of constant replacement of old production methods and goods with better procedures, commodities, and services by invention and innovation. And financial intermediaries enable this technological innovation.

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Robison (1952) argues that the relation should be started from growth to finance where he said that "where enterprise leads finance follows » according to this thought, a high rate of economic growth leads to a high demand for particular financial agreement or arrangement, and the well- developed financial sector will automatically respond to these types of demand.

Lewis (1955), one the early pioneers of development economics suggested a two way relationship between financial development and economic growth, where financial markets develop as a consequence of economic growth.

Hicks (1969) also noticed that financial institutions might facilitate growth, though he focused on capital formation. From this perspective capital formation can be influenced by financial institutions through altering the savings rate or by reallocating savings among different capital producing technologies, liquidity is crucial here. The high- return projects involve a long run commitment of capital and savers are generally reluctant to lose control of their savings for a long time. The task of financial institutions is to enhance the liquidity of long term investments so that more investment is expected in the high returns projects.

The above general view was shared by scholars like Goldsmith (1969), McKinnon (1973) and show (1973), who opted for the proactive function of financial services as well. Goldsmith (1969) assumed that the size of a financial system is linked with the supply and quality of financial intermediation, his analysis on 35 sample countries proved a positive correlation between the financial development and economic growth (Choong et al., 2011).

McKinnon (1973) and Shaw (1973) demonstrate the importance of financial liberalization in promoting domestic savings and hence investment, they admit the significance of financial development in promoting economic growth through high capital productivity (Katarzyna, 2009).

Greenwood et al. (1990), Levine (1991), Bencivenga et al. (1991) and saint-paul (1992) have all constructed theoretical models wherein efficient financial markets improve the quality of investments and enhance economic growth.

Pagano (1993) suggests three in which the development of financial sector might affect economic growth under the basic endogenous growth model. First it can increase the productivity of investments. Second, an efficient financial sector reduces transaction costs and thus increases the share of savings channeled into productive investments. Third, financial sector development can either promote or decline savings.

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According to Levine (1997) the financial development could be explained by the access to credit and financial services. Other points of view proposed by Miller (1998) and Lucas (1988). Miller (1998) refers that financial markets promote the economic growth, but it will be necessary to consider other explanatory variables. In other words, the financial development is endogenous across to real growth. Lucas (1988) has the similar opinion.

Economic growth according to (Levine, 1997; Beck et.al, 2000; and Levine et.al, 2000) is equal to:

$$Growth_{it=} f(\ credit, bank, IPC, trade, prod) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

Where:

- Growth is the growth rate of real GDP.
- Credit is the private credit.
- Bank is the deposit money banks.
- IPC is the consumer price.
- Trade is the ratio of exports plus imports.
- Prod is the productivity.

2.1.6. The hypotheses of financial development (the causality relationship between FD and Economic growth):

The hypotheses come up with Patrick (1966); he identifies two possible causal relationships between financial development and economic growth. The first is called **demand following hypothesis** which mentions the demand for financial services as dependent upon the growth of real output and the commercialization and modernization of agriculture and other subsistence sectors. Thus, the creation of modern financial institutions, their financial assets and liabilities and related financial services are a response to the demand for these services by investors and savers in the real economy. On this view, the more rapid growth of real national income, the greater will be the demand by enterprises for external funds (the savings of others).

The postulation of this view is that causality runs from economic growth to financial development, in this case, an expansion, of the financial system is induced because of real economic growth.

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The second causal relationship between financial development and economic growth is termed **supply leading** by Patrick (1966), supply leading has two functions, which are transferring resources from the traditional low-growth sector to the modern high-growth sector, promoting, and stimulating an entrepreneurial response in these modern sectors. This implies that the creation of financial institutions and their services occurs in advance of demand for them.

In this case and according to supply- leading argument, the effect runs from financial development to economic growth. The financial sector can stimulate economic growth through three different channels (Ferda, 2007 and Duenwald, 2002):

- It results in an increase in the marginal productivity of capital, by collecting information to evaluate alternative projects and by risk sharing.

- It raises the proportion of savings channeled to investments by means of financial development and thus, increases the efficiency of financial intermediation and 3- it increasing the private savings rate.

2.2. The impact of financial liberalization:

In the last two decades an increasing number of countries have eliminated controls on international capital movements. Financial liberalization refers to banking sector liberalization, the deregulation of domestic financial markets and the liberalization of the capital account. The effects of financial liberalization have been a matter of some debate. In one view, it strengthens financial development and contributes to higher long run growth, according to McKinnon (1973) and Shaw (1973) who supports that when financial repression is destroyed and financial system is liberalized, financial deepening will exist and economic growth will increase. Same idea is followed by Fry (1988), Gablis (1977), Kapur (1976), and Mathieson (1980) in another view, and in contrast to McKinnon and Shaw's view, Buffy (1984) and Wijnbergen (1983) were developed alternative idea who are called structuralism according to them, financial development decreases total real credit supply and prevents economic growth, according to Buffy (1984) "….if we give permission to reactions in markets then financial liberalization will be a dangerous enterprise."

2.2. Financial repression before financial liberalization:

Chapter 2: Theoretical Framework

In developing countries, the term financial repressed means that government holds financial markets under the repression by interfering them. It achieves this by distribution of credits with holding interest rates at low levels synthetically. However in fact, the hypothesis of financial repression depends on the criticisms of neoclassical and neo-Keynesian views about interest rate policies (Selda, 2009).

Financial repressed theory was first come up with in two independent studies belong to McKinnon (1973) and Show (1973), and financial markets were first examined systemically by McKinnon in 1973.

Above we saw, theoretically, that an economy with an efficient financial system can achieve growth and development through efficient capital allocation. McKinnon and Shaw argue that historically many countries, including developed ones but especially developing ones, have restricted competition in the financial sector with government interventions and regulations. According to their argument, a repressed financial sector discourages both saving and investment because the rates of return are lower that what could be obtained in a competitive markets. In such a system, financial intermediaries do not function at their full capacity and fail to channel saving into investment efficiently, thereby impeding the development of the overall economic system.

2.2.1.1. Rational for and policies of financial repression:

The term financial repression became a way of describing emerging markets financial systems prior to the widespread financial liberalization that began in the 1980. Financial repression was also the norm for advanced economies during the post world war II and in varying degrees up through the 1980s.

The key reason for the government to implement financially repressive policies is to control fiscal resources by having a direct control over the financial system, the government can funnel funds to itself without going through legislative procedures and more cheaply that it could when it resorts to market financing. More specifically, by restricting the behavior of existing and potential participants of the financial markets, the government can create monopoly or captive rents for the existing banks and also tax some of these rents so as to finance its overall budget. Existing banks may try to collude with each other and to interrupt

possible liberalization policies as long as they are guaranteed their collective monopoly position in the domestic market (Roubini et al., 1992).

McKinnon (1973) defines financial repression as follows: bank credit remains a financial appendage of certain enclaves, exclusively licensed import activities, specialized large-scale mineral exports, highly protected manufacturing, large international corporations and various government agencies. Even ordinary government deficits on current account frequently preempt the limited lending resources of the deposit banks. Financing the rest of the economy must be met from the meager resources of moneylenders, pawnbrokers and cooperatives. It is this phenomenon that he calls financial repression (McKinnon, 1973, p 69).

From his definition of financial repression we describe here some of its main features and policies. Typical policies that constitute financial repression and that are motivated by government's fiscal needs include high reserve requirements, liquidity ratio requirements, interest ceilings and government directives on the direction of credit.

A. High rates of the reserve ratios:

In some countries, governments require banks to meet high rates of the reserve ratios, and use the reserves as a method to generate revenues. Because reserves earn no interest, reserve requirements function as an implicit tax on banks and also restrict banks from allocating a certain Portion of their portfolios to productive investments and loans when high reserve ratios are required, the lending and borrowing rate spread must widen to incorporate the amount of no-interest reserves, which can reduce the amount of funds available in the financial market. If high reserve requirements are combines with interest ceilings and protective government directives for certain borrowers, savers who are usually unaware of the requirement policy become the main tax payers because they face reduced rates of interest on their savings.

B. Ceilings on interest rate:

These interest rate ceilings could be affected through various means, including (Reinhart et al., 2011):

(a) Explicit government regulation. For instance, the government in the united state prohibited bank from paying interest on demand deposits and capped interest on saving deposits.

(b) In many cases ceilings on banks' lending rates were a direct subsidy to the government in cases where the government borrowed directly from the banks.

(c) The interest rate cap could be in the context of fixed coupon rate nonmarketable debt. (d) Or it could be maintained through central bank interest rate targets.

C.   Financial repression also takes the form of government directives for banks to **allocate credit** at subsidized rates to specific firms and industries to implement industrial policy. Forcing banks to allocate credit to industries that are perceived to be strategically important for industrial policy ensures stable provision of capital, rather than leaving it to decisions of disinterested banks or to efficient securities markets. It is also more cost effective than going through the public sector's budgetary process.

D. **Capital controls** are restrictions on the inflows and outflows of capital and are also financially repressive policy. Despite their virtues, the use of capital controls can involve costs. Because of their uncompetitive nature, capital controls increases the cost of capital by crating financial autarky, limits both domestic and foreign investors ability to diversify portfolios, and helps inefficient financial institutions survive.

Adding other instruments of financial repression such as:

-Loan decisions of state owned banks dictated by political factors.

-Absence of a competitive system, where most domestic banks are state owned.

-Restrictions on the composition of asset portfolios.

2.2.1.2. Effects of financial repression:

Because financial repression leads to inefficient allocation of capital, high costs of financial intermediation, and lower rates of return to savers, it is theoretically clear that financial repression inhibits growth (Roubini et al., 1992).

The Mckinnon-Shaw framework suggests that interest rate controls, particularly interest rate ceilings, may distort the economy in several ways. First, it may discourage entrepreneurs

from investing in high risk but potentially high-yielding investment projects. Second, financial intermediaries may become more risk averse and offer preferential lending to established borrowers. Third, borrowers who obtain their funds at relatively low cost may prefer to invest only in capital intensive projects.

<center>**Figure (2): A Repressed Financial System.**</center>

Free lending subject to interest rates control

Deposits

Required Reserves

Central Bank

Development Bank

Investment

Commercial Banks

Issued Money

Ministry of Finance

project

Direct Lending
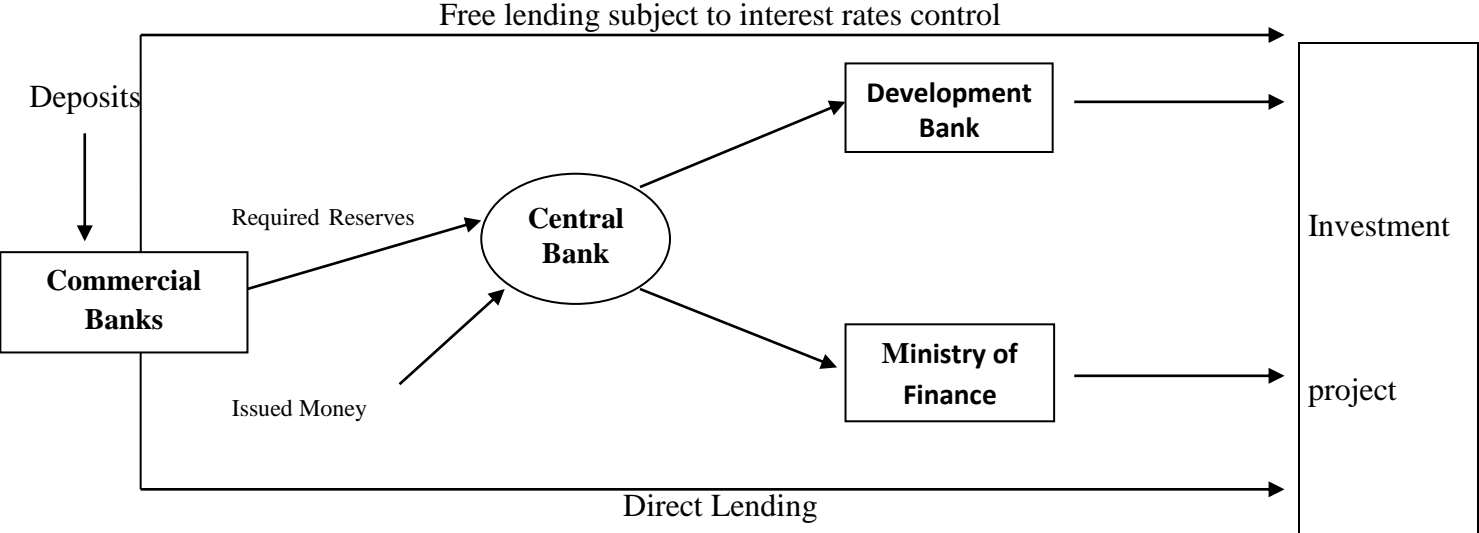
<center>**Source:** Adapted from McKinnon 1993, Ch. 4.</center>

Figure (2) shows the McKinnon- Shaw Financial repression, where McKinnon and Shaw were the first to provide a theoretical analysis of financially repressed economies which offered a rationale for liberalization as means to promote financial development and hence growth. Their models focus specifically on financial repression in the form of ceilings on deposit and \ or loan interest rates. Real interest rates influence growth in the economy via their impact on savings and investment. Investment *(I)* is assumed to be a negative function of the real rate of interest *(r):*

$$I = I\,(r): \qquad I_r < 0 \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

Savings *(S)* is assumed to be influenced by not only the rate of interest but also the rate of growth of national income *(g):*

$$S = S(r, g): \qquad S_r > 0; \quad S_g > 0 \dots\dots\dots\dots..\dots\dots\dots\dots\dots..(2)$$

<center>21</center>

Figure (3): Mckinnon-shaw financial repression
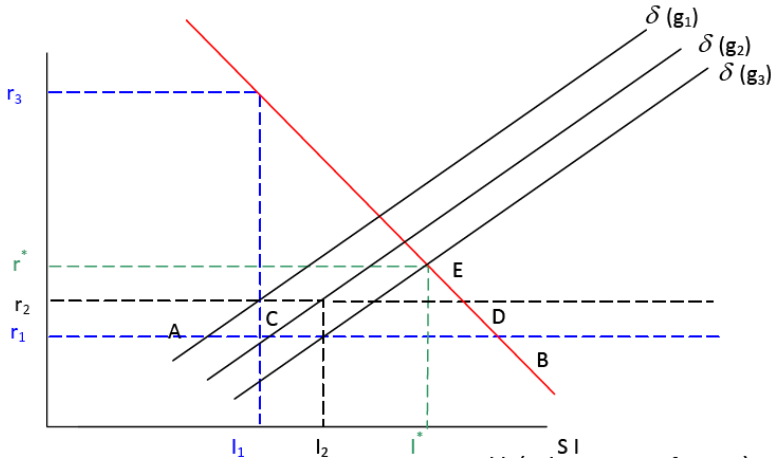
Source: Gibson et al. (1992).

According to Gibson and Tsakalots (1992), the figure above shows the impact of an interest rate ceiling on savings and investment. The savings function is drawn for given rates of economic growth where $g_1 < g_2 < g_3$. If there were no ceiling imposed, equilibrium, would be at *E,* interest rate, *r** and investment and savings equal to *I **. Assume initially that there is a government imposed ceiling (ceiling 1) on nominal deposit interest rates (i.e. the interest rate received by severs) which ensures that real deposit rates are below their equilibrium level given by *r**. Assume additionally that the rate of economic growth is g_1 at a real deposit rate of r_1, I_1 savings are forthcoming. Given that banks can charge whatever interest rate they like on loans, I_1 investment will be demanded at interest rate r_3. The margin which banks make on lending activities (r_3-r_1) is likely to be used for non- price competition. It is more likely that interest rate ceilings will apply to loan rates as well as deposit rates, since government regulation is frequently aimed at encouraging investment through reducing the cost of borrowing. This indeed was, and to some extent still is the case in Greece, Portugal, and Spain. Assume therefore that ceiling 1 applies both to the deposit and the loan rate. Again I_1 savings are forthcoming, allowing I_1 investment to be financed. This implies that investment demand given by *AB* is unsatisfied. In other words, credit has to be rationed and some entrepreneurs with profitable projects will not have access to finance. Moreover, those projects which are financed will tend to have rates on return which are only just greater than the interest rate ceiling. The justification for this in the literature seems to be based on the idea that given that there is credit rationing; banks prefer to give the available funds to less risky

projects. Thus, a large proportion of unsatisfied investment *(AB)* is likely to include potentially more profitable projects that were not allocated funds because of the risk. Presumably, these results from the inability of banks to charge risk which would allow them to finance potentially higher return investments. What happens if the government raises the interest rate ceiling say to ceiling 2? This increases the efficiency of investment (since entrepreneurs are now undertaking projects with higher expected rates of return), the rate of economic growth rises from $g_1 \, to \, g_2$ and the savings function shifts to the right. Thus the new interest rate ceiling at r_2 encourages savings of I_2. credit rationing is still present, but it has been reduced to *CD*. Only when interest rates are fully liberalized does credit rationing disappear. Economic growth increases to g_3 and the equilibrium savings and investment is at E.

Thus the McKinnon- Shaw analysis of a financially repressed economy suggests that interest rate ceilings stifle savings by promoting current consumption, reduce investment below its optimal level and reduce the quality of investment by encouraging banks to finance only low- return projects.

The McKinnon Shaw school of thought proposes that government restrictions on the operation of the financial system, such as directed credit programs, reserve and liquidity requirements may inversely affect the quality and quantity of investment and thus hinder financial development.

Reserve requirements held by banks reduce the inherent liquidity problems in banking. This affect bank lending, since banks have to hold unproductive reserves, for each level of loans they issue, they have to charge a higher lending rate. In other words at any given lending rate they will supply less loans, and the supply of loans will shift to left.

A number of writers question the wisdom of financial repression, arguing that it has detrimental effects on the real economy. Goldsmith (1969) argued that the main impact of financial repression was the effect on the efficiency of capital. McKinnon (1973) and Shaw (1973) stressed two other channels: first, financial repression affects how efficiently savings are allocated to investment, and second, through its effect on the return to saving, it also affects the equilibrium level of saving and investment. In this framework, therefore, investment suffers not only in quantity but also in quality terms since bankers do not ration the available funds according to the marginal productivity of investment projects but

according to their own discretion. Under these conditions the financial sector is likely to stagnate. The low return on bank deposits encourages savers to hold their savings in the form of unproductive assets such as land, rather than the potentially productive bank deposits. Similarly, high reserve requirements restrict the supply of bank lending even further whilst directed credit programs distort the allocation of credit since political priorities are in general, not determined by the marginal productivity of different types of capital.

The policy implications of this analysis are quite straight forward: remove interest rate ceilings, reduce reserve requirements and abolish directed credit programs. In short, liberalize financial markets.

2.2.2. The process of financial liberalization:

McKinnon and Shaw consider financial liberalization as a mainstay of economic reforms in developing countries. McKinnon goes as far as to define economic development as "the reduction of the great dispersion in social rates of return to existing and new investments under domestic entrepreneurial control".

Financial liberalization is the process of breaking away from a state of financial repression. As financial repression has been most commonly associated with government fixing of interest rates and its adverse consequences on the financial sector as well as on the economy, financial liberalization, in turn, has come to be most commonly associated with freeing of interest rates. This is pretty much the old view. They now understand financial liberalization as a process involving a much broader set of measures geared toward the elimination of various restrictions on the financial sector, such as the removal of portfolio restrictions on the banking sector, the reform of the external sector, as well as changes in the institutional framework of monetary policy (Ucer, 2003).

A multidimensional definition given in kaminsky and schmukler (2003): financial liberalization consists of the deregulation of the foreign sector, capital account, the domestic financial sector, and the stock market sector viewed separately from the domestic financial sector.

The liberalization of the capital account is captured by the regulations on offshore borrowing by financial institutions, and by non financial corporations, on multiple exchange rate markets and on capital outflow controls.

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In a fully liberalized capital account regime, banks and corporations are allowed to borrow abroad freely. They may need to inform the authorities but permission is granted almost automatically. Reserve requirements might be in place but are lower than ten percent. Also, there are no special exchange rates for either the current account or the capital account transactions.

A fully liberalized domestic financial system is characterized by lack of controls on lending and borrowing interest rates and certainly by the lack of credit controls, i.e. no subsidies to certain sectors or certain credit allocations. Also, deposits in foreign currencies are permitted.

In a fully liberalized stock market, foreign investors are allowed to hold domestic equity without restrictions on capital, dividends and interest can be repatriated freely within two years of the initial investment.

According to kaminsky and Schumkler (2003), full financial liberalization occurs when at least two of the three sectors are fully liberalized and the third one is partially liberalized. A country is partially liberalized when at least two sectors are partially liberalized.

2.2.2.1. The theoretical arguments for financial liberalization:

Many of neoclassical arguments stick to the belief that the deregulation and liberalization in the financial sector can lead to more efficient allocation and higher economic growth. Of course, lots of failures of financial liberalization like Southern countries of Latin America make them present more balanced stance like order of financial liberalization and important conditions for successful liberalization. However, since McKinnon and Shaw emphasized the serious problems of financial repression the main thrust of this idea has not changed. Their tenets are based on the assumptions that the government regulation like in interest rates and operation of financial institutions inevitably result in inefficiency and lower growth due to low saving and rent-seeking activities (Fry, 1995). Recently, so-called New-Keynesians recognize the problem of incomplete information inherent in the financial market and the essential role of the government regulation (Hellman, et al., 1997). Especially, the mild government repression called 'financial restraint' on interest rates and entry of financial institutions can produce a rent to help stabilize the financial system. Moreover, the government directed allocation of financial could induce higher economic growth in

developing countries (Stiglitz and Uy, 1996). But they don't go far to go beyond the neoclassical belief so that they broadly support the neoclassical idea in their argument, where the role of the government is somewhat limited only to enhance the financial market. Thus, now there is a consensus that financial liberalization with necessary government regulation does well to the economy. It is heterodox economists who are strongly against the financial liberalization. They argue that availability of loanable funds will decrease with high interest rates after the liberalization program and thus economic growth will be retarded (Taylor, 1991).

In addition the need to eliminate financial repression (in the McKinnon show sense) has been provided as a powerful argument in favor of financial liberalization. Repressive policies are seen to be inimical to financial deepening, in the context of the observed empirical relationship between financial deepening and growth. Financial repression is said to have a depressive effect on savings rates and thereby to result in capital shortages and adversely affect growth (Jayati, 2005).

So the most cogent argument which favors financial liberalization is the increasing growth effect by stimulating savings and investment, linking growth with savings and investments has a number of favored arguments. Financial liberalization may increase the level of savings and improve the allocation of savings among potential investors. This may create more available funds to finance technological developments and hence lead to higher economic growth. Financial liberalization may decrease the cost of capital, but on the other hand, the effects of international speculative capital movements which cause the crises and macroeconomic instability may have a negative impact on economic growth (Durmus et al., 2008).

2.2.2.2. Elements of financial liberalization:

Financial liberalization refers to measures directed at diluting or dismantling regulatory control over the institutional structures, instruments and activities of agents in different segments of the financial sector. These measures can relate to internal or external regulations.

Internal financial liberalization typically includes some or all of the following measures, to varying degrees: (Ghosh, 2005)

- The reduction or removal of controls on the interest rates or rates of return charged by financial agents.

- The withdrawal of the state from the activity of financial intermediation with the conversion of the "development banks" into regular banks and the privatization of the publicly owned banking System.

- The easing of conditions for the participation of both firms and investors in the stock market by diluting or doing away with listing conditions, by providing freedom in pricing of new issues, by permitting greater freedoms to intermediaries, such as brokers, and by relaxing conditions with regard to borrowing against shares and investing borrowed funds in the market.

- The expansion of the sources from and instruments through which firms or financial agents can access funds.

- The liberalization of the rules governing the kinds of financial instruments that can be issued and acquired in the System. This transforms the traditional role of the banking system's being the principal intermediary bearing risks in the System.

- The shift to a regime of voluntary adherence to statutory guidelines with regard to capital adequacy, accounting norms and related practices, with the central bank's role being limited to supervision and monitoring.

External financial liberalization involves changes in the exchange control régime. Typically, full convertibility for current-account transactions accompanying trade liberalization have been either prior or simultaneous reforms, which are then complemented with varying degrees of convertibility on the capital account. Capital-account liberalization measures broadly cover the following, in increasing degree of intensity, but with a wide variety of patterns of implementation: (Ghosh, 2005)

- Measures that allow foreign residents to hold domestic financial assets, either in the form of debt or equity. It can also involve the dilution or removal of controls on the entry of new financial firms, subject to their meeting pre-specified norms with regard to capital investments.

- Measures which allow domestic residents to hold foreign financial assets. This is typically seen as a more drastic degree of liberalization, since it cases the possibility of capital flight by domestic residents in periods of crisis. Measures that allow foreign currency assets to be freely held and traded within the domestic economy (the

"dollarization" of accounts). This is the most extreme form of external financial liberalization, which has been implemented only in very few countries.

2.2.2.3. The McKinnon Shaw paradigm (analysis):

McKinnon and Shaw outlined the constraints placed on economic development by an infective financial sector and the benefits that accrue from financial liberalization in developing countries, so they consider financial liberalization as a mainstay of economic reforms in developing countries. McKinnon goes as far as to define economic development as "the reduction of the great dispersion in social rates of return to existing and new investments under domestic entrepreneurial control" (1973, P9). He adds "economic development so defined is necessary and sufficient to generate high rates of saving and investment (accurately reflecting social and private time preference), the adoption of best Practice technologies, and learning – by doing" (1973, P9). Shaw suggests that "the argument for liberalization in finance is that scarcity prices for savings increase rates of saving, improve savings allocation, induce some substitution of labor for capital equipment, and assist in income equalization » (1973, 121).

Both McKinnon and Shaw maintain that financial liberalization, involving the establishment of higher interest rates that equate the demand for and the supply of savings, will lead to increased savings.

Shaw suggests that "real growth in financial institutions provides more investors with access to borrowing and gives them incentive to save and to accumulate the equity that makes borrowing cheaper" (1973, P9). McKinnon adds that "the increased desirability of holding cash balances reduces the opportunity cost of saving internally for the eventual purchase of capital goods from outside the firm household." (1973, 60).

Both Shaw and McKinnon note that below equilibrium interest rates lead to capital flight, thereby reducing the availability of savings for domestic investment. The McKinnon tells also that "below equilibrium interest rates also affect the capital – intensity of the investments actually undertaken."

As there is excess demand for funds at less than equilibrium interest rates, there is "credit rationing among borrowers, sometimes according to the dictates of monetary or other

authority, sometimes according to the preferences of the financial intermediaries" (Shaw 1973, 84).

Lending by government authorities, or influenced by them, responds to governmental preferences while financial intermediaries focus on reducing risk. Thus, "effective low ceilings in real loan rates intensify risk aversion and liquidity preference on the part of intermediaries. Banks and others keep a privileged place in their portfolios for established borrowers, especially trading firms with a long record of stability, they have little incentive to explore new and less certain lending opportunities" (Shaw1973, 86).

Shaw also speaks of the lengthening of maturities and diversification of the menu of financial assets in the event of financial liberalization (Shaw 1973, 7).

Thus, "monetary and other financial reform can be expected to extend capital market horizons and divert savings into contracts at longer term." (Shaw 1973, 127).

Also, "in the liberalized economy savers are offered a wide menu of portfolio choices" (Shaw1973, 10).

According to McKinnon: "the importance of curb markets would decline following financial liberalization" (P60). In turn, Shaw notes that "the curb should have to face competition from deepening in the organized sector" (P137). Thus the two authors consider the fact that increased financial intermediation represents, in part, a substitute for the curb market.

2.2.2.4. Extensions and criticisms of the McKinnon Shaw approach:

Extensions of the McKinnon, Shaw approach by kapur (1976), Galbis (1977), Mathieson (1980), and fry (1988) add little to the underlying ideas but rather formalize the McKinnon Shaw models. Kapur and Mathieson limit the analysis by assuming the constancy of investment efficiency following financial liberalization while Galbis and Fry consider the case when efficiency increases.

In Kapur's model , increases in the deposit rate of interest raise real money demand and hence the real supply of bank credit , resulting in an acceleration of economic growth.

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Galbirs constructs as two sector model to analyze the effects of financial repression on the average efficiency of investment. In his model, financial liberalization will lead the higher efficiency by shifting savings from self investment to uses with higher rates of return. Fry also puts emphasis on increases in investment efficiency following financial liberalization. In the other way, the principal critics of the McKinnon Shaw approach are Van Wijnbergen (1983) and Taylor (1983). They use Tobin's Portfolio[*] framework for household sector asset allocation.

Van WijnBergen contrasts his model to those of McKinnon and Kapur. He expresses the view that "the results obtained by McKinnon / Kapur depend crucially on one hidden assumption on asset market structure, an assumption that is never stated explicitly, all these authors assume that the portfolio shift into TD'S (time deposits) is coming out of an unproductive asset like gold, cash, commodity stocks etc" (1983, 434).

Also, in a study of Korea, Van Wijnbergen conclude that « substitution between the curb market and time deposits is of more importance that substitution between currency and time deposits » (1982, 156).

He adds: "in this case the total supply of funds to the business sector will decline as funds are shifted from the curb market which provides one for intermediation (no reserve requirements) into the banking system which provides only partial intermediation" (1983, 439).

Expressed differently, Wijnbergen and Taylor do not consider the effects of interest rate distortions on investment efficiency.

2.2.2.5. Financial liberalization and banking performance and efficiency:

From the late 1980s, policy makers in developing economies became aware of the importance of the financial system and the process of financial intermediation for economic growth (King et al., 1993). To improve the process of financial intermediation these governments therefore implemented financial liberalization policies aimed at improving the efficiency and productivity of the banking system.

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[*] Portfolio theory was expended in 1958 by James Tobin, before Portfolio theory, investors evaluated risk and reward only on individual securities or investments, Portfolio theory works to eliminate or minimize the risk of an individual security by diversifying the portfolio across asset classes, and he works also to maximize investment return by selecting the proportion of different assets in the Portfolio.

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In theory, financial liberalization is expected to improve bank efficiency (Berger et al., 1997). Shaw (1973) stresses that financial liberalization can strengthen financial intermediaries among savers and investors, increase investment efficiency, and reduce the cost of borrowing. Increased savings allow banks to attain economy of scale, which in turn allows banks to diversify their portfolios, reduce their costs, and improve their operational efficiency. Shaw (1973) used the following equation to explain the relationship between savings and banking efficiency:

$$M / P = F (Y, y, d-\pi); (\delta/P) / (\delta d-\pi) > 0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where:

M/P = Money Balance in the central bank

Y = represents the Real Income

y = reflects the Cost of Holding Money

d = the Nominal Deposit Rate

π = the Real Deposit Rate

Shaw stressed that the nominal deposit rate less the expected rate of inflation induces the real cost of the monetary system. Real deposit rate is the primary indicator of real money. "Income represented by growth is real money accrues either to the monetary system or to money holders depending on the explicit deposit rate that the former pays to the latter and on the rate of inflation." (Shaw, 1973, 23).

Deepening allows real money and physical investment to be the determinants of total savings. Growth in real money, which increases as a result of price deflation or deposit rate, induces the real income. Shaw concluded that "variations in nominal money that do not affect real deposit rate are neutral, to be sure, and the rate of inflation does not matter if nominal deposit rate is adapted to it" (Shaw, 1973, 38).

Levine (1996), Walter et al. (1983), and Gelb et al. (1990) studied the potential benefits of foreign bank entry for the domestic economy in terms of better resource allocation and higher efficiency. Levine (1996) found that foreign banks may improve the quality and availability of financial services in the domestic financial market by increasing bank competition, and enabling the application of more modern banking skills and technology, serve to stimulate the development of the underlying bank supervisory and legal framework, and enhance a country's access to international capital.

The same benefits of the presence of foreign banks are showed by Claessens et al. (2001). But on other hand there are, also, the costs and risks associated to the entry of foreign banks,

costs that can consists of the increase of the systemic risk caused by the increase of competition and of the inclination towards risk of the banks in order to maintain or increase their market share (Hellmann et al., 2000).

Bonin et al. (1996) claimed that banking efficiency has five determinants. First, competition between banks results in low interest rates on deposits and loans. Second, banks offer variety of financial instruments and develop new products. Third, the financial market in which banks operate is stable and liquid. Fourth, the payment system is well developed and financial resources are allocated adequately. Fifth, financial transaction costs are low. They also pointed out that an efficient market-oriented banking sector requires the government to withhold direct control over banks' operations and participate only in developing financial markets.

McKinnon (1993) noted that abolishing usury constraints encourages moneylenders to extend their credit and hence promotes competition in the traditional credit market. Loans need to be available for all classes of borrower and the expected rate of return on deposits should be increased to reduce money supply in the market. Historically, competition tends to reduce instability in the banking industry and lower market risk helps banks make better lending decisions. Schuler (1992) argued that interest rates on deposits and loans are similar in both market-oriented and centralized banking systems, but that free-market economies oblige banks to promote their services, to offer innovative financial products, and to open new branches. The result is a decline in financial transaction costs and an increase in the volume of investments (Dowd, 1992, 3-5). Schuler noted that removing restrictions on banks makes their activities more sophisticated. "Invisible hand process can result in a sophisticated banking system as the product of step-by-step evolution whose origin stretch all the way back to barter" (Schuler, 1992, 8). However, small banks cannot survive in the new market if their capital is low. They may need to consolidate to become competitive and to benefit from economies of scale.

Table (1) shows the impact of financial liberalization on bank margins, capital, deposit allocation, liquidity and profit, during the transition and in the long-term.

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Table (1): The level of banks' margin, capital, deposit allocation, liquidity and profit during the transition and in the long-term:

	Bank margins	Capital	Deposit allocation	Liquidity	Profit
During the transition	High	High	High	High	High
In the long-term	Stagnant	Stagnant	Stagnant	High	Stagnant

Source: Demirguç-Kunt and Detragiache (1998).

Demirguç-Kunt and Detragiache (1998) noted that financial liberalisation lowers the profit/return on equity ratio of existing banks. In contrast, the return on assets and the net interest margins do not change. Increases in the saving rate are balanced by higher lending rates. Liberalisation also increases banking capitalisation and decreases liquidity (which adversely impacts profitability), but long-term asset allocation remains constant.

Based on evidence for 61 countries in 1980-97, Demirguc-Kunt and Huizinga (2000) found that explicit deposit insurance tends to increase the likelihood of banking crises, the more so where bank interest rates are deregulated and the institutional environment is weak. Barth et al. (1999) affirm that countries with the most regulatory and restrictive systems are likely to eradicate banking crises.

Kaminsky and Reinhart (1999) conducting a study of a panel of 20 countries in Latin America, Europe, and Asia over the period 1970-1995 conclude the number of banking crises strongly increased and policies of financial liberalization precede these crises. Fisher, Gueyie, and Ortiz (1997), based on a study conducted in Malaysia, Thailand, and Taiwan, conclude banks are exposed to high risks during the process of financial liberalization.

2.2.2.6. Potential benefits qualifications and risks to liberalization:

They are two contrasting views of financial liberalization. In one view, financial liberalization strengthens financial development and contributes to higher long run growth. In another view, liberalization induces excessive risk taking increases macroeconomic volatility and leads to more frequent crises.

- **Interest rates:**

In most developing countries, the banking sector dominates the financial system and securities markets are not well developed. Restrictions on bank behavior imposed by the

government often result in negative real interest rate and an excess demand for credit, requiring banks to ration their lending, consequently, credit is allocated to favored sectors and firms by administrative decision, rather than by market mechanisms. Following financial liberalization, market determination of interest rates should result in modestly positive real interest rates. These ,in turn, will increase the resources available to the financial system, since bank deposits offering a competitive return will attract saving that were previously held outside the formal financial sector (possibly as excess inventories of intermediate goods). Moreover, positive real interest rates will provide an incentive for borrowers to invest in more productive activities, thereby improving the productivity of the economy as a whole. Consequently, financial liberalization should lead to an increase in both the quality and quantity of financial intermediation by the banking system (Pill et al., 1997).

- **Efficiency and allocation of investment:**

As reported above, a number of economists have found a positive relationship between financial sector development and economic growth. This raises the question of the mechanism through which the increased growth was achieved. The theoretical studies such as those by Greenwood and Jovanovic (1989), Levine (1992) and Saint-Paul (1992) present models in which the gains from increased financial development stem from increased efficiency in the allocation of investment rather than from a larger volume of investment. 75% of a positive correlation between financial intermediation and growth is due to increased investment efficiency is estimated by Gregorio et al. (1992).

The gains in investment efficiency after financial liberalization have been documented in a number of individual country studies using firm level data, for example in the case of Indonesia, credit was reallocated from manufacturing and agriculture to other sectors after financial deregulation. Studies by Harris et al. (1992) found that after liberalization, the more technologically efficient the firm, the greater the proportion of new credit it received. Credit tended to increase for both small and large firms, whereas it decreased for medium size firms. Prior to liberalization, small firms had received some special access to credit, but this subsidy was given on only a small portion of total credit. In fact, most credit subsidies went to large firms with political connections.

Other benefits are noted by Kiyota et al. (2007) are:

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- Financial liberalization may have positive effects on the efficiency of the banking sector in the host market. This is because domestic banks are forced to compete with more efficient foreign banks and because skills and technology levels improve.

- The entry of foreign banks may also contribute to financial stability in host countries. This is because the cross border flows are generally more volatile than locally generated claims by foreign branches and subsidiaries.

- As a part of financial sector liberalization, the privatization of state owned banks may be an important option to further enhance the efficiency of the banking sector. Numerous studies have confirmed that state owned banks are less efficient than private banks and that privatization generally has positive effects on bank performance.

- The entry of foreign banks may have positive on employment and wages. While studies of manufacturing industries have confirmed that FDI generally had positive effects on employment and wages in host countries.

By the same token, financial services liberalization carries certain economic risk and uncertainties:

- **Crises:**

Financial liberalization may cause financial fragility rather than financial stability. For example, Demirguç-kunt and Detragiache (2001) examined the relationship between baking crises and financial liberalization (defined as interest rate liberalization) for 53 countries from 1980 and 1995. They found that baking cries were likely to occur in countries whose financial system was liberalized. They also found that the impact of financial liberalization on a fragile banking sector is weaker where the institutional environment is strong.

Kaminsky and Reinhart (1990) examined the link between currency and banking crises. They analyzed 76 currency crises and 26banking crises for 20 countries during 1970 to mid 1995. One of their main findings is that financial liberalization often precedes banking crises.

Mehrez et al. (2000) examined how absence of transparency affects the probability of a financial crisis, using multivariate modeling for 56 countries, during 1977-1997. They report a higher probability of a crisis following financial liberalization during the following five years. Moreover, they also found that crisis probability is higher in countries with poor transparency than in countries that are transparent.

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Bacchetta et al. (1998) studied capital flows in recent years and contend that the wave of financial liberalization and structural reforms is the fundamental factor behind the increase in capital inflows to some developing countries. The authors showed that it is possible to reproduce some main features of capital inflows to emerging markets, such as overshooting of asset prices, volatility of financial markets and contagion by using a rather simple model and without relying on irrational or herding behavior.

The recent global financial crisis that swept across the globe jolt to memory the importance of a stable and efficient banking system .This crisis had its roots in the subprime house mortgage sector in the United States. It then spread to the banks which had invested in financial instruments linked to the value of this subprime mortgage. In March 2008, news of a fire sale of one of the largest and oldest banks in USA, Bears Stearns Inc. Stunned Wall Street and Pummeled global financial stocks. This was just the beginning of the financial meltdown.

- **Financial liberalization and economic instability:**

The success of resource allocation efficiency depends to a great extent on minimizing emerging capital market imperfections (Watson, 1993).

Macroeconomic instability increases the variance in project returns and also adverse selection possibility by the banks, thus making banks risk averse. The real benefit of macroeconomic stability comes not only from increased financial savings and great availability of credit, but also its favorable impact on risk-sharing relationship between borrowers and lenders (Villanueva et al., 1990).

The pace of liberalization itself is thus crucial in the sense that sudden increase in lending rate resulting from freeing of interest rate may render some firms unprofitable as they need to pay higher price for their funds burrowed earlier at a lower rate. This will in turn result in non-repayment of loans. Mathison (1980) warned that as this lead to widespread bankruptcies in the banking system, a program of gradual interest rate decontrol is necessary rather than sudden decontrol.

With the deregulation of interest rates ,banks gamble for higher profit by lending to the booming sector such as real estate, this leads to asset price boom that " can exacerbate the adverse incentive on bank to take risk, increased interest rates ,increased macroeconomic instability and ,if bank's portfolios are concentrated on particular sector ,increased covariance in the returns to banks' borrowers" (Brownbridge et al.,1999). The booms and slumps in the asset prices where banks play a crucial role by credit expansion during upswing in the business cycle and thus raising value of collateral, Stimulating more borrowing , leading to

over indebtedness and making borrowers vulnerable to any macroeconomic changes (interest rate increases)and ultimately rendering them insolvent, frequently result in banking crises.

Domestic investment financed by foreign savings leads to a temporary increase in real income and perceived wealth and relaxation of lending standard by as current trends are expected to continue (Reisen, 1999). With the increase in both consumption and investment balance of payment deteriorates which remains unnoticed at initial stage. Overvaluation of the exchange rate can sustain this sense of optimism, and thus exacerbate the asset bubble.

Chapter 2: Theoretical Framework

Conclusion:

Scholars offer different interpretation of financial deregulation's effect on bank performance. Their views are influenced by many factors such as their educational background and the sample chosen for their studies. Where Some authors, such as Berg et al. (1992), Berger and Humphrey (1997), show that financial deregulation has a positive impact on banking efficiency and on the productivity of banks, while other authors consider that deregulation has a negative effect on the performance of banks, determining a decrease of technical efficiency (Wheelock et al., 1999) or consider that financial liberalization most often leads to financial crises (Kaminsky and Reinhart, 1990).

Although theory predicts improvements of the efficiency and performance of banks in terms of their financial intermediation activities resulting from financial liberalization policies, there are some empirical studies on this issue in the context of developing and emerging economies. Moreover, these empirical studies investigating this relationship provide mixed results. In the chapter three, we will review the empirical research focusing on a number of developing economies.

Chapter three:

Empirical Evidence

- ✓ East Asia and Pacific.
- ✓ Europe and Central Asia.
- ✓ Latin America and the Caribbean.
- ✓ Sub-Saharan Africa.
- ✓ Middle East and North Africa.

Chapter 3 : Empirical Evidence

Introduction:

Since the end of the 1980s, almost every program of national economic reform, in industrialized as well as in developing and transition economies, has contained a financial liberalization component. These developments have sparked a fierce debate among both academics and practitioners on costs and benefits of financial liberalization.

Since the main objective of our study is to shed light on the impact of financial liberalization on the performance of Algerian banks; it seems however useful to refer to some selected studies in a sample of developing economies-according to the World Bank classification - in order to investigate the empirical evidence on the relationship between financial liberalization and banks performance and to explore its results- costs and benefits.

Chapter 3 : Empirical Evidence

3.1. East Asia and Pacific

3.1.1. South Korea:

A. Aggarwal et al. (2006), bank exposure to interest rate risks during financial liberalization: evidence from South Korea.

The study documented the changing impact of long and short term interest rate risks on the equity prices of banks in South Korea during the process of financial liberalization. Consistent with the presence of regulatory constraints, Korean bank equity returns are found to be sensitive to both anticipated and unanticipated changes in interest rates in the first period (1976–81) when banks were largely under government control. However, during the period (1989–99) of liberalization, Korean bank equity returns were found to have a positive association only with unanticipated short term interest rates.

B. Demetriades et al. (2001), financial liberalization and the evolution of banking and financial risks: the case of South Korea.

The paper provided insights into the role of financial liberalization in the South Korean financial crisis. The effects of financial liberalization on the evolution of banking and financial risks are estimated utilizing a conditional CAPM (Capital Asset Pricing Model) that explains the risk of a particular asset or portfolio using the excess return on the market portfolio, with time-varying market risk. They investigated the impact of financial liberalization on the volatility of bank and financial sector stock returns by focusing on two areas of reforms, namely, domestic financial liberalization effects of 1.interest rate liberalization and relaxations of reserve requirements on domestic deposits, 2.the relaxation of controls on capital flows, on banking and financial risks, and capital account liberalization. The bank and financial sector indices are obtained for the period 7/1/1987 to 29/7/1997. Their empirical findings suggest that financial liberalization reduced banking and financial risks, as implied by the significance of the coefficients of the policy measures in the conditional variance and co-variance equations. The empirical analysis also suggests that financial liberalization, with two exceptions, reduced the non-diversifiable market risk of the banking and financial sector.

Chapter 3 : Empirical Evidence

3.1.2. Thailand:

Papp(2002), the impact of pre- crisis financial liberalization policy on the operations of Thai domestic and foreign banks.

The paper clarified the effects of the liberalization measures on the activities of foreign banks. They used micro data from Thailand. They focused on the existence of economies of scope. In the first half of the 90's (1990-1995), they founded economies of scale in the groups of domestic and foreign banks. However, for the same period, in the group of large foreign banks they founded economies of scope only. Furthermore, in the second half (1993-1995) of the pre-crisis financial liberalization process, the implemented measures increased the magnitude of economies of scale in all groups, but the magnitude of economies of scope increased only in large foreign banks.

3.1.3. China:

A. Song (2001), interest rate liberalization in China and the implications for non-state banking.

The paper discussed why China needs to liberalize interest rates and looks at how liberalization is likely to affect the development of non-state banks over the period (1993-1999). A profit model is used to show that bank can maximize profit by determining the optimal supply of loans. This can only be achieved when interest rates are set according to the market supply of and demand for funds. The model showed a number of things. First, it showed that in order to maximize profit in a liberalized environment, banks need to set interest rates according to a correct assessment of risk. Second, the wider the interest spreads, the higher bank profit will be. Third, a reduction in operating costs and the level of bad debt, other things being equal, will increase profits. Fourth, an increase in the number of banks (increased competition), including foreign banks, tends to reduce profit margins by decreasing the lending rate and raising the deposit rate. Finally, the interest rate elasticity of loan demand comes into the equation in determining profit margins which, are affected by various institutional restrictions.

B. Fadzlan et al. (2012), Globalizations and bank performance in China.

The study examined the impact of economic globalization on the performance of the Chinese banking sector. They used data on commercial banks operating in the Chinese

banking sector during the period 2000–2007. The empirical findings from the study suggested that the well capitalized banks tend to be more profitable, while expense preference behavior exerts negative impact on bank profitability in China. By examining different components of economic globalization, they found that greater economic integration via higher trade flows, cultural proximity, and greater political globalization have significant and positive influence on bank profitability levels. The impacts of personal contacts and information flows seem to work in favor of the Chinese banks. During the period under study, the empirical findings seem to suggest that liberalization (restrictions) of the capital account exerts positive (negative) influence on the profitability of banks operating in the Chinese banking sector.

C. Chen et al. (2009), privatization and optimal share release in the Chinese banking industry.

The paper established a mixed oligopoly model to explore how the government determines the percentage of shares of the state-owned banks to be released to foreign investors under the goal of seeking to maximize social welfare, during the period (1996-2007). The theoretical model found that the release of shares of state-owned banks to foreign investors reduce the outputs of the state-owned banks. The direction of the change in the profitability of the state-owned banks depends on the percentage of the shares released. The direction of the changes in the levels of social welfare also varies.

D. WU et al. (2007), the effect of foreign bank entry on the operational performance of commercial banks in the Chinese transitional economy.

The article undertook an empirical examination of the impact of foreign bank entry on the operational performance of the Chinese banking sector, placing particular emphasis on the unique features of China's banking industry as it undergoes the process of transformation. Pooled cross-section (banks) and time series data are employed in the empirical estimation, with the sample comprising 14 Chinese banks and the period 1996–2004. Fixed effects and random effects models are estimated. The empirical results for the whole sample show that the return on assets (ROA) for those Chinese banks that have foreign shareholders is, on average, lower than the ROA for banks that do not have foreign shareholders. The longer a bank has been in existence, the lower its ROA will be. Non-interest income is found to have a negative impact on ROA, reflecting a continuing emphasis on traditional lending business. Moreover, an increase in the depth of foreign bank participation does not affect the operational performance of Chinese banks

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E. LIU (2005), the impact of financial services trade liberalization on China.

The paper intended to examine the impact of financial services trade liberalization on domestic financial liberalization and international bank loans using both a country case study and a cross-country panel study on international bank loans to developing countries during the period (1996-2004). They used a gravity model, where the indexes of financial services trade liberalization are calculated and updated using the combined metrics of Mattoo (2000) and Valckx (2002). The country case study demonstrates that financial services trade liberalization in China has set impetus for rapid domestic financial liberalization. Foreign banks, though still relatively small in size, have already had considerable impact on China's capital flows mainly between their branches and head offices and also via the arbitraging opportunities between domestic and offshore markets. Indeed, the role of intermediating capital flows played by foreign banks will become even more significant as their total asset size becomes bigger in the future after the barriers to entry are further reduced.

3.1.4. Malaysian

A. Elryah (2014), Financial Liberalization, Reforms and Bank Performance: Evidence from Malaysian Islamic Banks.

The study provided empirical evidence concerning the impacts of liberalization and reforms on Islamic bank's performance in Malaysia. Data were collected from 16 Islamic banks. The paper considered annual data from 2002 until 2012. The researcher used panel regressions model to investigate the relationship between the Islamic banks performance and financial liberalization and reforms, although its relation with return on assets and equity on return was measured by Z-score. The findings indicate that financial liberalization and openness, assets, profitability, return on assets and inflation have statistically positive impacts on Islamic banks performances.

B. Yee et al. (2009), financial liberalization and the Malaysian banking sector: some statistical evidence.

The paper investigated the link between financial liberalization and the performance of the Malaysian banking sector, it was assessed by employing various statistical techniques. Firstly using firm level data of Malaysian domestic banks to assess the allocative efficiency of the banking sector. Secondly, by mobilizing macroeconomic data to see if financial liberalization

resulted in unusually high credit growth and to assess the contribution of financial liberalization to the 1997 banking crisis. The Cost ratio analysis procedure is adopted to evaluate the efficiency of the banking system in terms of intermediation costs. Related data of selected banks in Malaysia are compiled from 1987 to1997. The cost ratio analysis indicated that Malaysian domestic banks' interest margin have not narrowed with financial liberalization. While chi-square test showed that there is a significant relationship between credit growth and financial liberalization. Lastly, logistic regression analysis revealed that financial liberalization (captured by a dichotomous variable), bank's lending rates and the ratio of M2 to foreign exchange reserves do contribute significantly to the Malaysian banking crisis episode of 1997.

C. Yu et al. (2010), the determinants of banking sector development: Malaysian experience.

The study examined the determinants of banking sector development from the Perspectives of real income, real interest rates, trade openness and financial liberalization. Three models of banking sector development indicators are employed in this study, namely liquid liability, private sector credit and domestic credit. Using data set from Malaysia that consists of quarterly time series data for the period of 1980: Q1 to 2007: Q4. the empirical results suggested that (1) higher GDP will strengthen the banking sector development, however, financial liberalization appears to destabilize the banking sector development, (2) the real interest rates and trade openness are not statistically significant determinants of the banking sector development, and (3) the financial reforms in Malaysia require financial liberalization to come in a later stage, when adequate institutions and sound macroeconomic policies are already in place.

3.1.5. Taiwan:

A. Chiu et al. (2009), the Analysis of Taiwanese Bank Efficiency: Incorporating Both External Environment Risk and Internal Risk.

The study adopted a three-stage approach to estimate bank efficiency based on information obtained from 29 banks in Taiwan for the period from 2002 to 2004. In the first stage they employed super SBM (super slacks based measure) to estimate the scores relating bank efficiency including internal risk. In the second stage a stochastic frontier regression model is employed to estimate the external environment risk effects. In the third stage they employed

the DEA method again to estimate the scores relating bank efficiency including the internal risk and excluding the external risk. Their empirical results from the three-stage approach are (1) the mean efficiency score of public-owned banks is higher than that in mixed banks and private-owned banks under the first and third stages. (2) The super-deficiency of domestic banks adjusted by three stages of risk is less than that of internal risk adjusted in one stage. (3) External environmental variables do impudence the efficiency of the domestic banks. (4) The impudence of external environmental adjustment toward the efficiency of the privately-owned banks is largest when comparing mixed and publicly-owned banks.

B. Yang et al. (2012), managerial efficiency in Taiwan bank branches: A network DEA.

The paper considers that the complementation of production and intermediation activities within a branch should be evaluated simultaneously and proposes a two-stage series model in the network framework to measure branch performance in Taiwan's banking system during 2008. In order to overcome the shortage of a traditional network DEA methodology about branches that cannot be assessed on the same base, they combined the multiple objectives programming approach and the fuzzy approach to propose the fuzzy multi objective model to evaluate this network problem. Their main results showed that: (1) The evaluation under the common base indicates that most Taiwan bank branches perform better in the productivity stage, but branches with a good score in the profitability stage have better efficiency in overall performance, implying that the profitability of branches still plays a critical role for a branch's performance although they present better performance in the productivity stage. (2) Efficiency decomposition indicates that interest cost is the largest factor in the productivity stage, while fund transfer income and interest income offer key contributions for branches' profitability. (3) By combining nominal profitability performance and real profitability performance, the decision-making matrix is presented to help bank management to position branches in their banking network. The matrix indicates that MOB branches not only have superior performance either in real profitability or in nominal profitability, but also have some branches as the benchmark for providing direction of for improving the performance of inefficient branches.

3.1.6. Philippines:

Lim (2012), a study on credit interest margin and efficiency ratios of selected universal banks in the Philippine for the year 2010.

The researcher based his sample on eight universal banks in the Philippines from 2003 to 2010. He used a descriptive design to show the trend of profit efficiency of banks as a result

of financial liberalization. It used a correlation analysis to determine the relationship between profit efficiency and its core drivers. The paper is limited to the removal of entry barriers which is one of the six policies of financial liberalization that allowed the entry of the ten foreign banks. To assess the bank's profit efficiency, net interest margin to total assets ratio (net interest income / total assets) was used. The study found that financial liberalization improved the profit efficiency of banks. It showed that capital to assets ratio and loans to assets ratio are positively related with net interest margin to assets. It also showed that provision for loan losses ratio is negatively related with net interest margin to assets.

3.2. Europe and Central Asia:

3.2.1. Turkey:

A. Denizer et al. (2000), Measuring Banking Efficiency in the Pre- and Post-Liberalization Environment: Evidence from the Turkish Banking System.

The paper examined the banking efficiency in a pre and post-liberalization environment by drawing on the Turkish experience. The paper also investigated the scale effect on efficiency by ownership. They used a non-parametric mathematical programming model DEA, which is a mathematical programming technique that measures the efficiency of a decision-making unit (DMU) relative to other similar DMUs with the simple restriction that all DMUs lie on or below the efficiency frontier, for each year from 1970 to 1994, to determine whether or not the liberalization program improved the efficiency of the Turkish banks by function and by ownership, their findings suggested that liberalization programs were followed by an observable decline in efficiency. Another finding of the study is that the Turkish banking system had a serious scale problem during the study period. One major reason for such system-wide efficiency decline may be the increased macroeconomic instability Turkish economy in general and financial sector in particular experienced during 1970 to 1994.

In contrast, a study for the period 2002 to 2006 showed contrary results, investigated by Aydin et al. (2009).

B. Aydin et al. (2009), Banking Efficiency in Developing Economy: Empirical Evidence from Turkey.

They are studied the efficiency of the banks operating in Turkish Banking Sector using financial ratios data of 44 banks operating in Turkey are used to assess the banks' relative efficiency scores applying DEA method, the Empirical results showed that the most efficient banks in Turkey are state-owned, foreign-owned, development-investment and private-owned

banks respectively. The efficiency rates in Turkish Banking Sector had been increased for the covered period substantially.

3.2.2. Russia:

Karas et al. (2008), are private banks more efficient than public banks? evidence from Russia.

They studied whether bank efficiency is related to bank ownership in Russia, they adopted the stochastic frontier approach for the period (2002-2006), and they also employed a two-stage DEA procedure. In the first stage they estimate time-specific bank efficiency scores for each quarter. In a second stage, they regressed these mean efficiency scores on a set of determinants (public ownership, foreign ownership, activity) using a Tobit estimator. They found that foreign banks are more efficient than domestic private banks and those domestic private banks are not more efficient than domestic public banks. They concluded that the efficiency of the Russian banking system may benefit more from increased levels of competition and greater access of foreign banks than from bank privatization.

3.2.3. Romania:

Marius et al. (2011), Bank performance in Central and Eastern Europe: The role of financial liberalization.

The paper purpose's is to observe the way in which the banking system reform has influenced the performance of the bank sector in 5 states in Central and Eastern Europe during 2001 to2008, focusing on determining the impact of the liberalization of the financial system and of the banking system in the Romanian banking system on the performances registered by banks. They developed two models, the first one uses independent variable and financial reform index, and the second one uses the banking system reform index, or alternatively the dependent variables such as: the cost of intermediation, operational performance and return on assets. The results of the performed analysis showed that, during the analyzed period, both the financial reform index, and the banking reform index have a positive impact on the bank performance indexes (the cost of intermediation, operational performance and profitableness of assets) at the level of banks in Bulgaria, Romania, Poland, Hungary and Slovakia during 2001 to 2008. This means that an increase of the level of the indexes regarding the financial reform and the bank reform determines an increase of the performance of the banks in Central and Eastern Europe.

3.3. Latin America and the Caribbean

3.3.1. Brazil:

Chapter 3 : Empirical Evidence

A. Neto et al. (2012), the paradigm of the new millennium management: a study of Brazilian banks performance.

The objective of the paper was to verify whether the economical-financial efficiency of the big Brazilian banks was higher than the efficiency of the small and medium-size banks. Based on information extracted from financial statements of all the Brazilian financial institutions with activities performed in at least a year in the period from 2000 to 2009, the indexes of Brazilian banks were calculated and grouped in financial economic indexes, sales performance, cash generator and financial balance, capital structure and leverage, profitability and value creation. The major results show that there was no significant difference between the economical-financial performance of the big and medium-size banks. It was also verified that, independently of the size, the financial institutions presented the same mean return for the credit operations, the same financial cost of the capital invested, the same relation between financial intermediation expense and liability and the same sales performance.

B. Staub et al. (2009), evolution of bank efficiency in Brazil: a DEA approach.

The paper investigated cost, technical and allocative efficiency for Brazilian banks in the recent period (2000-2007), using cost data and Data Envelopment Analysis. The empirical results implied that non-performing loans is an important indicator of efficiency level, as well as market share. Evidence is in favor of the home field advantage hypothesis since foreign banks are less cost efficient than their domestic counterparts.

3.3.2. Jamaican:

Clarke et al. (2005), interest rate volatility effects on profitability and solvency: a study of Jamaican financial sector.

The paper examined the role interest rate risk played in the performance of financial institutions during a period of financial crisis in the Jamaican economy in the late J990s. Their research covers the period 1993 to 1998. The data for the commercial banking sector includes six banks. The economic environment during this period was characterized by highly volatile interest rates, liberalization of the foreign exchange market and deregulation in the banking sector. They examined the changes in net interest margin and the market value of equity of the commercial banks. They found that changes in net interest margin and changes in market value of equity are positively related to changes in market interest rates. They also found that bank management moved to alleviate pressure on solvency by adjusting the asset and liability mix but was not able to affect a significantly positive outcome for bank profitability and solvency.

3.3.3. Argentina

A. Clarke et al., (2000) the effect of foreign entry on Argentina's domestic banking sector.

They analyzed how foreign entry affected domestic banks in Argentina during an especially intense period of entry in the mid-1990s. Data are selected from the first quarter of 1995 to the second quarter of 1997. Following the analysis by Claessens, Demirgüç-Kunt, and Huizinga (1997), they included four control variables that capture either the incentives of bank managers or the composition of a bank's business, which are Lagged equity over lagged total assets, overheads/total assets, non-interest assets/total assets, and customer funding/total assets. They found that domestic banks with loan portfolios concentrated in manufacturing, an area where foreign banks have traditionally devoted a large part of their lending, tended to have lower net margins and lower before tax profits than other domestic banks. Conversely, domestic banks with greater consumer lending, an area where foreign banks have not been heavily involved, have higher net margins and higher before tax profits.

B. Delfino (2007), control changes and firm performance in banking.

The paper examined the effect of control changes on efficiency and productivity in the banking industry of Argentina. The empirical analysis used a panel data set of banks over the period 1993–2000. Bank level efficiency was computed from a cost frontier estimated using a one step Stochastic Frontier Approach and modeled as a function of variables reflecting the static, selection and dynamic effects of privatization, foreign acquisitions. The results suggested that control changes due to privatization had a positive short-term effect on productivity in part as a result of efficiency gains, which were then gradually lost over time. Results also indicated that foreign acquisitions led to stronger productivity performance of acquired banks, though they did not have any significant effect on efficiency. Finally, mergers and acquisitions had a negative impact on productivity as a result of scale effects despite the long-term efficiency improvements.

C. Chortareas et al. (2011), banking sector performance in Latin America: market power versus efficiency.

The paper advanced the existing literature by testing the market power (Structure–Conduct–Performance and Relative Market Power) and efficient structure (X- and scale efficiency) hypotheses for a sample of over 2500 bank observations in nine Latin American countries over 1997–2005.they used the Data Envelopment Analysis technique to obtain reliable efficiency measures. They produced evidence supporting the efficient structure

hypotheses. The findings are particularly robust for the largest banking markets in the region, namely Brazil, Argentina, and Chile. Finally, capital ratios and bank size seem to be among the most important factors in explaining higher than normal profits for Latin American banks.

3.4. Sub-Saharan Africa:

Moyo et al. (2014), Financial Sector Reforms, Competition and Banking System Stability in Sub-Saharan Africa.

The study attempted to assess the implication of financial sector reforms on banking stability-insolvency nexus in a sample of SSA countries by examining variables relevant in explaining and predicting banking stability/fragility. They utilized the duration model with time-varying covariates, for bank distress prediction before and after financial sector reforms from 1998 to 2011. The results indicated that CAMEL-type bank-specific factors are good predictors of which banks are more likely to experience banking distress. Further, delineation of the sample to capture financial liberalization period, which permit competition in the banking industry, presented interesting findings with regards entry of foreign banks, easing of restrictions and economic freedom all of which contributed to enhanced competition in the banking industry.

3.4.1. Ghana:

A. Acheampong (2013), the Effects of Foreign Banks Entry on Financial Performance of Domestic – Owned Banks in Ghana.

The article empirically examined the effects of foreign bank entry on the financial performance of Merchant Bank Ghana Limited (MBG) and Ghana Commercial Bank Limited (GCB) in Ghana from 1975 to 2008. The most consistent result from the pooled regression was that foreign bank entry increased domestic banks' return on assets for the period 1992-2008; a period with a high influx of foreign banks into Ghana. In addition, liquidity had a relatively larger multiplier effect on domestic banks' return on assets for the period 1975-1991 than any other independent variables in the study. The presence of foreign-owned banks was not detrimental to the financial performance of domestic-owned banks in Ghana.

B. Korsah et al. (2001), impact of financial sector liberalisation on competition and efficiency in the Ghanaian banking industry.

They used the Herfindahl Index and Lorenz analysis to determine the incidence and intensity of competition and Data Envelopment Analysis (DEA) to assess the relative efficiency of the industry, in order to achieve the impact of financial sector liberalization on the performance of Ghanaian Banks from 1988 to 1999. The market concentration technique

ascertains the incidence and intensity of competition and DEA measures the relative performance of banks in a multi input-output scenario. Their empirical implementation of the analytical techniques showed that competition has increased and the banks have become more efficient although there is evidence of stagnation on both measures in recent years. Further, the banks have become more profitable due to the oligopolistic nature of the market that enables them to reap supernormal profits.

C. Ahiawodzi (2012), the Effect of Financial Liberalization Policy on Financial Market Efficiency in Ghana.

The same evaluation for Ghana was studied here but for the period (1988-2010) where he used a model called the "Deviations Model". The model seeks to make a comparison between the observed nominal interest rates and those that would prevail in a perfectly functioning financial market. The results of the study revealed that the financial liberalization policy has not yet succeeded in correcting the financial market inefficiency or distortion in the country between 1988 and 2010, even though there has been a fair improvement as compared to the pre-reform period.

3.4.2. Nigeria:

A.Adesegun, (2014), effects of financial sector liberalization on bank performance in Nigeria.

The study assessed the extent to which financial sector liberalization has affected bank performance in Nigeria. Panel data model was employed for data spanning a period of thirty four years (i.e. 1971-2011). Earnings per share (EPS), Returns on capital employed (ROCE) and Returns on equity (ROE) were used as proxies for bank performance (i.e the dependent variables) while interest rate, real financial savings and exchange rates were used as the proxies for financial sector liberalization (i.e. the independent variables). A number of diagnostic tests were also conducted on the residuals to evaluate the models; these include the Breuch-Godfrey serial correlation Lagrange Multiplier (LM) test, the Ramsey REST test of specification error (i.e. to test for omitted variables, incorrect functional form, correlation between exogenous variables and error term) and the Cumulative Sum (CUSUM) tests of parametric stability. The results showed that though the effect of financial sector liberalization on bank performance in Nigeria has been significant and positive, especially as measured by the proxies of Earnings per Share and Return on Equity.

B. Bakare (2011), financial sector reforms and domestic savings in Nigeria: an econometric assessment.

The paper delved deeper into the analysis of the extent to which financial sector liberalization has affected private saving and its allocation in Nigeria. The study used quasi-experimental research design approach and time series secondary data for the data analysis. The study focused on Financial Sector Reforms and Domestic Savings in Nigeria from 1986 – 2010 which is a period of twenty five (25) Years. The multiple regression results showed a significant and negative relationship between financial sector liberalization and private saving and its allocation in Nigeria.

C. Tanko (2005), The Impact of Financial Liberalisation on the Performance of Privatised Banks in Nigerian.

He compared the pre and post privatization performance of ten banks that experienced privatization through public share offering during the first phase of the Nigerian's liberalization policy which are: Five years (1983 - 1988) before and five years (1998 –2002) after the implementation of the privatization programme. The study examined whether the financial and operating performance of the privatized banks improved after privatization. The wilcoxon signed rank test was used as the principal method of testing for significant changes in profitability, operating efficiency, and dividend payout. He also used the wilcoxon two-sample test for their sub-sample. The study documented significant increases in the mean levels of profitability, operating efficiency, and dividend payout. Their results lend support to the proposition that privatized banks in Nigeria witnessed performance improvement following government's liberalization program.

3 4 3. Tanzania:

Simpasa (2011), competitive conditions in the Tanzanian commercial banking industry.

The paper analyzed the competitive nature of the Tanzanian banking industry from 2004 to 2008. They employed the Panzar–Rosse methodology to compute the competitive index, taking into account risk, efficiency, regulatory and macroeconomic factors. The results show that banks in Tanzania earned their income under conditions of oligopolistic conduct. Moreover, the competitive index derived from an interest revenue equation was not significantly different from that obtained using an aggregate revenue measure.

3.4.4. Namibia:

A. Okeahalam (2008), Internationalization and Firm Performance: Evidence from Estimates of Efficiency in Banking in Namibia and Tanzania.

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The paper assessed and compared the impact of internationalization on the economic performance of firms in the banking sector in Namibia and Tanzania. The data set is a balanced panel data set with observations from 1998 to 2003. The study found that in Namibia, all the foreign banks are larger but more inefficient than domestically owned banks. In Tanzania, foreign banks are more efficient than domestic banks. They also indicated that the type of foreign entrant, not, just foreign entry determines the impact on efficiency and the competitive landscape.

B. Aron et al. (2000), financial liberalization, consumption and debt in South Africa.

The paper emphasized the role of substantial financial liberalization for the period (1970-1997). Their methodological innovation is to treat financial liberalization as an unobservable, proxied by a spline function, and entering both consumption and debt equations, which are jointly estimated. They also clarify the multi-faceted effects of financial liberalization on consumption. The empirical results confirm the importance for consumer spending of extensive financial liberalization, of fluctuations in a range of asset values and asset accumulation, and of income expectations. Results suggested that households largely pierce the corporate veil.

C. Abdullahi (2013), effects of financial liberalization on financial market development and economic performance of the SSA region.

The study investigated the role of financial liberalization in promoting financial deepening and economic growth in Sub-Saharan African countries (SSA). He applied the more efficient system GMM (the Generalized Method of Moments) estimator in dynamic panel data. Their dataset covers 21 countries in Sub-Saharan Africa over the period of 1981–2009. Additionally, the paper sought to examine both the direct and indirect impacts of financial liberalization policies on economic growth and financial deepening using a much more comprehensive and recent financial. The econometric results suggest that, on average, financial liberalization is negatively associated with income growth in SSA region. The research found that financial liberalization does indeed impact positively on financial deepening and resource mobilization in SSA region, after controlling for key macroeconomic factors such as institutional quality, fiscal imbalances and inflation.

3.5. Middle East and North Africa:

3.5.1. Egypt:

Fethi et al. (2009), liberalization, privatization and the productivity of Egyptian banks: a non-parametric approach.

The paper evaluated the performance of Egyptian banks during 1984-2002, the study employed a prominent methodology in the literature, namely the DEA

Malmquist analysis, to evaluate productivity decompositions in Egypt's banking

system in an important era. The productivity analysis of Egyptian banks revealed that the liberalization policies managed to improve their performance. Hence, post liberalization productivity growth reached 7.6% compared with pre liberalization productivity regress. However, the influence of liberalization seemed to be short term in the case of Egyptian banks.

3.5.2. Tunisia:

A. Cook et al. (2000), financial liberalization and efficiency in Tunisian banking industry: DEA tests.

The paper examined the impacts of similar reforms on the efficiency of the banking system in Tunisia, Using various DEA models and panel data covering the period 1992-1997, they evaluated the individual effects of each component of the reforms on the banking industry overall. They found that Tunisia's financial system remained relatively stable during the turmoil caused by the Asian crisis that hit many emerging countries around the world, largely due to its cautious and well-timed deregulation process. They found that private   banks, in general, are more efficient than public sector banks. The analysis revealed that the reforms have been less successful in closing the efficiency gap between public, domestically owned and private, foreign owned banks.

B. Hakimi (2011), Financial Liberalization and Banking Profitability: A Panel Data Analysis for Tunisian Banks.

He studied also the effect of financial liberalization on the profitability of the Tunisian banks, in the basis of data relating to (9 banks) over the period 1980 – 2009. They used a model. By adopting the method of the data of panel and the method of estimate is that of least square ordinary (MCO). They found that financial liberalization decreased the profitability of the Tunisian banks.

3.5.3. Morocco:

Joumady (2000), libéralization financiere, rationnement du credit et investissement des entreprises marocaines,

The study measured and analyzed the evolution of Moroccan banking performance during the financial liberalization period (1990-1996) using DEA method. They found that there is no effect of financial liberalization on banking performance.

3.5.4. Iran:

Rabiei et al. (2011), the effects of privatization on the efficiency of the banking sector in Iran.

The study attempted to investigate the effects of privatization on the Efficiency of the banking sector in Iran and used stochastic frontier analysis to measure banking efficiency and its determinants for two years (2007-2009). They used a sample data of Melat bank which was the first Iranian bank scheduled for privatization. Their results showed that efficiency Melat bank after privatization has slowly grown.

3.6. South Asia:

3.6.1. India:

A. Sensarma (2006), are foreign banks always the best? comparison of state-owned, private and foreign banks in India.

They estimated efficiency of Indian banks and then estimate a measure of productivity that includes an efficiency term. Following this comprehensive measure, they found that banks have improved their performance during the period 1986 to 2000 in terms of both efficiency and productivity. Surprisingly, foreign banks have been the worst performers throughout the period as compared with state owned and private domestic banks.

B. Arora (2010), effect of size and age on the performance of Indian banks under different ownership forms.

The study was an attempt to find out the relationship between the growth performance of banks (i.e., profitability) and their size (asset) and age (current year-year of incorporation). It also studied the equality of the performance of all three sectors (public, private Indian and private foreign) in all three categories (large, medium and small) of the banks. The data was collected for 10 years, from 1997 to 2006. After applying the statistical method 'Multivariate Regression Analysis', results showed that the profitability and performance of the banks have a significant relationship with their age and size.

C. Sathye (2005), privatization, performance, and efficiency: a study of Indian banks.

The paper examined the effect of bank privatization on bank performance and efficiency, for five years from 1998 to 2002. The financial performance of the banks was measured using

the standard financial performance measures such as return on assets. Two main approaches are generally used to evaluate the impact of privatization on firm performance: 'Synchronic' approach And 'Historical' approach. The study revealed the following: Financial performance of partially privatized banks (measured by return on assets) and their efficiency (measured by three different ratios) were significantly higher than that of the fully public banks. In the matter of quality of advances (measured by the ratio of non-performing assets to net advances), significant difference was not found in these two groups. Partially privatized banks also seem to be catching up fast with fully private banks as no significant difference was found in financial performance and efficiency between them. Gradual privatization and well-developed financial markets seem to have contributed to Indian success.

3.6.2. Pakistan:

A. Nazir et al. (2010), the impact of financial restructuring on the performance of Pakistani banks: a DEA approach.

The study was conducted to observe the effects of restructuring reforms on the Pakistani commercial banks by using the traditional and Data Envelopment Analysis (DEA) approach by using the sample data of 28 commercial banks for the period 2003-2007. The study results showed that the efficiency of private banks is less than that of public banks and differences between the operating efficiency of both state-controlled banks and private banks are statistically insignificant.

B. Awan et al. (2010), rate of interest, financial liberalization and domestic savings behavior in Pakistan.

The study analyzed long run and short run association among the real rate of interest on deposits, financial liberalization, economic growth, terms of trade, real remittances by Pakistani emigrants and domestic savings behavior in Pakistan, using annual time series data for 1973-2007 and Autoregressive Distributed Lag model (ARDL) Bounds Testing Approach has been applied for co-integration. To test integration order of the variables, DF-GLS and Ng-Perron Tests have been employed. The results reveal that the real interest rate, financial liberalization and economic growth positively affect domestic savings in Pakistan in the long run. The co-efficient of liberalization dummy is also positive and statistically significant, conversely, the terms of trade and real remittances by Pakistani emigrants showed negative relationship with domestic savings.

C. Akhtar et al. (2011), Privatization and Performance of Banking System in Pakistan.

Chapter 3 : Empirical Evidence

The study analyzed the impact of privatization on the performance of banking system in Pakistan. The study has employed three measures of performance of banking system i.e. Return on Assets, Return on Equity, Net Interest Margin (ROA, ROE and NIM). The data for the period starting from 1990-1999 has been employed in the study. The technique of ratio analysis has been used to assess the impact of privatization on performance of banking system in Pakistan. Ration analysis revealed that private banks are performing better than the state-owned banks. it also showed that customers have more confidence in private banks as compared to the state-owned banks.

D. Shah et al. (2012), Privatization of Banks in Pakistan: A Case Study of Allied Bank.

The main objectives of the study were to review the privatization process in historical perspective of Pakistan (1980-2004), to compare the various measures of performance such as (Profitability, Efficiency, Investment, Employment and Assets) of Allied Bank before after privatization period, to suggest policy measures. The study applied the methodology, the comparative analysis and efficiency levels were measured by using nonparametric statistical tests and regression analysis. Means were compared by using t-test. A time series model is also used to determine the sequential trend of the components. The results showed that Allied Bank Limited showed a slow progress as compared to the other Banks throughout the privatization period. The deposits and investment declined before privatization whereas less or more the pre-tax profit, income and expenditure remained persistently in growth throughout the pre privatization period. On the contrary, in the post-privatization era, the deposits and investment jerked to high level of growth but the expenditure and income remained parallel with the pre-privatization period.

Conclusion:

Nowadays, financial liberalization is in vogue and is still one of the most controversial subjects among researchers worldwide. In fact, few studies evaluate the direct impact of financial deregulation on bank performance in different developing countries. However, their empirical findings are largely controversial; Some researcher - such as Denetriades et al. (2001), Papp(2002), Sathye (2008), Ayden et al. (2009), Marius et al. (2011), Fadzlan et al. (2012) – argue that financial liberalization has a positive effect on the performance and efficiency of banks.

Other authors consider that deregulation has a negative impact on productivity of banks like Cook et al. (2000), Denizer et al. (2000), Yu et al. (2001), Wu et al.(2007), Fethi et al.(2009), Staub et al.(2009), Abdelaziz(2011).

In contrast, others found no effect of financial liberalization on banking performance such as Joumady (2000).

In light of this empirical evidence, our study will focus in the fifth chapter on the Algerian experience which will tend to clarify the impact of financial liberalization carried out by the beginning of 1990s on the Algerian public banks.

Chapter Four:

Banking System Reform in Algeria

- ✓ Algerian banking system under financial repression.
- ✓ Financial liberalization of the Algerian banking system.

Chapter 4 : Banking System Reform in Algeria

Introduction:

The fundamental changes that have taken place on the international scene in the beginning of the 1990s, following the collapse of the socialist system and the emergence of Globalization made the Algerian economy show amid international changes and challenges that must be faced. This led the Algerian authorities to take economic reforms, and the latter led to the smallpox changing of the economic policy reliance on market forces. Where many changes, developments, studies and repercussions of globalization show that financial liberalization, in particular, have a large impact on banking system in any country of the world including the Algerian banking system.

Chapter 4 : Banking System Reform in Algeria

4.1. Algerian banking system under financial repression:

The Algerian banking and financial systems in several phases were characterized by each stage of certain characteristics. The first banking institution in Algeria is established by the law of 19/07/ 1843 as a branch of French banks, where the banking system, before the independence of Algeria, was contained of more than 24 foreign banks most of them of French nationality, as well as there were small capital market and two insurance companies and funds of savings deposits mail (El Kazwini, 2008).

The banking system housed in Algeria was characterized during this stage (before independence) that it was a mere branch, which referred to the French banking system not to an independent body which would issuance cash and control. The Monetary policy was ranged by the French Ministry of Finance, the French central bank, and the French loan council. In addition, the banking system was divided into two networks: The advanced banking sector that held the French centenarians and Europeans service, and the traditional banking network subsidiary in most of the public sector and took over the financing of traditional activity.

4.1.1. From 1962 to 1979:
4.1.1.1. Algerian banking system after independence:

The withdrawal of France from Algeria resulted many changes in the banking system, the most important changes was in the headquarters of banks, and the migration of executives eligible to run banks, other financial changes also represented in the withdrawal of banking deposits and capital transfers.

These changes led to:

A-Establishing banks **at first stage** extended between (1962-1966): It witnessed a phase of failure, when foreign banking system refuses financing the Algerian economy, it was inevitable result that looked so ably Algeria to:

a-The restoration of monetary sovereignty by separating the Algerian public treasury from the public treasury of France on August 29th1962 (Lahmar, 2005).

b-The establishment of bank of Algeria, by the Constituent board On December 13th1962 in accordance with the law 62 − 144, as a public institution that enjoy civil personality and

financial independence. Thus, In January 1963 the Bank of Algeria, which established by France during the colonial period under the law of August 1958, was replaced (Laachab, 2001).

c-Establishment of Algerian development fund: Algerian Development Fund was established on May 7th1963, of which the name has been transferred to Algerian Bank for Development in 1971(Latrach, 2004).

d-Establishment of the CNEP bank: CNEP bank was established on August 10th 1964 under Law No. 64/277 (Latrach, 2004).

With regard to the procedures for complementary monetary sovereignty of Algeria and after two years of independence, the establishment of national and non-convertible currency made an end to the damage of capital in the country, rendering National currency which is the Algerian Dinar on April 10th 1964, and this action obliged Algeria to leave the French Franc zone.

B. Second stage (1966 - 1971):

It was characterized by nationalizing foreign banks and the establishment of national banks to finance economic activity. This came as a result of alleged foreign banks in Algeria in financing the socialist public sector, despite the cash liquidity it had (Lahmar, 2005). Algerian National Bank has been established under Decree of 178\66 in June 13th1966 to replace 71 French agencies banks. His most important functions is the implementation of the State plan for the short and medium-term loans and loan guarantees as fund facilities. In addition to granting loans to the agricultural sector until the year 1982 when the Bank of agriculture and rural Development was established, and the loans to public and private industrial sector and foreign trade financing (Tsham, 2002).

CPA bank was established by Ordinance N° 67/75 dated 05/14th/1967, from buying shares of foreign banks that existed in Algeria before 1967. The Bank also merged three foreign banks that were nationalized after, which are mixed Bank of Algeria – Egypt, French loan Foundation, and Marseille Company for loan (Ben Abd Elfatah, 2005).

A third bank was founded in the nationalization period which is the External Algerian Bank (BEA) under Decree N° 67/204 of October 1st 1967, with a capital of 20 million dinars (El Kazwini, 2008).

4.1.1.2 Algerian banking system reform with 1971:

Since independence and until the law of finance 1971, this period was characterized by financial imbalances in banking system, this situation made a necessary reforms as early as 1971 (Meftah,2004).

This situation has made reforms essential as early as 1971, the financial reforms in the framework of the first quarter planned (1970-1973) with a view to removing the imbalance and ease the pressure on the treasury to finance investments and singled out organizational side of financial intermediation and the crisp in financing channels. This reform took several measures and laws which called financial planning. This planning rested on several grounds and principles which are: (Belaazouz, 2006)

A-The principle of the central financial resources: Algeria has adopted an Outline system that required them to know the size of the financial resources. It required enclosing financial resources in one institution which is the state treasury and commercial banks, for an optimal use.

B-The planned distribution of credit: the authorities organized financial intermediation through the planning and distribution of credit, tasks was identified for banks and the Treasury, and divided investments to public investment and productive one.

C-The principle of control use of financial resources: this principle is based on funds granted to public institutions in the form of loans, where the authorities tried to control the use of these funds and routed according to the objectives set out in the plan, and so ably custodians assigned to the commercial banks that are strategically located to monitor the use of financial resources, because they represent the channel through which the funds granted for completing projects (Mefteh, 2004).

4.1.1.3. The analysis and assessment of the Algerian banking system reform after 1971:

Financing policies, pursued by Algeria within financial reform of 1971, make several results. We will analysis and assess the impacts of the application of this policy in particular axis to assess the performance of Algerian banking system.

A-The relationship between banks and public sector:

The granting of loans, which was done through public banks for public institutions was not guaranteed by only good intention of the State, there are no guarantees in classical sense, and this gave slack in the study and follow-up monitoring of the loan. The result of that was the accumulation of debts of banks to public institutions and internal financial impact on the balance of these banks and even the institutions (Latrach, 2004).

Table (2): Evolution of withdrawal's public institutions for the period (77-81)

(Unit: Billion DZ).

The end of 1977	The end of 1978	The end of 1979	The end of 1980	The end of 1981
13,7	14,5	19,8	25,5	39,5

Source: Benhalima, A. (2001).

B- Relationship between banks and the private sector:

In respect of the bank financing to the private sector, it was suffering from discrimination, so it is subject to the expensive banking conditions. Thus, the banks adopted traditional criteria in granting loans to the private sector and the claim in-kind of guarantees or personal, which limit credit demand by private sector (Boukhatem, 2003)

C-lending policy:

We can say that the commercial banks did not play its role in basic lending policy (the policy of financing), in fact that everything was decree by Central Plan. In terms of the percentage of money in circulation known as big rise, and this explains the weakness of banking system in the mobilization of financial resources. This is because the advanced banking system led to the decreased proportion of paper money in circulation in economy by dealers, during increase deal in financial channels and banking networks and use credit cards.

D- Results of the applied financial policy:

Chapter 4 : Banking System Reform in Algeria

It can be said for the role of the banking system that the authorities wanted the financial banking system to be effective and to have a dynamic role in financing of economic development, which has not been achieved and that refer to:

- *Banking Resettlement,*
- *Administrative control of banks.*

Where the central distribution of resources led to the exclusion of banks from decision-making process concerning investment and finance, where banks have become subject to policy of the authorities. This has undermined banking function in Algeria in decision-making (Lahmar, 2005). Also banking system has known during the planning phase of large leak money outside banking channels and this refer to a several reasons, including:

- Habits and behavior of individuals, where they prefer to pay in cash.
- Absence of banking culture to members of the community and their ignorance of banking mechanisms and finance.
- Banking system is not well developed, in addition to the lack of diversity of financial instruments and their compatibility with the wishes of the savers.
- The negative real interest rates were administratively defined at low levels, which did not encourage banks to collect deposits where the interest rates on deposits ranging from 2.6% to 2.9% during the period (1972-1986) and interest rates on loans ranging between4% to 6% during the same period.

I.   The importance accorded to the treasury:

The treasury represented the most important organ in the transformation of the national economy because they were playing the role of the state fund. The growing role of the public treasury was reduced the functions of banks, and central bank lost his authority on banks to find itself compelled to money issuance, which is not justified by the monetary situation (Hamadi, 2005).

II.   Restructuring of banking institutions:

The beginning of the 1980s witnessed structural reforms of the economic sector including the banking field, which was the restructuring of the Algerian National Bank (BNA) and Algerian credit popular (CPA), got from them two banks are the Bank of rural development

(BADR) was established by decree N° 206/22 dated 13/03/ 1982 and Local Development Bank (BDL) established by decree 85/85 on 30/04/1985.

4.1.2. From 1980 to 1989:

The 1980's reforms came as an inevitable consequence of the difficulties that were recorded by the period of the 1970's on the economic level in general, especially on the banking system that failed legally and financially from filling and collecting savings and funding the national economy. Amendments were made on the banking system by the issuance of the banking law 86/12 in August 19th 1986, and the set of a national plan for the loan. Besides, the 1988 witnessed large economic reforms with the promulgation of the law 88-01 in January 1988 which granted independence to public institutions (Messitfi et al., 2006).

4.1.2.1. Act of bank and loan 1986:

The Algerian government set up a series of procedures in order to shift the economic system and its principles to rules that can suit the market, including the issuance of a new banking law, its basic objective is to reform the banking system in which it inserted a kind of exploitative management in the relationship of the banking system with the various economic sectors. The most important points brought by this reform are:

A- Types of loan institutions:

Article 14 of the banking and loan law has shown that loans' institutions are among the components of the banking system, it is distributed to:

a- Loan institutions of general formula (bank): According to the article 14, banks have became able to grant long-term loans. In addition to the traditional processes of banks from collecting resources and granting credits, new terms have entered, consists of operations on the transferred values and financial products.

b- Specialized loan institutions: defined by article 18 of law as a loan institution that does not gather, under its basic laws, only some varieties of resources and grant some affiliated varieties of loans.

B- Independence of bank financing: the law of bank and loan 86 gave independence in decision-making to grant loans. Article 11 of the law has shown the mandatory banking system to follow up financial situation in institutions in order to take necessary measures to minimize the risk of non-payment of loan. Therefore, the banking system was away from financing institutions with critical and deteriorating financial situation, this was confirmed by article 49 of the law showing that loan institutions take the responsibility of evaluating institutions' investments and financial analysis of projects before taking any investment decision, we find as well that article 15 demonstrates financial independence of loan institutions as public institutions which have moral personality and financial independence.

4.1.2.2. The law of banks autonomy 1988:

The act of loan and the banking system N° 86-12 was issued in an attempt to a reinstatement of the banking system in financing the national economy in more independent ways which is considered to be the first banking law that set the basic structures of the Algerian banking system, and entrusted through it ,to the banking system, the function of monitoring the use of granted loans and taking all the necessary measures which would reduce the risk of non-payment, in addition to the founding of the national plan through the act of bank and the loan to put an end to the interference of the central bank in financing the economy, and put an end as well to the chaos that characterized the process of issuing money. However, this act had shown contradiction between independence and centrality, and could not make a break in the prevailing transactions, because the causes of compulsory and central planning were always in existence, then came the law of 06/88 issued in April 12th 1988 to amend and supplement law N° 86-12 of August 19th 1986 related to banks system and loan (Official Newspaper, 1988).

This law has appeared at a time when Algeria legislated the application of a broad reform program between all economic sectors, especially public institutions. The law of 01-88 issued in January 12th 1988 granted public economic institutions independence of decision-making to cope with developments that have occurred on the level of the new organization of the economy, and it became necessary to adapt the monetary law with these laws in a way that permits to harmonize banks as institutions with the law (Zemmit, 2005).

The financial and economic reforms witnessed in 1988 were significant after issuing legal texts related to the independence of public institutions. Banks, as loan institutions which are

among economic public ones, have been given the opportunity to deal with the principle of trading and profitability in its decision-making, this law allows as well loan and financial institutions to go for short-term loans in the domestic and the foreign market, within this law, the treasury abandoned its job of financing this public investment institutions and gave this responsibility to the banking system, therefore, we can say that the independence of banks as public economic institutions has already been done in 1988 (Balaazouz,2006).

However the reform of 1988 faced several difficulties at the political, economic and social levels among them: unemployment rate which reached 2.1% of the active population in 1988, As well as the decline in the real consumption in the years of 1986 and 1987 recording the proportion of (-5.81%) and (7.4%) during the years of 87-88 with the decrease in the rate of real production. In 1988, it recorded (-2.9%) after it was (-1.1%) and (-2.1%) in the years of 1986-1987 respectively.

These difficulties made Algerian streets erupted in October 05th, 1988. This led Algeria to get into a phase of political and economic transition, which pushed Algerian economy to seek for contracting with international financial and monetary bodies. This action was considered as a turning point for the Algerian economy as a whole, and the banking system in particular, this is justified by the issuance of the law N° 90/10 related to money and credit (Benabdelfateh, 2005).

4.2. Financial liberalization of the Algerian banking system:

The law on money and credit 90-10 came to be in the same line as with the new situation, which means the transitional stage to the market economy. This law was issued in April 14th 1990 in accordance with the new economic and political orientation of the country toward total openness on capitalist economy, especially after the difficulties faced by Algeria in the late 1980's which we have already refer to in the previous point, in addition to the increase of the foreign indebtedness which consists of hard currencies where we find that the American Dollar is at the summit of currencies that the Algerian debt was recorded by, where it reached in 1989 the proportion of 40% of the total indebtedness, to be followed by the French Franc in the years of 1988-1989 with a proportion of 4.80% and 14.60% respectively (Benabdelfateh, 2005), besides, the emergence of social problems and the entering of the country for the first time in the multiparty system.

4.2.1. Algerian banking system under the law on money and credit 90/10:

4.2.1.1. The new vision for the reform:

The law on money and credit 90-10 is considered as a legislative one that came in order to highlight the importance of the place that the banking system should be on it. It also ensures new ideas and objectives; the most important of them are as follow:

A- The separation between monetary service and real service:

This is by achieving the following objectives:

- The Central Bank restores its role in managing the monetary policy.

- To put an end to the discrimination between public and private sector.

- To give freedom for commercial banks in decision-making related to loans.

B- The separation between the monetary department and the state budget:

The law of 90-10 came to put an end as well as to the overlap between monetary authority and the public treasury, where the treasury used to resort to the monetary authority in previous system and forced it for the monetary issuance for nothing; the law contained within its articles:

- The independence of the central bank for the growing role of the treasury.

- Reduce treasury debts toward the central bank, and paying previous accumulated debts.

- Create the conditions, so that the monetary authority plays its role effectively.

C- The separation between the budget and the credit:

The role of the treasury became, within the law on money and credit, limited to finance planned public investments by the state, thus, the distribution of loans became based on the economic feasibility of the project, not only on the administrative as previously(Balaazouz,2006). This law abolished the intervention of the minister of finance and public treasury as a monetary authority, where the council of money and loan was renewed and gave it a functional duplication, sometimes it moves on the basis of administrative authority and sometimes on the basis of monetary authority (Hamadi, 2005).

D- The placement of banking system on two levels:

That is to say the distinction between the Commercial Banks' activity as a loan distributor and the central banks' activity as a monetary authority, besides, the money and loan law has made profound changes in the banking system in order to organize the banking activity, the objectives are:

a- Establish the rules of market economy in managing the Algerian economy; this is through putting an end to every administrative intervention in banking system.

b- Give back the traditional functions to banks and financial institutions in filling savings and granting loans by giving a great flexibility in determining the interest rate, and allow them to set up banks and foreign private financial institutions.

c- To give the Central Bank more independence in applying monetary policy and the reduction of high rates of inflation by adjusting the relationship between the central bank and the treasury (Chakouri, 2005).

4.1.3.2. The reforms of 1990:

The most important reforms are as follows:

A- The Central Bank:

Under the law and according to article N° 12, the Central Bank has become called the bank of Algeria; it is a national institution enjoying moral personality and financial independence (article 11). The Central Bank, and according to the law on money and credit, does five major tasks: considering the Central Bank as an issuing institution and managing exchange reserves, in addition to its participation in the monetary policy and managing exchange reserve. The Central Bank is also considered as a bank for banks, and as an authority responsible for the banking system that imposes and supervises the application of prudential rules, which require banks to respect certain limits for loans, to ensure good health and reserve for the banking system (article 44).

B- Banking supervision bodies:

Under the law of money and credit, bodies were created to work on to supervise the banking system in order to maintain the public funds and the well functioning, these bodies lie

in: the Committee of Banking Supervision, Centrality of Risks and beams payment, The System of Anti-versions of checks without Pantry.

C- Banks and financial institutions in the framework of money and credit law 90/10:

I- Commercial banks:

The law on money and credit of 1990, in its article 144, defined commercial banks as moral persons, and its main and normal function is to conduct operations specified in the articles from 110 to 113, from this law which states that these commercial banks are those institutions that do the following:

- Receiving money from the public.
- Granting loans.
- To put the means of payment at the disposal of the customers, and managing them.

II- Financial institutions:

Article 115 from the law on money and credit defined financial institutions as moral persons, its main and normal function is doing banking businesses except receiving money from the public, this means that financial institutions grant loans likewise the commercial banks but without using public funds. The law on money and credit divided these institutions into (Bekhraz, 2005):

- Reserve and saving funds.
- Municipal loan funds.
- Financial companies.
- Specialized financial institutions.

III- Commercial banks, foreign and private financial institutions:

The law of 90/10 allowed the establishment of banks and foreign private institutions in a condition that these banks and institutions must be subject to the Algerian law and that this should be created in a form of joint-stock companies, and obtain a license granted by the council of money and credit signed by bank of Algeria, and in order to obtain this license it must meet certain conditions, among these conditions (Naas, 1998):

- 500 Million Dinar for banks.

- 100 Million Dinar for financial institutions.

- Select the program of activity, especially, in the field of resources, credits and services proposed.

- Respect solvency ratio.

We can limit some banks that have emerged after the law on money and credit as follows:

A- Private banks with a mixed Algerian capital:

- Al Baraka Bank: is the first joint bank that carries out its activities in Algeria after its foundation in December 1990 by an initiative group (Saudi Dallah Al Baraka) and the Bank of Agriculture and Rural Development with a capital of 500 million dinar, it is considered as an Islamic bank.

- Mixed Bank: it was founded in June 11th 1998 between the Libyan External Bank with 50% of the bank's capital and with the contribution of four commercial banks with a proportion of 50% which is the Algerian National Bank (BNA), CPA, BEA and BADR bank (Benhalima, 2001).

- The Algerian Industrial and Commercial Bank: it is a joint-stock institution with a capital of one billion dinar composed mainly of Algerian shareholders, it obtained the accreditation from bank of Algeria in September 24th 1998.

- Al Khalifa Bank: Al Khalifa Bank has been adopted as a joint-stock institution in July 27th 1998 with a constituent capital estimated by 500 million dinar.

- Mona Bank: obtained the accreditation in August 8th, 1998

- Arab Company of Banks: obtained the accreditation in September 09th, 1998.

-Itihad bank: it is a private bank which is established on may   **07th** *1999   with private and foreign capital.*
- The General Bank: obtained the accreditation in April 30th, 2000.

B- Private banks with a foreign capital:

- Arab Banking Corporation: obtained the accreditation in September 24th 1998, and has begun its work in December 02nd 1998, its capital is composed of:

- Arab investment company (Saudi Arabia) with a proportion of 10%.

- Arab banking corporation (ABC) of Bahrain by 70%.

- International finance company (IFC) (The United States of America) by 10%.

-Algerian Company for Insurance and Re-insurance: by 50% and 6 Algerian investors by a proportion of 50%.

-Algerian Natixes Bank: is a special branch of Natixes banking group, it is a business bank, its capital is estimated by 500million dinar belongs to the French Banking Natixes Group which is considered the third banking group in France from number of business and proliferation.

- US City Bank: date of obtaining accreditation is May 18th, 1998.

- Société Générale Bank: obtained the accreditation in November 14th, 1999.

- Al Rayan Bank: date of obtaining accreditation is October 08th, 2000.

- Arab Bank: date of obtaining accreditation is October 15th, 2000.

4.2.2. Development of the Algerian banking system after the law of money and credit 90/10:

After issuing the law on money and credit 90/10, a number of additional reforms were made in 1991in order to restrict the banking sector and the sector of public institutions, as a result, the public authorities have done several procedures in order to give a new vision to the national economy in general and the banking system in particular.

4.2.2.1. Purging Banks and Developing the Banking System:

These efforts can be summarized in three main axes which are (Maherzi, 2001):

- Strengthening the regulatory framework, for its being considered as the cornerstone to build an effective banking mediation.

- The banking intermediation that was founded was characterized that there were public banks operating in central planning, therefore, it was necessary to do:

- The purging operations of these banks were necessary reforms whether on the financial level or on the organizational level (developing and modernizing banking functions.

- Putting these banks in an independent and regulatory framework.

- Support the opening sector of banks for national and foreign private investors in order to stimulate competition.

These reforms had an impact on the banking finance status. Due to the substantial rise in the volume of non-performing credit in banks' portfolios, and in order to improve the status of the banks and give them a major role in funding based on returns, the authorities changed the rediscount rate in order to limit banks' return to the bank of Algeria, where banks resort for refinance was estimated at 310 billion dinar at the end of December 1999 and by a safe average cost estimated at 12.43%, while this percentage was estimated at 06.9% with a total of 115 billion dinar in 2000 (Kriman, 2006).

However, in spite of financial purging, public institutions continued to borrow from banks while these banks still provide loans for the economy and the state, this increased loans provided by the state and was the result of higher expenditures and ensuring chronic financial disability of public enterprises (Bouzidi, 1999).

Figure (4): Rates of rediscount (1990-2010).
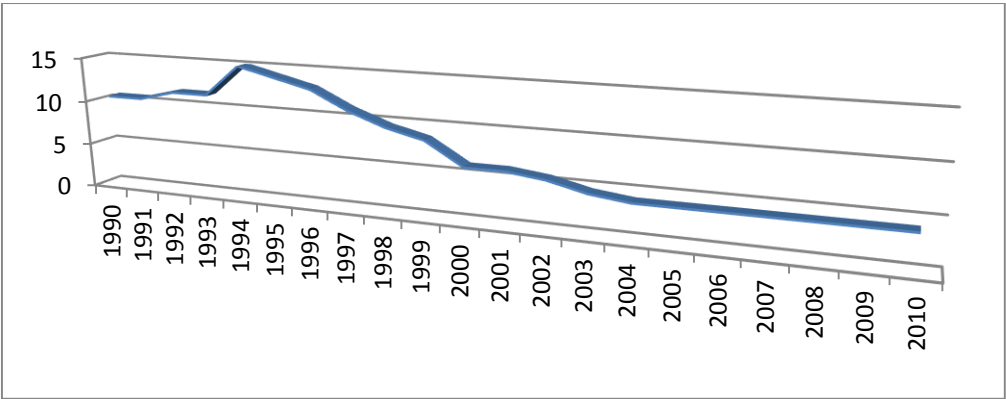
Source: www.bank-of-Algeria.dz

However, in spite of financial purging, public institutions continued to borrow from banks while these banks still provide loans for the economy and the state, this increased loans provided by the state and was the result of higher expenditures and ensuring chronic financial disability of public enterprises (Bouzidi, 1999).

4.2.2.2. The Algerian banking system during the period (1990-2003):

Despite of law on money and credit 90-10, it may constitute an important stage in the structural reforms banking sector and it was a turning-point in conduct and performance of banking system, but the presence of some of the gaps in it, which led now to ensure the effectiveness of the bank of Algeria and achieving its objectives, therefore, amendments was

made in 2001 and 2002. This is after a series of developments in Algerian banking legislation during this period.

- Law 01-01 complementary of Code of money and credit law 90-10 made in the 27th of February 2001. The amendments brought by this law as follows:

- Abandon the custody of the governor and his deputies which were appointed by presidential decree.

-To separate between the board of directors of the bank of Algeria and the council of money and credit as a monetary authority.

- Expansion of the loan council as a monetary authority to three figures, which choose efficiency in economic and financial fields.

- Law N°02-03 on 28th of October, 2002- which came after the big shark that stroke The Algerian banking system, as a result of what is known as the cause of 'Al-Khalifa Bank' and the Algerian Industrial and Commercial Bank- on internal oversight for banks and financial institutions of the Council of money and credit, which aims to define the content of internal control, that should be on banks and financial institutions applying analysis of risks and systems of surveillance and control.

4.2.2.3. The structure of the Algerian banking system from 2003 law:

Law N° 03-11 of money and credit in 26th of August, 2003 by presidential order was a new law that came within the commitments of Algeria in the financial field and banking developments in response to the Algerian banking and preparation of the banking system to adapt to world standards, especially, after the bankruptcy of Al-Khalifa Bank and Bank of Commerce and Industry of Algeria BCIA, the purpose of this amendment is to:

- The first objective is to enable the bank of Algeria to exercise better validity.

- The second objective is to promote consultation between the bank of Algeria and the Algerian government in financial field.

- The third objective is to ensure better protection for banks and financial area and public savings.

Laws issued by the Banking Law after (03-11) may be cited as follows:

- Law N° 04-01 in the 04th March, 2004 of the minimum capital of banks and financial institutions operating in Algeria.

- Law N° 04-02 in the 04th of March, 2004 of the reserve requirement conditions to the Bank of Algeria.

- Law N° 03-04 in the 04th of March, 2004 this relates to the law of the guarantee of bank deposits, where the banks deposit premium relative estimated at 1% of the total deposits to bank deposits fund , with a view to compensation depositors in the event of failure to obtain their deposits.

4.2.3. The Adoption of the financial liberalization in the Algerian banking system:

As we Have already seen, the Algerian financial system and banking knew many changes and developments, the issuance of credit and Loan law (90/10), was a real breakthrough for the financial liberalization policies in Algeria, which included all the ideas that came in the law of 1986 and 1988 in addition to the new ideas in the performance of banks such as the liberalization of interest rates and the banks from the restrictions imposed on them, allowing the establishment of private banks, the entry of foreign banks, the improvement of reserve requirement. Hereafter, we will try to point out the most important developments of these new ideas adopted by the Algerian banks in light of pursuing the financial liberalization policy:

4.2.3.1. The influence of the International Monetary Fund and the World Bank on the Algerian banking system:

The Algerian financial system replaces a joint assessment carried out by the joint mission of the International Monetary Fund and the World Bank, including the so-called program of evaluation of the financial system as the rest of the other member countries, the following are the most important proposals put forward by the International Monetary Fund (IMF):

Table (3): The most important proposals put forward by the IMF

Advocated policy	The steps involved
Privatization of public banks	-Expedition in the sale of two public banks enjoying good financial situation. - Give a five-year deadline for banks which adopt the privatization and abandon this process if it was not feasible.

	- Strengthen control of bank managers. -liberate finance for unable public institutions and this by inclusion in the general budget.
Improving the business environment to reduce costs	- Strengthen oversight and transparency of accounts. - Strengthen prudential rules and caution. - Reload payment system. - Training judges on the financial and business issues.
Conditioning liquidity resulting from the hydrocarbon sector and loans rotation	- doubling for issuing public debt bonds for the conduct of liquidity. - Pre-payment of the foreign debt and replace it with internal debt. - The creation of a statutory body to monitor the interbank market.

Source: Menah (2004, P 216).

4.2.3.2. The liberalization of interest rates:

The Algerian monetary authorities began in 1990 the liberalization of the interest rates in a gradual process, and the aim was to stimulate the savings and mobilize the greatest possible financial savings and get a real positive interest rates. The liberalization of interest rates with the decline in inflation starting in 1995[1]♣ thanks to the most stringent demand management policies has led to the emergence of positive real interest rates.

Figure (5): Real interest rates (1994-2013)
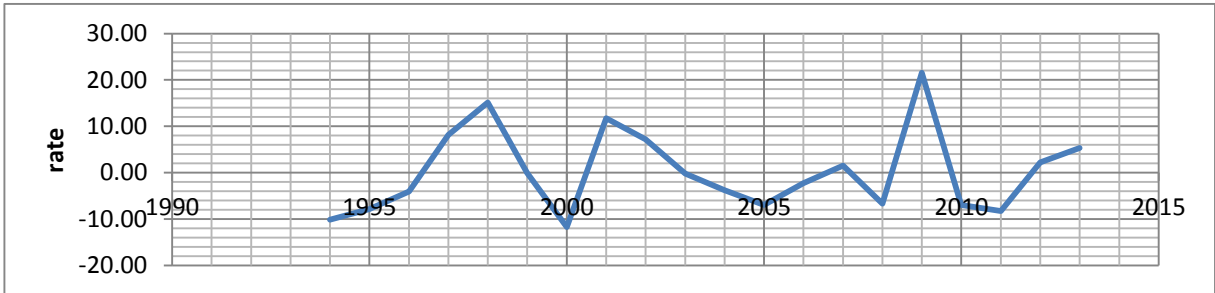
♣ One of the goals of the installation program 1994-1995 is to achieve financial stability by reducing the inflation rate to less than 10% .The program also focused on the liberalization of debtor interest rates, with rise creditor interest rates and thus achieve real interest rates.

For the debtor interest rates did not become positive till the year 1996 and this is because of the high inflation, that Algeria knew in the phase between(1990-1996), whereas concerning the creditor interest rates, it became positive in 1995 and this is what the following figures show:

Figure (6): The evolution of the creditor interest rates in the Algerian banking system.
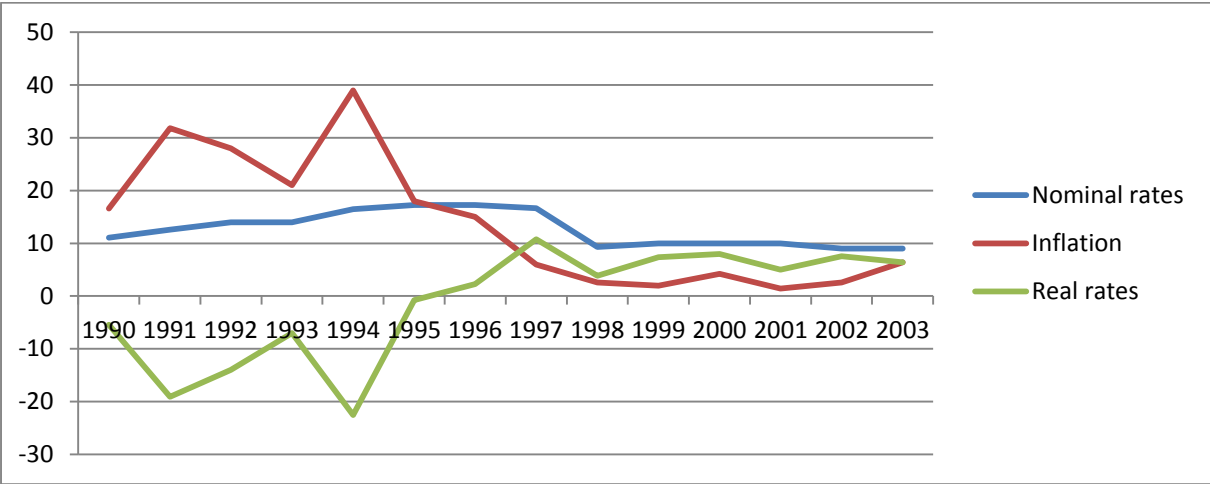
Source: *Benbouziane and Gharbi, (2009)*

Figure (7): The evolution of the debtor interest rates in the Algerian banking system.
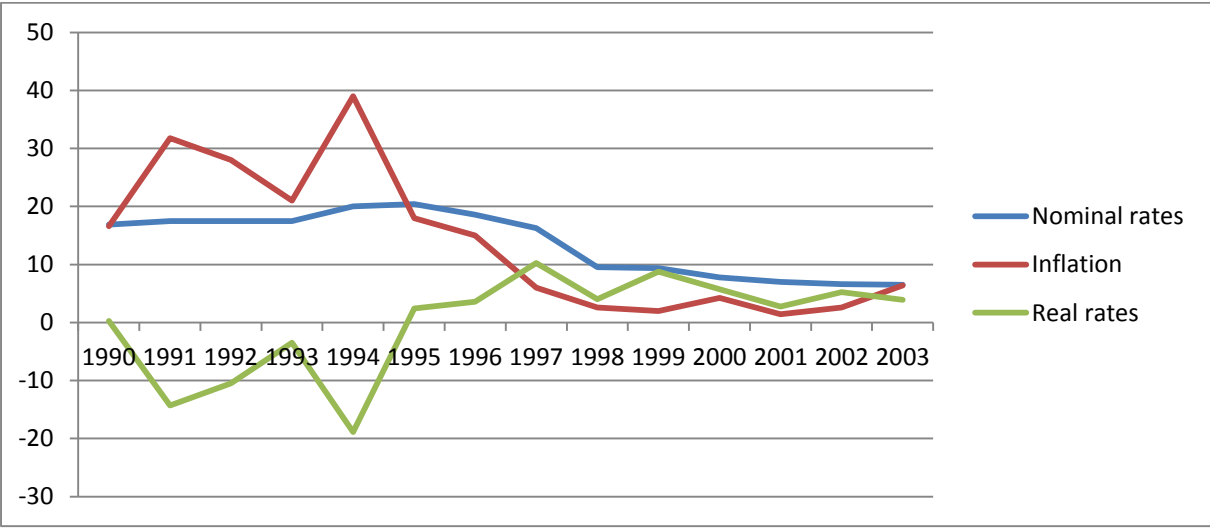
Source: *Benbouziane and Gharbi, (2009)*

4.2.3.3. The commitment to capital adequacy standards factor to measure market risk criteria as stated in the Basel committee:

In the context of the Algerian transformation to the economy market, there has been a radical change in the recent years in the way of employing the financial sector and an accumulation of huge amounts of doubtful loans. This latter was issued by the banking system which was in turn a result of previous reform process and the financial solvency of banks was deteriorated. Since 1995, new prudential standards were implemented and developed and also clear rules for the classification of loans were imposed, the instruction No.74-94 issued in November 1994 identified most of the rates relating to rules of caution and internationally known and the most important are those related to capital adequacy.

This instruction has forced banks to abide by the solvency capital greater or equal to 08% applied gradually by taking into account the transition undergone by the Algerian economy towards an economic market system. They identified the end of December 1999 as a cutoff date, according to the following stages (Article 03 of the instruction No. 74-94):

-4% by the end of June 1995.

-5% by the end of December 1996.

-6% by the end of December 1997.

-7% by the end of December 1998.

-8% by the end of December 1999.

The article 05 of the previous instruction has identified how to calculate the head of the bank's capital account in the primary segment. While the articles 6 and 7 have identified which are accounted in the supplementary capital of the bank, and the sum of these parts is a private bank capital, while article 08 of the instruction has identified the total elements which include the risk elements, and classified by the Article 11 which were classified according to their own risk weights for both elements of the budget or off-budget items, and all this in a similar manner as stated in the Basel I.

As for the Basel II agreement the Bank of Algeria has issued a regulation 02/03 dated Nov.14th.2002 which Force banks and financial institutions to establish internal control

systems to help them cope with various risks (credit, market, operational) in line with what is stated in this agreement. But the agreement (Basel II) is characterized by much of the complexity and hence the difficulty in the application, requiring the Bank of Algeria instruct illustrations clarifying how to implement this agreement and so as not to delay the application, as happened with the first agreement of the Basel I.

Figure (8): Legal reserves (1999-2012)
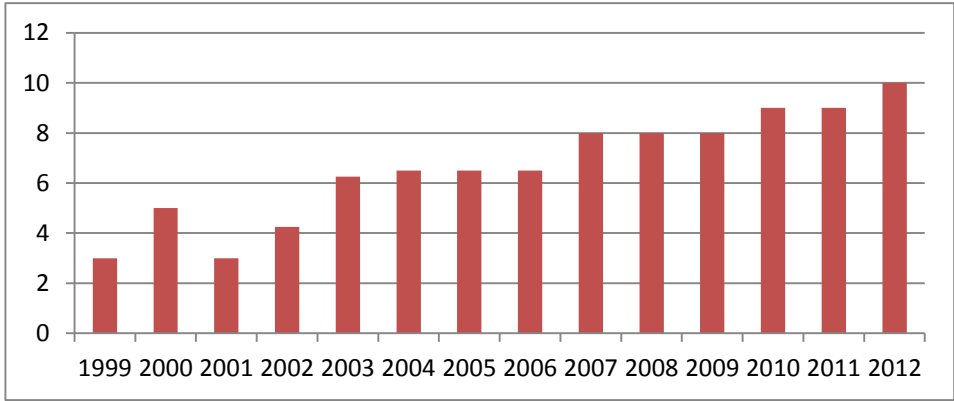
In order to study the extent of the banks operating in Algeria's commitment to the standard of the Basel Committee on capital adequacy, we take, for example:

- BNA achieved adequacy of capital up to 10.12% in 1997♣, strongly to drop to 6.12% in 1999 and then reach 7.64% in 2000. This indicates that the bank did not pay adequate attention to this ratio.
- CNEP achieved 14% in 2001 and this ratio of capital was good compared to the newness undergoing banking regulations.
- ABC Arab Group achieved a capital adequacy ratio up to 22.98% in 2000 to fall to 9.84% in 2001, then rising to 15.62% in 2002♠, and this indicates that the bank is trying to improve this ratio.

4.2.3.4. Privatization of public banks:

♣ Annual reports of BNA in 1997, p 25; 2000, p23.
♠ Financial reports for ABC Algeria.

Chapter 4 : Banking System Reform in Algeria

The privatization of some Algerian public banks enters the framework of the process of economic reforms which the country has initiated some time ago as part of the terms of the proposals and the International Monetary Fund where efforts emerged as the privatization of public banks in light of the deteriorated conditions of public institutions of the national economy. But till now, the privatization process of the Algerian banking sector going weak and tinged great reluctance. And in contrast to the privatization of other public institutions, which the government has achieved the advanced stages of them. 95-22 Act dated August 26, 1995 which was related to privatization was issued, and the privatization council was created in September 21, 1996 and then monitoring committee privatization in 1997, then the decree 97-12 dated March 19, 1997 to change and complement the Act of 95-22 and that go along with the new changes in order to activate the progress of privatization processes.

There are current external pressures exerted on Algeria to open the private bank's capital and privatize it as a way to restore balance to the Algerian banking market controlled by those banks. Among the proposals made by the International Monetary Fund for financial reform in Algeria in the privatization of two public banks that enjoy good financial state and give a five-year deadline for the privatization of the remaining public banks, and then abandon the process that were not feasible.

The privatization process has been initiated by the selection of three public banks in the first phase: CPA, BDL and BNA. CPA was selected as the first bank to open its capital for his good financial situation. The capital of the Bank was estimated at 48 billion dinars. This bank has 120 agency distributed in the majority of the States. However, the first operation to open the head of the CPA bank that was overseen by the brothers Lazar Bank of the year 2001 in favor of Société Générale bank, has failed to be decided to open the bank's capital again by the Council of state contributions (IMF, 2004). For this, many foreign banks came with their Financial and technical bids for the international tender allocated to choose the business bank, which assesses the process.

Concerning BDL, The process of evaluating the performance of the bank began in the first stage and a preparatory study was prepared at the opening capital of this bank by the International Bureau Coopers at the request of the World Bank. This study required to enter into partnership with foreigners i.e. to Waive of a section of the bank's capital to international banks (Khalfi, 2001.173).

4.2.3.5. Liberalize and reject restrictions on credit:

With the beginning of 1990, the increase in loans provided to the state was recorded and this was due to the rise of important expenses which was vouching for chronic fiscal deficits of public institutions (Bouzidi, 1999). Also, the large amount recorded for loans to the economy in the year 1999 was a result of improved public treasury liquidity. This improvement has allowed the public treasury deficit down by 0.5% in 1999 after it had been 3.9% in 1998, and this is thanks to the sharp rise in oil prices recorded in the second semester 1999. This increase in loans to the state and the economy impacted directly on the money supply, since the latter was estimated in the year 2000 at 1671 billion Algerian dinars, after it was estimated to be 1468 billion Algerian dinars and 1287 billion dinars for the years 1999 and 1998 respectively.

Table (4): Credits to state and economy (Billion DZ)

year	Credits to economy	Credits to state	Year	Credits to economy	Credits to state
1990	247	167	2002	1266.7	578.6
1991	325.8	159	2003	1380.1	423.4
1992	412.3	226.9	2004	1535.0	-20.5
1993	220.3	527.8	2005	1778.2	-939.2
1994	305.8	468.5	2006	1905.4	-1304
1995	565.6	401.6	2007	2205.2	-2193.2
1996	776.8	280.5	2008	2615.5	-3627.3
1997	741.3	423.7	2009	3086.5	-3488.9
1998	554.82	723.18	2010	3268.0	-3392.9
1999	620	848	2011	3726.5	-3406.6
2000	993.7	677.6	2012	4289.3	-3390.9
2001	1078.4	569.7			

Source: bank of Algeria, Statistical Bulletin of the Bank of Algeria, June 2006, p 49; Statistical Bulletin of Bank of Algeria, November 2013, P 251.

After financial liberalization public banks have *de facto* autonomy in selecting their own borrowers, public or private. Public banks have restricted their direct lending to public enterprises and improved their credit assessment. The following figure shows the evolution of credits to public and private sector.

Figure (9): Credits of public banks to public and private enterprises (2000-2012)
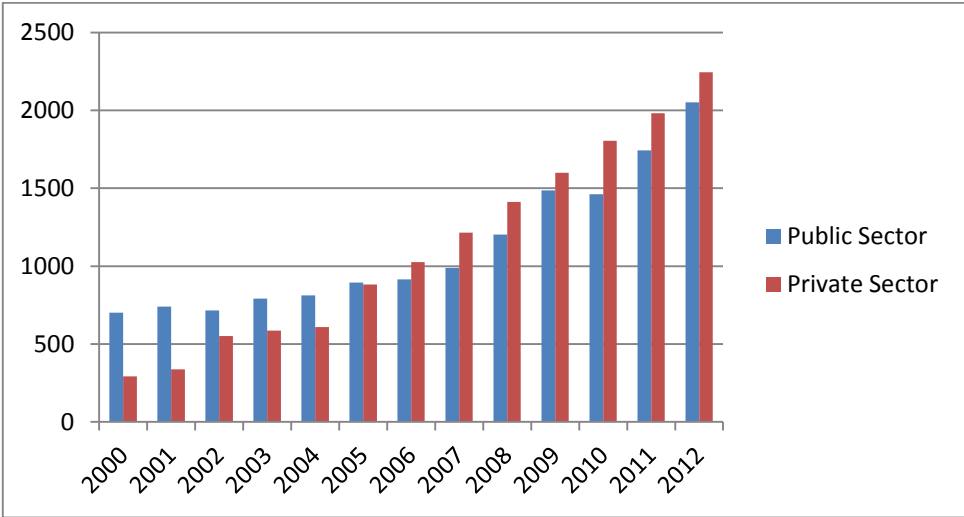
Source : Bank of Algeria, reports 2002-2003 and 2012, Bank of Algeria 2007 /http/www.bank-of Algeria .dz

4.2.3.6. The lifting of restrictions on foreign ownership and national private banking sector in Algeria:

The first base lies in the banking reform policy in regard to the first step to reform the banking system itself is left free entry to the field of banking, and so that the private sector can compete with the local banks which may remain under state control, which improve the financial intermediation process through increased competition, both among National banks which are publically owned or foreign banks. The credit and Loan law (10/90) has allowed establishing private banks, and therefore was the adoption of:

-The first private Bank was Elbaraka bank on the December 6th, 1990.

-Elkhalifa Bank on July 27th, 1998, then withdrawn accreditation from him in May 2003.

- BCIA bank was adopted on September 24th, 1998, and then withdrawn accreditation from him and his appointment of a liquidator in the month of August 2003.

- BGM bank was adopted on April, 30th, 2000.

- CAB bank was adopted on October 28th, 1999.

- City bank and was adopted on May 18th,1998.

-Arab Banking corporation (ABC) was adopted on September 24th, 1998.

-Natiexis Bank was adopted on October 27th, 1999.

-Societé Générale bank was adopted on November 14th, 1999.

- Algerian Rayan bank was adopted on October 08th, 2001.

- Arab Bank was adopted on October 15th, 2000.

-BNP Paribas was adopted on January 31th, 2002.

For the moment there are 14 foreign banks working actually in Algeria which are: Al Baraka Bank, Arab Banking Company, Natixis Bank, Société Générale, City Bank, Arab Bank, PNB Paribas, Trust Bank Algeria, Gulf Bank Algeria, Hosing Bank for Trade and Finance-Algeria, Fransabank El-djazair, Credit Agricole Corporate, Al Salama Bank, and HSBC Algérie (Bank of Algeria, consulted on January 3rd, 2014).

5.2.3.7. Liberalization of capital account:

Capital account transactions have been liberalised to improve competition in the financial market, to mobilise foreign exchange resources, and to facilitate the movement of foreign direct investments into the country. In April 1994, the government abandoned barriers preventing the use of foreign exchange. However, restrictions on residents' capital were continued to avoid capital outflows from Algeria (Benamraoui, 2003).

Conclusion:

The reforms discussed earlier are the result of many week points in the Algerian banking system. In fact, these points are represented in whole the internal challenges inside this system which still require its improvisation. Furthermore, it was pointed out the external challenges that are the rapid changes in the international environment, and that could affect deeply the present and future of Algerian banks and their ability to support development in the country. Undoubtedly, the most prominent of these challenges is the phenomenon of globalization and financial liberalization; this is what will discuss in detail the next chapter, which is devoted to the impact of financial liberalization on the performance of Algerian public banks.

Chapter Five:

Econometric Methodology and Results Discussion

✓ General Framework and Objectives of the Econometric Study.

✓ The Decision Rule.

✓ Data, Methodology, and the Model Used.

✓ Presentation and interpretation of empirical results.

✓ Results discussion.

Chapter 5 : Econometric Methodology and Results Discussion

Introduction

This chapter provides the research methodology. It shows the data collection method, the population, and the sample of the study. It defines also the main variables, and indicates the model used in this study. In addition, this chapter presents the analysis of the data used in the study; the first part provides statistical analysis of the study, while the second one reports the results of testing the hypothesis by explaining the results of the regression analysis.

Chapter 5 : Econometric Methodology and Results Discussion

5.1. General Framework and Objectives of the Econometric Study:

To investigate the effect of financial liberalization on the performance of public Algerian banks, we use the model that has been suggested by Battese et al., (1993). This one has been largely applied in various studies among which one can mention that of Elryah (2014), who used this model in order to find out the relationship between financial reforms and bank performance in Malaysia. Also, Fadzlan et al. (2012) have used this model to investigate the impact of economic globalization on the performance of banks operating in the Chinese banking sector.

5.2. The Decision Rule:

The analysis is built on six steps in order to achieve the objective of the study:

A. Stationary test is used to check whether there is unit root using both ADF (Dickey and Fuller, 1981) and PP (Philips and Person, 1988). This test is referred to in order to avoid the so-called "spurious regression." The variables are Stationary depending on P value, which should be less than 5% to judge that the variable is stationary either at level, first or second differences.

B. Co-integration test is possible since variables are stationary at the same differences. The variables are co-integrated if P value is less than 5%.

C. After making all the series stationary, the panel data is used. This latter may have group effects, time effects, or both of them. These effects are either fixed effects or random effects. Therefore, Hausman specification test is used to determine which one of the alternative panel analysis methods (fixed effects model or random effects model) should be applied. With regard to this, H_0 hypothesis claims that "random effects approach is appropriate" and H_1 hypothesis claims that "fixed effects approach is appropriate". In this case, P value is more than 5%.

D. Wald test is used to check the joint causality; the independent variables jointly cause the dependent variable if P value is less than 5%.

E. VAR approach allows the identification of long-term effects of financial liberalisation on bank performance and considers the dynamic interactions between the variables of the study. The variables are considered significant given to t-statistics (1.99).

F. Granger causality test is used to determine the causality direction; there is causality when P value is less than 5%.

5.3. Data, Methodology and the Model Used:

5.3.1. Data:

A. **Study Population:** The population comprises all the public banks that operate in Algerian banking sector. This includes six public banks.

B. **Study sample:** the study consists of five Algerian public banks, so only one bank has been excluded which is CNEP bank, given to the lake of required dada. The five banks namely are:

- BEA bank (Banque Extérieure d'Algérie), established in 1967.
- BNA bank (Banque National d'Algérie), established in 1966.
- BADR bank (Banque de L'Agriculture et de Développement Rural), established in 1982.
- BDL bank (Banque de Développement Local), established in 1985.
- CPA bank (Crédit Populaire d'Algérie), established in 1966.

C. **Data Collection**:

This study attempts to investigate the effect of financial liberalization on the performance of the Algerian public banks. The data (bank level and general data) for this analysis are drawn from secondary sources: Bank level data were collected from bank balance sheets and income statements of five banks during the period 1997-2012, as available from bank scope prepared by *VANDIJK* (Paris). General economic data were collected from International Monetary Funds, International Financial Statistics and data files, the World Bank, World Development Indicator (WDI) databases, detailed documentation of the WGI (The Worldwide Governance Indicators) available at: www.govindicators.org www. Bank- of -Algeria.dz and www.ons.dz (The data sources for each variable are mentioned in detail in appendix N° 2).

5.3.2. Research Methodology and Model Specification:

5.3.2.1. Research methodology:

This study uses data on public commercial banks operating in the Algerian banking sector during the period 1997–2012. It employs a balanced panel of five banks, which gives us a total of 80 bank-year observations. Panel of data (known also as longitudinal data) is used

because of its many advantages over either cross-section or time series data (Green, 2000 and Wooldridge, 2002). Firstly, by combining time series and cross-section observations, panel data approach offers more informative data with more variability (Gastineau et al., 1999). Furthermore, it provides an increased number of data points and hence generates additional degrees of freedom and more efficiency (Baltagi, 2001). Secondary, by incorporating information relating to both cross-section and time series variables, it can substantially reduce the problems that arise from omitted variables (Wooldridge, 2002).

Panel data models are usually estimated using either fixed effects or random effects method. In order to identify which of these models is the most appropriate, the Hausman specification test is conducted:

A. **Fixed effects model**: the fixed effects model is simpler to be conducted and is defined according to the following regression model:

$$Y_{it} = B_i + B'X_{it} + U_{it} \qquad i = 1, ...N, \ t = 1, ...T .... (1)$$

Where Y_{it} indicates the dependent variables while X_{it} determines the vector of K explanatory variables, α_i , $i = 1, ...N$, are constant coefficients specific to each bank. Their presence assumes that differences across the considered banks appear by means of differences in the constant term. These individual coefficients are estimated together with the vector of coefficients β (Baltgi, 2001).

In order to valid the fixed effects specification, the question is to prove, according to the empirical application, that the individual coefficients α_i , $\qquad i = 1, ...N$, are not all equal this corresponds to the following joint null hypothesis.

$$H_0: \alpha_i = ... = \alpha_N = \alpha .... (2)$$

It is rather the acceptation of the alternative hypothesis which is interesting if we want to differentiate between the situations in each bank considered in the sample and confirm the existence of significant heterogeneity across banks. The appropriate statistic of the test is a fisher distributed one with

$$\left(N - 1, \sum_{i=1}^{N} T_i - N - K \right)$$

degrees of freedom under the null hypothesis and is defined as follows:

$$F = \frac{SSR_0 - SSR_1}{SSR_1} \cdot \frac{\sum_{i=1}^{N} T_i - N - K}{N - 1} \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (3)$$

Where SSR_0 and SSR_1 are respectively the sum of squared residuals provided by the estimation of the constrained model (under the null hypothesis that is no individual specific coefficients are considered) and the sum of squared residuals relative to the fixed effects model (equation (1)).

B. **Random effects model**: in the random effects case, the model is defined as follows:

$$Y_{it} = B_i + B'X_{it} + U_{it} \qquad i = 1, \ldots.N, \; t = 1, \ldots.T \ldots \ldots \ldots (4)$$

Where $U_{it} = \varepsilon_i + V_{it}$ reflect that the individual specific effects are random and distributed normality ($\varepsilon_i \rightarrow$ IIN $(0, 0^{-2}\varepsilon)$). They are independent of the residual terms V_{it} which are also distributed normally ($V_{it} \rightarrow$ IIN $(0, 0^{-2}v)$).

Here U_{it} is the composite error term that consists of two components, ε_i which is the cross-section, or the individual specific, error component, and V_{it} which is the combined time series and cross-section error component.

The random effects model (REM) is also known as the error components model (ECM) due to the fact that the composite error term U_{it} consists of two (or more) error component (Gujarati, 2003).

The above equation means that the individual error components are not correlated with each other and are not auto-correlated across both cross-section and time-series units.

After estimating the above two models, we shall have to decide which model is appropriate. To check it, we must refer to the Hausman test.

5.3.2.2. Model specification:

The relationship between financial liberalization and performance is examined applying a basic model, using banks' performance as depending variable. Besides, this model includes independent variables which are bank specific variables, macroeconomic variables, and financial liberalization measures, that have been used in previous empirical studies.

This relationship is defined by the following equation:

Chapter 5 : Econometric Methodology and Results Discussion

$$BP_{it} = \alpha_0 + \beta_1\ BS_{it} + \beta_2\ M_{it} + \beta_3\ FL_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots(5)$$

The explanation of the above variables is as follows:

- BP_{it}: bank performance indicators,

- BS_{it}: bank specific variables,

- M_{it}: macroeconomic variables,

- FL_{it}: financial liberalization variables (measures),

- i: bank,

- t: year,

- ε_{it}: error term,

- α_0 is intercept coefficient, and β is the regression coefficient.

5.3.2.2.1. Variables and Indicators Used in the Study:

In the empirical study, in order to investigate the effect of financial liberalization on the performance of public Algerian banks and its determinants, dependent and independent variables are included:

A. The dependent Variables:

The dependent variable in this study is mainly profitability. Theoretically and empirically, researchers have employed different measures of profitability to determine the factors affecting banks' performance. For instance, the main measures of profitability employed: return on assets (Scott et al., 2011; Oladele et al, 2012; Babalola ,2012), return on equity (Saona, 2011), return on assets and return on equity (Akhtar et.al, 2011; Macit, 2012; Sharma et al., 2012; Riaz, 2013), return on assets, return on equity and return on deposits (Jahan, 2012), return on assets and net interest margins (Demirguc-Kunt & Huizinga, 1999; Naceur et al., 2008), return on assets, return on equity and net interest margins (Fadzlan et al. ,2009; Naceur et al., 2011; Qin et al., 2012); return on assets, return on equity, profit margin (BTP/TA) and net interest margins (Hassan et al. Bashir, 2005).

For this study, bank profitability is proxied by return on assets (ROA), considered as the key proxy for bank profitability, instead of the alternative return on equity (ROE), because an analysis of ROE disregards financial leverage and the risks associated with it (Flamini et al., 2009), and net interest margin (NIM) is also used in this study as measure of performance; While (ROA) measures the profit earned on assets and reflects how well bank management

uses the bank's real investment resources, the (NIM) focuses on the profit earned on lending, investing and funding activities.

(ROA) reflect the ability of a bank management to generate profit from the bank assets. It measures bank profits per dollar of assets and it is defined as the ratio of net income to total assets. As Golin (2001) points out, the (ROA) has emerged as the key ratio for the evaluation of bank profitability and has become the best and widely used indicator of earnings and profitability supplemented by return on equity (ROE).

The second measure (ROE) reflects the return earned in the funds invested in the bank by its stockholders. On the other hand, (ROE) reflects how effectively a bank management is using shareholders' funds (Jahan, 2012).

The third one, (NIM) variable, focuses on the profit earned on interest activities. It is defined as the net interest income divided by total assets. As a measure of the return on assets, the net interest margin has been used in many studies of bank performance.

B. The Independent Variables:

Prior literature on bank profitability explains profitability through internal and external variables, Where Short (1979) and Bourke (1989) provide the first studies on bank profitability. Internal, or bank specific factors, are under the control of bank management. External variables trace the effect of the macroeconomic environment on bank performance.

There are common factors influencing profitability identified by several researchers. These determinants, which will be token in consideration in our study, are divided into three main sub-categories: bank-specific (internal variables), macroeconomic determinants (external variables), and financial liberalization measures.

B-1 Bank Specific Independent Variables:

- Capital Adequacy: The ratio of equity to total assets (CA) is considered as one of the basic ratios for capital strength. It is expected that the higher this ratio, the lower the need for external funding and the higher the profitability of the bank.
- Credit Risk: Credit is broadly defined as the risk of financial loss arising from borrowers' failure to honour their contractual obligation for banks; credit risk arises basically from lending activities. A proxy for credit risk that will be used is the proportion of provisions

for loans losses over total loans. Theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability. Hence, we expect a negative relationship between profitability and loan loss provision ratio.

- Bank Liquidity: Liquidity implies how a bank can quickly convert its assets into cash at face value to satisfy its maturing liabilities (those of positions and borrowers) as they fall due even under adverse conditions. The ratio of net loans to total assets is used in this study as a measure of liquidity.

- Bank Size: In most finance literature, total assets of the banks are used as a proxy for bank size. Bank size is represented by natural logarithm of total assets. The effect of bank size on profitability is generally expected to be positive.

B-2 Macroeconomic independent Variables:

- GDP Growth: Gross domestic production is the total market value of all final goods and services produced in a country in a given year where GDP_{t_2} growth = $(GDP_{t_2} - GDP_{t_1})/GDP_{t_1}$.

- Inflation rate: This measures the overall percentage increase in consumer -price index (CPI) for all goods and services. Inflation affects the real value of costs and revenues; it is measured by annual country inflation rate.

Besides, we use three governance indicators developed by Kaufmann et al. (2006) to proxy institutional differences which are:

- Rule of law: Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

- Political Stability and Absence of Violence/Terrorism: Political Stability and Absence of Violence/Terrorism captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

B-3 Measuring financial liberalization (FL indicators):

Methodologically speaking, the study of financial liberalization should take into account the three following aspects, as mentioned earlier:

- ✓ Banking sector liberalization,
- ✓ Financial market liberalization, and
- ✓ Capital account liberalization.

These components are represented in some indicators that measure the level of financial liberalization in Algeria, the case of our study. Moreover, they measure the intensity of restrictions on the financial sector.

I. Banking Sector Liberalization Indicators:

Economists disagree about the quantity and quality of bank activity indices. For instance, Goldsmith (1969) and McKinnon (1973) measured only the size of the financial system, used only one index that is M_2/GDP, not taking into account effectiveness.

Several important studies have used a single indicator to analyze the process of financial liberalization. In their study about the increase in the risk level of banks due to financial liberalization, Gruben et al. (1999) used privatization of banks as an indicator of financial liberalization. In several studies, financial liberalization has been identified with capital mobility. Esen (2000) studied financial deepening in Turkey, and Haque and Montiel (1991) look at capital mobility in developing countries.

Also many studies tended to use individual indicators to date the onset of financial liberalization. For instance, Demirgüç-Kunt and Detragiache (1998) used the deregulation of bank interest rates as an observable policy change to define the initiation of liberalization. Kaminsky and Reinhart (1999) also used this method in their study about banking crisis in order to date financial liberalization in their analysis.

According to Jbili et al. (1997), suitable measures of financial sector reform include: (1) the cost of capital (real interest rate), (2) the volume (size) of intermediation which is measured by both the ratio of M2 to GDP, that is an indicator of the deposit mobilization role of the financial system, as well as by the share of credit to the nongovernment sector in GDP

(CP/GDP), and (3) the effectiveness of financial intermediation is proxied by both the ratios of reserve money to total deposits and of reserve money to quasi money.

For this study, M2/GDP, CP/GDP, and real interest rate (RIR) are used as proxy variables for banking sector liberalization measures. Besides, our study includes competitive and concentration indicator.

I.1. Size Indicators (the Volume of Intermediation);

a) M2/GDP ratio:

According to king and Levine (1993), "the traditional practice e.g. Goldsmith (1969) and Mckinnon (1973) has been to use the size of the formal financial intermediary sector relative to economic activity to measure financial sector development or financial depth". One measure of financial depth equals the ration of liquid liabilities of the financial system to GDP. Liquid liabilities equal "M3" or line 551 from the international financial statistics, or when 551 are not available we use line 34 plus line 35, which equal "M2."[2]

b) CP/GDP ratio:

King and Levine (1993) constructed a second financial development indicator that is designed to measure domestic asset distribution. A financial system that simply funnels credit to the government or state owned enterprises may not be evaluating managers; selecting investment projects, pooling risk, and providing financial services to the same degree as financial system that allocate credit to the private sector. Thus, they computed the ratio of private credit by commercial banks to GDP. CP/GDP ratio measures the financial activity of commercial banks and is an indicators of how the financial system is supporting economic activity (i.e. the private sector), it measure the ability of financial intermediaries to carry out their primary function.

I.2. The Cost of Capital:

The cost of capital is approximated by the real interest rate; in particular, a move from negative to positive real interest rates is indicative of progress in financial sector reform.

I. 3. Competitive and Concentration:

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[2] Liquid liabilities consist of currency held outside the banking system plus demand and interest bearing liabilities of banks and nonbank financial intermediaries.

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Measures of concentration often have been used as indicators of competition.[3] Concentration is defined as the degree to which the financial sector is controlled by the biggest institutions in the market (as defined by market shares). For example, the three market bank concentration ratio measures the market share of the top three banks in the system, defined in terms of assets, deposits, or branches (World Bank, 2005).

II- Indicators for financial markets liberalization:

Bekaert et al. (2000) and Lundblad (2001) developed *BHL index* to measure the effect of financial markets liberalization on growth. This index is a dummy variable that measures the level of financial markets openness for the foreign investors, where they develop different sets of equity market liberalization dates.

For the Algerian case, evidence suggests that the stock market has not yet been liberalized. According to Benamraoui (2003), "Banks place a small amount of funds in the trading of shares on the Algiers Stock Exchange. Individuals are also unable to engage in equity market activities because of the scarcity of capital. Other barriers include a limited number of listed companies, underdeveloped telecommunication systems, and high country risk. Besides, foreign participation in the Algiers Stock Exchange (ASE) is still absent where foreign investors are prevented from taking part in the trading of shares on the ASE."

For these reasons, the indicator for financial markets liberalization could not be included in our model.

III- Indicators for capital account liberalization:

To measure the level of capital account liberalization, *kaopen index* is used in this study. Kaopen is an index measuring a country's degree of capital account openness. The index was initially introduced in *Chinn and Ito* (2000). Kaopen is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's annual report on exchange arrangements and exchange restrictions (AREAER).

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[3] A more sophisticated measure of concentration is the *Herfindahl Index* (HI), which is the sum of squares of the market shares of all firms in a sector higher value of the index indicate greater market concentration.

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Kaopen index contained series for the period of 1970-2012 for 181 countries, it takes values ranging from approximately -1.89 to 2.17. This index takes on high values; the more open the country is to cross-border capital transactions.

Given to Chinn and Ito index 2012, the study excludes Kaopen index due to its steady state during the period of study (1997-2012) (appendix N° 03). So, in this case using this index in the investigation of financial liberalization on banking system is meaningless.

5.3.2.2.2. Models in detail:

In order to test the model (5), twelve selections will be tested in detail:

-*selection one, two, and three (S1, S2, and S3):* these selections will test the control variables for banks' performance, which is measured by three dependent variables (ROA, ROE, and NIM), without introducing financial liberalization indicators:

S1: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

S2: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

S3: $NIM = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

-*selection four, five and six (S4, S5 and S6):* these selections will test the null hypothesis mentioned so far, that there is no impact of financial liberalization on the performance of Algerian public banks. Thus, we introduce, beside the control variables of performance, CP/GDP and M2/GDP indicators that measure the size of financial intermediation:

S4: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

S5: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

S6: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

-*selection seven, eight and nine (S7, S8 and S9):* these selections will test the null hypothesis that there is no impact of financial liberalization on the performance of Algerian public banks, using real interest rate (RIR) as a measure for financial liberalization:

S7: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

S8: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

S9: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

-selection 10, 11 and 12 (S10, S11 and S12): these selections will test the null hypothesis that there is no impact of financial liberalization on the performance of Algerian public banks, using bank concentration (BC) as a measure for financial liberalization:

S10: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

S11: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

S12: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

5.4. Presentation and interpretation of empirical results:

Using the econometric methods outlined earlier, this section is devoted for analysing the empirical results of the panel data study. The analysis is basically aimed at investigating the impact of financial liberalization on the performance of Algerian public banks.

5.4.1. Results of stationary tests:

Before conduction a panel data study, it is recommended to check first for unit root tests in order to ascertain the stationary of data series. In fact, a variety of procedures for the analysis of unit root in a panel context have been developed. Here we use both ADF (Dickey and Fuller, 1981) and PP (Philips and Person, 1988). The results of ADF and PP tests are shown in table 5.

Table (5): Results of panel unit root tests (significant at 5%)

Variable	Order	ADF		PP	
		Level	First difference	Level	First difference
BL	I (1)	12.1485	31.8677	6.47428	31.7193
BS	I (1)	0.63828	33.6490	0.56788	33.5965
CA	I (1)	6.92096	32.3548	7.74530	51.3820
CR	I (0)	29.9534	62.3584	28.7244	80.0342
GDP	I (0)	33.6156	94.7462	34.5609	95.6794
INF	I (1)	13.7232	30.4314	13.7232	52.2837

NIM	I (1)	12.8975	58.6596	12.7702	66.3152
PS	I (1)	7.81041	35.5246	6.55442	37.8751
RL	I (1)	4.83035	68.3702	114.487	92.1034
ROE	I (1)	8.84504	26.2943	33.1010	26.2943
ROA	I (1)	16.4217	79.4277	17.3421	93.9015
BC	I (1)	18.4958	57.0748	17.1541	57.5057
RIR	I (1)	7.44924	59.6201	78.0016	135.223
CP/GDP	I (1)	7.82285	24.5791	7.79042	24.7000
M2/GDP	I (1)	13.0798	41.4921	15.7243	43.5379

Source: E-views 8.0

Based on the Table 5, both ADF and PP tests suggest that all variables representing the five public banks are not stationary at level, except credit risk (CR) and GDP growth variables. Accordingly, first differences of the series are required for BL, BS, CA, INF, RL, PS, CP/GDP, M2/GDP, RIR, BC, NIM, ROA, and ROE variables. It is concluded that these variables are stationary at first differences, thus "spurious regression" problem would not be encountered in any model formed in this study.

Besides, co-integration test is now possible since variables are stationary at the same level I (1), except those of CR and GDP.

5.4.2. Results of first selections:

S1: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

S2: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

S3: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \varepsilon_{it}$

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5.4.2.1. Co-integration test:

Table (6): Results of Kao's Residual Co-integration Test for S1, S2, and S3

ADF \ selections	S1	S2	S3
t-statistic	-2.725350	-3.603502	-4.694154
Prob.	0.0032	0.0002	0.0000

Kao residual co-integration test results are given in Table 6. Accordingly, P value equals 0.0032, 0.0002, and 0.0000 for S1, S2, and S3 respectively. These values are less than 5%, so the null hypothesis is rejected, and we accept the alternative one, meaning that the variables for each selection (S1, S2, and S3) are co-integrated; therefore, they have long-run relationship.

5.4.2.2. Panel least square test:

5.4.2.2.1. For the first selection:

In the first selection, we run ROA variable on the bank specific (BL, BS,CA, and CR) and macroeconomic variables (GDP, INF, PS, and RL). The results are represented in the following table:

Table (7): Equation estimation for S1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.025089	0.014395	-1.742886	0.0857
BL	-2.72E-05	3.49E-05	-0.779864	0.4381
BS	0.001810	0.000998	1.812760	0.0741
CA	0.000649	0.000232	2.799006	0.0066
CR	-0.004208	0.013101	-0.321223	0.7490
GDP	-0.000624	0.000392	-1.589330	0.1164
INF	0.000273	0.000349	0.782653	0.4364
PS	-0.002353	0.002745	-0.857171	0.3942
RL	-0.003153	0.001861	-1.694723	0.0945

ROA = -0.0250890005946 - 2.71926210405e-05*BL + 0.00180975889975*BS + 0.00064914797322*CA - 0.0042082914821*CR - 0.00062368962015*GDP + 0.000273404658021*INF - 0.00235306351066*PS - 0.00315311092588*RL

Based on the equation estimation, the model is significant given to F-statistic value (4.88>2.07). Besides, R^2 value (0.35) denotes that the whole independent variables explain weakly the variation in the dependent variable (ROA).

Among the variables used in the equation, we observe that only CA is significant given to t- student values. Therefore, we consider only this variable to be associated with dependent variable ROA. Thus, CA is associated with ROA positively given to B = 0.000649, which means that if CA increases by 1%, ROA will increase by 0.000649.

5.4.2.2.2. For the second selection:

In the second selection, we run ROE variable on the bank specific (BL, BS,CA, and CR) and macroeconomic variables (GDP, INF, PS, and RL). The results are represented in the following table:

Table (8): Equation estimation for S2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.652881	0.547955	1.191487	0.2374
BL	-0.002264	0.001327	-1.705606	0.0925
BS	-0.043643	0.038002	-1.148419	0.2547
CA	-0.016558	0.008828	-1.875640	0.0648
CR	0.011601	0.498690	0.023264	0.9815
GDP	-0.018603	0.014938	-1.245340	0.2171
INF	0.009604	0.013297	0.722237	0.4725
PS	-0.121919	0.104495	-1.166739	0.2472
RL	-0.138011	0.070823	-1.948693	0.0553

ROE = 0.652881189057 - 0.00226381967569*BL - 0.0436426660023*BS - 0.0165584651625*CA + 0.0116014436298*CR - 0.0186025761261*GDP + 0.00960388713773*INF - 0.121918789352*PS - 0.13801128603*RL

Based on the equation estimation, the model is not significant given to F-statistics value (1.69<2.07). Besides, R^2 value (0.16) denotes that the whole independent variables explain weakly the variation in the dependent variable (ROE).

Among the variables used in the equation, we observe that all variables are not significant given to t- statistics value. Therefore, we consider that these variables not associated with dependent variable ROE.

5.4.2.2.3. For the third selection:

In the third selection, we run NIM variable on the bank specific (BL, BS, CA, and CR) and macroeconomic variables (GDP, INF, PS, and RL). The results are representing in the following table:

Table (9): Equation estimation for S3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.424581	3.719735	1.458324	0.1492
BL	0.030899	0.009010	3.429382	0.0010
BS	-0.189579	0.257975	-0.734875	0.4648
CA	-0.012247	0.059929	-0.204352	0.8387
CR	1.760226	3.385302	0.519961	0.6047
GDP	0.184555	0.101403	1.820007	0.0730
INF	0.095144	0.090268	1.054010	0.2955
PS	1.888366	0.709356	2.662086	0.0096
RL	-0.425454	0.480771	-0.884940	0.3792

NIM = 5.42458079087 + 0.0308991039927*BL - 0.189579475389*BS - 0.0122465998915*CA + 1.76022598841*CR + 0.184554718412*GDP + 0.0951435056319*INF + 1.88836579314*PS - 0.425453656403*RL

Based on the equation estimation, the model is significant given to F-statistics value (2.15>2.07). Besides, R^2 value (0.19) denotes that the whole independent variables explain weakly the variation in the dependent variable (NIM).

Among the variables used in the equation, we observe that only BL and PS are significant given to t-statistics values. Therefore, we consider only these two variables to be associated with dependent variable NIM. Thus, BL and PS associated with NIM positively given to B = 0.030899 and 1.888366 respectively, which means that if BL increased by 1% NIM increased by 0.030899. Also if PS increased by 1% NIM increased by 1.888366.

5.4.3. Results of second selections:

S4: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

S5: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

S6: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 (CP/GDP)_{it} + \beta_4 (M2/GDP) + \varepsilon_{it}$

5.4.3.1. Co-integration test:

Table (10): Results of Kao's Residual Co-integration Test for S4, S5, and S6

ADF Selections	**S4**	**S5**	**S6**
t-Statistic	-2.901621	-3.494174	-4.603034
Prob.	0.0002	0.0000	0.0000

Kao residual co- integration test results are given in Table 10. Accordingly, P value equal 0.0002, 0.0000, and 0.0000 for S4, S5, and S6 respectively. These values are less than 5%, so the null hypothesis is rejected, and we accept the alternative one, meaning that the variables for each selection (S4, S5, and S6) are co-integrated; therefore, they have long-run relationship.

5.4.3.2. Hausman specification test for S4:

The results of the Hausman specification test for the S4 is given in the following table:

Table (11): Results of Hausman specification test for S4

	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
ROA ,CP	Cross-section random	0.000000	4	1.0000
ROA, M2	Cross-section random	0.000000	4	1.0000

According to table 11, P value equals 1.0000 which is more than 5%, which means that we cannot reject the null hypothesis, meaning that random effect model is appropriate.

5.4.3.3. Results of VAR, Wald and Granger causality test for S4:

The Hausman test result for S4 indicated that we should use random effect model to estimate panel data VAR of ROA with CP and M2 for five banks as a group. Besides, we implement the Wald and Granger causality tests. The results of these three tests are given in table 12.

Table (12): Granger causality test for S4

									Wald test	Causality direction
	Vector Auto Regression									
Dep. Var.	constant	ROA(-1)	ROA(-2)	CP(-1)	CP(-2)	M2(-1)	M2(-2)	R^2 F-sta	H0: P>5%	H0: P>5%
ROA	0.010980 [1.78443]	0.303509 [2.87691]	0.319393 [2.92463]	0.000992 [2.46542]	0.000131 [0.40341]	-0.000124 [-0.97273]	-0.00027 [-2.1222]	0.56 13.6	CP 4.2700 (0.0181) M2 1.7502 (0.1818)	CP 4.0491 (0.022)* M2 1.70009 (0.1907)
CP	7.03916 [3.7715]	-45.68368 [-1.42765]	-62.4703 [-1.8859]	0.922957 [7.56230]	0.249373 [2.53022]	0.137298 [3.55937]	-0.28788 [-7.2870]	0.90 96.0	------	ROA 1.30390 (0.2785)

M2	45.13792	23.65376	-150.082	1.544825	0.266620	0.285195	-0.47443	0.66		ROA
	[6.62908]	[0.20262]	[-1.2419]	[3.4695]	[0.74151]	[2.02661]	[-3.2917]	20.4		1.1571
										(0.3208)

1. Inside [ ] is t-statistic
2. The p-value is in the parenthesis ( ).
3.*denotes rejection of hull hypothesis at the 5% level of significance.
4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 12, Wald test indicates that joint causality does run from CP to ROA, as the test rejects the null hypothesis that there is no causality at 5% significance level, meaning that c (4): CP(-1) and c (5): CP(-2) are not equal to zero, which means that CP (-1) and CP (-2) jointly cause ROA. Wald test indicates also that joint causality does run from M2 to ROA, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): M2(-1) and c (5): M2(-2) are equal to zero, which means that M2 (-1) and M2 (-2) jointly do not cause ROA.

VAR test shows, given to t-statistics, that CP (-1), ROA (-1) and ROA (-2) are positively associated with ROA. Besides, the model is significant given to F-statistic value (13.6). R^2 value equals to 0.56, which denotes that the independent variables explain 56% of the variation in the dependent variable (ROA).

On the other hand, causality Granger test, according to P values, indicates that M2 does not cause ROA, as well as ROA does not cause CP, and ROA does not cause CP, whereas CP causes ROA.

5.4.3.4. Hausman specification test for S5:

The results of the Hausman specification test for the S5 is given in the following table:

Table (13): Hausman specification results test for S5

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
ROE ,CP	Cross-sectionrandom	0.000000	4	1.0000
ROE, M2	Cross-section random	0.000000	4	1.0000

According to table 13, P value equals 1.0000 which is more than 5%, means we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.3.5. Results of VAR, Wald and Granger causality test for S5:

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The Hausman test result for S5 indicates that we should use random effect model to estimate panel data VAR of ROE with CP and M2 for five banks as a group. Besides, we implement the Wald and Granger causality tests. The results of these three tests are given in table 14.

Table (14): Granger causality test for S5

Dep. Var.	Constant	ROE(-1)	ROE(-2)	CP(-1)	CP(-2)	M2(-1)	M2(-2)	R^2 F-sta	Wald test H0: P>5%	Causality direction H0: P>5%
					Vector Auto Regression					
ROE	0.372291 [2.29478]	0.223122 [3.40875]	0.328874 [5.12974]	0.01468 [1.41277]	0.004301 [0.52351]	-0.004350 [-1.31116]	-0.00581 [-1.7210]	0.48 10.0	CP 0.0366 (0.964) M2 0.1409(0.868)	CP 0.0374 (0.963) M2 0.1441(0.866)
CP	7.130122 [3.59270]	-1.070421 [-1.33682]	-0.41211 [-0.5254]	0.911719 [7.16938]	0.169498 [1.68660]	0.136424 [3.36126]	-0.27588 [-6.6729]	0.88 84.8	------	ROE 0.3607 (0.698)
M2	45.91710 [6.62649]	-1.023531 [-0.36610]	-0.60472 [-0.2208]	1.588068 [3.57664]	0.167078 [0.47616]	0.272129 [1.92031]	-0.47093 [-3.2624]	0.65 19.7		ROE 0.1643 (0.848)

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 14, Wald test indicates that joint causality does run from CP to ROE, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): CP(-1) and c (5): CP(-2) are equal to zero, which means that CP (-1) and CP (-2) jointly do not cause ROE. Wald test indicates also that joint causality does run from M2 to ROE, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): M2(-1) and c (5): M2(-2) are equal to zero, which means that M2 (-1) and M2 (-2) jointly do not cause ROE.

VAR test shows, given to t-statistics, that only ROE (-1) and ROE (-2) are positively associated with ROE. Besides, the model is significant given to F-statistic value (10.0). R^2

value equals to 0.48, which denotes that the independent variables explain 48% of the variation in the dependent variable (ROE).

On the other hand, causality Granger test, according to P values, indicates that CP does not cause ROE, and ROE does not cause CP, as well as M2 does not cause ROE, and ROE does not cause M2.

5.4.3.6. Hausman specification test for S6:

The results of the Hausman specification test for the S6 is given in this table:

Table (15): Hausman specification results test for S6:

	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
NIM ,CP	Cross-sectionrandom	0.000000	4	1.0000
NIM, M2	Cross-section random	0.000000	4	1.0000

According to table 15, P value equals 1.0000 which is more than 5%, that means we could not reject the null hypothesis, meaning that random effect model is appropriate.

5.4.3.7. Results of VAR, Wald and Granger causality test for S6:

The Hausman test result for S6 indicates that we should use random effect model to estimate panel data VAR of NIM with CP and M2 for five banks as a group. Besides, we implement the Wald and Granger causality tests. The results of these three tests are given in table 16.

Table (16): Granger causality test for S6

Dep. Var.	Constant	NIM(-1)	NIM(-2)	CP(-1)	CP(-2)	M2(-1)	M2(-2)	R^2 F-sta	Wald test H0: P>5%	Causality direction H0: P>5%
				Vector Auto Regression						
NIM	-3.29846 [-2.6539]	0.597920 [5.46002]	0.112454 [1.15991]	-0.05454 [-0.6903]	-0.122245 [-1.96402]	0.056597 [2.25099]	0.055875 [2.14924]	0.59 15.5	CP 1.4293 (0.246) M2 2.1629 (0.023)	CP 1.3873 (0.257) M2 2.0881 (0.032)*

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CP	5.69608	0.055668	0.15187	0.899854	0.155371	0.145265	-0.26704	0.89	------	NIM
	[2.8386]	[0.31485]	[0.97024]	[7.05469]	[1.54610]	[3.57844]	[-6.3621]	85.0		1.2032
										(0.306)
M2	48.70077	0.816966	-1.15398	1.686763	0.218148	0.252938	-0.52129	0.67		NIM
	[7.1899]	[1.36886]	[-2.1840]	[3.91752]	[0.64309]	[1.84587]	[-3.6792]	21.9		0.5780
										(0.563)

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 16, Wald test indicates that joint causality does run from CP to NIM, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): CP(-1) and c (5): CP(-2) are equal to zero, which means that CP (-1) and CP (-2) jointly do not cause NIM. Wald test indicates also that joint causality does run from M2 to NIM, as the test rejects the null hypothesis that there is no causality at 5% significance level, meaning that c (4): M2(-1) and c (5): M2(-2) are not to zero, which means that M2 (-1) and M2 (-2) jointly cause NIM.

VAR test shows, given to t-statistics, that only NIM (-1), M2 (-1) and M2 (-2) are positively associated with NIM. Besides, the model is significant given to F-statistic value (15.5). R^2 value equals to 0.59, which denotes that the independent variables explain 59% of the variation in the dependent variable (NIM).

On the other hand, causality Granger test, according to P values, indicates that CP does not cause NIM, and NIM does not cause CP, whereas M2 causes NIM, but NIM does not cause M2.

5.4.4. Results of third selections:

S7: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

S8: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

S9: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 Rir_{it} + \varepsilon_{it}$

5.4.4.1. Co-integration test:

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Table (17): Results of Kao's Residual Co-integration Test for S7, S8, and S9

ADF selections	S7	S8	S9
t-Statistics	-0.743263	0.078117	-3.683985
Prob.	0.2287	0.4689	0.0001

Kao residual co-integration test results are given in Table 17. Accordingly, P value equals 0.2287, 0.4689, and 0.0001 for S7, S8, and S9 respectively. Only P value for S9 is less than 5%, so the null hypothesis is rejected, and we accept the alternative one, meaning that the variables for S9 are co-integrated; therefore, they have long-run relationship. Rather, the P values for S7 and S8 are more than 5%, so the null hypothesis is accepted, meaning that the variables for each selection (S7, S8) are not co-integrated; therefore, they don't have long-run relationship.

5.4.4.2. Hausman specification test for S7:

The results of the Hausman specification test for the S7 is given in the following table:

Table (18): Hausman specification results test for S7

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

According to table 18, P value equals 1.0000 which is more than 5% that means we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

6.3.3. Results of VAR, Wald and Granger causality test for S7:

The Hausman test result for S7 indicates that we should use random effect model to estimate panel data VAR of ROA and RIR for the five banks as a group. In addition, we

implement the Wald and Granger causality tests. The results of these three tests are given in the table below:

Table (19): Granger causality test for S7

Dep. Var.	Constant	ROA(-1)	ROA(-2)	RIR(-1)	RIR(-2)	R2 F-stat	Wald test H0: P>5%	Causality direction H0: P>5%
		Vector Auto Regression						
ROA	0.001884 [2.49142]	0.438316 [4.09010]	0.351361 [3.06495]	1.97E-05 [0.32842]	-4.79E-05 [-0.78194]	0.51 17.2	0.40229 (0.6704)	0.39941 (0.6724)
RIR	0.944810 [0.77630]	326.0906 [1.89034]	-449.0153 [-2.43325]	-0.284438 [-2.93871]	-0.360841 [-3.65717]	0.23 5.07	------	3.16190 (0.0489)*

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 19, Wald test indicates that joint causality does run from RIR to ROA, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): RIR(-1) and c (5): RIR(-2) are equal to zero, which means that RIR (-1) and RIR (-2) jointly do not cause ROA.

These results are also confirmed from VAR test, where t-statistics is less than 1.99, which means that RIR (-1) and RIR (-2) separately are not associated with ROA. The results indicate that only ROA (-1) and ROA (-2), given to t-statistics, are positively associated with the dependent variable ROA. Moreover, the model is significant given to F-statistics value (17.2). R^2 value equals to 0.51, which denotes that the independent variables explain 51% of the variation in the dependent variable (ROA).

On the other hand, causality Granger test, according to P values, indicates that RIR does not cause ROA, whereas ROA causes RIR.

5.4.4.4. Hausman specification test for S8:

The results of the Hausman specification test for the S8 is given in table 20.

Table 20: Hausman specification results test for S8

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

According to table 20, P value equals 1.0000 which is more than 5%, means we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.4.5. Results of VAR, Wald and Granger causality test for S8:

The Hausman test result for S8 indicates that we should use random effect model to estimate panel data VAR of ROE and RIR for the five banks as a group. Besides, we implement the Wald Granger causality tests. The results of these three tests are given in table 21.

Table (21): Granger causality test for S8:

Vector Auto Regression							Wald test	Causality direction
Dep. Var.	Constant	ROE(-1)	ROE(-2)	RIR(-1)	RIR(-2)	R^2 F-stat	H0: P>5%	H0: P>5%
ROE	0.043344 [2.57868]	0.236101 [3.58055]	0.318385 [4.89869]	0.001073 [0.72077]	0.000271 [0.17793]	0.45 13.4	0.25683 (0.7743)	0.26266 (0.7698)
RIR	0.319214 [0.28316]	6.820931 [1.54236]	-4.033160 [-0.92526]	-0.285751 [-2.86144]	-0.371535 [-3.63948]	0.23 5.09	------	1.31409 (0.2758)

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 21, Wald test indicates that joint causality does run from RIR to ROE, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): RIR(-1) and c (5): RIR(-2) are equal to zero, which means that RIR (-1) and RIR (-2) jointly do not cause ROE.

These results also confirmed from VAR test, where t-statistics is less than t table 1.99, which means that RIR (-1) and RIR (-2) separately are not associated with ROE. The results indicate that only ROE (-1) and ROE (-2), given to t-statistics, are positively associated with the dependent variable ROE. Moreover, the model is significant given to F-statistics value (13.4). R^2 value equals to 0.45, which denotes that the independent variables explain 45% of the variation in the dependent variable ROE.

On the other hand, causality Granger test, according to P values indicate that RIR does not cause ROE, as well as ROE does not cause RIR.

5.4.4.6. Hausman specification test for S9:

The results of the Hausman specification test for the S9 is given in table 22.

Table (22): Hausman specification results test for S9

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

According to table 22, P value equals 1.0000 which is more than 5%, means we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.4.7. Results of VAR, Wald and Granger causality test for S9:

The Hausman test result for S9 indicates that we should use random effects model to estimate panel data VAR of NIM and RIR for five banks as a group. Besides, we implement the Wald Granger causality tests. The results of these three tests are given in this table:

Table(23): Granger causality test for S9

Vector Auto Regression							Wald test	Causality direction
Dep. Var.	constant	NIM(-1)	NIM(-2)	RIR(-1)	RIR(-2)	R^2 F-stat	H0: P>5%	H0: P>5%
NIM	0.830294 [3.00404]	0.641722 [5.50414]	0.059775 [0.57936]	-0.004251 [-0.35426]	-0.004857 [-0.39929]	0.51 17.2	0.129612 (0.8787)	0.12611 (0.8817)
RIR	2.274765 [0.98502]	0.786776 [0.80766]	-1.34008 [-1.55444]	-0.258294 [-2.57602]	-0.369944 [-3.63993]	0.23 5.07	------	1.27400 (0.2866)

1. Inside [ ] is t-statistic

1. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 23, Wald test indicates that joint causality does run from RIR to NIM, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4): RIR(-1) and c (5): RIR(-2) are equal to zero, which means that RIR (-1) and RIR (-2) jointly do not cause NIM.

These results are also confirmed from VAR test, where t-statistics is less than t-statistics table (1.99), which means that RIR (-1) and RIR (-2) separately are not associated with NIM. The results indicate that only NIM (-1), given to t-statistics, is positively associated with the dependent variable NIM. Besides, the model is significant given to F-statistic value (17.2). R^2 value equals to 0.51, which denotes that the independent variables explain 51% of the variation in the dependent variable NIM.

On the other hand, causality Granger test, according to P values indicate that RIR does not cause NIM, as well as NIM does not cause RIR.

5.4.5. Results of fourth selections:

S10: $ROA_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

S11: $ROE_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

S12: $NIM_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 M_{it} + \beta_3 BC_{it} + \varepsilon_{it}$

5.4.5.1. Co-integration test:

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Table (24): Results of Kao's Residual Co-integration Test for S10, S11, and S12

ADF / Selections	S10	S11	S12
t-Statistic	-3.510873	-5.091565	-4.548880
Prob.	0.0019	0.0002	0.0000

Kao residual co integration test results are given in Table 24. Accordingly, P value equals 0.0019, 0.0002, and 0.0000 for S10, S11, and S12 respectively. These values are less than 5%, so the null hypothesis is rejected, and we accept the alternative one, meaning that the variables for each selection (S10, S11, and S12) are co-integrated; therefore, they have long-run relationship.

5-4-5-2 Hausman specification test for S10:

The results of the Hausman specification test for the S10 is given in table 25.

Table 25: Hausman specification results test for S10

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

According to table 25, p value equals 1.0000 which is more than 5%, means that we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.5.3. Results of VAR, Wald and Granger causality test for S10:

The Hausman test result for S10 indicated that we should use random effect model to estimate panel data VAR of ROA and BC for five banks as a group. Besides, we implement the Wald Granger causality tests. The results of these three tests are given in table 26.

Table (26): Granger causality test for S10

	Vector Auto Regression						Wald test	Causality direction
Dep. Var.	Constant	ROA(-1)	ROA(-2)	BC(-1)	BC(-2)	R^2 F-stat	H0: P>5%	H0: P>5%
ROA	0.003681 [0.48815]	0.429305 [4.03444]	0.339895 [2.97732]	-1.44E-06 [-1.57782]	1.19E-06 [1.36765]	0.49 15.7	1.530506 (0.2241)	1.50844 (0.2289)
BC	5695.967 [6.00710]	-4521.945 [-0.33799]	-17550.82 [-1.22275]	0.304225 [-1.57782]	-0.031464 [-0.28771]	0.18 3.71	------	1.40263 (0.2533)

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 26, Wald test indicates that joint causality does run from BC to ROA, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4):BC(-1) and c (5):BC(-2) are equal to zero, which means that BC (-1) and BC (-2) jointly do not cause ROA.

These results are also confirmed from VAR test, where t-statistics is less than 1.99, which means that BC (-1) is not associated with ROA, as well as BC (-2). The results indicate that only ROA (-1) and ROA (-2), given to t-statistics, are positively associated with the dependent variable ROA. Besides, the model is significant given to F-statistic value (15.7). R^2 value equals to 0.49, which denotes that the independent variables explain 49% of the variation in the dependent variable (ROA).

On the other hand, causality Granger test, according to P values, which are more than 5%, indicates that BC does not cause ROA, as well as ROA does not cause BC.

5.4.5.4. Hausman specification test for S11:

The results of the Hausman specification test for the S11 is given in table 27.

Table (27): Hausman specification results test for S11

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.

Cross-section random	0.000000	4	1.0000

According to table 27, P value equals 1.0000 which is more than 5%, means we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.5.5. Results of VAR, Wald and Granger causality test for S11:

The Hausman test result for S11 indicated that we should use random effect model to estimate panel data VAR of ROE and BC for five banks as a group. Besides, we implement the Wald Granger causality tests. The results of these three tests are given in table 28.

Table (28): Granger causality test for S11

Vector Auto Regression							Wald test	Causality direction
Dep. Var.	constant	ROE(-1)	ROE(-2)	BC(-1)	BC(-2)	R^2 F-stat	H0: P>5%	H0: P>5%
ROE	-0.203118	0.227715	0.313095	-1.10E-05	4.21E-05	0.45	2.092577	2.13369 (0.1266)
	[-1.18977]	[3.55495]	[4.94197]	[-0.50428]	[1.98999]	15.1	(0.1316)	
BC	5183.098	129.9207	-522.4787	0.326594	0.003931	0.13	------	1.27677 (0.2858)
	[5.87468]	[0.39246]	[-1.59578]	[2.89262]	[0.03598]	3.63		

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 28, Wald test indicates that joint causality does run from BC to ROE, as the test accepts the null hypothesis that there is no causality at 5% significance level, meaning that c (4):BC(-1) and c (5): BC(-2) are equal to zero, which means that BC (-1) and RIR (-2) jointly do not cause ROE.

VAR test shows, given to t-statistics, that only ROA (-1) and ROA (-2) are positively associated with ROA. Furthermore, the model is significant given to F-statistic value (15.1). R^2 value equals to 0.45, which denotes that the independent variables explain 45% of the variation in the dependent variable (ROE).

On the other hand, causality Granger test, according to P values, which are more than 5%, indicates that BC does not cause ROE, as well as ROE does not cause BC.

5.4.5.6. Hausman specification test for S12:

The results of the Hausman specification test for the S12 is given in the table below:

Table (29): Hausman specification results test for S12

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

According to table 29, p value equals 1.0000 which is more than 5%, means that we could not reject the null hypothesis, so we accept it, meaning that random effect model is appropriate.

5.4.5.7. Results of VAR, Wald and Granger causality test for S12:

The Hausman test result for S12 indicated that we should use random effect model to estimate panel data VAR of NIM and BC for five banks as a group. Besides, we implement the Wald Granger causality tests. The results of these three tests are given in the following table:

Table 30: Granger causality test for S12

	Vector Auto Regression						Wald test	Causality direction
Dep. Var.	constant	NIM(-1)	NIM(-2)	BC(-1)	BC(-2)	R^2 F-stat	H0: P>5%	H0: P>5%
NIM	4.458854 [3.35279]	0.618017 [5.71247]	0.102823 [1.04734]	-3.83E-05 [-0.22182]	0.000425 [2.62036]	0.57 22.1	5.06064 (0.0091)	4.92900 (0.0102)*
BC	4552.710 [5.60202]	266.4786 [4.03066]	-172.7920 [-2.88013]	0.351638 [3.33105]	0.019764 [0.19922]	0.32 7.67	------	8.14058 (0.0007)*

1. Inside [ ] is t-statistic

2. The p-value is in the parenthesis ( ).

3.*denotes rejection of hull hypothesis at the 5% level of significance.

4. In Wald test, the null hypothesis is c (4) = c (5) = 0.

According to table 30, Wald test indicates that joint causality does run from BC to ROE, as the test rejects the null hypothesis that there is no causality at 5% significance level, meaning that c (4):BC(-1) and c (5):BC(-2) are not equal to zero, which means that BC (-1) and BC (-2) jointly cause NIM.

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VAR test indicates that BC (-1) is not associated with NIM, whereas BC (-2) is positively associated with NIM, given to t-statistics which are less than 1.99. The results indicate that only NIM (-1), given to t-statistics, is positively associated with the dependent variable NIM, and NIM (-1) as well as BC (-1) are associated with BC as a dependent variable. Moreover, the model is significant given to F-statistic value (22.1). R^2 value equals to 0.57, which denotes that the independent variables explain 57% of the variation in the dependent variable NIM.

On the other hand, causality Granger test, according to P values which are less than 5%, indicates that BC causes NIM, as well as NIM causes BC.

5.5. Results discussion:

From the fourth selection (ROA_{it}), we found a positive unidirectional causality from CP to ROA. This causality indicates that credits to private sector enhance return on assets ratio; i.e., CP impacts positively the profits of the five public banks as a group. This result confirms the programs that were carried out by the government in order to restructure the financial sector. Among these programs, direct lending to state-owned enterprises and the treasury was gradually removed to enable banks to improve the quality of their credit. Furthermore, from 2000 and 2001, the credit to the private sector rose to reach 31.8 per cent of total credits (Bank of Algeria). This was a result of the increase in the number of small-sized private enterprises and slow privatisation programme which have been accelerated during the period 1995-1998 under the IMF supervision. Also, the rise of credit to private sector was a result of the reduction of credit control. Thus, one can conclude that both the rise of credits to private sector and the decline of the amount of loans that were granted to poorly performing public enterprises have helped state owned banks to reduce the amount of their non-performing loans, which in turn led to a higher profit.

From the sixth selection (NIM_{it}), we found a positive unidirectional causality from M2/GDP to NIM. This causality indicates that the depth of financial system factor contributes to an increase in profit for public banks. In Algeria, due to the development of banking system process, demand for credit increased quickly during the period 2000-2012 (Bank of Algeria). In addition, to deal with the economic downturn after 1988, the government applied an expansionary monetary policy -under the law on money and credit 10/90- which encouraged banks to lend more money.

From S7, S8, and S9 (ROA_{it} ROE_{it} NIM_{it}), we did not find any relationship between RIR and performance's measures. This result supports the findings on the Algerian case done by

Jbili (1997). However, according to theorists of financial liberalisation, the removal of government controls on interest rates would lead to greater competition and improve the performance of the financial institutions. For instance, Mckinnon and Shaw argued that financial liberalization enables developing countries to stimulate domestic savings and economic growth.

From S12 (NIM_{it}), we found positive bidirectional causality between BC and NIM, which means that BC causes NIM, as well as NIM causes BC. This result indicates that bank concentration impacts positively net interest margin. This result is consistent with Smirlock (1985), Bourke (1989) and Staikouras & Wood (2003) who provide evidence that industry concentration has a positive impact on banking performance. They showed that high concentrated banking system allows to a large monopolistic power of firms, and then improves profit margins of banks. However, Berger (1995) and BenNaceur (2003), among others, concluded that an inverse relation does exist between concentration and bank profitability. Thus, the study result confirms strongly the Structure- Conduct- Performance hypothesis (SCP) which stipulates that higher market power submits monopoly profits (Molyneux et al., 1992). Therefore, the high concentration ratio in the Algerian banking system would indicate weaker competition among the banks.

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Conclusion:

In this chapter, we examined empirically the relationship between financial liberalization and the performance of Algerian public banks, taking into consideration the three measures of banking performance namely: return on equity (ROE), return on assets (ROA), and net interest margin (NIM). For this purpose, empirical model -specified in equations- was estimated using the random effects panel data approach. In order to examine the long-term relationship between the variables of bank performance and financial liberalization, VAR model was used, in addition to Wald and Granger causality tests.

In light of the empirical results, we found three interesting causality relations for the five public banks as a group. They are summarized as follows:

- ✓ There is a unidirectional causality from CP to ROA, which means that CP causes ROA. Besides, according to VAR results, we conclude that CP impacts positively ROA.

- ✓ There is also a unidirectional causality from M2 to NIM, which means that M2 causes NIM. Besides, according to VAR results, we conclude that M2 impacts positively NIM.

- ✓ There is bidirectional causality between BC and NIM, Which means that BC causes NIM, as well as NIM causes BC. In addition, according to VAR results, one can conclude that BC impacts positively NIM.

General Conclusion

General conclusion :

This study is motivated by the recent financial developments in the Algerian banking industry since the initiation of financial liberalization in early 1990s. In fact, the Algerian banking sector has had four crucial development periods. The first one was before independence, i.e., before 1962. In that period, Algerian financial market was under the control of colonial banks. The second period lasted from 1962 until 1968. In that period, new-state-owned banks were established namely: BNA, BEA, and CPA. The third period was during 1968 and 1990. At that period, all foreign banks have been nationalized and replaced by state-owned banks, where BDL and BADR were set up by the government in the 1980s. The final period, from 1990 onwards, took place after the Algerian authorities have initiated financial liberalization process.

In 1990, the law on money and credit (10/90) was the first step to be taken by Algerian government to remove many barriers towards domestic and foreign banks. Therefore, the law led to various changes in the structure of Algerian banking sector, where it enabled both private banks and foreign banks to operate in parallel with state-owned banks. It also allowed state owned banks to select their borrowers and finance a variety of industries. Moreover, other programs were adopted in order to achieve financial liberalization, such as the gradual interest rate liberalization, reduction of credit control, improvement of reserve requirement, and capital account liberalization.

Based on the crucial developments of the Algerian banking system, one can mention the following conclusions:

✓ The process of financial liberalization is not yet been completed because of the absence of a clear banking privatisation plan.
✓ The national banking industry has grown steadily after financial liberalization, as reflected by the increased number of local and foreign market participants.
✓ The new players motivate state-owned banks to be conscientious in their lending to both public and private sectors.
✓ Banks place a small amount of funds in the trading of shares on the Algiers stock exchange. This later is still in its infancy because of low market capitalisation and the absence of foreign participation in ASE.

General conclusion :

In light of these structural reforms, the importance of this study is derived. Thus, the main research problematic was to investigate the impact of financial liberalization on the performance of Algerian public banks. To do so, an empirical model specified in equations was estimated using random effects panel approach for five public banks during the period 1997-2012. In order to examine the long-run relationship between financial liberalization measures and bank performance, VAR model was used, in addition to Wald and Granger causality tests. The study has basically focused only on the impact of banking system liberalization measures.

The main findings of the empirical study can be summarized as follows:

- ✓ It is found that credit to private sector (CP) as a share to GDP impacts positively ROA (as a measure of banks performance). This indicates that the gradual withdrawal of the government from the banking sector as well as the removal of lending restrictions, both of them would improve the lending decisions of state owned banks and reduce their losses.
- ✓ It is found equally that M2 as a share to GDP impacts positively NIM (as a measure of banks performance).
- ✓ It is found also that bank concentration (BC) ratio impacts positively NIM (as a measure of banks performance). This indicates that there is a weaker competition among the banks in Algerian market, where the public banks still have the monopoly in financing state owned enterprises and government projects even after the financial liberalization.
- ✓ In contrast, it is found that real interest rates (RIR) do not impact banks' performance.

Based on these findings, the main hypothesis of this study is rejected and one can say alternatively that there is a limited impact of financial liberalization on Algerian Public banks.

In fact, financial liberalization -by the removal of credit control and lending decisions- increases the opportunities to take on risk. This tends to raise financial fragility, but it is not necessarily bad for the economy, because high-risk, high-return investment projects may outnumber low-risk, low-return ventures. However, because of limited liability and other forms of implicit and explicit guarantees, bankers' appetite for risk is likely to be far greater

General conclusion :

than is socially desirable. So, if prudential regulation and supervision are ineffective at controlling bank behaviour and realigning incentives, liberalization may increase financial fragility.

The non-competitive market structure in the Algerian banking system may hamper financial intermediation. This structure as well as the other market characteristics may constitute an indirect barrier to entry thereby shielding the large profits in the Algerian banking system. Also, the monopolistic behaviour could contribute to higher intermediation costs and diseconomies of management compared to a competitive structure. In this sense, the non-competitive behaviour is consistent with the presence of wide net interest margin.

At the end of this study, one can advance the following recommendations:
- ✓ Improving of prudential regulation and supervision in order to be effective in controlling bank behaviour and realigning incentives.
- ✓ Enabling foreign banks to deal with state owned enterprise in order to make financial Algerian market more competitive.

Besides, one can suggest the following topics for further research:

- ✓ Studing the same topic and including the effectiveness of financial intermediation as a measure of financial sector reform beside the size of intermediation used in the study.
- ✓ Studing the impact of financial liberalization on the performance of pubic banks in North Africa in order to make comparison between Algeria and neighbour countries.

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Appendixes

Appendixes :

Appendix N° (1): Sources of the models' variables used in the study

variables	Sources
NIM	Bank scope prepared by VANDIJK available at Paris Dauphine university data base.
ROA	Calculated by the researcher used VANDIJK data.
ROE	Calculated by the researcher used VANDIJK data.
CA	Bank scope prepared by VANDIJK available at Paris Dauphine university data base.
CR	Calculated by the researcher used VANDIJK data.
BL	Bank scope prepared by VANDIJK available at Paris Dauphine university data base.
BS	Calculated by the researcher used VANDIJK data.
GDP growth	http://www.ons.dz/-Bulletin-des-Statistiques-.html, http://www.bank-of-algeria.dz
INF	http://www.ons.dz/-Bulletin-des-Statistiques-.html, http://www.bank-of-algeria.dz
RL	Detailed documentation of the WGI, interactive tools for exploring the data, and full access to the underlying source data available at www.govindicators.org.The WGI are produced by Daniel Kaufmann (Brookings Institution), Aart Kraay (World Bank Development Research Group) and Massimo Mastruzzi (World Bank Institute). Please cite Kaufmann, Daniel, Aart Kraay and Massimo Mastruzzi (2010). "The Worldwide Governance Indicators: Methodology and Analytical Issues". World Bank Policy Research Working Paper No. 5430 (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130).
RQ	Detailed documentation of the WGI, interactive tools for exploring

	the data, and full access to the underlying source data available at www.govindicators.org.
PS	Detailed documentation of the WGI, interactive tools for exploring the data, and full access to the underlying source data available at www.govindicators.org.
CP/GDP	Znasni(2011) p07, http://www.bank-of-algeria.dz, International Monetary Fund, International Financial Statistics and data files.
QM/GDP	ONS :http://www.ons.dz/-Bulletin-des-Statistiques-.html, International Monetary Fund, International Financial Statistics and data files.
Rir	**World bank.org**
BC	Bank scope prepared by VANDIJK available at Paris Dauphine university data base.
Kaopen	The Chinn-Ito index (2012)

Appendixes :

Appendix N° (2): Summary of the independent variables and the sign of their coefficients from selected previous studies

Independent Variables	Measure	Notation	Expected with ROA as the Dependent Variable	Expected Correlation with NIM as the Dependent Variable
Capital adequacy	Equity/total assets	CA	(+) [57] ,[58], [87]	(+) [57], [169], [05]
Credit risk	Loans losses/total loans	CR	(-) [141]	(+) [57], [133], [30]
Bank liquidity	Net loans/total assets	BL	(-) [12], [120] ,[66]	(+) [15], [68]
Bank size	Natural logarithm of total assets	BS	(+) [120], [85], [17]	(+) [148]
GDP growth	GDP growth	GDP	(+) [120]	(-) [38]
Inflation rate	Annual inflation rate	INF	(+) [42], [13] [*]	(+) [142] [*]

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[*] The relationship between the inflation and profitability may have a positive or negative effect on profitability depending on whether it's anticipated or unanticipated (Perry, 1992). If an inflation rate is anticipated, banks can adjust interest rate in order to increase revenues than costs. On the contrary, if inflation rate is not anticipated, banks can not make proper adjustments of interest rate that cost may increase faster than revenues.

Appendixes :

Rule of law	----	RL	(-) [144]	------
Political Stability	----	RQ	(-) [144]	-------
Financial liberalization index	*Measure*	*Notation*	*Expected with performance as the Dependent Variable*	
	Private credit/GDP	CP/GDP	(+) [70]	
	Money supply/GDP	M2/GDP	(+) [70]	
	Real interest rate	RIR	(+) [04],[135]	

Appendixes :

	Bank concentration	BC	(+) [72]

Appendix N° (3): Chinn-Ito 2012 index for Algeria

Years	Kaopen index value	Years	Kaopen index value	Years	Kaopen index value
1970	-1,87502408	1986	-1,87502408	2002	-1,17502975
1971	-1,17502975	1987	-1,87502408	2003	-1,17502975
1972	-1,87502408	1988	-1,17502975	2004	-1,17502975
1973	-1,87502408	1989	-1,17502975	2005	-1,17502975
1974	-1,87502408	1990	-1,17502975	2006	-1,17502975
1975	-1,87502408	1991	-1,17502975	2007	-1,17502975
1976	-1,87502408	1992	-1,17502975	2008	-1,17502975
1977	-1,87502408	1993	-1,17502975	2009	-1,17502975
1978	-1,87502408	1994	-1,17502975	2010	-1,17502975
1979	-1,87502408	1995	-1,17502975	2011	-1,17502975
1980	-1,87502408	1996	-1,17502975	2012	-1,17502975
1981	-1,87502408	1997	-1,17502975		
1982	-1,87502408	1998	-1,17502975		
1983	-1,87502408	1999	-1,17502975		

1984	-1,87502408	2000	-1,17502975
1985	-1,87502408	2001	-1,17502975

Appendix N (4): Summary Table of Empirical Evidence

Country	Author	Period	Model	Relationship	Effect
South Korea	Aggarwal et al.	1976-1999	R-squares	Interest rates changes-equity prices of banks	Positive
	Demetriades et al.	1987-1997	Capital asset pricing model(CAPM)	Financial liberalization(FL)-evolution of banks	Positive
Thailand	Papp	1990-1995	Production and cost function	FL_ activities of banks	positive
China	Song	1993-1999	Profit model	Interest rate liberalization-development of non state banks	positive
	Fadzlan et al.	2000-2007	Regression model	Economic globalization-performance of banking sector	positive
	Chen et al.	1996-2007	Mixed oligopoly model	Privatization-outputs of the state owned banks	negative
	WU et al.	1996-2004	Fixed effects and random effects models	Foreign banks-performance of banks	negative
	LIU	1996-2004	Gravity model	Financial trade liberalization-banks	positive
Malaysia	Yee et al.	1987-1997	Cost ratio analysis	Financial liberalization-banking sector	positive
			Chi-square test		Significant relationship
	Yu et al.	1980-2007	Model of banking sector development	Financial liberalization-banking sector development	negative
Malaysia	Elryah	2002-2012	Panel regeression model	Financial liberalization- Islamic banks performance	positive
Taiwan	Chiu et al.	2002-2004	Super slacks based measure SBM and DEA method	Liberalization(external risk and internal risk)-bank efficiency	negative
	Yang	2008	DEA	Intermediation activities within a	positive

				branch- performance	
Philippine	Lim	2003-2010	Correlational analysis	Profit efficiency of banks- financial liberalisation	Positive
Turkey	Denizer et al.	1970-1994	DEA	Liberalization-banking efficiency	negative
	Aydin et al.	2002-2006	DEA	Liberalization-banking efficiency	positive
Russia	Karas et al.	2002-2006	DEA	Efficiency- bank ownership	Foreign and domestic public more than private
Romania	Marius et al.	2001-2008	2 Regression models	Liberalization-bank performance	positive
Brazil	Neto et al.	2000-2009	Regression model	Efficiency-size of bank	No relation
	Staub et al.	2000-2007	DEA	Liberalization-efficiency	negative
Jamaica	Clarke et al.	1993-1998	Regression model	Interest rate volatility-net interest margin and market value of equity of banks	positive
Argentina	Clarke et al.	1995-1997	Regression model	Foreign entry-domestic banks	positive
	Delfino	1993-2000	Empirical analysis	Control changes-performance	Positive (short term)
					Negative (long term)
	Chortareas et al.	1997-2005	DEA	Liberalization-performance of banks	positive
Sub saharan africa	Mayo	1998-2011	Duration model	Financial reforms_competition and stability	positive
Ghana	Acheampong	1975-2008	Pooled regression	Foreign entry-performance of domestic and owned banks	positive
	Korsah et al.	1988-1999	DEA	Liberalization-efficiency	positive
	Ahiawodzi	1988-2010	Deviations model	Liberalization-financial market efficiency	A fair effect
			Quasi experimental		

Appendixes :

Nigeria	Bakare A. S.	1986-2010	research design approach	Financial sector liberalization-domestic savings	negative
	Tanko	1983-2002	Wilcoxon signed rank test	Privatization-performance	positive
	Adesegun.o	1971-2011	LM test, REST test and CUSUM tests	Financial sector liberalization-performance	positive
Tanzania	Simpasa	2004-2008	Panzar rosse methodology	Competitive-income	positive
Namibia	Okeahalam	1998-2003	Regression model	Internationalization-performance	positive
	Aron et al.	1970-1997	Spline function	Financial liberalization-consumption and dept	positive
	Abdullahi	1981-2009	General method of moments	Financial liberalization-financial market development	negative
Egypt	Fethi et al.	1984-2002	DEA Malmquist analysis	Liberalization-performance	negative
Tunisia	Cook et al.	1992-1997	DEA	Financial liberalization-efficiency	negative
	Abdelaziz et al.	1980-2009	Regression model	Financial liberalization-efficiency	negative
Morocco	Joumady	1990-1996	DEA	Financial liberalization-performance	No effect
Iran	Rabiei et al.	2007-2009	stochastic frontier analysis	Privatization-efficiency	positive
India	Sensarma	1986-2000	Regression analysis	liberalization	positive
	Arora	1997-2006	Multivariate regression analysis	Size and age-profitability	positive
	Sathye	1998-2002	Regression analysis	Privatization-performance	positive
Pakistan	Nazir et al.	2003-2007	DEA	Reforms-performance of public banks	positive
	Awan et al.	1973-2007	Autoregressive distributed lag model bounds testing	Liberalization-domestic savings	positive

	Akhtar et al.	1990-1999	Regression analysis	Privatization-performance of private banks	positive
	Shah et al.	1980-2004	Regression analysis	Privatization-performance (deposits-investment)	positive

الملخـص

يتمثل هدف هذه الدراسة في استقصاء أثر التحرير المالي على أداء البنوك العمومية في الجزائر. وقصد بلوغ هذا الهدف، تم اجراء تحليل كمي لعينة مُشكَّلة من معطيات بانل لخمسة بنوك عمومية خلال الفترة 1997–2012. وقد تضمّن نموذج الدراسة محددات الاداء التي تتمثل أساساً في متغيرات خصائص البنوك ومتغيرات اقتصادية كلية. وتمَّ التعبير عن أداء البنوك بثلاث مؤشرات هي: العائد على الأصول، العائد على حقوق الملكية وصافي هامش الفائدة. كما تمَّ التعبير عن التحرير المالي أيضا بثلاث مؤشرات هي: حجم الوساطة، معدلات الفائدة الحقيقية والتمركز البنكي. انتهت الدراسة الى وجود أثر ايجابي لكل من حجم الوساطة والتمركز البنكي على أداء البنوك العمومية الجزائرية وعدم وجود أي أثر لمعدلات الفائدة الحقيقية على هذا الأخير.

الكلمات المفتاحية: التحرير المالي، أداء البنوك العمومية، معطيات بانل، الجزائر.

Résumé

L'objectif principal de cette thèse est d'étudier l'impact de la libéralisation financière sur la performance des banques publiques algériennes. Afin d' atteindre cet objectif, une analyse quantitative a été menée sur un échantillon de données de panel couvrant cinq banques publiques sur la période (1997-2012). Le modèle de cette étude inclut les déterminants de la performance qui sont des variables spécifiques de la Banque et les variables macroéconomiques. La performance des banques a été un proxy en utilisant le rendement des actifs, le rendement sur fonds propres, et la marge nette des intérêts. En outre, la libéralisation financière a également été un proxy en utilisant: la taille de l'intermédiation, les taux d'intérêt réels, et la concentration de la banque. L'étude a montré que la taille de l'intermédiation et de la concentration bancaire affectent positivement la performance des banques publiques algériennes. Par contre, l'étude a montré que les taux d'intérêt réels n'affectent pas ces banques.

Mots-clés: libéralisation financière, la performance des banques publiques, données de panel, Algérie.

Abstract

The main aim of this study is to investigate the impact of financial liberalization on the performance of the Algerian public banks. In order to achieve this goal, a quantitative analysis has been conducted for a panel data sample covering five public banks over the period (1997-2012). The model of this study includes the determinants of performance which are bank specific variables and macroeconomic variables. The banks' performance was proxied by using return on assets (ROA), return on equity (ROE), and net interest margin (NIM). Besides, the financial liberalization was also proxied by using: the size of intermediation, real interest rates, and bank concentration. The study showed evidence that both the size of intermediation and bank concentration impact positively the performance of Algerian public banks. In contrast, it showed that real interest rates do not impact this latter.

Keywords: financial liberalization, public banks' performance, panel data, Algeria.