# FINANCIAL SECTOR DEVELOPMENT, SAVINGS AND ECONOMIC PERFORMANCE: A CASE STUDY OF LIBYA


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# Contents

## List of Tables

# List of Figures

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# Abbreviation

| | |
|---|---|
| BPC | Basic People's Congress |
| CBL | Central Bank of Libya |
| CPI | Consumer Price Index |
| CRR | Cash Reserve Ratio |
| CV | Critical Value |
| DD | Demand Deposit |
| DMB | Deposit Money Bank |
| ED | External Debt |
| ERSAP | Economic Reform and Structural Adjustment |
| FDI | Foreign Direct Investment |
| GDD | Gross Domestic Debt |
| GDI | Gross Domestic Investment |
| GDP | Gross Domestic Product |
| GPC | General People's Congress |
| IMF | International Monetary Fund |
| INF | Inflation Rate |
| LCH | Life-Cycle Hypothesis |
| LD | Libyan Dinar |
| LDM | Libyan Dinner Million |
| MENA | Middle East North Africa |
| MPC | Marginal Propensity to Consume |
| NFA | Net Foreign Assets |

| | |
|---|---|
| OBI | Other Banking Institution |
| OLS | Ordinary Least Square |
| OPEC | Organisation of Petroleum Exporting Countries |
| PAYG | PAY-AS-You-Go |
| PIH | Permanent-Income Hypothesis |
| RCC | Revolutionary Command Council |
| SLR | Statutory Liquidity Ratio |
| SOE | State-owned Enterprise |
| SSF | Social Security Fund |
| TD | Total Deposits |
| TSD | Test Statistics |
| T&SD | Time and Saving Deposits |
| VAR | Vector Autoregression |

## Abstract

The financial liberalisation theorem postulates that liberalising the financial sector is a route to increasing savings and investment, and thus the promotion of growth. Endogenous growth models suggest that financial sector development increases savings mobilisation, transfers savings into investments, and increases the productivity of investment, with the consequence of economic growth and improved economic performance. However, in practice, experience has shown that a number of developing countries do not demonstrate this kind of relationship, and have rather, recorded relatively low growth despite achieving high savings rates.

It is argued that the reason why few authors have found empirical evidence supporting the notion that saving causes growth in developing countries, and have found instead that growth causes savings, is these scholars' failure to consider the productivity of investment financed by savings, evidenced by the tendency to use aggregate measures of savings. This work proposes that the quality of saving is important, and instead of using gross saving, financial savings is used as a measure of savings.

Despite the implementation of reforms and liberalisation in the financial sector, especially the banking industry, as the major elements of the economic reforms and structural adjustment programmes in Libya in the early 1990s, the resulting improved economic performance has not been followed by sustained economic growth and development, and investment rates are still insufficient to achieve this. Therefore, the purpose of the study is to identify the role of the financial sector, examining the impact of its development on saving, and on the growth of the Libyan economy.

The methodology used in this research involved the quantitative approach. The quantitative aspect was based on an empirical assessment of the importance of

financial sector development by using time-series econometric techniques including the unit root test, testing for cointegration and causality for the variables of the study. The results indicate that the impact of the real interest rate on financial saving and domestic investment is negative in the long run. The impact of real output on financial savings and domestic investment is positive in the long run. Credit as an indicator of financial sector development, has a very small impact on domestic saving in the long run and is highly insignificant in the long run. The causality test results indicate that causality runs from growth to financial savings, from growth or real output to credit. The study suggests that more attention should be paid to other aspects of financial liberalisation and financial reforms because liberalising the interest rate is not only the key aspect of financial sector reform.

# CHAPTER ONE
# GENERAL INTRODUCTION

## 1.1 Introduction

Achieving high and sustainable rates of economic growth has long been the aim of economic development in all developing countries, and growth-promoting policies have been adopted by their governments in attempts to raise standards of living and lift their populations out of conditions of poverty. However, the promotion of growth needs a sufficient level of capital accumulation and productive investment that guarantee a sustainable increase in the growth. In recent years, policies to improve savings mobilisation have increasingly been suggested as appropriate in this regard, since the savings rate can influence economic development through financing productive investment. Hence, the mobilisation of saving is a necessary condition for achieving high and sustainable rates of growth. This mechanism has been interpreted to suggest that causality runs from saving to growth, and so, the encouragement of saving is a simple way to increase growth.

However, the argument concerning the necessity of savings for growth is linked with another argument regarding the efficiency of savings in financing capital accumulation, and hence increasing investments (Pagano, 1993 and Beck et al, 2000). This leads to question the importance and extent of the role of the financial sector in the complex relationship between savings, investment, and growth. The interplay between financial development and macro-economic performance on the one hand, and savings, on the other, has been addressed in economic development and growth literature. (Levine, 1997, Westley, 2001 and Beck et al, 2005). Indeed, the debate in this respect is ongoing and the issue remains controversial. The discussion occurs in different dimesions, one of these being the relationship between saving and growth, or more precisely the direction of causality between the

two variables, which leads to a crucial question: Is it growth that causes saving or is it saving that cause growth? The second dimension of the debate is the impact of financial development (financial liberalisation) on saving, which leads to the important question of whether the interest rate has any impact on saving. And a third dimension is the relationship between the financial sector and growth, which precipitates another causality issue. That being: does financial sector development cause growth or does growth cause or stimulate financial development?

In recognition of saving as a necessary condition for growth and financial development, this study seeks to address the above issues. It firstly tests the financial liberalisation hypothesis by assessing the impact of the real interest rate on saving and investment. Secondly, it examines the saving-growth relationship and the direction of causality within it; and finally it evaluates the importance of financial development by examining its impact on economic growth and investment, which is the main source of growth.

This introductory chapter highlights the motivation for the study by presenting the basic issues surrounding the research problem. A rationale is provided for undertaking the study, and this is followed by comments regarding the anticipated contribution to knowledge of the research, a statement of the research aim and objectives, associated hypotheses, and the methodology to be adopted. The chapter ends by outlining the scope of the study, and indicating how the rest of the thesis is structured.

## 1.2 Motivation for the Research

The financial sector is considered a necessary support for economic development and performance due to its important role in collecting reserves, transferring them to the investment channels, and ensuring the provision of sufficient funds to achieve high growth rates. Indeed, by the beginning of the 1970s, most economic theories confirmed the importance of the financial sector and its role in the provision of reserves necessary for different investments (Mackinon and Shaw, 1973). And certainly by this time,

the world's governments, including those of developing countries, had become convinced of the vital part to be played by the financial sector in a country's economic performance.

During the final two decades of the last century, much financial sector reform and liberalisation occurred in several developed and developing countries. As a result, a substantial amount of literature has emerged on the subject, and has produced a wide range of opinions, views and ideas, which have ranged from those that are totally supportive of reform and liberalisation, to those that are largely opposed to both objectives and method. The choice and design of most of the financial sector reforms and liberalisation policies, partly owes its origin to the earlier works of McKinnon (1973) and Shaw (1973), who advocated financial liberalisation measures to free banks from financial repression.

Until the early 1970s, the predominant policy framework was based on the Keynesian classical theories, which assumed that low interest rates would promote investment and economic growth (Jacques, 1991). However, McKinnon (1973) and Shaw (1973) challenged this conventional understanding by suggesting that higher equilibrium interest rates were necessary for increasing savings, raising the volume of domestic credit extended by the financial system, and hence the equilibrium rate of investment.

The financial sector in Libya (discussed in Chapter Five) was characterised by a number of problems, which justified the case for reform and liberalisation. Firstly, it was entirely dominated by the banking sector, and in particular the commercial banks. Secondly, the control of interest rates to keep them at a low level, resulted in increasing the demand deposits rather than time and saving deposits, thereby causing the domination of demand saving over the saving structure of commercial banks. Thirdly, there was significant control over the resources of the banking sector by the Government, not least, through its ownership of the commercial banks. Government control over financial resources was also exercised through

credit allocation. Finally, the financial sector in Libya lacked the important contribution made by the insurance system, social security and capital market, which made the banking sector more crucial to the economy because it represented the only source of finance.

### 1.2.1 Justification for the Research

Libya has been chosen as a case study for a number of reasons. Firstly, it is an important developing country in the North Africa region, and as the researcher's home country, it provides a natural focus of study, particularly in its financial sector, and hence, overall economic progress. Secondly, there has been a lack of attention paid thus far to the financial development-saving-growth relationship in Libya, particularly at the empirical level. Thirdly, Libya is a good example of a country that has experienced early bank activity with a high rate of financial saving relative to other developing countries. That said, the financial sector has not managed to convert this into a productive investment and consequently to a high growth rate, for a variety of reasons and circumstances that are discussed below, together with a brief review of Libya's background.

Libya's financial sector is one of the oldest in the region, having commenced with the establishment of an agriculture bank in Benghazi in 1868. Many changes in the banking sector's structure and activities were witnessed, until the socialist ideology was adopted and the nationalisation of the economic sectors was implemented. The government intervention in the economy and financial sector since the nationalisation in late 1969, after the Revolution, led to a drastic decrease in the banking industry. All the other financial institutions became publicly-owned, the State imposed a ceiling on interest rates, and high reserves ratios were imposed by the Central Bank of Libya, which was in itself directed and controlled by the State. In addition, credit was directed and controlled by the Government to finance the public sector and the budget deficit.

By the beginning of the 1980s, the economic situation in Libya was negatively affected by the decline in oil prices, since oil is the country's main source of income. This impacted upon the general budget of the State leading to a Gross Domestic Debt of LD 5,343.4 million at the end of the decade. As indicated in Figure 1.1, the GDP per capita declined from 33% in 1979 to -22% in 1986 and to 9.4% in 1989 after reaching an unprecedented level in the history of Libya; remarkably, it had increased to 62% in 1974 as a result of the increase in oil prices.

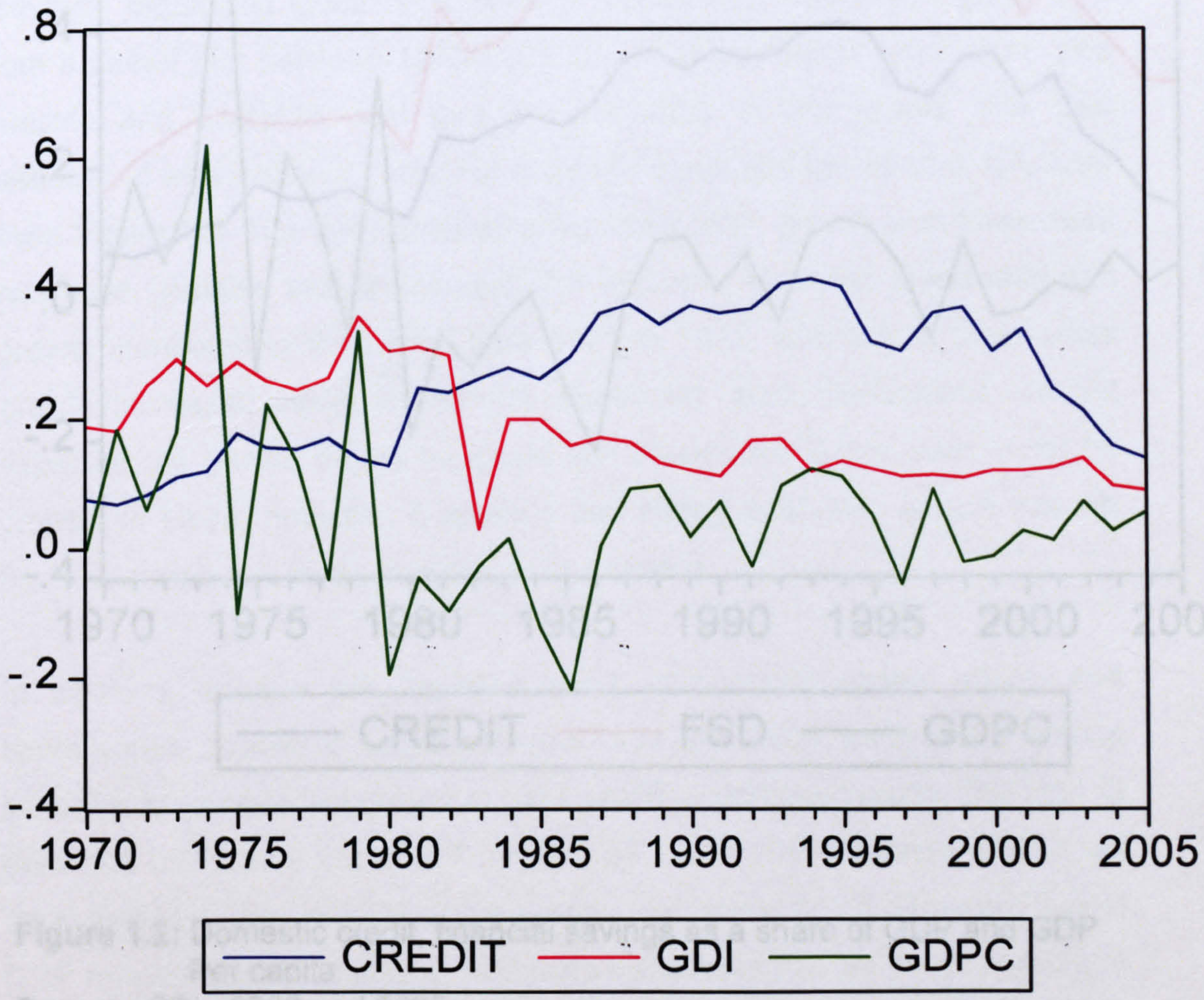



**Figure 1.1:** Domestic credit, domestic investment as a share of GDP and GDP per capita

**Source:** CBL, 2002 and 2005

The Gross domestic investment as a share of GDP also noticeably declined from 35% in 1979 to 15.8% in 1986 and to 13.2% in 1989. But, in contrast, credit as a share of GDP markedly increased from 13.7% in 1979 to 29.2% and to 34.2% in 1989.

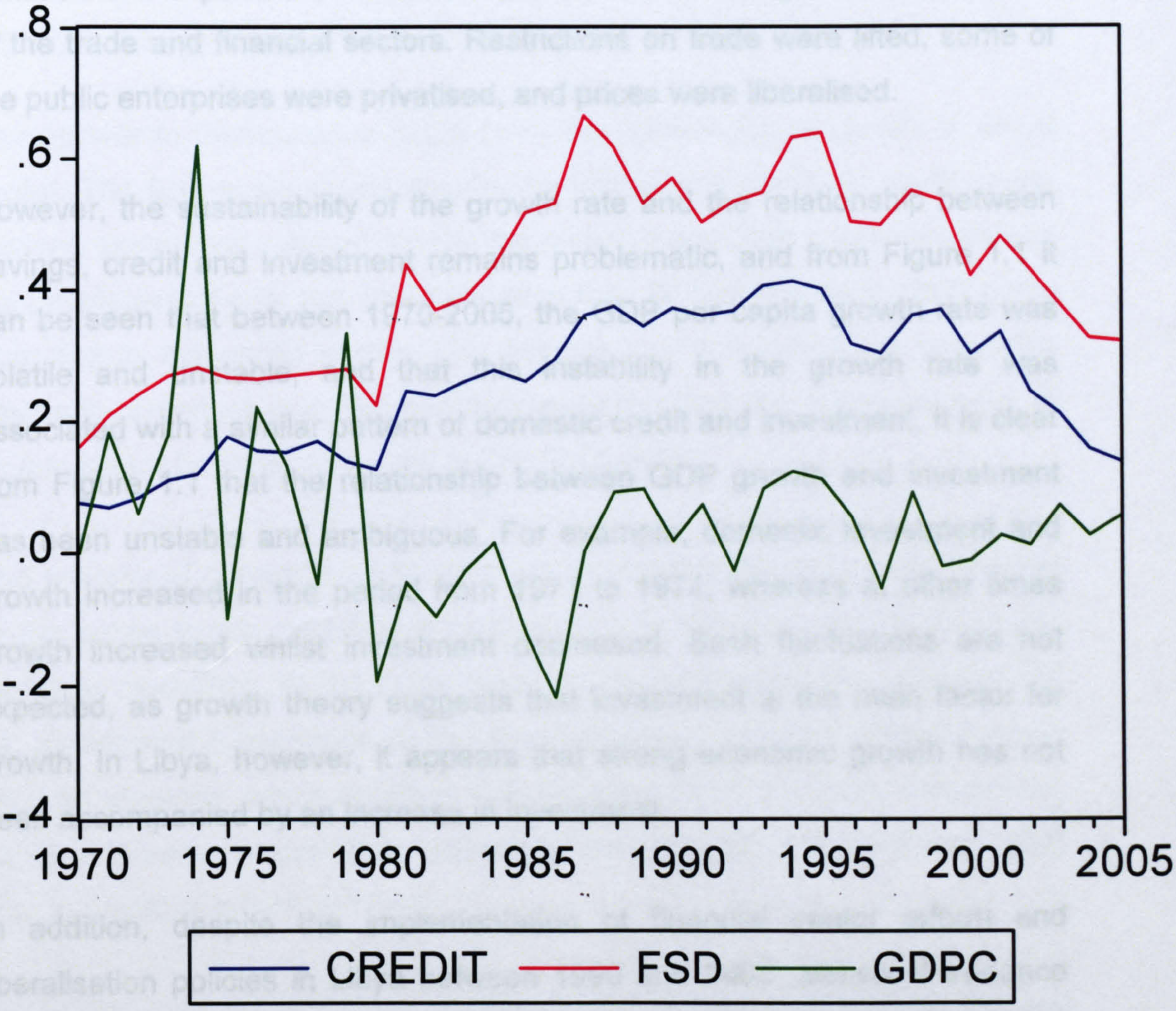



**Figure 1.2:** Domestic credit, financial savings as a share of GDP and GDP Per capita
**Source:** CBL, 2002 and 2005

Figure 1.2 shows that despite the decline of GDP per capita, financial savings sharply increased from 27.9% in 1979 to 53.1% in 1989. Therefore, a remarkable gap existed between financial savings and investment and this

might explain the volatility of growth because of the excessive dependence on the oil industry.

In the early 1990s, Libya adopted new macro-economic reforms and began to implement the structural adjustment that aimed to overcome its economic situation and expand the role of the private sector through the liberalisation of the trade and financial sectors. Restrictions on trade were lifted, some of the public enterprises were privatised, and prices were liberalised.

However, the sustainability of the growth rate and the relationship between savings, credit and investment remains problematic, and from Figure 1.1 it can be seen that between 1970-2005, the GDP per capita growth rate was volatile and unstable, and that this instability in the growth rate was associated with a similar pattern of domestic credit and investment. It is clear from Figure 1.1 that the relationship between GDP growth and investment has been unstable and ambiguous. For example, domestic investment and growth increased in the period from 1971 to 1974, whereas at other times growth increased whilst investment decreased. Such fluctuations are not expected, as growth theory suggests that investment is the main factor for growth. In Libya, however, it appears that strong economic growth has not been accompanied by an increase in investment.

In addition, despite the implementation of financial sector reform and liberalisation policies in Libya between 1990 and 2005, statistical evidence indicates no substantial growth in bank credit or domestic credit. The ratio of domestic credit as a share of GDP was 37.1% in 1990 declined to 30.2%in 2000 and to 13.8% in 2005 which means that domestic credit as a share of GDP remained quite unstable. Domestic investment has been fairly stable at a low level, especially during the period from 1994 to 2004, possibly as a result of the slow rate of growth in domestic credit.

Using domestic credit by the banking sector to GDP and financial savings to GDP as financial indicators, Figure 1.2 shows a gap between financial saving and domestic credit because of the strict and directed policy of credit

allocation imposed by the Central bank of Libya. From Figure 1.2 it can be seen that the financial system deposits and domestic credit were low during the period 1970-1980, and then distinctly increased during the period 1981-1994 but that investment was lower in this period in comparison to the earlier period of 1970-1980. Therefore, a question is: If credit was higher during the period 1981-1994 than in the period 1970-1980, why did investment and GDP not also increase?

The answer to this question might lie in the inefficiency of Libya's financial sector. The figures show that despite the increase in domestic credit by the banking sector that reached 42.1%, the share of domestic credit received by the private sector was very low, with more than 80% of domestic credit being allocated to the public sector. This occurred as a result of the excessive government control over the commercial banks and the entire absence of private sector banking during the period 1970-2000.

The majority of domestic credit provided by the banking sector was directed to the public sector, which was non-productive and inefficient in using the domestic resources. At the same time, private investment was crowded out by government intervention in the financial sector and the adoption of its socialist ideology, which together with the inefficiency of public investment, led to a decrease in both the volume and the productivity of investment, and thus to unstable growth in Libya.

The justification for this study, therefore, lies in the need to broaden and strengthen the intelligence concerning the financial sector, the saving process, and macro-economic performance, by identifying and focusing on key issues and aspects. In particular, the rationale is found in the intention of the study to examine Libya's financial sector development, saving and growth, before and during the reform and liberalisation process, in order to fully understand the reasons for the adopted policies, the design, objectives and implementation, and in the aim to eventually produce policy suggestions that are intended to take the process forward.

Given Libya's recent political history, which includes the relative international isolation resulting from US and UN sanctions, and the subsequent lifting of those measures, which has resulted in Libya's re-entry into world trade and politics, a detailed exploration of the country's financial sector development and its role in growing the economy, is particularly worthwhile.

## 1.3 Contribution of the Research

This research contributes to the literature in a number of ways. Firstly, it provides a wide survey of the recent work on finance growth, savings growth, and finance-saving issues, and it provides an analytical assessment of the determinants of savings. Secondly, it offers an in-depth analysis of the Libyan economy and a critical assessment of the development of the financial sector and the banking sector in particular.

Thirdly, the examination of the co-integration and causality between saving and income level or growth, financial development and domestic investment, and financial development and growth, is undertaken using a relatively long time-series of data from 1970-2005, which to the best of the researcher's knowledge, is the first study of this type in this academic area in Libya.

In addition, the financial liberalisation theorem for the case of Libya is carried out by testing the impact of the real interest rate on financial saving, and by testing the long run impact of the real interest rate on domestic investment

## 1.4 The Research Aim

The research aims to examine the role of the financial sector on saving, and on the growth of the Libyan economy, with a view to finding an explanation for the country's unstable, slow and low growth rate. In order to achieve this aim, the study considers different arguments and propositions in the literature, and employs statistical and econometric tools to analyse the trends that have prevailed in key aspects of the financial sector.

### 1.4.1 The Specific Research Objectives

The following specific research objectives were established in order to achieve the aim of the research:

- To review the state and the structure of the Libyan economy, especially the financial sector, with an emphasis on the banking system.

- To identify the type and the nature of the adopted reform and liberalisation policies and the objectives associated with them.

- To assess the impact of financial sector development on savings, investment and economic output in Libya.

- To make and provide recommendations for the Libyan economy, especially the financial sector, and for further research in this area.

## 1.5 Research Hypotheses

This section presents the hypotheses derived to test for various relationships between financial sector development, savings and growth in Libya. The following hypotheses were formulated:

### 1.5.1 Hypothesis 1: Financial Savings, Investment and Growth

Savings are necessary for capital accumulation and economic growth. However, it is financial savings, which should be available for investment (savings in financial sector) that matter for capital accumulation and growth, while non-financial savings do not contribute to capital accumulation and growth. Therefore, saving-mobilising policies such as the liberalisation of the interest rate, and the reduction of government intervention in the financial system, increase the competitiveness of the financial sector. Furthermore, some other variables such as income or growth and inflation rate have a strong impact on financial savings.

### 1.5.2 Hypothesis 2: Financial Sector Development

Financial sector development is vital for economic growth in Libya. Because the mobilisation of savings is necessary but not sufficient to ensure the channelling of savings into productive investment, this strategy requires an efficient financial sector that facilitates the transfer of mobilised savings into productive projects, and presents financial services for all sectors in the economy. Therefore, the reform and updating of the financial sector is crucial for development and growth.

## 1.6 Methodology

The quantitative approach is mainly used to achieve the aim and objectives of the research. A review of literature on financial development, financial liberalisation, the relationship between financial development and economic growth, saving-growth, and financial development and saving, is undertaken in order to highlight key issues and experience, and to establish a sufficient background that helps to understand the mechanism of the saving-growth and finance-growth relationships and to facilitate the implementation of the quantitative study. Furthermore, theoretical perspectives on the financial development sector and on saving determinants are presented in order to clarify two issues, these being, the importance of the financial system to an economy, and the factors that influence the savings rate. Both of these issues are relevant in terms of achieving the aim of this study, as they can support the argument that financial sector development is vital for economic performance through its effect on savings and investment, and they are useful in underpinning the quantitative aspect of the research.

In addition, a review of Libya's economic background before the discovery of the oil up to the post-reform programmes adopted in the early 1990s is conducted, with a specific focus on the events before and during the period of financial sector reform and liberalisation, particularly during the 1990s when the financial reforms were implemented as part of structural adjustment programmes.

The quantitative analysis is based on an empirical assessment of the importance of financial sector development in Libya's economy, using time-series econometric techniques, including the unit root test for the stationarity of the variables, and testing for co-integration and causality. The empirical study aims to examine the financial liberalisation hypothesis by testing the long-run impact of the real interest rate on financial savings and investment in Libya over the period 1970-2005. Furthermore, the role of financial sector development in Libya's economy is examined by testing for causality between financial development indicators and the real output, and by testing for a long-run relationship and causality between financial development indicators and investment. In addition, causality tests between financial savings and income level or growth are undertaken. The aim of the quantitative analysis is to present empirical evidence that the financial sector might be the main influence on Libya's economic performance, because of the relationships between savings and investment, and investment and growth.

## 1.7 Scope of the Study

The scope of the study has been defined both in terms of sector coverage (financial sector) and time scope (1970-2005). In terms of sector coverage, the emphasis is placed on the banking sector mainly because of its predominance in the financial sector on the one hand, and because Libya's financial sector lacks the important contribution made by the contractual savings institutions and the capital market, on the other. In addition, evidence in the literature seems to support the view that commercial banks dominate the financial sector and have a greater role when compared to other financial institutions in the developing countries (Sarr, 2000). Furthermore, the World Bank (2002) has noted that more funding is raised from bank loans than from selling equity, even in industrial countries.

With regard to time, the study focuses on the period 1970-2005, largely, because this accounts for the most important period within the Libyan

economy that the financial sector has gone through. This period witnessed a number of economic changes, which included the impact of the oil industry on the economy, and the implementation of economic reforms in the early 1990s.

## 1.8 Structure of the Thesis

The thesis is divided into eight chapters, including this introduction (Chapter One). The arrangement of chapters is intended to capture the flow from a wider perspective to the country-specific issues and from the theoretical towards the empirically-based evidence. In line with this, the next two chapters cover the theoretical and empirical background of the research. Chapter Two provides the theoretical and empirical evidence regarding the financial liberalisation and the relationship between financial development and economic growth, including financial liberalisation as part of financial development. Chapter Three discusses the theoretical and empirical saving-growth relationship and the determinants of savings. Chapters Four and Five respectively, present a review of the Libyan economy in general and the financial sector in particular. Chapter Six provides more information on the econometric methodology and data issues. Chapter Seven presents the results of the empirical analysis including the results of the unit root test, cointegration and causality tests, in respect of all variables. Chapter Eight provides some policy recommendations and an overall conclusion.

# CHAPTER TWO
# FINANCIAL DEVELOPMENT: FINANCIAL LIBERALISATION AND THE IMPACT ON ECONOMIC GROWTH

## 2.1 Introduction

The financial sector is vital for economic development and activities. It links savings and investments and, therefore, promotes economic growth, which is enhanced because a more efficient and well-structured financial sector helps to mobilise more savings, and increase productive investment. This chapter presents a review of the theoretical and empirical studies that discuss the relationship between financial sector development and economic growth. In section 2.2 the meaning of financial development is discussed, together with the characteristics of an under-developed financial sector, and an explanation of how this situation arises.

Section 2.3 focuses on the issue of financial liberalisation as part of financial reform and the experiences of different countries. Section 2.4 presents a review of literature on the relationship between the financial development and economic growth. Section 2.6 explores theoretical macro models, which explain the mechanism between financial development and growth.

The overall purpose of the chapter is to explain why the financial sector is the core of economic development and growth. It considers the intermediation role played by the financial system between saving and investment. Hence, section 2.5 reviews the functions of the financial system. In addition, the chapter aims to examine the theoretical and empirical evidence for the impact of financial sector development on economic development and growth. Section 2.6 provides the conclusion.

## 2.2 The Meaning of Financial Development

Financial development refers to the process of moving from a situation of financial repression, or restriction, characterised by excessive state

intervention and control of the financial sector, to one where the financial sector is in the hands of the private sector, and the state simply acts as regulator, enforcing prudential regulation and supervision. To understand the significance of such an event, it is important to appreciate the role of the financial sector in the economic process, and why excessive state involvement arises in developing countries.

### 2.2.1 The Role of the Financial Sector

Ideally, a financial system develops to act as an efficient intermediary between depositors and investors, generating market-clearing prices and interest rates. Such a situation has positive implications for saving and growth. Bencivenga and Smith (1991a) note the beneficial activities of banks and other intermediaries as follows:

- Banks accept deposits from, and lend to, large numbers of agents: Withdrawal demand under normal circumstances is fairly predictable.
- Banks hold liquid reserves against predictable withdrawal demand.
- Banks issue liabilities that are more liquid than their primary assets.
- Banks eliminate the need for self-financing of investment

Bank activities have two important implications for saving and investment. By providing liquidity, banks permit risk-averse savers to hold bank deposits rather than liquid, (but unproductive) assets. Of particular importance is that banks can economise on liquid reserve holdings that do not contribute to capital accumulation. Also, by eliminating self-financed capital investment, banks prevent the unnecessary liquidation of such investment by entrepreneurs who find that they need liquidity. To summarise, an intermediation industry allows permits an economy to reduce that part of its savings held in the form of unproductive liquid assets, and to prevent misallocation of invested capital due to liquidity needs.

### 2.2.2 Financial Restriction

Clearly, the banking system is an important link between household saving and business investment, and is vital for any development effort. However, traditionally there has been a general feeling in many developing countries that a laissez-faire approach by the state would result in a poor level of investment. Fry (1988) notes three reasons for this:

- The general mistrust of the free market.
- Keynes' view that liquidity preference would push the interest rate above its equilibrium.
- Keynesian writings purporting the existence of an inverse relationship between the nominal rate of interest and the rate of economic growth (Tobin, 1965).

In many developing countries, policies of financial restrictions were introduced in order to circumvent the above issues. Generally, such policies have involved imposing upper limits on interest rates in order to provide investment for industry at lower prices, and have require banks to lend to favoured industries. However, when pursued to an extreme, such intervention has tended to cause financial repression.

### 2.2.3 Financial Repression

Financial repression is one of the important issues to be addressed financial sector development, especially in developing countries where such repression has generally been long-lasting. McKinnon (1989) defined financial repression, saying,

> *"when governments tax and otherwise distort their domestic capital markets, the economy is said to be financially 'repressed'. Usury restriction on interest rates, heavy reserve requirements on bank deposits, and compulsory credit allocations, interact with ongoing price inflation to reduce the attractiveness of holding claims on the domestic banking system".* (P.29)

From the above definition of financial repression, it is clear that when state intervention in the financial system distorts the operation of financial markets, the financial system is unable to perform its role as an intermediary, mobilising savings and ensuring the efficient allocation of investment. Whilst it is difficult to generalise about the characteristics of heterogeneous economies, it would be fair to say that financially repressed economies may show some or all of the following characteristics:

1. Controlling the interest rate. It is common for the government to place upper limits on interest rates to provide firms with cheap capital, to facilitate expansion. The spreads offered by banks tend to be wider, meaning that deposit rates are respectively lower, and frequently real rates of interest are negative. Rates of interest should perform a number of roles, such as the cost of funds, acting as rate of discount, and as a link between the real and monetary sectors. However, when interest rates are government administered, they do not perform any allocated function on the asset side of banks' balance sheets: Credit is allocated by non-price means.

The justification of government administration of the interest rate is based on the fact that in the presence of asymmetric information, a competitive credit market may not clear, and equilibrium will be characterised by credit rationing, which means banks will choose borrowers with good creditability and reputation or they might choose to lend to low-risk and low-return projects, whilst they exclude the high-risk and high returns projects from their lending. Thus, the quality of investment will be reduced and that would restrict the growth rate (Stiglitz and Weiss, 1981), as well as affecting the excess demand for loans.

For a long time, developing countries imposed low nominal interest rates in order to encourage investments and provide firms with cheap capital. These low rates of interest that were associated with high rates of inflation, have led to a predominantly negative real rate

of return on deposits in developing countries. Indeed, a World Bank report (1989) stated that real interest rates in developing countries have been strongly negative since the 1960s and certainly below real interest rates in developed countries. Therefore, an individual's willingness to save in financial assets was remarkably low, and instead people invested their wealth in inefficient inflation hedges such as gold, jewellery, real estate, and stayed away from investing their funds with the banks or any other formal financial intermediaries, thereby reducing saving and investment and ultimately hampering growth and economic performance.

2. Government intervention in allocating credit. The governments of developing countries have often assumed pre-emptory rights over the lending activities of banks, requiring a certain proportion of all lending to be directed to specified industries (those that the state determines to be high priority), or used to fund the budget deficit, at favourable rates of interest. The original purpose of policies of directed credit was to channel credit in social directions. A number of justifications have been proposed as follows:

- On efficiency and equity grounds: The presumed monopoly power of money lenders would be broken by the state provision of finance, reducing the price and increasing the volume of credit.
- Asymmetric information problems outlined in the previous section.
- The high fixed costs of setting up financial infrastructure and the externalities involved. For example, extending banking to rural areas would yield social benefits, but may not be undertaken by banks because they can not capture the benefits.
- The provision of cheap credit is an important means of redistributing income and wealth.

These arguments in favour of government intervention in allocating and pricing credit have been criticised by a number of authors. Joshi

and Little (1996) note that the fact that some worthwhile projects that deserve finance do not receive it, is not a valid reason for state intervention. Indeed, the state faces an even more severe informational constraint than informal sector lenders. The control over the interest rate means that the remaining investment by the banks tends to go to safe projects that will not be as beneficial to growth as innovative projects, which provide higher expected returns and therefore attract more private investment. Since, in such circumstances, little power or responsibility is left to the banks, there is no incentive to invest in credit assessment or monitoring. This is a major cause of the problems experienced by developing economies on the liberalisation of their financial sectors.

3. Inflated reserve requirements. Reserve ratios take two forms. The cash reserve ratio (CRR) requires banks to hold a proportion of their net demand and time liabilities in the form of cash balances, usually with the central bank. The statutory liquidity ratio (SLR) stipulates the proportion of the deposits that banks must hold in the form of government and other approved securities. Such requirements are intended as prudential measures to prevent banks from lending more than a specified multiple of the deposits, forcing them to retain a proportion of their deposits in a liquid form. In developing countries, these requirements tend to be large, and can result in inadequate funding of the non-governmental side of the economy by the organised financial system. Whilst such a requirement is appropriate if used as a prudential requirement, the reality is that in many developing countries it is actually used as an instrument for financing the public sector. It is an easy way to finance deficits at a low cost. A high reserve requirement is a heavy tax on the banking sector, and distorts the cost of funds as well as the development. It has not been unknown in some developing countries for banks to be required to hold in excess or half of their liabilities in the form of reserve or liquid assets (Bandiera et al, 2000).

### 2.2.4 Financial Reform

Financial reform refers to the process of moving from a situation of financial restriction, or repression, characterised by excessive state intervention and control of the financial sector as outlined, to a situation where the financial sector is in the hands of the private sector, and the state simply acts as regulator, enforcing prudential regulation and supervision. The different aspects of financial reform are now discussed.

## 2.3 Financial Liberalisation

The seminal works of McKinnon (1973) and Shaw (1973) provide the background to financial liberalisation. These particular writers diagnosed the prevalence of what they termed 'financial repression' and therefore, went on to argue the case of financial liberalisation.

Fry (1995) showed that many developing countries had experienced financial repression. Therefore, liberalisation was required to allow market forces to allocate financial resources in a competitive and efficient manner. The withdrawal, by government, of the absolute responsibility to allocate credit from financial intermediaries was likely to weaken the process of loan recovery as the borrowers could always look forward to protection by the government.

According to the World Bank (1994), financial repression had also imposed both explicit and implicit taxation, on both individuals and financial intermediaries. Several countries, developed and developing, have undergone financial liberalisation. In the case of the developing countries, the adoption of financial liberalisation policies were introduced to satisfy the conditional ties for accessing credit from the International Monetary Fund and World Bank.

The major dimensions of financial liberalisation, according to Williamson and Maher (1998) include: elimination of credit controls, deregulation of interest

rates, removal of entry conditions, ownership, autonomy of operation, and liberalisation of internal capital flows. A repressed financial system could, therefore, be defined as one in which virtually all the major decisions in the relevant dimensions are made by the government, while in a liberalised system the government only plays a minor role. Therefore, a system could be categorised as repressed, partly-liberalised or fully-liberalised, depending on the strength of government involvement on several of the above dimensions of liberalisation.

### 2.3.1 McKinnon-Shaw Hypothesis

The McKinnon-Shaw (M-S) theory rests heavily on the importance of the interest rate in mobilising domestic saving and increasing investments and hence, promoting economic growth. This hypothesis argues that restricting the interest rate promotes current consumption at the expense of the future, thereby stifling savings, reducing the quantity of investment below the optimal level and reducing the quality of investment by encouraging banks and other financial intermediaries to finance only low return projects (Gibson and Tskalotos, 1994). It is suggested by the M-S hypothesis that the removal of restrictions on interest rates is the best way to mobilising savings, and that such restrictions should be transferred to the productive sectors.

According to McKinnon (1973), the removal of interest rate ceilings and their substitution by higher and positive real interest rates, are essential measures to encourage individuals to start accumulating money and transfer it to the productive sectors and investments, because these steps will ensure a positive real rate of return on their savings. At the same time, Shaw (1973) emphasised the significance of financial intermediaries in the financial liberalisation process as they reduce transaction costs and bring together savers and investors at higher deposit interest rates and lower loan rates.

McKinnon (1989) stressed the need for financial liberalisation when he connected this and trade liberalisation with successful economic growth. In doing so, McKinnon (1991) suggested two macro-economic pre-requisites to

assist financial liberalisation, these being: firstly, the need for fiscal control by the government in order to raise revenues and reduce the state deficit; and secondly, the need for control over domestic banks by monetary policy in order to control the credit flows in the economy. In this respect, De-Gregorio (1999) observed that using the reserve requirements across industrial countries as a way to control credit allocation has declined remarkably in recent years. He pointed to financial sector development as the main reason for this. Financial improvement made the reserve requirement less effective by creating new instruments that are close substitutes to the assets subject to the reserves.

More support for financial liberalisation came from Fry (1997), who argued the real interest rate as the key to a higher level of investment and a rationing device leading to greater investment efficiency. However, Fry suggested five pre-requisites for the success of financial liberalisation: The first is adequate prudential regulation and supervision of commercial banks, both of which imply some minimal levels of accounting and legal infrastructure. The second is a reasonable degree of price stability. The third is the fiscal discipline to avoid inflationary expansion of reserve money by the Central Bank, seen through direct domestic borrowing by the government or through the indirect effect of government borrowing, which produces surges of capital inflows and requires a large purchase of foreign exchange by the Central Bank to prevent exchange rate depreciation. The fourth is a tax system that does not impose discriminatory or implicit taxes on the financial sector. The fifth is a profit-maximising policy by the commercial banks.

Because of the disadvantages associated with the extreme of outright liberalisation, Stiglitz (1994) argued against full liberalisation of the financial sector, on the grounds that it does not allow perfect work due to the possibility of market failure. Moreover, he called for government interference to keep the interest rate below the level of market equilibrium. Stiglitz stressed that under conditions of imperfect information, some forms of financial repression, including an interest rate ceiling, might contribute to reductions in the problems of moral hazard and adverse selection. In

contrast, liberalising the interest rate may lead to financial crisis by worsening the problems of adverse selection and moral hazard: when the interest rate rises, the probability of the default of the high-risk borrowers becomes higher, with the result that banks that are risk neutral tend to lessen the supply of credit to the borrowers in order to avoid risking their assets.

These opinions have been criticised by Fry (1997), who argued that Stiglitz over-trusts the government by describing it as disciplined, long-sighted, knowledgeable, objective and pursuing economic objectives without deviating into the many side alleys of patronage and rent creation. Fry totally agreed with the conclusion drawn by Arestis and Demetriades (1997) that market failure does not necessarily imply government success. Consequently, the impacts of financial liberalisation depend on the institutional context of the economy in question and, particularly, the existence of good governance. Even though Arestis and Demetriades (1997) to some degree, accepted the claim by Stiglitz about the government intervention, they concluded that under conditions of market failure and effective governmental institutions, government intervention may be able to improve matters. Therefore, in those circumstances liberalisation by reducing the scope for the government action may prove detrimental. In addition, Arestis and Demetriades highlighted macro-economic stability and adequate bank supervision as pre-requisites for successful financial reform.

Thirwall (1999) argued that the change in the interest rate has two effects, the income effect and the substitution effect. The latter encourages savings by making current consumption more expensive, while the former hampers savings, because at higher interest rates the same income can be obtained with lower savings, and consequently the two effects offset each other. Even McKinnon (1991) admitted that the impact of the interest rate on savings is ambiguous because of the interaction between the income and substitution effects of the real interest rate.

Some other criticisms of financial liberalisation theory are widely discussed in Thirwall (1999). For example, the Post-Keynesians argued that a high rate of

interest has an adverse effect on costs and, therefore on the level of demand in the economy, and that may lead to stagflation (the combination of inflation and unemployment).

Another criticism was made by Post-Keynesian and Keynesian economists, who blame the Financial Liberalisation school for treating the supply of credit as exogenously determined, where the banks act as savings holders and supply loans mainly on the basis of the deposits they hold, so the more deposits they have the more loans they can make. These economists argued that savings are not necessary in order to increase investments, and that the crucial factor is the increase in the volume of bank loans that finance real investments, and not the increase in deposits.

The Neo-Structuralist school claims that a higher interest rate negatively influences the supply of credit to the private sector. According to this argument, increasing the interest rate attracts money from the informal (curb) market to the banks. However, under government regulation, banks, unlike the informal market, are subject to compulsory reserve and requirements lending to governments and that might cause a reduction in the supply of loans to the private sector.

### 2.3.2 Experiences of Implementing Financial Liberalisation

Financial sector liberalisation can spur economic growth and development but these same reforms also involve risks if they are not appropriately designed and implemented. Thus, according to Guitani (1998), one of the central policy and operational concerns for countries has been how to sequence the reforms so as to maximise their benefits and limit the risks. The literature on sequencing of financial sector liberalisation provides a wide range of views, as the practice has been different from one country to another, partly because of variations in the initial conditions and objectives (Mirakhor and Villanueva, 1993; Gibson and Tsakalotos, 1994).

Although in most developing countries, financial sector reforms have been a component of broader structural adjustment programmes, the heavy administrative requirements, economic theory and experiences gained from earlier implementations, suggested the need of some form of sequencing. For example, Funke (1993) noted that certain distortions could remain in the system for some time and delay the introduction of other policies, thus strengthening the need for a sequencing approach. In particular, economic consequences such as rising inflation due to funding of fiscal deficits could undermine the credibility of reforms and make the liberalisation process difficult. The dilemma is that too much emphasis on inflation could undermine growth and yet growth is vital for the success of the reforms (Blackburn, 1999). This is in line with the observation by Calvo and Kumar (1994) that credit extension in the early stages of general economic reform liberalisation could be restricted by macro-economic level demand-management policies. They argued that the liberalisation of trade and prices together with an inherited monetary over-hang, could lead to serious problems of inflation, stabilisation and balance of payments, which would require credit-restriction by the monetary authorities, and hence raise the possibility of slow growth.

According to a survey by Williamson and Maher (1998), whilst by 1973, the financial systems of a number of developed countries could broadly be categorised as fairly liberal, they nonetheless retained certain dimensions of financial repression. The United States, for example, was still imposing a maximum limit on the deposit rate, limited assets that savings and loan institutions could obtain, and also prohibited inter-state banking. On the other hand, financial repression was almost universal in most developing countries, as they all had directed credit and regulated interest rates, as well as government control of entry of firms into the financial sector.

Such financial repression had changed dramatically by 1996, however, as a number of countries had made significant progress in liberalising their financial sector (Williamson and Maher, 1998). For instance, most Latin American countries had eliminated the direct credit programme and interest rate controls, although elements of directed credit were still present in Brazil

and Venezuela. Both Latin America and East Asian countries still had barriers to entry for foreign and domestic commercial banks but barriers had been lowered for other financial institutions. However, Chile and Argentina had allowed competition in the commercial banking sector as far back as the late 1970s and early 1980s respectively. Countries such as Morocco, Egypt, South Africa and others in South Asia, had also reduced elements of directed credit, liberalised interest rates and allowed more competition in the banking sector

According to Aluthge (2000), reform and liberalisation policies in Sri Lanka were implemented in a gradual process consisting of two major phases from 1977 to 1988, and 1989 to 1994. The gradual method is said to have begun with interest rate liberalisation, followed by the introduction of market-based instruments of monetary policy and initial measures to strengthen banking supervision. This type of phasing, according to Dassanayke and Heart (1997), was largely aimed at avoiding possible macro-economic shocks to the system. Reforms in the initial phases were centred on the banking system, with the exchange rate system and monetary policy, being later extended to provide more autonomy to the Central Bank and to strengthen its capacity in banking supervision and the establishment of prudential regulation.

Another important reform is the privatisation of the state enterprises, since their poor performance and continued borrowing from the financial sector does not improve the lending portfolios of the financial intermediaries. However, a different view on sequencing with regard to privatisation of state enterprises came from Demirguc-Kunt and Levine (1994), and the World Bank (1995), who argued that the development of a good financial system before privatisation was necessary to ensure an immediate response to the financial needs of the newly-privatised enterprises.

Awasu (1996) studied the experience of some countries that applied financial liberalisation such as China, Taiwan and South Korea. He found the existence of efficient markets and financial institutions were the essential

condition for the success of financial liberalisation, since without them the process may lead to retardation of financial development by creating high volatile inflation in an unstable macro-economic and shallow financial market.

The World Bank and the IMF broadly adopted the McKinnon and Shaw hypothesis in their prescriptions for developing countries. These prescriptions took the form of structural adjustment and stabilisation programmes, and aimed to support developing countries to overcome their severe problems such as high inflation, balance of payments deficits, debt crises, and unemployment. However, the outcomes of implementing financial liberalisation as prescribed by the World Bank and the IMF were at most disappointing. In some of the cases, financial liberalisation did not help in achieving the aim of mobilising savings and increasing investments and growth. Moreover, in many instances it led to adverse effects; financial liberalisation resulted in economic crises in many of the emerging markets, such as in the Russian Federation (1990), Mexico (1994-1995), and the financial crises that hit the Southern East Asian economies in 1997.

Akyuz (2000) argued that many victims of the crises applied policies of economic liberalisation, specifically financial liberalisation, which was initially associated with a rush in capital inflows, only to be followed by an equally sharp reversal. The huge capital outflows damaged not only the financial sector but also all macro-economic conditions in the affected countries, leading to currency appreciation, current account deterioration, rapid domestic credit expansion, and speculative bursts in the asset market. A large debate arose following the above crises, especially those in South-East Asia. The core of the debate focused on the causes and consequences of these crises, which are not the concern of this study, but it is still appropriate to mention that in addition to the errors made by the various governments, the World Bank and the IMF must bear a share of the blame for these crises, especially as they often used financial liberalisation as a pre-condition for financial and technical assistance to the developing countries. This pre-condition was always imposed without taking account of the differences in

the conditions and the characteristics of the countries that applied financial liberalisation.

Rodirk (1999) argued that openness may not be suitable for all countries, and that the anticipated benefits of financial liberalisation depend on the strength of the domestic institutions and other factors. In a similar, Edwards (2001) and Quinn and Toyoda (2003) suggested that the benefits of capital account liberalisation are restricted to more developed countries, finding that countries that are more mature in terms of financial development, experience a larger than average boost from equity market liberalisation. In addition, countries with better legal systems, good institutions, favourable conditions for foreign investment, and investor protection, generate larger growth effects.

Patti and Hardy (2005) argue that the de-regulated interest rate, allocation of credit, liberalised entry into the financial sector, privatisation of state-owned banks, and supervision of the banking system, all improve the efficiency of the banks in developing countries, and Pakistan especially.

Bekaert et al (2005) found that financial liberalisation (equity market liberalisation) increased GDP. They argue that it is reasonable to expect market liberalisation to be linked with both macro-economic reforms and financial development and also indicate the important impact of financial liberalisation after controlling for macro-reforms, financial development, banking crises, legal reforms, and the ability of a country to enforce its laws.

Chinn and Ito (2005) noticed that financial openness does contribute to equity market development, but only when a threshold level of general development of the legal system and institutions has been reached. They conclude that the general level of legal development matters more than the level of finance-specific legal/institutional development, also found that the openness of goods markets is a pre-condition for financial opening, and that the development of the banking sector is a pre-condition for the development of equity markets.

Ghosh (2006) argued that financial liberalisation led to a significant easing of financing constraints and improves financially-constrained firms' access to external finance. He proposed gradual financial liberalisation and the elimination of political and economic obstacles.

Using panel data relating to 87 less developed countries over the period 1980-2000, and with a focus on Asian countries, Ito (2006) controlled for the level of legal or institutional development and investigated whether financial liberalisation leads to financial development, and whether trade opening is a pre-condition of financial opening. For Asian countries, he found that corruption and law appear to matter in financial development, suggesting that the general level of legal development matters more than the level of finance-specific legal development. According to the McKinnon hypothesis, the opening of a goods market is a pre-condition for financial opening in the less developed countries as well as in the Asian countries.

Very recently, Ang and McKibbin (2007) used time series data from 1960 to 2001, to examine whether financial development leads to economic growth in Malaysia. They performed cointegration and causality tests in order to assess the finance-growth link, finding that financial liberalisation, through the removal of expressionist policies, has a positive impact in stimulating financial development.

In summary, the different outcomes of financial liberalisation bring the strong belief that a group of appropriate macro-economic, financial, and institutional pre-requisites are crucial for the success of such reform. This includes sequencing the liberalisation policies (external and internal), a suitable exchange rate policy, the regulation of capital outflows and inflows, efficient regulation and supervision systems, and macro-economic stabilisation. All of these pre-requisites contribute to the success of financial liberalisation.

## 2.4 Financial Development and Economic Growth

There is substantial theoretical and empirical literature that establishes a link between financial development and economic growth. The link exists because the nature of the financial system is unlimited and wide especially nowadays, where every day there are new changes in financial institutions, services and instruments and the effect of these changes spread over the borders of one small local economy to reach the international and global economy.

In practice, until now, many developing countries have not developed their financial systems and these have not been their priority, not placed at the top of their development and growth agendas. In developed countries, however, reforming and updating the financial system is a priority, recognised to be of great importance to their economies. For these countries, the financial system is the heart of the system because it harmonises the economic activities and ensures the efficient allocation of resources.

However, in theory, the issue of the relationship between financial development and economic growth and development is still debatable. This section briefly reviews the literature about the importance of the financial sector for economic development and economic growth. In recent years, this issue has gained increasing attention, both in academic and applied circles. However, it is important to mention that the reference to the importance of finance in economic activities goes back to the early study by Bagehot (1873) who referred to the vital role of financial intermediation for the rapid industrialisation of England in the early nineteenth century (Becsi and Wang, 1997). Schumpeter (1911) emphasised the importance of financial intermediaries to economic development through their role in channelling society's savings to firms. He argued that financial services provided by the intermediaries were crucial for economic growth (Luintel and Khan, 1999).

Studies by several researchers (Gurley and Shaw, 1955, 1960; Cameron, 1967; Goldsmith, 1955; and Patrick, 1966) argued that the financial system

plays an important role in economic development and growth and, therefore, governments should use a financial sector model that promotes policies and strategies to improve the growth and development process. Patrick (1966) distinguished between two types of financial development. The first type is supply-leading financial development that requires the establishment of financial institutions to effectively enhance growth. This type dominates the early stages of economic development and investments. The second type is the demand-following financial development type, in which the increase in financial institutions and the diversification of the financial services and assets is a response to the increasing demand by savers and investors in the economy: This type of financial development dominates the later stages of economic development.

In 1973, McKinnon and Shaw argued that repressing the financial sector by imposing restrictions on the deposit or interest rate, negatively affects economic growth by reducing savings and investments. They called on financial liberalisation as the best way to overcome the distortion in the capital market that arises from financial repression.

Kapure (1976), Gablies (1977), Fry (1978) and Mathieson (1980) emphasised the role of financial liberalisation on economic growth. They indicated that liberalising the financial sector would mobilise financial saving and allocate capital to the productive sectors, and in turn increase investments and economic growth. In 1989, McKinnon re-emphasised the positive role of financial liberalisation, indicating this together with trade liberalisation as vital factors in successful economic development.

Gertle and Rose (1994) undertook a study using 69 developing countries over the period 1960 to 1988, using two measures of credit as measures of financial deepening. These measures were private domestic credit, and quasi money, which are regarded as indicators of the depth of financial intermediation. Both are expressed as a percentage of GDP. Gertle and Rose (1994) regressed the log values of these variables onto the log of real per capita income, finding that a 1% increase in per capita income is

associated with an increase in the ratio of private credit to GDP of 0.42%. The comparable increase in the ratio of quasi money to GDP is around 0.56%.

In 1996, Berthelemy and Varoudakis criticised the distinction between the supply-leading and the demand-following financial development types as suggested by Patrick (1996). They emphasised the complementarity of the demand-following and supply-leading styles of financial development in increasing the economic growth process, regardless of the stage of the development.

Becsi and Wang (1997) found that the under-development of the financial sector negatively impacts upon society and growth, whereas financial intermediaries (banks) positively affect economic growth through the efficient allocation of capital to the most productive users. In addition, they revealed that restricting the deposit interest rate and increasing reserve requirements, reduce the growth rates. Similarly, Levine (1997) supports the argument of the positive association between the financial sector development and economic performance; he argues that the development of financial institutions and markets is a vital part of the growth process and not *"an inconsequential side show responding passively to economic growth and industrialisation" (P.689).*

A wide range of empirical evidence supports the view that financial development can directly influence economic development and growth and reduce income inequality (Jalilian and Kirkpatrick, 2001; Westley, 2001). This is synonymous with the observation by the World Bank (2001) that there is a likelihood of a causal relationship between an effectively-functioning financial system, macro-economic stability, poverty reduction, and economic growth. Comparative research on the link between the financial system and economic growth shows that firms located in economies with well-developed financial intermediary sectors and stock markets, have grown faster than those in economies with similar systems but which are less developed (Demirguc-Kunt and Maksimovic, 1996; Levine and Zervos, 1996; Rajan and

Zingales, 1996). In addition, financial depth, as a measure of financial development, has been found to be strongly associated with per capita income.

The debate on the legal system has helped to deepen the understanding of the role of the legal structure, and institutional development in general, on both financial and economic growth. According to Cross (2003), there is an important role for the legal and other institutions in financial and economic growth. The fundamental theory of institutional economics is closely linked to the assumption that individuals will invest for growth if they are sure that they can gain returns from their investment. The ability to capture economic returns is not automatic but requires a well-functioning institutional arrangement.

Claessens and Laeven (2003) found evidence suggesting that the effect of insecure property rights on the asset mix of firms and the asset allocation effect is economically as important as the lack of financing effect, because it impedes the growth of firms to the same quantitative magnitude. The results imply that the extent to which firms allocate resources in an optimal way, depends on the strength of a country's property rights and that their asset allocation is an important channel through which property rights affect firm growth.

Beck et al (2004) assessed two inter-connected questions: (1) Why does legal origin matter for the operation of the financial system, and (2) Which specific system traits, such as judicial independence and the adaptability of the legal system, are crucial for explaining differences in the obstacles that firms face in contracting for external finances? They provide evidence of the connection between legal origin and specific legal system traits, and document the link between these and the obstacles that firms face in contracting for capital. They emphasise that legal system adaptability is important for corporate finance.

In line with the above argument, the World Bank (2002) noted that the development of the financial sector critically relies on the protection of private property. Such an argument provides evidence that the differential protection of stakeholders has influence on the relative development of debt and equity markets, which relates to how firms are externally funded, and hence the overall level of financial and economic development (World Bank, 2001). In particular, better protection of outside financiers property rights is said to favour financial sector development and investment.

Institutions provide opportunities for people, empower them to make better use of their assets and accumulate more by supporting market activity. The focus, according to the World Bank (2002), should be on creating institutions that support the market, and on creating an environment that enables people to demand the use of the financial institutions.

The World Bank (2001) cited empirical research, which strongly suggested that improvements in financial arrangements precede and contribute to economic performance. For example, King and Levine (1993a) showed that the level of financial development in 1960 was an important determinant of economic growth.

Other recent studies have tried to establish whether financial development leads to improved economic growth and performance. For example, Beck et al (2000) evaluated the long-term impact of the exogenous component of financial intermediary development on the sources of economic growth by using a cross-country sample with data averaged over the period 1960-1995. They found that financial intermediaries have a large, positive impact on total factor productivity growth, and that the long-term links between financial development and both physical investment growth and private saving rates, are tenuous.

Nidkumana (2001) investigated the links between financial development and economic development, finding that empirical research on the relationship between financial development and economic growth in Africa, remains

limited. However, the existing evidence suggests that financial development is positively related to the growth rate of real income, and further indicates that financial systems are still relatively under-developed in the majority of African countries. Research in this area is constrained by the lack of detailed information that can allow researchers to assess the extent to which financial systems fulfil their roles in connection with identifying productive investment projects and mobilising savings.

Neimke (2003) used a theoretical and empirical approach to explain the dynamic link between financial development and economic growth in the transition countries. He found that both the theoretical explanations and the empirical results, point to financial institutions having significant effects for investment and the development of factor productivity as the foundation for long-term positive growth. This is particularly true for Central and Eastern Europe as well as for the former Soviet Union economies that have inherited widely obsolete capital stock, and are suffering from sharp declines in their growth rates.

Using data from 1993-2000 on 49 nations, Berger et al (2003) contributed to both finance-growth literature and the community banking literature by testing the effects of the relative health of community banks on economic growth, and investigating potential transmission mechanisms for these effects. Data from both developing and industrial nations suggest that greater market shares and efficiency rankings of small, private, domestically-owned banks are associated with better economic performance. Data from developing countries are also consistent with favourable economic effects of foreign-owned banks, but unfavourable effects from state-owned banks.

Fase and Abma (2003) examined the empirical relationship between financial development and economic growth in nine emerging economies in South-East Asia finding that financial development matters for economic growth. The results indicate that improvement of the financial system in developing countries may benefit economic development, and also that the financial infrastructure is of great importance for economic welfare.

Hung (2003) developed a model to determine the impact of inflation on the relationship between financial development and economic growth. The results demonstrated that if a government's spending share is relatively large, inflation will rise and financial development will decrease and reduce economic growth for countries with relatively high initial inflation rates. However, in countries with relatively low initial inflation rates, financial development will reduce inflation and promote growth.

Analysing the relationship between financial development and growth in the short and long term, Fisman and Love (2004) found that over the long run, financial development supports and promotes economic growth through a deepening of markets and services that channel savings to productive investment; these positive aspects of the financial development lead to higher economic growth in the long term.

Alfaro et al (2004) examined the various links between foreign direct investment (FDI), financial development and economic growth. They explored whether countries with better financial systems can exploit FDI more efficiently, producing an empirical analysis that shows that FDI alone plays an ambiguous role in contributing to economic growth. They argued that countries with well-developed financial system gain significantly from FDI, but that the level of the development of local financial markets is crucial for the positive effects to be realised.

For the case of China, Liang and Teng (2005) investigated the relationship between financial development and economic growth over the period 1952-2001. After considering the time series dataset, they found that financial development, physical capital stock, international trade and real interest rate are all economically and significantly related to economic growth. They also suggested that in the developing countries that it is critical to establish well-developed financial systems, particularly with sound financial intermediation and liberalised interest rates, all of which are important for the efficient

allocation of credit, which in turn, can help to maintain sustainable high economic growth.

Beck et al (2005) found that financial development boosts the growth of industries that are naturally composed of small firms, more than large-firm industries. Their work contributes to the literature on the mechanism through which the financial development boosts aggregate economic growth. Besides confirming that financial development facilitates economic growth by boosting the growth of firms that rely on external finance, they show that financial development fosters economic growth by relieving constraints on small firm growth.

Liu and Hsu (2006) examined the relationship between financial development and economic growth in Taiwan, Korea and Japan. They found that high investment had accelerated economic growth in Japan, while a high investment to GDP ratio did not necessarily lead to better growth if investment was not allocated efficiently or if there was over-investment as in Taiwan and Korea. The finance-aggregate had positive effects on the economy of Taiwan, but a negative effect on Korea and Japan. Liu and Hsu attributed this outcome to the relatively sound financial system and prudential financial regulation and supervision in Taiwan, compared with the arrangements in Korea and Japan.

Chen Hao (2006) examined how the development of financial intermediation has influenced the economic growth in China during the post-1978 reform period. He found that financial development contributed to the country's rapid economic growth through two channels: firstly, through the substitution of loans for state budget appropriation, and secondly, through the mobilisation of household savings.

In their investigation of the role of financial development in both oil exporting countries and non-oil countries, Nili and Rastad (2007) reportd a lower level of financial development for the oil economies when compared with the rest of the world. The study also shows that the weakness of financial institutions

contributes to the poor performance of economic growth in oil economies and that this weakness might be associated with the dominant role of government in total investment and the under-developed private sector.

On other hand, Levine et al (2000) also provided evidence to show that certain aspects of economic growth can cause growth in financial development. They found that some aspects of the financial sector were dependent on the factors that precede recent growth. In particular, development of the financial sector was related to the historical direction of the legal system, and also showed a high correlation with long–term economic growth. This finding seems to support the observation by the World Bank (2001) that access to long-term debt-financing in developing countries is partly limited by poor collateral laws and weak judicial efficiency, which make it hard either to write strong contracts or enforce them in courts of law. Therefore, a legal system, that encourages many informal activities in the economy, has the potential to slow down the development of the financial sector.

Calderon and Liu (2003) examined the direction of causality between financial development and economic growth on data from 109 developing countries and industrial countries from 1960 to 1994. They found that financial development generally leads to economic growth and that there is a positive interaction between financial and economic growth. They also reported that financial deepening contributes more to the causal relationship in the developing countries. Financial deepening propels economic growth through both a more rapid capital accumulation, and productivity growth.

Christopoulos and Tsionas (2004) investigated the long-term relationship between financial depth and economic growth, trying to use the data in the most efficient manner through panel unit root tests and panel cointegration analysis. They provide clear support for the hypothesis that there is a single equilibrium relationship between financial depth, economic growth and financial depth, and that the only cointegrating relationship implies uni-directional causality from financial depth to growth.

Contrary to the above, there are some arguments about the positive role of the financial sector on growth. Some economists argue that the financial sector does not play a remarkable role in economic development and economic growth. For example, the Miller-Modigliani theorem (1961) argued that *"real economic decisions are independent of the methods of financing, thus, leaving only a passive role for the financial sector"* (cited in Becsi and Wang, 1997, P.47). Furthermore, Chandavarkar (1992) concluded "*none of the pioneers of development economics even list finance as a factor in development. Thus finance is viewed as handmaiden to enterprise by responding to the demand for the particular types of financial services generated by economic development*" (P.134).

In addition, some economists argue that the impact of financial development on economic growth is theoretically ambiguous. For example, Ram (1999) argued that the positive impact of financial development on economic growth is not quite clear. He also indicated the lack of a significant positive association between financial development and economic growth.

Al-Yousif (2002) examined the nature and the direction of the relationship between financial development and economic growth using both time-series and panel data from 30 developing countries for the period 1970-2000, and reported a negative correlation between financial development and economic growth. These results can be attributed to the weakness of these countries' financial environments, which have encouraged the inefficient allocation of savings and led in turn to the negative growth of the GDP.

Recently, more attention has been given to the role of the stock market on economic growth and development. The expansion of a stock market is considered to be important component in the development of the financial sector and positively affects economic growth and development. Arestis and Demetriades (1997), Levine (1997), Demirguc-Kunt and Levine (1996), and Levine and Zervos (1998), all demonstrated the positive impact of the stock market on economic growth. However, these studies do not indicate the

direction of the causality between stock market development and economic development and growth.

- Durham (2002) examined the effect of stock market development on growth and private investment in lower-income countries by a using sample of 64 countries from 1981-1998.The results indicate that stock market development has long and short-term effects on macro-economic growth and private investment.

- Beck and Levine (2004) investigated the impact of stock markets and banks on economic growth using a panel of 40 countries for the period 1976-1988, and reported that they have a positive impact. Also the data are consistent and emphasise an important positive role for financial development in the process of economic growth.

- Nieuwerburgh et al (2006) assessed the importance of stock market development and economic growth in Belgium. They found strong evidence that stock market development caused economic growth in Belgium, and was a better forecaster of economic growth than bank-based development.

Harris (1997) re-examined the empirical relationship between stock market and economic growth from a different perspective by dividing his sample into developed and less developed countries. For the less developed countries, the stock market effect was found to be very weak, although it does have some effect.

- Hondroyiannis et al (2005) assessed empirically the relationship between the development of the banking system and the stock market and economic performance for the case of Greece over the period 1986-1999. The empirical results gained from using VAR models, suggest a bi-directional relationship between finance and growth in the long run. Also, both bank and stock market financing can promote growth and furthermore the contribution of stock market finance to economic growth appears to be substantially smaller compared to bank finance.

Using a sample of 11 MENA countries, Naceur and Ghazouani (2006) studied the relationship between stock markets, banks and economic growth. Their empirical results support the idea of no significant relationship between banking and stock market development, and growth. The results show that the overall financial development, including the stock market and banks is unimportant or even harmful for economic growth in the MENA region. This lack of relationship must be linked either to an under-developed financial system in the MENA region that hampers economic growth, or to unstable growth rates in the region that affect the quality of the association between finance and growth.

So far, a review of the different issues regarding the importance of the financial development on economic growth and economic development has been provided, and from this it can generally be said that most economic development and economic growth literature does not ignore the impact of the financial sector development in promoting growth and development.

## 2.5 Growth Macro Models and Financial Development

The early work on financial liberalisation and growth lacked analytical foundations. As Pagano (1993) noted, in traditional growth theory, financial intermediation can be related to the level of the capital stock per worker or to the level of productivity, but not to the respective growth rates: the latter is ascribed to technological progress. The lack of theoretical foundation, combined with the poor experience of many developing countries which liberalised their economies, and the ambiguities associated with the outcomes outlined above, meant that there was room for a new development in the literature. This development has been provided by a second generation of models, based on the insights and techniques of endogenous growth models.

This body of work concentrates mainly on the effects on savings and growth of financial sector development, which results from the market-driven development of institutions and markets that provide intermediation and help

solve information and allocation problems between depositors and investors. Financial liberalisation is a pre-requisite for financial sector development, as continued government intervention and control over the financial sector provides no incentive for such development to occur. With financial liberalisation, the conditions are created for increased competition, resulting in both the creation of new institutions, and the inflow of existing institutions from abroad. The increase in volume and variety of institutions provides improvements in financial intermediation. Hence, the functions of the financial sector are seen as being important for growth,

Levine (1997) refers to the growth effects of financial sector development as the functional approach. He stresses that it is the functions performed by the financial sector that encourage saving.

Pagano (1993) used the simple endogenous growth model "the AK model", in which aggregate output is a linear function for the aggregate capital stock as in equation (2.1):

$$Y_t = A K_t \qquad (2.1)$$

where $Y_t$ is aggregate output, $K_t$ is aggregate capital stock, and A is technology.

In this model, Pagano assumes that the population is stationary, and the economy produces a single good that can be invested or consumed. If invested, this good depreciates at the rate of δ per period. Gross investment equals:

$$I = K_{t+1} - (1- \delta) K_t \qquad (2.2)$$

The capital market equilibrium requires that gross saving ($S_t$) equals gross investment ($I_t$). However, Pagano assumes that because of the role of the financial intermediation there is a fraction of saving (1- φ) that is lost as in (2.3):

$$\Phi S_t = I_t \qquad (2.3)$$

After the mathematical treatment, Pagano found the steady state growth rate equation as follows:

$$g = A\,(I/Y) - \delta, \quad (2.4)$$

where (g) is the growth rate, (A) is the social marginal productivity of capital, (I) is investment, (Y) represents the income, and (δ) is the rate of capital deprecation.

By substituting equation (2.3) in (2.4), the growth rate equation takes the following form.

$$g = A\Phi s - \delta, \quad (2.5)$$

where s is the gross saving rate (S/Y). Based on the steady-state growth equation in (2.5), Pagano argues that financial indicators affect growth through three channels. The first channel affects the proportion of savings transformed to investments (Φ), which reflects the efficiency of the financial sector in transforming the deposited savings into the more productive investments. The proportion (1-Φ) reflects the resources absorbed by the financial sector during the transfer of savings to investments as a reward for the services supplied, and in addition it may reflect the inefficiency of the financial market. The second channel affects the social marginal productivity of capital (A); financial markets can allocate and channel savings more efficiently toward the productive investments through their informational role of diversifying the liquidity risk. Finally, financial development affects growth by altering the savings rate (s); the well-developed financial sector can mobilise more domestic savings by attracting the unproductive types of savings on one hand, and by increasing the willingness to save among individuals on the other hand.

Murinde (1996) extended Pagano's model in his attempt to assess the role of financial development on growth. His steady state growth rate equation was similar to Pagano's as in equation (2.6):

$$g_{t+1} = A\,(I_t/Y_t) - \delta \quad (2.6)$$

By substituting equation (2.3) in equation (2.6), Murinde obtained the steady state growth equation as follows:

$$g_{t+1} = A(s\Phi) - \delta \quad (2.7)$$

Rewriting equation (2.7) in the logarithmic form leads to equation (2.8):

$$g = \text{Ln}\,\Phi + A + \text{Ln}\,s \quad (2.8)$$

Murinde used equation (2.8) to argue that financial markets can affect the growth rate (g) by affecting the proportion of savings transformed to investments (Φ), the social marginal productivity of capital (A), and the savings rate (s).

The main financial factors that Murinde referred to in his model are the bond market, the stock market, and the credit market, and the main participants in these markets are households, non-financial firms, banks, the overseas sector, and the government. He assumes that financial markets perform in this model by supplying and demanding funds, bonds, and stocks. The firms and government sectors demand funds and supply stocks or bonds, while the households and overseas sectors supply loanable funds and demand bonds and/or stocks.

To capture the impact of the above elements of the financial markets on growth, Murinde assumes that the proportion of savings that are channelled to investment (Φ) depends on two indicators of the financial markets, namely the returns in the stock markets and the returns in the bond markets. Therefore, the higher the returns in these two markets the higher the proportion of savings transformed to investments (Φ). The following equation gives the effects of the returns of the stocks and bond markets (Φ)

$$\text{Ln}\Phi = \beta_0 + \beta_1 BR + \beta_2 SR + \mu \quad (2.9)$$

Where (BR) is the return in bond market, (SR) is the return in stock market, and (μ) is the white noise error.

Murinde assumes that the behaviour of the social marginal productivity (A) is determined by the capital-output ratio (K/Y) as in equation (2.10):

$$\text{Ln } A = \lambda_0 + \lambda_1 \text{Ln } (K/Y) + \varepsilon \qquad (2.10)$$

The savings rate is altered by the rate of return on deposits and time-savings by banks as in equation (2.11):

$$\text{Ln } s = \tau_0 + \tau_1 MR + u, \qquad (2.11)$$

Where (MR) is the return in the money market and (u) is the white noise error term.

By substituting equations (2.9, 2.10, and 2.11) into equation (2.8) and rearranging it, Murinde(1996) gets the steady state growth rate equation as follows:

$$g = \alpha_0 + \alpha_1 (K/Y) + \alpha_2 MR + \alpha_3 BR + \alpha_4 SR + v, \qquad (2.12)$$

where (v) is the white noise error term. Equation (2.12) expresses the impact of financial indicators on economic growth through their effects on savings and investments.

In addition, Murinde conducted an empirical test for the predictions of his theoretical framework. He regressed the growth rate of real per capita income (y) on the investment-output ratio (I/Y) as a proxy of capital-output ratio, the 3-month money market interest rate (MR) as a proxy of money market return, and the returns of the stock and bond market (BR, SR) to capture the effect of these two markets. Therefore, the empirical model takes the following form:

$$G_t = a_0 + a_1 \text{Ln } (I/Y)_t + a_2 MR_t + a_3 BR_t + a_4 SR_t + e_t \qquad (2.13)$$

Murinde used annual time series data for seven Pacific Basin countries over the period 1960 to 1993 in order to estimate the above regression. He used the Ordinary Least Square (OLS) method to estimate the model for each country in a country-specific spirit to capture the effects of the financial

variables on the growth rate. Like Murinde (1996), Agenor and Montiel (1996) used Pagano's model to study the role of the financial sector in growth through the effect on the saving rate (s), the proportion of savings that transformed into productive investment (μ), and the marginal social productivity of capital (A).

The steady state growth rate equation looks as follows:

$$g = s\mu A - \delta \qquad (2.14)$$

As in Pagano's model (1993), (1-μ) represents the absorption of resources as the returns of the services of financial intermediaries. However, Agenore and Montiel believe that (1- μ) in developing countries, results from explicit and implicit taxation such as high rates of reserve requirements, and from excessive regulations lead to higher costs and, therefore, inefficient intermediation activities. Consequently, they argue that reforming the financial sector reduces the costs and enhances the activities of financial intermediaries, and then the proportion of savings transformed into investment (μ) rises and leads to a higher rate of growth (g).

## 2.6 The Functional Mechanism of the Financial System

The financial system is the heart of the performance of any economy, being the intermediary that allocates funds from the sources of surpluses to the users of the surpluses, thus facilitating effective capital accumulation, which is one of the major engines of economic growth (Bain, 1992). Dornbusch and Reynoso (1989) believed that financial factors might affect economic development through their impact on the availability and the mobilisation of savings, and the allocation of these savings to the highest return investment projects. Following the argument that the financial sector may affect economic growth through three channels; mobilisation of savings, transferring saving into investments, and increasing the productivity of investments (Pagano, 1993 Beck et al., 2000), this section considers how the financial sector facilitates growth.

### 2.6.1 Mobilisation of Savings

Levine (1997) defined savings mobilisation as the process that involves the agglomeration of capital from disparate savers for investment and the creation of small denomination instruments that provide opportunities for households to hold diversified portfolios, and to invest in efficient scale firms and to increase asset liquidity. In addition, he noted that savings mobilisation involves overcoming the transaction costs associated with collecting savings from different individuals and overcoming the informational asymmetries associated with making savers feel comfortable in relinquishing control of their savings.

The efficiency of the financial sector in mobilising savings is largely determined by its ability to pool the resources from the surplus units and transfer these resources to the deficit units, which involves overcoming the transactions and information cost. However, the impact of the financial sector on saving is ambiguous. On one hand, the development of the financial system may lead to a positive impact on savings mobilisation by making the agglomeration of existence resources in the economy easier (Berthelemy and Varoudakis, 1996).

The existence of well-structured banks encourage the holders of unproductive assets who are risk averse, to deposit their holdings in banks, so banks can efficiently allocate these deposits to more productive investment, and that would increase economic growth (Bencivenga and Smith, 1991b).

On the other hand, financial development may reduce savings and growth by increasing risk-sharing opportunities. For example, introducing insurance markets increases the endowment risk-sharing among individuals and that reduces the need for precautionary savings, resulting in higher consumption, and lower growth rates (Pagano, 1993).

### 2.6.2 Allocating Savings to Investments

The process of mobilising savings is crucial, but in itself this is not enough to guarantee the efficient use of domestic resources and to promote economic growth and development. Transferring the mobilised savings into productive investments is more important than the mobilisation process itself because it enables the investors (the deficit units) to accumulate capital and then use this capital in productive projects, which would lead to a higher growth rate. Therefore, channelling the mobilised savings into investments is a vital function of the financial sector. The less efficient the financial sector, the fewer resources are made available for investment out of a given amount of savings (Demetriades, 1998).

There are different causes of inefficiencies in the financial sector, some of which may be technical, such as the shortage of deposit collection and loan technologies, which may be the results of outdated technologies, bureaucratic controls, and unskilled bank staff. Technical inefficiency in the financial sector produces high transaction costs that are passed on to both lenders and borrowers in the form of low deposit rates and higher lending rates, commissions, etc. Government policy might be another cause of the inefficiency in the financial sector, since the imposition of high reserve requirements by the government restricts the activity of the financial intermediaries. In addition, the lack of competition in the financial system enhances the technical inefficiencies of financial intermediation and negatively affects the accumulation of capital.

### 2.6.3 Improving the Productivity of Investment

An efficient financial sector contributes to the increase in capital productivity and the efficiency of investment through the two mechanisms of risk reduction, and monitoring services.

### 2.6.3.1 Reduction of Aggregate Risk

There are several types of risks associated with financial intermediation, such as, liquidity risk, default risk, investment risk, and the payment risk etc. Uncertainty is a problem for economic agents in their economic daily economic life. It usually arises from the irregularity in business cycles and the possibility of economic shocks and sudden changes in the circumstances and conditions. Therefore, the main concern of savers is the speed that they can liquidate their assets to face the unexpected shocks (the liquidity risk).

A well-structured financial sector can reduce the liquidity risk by having good liabilities and assets management on the one hand, and by diversifying its financial portfolio on the other. Assets management means holding cash and liquidity assets at a level above that required to meet the expected volatility of cash flows. Liability management occurs by determining the desired quantities of assets and then adjusting interest rates to attract the desired levels of deposits to fund the transactions (Buckle and Thomposin, 1998).

The more financial intermediaries facilitate and ensure the liquidity of saving at any time in the face of uncertain income shocks, the greater the individual's willingness to save; *"the more liquid markets are the more savers will be induced to hold a bundle of assets diversified along the risk and maturity spectrum"* (Caprio and Claessens, 1997, P.3). According to Pagano (1993), well-structured banks and stock markets enable individuals to face the liquidity risk and invest most of their funds in more productive and illiquid projects, and that would result in higher productivity of investments and higher growth rates. By eliminating self-financed capital investment, banks enable entrepreneurs to face the liquidity shocks without liquidising their productive assets to compensate (Bencivenga and Smith, 1991b).

According to Caprio and Honohan (2002), the mobilisation of savings is itself a way in which individuals protects themselves from economic downturns. Thus, banks provide insurance to risk-averse depositors against liquidity-risk or a need for cash in the future. However, there may be certain cases when

events in the financial sector can cause risks and instabilities in the economy in general and to firms in particular. For example, at an aggregate level, Beck et al (2001) found that, although real sector shocks are dampened as a financial system develops, monetary shocks could be amplified. The development of the financial sector requires firms to depend more on external resources and hence become more exposed to monetary and financial shocks.

To minimise the size of investment risks (the possibility of a decrease in the value of assets), financial intermediaries need to hold low-risk securities in their own investment portfolio, and to use their networks and information to predict the unexpected changes in the price and the other macro-economic variables such as the inflation rate, interest rate, and exchange rate. The diversification of financial portfolios by stock markets, mutual funds, and other financial institutions, is an important instrument in coping with investment risks (Gersovitz, 1988).

### 2.6.3.2 Monitoring and Screening Service

The effectiveness of the financial sector in screening and monitoring has an important implication for the productivity of investments. The ability of intermediaries to collect accurate and reliable information about investment projects and evaluate these projects contributes substantially to the efficient allocation of resources to more efficient investors. hence, it increases the productivity of capital, and the growth rate (Beck et al, 2000). According to King and Levine (1993b), financial intermediaries are more efficient and less costly in collecting information on prospective entrepreneurs and in evaluating this information, and therefore, they enhance the allocation of capital and investments and consequently improve productivity and growth. In addition, King and Levine concluded that financial intermediaries are better than individuals in mobilising resources and transferring these resources to entrepreneurs. They determined four functions of financial intermediaries in their growth model: (i) evaluating the prospective entrepreneurs in a less costly and efficient manner, (ii) mobilising sufficient

resources for projects, (iii) diversifying the risk of investments and, finally (v) valuing the expected profits from innovative activities.

## 2.7 Conclusion

In this chapter, a review has been presented of the meaning of financial development, and the key issue of financial repression has been discussed. During this it has been shown that government intervention in financial markets results in a low rate of savings and investment and in turn, low growth rates. The call for financial liberalisation that was first made by McKinnon and Shaw (1973) has been widely discussed. Empirical studies have illustrated that there is no clear-cut answer to the question of how financial liberalisation impacts upon savings and economic growth. They suggested that lifting the interest rate ceiling is a vital condition in order to effectively mobilise domestic savings and to increase the volume of investment, and thus promote growth. Furthermore, a group of appropriate macro-economic, financial, and institutional pre-requisites are crucial for the success of the financial liberalisation.

The basic tenets of the relationship between the financial development, and economic growth have been defined in this chapter, which provides a discussion of the importance of the financial sector for growth and development. The growth macro models used to show theoretical mechanisms of financial development have been outlined. Endogenous growth theory suggests that the financial sector affects growth through mobilising savings, transferring savings into investments, and increasing productivity of investments. The theoretical background of the functions of the financial sector has also been considered, and these functions were classified into three main categories according to their impact on economic growth - mobilising savings, transferring savings into investments, and increasing the productivity of capital investment. The following chapter considers behaviour and determinants of savings.

# CHAPTER THREE
# SAVINGS: BEHAVIOUR AND DETERMINANTS

## 3.1 Introduction

The importance of savings arises from savings being a major factor in financing capital formation and thus, promoting economic growth. The strong correlation between productive investment and growth means that one of the key ways that developing countries can achieve the objective of higher growth is by introducing policies to enhance productive investment. As reported by the World Bank (1999), successful countries finance a large portion of investment from domestic savings. This conclusion is supported by a number of studies that emphasise the significant role of mobilising domestic savings and replacing foreign savings in financing the economic development in developing countries. In line with the purpose of this research, it is necessary to shed light on the models or theory of saving. The main aim of this chapter is to examine the main factors that influence saving rates.

The savings rate like any other macro variable is a function of several complex socio-demographic variables. It is also a function of economic variables such as the level and distribution of both life-time and current income, wealth, interest rates, price level, fiscal policy, financial depth, social security systems and financial sector development (Chandavarkar, 1990).

The contemporaneous positive correlation between savings and growth has been widely discussed in the literature, and empirically verified by a number of authors, such as Modiligani (1970), Maddison (1992), and Mankiw et al (1992). The question of the direction of causality, in other words the lead-lag relationship between saving and growth has, become a contentious issue.

The chapter will proceed as follows. Section 3.2 provides a brief discussion of the models of saving, in order to give some ideas about saving behaviour.

Section 3.3 examines the relationship between savings and growth. Section 3.4 is devoted to a review of the empirical studies on the relationship between saving and financial development. Section 3.5 explores the other main determinants of saving, and Section 3.6 concludes the chapter.

## 3.2 Models of Savings-income

It is very important to establish what drives individuals to save, rather than to consume their income. Callen and Thimann (1977) observed that there are a number of motives for household saving, which they place into four categories: to finance expected large lifetime expenditures, to finance unexpected losses of income (precautionary saving), to provide resources for retirement and bequests, and to smooth the availability of resources over time in order to maintain a more stable consumption profile. In this section a review of the theories of saving and some empirical studies focusing on the influence of income indicators on savings rates, are outlined.

### 3.2.1 The Classic Theory of Savings

This theory is associated with Lewis (1954) and Kaldor (1957), who divided the population into two classes: workers who spend all their labour income, and capitalists who save their (primarily property) income for accumulation purposes. The Lewis model argues that the accumulating behaviour of the capitalists increases the ratio of saving/national income because of the increase in income distribution towards the profit and the use of that profit in more accumulation and more savings. The Kaldor model suggests that the income distribution adjusts between workers and capitalists in the way that satisfies the identity between savings and investment, so more investment brings more growth, and the capitalists, share of income increases, and so too their savings.

However, to rely on the above classic hypothesis to explain the saving behaviour nowadays seems inappropriate, especially in developing countries like Libya.

### 3.2.2 The Absolute-Income Hypothesis

This hypothesis was developed by John Maynard Keynes in the 1930s to explain the impact of income on savings. It states that household savings directly depend on current disposable income, so the propensity to save out of current disposable income is supposed to rise with the increase of income. According to this, the consumption (savings) function is non-proportional and that means the rich people or countries consume proportionately less, and save proportionately more of their income than the poor save.

However, Hussein and Thriwall (1999) argued that this pattern of saving behaviour does not continue in the long-run because over time the saving rate will increase by a diminishing rate with the increase of the income level. Moreover, it might start falling at high levels of income, taking an inverted U-shape.

Similarly, Gillis (1996) argued that saving behaviour is expected to follow the Keynesian style but only in the short-run. Mikesel and Zinser (1973) criticised the absolute-income hypothesis. They argued that, "*over a long period of steady-state growth, a rise in per capita income will not in itself bring about a higher savings ratio at least so far as personal income is concerned*" (P.8)

Several empirical studies analysed the absolute income hypothesis. For instance, Chenery and Ecksten (1970) estimated the saving function in 16 Latin American countries, finding that the saving rate in the sample slightly increased from 16.3% in 1951 to 16.9% in 1964 as a response to the increase in the income level. Gillis et al (1996) argued that saving behaviour is expected to follow the Keynesian theory in the short-run but not in the long term. Hussein and Thirwall (1999) found a positive non-linear effect of the level of per capita income on the saving ratio in panel data from 62 countries over the period 1976-95. In addition, they found that 70% of the differences in saving behaviour in their panel data are explained by the differences in the level of the per capita income in accordance with the absolute income hypothesis.

### 3.2.3 The Relative-Income Hypothesis

The relative-income hypothesis suggests that the consumption or saving of households depends on both the current income and the previous levels of income and past consumption habits. James Dueseberry (1949) studied the consumption behaviour in the USA in the 1940s. He argued that the short-run consumption function in an economy tends to ratchet upward over time, so as income grows over the long-term, consumers adjust their spending habits to higher levels of consumption. Although this theory was originated to explain the saving behaviour in the USA, some economists argue that it might be relevant for developing countries (Gillis et al, 1996).

### 3.2.4 The Permanent-Income Hypothesis (PIH)

The PIH was originally used to study the macro-economic fluctuations and the short-run dynamic relationship between consumption, saving and income. However, it is also employed to examine the long-run relationship between savings and growth. The PIH was formulated in 1957 by Friedman, who divided life-income into permanent income and transitory income. The permanent income is the yield from wealth, including physical and capital assets that are at the disposal of the household, and the transitory income is the unexpected income such as that arising from changes in asset values, changes in relative prices, lottery winnings, and other unpredictable incomes. Friedman argued that individuals make their consumption decisions over their entire life cycle or permanent income, which tends to be stable over time.

The forward-looking consumer theory, which is based on the PIH, proposes that individuals who anticipate an increase in their future labour incomes tend to reduce their savings as a precaution against the unexpected shocks. Therefore, we would expect lower savings rates with the increase in economic growth because consumers will smooth their consumption over the rest of their lives (Carrol and Summers, 1991; Viard, 1993).

However, this was not the case in the OECD economies between the 1960s and the 1980s, where the decline in the growth rate of future earnings was not associated with a decrease in consumption, but instead, an increase in savings. Rather, saving declined from the 1960s to the 1970s and to the 1980s (Deaton, 1999).

In addition, the permanent income hypothesis suggests that the propensity to save from the variable high fluctuating income, is higher than out of stable-income (Gillis et al, 1996). This assumption was examined by Gupta (1987) who concluded that savings positively respond to temporary income shocks in developing countries.

### 3.2.5 The Life-Cycle Hypothesis (LCH)

The life-cycle hypothesis was first proposed by Modigliani (1970), and has since provided the main theoretical framework in the literature for analysing the determinants of private saving rates. Traditionally, the life-cycle hypothesis is expressed in terms of consumption, rather than saving. The model described below was used by Gersovitz (1988).

Consider an individual who lives for T periods, receives income payments ($Y_i$) and consumes ($C_i$). He never receives nor leaves bequests and can borrow and lend at interest rate (r). Equation (3.1) gives the constraint on the individual's consumption as:

$$C = \sum_{i=0}^{T-1}\left[\frac{c_i}{(1+r)^i}\right] \leq \sum_{i=0}^{T-1}\left[\frac{y_i}{(1+r)^i}\right] \equiv Y \qquad (3.1)$$

The present value of lifetime consumption (C) cannot exceed the present value of lifetime income (Y). The individual seeks to maximise the sum V of his discounted utility of consumption in each period as in (3.2):

$$V \equiv \sum_{i=0}^{T-1} \partial^i U[c_i] \qquad (3.2)$$

The First order condition solves the decision-maker's problem as in equation (3.3):

$$U'[c_0] = (1+r)\partial U'[c_1] \qquad (3.3)$$

Equation (3.3) gives the optimal values of consumption, and in turn determines saving (S), which is the residual between income (Y) and consumption (C).

In this simple model, the consumption depends on the lifetime resources (Y) rather than on the current resources. This means that any change in the measurements of economic growth has a simultaneous effect on consumption and hence on savings, and "*thus, countries with higher growth rates might be expected to have at least higher personal savings ratio than countries with lower growth rates*" (Hussein and Thirwall, 1999, P.37).

Deaton and Paxson (2000) studied the role of demographic changes on savings by using a life-cycle model. They suggest that the households' age-profiles of income, consumption, and savings, change along with changes in the age structure of the population and households and with changes in the relative economic power of different age groups. They also argued that there are some unobserved factors that may influence the relationship between savings and growth and make it more ambiguous, such as the distributions of wealth and income. More information on using the life-cycle approach empirically, is used in studying the impact of the demographic factors on saving in section 3.4.2.

### 3.2.6 Income Distribution and Savings

It is believed that income distribution has an important effect on the saving rate. This section discusses the difference between the functional and personal distribution of income and the impact of the income distribution on saving.

In fact, it is important to distinguish between two types of income distribution when we talk about the impact on savings. The functional distribution of income refers to the exogenous distinction between savers and non-savers. It means the distribution of income in an economy according to production characteristics mainly between workers (wages) and capitalists (profits).

The neo-classical growth model of Solow (1956) treated savings and income distribution as endogenous variables, supposing there to be no difference in the saving behaviour of workers and capitalists, on the other hand, the Neo-Keynesian models of Kaldor and Lewis argue that redistributing income from low-saving groups (workers who have zero propensities to save) to the capitalists whose propensities to save are very high, would increase aggregate savings. The personal distribution of income studies the effects of changing the individual's lifetime income on his/her savings behaviour. This income distribution treats the agent as heterogeneous. It refers to the impact of redistributing the lifetime income among the age-groups from young to old including their wealth, inheritance and bequests on saving.

Hussein and Thirwall (1999) argued that the movements in personal and functional income distribution may be an independent explanation of why the savings ratio first rises with the increase of the per capita income, and then levels off. They suggested that the increase in inequality of income distribution by a decreasing rate is expected to be the reason for the above saving behaviour. They introduced the proportion of income received by the top 10% of the income distribution in their regressions to assess the impact of income distribution on savings. However, they did not find a significant effect of income distribution on savings.

Edwards (1996) examined the impact of income distribution as the ratio of income received by the poorer 40% over income received by the higher 10%, and found a significant positive impact of this indicator on private savings.

Schmidt-Hebbel and Sereven (1999) investigated the role of borrowing constraints on the income distribution and savings relationship. They argued

that if borrowing constraints exist, consumers would use their assets to fulfil their consumption when earnings are low, so the savings rate would be lower, but when they have high earning they accumulate the assets, and their savings rate is higher. Therefore, they see borrowing constraints as the chief force behind the saving behaviour of lower and middle-income groups. They also referred to the effect of political instability on the income distribution and savings relationship. In their view, political instability results in high inequality in income distribution and increases the degree of uncertainty in the economy, thereby discouraging investment and, in turn, reducing growth. As a result, if saving is positively related to growth rate, the high inequality of income would depress the aggregate savings. In reality, this conclusion might be quite suitable to explain the low rate of savings in most developing countries that are politically unstable and have a remarkable inequality in income distribution.

## 3.3 Savings and Economic Growth

Savings are one of the main sources of capital accumulation and hence investment, which is the vital factor for growth. However, there is no agreement on the nature of the relationship between saving and growth and the direction of the causality between the variables both theoretically and empirically.

### 3.3.1 Theoretical Evidence

The Keynesian model, such as that of Harrod-Domar, presumes a concrete, linear relationship between investment and growth rates. Therefore, if higher investments lead to higher growth automatically, it can be concluded that higher savings generate higher growth. The popularity of this approach led to its use by many development economists to forecast GDP growth rates in developing countries.

However, the Harrod-Domar formulation was not appropriate for determining long-run growth rates. In this regard, exogenous growth models (neo-

classical) like Slew's model (1956) and that of Swan (1956), suggest that an increase in the saving ratio increases the capital-output ratio. It argues that increasing the saving rate generates higher growth only in the short run during the transition between steady states, and the long-run growth will depend entirely on structural demographic variables such as the labour force and the population growth, leaving no room for savings rates in the long term.

Rodrik (1998) reported that "*significant increases in either saving or growth are usually accompanied by contemporaneous increase in the other variables. But while growth transitions lead to sustained increase in saving rates, saving transitions tend to result only in temporary increases in growth*" (P.14). Endogenous growth models as developed by Romer (1986) and Lucas (1988), indicate that higher savings lead to higher capital accumulation and then to a permanent increase in growth rates. The World Bank (1998) states that.

> *"high investment leads to rapid growth, which increases the profits of firms and entrepreneurs. As long as growth is anticipated to continue, these agents save and invest a large fraction of their profits. In this way, saving, investments, and growth are mutually reinforcing. If one accepts the argument then, the policies that promote growth and investment will also promote saving"* (P.3)

### 3.3.2 Causality between Savings and Growth

The contemporaneous correlation between savings and growth is often presented as a robust empirical finding, and has been discussed in empirical works by using cross-section and time series analysis. Most of the findings of these studies indicate that income indicators such as income growth or income level are the major factors of savings and, therefore, it is the growth-promoting policies that should be considered, not the savings-mobilising policies. Nonetheless, these findings are not sufficient for policy

recommendation, because they do not tell us about the causality between the two variables.

The first important work to address the causality between savings and growth was that of Gavin et al. (1997), who used panel data from 6 Asian and 20 Latin American countries and found that higher growth rates precede higher saving rates, and that the estimated impact of growth on savings is not only significant, but also very large in economic terms. They found the direction of causality runs from growth to savings, reporting that *"the most powerful determinant of saving over the long run is economic growth*" (P.13).

Cardenas and Escobar (1998) examined the question of causation in Colombia by using time series data. They employed a first order vector auto regression (VAR) of the growth rate and saving rate over the period 1925-1994, and found that the impact of the lagged savings rate on growth is statistically significant, thereby suggesting that past saving performance is helpful in predicting growth. At the same time, they found the coefficient on lagged growth in the saving equation was also statistically significant, concluded that there is a strong relationship between growth and saving, with evidence of bi-directional causality between both variables.

Sinha (1997, 1998), and Sinha and Sinha (1998), published three individual country analyses on India, Pakistan, and Mexico respectively, using recently appropriate time series techniques. They found no evidence of causality in India. They also found evidence that GDP growth Granger causes private and public saving in Pakistan and Mexico. In the case of Pakistan, they found evidence of Granger causality in respect of GDP growth, but they did not find the same in Mexico.

Baharumshah et al (2003) investigated empirically, the factors influencing saving behaviour in the fast-growing Asian economies of Singapore, South Korea, Malaysia, Thailand and the Philippines over the period 1960-1997. They found no Granger causality in respect of economic growth except in Singapore.

## 3.4 Savings and Financial Development

This section outlines the relationship between saving and financial development. A dominant view in economic literature for a long time was that financial liberalisation (as discussed in Section 2.3) is the perfect indicator for developing the financial sector in any economy, which ultimately increases the savings rate and the efficiency of investment and thus, promotes economic growth. However, recent studies provide different predictions regarding this hypothesis.

Bandiera et al (2000) suggested that the effect of financial liberalisation on private savings is theoretically ambiguous because of the ambiguity of the relationship between the interest rate and saving and because of the multi-dimensional nature of financial liberalisation.

Bandiera et al (2000) distinguished between the long-term effects of financial liberalisation such as improvement in saving opportunities, higher deposit interest rates, wide range of saving media with improved risk return characteristics, more active and wide intermediations including the bank sector, and wide borrowing, and the short term effects such as large capital inflow which induce a credit boom and more income surge, that in turn, have a direct but transitory effect on the volume of savings. This may reduce the savings. Above all, they emphasised the importance of considering both the long-term and short-term effects in modelling the impact of financial liberalisation on saving, besides considering the effect of income on saving.

Bandiera et al (2000) conducted empirical tests on the impact of the financial liberalisation on private savings in eight developing countries by using time series data over 25 years. Their findings indicated that financial liberalisation might be associated with a negative impact on savings, in particular, when it leads to a relaxation in the liquidity constraints. Therefore, they concluded that

> "*there is no presumption as to the direction of the aggregate saving response to an exogenous interest rate change. Despite many studies, this remains an empirically controversial area partly because of a surprising shortage of reliable and comparable cross-country data on retail interest rates*" (P.240).

Loayza et al (2000) used cross-section and time-series macro-economic data for 150 developing countries over the period 1965-1994, in order to examine the private saving determinants. They found a negative impact of the real interest rate on the private savings rate, suggesting that the income effect of the interest rate outweighs the sum of its substitution and human-wealth effects.

Ozcan (2000) found a positive significant coefficient of financial depth indicator (M2/GNP) ratio on private savings, and a negative significant impact of the ratio of private credit to gross national disposable income, suggesting that the relaxation of credit constraints decreases private savings. Loayza and Shankar (1998) found a robust positive impact of real interest rate and financial depth, on long-run private savings in India.

Hussein and Thriwall (1999) examined the factors that affect the willingness to save in their cross-sectional study. They found a negative impact of the real interest rate on domestic savings, attributing this negative effect to two possibilities. The first is that the negative substitution effect offsets the positive income effect, the second is the possibility that high real interest rates are associated with a higher ratio of foreign capital inflows to GDP and a part of this capital was consumed, thus being reflected by a decrease in savings. In addition, Hussein and Thriwall used four variables to measure the impact of financial sector development on saving, the money and quasi-money ratio to GDP (M2/GDP), the ratio of domestic credit provided by the banking system to GDP, money and quasi money growth, and quasi-liquid liabilities to GDP. They found a strong positive impact of the financial sector indicators on savings, suggesting that the government should provide an efficient regulatory and legal framework to enhance the efficiency of the financial sector and then to promote savings.

In comparison, Burnison (1998) found an insignificant role for the interest rate on private savings in Mexico. His regression suggests that the substitution and income effects offset each other such that the effects of changes in interest rates tend to cancel one another out. In addition, he found that the increase in private domestic credit growth led to a high level of private savings. Even so, Lopez-Mejia and Ortega (1998) concluded that in a country where there are large numbers of individuals with no capital and insufficient income to accumulate, financial liberalisation would have to be very strong to have a significant effect upon households' saving.

Bonser-Neal and Dewenter (1999) empirically studied the assumption of the positive role of financial market development on gross private savings in 16 emerging markets over the period 1982-1993. They used the stock market indicators such as the ratio of market capitalisation to nominal income, the ratio of total value traded to GDP, and the ratio of total value traded relative to market capitalisation, as measures of financial development. They argued that the stock market could overcome the problem of incompleteness of investment opportunities by offering the possibility of trading shares, leading to an increase in the rate of savings in the economy. Their conclusion indicated that the development of the stock market does not necessarily lead to an increase in savings rates, and they also found a negative but insignificant effect, of interest rate on private savings.

Mavrotas and Kelly (2001) used time-series data for Sir Lanka over the period 1970-1997 to assess the cointgration of financial sector development and private savings. The results of their estimations suggested that developing the financial sector positively and strongly, affected the private saving rate in Sir Lanka over the examined period. In addition, they found that relaxing the credit constraints negatively affected private savings. Kraay (1998) referred to the important role of the developing financial market on saving in China. He found that the accelerated development in the Chinese financial sector since the reforms in 1978, which led to the rapid growth in households' deposits in the banking system, was the main source of the

discrepancy between the two measures he used to assess the household savings in China. Kraay concluded that reforming the financial sector encouraged households to shift their savings from unproductive physical commodities such as grain, and deposit them in the banking system, and that the 1988 inflation-indexed saving deposits policy made the real returns of savings very attractive and increased saving deposits in China.

## 3.5 Determinants of Saving

This section will examine the theoretical determinants of saving, and empirical evidence of their validity as discussed in Section 3.2.5. The life-cycle theory of consumption is the most widely discussed explanation of the level of saving. According to this theory, the saving rate might depend on a wide range of factors. Most studies in this area use methodology based around a life-cycle approach using ordinary least squares techniques. The following provides an idea of the main theoretical determinants of saving, and empirical findings in this area.

### 3.5.1 Income

As discussed in Section 3.2, income is clearly an important determinant that can influence the level of saving. There is a school of thought that considers saving as a luxury, meaning that poor individuals are less able to save than the wealthy because they are closer to the line of subsistence. Consequently they have less flexibility in their consumption decision. According to this logic, the level of per capita income has a positive effect on the saving rate. It is also important to consider the effects of a change in per capita income. Which depend on whether the change is interpreted by consumers as being in permanent income or a temporary shock.

According to the life-cycle theory, as discussed in Section 3.2.5, individuals will increase their saving when their lifetime income has increased. In the above case, consumption is likely to respond only marginally to temporary income fluctuations, and most of the effect of the temporary change will be reflected in saving.

As the same time, in the presence of credit constraints (Section 3.5.7), there may be a significant consumption response to temporary income fluctuations. This would apply particularly to developing countries, where credit constraints tend to be more binding (Schmidt-Hebbel et al, 1992).

Empirical findings are consistent with the hypothesised effects of temporary income shocks. Gupta's (1987) study reveals that saving responds significantly and positively to the temporary income shocks in developing countries. Similar results are obtained by Loayza et al (2000) who found that the level of income has a positive and significant effect on private saving. They find that an increase of 10% leads to an increase of 0.47% in private saving. Athukorala and Sen (2003) examine the determinants of private saving in the process of economic development in India. they found a positive relationship between the level and the rate of growth of disposable income and private saving.

### 3.5.2 Demographic Factors

The standard life-cycle model states that individuals will have negative saving when they are young and have low income, positive savings during their productive years, and consume from their savings during their retirement years. The size of savings during productive years will depend in part on the size of the family; those with more children will save less. According to the lifecycle theory, individuals consume all resources available over their life-cycle.

A number of studies have been undertaken examining the effect of demographic variables on saving rates. Modigliani (1970) used cross-sectional data mostly on developed countries to test the lifecycle hypothesis, finding that differences in the dependency ratio have a significant negative impact on saving. Edwards (1996) found that the coefficient of the age-dependency ratio is significantly negative, indicating that demographics play

an important role in explaining differences in private savings across time and countries.

Ozcan (2000) tested the LCH in a sample of 12 countries in the Middle East region over the period 1981-1994, obtaining results indicating that both the log level and the growth rate of per capita income positively enhanced private savings. In line with the lifecycle predictions and the precautionary motives, Ozcan found that the urbanisation ratio has a significant negative impact on private saving, while the sign of the coefficient of the young and old dependency ratios is against the expectations, its impact being statistically positive.

Loayza et al (2000) investigated the factors that influenced private saving across the world by using data on 159 countries over the period 1965 to 1994. The results disclosed a significant impact of growth rates and income levels on private savings rates, and they thus concluded that "*successful growth policies may be able to set in motion a virtuous cycle of saving, capital accumulation, and growth*" (p.174). In addition, the demographic variables in their regression (urbanisation ratio, and the young and the old dependency ratio), significantly affected private savings

Deaton and Paxson (2000) examined the correlation between savings and economic growth in Taiwan and Thailand, by using household and individuals' data. They argued that the increase in growth rate for Taiwan can result in a large increase in saving rates, particularly when the rate of population growth is low. In Thailand, however, for most combinations of rates of economic and population growth, an increase in economic growth raises the wealth of the very youngest individuals, causing a reduction in the saving rate. Therefore, they concluded that the variation of saving rates with age is not large enough and not always in the right direction to allow growth to have much influence on savings through the aggregation effects proposed by the LCH.

Park and Rhee (2005) investigated the relationship between saving, growth and demographic change in Korea, using data from the family income and expenditure survey. They found that the rapid economic growth combined with habit persistence, as well as the drastic changes in demographic variables such as dependency ratio, fertility rate and life expectancy, have the potential to explain the rise in the saving rate.

Kim and Lee (2006) empirically examined the effects of the macro-economic demographic changes, focusing on saving rate and current account balances, using panel data from the G-7 countries over the period 1979-2001. They found that substantial demographic rates, with an increase in the dependency rate, were associated with a significant decline in saving rates, especially public saving rates. They also found that a higher dependency rate significantly worsens the current account balance. In addition, they conclude that the G-7 nations are experiencing a rapid ageing process of their populations. Rising elderly dependency rates, by having negative effects on the national savings of advanced G-7 countries, influence the global current account and capital flows.

In contrast, other studies produced mixed signs of life-cycle variables on savings. For, example Attanasio et al (2000) found a weak positive impact of growth on savings with some exemptions. Introducing some control variables such as the share of the population in working age, changes the positive impact of lagged growth on saving to a negative.

Kraay (1998) found an insignificant correlation between saving and contemporaneous growth rates. He found a weak negative correlation between household savings rates and future income growth and that result is in line with the predictions of the standard forward-looking theory that households facing high-expected future income growth will save less than households facing low-expected income growth.

### 3.5.3 Fiscal Policy

Besides the important role of fiscal policy on economic performance, it has a vital role on savings behaviour, being able to influence savings in two ways, directly by affecting public savings, and indirectly by affecting private savings. The impact of fiscal policy is explained in greater detail in the following sub-sections.

#### 3.5.3.1 Fiscal Policy Government Savings

It is well established that taxes are the key part of the government total revenues. Therefore, tax policy plays a vital role in government savings, and this issue dominated the economic literature during the 1950s and the 1960s. Raising the ratio of tax collections to income is the preferred way to mobilise public savings. This argument was built on the fact that the government's marginal propensity to consume (MPC) out of increased taxes is less than the private sector's MPC out of the marginal income from which it pays increased taxes. Therefore, increasing the tax ratios to income would increase national savings (Gills et al, 1996). However, the evidence from developing countries came out with opposite predictions, showing that increasing the tax rates reduces the national saving because the government's MPC out of increased tax revenues is high. Therefore, the net result might be a decrease in government savings, which leads to a decrease in national savings (Chandavarkar, 1990).

It is difficult to determine the optimal tax policy required to raise public savings because this issue depends on the circumstances of the economy and on the government's policy intension. However, there are two main ways to manipulate the impacts of taxes on public savings. The first is by affecting the tax rate; meaning increasing the present tax rates or imposing new taxes on the unutilised sources of revenue. The second is by improving the efficiency of the existing tax system. This could be achieved by improving the tax administration, reducing tax avoidance and tax evasion (which is extremely common in the developing countries), and regulating and

reforming the tax structure to maintain its capacity to catch up with the new aspects of developments and changes both domestically and internationally.

Nevertheless, increasing the efficiency of the tax system is not enough by itself to reduce the size of the budget deficit and thus increase the government savings. Governments need to reduce the unproductive expenditure and increase the productivity of their expenditure. In addition, governments in developing countries need to reduce their administrations' costs and the luxury expenses of its administrators and employees that are remarkably high in most of the developing countries compared to the developed countries. These costs and expenses could be otherwise used more productively in a way that reduces the size of the budget deficit and increases the public savings.

Hussein and Thirwall (1999) studied the impact of public saving on the total domestic savings by using the ratio of tax revenue to economic growth to explain the differences in saving rates across countries. They expected the impact of the public saving on domestic saving to be positive, but they found a negative effect of the tax revenue ratio, and suggested three explanations for the negative effect: (1) A high tax ratio could be discouraging personal and private savings; (2) A high tax ratio could be a reflection of the extent of redistribution policies which make precautionary private saving less necessary, and (3) Higher tax could go hand in hand with higher budget deficits on current accounts.

### 3.5.3.2 Fiscal Policy and Private Savings

Tax policy affects private saving by affecting the capacity and incentives to save. Taxes are usually divided into direct and indirect forms. The direct taxes include income taxes and capital and wealth taxes, whereas the indirect taxes are mainly those relating to consumption, trade, and customs. It was argued by Gillet al (1996) that different taxes will have different impacts on the capacity and willingness to save. Therefore, increasing the capital tax would reduce the after tax-returns and that would directly reduce

the ability of firms and other corporations to save. Similarly, imposing higher income tax rates would directly affect household saving.

In comparison, any other changes in indirect taxes would have an indirect effect on savings because the direct impact would be on the consumption. However, it is difficult to predict the impact of such changes on savings because, in reality, there are other factors, which should be considered when assessing the impact of both direct and indirect taxes on consumption and savings. The propensities to save and consume as well as income distribution, are crucial in this regard, so imposing higher consumption taxes on the higher-income groups whose propensity to consume is low, would not affect their savings. However, raising the income and capital taxes would reduce their ability to save. On the other hand, if these groups had a high propensity to consume, as is the case in most of developing countries, they would be affected by the higher consumption taxes more than the income taxes.

Theoretically, different consumption theories provide different predictions regarding the impact of fiscal policy on private savings. The simple Keynesian theory predicts that only the current level of taxation matters for private consumption and savings. In comparison, the permanent-income hypothesis suggests that both the current and the future levels of taxation affect the path of saving rates. The life-cycle predicts that as long as fiscal policy shifts income across different cohorts, it can affect private savings. Nonetheless, the Ricardian equivalence theorem is still the most used model when assessing the impact of fiscal policy on private savings.

### 3.5.3.3 The Ricardian Equivalence Concept

The concept of Ricardian equivalence gives a theoretical framework for the relationship between private and government saving. It also measures the impact of fiscal policy on savings. Barro (1974) stated that public debt issues are macro-economically indistinguishable from tax increases, and therefore, a change in public saving should be offset by an equal and opposite change

in private saving. The idea is that changes in government deficits or saving may change households' perceived permanent income and therefore affect private saving rates. Essentially, individuals will realise that a change in current government saving will have future implications. For example, tax cuts in the present period will produce higher taxes in a future period, to compensate for the reduction in government revenues; consequently it is assumed that the decrease in tax will be offset by an increase in private saving.

Most empirical work has rejected the idea of Ricardian Equivalence. Rossi (1988) and Haque and Montel (1989) concluded that Ricardian equivalence might not hold in developing countries because of the liquidity constraints and imperfection in the capital market.

Corbo and Schmidt-Hebbel (1991) use data on 13 developing countries to analyse the consequences of higher public saving. They found that government savings crowd out private savings to a certain degree, but the magnitude of this effect is not as strong as the one-to-one relationship suggested by Ricardian equivalence.

In comparison, Loayza et al (2000) found that each percentage point increase in the public savings ratio leads to a 0.29 percentage point decrease in private savings to public saving ratio within the same year that the policy changes occurs. However, a permanent rise in the ratio of public saving to Gross National Disposable Income (GNDI) by 4% will increase the ratio of national savings to GNDI by 2.8% within a year, but only by some 1.2% in the long run. Even so, their tests could not significantly provide evidence against the Ricardian equivalence.

Edward (1996) argued that public savings have historically provided a very considerable share of total national savings in rapidly growing economies. Moreover, he found a less than proportionate crowding out effect of public saving on private savings. Likewise, Burnside (1998) and Mavrotas and Kelly (2001b) concluded with a possible approximate Ricardian equivalence; they

found a less one-to-one strong negative impact of the government budget balance on private savings.

Athukorala and Sen (2003) found that the public saving seems to crowd out private saving in India, concluding a clear role for fiscal policy in increasing the total saving in the economy with the private sector considering public saving as an imperfect substitute for its own saving. Kuttner and Posen (2002), investigated the fiscal policy effectiveness in Japan over the period 1976-1999 using a structural VAR analysis of real GDP, tax cuts, and expenditures. They found limited evidence of Ricardian effects in examining savings behaviour.

Ozcan (2000) concluded there was a partial crowding out effect of public saving on private savings in the sample of 12 Middle East and North Africa (MENA) countries. He suggested that Ricardian equivalence does not hold strictly, and that the government can increase aggregate savings through increasing public savings.

### 3.5.4 Foreign Savings

Reducing the size of the dual gap, that is the saving-investment and the foreign exchange gap, is the main task facing developing countries in their efforts to achieve economic development. A discussion of the saving-investment gap requires us to deal with the argument that foreign savings is a substitute or supplement to national savings. Theoretical and empirical studies do not provide a clear-cut answer to this issue. On the one hand, there is the argument that aspects of foreign savings such as foreign aid and foreign borrowing, substitute for domestic savings in financing development in a way that negatively affects domestic savings and economic growth (see, Griffin and Eons, 1970; Mikesell and Zinser, 1973; Oshikoya, 1992; and Edwards, 1996). On the other hand, there is the argument that foreign savings supplement domestic savings and therefore promote growth. Indeed, Rodrik (1998) found a highly significant effect of foreign aid flows on national savings.

Chandavarkar (1990) referred to the difficulty of generalising the impact of foreign savings on domestic savings across countries, or over time, because many factors may influence them in opposite directions without suggesting any causal connection between the saving streams. Therefore, he concluded that.

> "*the relaxation of a given supply constraint, whether it is food aid, budget aid, supplier credit, or commercial bank credit, may have a negative effect on domestic savings and growth in one country and a positive effect in another, depending on the domestic policy stance of the receiver country and the terms on which foreign savings are made variable ... the negative correlation between domestic and foreign saving over time proves nothing about any response mechanism that induces a country to save less in any particular year if it received more foreign capital or aid in that year*" (p.28-29).

Nonetheless, Chandavarkar (1990) points to the importance of foreign savings in promoting economic development when he stated

> "*external resource flows have a strategic and catalytic role to play only insofar as they supplement and not substitute domestic savings and also, concomitantly, help to bring in essential technology, or access to foreign markets, promote export, import-substitution, and greater efficiency and competition in the domestic economy*" (p.30).

However, in his opinion, during the 1970s and the 1980s, developing countries relied too much on external borrowing and too little on domestic resources, which contributed substantially to the unsustainable rate of growth and development in these countries during that period of time.

Irandoust and Ericsson (2005) investigate the relationship between foreign aid, domestic savings and growth in Togo, Senegal, Niger, Nigeria and Rwanda over the period 1965-2000. They found that the foreign aid assistance accelerates economic growth by supplementing the domestic savings.

### 3.5.5 The Rate of Interest

The effect of a change in the interest rate in the context of financial liberalisation is discussed in Chapter Two. Therefore, the treatment here is brief and included for the purpose of completeness. It is well known that an increase in the real rate of interest is likely to give rise to two effects. It decreases the present cost of purchasing future consumption, making it attractive to substitute future consumption for present consumption, and it increases saving. This is known as the income effect of a change in the rate of return. There is also a substitution effect. Given an increase in the real rate of return, in order to achieve a given level of consumption in the future, it is no longer necessary to save as much. Clearly, the effect on savings of a change in the real rate of interest depends on which of these effects dominates. Athukorala and Sen (2003), in their study of the determinants of private saving in India, found a significant positive impact of the real interest rate on bank deposits on such saving.

### 3.5.6 Inflation and Uncertainty

It is well established that the high rates of inflation, which dominated the majority of the developing countries during the 1980s and 1990, negatively affected these countries' development efforts. One of the main negative impacts was on the domestic savings rate, where the high rate of inflation resulted in a highly negative real rate of interest that diverted domestic savings from the financial productive assets, and steered them towards real unproductive and foreign currency dominated assets.

Furthermore, the high rate of inflation remarkably and negatively affected the financial intermediation in these countries. On the one hand, the high rate of inflation led to a shortening of loan maturities because the lenders became concerned about the risk of negative returns in long-run lending and that discouraged them from this type of lending. On the other hand, the borrowers were concerned about the increase in the cost of borrowing in case of a fall

in the inflation rate. Therefore, they were reluctant to borrow, particularly for the long term (Holst, 1990).

However, Hussein and Thirwall (1999) argued that inflation can affect the willingness to save, but the effect is ambiguous. On the one hand, high inflation motivates individuals to restore the real value of their money balance holdings and thus, the savings rate increases. Yet, conversely, inflation may discourage voluntary savings because of the expected decrease in the real value of these savings. Hussein and Thirlwall (1999) found a positive effect of inflation on savings in their panel data but this effect soon turns to be negative. Therefore, they concluded that "*the most likely relation between inflation and saving ratio is a quadratic showing saving rising with mild inflation and then falling as inflation becomes excessive*" (p.40).

The empirical studies about the inflation-saving relationship produced mixed results. For instance, Schmidt-hebbel et al (1992) found a negative but statistically insignificant effect of inflation on saving. They concluded that reducing inflation encourages savings. Denizer and Wolf (1998) also found a negative impact of higher inflation on savings rate.

Similarly, Edwards (1996) found insignificant effects in both inflation and political instability on the private savings rate. However, he found that a higher degree of political instability reduces government savings, and that strengthening the democracy has important and fairly direct positive effects on growth.

Gylfason and Herbersson (2001) studied the interaction between inflation and economic growth using panel data covering 170 countries from 1960 to 1992. They found a statistically significant and robust link between inflation and growth, concluding that the effect of inflation reduces savings and then the quality of investment by reducing real interest rates. Kim (2001) investigated the impact of the Asian crisis on private savings, because the Asian financial crisis had several critical implications for savings behaviour and increased economic uncertainty. He found that the post-crisis saving

rates in the crisis economies are likely to decrease. For example, in Indonesia, the saving rate fell to 13% in 1999 from the level of between 28% and 30% in the pre-crisis period. He also found that although the uncertainty factor may contribute to an increase in saving, a decrease in the household income level and corporate output, together with slow GDP growth, will also lead to a fall in the savings rate.

Recently, Heer and Sussmuth (2007) analysed the effects of permanent inflation on the distribution of wealth in the US economy. They found that higher inflation results in a higher nominal interest rate and a higher real tax on income. So, an increase in inflation leads to lower stock market participation, a decrease in savings and unequal distribution of wealth.

In comparison, Loayza and Shankar (1998) suggested that the increase in the uncertainty in financial markets, enhances the precautionary motives and hence savings, particularly in agriculture in India. They found a positive relationship between private savings and the share of agricultural income in GDP in India, but they did not find a statistically significant impact of inflation on savings. Sen (2003), also looking at the determinants of a private saving study in India, found a positive impact of inflation on private saving through the role of inflation in determining real returns to saving (the real interest rate).

In the Loayza et al (2000) study, using a broad panel of industrial and developing countries, it was found that a rise in inflation had a positive impact on saving. They suggested that an increase in macro-economic uncertainty encourages people to save a large proportion of their income for precautionary reasons. Overall, there appears to be no clear evidence that inflation affects saving in developing countries.

### 3.5.7 Borrowing Constraints

The ability of a household to smooth its consumption over its lifetime is likely to be complicated by liquidity constraints, in the form of borrowing

constraints, which make dis-saving difficult. In equation 3.1 of the life-cycle model outlined in section 3.2.5, it was assumed that the individual is able to borrow or lend at the interest rate *r* in the period *i* if his objective of maximising his discounted lifetime utility *v* , does not require that $y_i$ = ci. Borrowing constraints might require that $y_i = c_i$ or at least may restrict the individual's ability to substitute consumption between periods. When a borrowing constraint is binding the household's consumption decision, the marginal utility of present consumption will expect utility of future consumption. A binding borrowing constraint encourages an individual to consume less than she/he wants to, effectively forcing saving, or at least discouraging dis-saving. In such a situation, the consumption equation no longer holds, as agents cannot borrow against future income. If financial development and the deregulation of banks give rise to increased access to credit, then present consumption will increase.

There is a huge literature that has attempted to determine the importance of borrowing constraints by inferring that any dependence of the change in consumption on income might reflect the inability of a household to smooth consumption through the borrowing in developed countries. Jappeli and Pagano (1994) used the loan-to-value ratio and consumption credit as proxies of borrowing constraints to show that binding liquidity constraints on households enhance saving, and increase the growth rate. Loayza et al (2000) found a negative relationship between the flow of private domestic credit relative to income and private saving, in agreement with the findings of Jappeli and Pagano.

In a developing country context, Cardenas and Escobar (1998) use a framework proposed by Caprio and Schiantareli (1996) to test the validity of the hypothesis that private saving rates have fallen as a result of the relaxation of liquidity constraints precipitated by the structural reform package implemented in Colombia in the early 1990s. They found that liquidity constraints are indeed a significant factor in recent declines in private saving. In contrast, Edwards (1996), in his study on Latin America, provided different evidence to that of Jappeli and Pagano. He found that the

coefficient for private credit is significantly positive in regressions, proving that borrowing constraints have resulted in higher savings.

The ratio of money (money supply) to GDP is traditionally taken as a proxy for financial deepening but it can also be used as a measure of the extent to which households face a borrowing constraint. Edwards (1996) used the above ratio and found the positive impact on private saving.

Loayza et al (2000), found a negative significant effect of the flow of private domestic credit relative to income on private savings, indicating that a relaxation of borrowing constraints leads to a fall in the private saving rate, consistent with the result of Jappeli and Pagano. Samwick (2000) found that the increase in the ratio of private credit to income will negatively affect savings.

### 3.5.8 Institutions

A vast literature now concerns the importance of the existence of appropriately designed institutions for saving in developing countries. A group of formal and informal financial institutions now exist around the world that has developed in order to attend to the needs of the smaller saver and investor. Formally, state-introduced institutions traditionally worked on the assumption that the poor did not have the capacity to save, and needed direct credit to enable them to escape the poverty trap. The institutions aimed to help the poor directly, through subsidy, rather than by addressing their financial services needs.

#### 3.5.8.1 Informal and Formal Financial Institutions

Another issue that deserves some discussion is the belief that the size of informal operations in the financial sector of some of the developing countries is so large that ignoring it will give absolutely unrealistic information about the performance of the economy.

According to Chandavarker (1990), the informal financial sector is a part of continuity with the formal financial sector, and varying combinations in space and time of formal and informal transactions. The formal financial sector dominates in developed economies with just very small activities of the informal sector. In comparison, the size of the informal financial sector is large in developing countries to the extent that the impact of its activities can not be ignored on saving mobilisation in some countries like India and the Republic of Korea.

In addition, Chandavarkar (1990) argued that there are high linkages between these two sectors in developing countries, in both borrowing and lending, since the moneylenders, and the rotating savings and credit associations, deposit the surplus funds with formal financial institutions and at the same time, they have a line of credit with them. Similarly, customers of the formal financial system also have lines of credit with the informal sector, which they tend to use after their borrowing limits with the formal sector have been exhausted.

There are two types of informal groups that provide financial aid, which have saving and lending as their primary function. There are those with rotating funds known as Rotating Savings and Credit Associations (ROSCA), and those with non-rotating funds that Bouman (1995) calls Accumulating Savings and Credit Associations (ASCRA). As financial institutions they are self-sufficient, self-regulating, and have their own control mechanisms. They are also independent from the legal, fiscal and financial authorities of their countries. Their great advantage is their flexibility, and this is where their comparative advantage over formal financial institutions lies. The ROSCA has been becoming more common in Libya, for many reasons such as credit availability, household income, and inflation. It is widespread among relatives or employees who work in the same place.

Adams and Canavesi (1989) found that 91% of individuals in Bolivia entered a ROSCA to save, and not to get a loan. The reason for this may be that the illiquidity of ROSCAs is an attractive feature. Contributions that are made to

a ROSCA are recognised as being obligatory, so individuals with money that they want to keep from the demands of relatives, may join a ROSCA in order to become illiquid. They also indicated that individuals are keen to save in financial forms, even in time of higher inflation. Interestingly, they found that such associations were common among employees of most formal financial intermediaries.

Bouman (1995) noted that research in the Gambia and Uganda suggests that ROSCAs are more common in urban, and ASCRAs in rural areas. The importance of such informal financial institutions as savings vehicles can partly be explained by the fact that in many countries, these associations are the sole deposit agents, either due to the absence of formal financial institutions, or because the formal institutions tend to tie savings in with borrowing.

Schreider and Cuevas (1992) reported that the informal financial groups in Cameroon hold about half of the total national savings of the country. Levenson and Besley (1996) analysed the participation in rotating savings and credit associations using a national household survey from Taiwan. They found the participation is from high-income households, and the ROSCAs may be an alternative savings device to the formal financial sector.

### 3.5.8.2 Credit Unions

Credit unions are formal savings and credit co-operatives, owned and operated on a not-for-profit basis by their members according to democratic principles. Their purpose is to encourage savings, to use pooled funds to make loans, and provide other related services to members and families (Cuevas, 1988). The democratic structure, the operating principles governing service to members, and social goals that characterise credit unions, are likely to blend with and build upon the implicit principles of mutual trust and co-operation that exist in rural communities.

Loans from credit unions in developing countries have grown rapidly. The explanation for this fact is the different regulatory environment affecting the two types of institutions. Banks and other non-co-operative financial institutions are more likely to be influenced by policies aimed at increasing credit to the public sector than credit unions. Banks are also prone to invest in government instruments if they think their loan demand is riskier than usual, thus reducing private sector credit. On other hand, credit unions are mostly unregulated or less regulated by the monetary authority, and the nature of the organisation makes the level of risk implicit in their loan demand, more stable than that faced by the banking institutions.

Van der Brink and Chavas (1997) examined the relative importance of credit unions compared to ROSCAs for a village in Cameroon. They found thatwhile at least 90% of all household heads were members of ROSCAs, the corresponding figure for Credit Unions was 30%. They found that credit unions attracted large amounts of savings because people felt that their savings were secured and out of reach of claims from the community.

### 3.5.8.3 Social Security and Saving

One of the motives to save is the precautionary motive, which arises from uncertainty regarding future income or expenditure. The precautionary motives include saving for income fluctuation, unemployment, illness, accidents and longevity risk. The social security system is used to transfer some of the individuals' income from their working years to old age, mainly when they retire. It also insures individuals against unexpected types of risks like disability, longevity and death.

In most developing countries, social security systems are state-run, unfunded, and defined benefit systems, operating on a Pay-As-You-Go (PAYG) system. Some countries have moved to the fully-funded basis or system to deal with the problem of under-funding in the face of an ageing population. The PAYG system means that taxes collected from current workers are transferred to current retirees. In contrast, the fully-funded

system collects tax from workers when they are young, invests the proceeds on their behalf, and years later, pays their benefits out of the accumulated principal and interest (Cogley, 1998).

Under the PAYG system, the individuals covered tend to reduce their savings because they anticipate receiving the future social security benefits. However, the government savings will not increase with the decrease in private savings because the social security contributions paid by those covered now are not set aside and invested, but rather are used to pay benefits to those already retired, and therefore, the net impact of the PAYG system on the total savings is negative (Chandavarkar, 1990).

In comparison, if the social security contributions are on a fully-funded basis (invested) as in the industrial economies - in profitable projects with an adequate social marginal rate of return, then they would encourage domestic savings. Edwards (1996) suggested that a switch to either fully-funded or at least partially-funded schemes, would benefit the level of national savings in an economy, as part of a package of financial sector reform.

The recent studies in savings' determinants tend to favour the fully-funded system at the expense of the PAYG system Samwick (2000) studied the impact of social security reforms on savings by using panel data of countries over 25 years. He found that reforming the pension scheme by the transition from an unfunded (PAYG) system to a funded-system provides the opportunity to increase the national savings.

### 3.6 Conclusion

This chapter has set out the basic tenets of saving, and models of saving have been provided. The Keynesian absolute-income hypothesis suggests that the current level of income is the key determinant of savings. The forward-looking theories such as the PIH argue that individuals tend to reduce their savings if they expect an increase in their future income. The life-cycle theory hypothesises that, besides the income level growth,

demographic factors such as population growth, and the age structure of the population are very vital determinants of savings. The income level and growth are expected to have a positive impact on savings rates. Population growth and the dependency ratio are expected to have a negative effect on savings. Other savings-income issues such as the relative income and the inequality in income distribution were pointed out in this chapter, in order to provide sufficient background about saving behaviour.

The chapter has shed light on the controversy about the relationship between savings and growth. It was found that there is no agreement among economists on the nature and direction of causality between the two variables, including theoretical and empirical evidence. The impact of the financial development, through financial liberalisation on saving was discussed. It shows that there is no clear-cut answer on the impact of financial sector development on savings. Empirical studies relating to the relationship between financial sector development and savings, concluded with mixed results concerning the impact of financial development on savings rates.

In addition, the other main determinants of saving such as, fiscal policy, including the impact of government savings on private savings, interest rate, inflation and uncertainty, borrowing constraints, and financial institutions have been discussed in this chapter. The economic background of Libya is provided in the next chapter.

# CHAPTER FOUR
# ECONOMIC BACKGROUND OF LIBYA

## 4.1 Introduction

A brief introduction of the general background of Libya is very supportive because financial development and saving behaviour can not be studied in isolation of the surrounding environment in terms of economic, political and social sides. These consistent factors may influence individuals' and households' behaviour and the economic sectors' attitudes. Background information of location, population, history, political system are included in section 4.2.

From the early 1990s, structural adjustment and stabilisation programmes have been implemented, under the economic reform and structural adjustment programmes (ERSAP), in order to promote the performance of the economy, the private sector in particular, and to improve the level of economic management. The performance of the Libyan economy was unstable until the above programmes were implemented. The exceptionally high rate of rapid growth of the Libyan economy during the 1970s ended in the early 1980s; the average annual growth rate of GDP declined sharply from 16.4% in the period 1971-81, to 0.37% in the period 1982 to 1992. The reason for this remarkable change was the decline in oil prices during the 1980s. Therefore, Section 4.3 is devoted to a review of the Libyan economy in different stages, from its dependence on foreign aid until the 1980s.

Along with the strong desire from the Libyan state to reduce the reliance on the oil sector as the main source of income in the country, and to diversify its sources of income, Libya adopted stabilisation and structural reform programmes with the support of the IMF and the World Bank. The reforms adopted, included: public sector reform, the liberalisation of the economy including the financial and trade sectors, privatisation, and the promotion of private investment, both domestic and foreign. The purpose of this chapter is

to highlight the economic environment and its main features in the Libyan economy. Section 4.4 considers the structure, including the main characteristics of the Libyan economy. The reform programmes and stabilisation policies that have been implemented are discussed in section 4.5, and Section 4.6 provides the conclusion.

## 4.2 Information on Libya

Libya occupies a strategic location in North Africa as it links Eastern with Western Africa and Southern Europe with the rest of Africa. It occupies nearly 1,760,000 square kilometres, and has a population of almost five and a half million (NLBI, 2006). The Islamic religion and Arabic language are two elements that characterise Libyan culture. Libya has been subjected to many foreign occupations, the last of which was the Ottoman Empire's long occupation (1551-1911), and European tutelage (1911-1951).

Early Libyan history was influenced by numerous foreign conquerors, including the Phoenicians, the Greeks, the Romans and most significantly the Arabs. Under Ottoman Turkish rule in the nineteenth century, the Islamic religious order became a powerful force with political implications. In the twentieth century, Italy gained control of Libya following the First World War, setting up a new administrative system joining together the country's three main regions (Vandewalle, 1998). These regions were known as Tripolitania in the west (now Tripoli), Fezzan in the South and Cyrenaica in the East. The Italians improved the infrastructure of the state, constructing roads, railroads, port facilities, and irrigation projects, but provided little education and training for the people in administrative, technical or agricultural skills. During World War II, the best route for gaining independence was seen by many locals to be to support the Allied side. Therefore, many locals fought with the British army. This action, coupled with Italy's defeat, led to a brief period of British and French administration (1943-1951) of the former Italian-controlled country after the War.

Thereafter, under United Nations auspices, Libya gained independence in 1951, but the severe economic conditions of the country at the time of independence meant that help from international organisations and foreign countries was needed (Vandewalle, 1998). Three United Nations technical assistance teams made study tours of Libya in 1950-1951 (Wright, 1981). One of the teams was headed by Benjamin Higgins, who stated "*when Libya became an independent nation under United Nations auspices at the end of 1951, the prospects for Libyan economic and social development were discouraging to Libya and foreigners alike*" (Higgins, 1968, p 819).

Higgins an economist specialising in economic development who worked as an economic adviser to Libya in the early 1950s, prepared a six-year social and economic plan which was adopted by the state soon after independence. The plan laid great emphasis on education and training. As part of a broad assistance package, the UN agreed to sponsor a technical aid programme that emphasised the development of the country's agriculture and education system. Foreign powers, notably Britain and the United States, provided development aid. The aid programmes were a result of allowing the UK and the US to maintain and use the military bases in Libya over a 20 year period starting in 1953. In light of these agreements, the UK agreed to grant Libya an annual sum of £2.75 million to meet budgetary deficits and £1 million annually for economic development, whilst the US agreed to grant $42 million over 20 years (Wright, 1981).

On 1st September, 1969, the political system of the country changed as military and civilian officers seized power. The movement was headed by a twelve-member directorate that designated itself the Revolutionary Command Council (RCC), which formed a new government. In its initial proclamation on 1st September, the RCC declared the country to be a free and sovereign State called the Libyan Arab Republic. Among the RCC members was Muammer Al Gadhafi, who served both as Prime Minister and Defence Minister. In 1977 the official name of the country was changed to "The Socialist People's Libyan Arab Jamahiriya." The term 'Jamahiriya' is translated to mean power to the masses' (Wright, 1991, P. 191).

Further changes were initiated in 1971 when the General People's Congress (GPC) was created to replace the Revolutionary Command Council. The centrepiece of the new system was the General People's Congress as a legislative body. The GPC still exists today and is headed by a Secretary. It adopts resolutions creating the General Secretariat of the GPC and appointing members (i.e. Secretaries) of the General People's Committee as an executive body. The General Committee acts as the country's government. At its conception, all legislative and executive authority was vested in the GPC, which delegates most of its authority to the General Secretariat and to the Basic People's Committee. In turn, Municipal People's Congresses (MPC) and Basic People's Congresses (BPC) were established across the country. People debate and take decisions at the BPC level. These decisions are then passed up to the GPC for consideration and implementation as national policy (Wright, 1981).

### 4.3 Libyan Economy

Since the formal structure in 1951, the Libyan economy has witnessed a number of changes and gone through different stages. The first stage was before the discovery of oil, when the country was one of the poorest countries, and this can be referred to as the primitive stage, when the economy was dependent on international aid for its survival. The second stage began with the discovery of oil in Libya in 1959, which utterly changed the economic situation in Libya, since when the oil industry has played a large and an important role in transferring the economy from a broken institution to one with vibrancy. The Libyan economy, like that of most countries, experienced a period of crisis in the 1980s, but this appeared in a very special form, and this can be categorised as the third stage (the economy in the 1980s). Libya's economy was entirely impacted by the decline of oil prices, and hence, the economic reform programmes were adopted in the early 1990s, marking another distinct stage in economic development.

### 4.3.1 The Early Stage

Prior to the discovery of oil in 1959, Libya was one of the poorest countries in the world (Higgins, 1968; Wright, 1981). During the Italian, and then the British Rule (1911-1951), the country's economy had improved compared with the primitive conditions the Italians found the country in when they first came to Libya in 1911. It was the American and British money in return for the use of military bases in Libya, and aid from the UN and other organisations, which helped the country to survive and overcome the economically severe years of the fifties. The population was engaged in agriculture and animal husbandry (Higgins, 1986). The few relatively large enterprises in the country were controlled by Italian expatriates (Wright, 1981).

In contrast, to neighbouring Tunisia, Algeria, and Egypt, the colonial economy in Libya did not create clear domestic relationships with colonial powers (Vandewalle, 1998). Industries, which had been established prior to the discovery of oil, were mainly focused on processing the local agricultural products, which include flour, textiles, tobacco, footwear and clothing.

The economy was suffering from deficit in the budget and was based on the limited productivity of a primitive agricultural sector and a few small industries. Benjamin Higgins described the country's economic conditions as follows:

> *"we need to construct abstract models of an economy where the bulk of people live on a subsistence level, where per capita income is well below $50 per year, where there are no sources of power and no mineral resources, where agricultural expansion is severely limited by climatic conditions, where capital formation is zero or less, where there is no skilled labour supply and no indigenous entrepreneurship. When Libya became an independent nation...it fulfilled all these conditions. If Libya can be brought to a stage of sustained growth, there is hope for every country in the world"* (Higgins, 1968, p. 819).

### 4.3.2 The Importance of Oil

The Libyan economic situation changed after the discovery of oil in 1959 and the inflows of foreign capital. Thereafter, the need for foreign subsidies declined as international oil companies began to invest in Libya. The investment in the oil industry generally produced surplus to the Libyan economy, with oil revenues accounting for 24.4% of the GDP in the Libyan economy in 1962, 61.7% in 1969, and 28.3% in 1992. By 1968, Libya was the second largest oil producer in the Arab world. Per capita income increased from below LD430 before 1967 to LD3, 252 in1980 as shown in table 4.1(Elmaihub, 1981).

***Table 4.1**: GDP and Per Capita Income in Selected Years (LDM)*

| | 1967 | 1970 | 1975 | 1980 | 1985 | 1990 |
|---|---|---|---|---|---|---|
| **GDP** | 747.8 | 1,288 | 3,774.3 | 10,553.8 | 7,852.1 | 7,749.6 |
| **Oil Sector** | 402.5 | 812.6 | 1,961.1 | 6,525.7 | 3,500.4 | 2,740.8 |
| **As a % of GDP** | 53.8 | 63.3 | 52.0 | 61.8 | 44.5 | 35.3 |
| **Non-oil sectors** | 345.3 | 475.7 | 1,713.2 | 4,028.1 | 4,351.7 | 5,008.8 |
| **Per capita income** | 430 | 656 | 1,369 | 3,252 | 2,140 | 1,600 |

**Source**: Economic and Social Indicators (1999)

During the period 1951-1969, from independence to the revolution, the Libyan economic system was mainly capitalist. Private ownership existed with minimum governmental interference. Public ownership was in sectors that required large-scale investment. The government initiated a number of measures to encourage competition and the establishment of private

businesses. These included the issuance of import and export laws demanding that the importation of competitive foreign goods be subject to licence, the establishment of the Industrial and Real Estate Bank of Libya (currently the Development Bank) to provide loans and credit to Libyan businessmen to construct local industries, and the establishment of the Industrial Research Centre to help in implementing the programmes of economic and social development in Libya by providing technical and economic services to both the public and private sectors (Elmaihub, 1981).

### 4.3.3 The Economy in the 1980s

Since the discovery of oil, the Libyan economy has changed from deficit to surplus. Additionally, since the Revolution in 1969, the country has changed from capitalism to socialism, state intervention in the economy has increased and the government began the expansion of the public sector and a reduction in the private sector's activities in Libya. The state ownership structure of businesses started in the early 1970s, gained momentum in the mid-1970s and reached its peak in the 1980s, when most of the businesses became owned or controlled by the state. Thus, the state came to dominate all manufacturing activities, foreign and domestic retail trade, and financial institutions (Vandewalle, 1998).

According to Baryun (1993), the decline of the oil price to less than $10 a barrel resulted in cash flow problems and had negative consequences for the Libyan economy, such as the decline in total exports from LD4,361.1 million in 1980 to LD1,716.8 million in 1987, and LD1,615.5 million in 1988. Furthermore, according to the decline in oil exports, the trade balance was also negatively affected by this decline, recording a deficit in 1988 of LD31.1 million after reaching its peak of LD3,419.1 million (Baryun, 1993). Moreover, the contribution and the relative importance declined from 61.8% in 1980 to 25.4%, while the general budget showed a deficit of LD1, 974.089 millions. On each occasion, the Central Bank of Libya (CBL) provided loans for the General People's Committee for Treasury to cover its expenses. Thus, the balance of the gross domestic debt (GDD) increased from LD301.6

million in 1980 to LD3, 734.4 million in 1984, and to LD5, 345.4 million in 1989. The percentage of the (GDD) as a share of GDP was very high as it increased from 2.9% in 1980 to 79% in 1988.

During the 1980s, the Libyan economy saw various important economic developments, both in local and international aspects. The most important ones are referred to in the following list:

- The preparation and execution of the 1981-1985 economic and social transfer plan, accompanied by large investment.
- The appearance of the Consumers' Co-operative Association and the local supply companies and the public markets, thereby facilitating the distribution of products and supplies to consumers at competitive prices.
- The decrease of the economy's income, resulting in reduced budgets to cover developing projects.
- The considerable increase in the exchange rate in the 1980s as a result of the sharp decline in oil prices, and the consequent negative impact on the supply of exchange.
- The appearance of a deficit in the general budget and taking refuge in financial support by means of local bank loans. The deficit of the general budget was one of the main causes of economic instability in the Libyan economy during the 1980s.

The deficit in the general budget was financed by expanding the money supply. Inflation waves came as a result of these developments and changes that the Libyan economy suffered within the period from 1980-1990. These inflation waves can be measured using the standard consumer price index, which show that the inflation rate increased from 3.6% in 1981 to 11.9% in 1982, then decreased to reach the minimum amount of 1.3% in 1989, and increased again to 8.6% in 1990. On the other hand, measuring the inflation rate compared to the base year, 1980, it is notable that this rate increased continuously from 3.6% in 1980 to

92.4% in 1990. One of the main causes of the deficit was the continuous decline in oil revenues in 1980 as the outcome of the drop in oil prices, and increases in public expenditure, especially on administration. It is believed that the general budget was planned randomly (Baryun, 1993).

In addition, in the 1980s, the Libyan economy witnessed a shortage and disappearance of commodities, and the emergence of a black market, as a result of many factors related to sourcing and methods of providing the commodities and the manner of marketing channels. The problem was also related to whether the commodity was locally produced or imported. Such reasons can be specified as follows: (i) Lower levels of production in respect of locally produced commodities; (ii) Stopping imports of commodities or fluctuation of import operations due to the delay in opening credits for imports or the lack of necessary foreign exchange for financing the expenses, or as a result of adopting commercial policies; and (iii) Interference in the market by determining a legal price for a commodity lower than the price in the market (black market). The reduction of imports has been used from one year to another. Bureaucracy and its accompanying features, such as bribery, favouritism and administrative corruption, arose in Libya, as result of the economic situation and the lack of strict control of the state (Elftiuri, 1992).

### 4.4 The Structure of the Economy

The structure of the economy has been described in terms of the relative importance of the sectors in productive structure, investment distribution and employment structure, and the position of the Balance of Payments (BOP). The productive sectors in Libya include: agriculture, forestry, fishing, oil and natural gas, manufacturing, mining and quarrying, construction, financial, transportation, storage and communication, trade, restaurant and hotels, ownership of housing and general services including the education service, health and other services. The sizes and the importance of the sectors that comprise the economic structure in Libya, as a percentage of GDP, and the annual growth rates, are shown in Table 4.2.

*Table 4.2: The Structure of GDP (%)*

| Industry Group | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|
| Agriculture, Forestry and Fishing | 2.6 | 2.2 | 5.1 | 5.4 |
| Oil and natural Gas | 63.1 | 61.8 | 35.4 | 28.8 |
| Manufacturing | 1.8 | 2.5 | 8.5 | 7.3 |
| Finance and Insurance | 1.0 | 2.3 | 3.7 | 4.3 |
| Trade, Restaurant and Hotels | 3.7 | 4.9 | 10.2 | 6.6 |
| Construction | 6.8 | 10.4 | 5.9 | 13.1 |
| Transportation, Storage and Communication | 3.4 | 4.0 | 8.3 | 5.7 |
| Ownership of houses | 4.6 | 2.0 | 3.9 | 4.0 |
| General Services | 13.0 | 9.9 | 19 | 22.0 |

**Source:** Economic and Social indicators, (1999) and CBL, 2002

Table 4.2 shows that despite the decline in the contribution of the oil and natural gas sector to GDP in 1970, comparing to other sectors, it was the most important sector of the productive economy, accounting for around( not less than) 30% of GDP in the 1990s, and 98% of exports. The contribution of agriculture and manufacturing sectors towards GDP declined in comparison with the oil and natural gas industry, and the service sectors, regardless of the actual investment in these sectors via the economic and social development programmes. The construction sector and general services including education, health and others, rank second and third, respectively in the contribution towards GDP.

Table 4.3 shows the distribution of fixed investment in the major economic sectors in Libya during the period 1970-2000, as a reflection of the economic and social development plans, more details of which will be presented in the next section. Transportation, Electricity, Gas and Water received the most investment actually allocated or spent in the period 1970-1997, demonstrating the strong focus on the creation of the basic infrastructure in

Libya. The Education and Health sectors ranked second, receiving around 16% of total investments. Agriculture and Manufacturing as productive sectors, both received 27% of the total investment during the period of 1970-1997.

***Table 4.3:*** *Total Investment distribution 1970-1997*

| **Industry Group** | **(%)** |
|---|---|
| **Transportation, Storage, Electricity, Gas and Water** | 32 |
| **Education and Health** | 16 |
| **Manufacturing** | 15 |
| **Construction and Housing** | 12 |
| **Agriculture** | 12 |
| **Oil and other services** | 10 |

**Source:** Political, Economic and Social transformation (1999)

***Table 4.4:*** *Fixed Investment as a Share of GDP for Selected Years (%)*

| | **1970** | **1975** | **1980** | **1985** | **1990** | **1995** | **2000** |
|---|---|---|---|---|---|---|---|
| **Fixed Investment** | 18.8 | 28.9 | 26.2 | 19.8 | 13.8 | 13.9 | 12 |
| **Public** | 9.5 | 22.7 | 22.1 | 19.2 | 12.4 | 12.2 | 9.9 |
| **Private** | 9.3 | 6.2 | 4.1 | 0.6 | 1.3 | 1.7 | 2.1 |

**Source:** Economic and Social indicators (1999) and CBL, 2002

Table 4.4 shows that there has been no significant increase in the share of the private sector's investment to GDP, since 1970. The total share of fixed private investment as a percentage of GDP started to decline sharply since 1975, following the political ideology, and largely remained the same during the period from 1990 to 2000, while the investment of the private sector increased from 0.6% in 1985 to 2.1% in 2000. The increase in the share of private investment is the result of the reform programmes adopted by Libya since the early 1990s, while the large portion of public sector investment in

the period from 1975 to 1985 may be attributed to the building of the infrastructure.

***Table 4.5:*** *The Employment Structure in Selected Years (%)*

| Industry group | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|
| **Agriculture, Forestry and Fishing** | 29.0 | 19.9 | 18.5 | 17.0 |
| **Oil and Natural Gas** | 2.3 | 1.4 | 1.6 | 2.8 |
| **Manufacturing** | 4.7 | 7.1 | 9.8 | 8.5 |
| **Construction** | 11.3 | 21.3 | 15.4 | 14.7 |
| **Public Administration** | 12.8 | 8.0 | 10.0 | 8.6 |
| **Educational Services** | 8.2 | 11.2 | 15.5 | 6.1 |
| **Health Services** | 4.5 | 5.6 | 5.5 | 5.1 |
| **Other sectors** | 27.2 | 26.5 | 23.7 | 37 |

**Source:** Political, Economic and Social Transformations (1999) and CBL, 2002.

Table 4.5 shows that the general services sector is the most important for providing employment, accounting for 31% of the total workforce. Agricultural employment, however, declined from 29% in 1970 to 18.5% in 1990, as a result of the dependency on the capital method in agriculture rather than the labour factor. In other words, the development of this sector and the consequent introduction of modern technology instead of the use of primitive tools, dispensed with the need for human workers.

Table 4.6 shows that the trade balance are the most important part of the Balance of Payments in the Libyan economy, a feature which is due to the impressive role of oil exports. The balance of service and unrequited transfer is characterised with the deficit, but in general the amount of the deficit in this balance is less than the surplus in the balance of trade. The most important item in the balance of payments in Libya is the trade balance and the surplus

of the overall balance always attributes to the balance of trade. Therefore, the next section will consider the structure of exports.

***Table 4.6:*** *The Balance of Payments in Selected Years (LD M)*

| Items | 1970 | 1980 | 1990 | 2000 |
|---|---|---|---|---|
| **Trade Balance** | 301.1 | 3419.1 | 1069 | 4054.1 |
| **Exports** | 533.2 | 6489.2 | 3214 | 6159.8 |
| **Imports** | 232.1 | 3070.1 | 2145 | 2105.7 |
| **Service and Unrequited Transfer** | (-) 71.6 | (-) 988.3 | (-) 456.2 | (-)462.8 |
| **Capital Account** | (-) 193.4 | (-) 463.8 | (-) 284.9 | (-) 320.2 |
| **Total Balance** | 36.1 | 1967.0 | 328.4 | 3271.1 |

**Source:** CBL, 2002

To sum up the main characteristics of the Libyan economy as a conclusion of this section, through the structure of the economy, it can be noticed that the natural, development and social factors have led to the creation and development of a group of economic and social conditions, thereby shaping the nature of economic activity, and distinguishing the Libyan economy. In general, the Libyan economy is described as a developing economy of a relatively small size, the main characteristics of which can be summarised as follows:

- The Libyan economy depends on one product, crude oil as a source of income and for obtaining foreign exchange. The oil exports represent more than 90% of total exports. The oil and natural gas industry contributes about 30% and more of the Gross Domestic Product.

- The public services sector represents about 22% of the GDP and ranks second in importance after the oil and gas extraction sector GDP. The sectors of construction, manufacturing industries, trade, restaurant and hotels, transport and communications rank third, fourth, fifth and sixth respectively, while agriculture ranks seventh in terms of creating GDP.

- The GDP as shown through the economic activities is incompatible with the gross fixed investment formation pattern as per economic activities.

- Despite the huge investments, exceeding LD4 Billion, in the industrial sector during the last twenty years, the contribution of the sector in the structure of the GDP is considered low. The employment rate in the manufacturing industrial sector did not exceed 9.2% of total employment in the Libyan economy until 1990.

- Agriculture received more than 16% of the total allocations for fixed capital formation during the period 1970-1990. Despite that, the contribution of the sector to the GDP did not exceed 5.5%. Additionally, there has been a progressively declining level of employment in the agricultural sector.

- The public sector dominates the economy, and the relative importance of the private sector has decreased since the beginning of the three-year plan covering 1973-1975.

- The Libyan Balance of Payments is characterised by fluctuations, reflecting developments in oil exports and prices in the international markets on one hand, and aspects and levels of expenditure of foreign currency locally, on the other hand.

- The state's public finance is characterised by adopting the method of financing by deficit. The existing commitments of the public treasury towards the Central Bank of Libya (CBL) and Commercial Banks (GDD) were about LD5, 820.3 million in 1991.

## 4.5 Economic Reforms

Three main issues are considered in this section: the structural adjustment and macro-economic reform programmes, the privatisation process, and the economic performance following the reform programmes in Libya's economy.

### 4.5.1 The Reform Programmes

In the early 1990s, the Libyan State began to adopt new macro-economic reforms and stabilisation policies in order to cut public expenditure, diversify the economy, expand the role of the private sector in the economy, and promote growth in the national economy. These reform programmes have included several fundamentals such as liberalising commodity prices, controlling the exchange rate, liberalising the financial sector by removing restrictions on capital movement, controlling the interest rate and adopting the role of the capital market, liberalising trade, reforming the public enterprises, and encouraging privatisation.

In addition, the Libyan state adopted some other measures in order to encourage the inflow of foreign capital. For example, in 1997, it issued Law Number 5 regarding foreign investment (IMF, 2003, 2005).

The Comprehensive Economic Reform and Structural Adjustment Programmes (ERSAP) were planned to take place in two stages, the first starting in the early 1990s. At an early stage, this agenda aimed at improving the macro-economic management and reducing dependency on the oil revenues, and improving growth through the measures of: (i) bringing domestic prices in line with world prices while addressing explicitly the budget; (ii) implementing tariff reform and establishing the agenda to reform public enterprises and expanding the role of the private sector; (iii) improving the performance of monetary policy within a well-defined framework and developing indirect monetary instruments and money markets; and (iv) strengthening the banking system.

The second stage started in the late 1990s after the UN sanctions were lifted, and aimed to decentralise the Libyan economy by minimising the size and role of the public sector and giving the private sector a leading role in a market-based economy, through the following measures: privatisation and restructuring of publicly owned enterprises and banks; (ii) liberalising the financial sector by the decontrol of interest rates and the unification of the exchange rate system; (iv) legal and regulatory reforms; and (v) reform of the tax system (IMF, 2003, 2006 and World Bank, 2006).

Some progress has been made on structural reform; including the significant streamlining of the tariff schedule, the partial liberalisation of the interest rate, broadening of the privatisation programme and the scope of foreign investment, and the privatisation of a major public bank. The World Bank and the IMF supported the reform programmes in Libya and welcomed the effort that has been made, especially towards the market-based economy. Recently, teams have visited Libya from the IMF and the World Bank at the request of the Libyan authorities in order to assess the effort of the state in implementing reform programmes, and to gain advice about these programmes (IMF, 2006 and World Bank, 2006).

### 4.5.2 Privatisation in Libya

The public sector, representing a large share of non-oil GDP, especially the public services sector, represents about 22% of GDP and 70% of employment and this is noticeably high compared with the 11% world average of GDP for developing countries. Public sector activities were evident in many aspects of the economy such as the light industries, whole and retail distribution, and transportation (World Bank, 2006). However, during the whole 1980s period and afterwards, the efficiency of the public enterprises was low relative to their size, and particularly the industrial enterprises, were unable to produce enough surplus to recover the capital spent on their establishment. This led to the public budget having to shoulder the load of helping many of the public sector industries, and it became impossible for all these public enterprises to continue under the

monopoly or management of the state, such that the government realised the importance of transforming the public sector through privatisation. In 1992, to improve economic development, the Libyan state passed Law Number 9 to encourage and regulate private sector activities in the national economy, and to open the door for privatisation of a number of public sector enterprises.

Initially, privatisation was narrow in scope and slow in progress. Despite the existence of a general framework for privatisation, established in 2000, there was no privatisation law, and the framework was neither finely-tuned nor realistic. However, in January 2004, the privatisation process expanded specifically, when the Libyan state began to sell all 360 public enterprises in those sectors other than utilities, oil and gas sector, and banking. Most of these enterprises were over-staffed and incurred recurrent losses, as recruitment in the past was based on social grounds rather than on merit, and hence, economic efficiency. Moreover, ongoing trade liberalisation since 2001 had led many of them to stop operations as their products were no longer marketable (World Bank, 2006).

The state wanted to reduce the size of the budget deficit by selling the 360 enterprises; therefore, the General Peoples' Committee issued Decision No 313 in 2003, which immediately transferred the ownership of 260 of the 360 enterprises to the private sector through shareholding companies in which employees and others could hold shares. The state also provided exemption from taxes on income for five years. However, the state also intended to motivate the private sector to effectively participate in the capital accumulation process and promote economic growth. Thus, 41 small units were privatised and sold to domestic investors in 2004 (IMF, 2005).

To support the privatisation programme, two new funds were established in 2003, the first one aimed at supporting activities by employees in over-staffed public enterprises in the process of privatisation. The second was to help public companies to improve their financial situation, level of activity and the quality of their production in order to set these enterprises into privatisation. This fund is financed from import taxes, part of the recent

increase in the price of cement and steel, part of the revenues from the privatisation of public companies, and the general budget. In addition, the current oil revenues provide a unique position to put in a place a generous safety net that can facilitate these reforms from a social standpoint (World Bank, 2006).

Despite the fact that some progress has taken place since 2004, the method that has been adopted to conduct privatisation remains limited by two objectives, these being: (i) protecting employment and the generous social safety net; and (ii) broadening the ownership base to avoid concentrated ownership. In this connection, the IMF encouraged Libya to reassess the strategy and implement measures along the lines recommended by the World Bank including: (i) enacting a privatisation law that would give the privatisation agency an independent legal power and existence, and allow investors to acquire or hold a significant share of capital and have a corporate control over the privatised companies; (ii) basing the sale process on competitive bidding. In general, privatisation through employee ownership does not create good outcomes. Furthermore, the direct sales method has been adopted by a few countries and shown good results in Poland and Hungary. Both these countries had open and transparent methods (IMF, 2005; World Bank, 2006).

However, at this stage of privatisation, it is very important to have an active market since this helps to accelerate the programme and encourage participation of wide sections of society in the ownership of privatised companies, where the workers become partners in the productive process. Developing the financial system can play an important role in the transition stage from a planned economy to a market economy and have remarkable positive impact on privatising and reforming the state-owned enterprises (SOE). Demir-kunt and Levine (1994) argued that a well-structured liquid capital market facilitates privatisation by enabling investors to buy extensive public offerings of shares. They also argued that promoting the financial sector reduces the urgency to dismantle big companies prior to privatising them. Furthermore, they stressed the importance of the co-ordination

between the SOEs' reform and financial reform, as these are both long-term measures.

Demir-kunt and Levine (1994) argued that financial liberalisation and the construction of the financial infrastructure are needed prior to SOE privatisation because financial reform is a long-run process and needs to be started early to create a solid base for reform of the SOE and future financial reform. Therefore, in the reform programme, more attention should be paid to the financial sector. It is believed that there is no well-structured plan to connect the components of Libya's economy, and that the financial sector reforms should have preceded the privatisation programme.

### 4.5.3 The Macro Performance after ERSAP

According to the World Bank, IMF and other reports, Libya's macro-economic performance resulting from the structural reform programmes has been satisfactory, and there have been relatively strong economic growth and large fiscal and external surpluses reflecting favourable developments in the oil market (IMF, 2006).

Macro-economic performance has been shaped by fluctuation in oil revenues. Real GDP growth was modest and volatile during the 1990s, shaped by changes in the price of oil and reflecting the decline in oil production as the outcome of sanctions enforced by the US and the UN since 1986. During the 1990s the non-oil GDP growth was slow and volatile at 3%, due to persistent state controls and the decline of public revenues. As sanctions were suspended by the UN in 1999, and oil prices increased, growth has gradually picked up (See Table 4.7).

The macro-economic situation remains strong, with real GDP growing at 4.6% and 3.5 in 2004 and 2005 from 1.8% during 1995-1998. The contribution of other sectors has accelerated to 4.6% in 2005, up from 2.6% in the 1995-1998 periods. Non-oil GDP growth was broad-based, driven by construction, utilities such as gas, water and electricity but also trade, hotels, transportation, and other services. However, growth in manufacturing

declined 5% in 2003-2004 mainly as a result of increased competition from the private sector imports. Libya ranks ahead of several other oil-producing countries in terms of per capita GDP, increased from US$4,320 in 1990 to US$9,966 in 2004, and this supported decent living standards for the Libyan population. According to the decline in the CPI, the inflation rate has decreased since the devolution of the Libyan currency in February 1999 by the CBL. Therefore, from 2000, Libya has witnessed broad-based deflation, with declining prices of both goods and services. The deflation continued during the period 1999 to 2004. It declined from 2.6% in 2002 to -2.2% in 2005.

***Table 4.7:*** *Summary of Macro- Performance 1991-2005 (% change)*

| | 1991-94 | 1995-98 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|---|
| **Real GDP** | 3.4 | 1.8 | -0.4 | 1.1 | 4.5 | 3.3 | 9.1 | 4.6 | 3.5 |
| **Non-oil GDP** | 3.7 | 2.6 | 0.9 | 3 | 6.8 | 4.7 | 2.2 | 4.1 | 4.6 |
| **Per capita** | 1.4 | -0.2 | -2.3 | -1.2 | 2.5 | 1.2 | 7.0 | 2.5 | 5.4 |
| **CPI** | 9.8 | 4.9 | 2.6 | -2.9 | -8.8 | -9.9 | -2.1 | -2.2 | -2.5 |

**Source:** IMF (2006).

According to the IMF (2006), the general budget was balanced in the 1990s. Since 1999 it has posted a surplus, although the dependency on oil revenues is significant, with a sizeable non-oil budget deficit hovering at around 36% of GDP since 2003. Enhanced by steeply rising oil revenues, public expenditures increased from 31.3% of GDP in 2000, to 44% in 2004, and public expenditure declined to 41.2% of GDP in 2005, driven by a sharp decline of extra budget spending. With high oil or hydrocarbon revenues, the overall fiscal surplus is increased to 31.8% of GDP in 2005, up from 9.8% in 2003.

Contrary to other oil-producing countries that suffered crises following the oil price declines in the 1980s and early 1990s, Libya's external current account stayed generally in surplus, also reflecting the restraining impact of sanctions on imports. Therefore, Libya was able to accumulate large foreign exchange reserves. Gross official reserves were about US$6.7 billion on average in 1995-1998 (Table 4.8), and increased to US$25.6 billion in 2004 and US$39.3 billion in 2005. The ratio of current account surplus to GDP increased from 2.6% in the 1995-1998 periods, to 40.8% in 2005. The ratio of the External Debt (ED) was paid and cleared to be zero in 2005.

***Table 4.8:*** *Balance of Payments in Libya 1995-2005*

| | 1995-98 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|---|
| **Current account balance (%)** | 0.8 | 1.6 | 6.5 | 4.1 | 0.6 | 5.0 | 7.3 | 16.0 |
| **As a % of GDP** | 2.6 | 5.4 | 18.8 | 13.8 | 2.9 | 21.5 | 24.2 | 40.8 |
| **GOR (LDB)** | 6.7 | 6.7 | 13.1 | 14.1 | 15 | 19.5 | 25.6 | 39.3 |
| **ED/GDP (%)** | - | 18.8 | 15.3 | 19.2 | 28.7 | 23.4 | 0 | 0 |

**Source:** IMF (2006).

Undoubtedly, the above indicators and the current investment plans to raise the capacity of oil production and revenues largely in the coming years considering the current OPEC quota shares, provide a positive hope about the macro-economic performance of Libya following the wide-range reform programmes. However, the degree of sustainability of the economic recovery is still an ambiguous issue. In fact, in spite of the improvement in some of economic indicators as shown above, files of economic problems are still unsolved. Obviously, the most serious one, the high unemployment rate is still increasing; currently the unemployment rate is estimated to be around 25% in 10 years. The World Bank estimates annual growth about of 6.5% in the non-oil sector and recommends giving more attention to the creation and development of the private sector to absorb the unemployed population, and solve the problem (World Bank, 2006).

## 4.6 Conclusion

This chapter has provided an overview of the location, population, and political system of Libya. It has reviewed Libya's economic development since the country's dependency on foreign aid at the time before oil was discovered, up to the implementation of structural adjustment programmes in the early 1990s. It has continued to consider the changes in Libya's economic situation after the discovery of oil in 1959 and the first attempt at development which started in 1963 and lasted for 23 years and more.

The development programmes included in the 1973-1975 to 1981-1986 plans were seen to be influenced by socialist ideology, due to the switch from a Western-oriented capitalist country to one aiming to be strongly nationalist and socialist. This period also witnessed the growing involvement of the state in the organisations and management of the economy, which was largely financed by the booming oil revenues of the 1970s. Therefore, the role played by the oil sector in different aspects of the economic activities was highlighted.

It has been shown how the economy was seriously weakened during the mid- 1980s, as a result of the country's complete reliance on the oil sector. During this period the budget deficit, inflation and exchange rate increased, while growth and investment rates markedly declined. However, since the early 1990s, the Libyan state has adopted new reform programmes and stabilisation policies, which have introduced measures such as financial liberalisation, a reduction in the general budget, and privatisation.

The World Bank and the IMF supported these programmes and encouraged the Libyan authorities to expand the private investment and reform the financial sector to allow both to play an important role in the transition stage. In the next chapter, the financial sector in Libya is introduced and discussed in detail.

# CHAPTER FIVE
# THE FINANCIAL SECTOR IN LIBYA

## 5.1 Introduction

The financial sector in Libya is no different from that in other developing countries. It consists of a group of financial institutions, dominated by the banking sector. However, whilst Libya's banking sector is not characteristically different from its counterparts in other developing countries, it is more crucial to the economy because it represents the backbone of the Libyan financial system, being the only source of finance and the only financial institution that can provide loans and credit in Libya, unlike in other countries where the stock market contributes in this way.

This chapter provides the background to the financial sector in Libya with a particular focus on the banking sector. Section 5.2 gives the historical development of the country's banking sector, while Section 5.3describes the sector's performance before the financial reforms, and considers monetary policy, deposit mobilisation, bank credit development and portfolio adjustment.

The Libyan State has prepared a programme of financial sector reforms with the specific aim of restructuring the state-owned banks, and in respect of some of them, an adjustment in ownership structure to increase the participation of the private sector in the banking industry is the target. Section 5.4 thus details the financial reform programme process in Libya, including its objectives, implementation, and the performance of the banking sector subsequent to it.

Libya's financial sector lacks the important contribution made by the contractual savings institutions and the capital market. The insurance system and the social security fund have no part to play and their contribution towards the Libyan economy is very narrow. This issue is briefly discussed

in sections 5.5 and 5.6, which consider respectively, the social security fund (SSF), and the insurance system. Section 5.7 concludes the chapter.

## 5.2 Development of the Banking Sector

The historical development of the banking sector is discussed in three main stages: the early stage from the first attempt in banking work until the 1969 revolution, the stage after the 1969 revolution, including the 1970s period, and finally the stage following the economic crisis in the early 1980s because of the decline in the oil prices and the reduction in the role of the oil sector, and because this comprises the stage before the reform measures. Learning about the history of the banking sector helps to gain a better understanding of its role in the Libyan economy, and how it is evaluated.

### 5.2.1 The Early Stage

In 1868 the first attempt was made to establish an agricultural bank in Benghazi and in 1901 another bank was established in Tripoli. Subsequently, several branches were opened in different parts of the country. The objective of establishment was to serve the Libyan economy, which was dominated by the agriculture sector. With the development of the economic system, the Ottomani Bank opened two branches in Libya: a branch in Tripoli in 1906, which remained in operation until 1913; and another one in Benghazi in 1911.

In 1907, the Bank of Rome opened a branch in Tripoli, followed by another branch in Benghazi in the same year and a third branch in Derna in 1912. Moreover, Tripoli witnessed the opening of branches of the Bank of Napoli, the Bank of Sicily and the Bank of Italy. The main objective of these banks was to finance the Italian immigrants and encourage their settlement in Libya.

From 1911 until the outbreak of the Second World War, the monetary system in Libya was an essential part of the Italian system, because Libya was an

Italian colony as discussed in the last chapter. After the Allies prevailed in North Africa the Italian Lire was replaced by a different currency: the Egyptian pound in the East, the Military authority Lire in the North and the French Franc in the South.

During the British and French military administration, banking activity was confined to Barclays Bank, which acted as the agent of the British Treasury and which was authorised to issue currency covered by the Pound Sterling.

When Libya gained its independence on 24 December 1951, the Libyan people found themselves lacking skills, education and experience in the field of banking. Banking activity was largely out of Libyan hands, except for a few customers who were small borrowers or depositors. A new currency (the Libyan Pound) was issued to replace the other three currencies. Due to the lack of national banks, Barclays Bank, which was a British bank, took on the responsibility of issuing Libyan currency and acted as the fiscal agent for the government. At that time, it was the only bank in the country with branches in Tripolitania and Cyrenaica.

In 1951, three Italian banks, the Bank of Rome, the Bank of Napoli and the Bank of Sicily, resumed activity in the country. Also other banks entered Libya: the British Bank for the Middle East in 1952, the Arab Bank in 1952, the Bank of Egypt in 1954 and the Tunisian-Algerian Estate Bank in 1955.

The Libyan National Bank (LNB) was established in 1955 with its head office in Tripoli following the pattern of the Bank of England. The LNB was divided into two departments, an issue department and a banking department. The Bank's functions were to regulate the issue of banknotes and coins, to keep reserves, to maintain monetary stability in Libya and external values of the Libyan pound, to influence the credit situation and to act as the bank of the government. In 1958 the first unified banking law was issued, stipulating the credit organisation and money supply and the supervision of liquidity held by commercial banks.

The LNB was unable to persuade foreign banks to establish policies that were in the best interests of Libya. As a result, a new banking law was issued in 1963 that changed the name of the bank to the Bank of Libya, and gave it extensive authority and new functions. Under the new law its functions as a central bank became clearer and its supervisory role over the commercial banks was increased. Both of these changes were designed to diminish the role of the foreign banks in the country, which were concentrated in the two large cities of Tripoli and Benghazi.

The foreign banks were designed to provide short-term credit for commerce where risk was limited and the profit margin was relatively high. Until 1963 the banking sector was composed of the Central Bank and ten foreign banks, these being the Bank of Sicily, Morgan Guaranty Bank, Bank of America, Bank of Rome, Barclays Bank, Bank of Egypt, the Tunisian–Algerian Real Estate Bank, the British Bank of the Middle East, the Arab Bank, and the Eastern Bank (Lindber, 1953).

In the field of control, the 1963 Law No 4, stated that commercial banks had to maintain a liquidity ratio at least 20% of saving deposits; this ratio was increased to 25% in July 1966 and then reduced to 15% in 1970. Until March 1965, liquid assets consisted of cash on hand, demand deposits of commercial banks with the commercial banks in Libya, foreign currency held by commercial banks, and balances due to commercial banks from banks abroad. The 1963 Law also required the commercial banks to deposit with the Central Bank of Libya with no interest, a specified percentage of specified liabilities. It left the determination of these specified liabilities and required reserve ratio to the board of the directors of the Central Bank of Libya.

In addition, the 1963 Law No 4 also called for Libyan participation in the ownership of the existing banks, representing at least 51% of their capital. The motivation for such a requirement was the fact that all the above-mentioned establishments were branches of foreign banks and was

operating not in Libya's best interests, but rather in those of their parent banks.

In the field of the Specialised Banks, the Agriculture Bank was established in 1955, entitled the National Agriculture Bank. This was reorganised by the 1970 Law No 133 by which it was renamed the Agriculture Bank with a capital of LD 13 million. Currently, it has 42 branches in different parts of the country, and aims at promoting agriculture and animal production and encouraging co-operation in agriculture.

Late in 1963, according to the Libyanisation policy adopted by the Central Bank some of the ten foreign banks, the Eastern Bank, the Bank of America, the Bank of Sicily, the Tunisian-Algerian Real Estate Bank, the British Bank of the Middle East, the Morgan Guaranty Bank and the Bank of Egypt were transformed into Libyan incorporated companies. These were: the Commercial Bank, Sahara Bank, the African Banking Company, the Bank of North Africa, and the Nahda Arbia Bank. The remaining four banks, the Bank of Rome, Barclays Bank, the Arab Bank, and the Bank of Napoli, ignored the Libyanisation policy (Baryun, 1987).

### 5.2.2 The Banking Sector after the 1969 Revolution

In November 1969, the Revolutionary Command Council issued an order stipulating the Libyanisation of all foreign banks operating in the country. This resulted in nationalising the four remaining foreign banks and transforming them into Libyan Commercial banks. The state owned 51% of their capital (Baryun, 1987).

In December 1970, Banking Law No 153 was issued and all foreign shares in Commercial banks were nationalised and re-organised. The ownership of all foreign shares in all commercial banks reverted to the State. The 1970 Law No 153 also determined the limit on the share that Libyans could hold, placing a ceiling amounting to LD 5,000 on the nominal value of what a person might own in the capital of any bank. The only justification given for

this action was its intention to end the capitalist monopolies in the banking sector.

The Law also stipulated the combination of the former commercial banks into only five banks. Three of those commercial banks were owned entirely by the state, these being the Umma Bank, Jamahiriya Bank, and the National Commercial Bank. The state owned 51% of the shares in the Wahda Bank and Sahara Bank, whilst the other 49% was owned by the public (Banking Law No 153, 1970).

In 1971, Banking Law No 4/1963 was amended by Law No 63/1971, which introduced some necessary changes in line with new developments in the banking sector. One of the amendments was a change in the unit of accounting to the Dinar and the Dirham from the old denominations of the Libyan currency Pound and Millieme. The currency is still sometimes referred to as the pound. The second amendment was a change of the name of the Bank of Libya to the Central Bank of Libya, and the endowment of the Central Bank of Libya with more power, control and supervision over the commercial banks. The Central Bank was authorised to co-ordinate the commercial banks' work and follow their activities to ensure encouragement of the various economic sectors in accordance with the general policy of the State.

In addition, the basic goal of commercial banks according to the 1971 Law No 63 was no longer the realisation of the largest possible profits at the expense of the country's economic development plans. The primary function was to promote the development of the country in harmony with the projected economic and social plans in the country. Consequently, the commercial banks began to spread their services and to expand the range of their work to many areas where they contributed towards providing housing loans with average income. Additionally, they contributed towards the provision of real estate loans in co-operation with the Industrial and Real Estate Bank for people with limited income in a joint effort to solve the

housing problems, and they also offered loans towards urban development and tourist projects.

Following the 1971 Law No 63, liquid assets changed to consist of cash on hand, demand deposits of commercial banks with the Central Bank of Libya, demand deposits of commercial banks with other commercial banks in Libya, time deposits of commercial banks with the Central Bank of Libya, time deposits of commercial banks with other commercial banks in Libya, and foreign currency held by commercial banks (Banking Law No 63, 1971).

In the foreign field, the commercial banks contributed towards establishing some foreign companies and banks such as the Franco-Arab Bank, and the Euro-Arab Bank. In 1972 Banking Law No18 was issued, and was amended by Law No 66 in the same year, establishing the Foreign-Libyan Arab Bank with a capital of LD20 million entirely owned by the Central Bank of Libya. Among the objectives of this bank is engagement in financial and banking practice and in the development of financing operations outside Libya. The bank started its activity by establishing joint banks in some African, European, and Arab Countries (Abdussalam, 1976).

In summary, during the 1970s, the number of commercial banks was only five and the Central Bank of Libya continued its activity of supervising the commercial banks and backing up the development plans. In the field of monetary policy the Central Bank of Libya took several decisions, such as the use of liquidity of the commercial banks, and increasing the minimum of the total credit granted by the commercial banks.

The banking sector in general, and the commercial banks in particular, were positively affected by the economic situation in Libya during the 1970s as a result of increasing oil prices and the subsequent oil contribution towards the GDP, as discussed in section 4.3.2. The total budget of the commercial banks grew considerably as a result of their assets and liabilities, the development in their capital, reserves and the volume of their deposits of all kinds as shown in Table 5.1.

***Table 5.1:*** *Assets, Capital and Reserves and Total Deposits in Selected Years (LDM)*

| Item | 1967 | 1970 | 1975 | 1978 | 1980 | 1985 |
|---|---|---|---|---|---|---|
| **Assets (liabilities)** | 93.9 | 160.0 | 923.0 | 1,524.9 | 3,436.3 | 4,694.1 |
| **Capital and Reserves** | 7.7 | 9.2 | 43.6 | 90.5 | 148.6 | 208.8 |
| **Total deposits** | 73.3 | 211.5 | 615.9 | 1,043.4 | 2,416.2 | 3,247.7 |

**Source:** CBL, 2002

Table 5.1 shows that there was considerable development in the commercial banks' assets and liabilities during the period 1970-1980. Their assets increased from LD 93.3 million in 1967 to LD 160.0 million in 1970, and to LD 1,524.9 million in 1978. The total deposits largely increased from 73.7 million in 1967 to 3,247.7 million in 1985.

### 5.2.3 The Banking Sector before the Reform Programmes

By the beginning of the 1980s, the economic situation in Libya (as discussed in section 4.3.3) was affected as a result of the declining demand for oil and its accumulating stock which led to a considerable fall in oil prices. This, in turn, had negatively impacted upon the general budget of the state, which led to a considerable Gross Domestic Debt (GDD) of LD 5,345.4 million at the end of the decade. That was covered by the Central Bank of Libya and the commercial banks.

In addition, to overcome the problems of the 1980s crisis, the Central Bank of Libya applied policy to restrict the foreign exchange within the limits of the available monetary resources. This policy had negatively affected the banking sector by the fall in the net foreign assets and currency supplies. The crisis was sharpened by the American decision in 1986 to freeze all Libyan assets in American Banks and their branches in America and abroad on the pretext of the American policy to combat terrorism. The Libyan Arab

Foreign Bank took appropriate legal proceedings and obtained some urgent rulings enabling it to use its asset accounts in London.

Regarding the Specialised Banks, the saving and Investment Bank was established in 1981 as a Libyan joint stock company with a capital of LD 100 million. The aims of this bank are summarised as being: (i) encouraging real estate savings and providing loans for suitable housing for the citizens; (ii) sustaining the development movement; (iii) executing real estate projects on its own; and (vi) receiving deposits from parties that do business with the bank. The Development Bank was also established in 1981 in response to special importance that was given to the industrial sector during the development plans. There are 13 branches of the Development Bank in different locations in Libya with a capital of LD 100 million, entirely owned by the State. It aims at promoting productive projects in industrial, agricultural and tourist sectors, through the provision of technical assistance, technical counselling and loans for financing the productive projects (Abas, 1992).

In 1993 the banking system witnessed an important development, with the introduction of Law No 1, which following the economic reform programmes adopted by the Libyan State in the early 1990s, permitted foreign banks to open branches or bureaux representing them in Libya in accordance with conditions specified by the Central Bank of Libya (Banking Law No 1, 1993).

The National Banking Institution was established in 1996 in accordance with the 1993 Law No 1. Its target is the supervision and control of the national (native) banks and the follow-up of their activities and co-ordination between them and the commercial banks. Its capital was LD 20 million divided into two hundred thousand shares, which the operating national banks contribute. In this field, 48 banks opened in different locations in Libya (National Banking Institution, 2004).

The Law contained several articles concerning the Central Bank's responsibilities, the work of the commercial banks, and currency control. It defined the Central Bank's functions relating to the organisation and issue of

money and the maintenance of its stability, organisation of the credit and banking policy, and its supervision in the framework of the state's economic policy. In the banking field, the 1993 Law No 1 stipulated that the banks should contribute towards financing the development plan and take part in economic projects.

In the field of control, the 1993 Law No 1, authorised the Central Bank of Libya to formulate general rules for control and supervision relating to the rating of assets, specifying rates of liquid assets, aspects of investment and the reserves to be provided, observance of financial rates and fixing the interest rate for all credit and debit accounts and discount prices. The Law required the commercial banks to deposit at the Central Bank of Libya between 5-20% of the amount of their long-term deposits and between 10-40% of deposits under demand (Banking Law No 1, 1993).

This is the gist of the main parts of the 1993 Law No 1. Since that year commercial and specialised banks have offered their services and conducted their work in observance of this Law and in accordance with the general policy of the state.

Despite the sanctions imposed on Libya in 1992, the successive years witnessed good rates for the banking sector. The state also implemented some important monetary and financial policies, which had a positive impact on many parts of the Libyan economy.

In general, the banking sector, and particularly the commercial banks, dominates the entire financial system. The commercial banks with the specialised ones have continued their activities aiming at better performance through expanding the range of their services, updating their apparatuses and instruments, introducing up-to-date technology, and improving their training methods in order to ensure technically-trained personnel to keep pace with international innovations and developments in the banking sector.

## 5.3. Performance of the Banking Sector

The purpose of discussing performance is to appreciate the justification for the reforms and liberalisation policy, and in reviewing performance, the section will discuss the development of monetary indicators including the financial depth, deposit mobilisation, credit development, and portfolio adjustment.

### 5.3.1 Monetary Development

Regarding actual trends of monetary indicators, it is preferable to discuss money supply trends and factors affecting them. Table 5.2 shows the growth rates of the monetary indicators.

***Table 5.2:*** *Monetary Variables Development (%)*

| Monetary Variable | 1970-1980 | 1981-1990 |
|---|---|---|
| **Currency outside banks** | 20.2 | 8.1 |
| **Demand deposits** | 25.7 | 11.6 |
| **M1 narrowly defined** | 22.1 | 11.7 |
| **Time and Saving deposit** | 33.5 | 3.1 |
| **M2 broadly defined** | 27.3 | 4.4 |
| **Monetary base** | 23.2 | 5.7 |
| **Net foreign assets(NFA)** | 82.6 | -19.3 |

**Source:** CBL, 2002

Table 5.2 shows the development of the main monetary indicators, which reflected the policies and the strategies adopted by the banking sector in Libya. Money supply M1, as narrowly defined, was increasing very rapidly, especially during the first period (1970-1980), with an average growth of 22.1 % compared to about 11.7% in the second period (1981-990). The growth in the currency component demand deposits rapidly increased in the first

period, being 20.2% in currency outside banks and 25.7% in the demand deposits. Time and saving deposits showed a rapid rate of growth during the first period compared to the second periods. The growth was 33.5% in the first period, then decreased to 3.1% in the 1981-1990 period Because of the larger growth rate in time and saving deposits in the first period relative to demand deposits, the money supply M2, as broadly defined, showed more growth than M1.

Table 5.2 shows a strong relationship between the money supply and the monetary base in Libya. That is, when the monetary base increased, money supply was also increased. It is clear that the monetary base is mostly affected by net foreign assets (NFA). NFA rose quickly in the first period as an outcome of the rapid increase in the oil prices; therefore, it is clear that the NFA is mostly influenced by oil prices and exports. Concerning the second period, all monetary variables in Table 5.2 showed a decreasing trend, as the result of the decline of the oil prices, the decline of the oil revenues and therefore the appearance of GDD in the 1980s. NFA was also affected by the oil prices, it decreased by 19.3 %.

***Table 5.3:*** *Selected Indicators of Financial Depth for 1970-2000*

| Indicators | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 |
|---|---|---|---|---|---|---|
| **M2/GDP (%)** | 24.8 | 35.1 | 29.0 | 64.6 | 74.6 | 73.8 |
| **GDD/M2 (%)** | 0.0 | 19.4 | 9.8 | 81.1 | 90.2 | 86.6 |
| **Currency/M2 (%)** | 35.1 | 26.0 | 22.3 | 19.5 | 23.7 | 22.8 |

**Source:** CBL, 2002

Table 5.3 shows that there is a strong relationship between M2/GDP and GGD/ M2, since when the GGD/M2 increased, so too did the M2/GDP, and therefore, the increase in the M2/GDP does not reflect the financial depth in Libya. Rather, it reflects the impact of the GGD, which the banking sector covered since the oil crisis in the 1980s. As evidenced by a high rate of currency to M2, there was a lack of confidence in the financial system, the

rate being 22.8 % in 1995. Increased M2 was one of the main determinants of inflation in the 1990s.

The financial sector was dominated by commercial banks that were concentrated in the two biggest cities, Tripoli and Benghazi. Attempts to open up branches in rural places by the CBL had proved disastrous as the operating costs were far in excess of the benefits of deposit mobilisation and any form of profits. Consequently, financial widening and deepening could not be attained. The lack of monetary depth contributed to macro-economic instability as monetary discipline become difficult to enforce. Even a relatively small fiscal deficit could generate large monetary and inflationary pressures because of the small monetary holdings in the economy.

### 5.3.2 Deposit Structure

Securing an increase in total deposits is the main function of the financial sector. It is also constantly considered to be one of the main objectives of the banking sector reform. This section presents a review of the trends followed by both total and different categories of the Libyan commercial banks' deposits. It is important to mention that there is no data about deposits in other categories of banks. The growth of demand deposits as shown in Table 5.4, declined from 105.9% in 1980 to 32.5% in 1981, to minus 13.2% in 1982, to 12.55 % in 1985, and to 1.4% in 1990. Time and savings deposits witnessed a decline in the same period from 22.5% in 1980 to minus 15% in 1981, to 16.3% in 1985, and to negative 9.02% in 1990, subsequently, the total deposit growth declined from 69.7% in 1980 to 17.5 in 1981, to minus 11.4% in 1982, and to minus 1.6% in 1990. The country's deposit structure continued to be dominated by demand deposit, which as shown in Table 5.4, accounted for over 60% in the period 1980-1990. The predominance of the demand deposits can partly be attributed to the slow growth of public confidence in the banking sector, the low level of savings rate, and the shallow nature of the country's financial system.

Table 5.4 shows the evolution of demand deposits and time and savings (T&S) deposits during the period under study. The argument against the effectiveness of real interest rates in saving mobilisation can be explained by the fact that, during the 1980s, the nominal interest rates on deposits were stabilised at a low rate, while the real interest rates were either negative or very low.

***Table 5.4:*** *Deposit Structure and Development of Commercial Banks (LDM)*

| Year | Demand Deposit | T&S Deposits | Total Deposits | Demand/ Total Deposits | T&S/Total Deposits |
|---|---|---|---|---|---|
| | (%) | (%) | (%) | (%) | (%) |
| **1979** | - | - | - | 56.6 | 43.4 |
| **1980** | 105.9 | 22.5 | 69.7 | 68.6 | 31.4 |
| **1981** | 32.5 | - 15.0 | 17.5 | 77.3 | 22.7 |
| **1982** | - 13.2 | - 4.9 | - 11.4 | 75.7 | 24.3 |
| **1983** | - 3.1 | 20.0 | 2.5 | 71.6 | 28.4 |
| **1984** | 10.2 | 12.0 | 10.8 | 71.2 | 28.8 |
| **1985** | 12.5 | 16.3 | 13.6 | 70.5 | 29.5 |
| **1986** | 1.7 | 15.7 | 5.9 | 67.9 | 32.1 |
| **1987** | 3.3 | 4.6 | 3.8 | 67.5 | 32.5 |
| **1988** | - 9.1 | - 3.3 | - 7.2 | 66.2 | 33.8 |
| **1989** | 9.9 | - 13.7 | 1.9 | 71.4 | 28.6 |
| **1990** | 1.4 | - 9.02 | - 1.6 | 73.5 | 26.5 |

**Source:** CBL, 2002

### 5.3.3 Bank Credit

This section considers the development of credit and the allocation of bank credit to different sectors of the economy by the commercial sector. The aim is to highlight the changes in bank credit to different sectors, and possible linkage that such changes could have with the reform and liberalisation policies. The credit structure has continued to be dominated by loans and overdrafts, which as shown in Table 5.5, accounted for more than 93% from

the 1980s to 2000. The bills discounted and negotiated were insignificant as a component of credit, accounting for more than 5.4% during the 1980s. This can be attributed to the lack of maturity in the banking sector and the absence of the stock market. Table 5.5 shows the structure and development of credit during the period 1979-1990.

***Table 5.5:*** *Structure and Development of Bank Credit (LDM)*

| Year | Total Credit Value | % | Loans and Overdraft/ Credit (%) | Bills Discounted/ Credit (%) | Other Loans/ Credit (%) |
|---|---|---|---|---|---|
| **1979** | 1040.4 | - | 96.7 | 1.6 | 1.7 |
| **1980** | 1321.2 | 27.0 | 97.6 | 1.1 | 1.3 |
| **1981** | 2167.7 | 64.1 | 94.5 | 2.6 | 2.9 |
| **1982** | 2126.0 | - 1.9 | 96.4 | 0.6 | 3.0 |
| **1983** | 2208.1 | 3.9 | 97.1 | 1.3 | 1.6 |
| **1984** | 2153.7 | - 2.5 | 95.3 | 0.8 | 3.9 |
| **1985** | 2033.0 | - 5.6 | 95.6 | 0.3 | 4.1 |
| **1986** | 2031.6 | - 0.1 | 93.2 | 1.4 | 5.4 |
| **1987** | 2157.5 | 6.2 | 93.7 | 1.3 | 5.0 |
| **1988** | 2316.5 | 7.4 | 97.2 | 1.8 | 1.0 |
| **1989** | 2441.9 | 5.4 | 97.9 | 1.2 | 0.9 |
| **1990** | 3053.3 | 25.0 | 98.4 | 1.0 | 0.6 |

**Source:** CBL, 2002

Regarding the allocation of credit between the private sector and public sector, most of this was directly allocated to the public sector. According to the CBL (2002), public sector credit accounted for about 80% during the 1980s, providing evidence that the private sector was effectively crowded out. Given the allocation of no significant amount of credit to the private sector, the economy was bound to remain depressed and demonstrate a low

growth rate. Financial repression, in the form of controls on interest rates and directed credit, had contributed to the dis-intermediation of the financial system. Savings in the banking sector could not match the growing levels of credit demand and domestic investment. The ratio of total credit to total saving declined from 88.7% in 1978 to 55.1% in 1980, 62.6% in 1986, and to 77.1% in 1989.

Table 5.6 shows the percentage shares of bank credit allocated to the various key sectors of the economy, from which it is obvious that, whereas sectors such as trade and other services and housing and construction experienced significant increases in their share of credit, agriculture, manufacturing and oil and natural gas, experienced decreases in theirs.

***Table 5.6:*** *Bank Credit to Economic Sectors (% of total)*

| **Sector** | **1970** | **1975** | **1980** | **1985** | **1990** |
|---|---|---|---|---|---|
| **Agriculture** | 1.8 | 2.4 | 8.5 | 6.9 | 5.1 |
| **Oil and Natural Gas** | 2.4 | 0.5 | 0.3 | 4.2 | 1.1 |
| **Manufacture** | 12.6 | 13.0 | 18.5 | 31.4 | 11.6 |
| **Housing and Construction** | 17.4 | 26.2 | 20.2 | 41.0 | 33.7 |
| **Trade and Services** | 65.8 | 57.9 | 52.5 | 16.5 | 48.5 |
| **Total** | 100 | 100 | 100 | 100 | 100 |

**Source:** CBL, 2002

The predominance of credit to trade and other services, whose percentage share of credit ranged from 65.8% in 1970 to 48.5% in1990, may partly be due to the short-term nature of bank deposits and high lending rates. In converting deposits, which were largely of a short-term nature, into loans, it is likely that banks found it more feasible to lend for shorter periods of time.

Moreover, the preference for short-term credit, and the decline in the shares of credit to other sectors, which are usually of a long-term nature and

focused on credit to trade and other services, may be explained by the credit policy adopted by the banks. This confirmed imbalance between short-term and long-term credit is attributed to the absence of the capital market.

### 5.3.4 Portfolio Adjustment and Lending

This section presents developments in components of the banks' portfolios, other than bank credit. The assumption is that by looking at the additional activities in which banks are involved, it is possible to gain a better understanding of the trends in bank credit. In this case, consideration was given to the banks' involvement in the treasury bills market and the stock of excess reserves, both of which have significant potential for reducing the amount of bank credit for a given stock of loanable funds. Excess reserves represent the stock of deposits retained by the banks above the minimum level required by the Central Bank of Libya. Table 5.7 shows the trends in the stock of treasury bills held by commercial banks (TBB) and excess reserves (ER) as a percentage of total bank deposits.

***Table 5.7:*** *Selected Indicators of Commercial Bank Activities (LD M)*

| End of | 1980 | 1982 | 1984 | 1986 | 1988 | 1990 |
|---|---|---|---|---|---|---|
| Total Bank Deposits (TD) | 2416.2 | 2517.0 | 2858.8 | 3437.9 | 3310.0 | 3321.4 |
| T-Bill held by Banks (TBB) | 828.5 | 325.1 | 1097.5 | 1546.5 | 1597.7 | 1436.4 |
| Excess Reserves (ER) | 73.7 | 148.1 | 158.4 | 90.0 | 91.3 | 604.2 |
| TBB/TD (%) | 34.2 | 12.9 | 38.3 | 44.9 | 48.2 | 43.2 |
| ER /TD (%) | 3.05 | 5.8 | 5.5 | 2.6 | 2.7 | 18.19 |

**Source:** CBL, 2002

Table 5.7 shows that the stock of treasury bills held by the commercial banks slightly increased from LD 828.5 million in 1980 to LD 1,597.7 million in 1988, but that TBB slightly decreased to LD 1,436.4 million in 1990. As a

ratio of total bank deposits, this represents an increase from 12.9% in 1982 to 44.9% in 1986, to 48.2% in 1988 and to 43.2% in 1990, the reason being the participation of the commercial banks to cover the government debt (GDD) with the CBL. Considering that treasury bills were a form of risk-free investment, there is a strong possibility that the option of not investing in treasury bills could have increased the incentives for innovation by commercial banks in their efforts to extend credit to other sectors.

The excess reserves increased dramatically from LD 73.7 million in 1980 to LD 604.2 million in 1990 and this confirmed the reserved policy of credit that was adopted by the commercial banks during the 1980s. As a ratio of total deposits, this represents an increase from 3.05% in 1980 to 18.19% in 1990. The excess reserved was not financially used as credit, due to the fact that commercial banks were following the country's general loan policy, which was ambiguous and designed by the CBL. It is important to mention that a number of banks developed liquidity problems partly because of increases in their level of non-performing assets, but there is a lack of data regarding such assets, and hence, firm conclusions can not be drawn.

The investments in treasury bills reduced the incentives for lending to the private sector, as evidenced by the presence of significant amounts of excess reserves within the commercial banks, which could have been used innovatively to become private sector credit. However, in the presence of such reserves, it is not possible for one to argue with a lot of confidence that investment in treasury bills crowded out private sector credit.

In view of the above findings, it was inevitable that the country had to adopt reform and liberalisation policies, aimed at reversing the downward trend of the banking sector and increasing its role and contribution to the development of the economy. The next section considers the financial reform programmes in Libya.

## 5.4 Financial Sector Reform

The reform programmes in the early 1990s, representing the first wave of reform as previously discussed, underlined the urgent need to reform the financial sector in Libya and the banking sector in particular. This was done by improving the performance of monetary policy within a well-defined framework and developing indirect monetary instruments and money markets, and strengthening the banking sector. The second stage was planned to liberalise the financial sector and privatise the banking sector.

In general, the financial reforms aimed to encourage private participation in commercial banking, securities and insurance companies, and to increase the competitiveness of financial markets by continuing to reduce the size of the state ownership of public institutions (World Bank, 2006).

However, despite the above connection between the reform and liberalisation of the financial sector and the general reform programmes of the economy, practically, there was a delay in the commencement of financial sector reform and liberalisation.

### 5.4.1 The Objectives

Considering the unsatisfactory performance indicated above, the process of reform involved policies and institutional changes, which were aimed at reducing the role of the Libyan state in the banking sector in order to encourage private sector participation and allow the market to play a greater role in the allocation of financial resources. The measures adopted included the removal of interest rate controls, restructuring of financial institutions including the banking sector, to enhance competition and efficiency, and improving the legal and regulatory framework for the sector.

The objectives included the facilitation of macro-economic stability and promotion of overall economic growth. The entire policy package may be divided into the following three major elements: institutional reforms to

Central Bank and public sector banks, legislative changes to the banking law, and financial liberalisation. According to IMF 2005, the main objectives of the financial reforms were as follows:

- Increased deposit mobilisation
- Stimulating competition in the financial sector
- Enhancing efficiency in the financial institutions
- Restructuring of the financial sector, especially the banking sector
- Improving prudential regulation and supervision

### 5.4.2 Implementation of Financial Reforms

Several measures have been taken in order to facilitate banking sector reforms, the first being Law No 1, which was introduced in 1993 to increase the efficiency of the sector. According to this legislation, new principles were adopted, such as the ability to open branches or bureaux of foreign banks, the ability of Libyan people to open and operate banks in a collective way, and hence, the Trade and Development Bank was established (Banking Law No1, 1993).

Recently, a particular focus of the programme has been the restructuring of state-owned banks and, for some of them, an adjustment in ownership structure to increase private sector participation in their capital. In this context, the authorities have taken some significant measures. Firstly, in 2005 the new Law No 1 was passed in order to reassign the legal framework, and partial privatisation of the Al Sahari Bank was started through public sale, and preparations for the privatisation of the Wahda Bank commenced. Secondly, since 2006, some other measures have been taken such as the recapitalisation of all commercial banks, and partial interest rate liberalisation. Terminating directed credit allocation, authorising the commercial banks to lend to foreign firms operating in the country, partial privatisation through the public sale of shares of the Al Sahari Bank and preparation for the privatisation of the Wahda Bank all represent elements of the programme (World Bank, 2006).

In addition, some measures have been taken such as the merger of 21 regional banks to form just one bank, the reinforcement of banking supervision, exchange rate liberalisation and strengthening of regulatory and prudential oversight (IMF, 2006).

### 5.4.3 The Performance after Financial Reforms

This section provides a review of the banking sector's performance after the implementation of financial reforms. The purpose of this review is to present the impact of the above reforms on the banking sector through the development of monetary indicators, deposit mobilisation, and bank credit.

Table 5.8 shows that there has been some progress in some monetary indicators such as currency outside the banking sector, time and saving deposits, monetary base and NFA. Currency outside banks decreased, showing an average growth of 11.7% in the period 1990-1997, and just 2.1% in the period 1998-2005, depicting a better financial situation.

The demand deposits, including the deposits of public enterprises at the CBL, increased with an average growth from 7.4% in the period 1990-1997 to 18.5% in the period 18.5%, this can be attributed to the decline in the inflation rate. M1, as narrowly defined, decreased after the implementation of the reforms, showing an average growth of 6.7%.

Time and saving deposits, including deposits in foreign currency for resident customers, increased with an average growth of 6.2% in the first period after the reforms and rose to 12.3% in the period 1998-2005, in line with the objectives of the financial reforms. M2, broad money grew at 9.7% during the period 1998-2005, as a result of the improved government situation. The indicator of monetary base increased with an average of 14.1% because of the large increase in the net foreign assets (NFA), caused by the increase the oil prices. Despite, the increase in the time and saving deposits, the deposits structure remains dominated by the demand deposits, even though

the partial liberalisation of the interest rate in Libya and the decline of the inflation rate and GDD, account for more than 60% of total deposits.

***Table 5.8:*** *Monetary Variables Development (%)*

| Monetary Indicator | 1990-1997 | 1998-2005 |
|---|---|---|
| **Currency outside banks** | 11.7 | 2.1 |
| **Demand Deposits** | 7.4 | 18.5 |
| **M1** | 8.7 | 6.7 |
| **Time and Saving Deposits** | 6.2 | 12.3 |
| **M2** | 8.0 | 9.7 |
| **Monetary Base** | 12.0 | 14.1 |
| **NFA** | 9.7 | 52.3 |

**Source:** CBL, 2002 and 2005

Table 5.9 shows better performance of indicators of financial depth as demonstrated by the continuous decline in the ratio of GDD to GDP, the ratio of M2 to GDP reflecting the real or actual financial depth in the Libyan economy. The ratio of currency to M2 shows a large decrease from 28.1% in 1996 to 17% in 2004, providing evidence of confidence creation in the banking sector. The constant decrease in the ratio of M2 to GDP reflects the strategic monetary reform adopted by the CBL to reduce the impact of increasing money supply on the economy by using direct instruments.

***Table 5.9:*** *Selected Indicators of Financial Depth for 1996-2004 (%)*

| Indicators | 1996 | 1998 | 2000 | 2002 | 2004 |
|---|---|---|---|---|---|
| **M2/GDP (%)** | 69.9 | 76.4 | 59.5 | 51.4 | 39.0 |
| **GDD/M2 (%)** | 88.8 | 79.3 | 72.9 | 58.9 | 51.3 |
| **Currency/M2 (%)** | 28.1 | 28.0 | 25.7 | 20.1 | 17.0 |

**Source:** CBL, 2002 and 2005

Despite the large excess reserves, which accounted for LD 7,065.9 (CBL, 2005), the growth of credit is unstable and does not match the need in the

economy, and despite the aim of expanding the private sector's role in the economy, there was no noticeable change during the period 1991-2004. The ratio of credit to total deposit declined from 88.4% to reach 60% in 2004, reflecting the reserve policy of credit adopted by the commercial banks. The trade and services still dominated the credit allocation because of the preference for short-term bank loans. Despite the termination of the directed credit allocation, most credit remains allocated to the public sector that receives about 80% in comparison to the 20% provided to the private sector.

***Table 5.10:*** *Deposit Structure and Credit*

| Year | DD/TD (%) | T&SD/TD (%) | Credit (%) | Credit/TD (%) |
|---|---|---|---|---|
| **1991** | 72.3 | 27.7 | 3.2 | 88.4 |
| **1992** | 72.2 | 27.8 | 7.6 | 81.3 |
| **1993** | 69.9 | 30.1 | -8.8 | 86.2 |
| **1994** | 72.0 | 28.0 | 28.8 | 79.2 |
| **1995** | 67.9 | 32.1 | 7.4 | 77.8 |
| **1996** | 66.1 | 33.9 | -8.6 | 66.6 |
| **1997** | 65.8 | 34.2 | 6.4 | 69.0 |
| **1998** | 63.6 | 36.4 | 8.7 | 68.9 |
| **1999** | 63.9 | 36.1 | 14.9 | 73.1 |
| **2000** | 64.0 | 36.0 | 7.3 | 74.8 |
| **2001** | 61.2 | 38.8 | 8.5 | 72.2 |
| **2002** | 66.6 | 33.4 | 5 | 73.0 |
| **2003** | 64.1 | 35.9 | 6.6 | 70.8 |
| **2004** | 68.1 | 31.9 | - 3.9 | 60.0 |

**Source:** CBL 2002, 2005

In summing up, it is important to mention that some positive steps have been taken as the starting point and that at least the authorities realised that the financial sector had been under-performing. However, there are other steps that have not been taken and are crucial for the development of the section, and more attention is required in these respects.

Firstly, the deregulation of the interest rate in Libya is unclear. Thus, the lack of competition in the market reduces the interest rate ability to reflect the real cost of borrowing and the real return of lending in the economy, meaning it is not possible to bring both investments and savings into equilibrium. There should be full liberalisation in this respect, and the market should be the determinant of the interest rate.

Secondly, in spite of the progress brought by the new banking law, through its specification of the duties and responsibilities of the CBL, the Central Bank is still the owner of the public banks, and the associated potential conflict of interest between ownership and regulation remains. Therefore, it is essential that the authorities in Libya consider separating the ownership of banks from their regulation by the CBL. Ownership should be transferred to the General Secretary of Finance.

Thirdly, the privatisation programme of the public banks began without any conditions or planning, because one of the critical elements of success in bank privatisation is being able to secure the interest and participation of strategic investors and partners. Therefore, the authorities and CBL should organise a system or conditions to attract a well-qualified category of investors with a proven track record in financial matters.

Fourthly, despite the ending of the direct allocation of credit, until recently, the public enterprise sector in Libya was the only beneficiary of credit lending by banks. The banking sector administratively channelled funds to public enterprises, while the marginal private sector consisted only of micro-enterprises with no formal access to finance. Therefore, for the new private sector to grow, banks need to obtain capacity to serve this new part of the

economy. Moreover, there should also be a complete ending to the direct allocation of credit.

## 5.5 Social Security Fund in Libya

It is noteworthy to mention that in Libya the pension scheme is referred to as the Social Security fund (SSF), which is a PAYG system that covers 75% of the workforce and pays benefits equivalent to 1.4% of GDP. The high level of coverage is achieved since the public sector is a major employer. The main resources of the SSF come from employee contributions, public transfers and from its investment. The system is obligatory for all employed people. Thus, it covers civil servants, private sector and state-owned enterprise employees, and the self-employed. Under a separate law, the SSF manages the pension scheme for the military (World Bank, 2006). The indicators show that the size of the SSF in the Libyan Economy is too small and has no role in the country's financial market; the accumulated reserves of the SSF stood at 2.5% of the GDP in 2005 and the SSF has assets equivalent to 4.7% of GDP and bank deposits constitute only 8% of its total assets. The share of contribution by employees to the GDP was 4.5% in 2005 (SSF, 2005).

According to the World Bank (2006), the SSF is in a financially weak situation and is likely to have accumulated a substantial implicit pension debt that threatens its fiscal position. The reason is the generosity of the system that aims for a high replacement rate and is paying an implicit real rate of return on contributions above 5.5% per year. Already, the SSF is showing an operational deficit of LD 119.6 million or 0.18% of GDP, which is being covered by using the SSF reserves.

Furthermore, the Libyan state is accumulating debts with the SSF that in 2003 reached LD 111.8 million. For instance, military pensions should be financed by the central budget. Yet, in 2003, out of LD 48 million in expenditures, the state only transferred LD 4.5 million. The state's use of a large share of the SSF reserves in unproductive public projects has led to the absence of these shares. Therefore, reforming the social security fund is an

urgent and vital requirement in order to develop Libya's economy. The authorities are committed to introducing a series of reforms to improve management and investment policies as well as to control the growth of the implicit pension debts.

### 5.5.1 Insurance System in Libya

The insurance sector can contribute to the well-being of individuals by transforming some aspects of economic and financial risks that they may face in their daily life (e.g. accidents, injuries, fire, theft etc). In particular, life insurance provides individuals and enterprises with such cover through long-term savings instruments that have longer maturity than traditional loans from the banking sector. Therefore, reforming the insurance system is an important element for savings mobilisation and financial development, and in the advanced countries the ratio of premiums to GDP ranges from 3% to 10.1% (World Bank, 1998). In comparison, Libya's insurance industry is small with the ratio of premiums accounting for less than 1% of GDP (World Bank, 2006).

Until the 1969 Revolution, there were over 30 insurance companies in Libya, four Libyan and the rest being either branches or agencies of foreign insurance companies. These institutions handled almost all kinds of insurance.

However, in 1970, a new law was passed to regulate the insurance sector and the foreign insurance companies were nationalised. Subsequently, those companies were merged into two companies - the Libyan insurance company, and Al Maktar Company. In 1980, a further decision was taken to merge these two companies into the Libyan insurance company. This situation produced several undesirable outcomes, such as: (i) the disappearance of insurance agents who play an important role in spreading insurance awareness in society; (ii) a rise in the prices of certain insurance such as marine insurance, for which there are no options, and prices are fixed by the monopoly company, and (iii) a deficiency in information and

studies about the importance of the insurance industry and its contribution toward economic activity and financial development (Ganus, 1999).

However, despite the recent permission to the private sector to operate insurance activities, the Libyan insurance sector is still narrow and under-developed compared with the advanced countries and even with some other developing countries in the region. The Libyan authorities recognise the potential for growth in the non-bank sector including the insurance industry, and have started to regulate and update this sector in an attempt to increase public appreciation of the significance of insurance policies, by liberalising the operating environment and allowing the diversification of services provided by the sector as part of the financial reforms (World Bank, 2006).

## 5.6 Conclusion

The background to the Libyan banking sector since the first attempt to establish an agriculture bank in 1868 until the recent implementation of financial reform programmes in 2005, has been provided in this chapter. In 1955, the Libyan National Bank was established, later to become the Central Bank of Libya in 1963. Until the 1969 Revolution, the banking sector was dominated by foreign banks, with limited services being offered to the general Libyan population, but a year later, in December 1970, the Banking Law No 153 was issued with the result that all foreign shares in all commercial banks were nationalised and re-organised into commercial banks. Due to the lack of other financial institutions, five commercial banks dominate the banking sector and the financial sector in Libya.

The chapter has presented a statistical review of some outcomes of banking performance using certain monetary indicators, deposit mobilisation, bank credit and portfolio adjustment in the 1980s and before the adoption and implementation of the financial reform programmes in Libya. The outcomes indicated that there were strong needs to reform the country's banking sector, since they demonstrated a strong relationship between the GDD and indicators of financial depth, a lack confidence in the banking sector, the

domination of the deposit structure by demand deposits, the dominated of the credit structure by loans and overdrafts, the domination of the credit allocation by trade and services, and a squeezing of credit to the private sector, with a greater preference being shown for treasury bills and the accumulation of excess reserves.

The new measures and legalisation introduced in the banking sector as part of the reform programmes in the early 1990s led to a little improvement in the effectiveness of the banking sector. However, more changes are needed to enhance the sector's efficiency and competitiveness. These changes include the full liberalisation of the interest rate and its determination by the market base, the separation of bank ownership and regulation which are both currently in the hands of the CBL, the reduction of the size of the state-owned banks by rushing the privatisation of commercial banks, more participation by private sector banking, an increased share of the private sector (especially small and medium enterprises) in bank credit, and improved supervision and regulation systems to avoid the occurrence of crises.

The SSF is a PAYG system operated by the government, and that is very narrow, having a weak financial impact, and already showing 18% of GDP as an operational deficit. Insurance is small with ratio of premium to GDP of less than 1%, thereby appearing as substantially under-developed in comparison to the insurance system in advanced countries. The World Bank (2006) recently concluded that the SSF and insurance sector as contractual savings institutions need to reform in order to increase their role in Libya's financial sector, through increasing the availability of long-term savings instruments.

The next chapter is concerned with the data issues and econometric methodology used in this study.

# CHAPTER SIX
# DATA PROCESSING AND ECONOMETRIC METHODOLOGY

## 6.1 Introduction

The availability and the quality of the data is a major issue that faces applied economists when conducting empirical work particularly for developing countries. This issue becomes more problematic with respect to financial sector and savings measures. Section (6.1) clarifies the problem of the issue of financial sector and savings measurement, and it explores the indicators that were used in previous empirical studies besides discussing the data that are used in this work and its sources.

The methodology used in this empirical study is econometric methodology. Therefore section 6.3 discusses the econometric methodology, which shows that time series analysis is adopted in order to study the relationship between economic variables in one country (Libya); a brief discussion of the unit root tests is provided and the cointegration and causality issues are also discussed. Section 6.4 concludes the chapter.

## 6.2 Data Issues

Finding suitable data is one of the major issues that face applied economists. This issue becomes more problematic in developing economies, which lack the well-structured statistical institutions and sufficient technology that enable them to provide accurate statistical data. Compared with the issue of measuring macroeconomic variables such as inflation rate, the GDP, cross domestic investment and unemployment, the issue of measuring financial development and saving is more problematic. This is because of the difficulty of finding an appropriate definition of financial development, which captures the diversified nature of the financial sector on one hand and because of the calculation of savings as the difference between income and consumption, on the other.

### 6.2.1 Indicator of Financial Sector Development

There is no agreement about the most appropriate indicator of financial sector development. The difficulty of finding a suitable proxy of financial sector development comes from the lack of a clear-cut definition of financial development. The concept of financial sector development includes a wide range of reforms and changes in different aspects of the financial sector; it includes reforms and changes in financial institutions including banks, non-banking institutions, capital markets and contractual savings institutions (CSI) such as pension funds and life insurance etc; it includes reforms and changes in prudential and regulation system; and it includes updates and diversification of financial instruments and financial services etc. therefore, it is not easy task to find the most appropriate indicator to include in any econometric regression as a proxy of financial sector development. The following discussion provides a brief review of variables that were used as indicators of financial sector development in empirical studies.

#### 6.2.1.1 Financial Liberalisation Indicators

The use of the interest rate as a proxy of financial development remarkably dominated the economic literature for a decade after the Mckinnon-Shaw hypothesis. However, the ability of the interest rate to indicate the level of financial reforms and financial development, and to assess the impact of such reforms on other macro variables such as investment and saving, is still questionable. De-Gregorio and Guidotti (1995) criticised the use of the interest rate variable as a measure of financial development as suggested by Mckinnon-Shaw theorem. They argued that it is not necessary that a positive real interest rate stimulates financial savings and leading to an increase in the supply of credit to the private sector and hence to an increase in investment and growth.

As an alternative to the use of the interest rate as an indicator of financial liberalisation, some economists construct their own indexes. Bandiera et al (2000) constructed an index that reflects the various aspects of the

deregulatory and the institutions-building process in the financial sector. Their index summarises exogenous changes in interest rate regulation, reserve requirements, directed credit, liberalisation of securities market, bank ownership, prudential regulation and international financial liberalisation. However, they concluded that capturing all of these aspects of financial development in one index is impossible work.

#### 6.2.1.2 Monetary Indicators

It has been a common practice to employ monetary variables such as M1, M2 and M3 as proxies of financial development in empirical studies (Edwards, 1996; King and Levine, 1993a; Loayza, et al, 2000; Hussein and Thirwall, 1997 and Bandiera et al, 2000).

M1 is the narrow money variable, which refers to the sum of currency outside banks and demand deposits. M2 (money and quasi money) is broader than M1, it is usually referred to as "broad money" because it consists of the sum of currency outside banks, demand deposits other than those of central government (M1) and the time, savings and foreign currency deposits of resident sector other than central government. M3 includes M2 plus large time deposits and institutional money market accounts. The above indicators reflect the degree of monetisation in the economy; they are designed to show the real size of the financial sector of a growing economy in which money provides valuable payment and saving services (Kar and Pentecost, 2000).

However, these monetary variables are criticised as being very poor indicators of the extent of financial development because their ability to reflect financial depth is restricted. For example, they cannot explain the functions of allocating funds or making transactions by the financial institutions, even though they provide a good proxy of the ability of the financial instruments to work as a medium of exchange. Demetriades and Hussein (1996) argued that the high degree of monetarisation in developing economies does not necessary reflect an increase in the level of financial intermediation, because a large component of the broad money stock in

developing economies in currency held outside the banking sector. Therefore, an increase in the ratio of broad money to GDP may reflect a more extensive use of currency rather than an increase in the volume of bank deposit transactions, particularly in the first stages of economic development.

### 6.2.1.3 Financial intermediaries Indicators

Beck et al (1999) distinguished between three sets of financial development measures, namely: the absolute size, the relative size measures and the efficiency measures. The first set of variables is the absolute size indicators that measure the importance of the parts of the financial sector in the economy by measuring their ratio to GDP. These measures for examples are the ratio of central bank assets to GDP, the ratio of deposit banks assets to GDP and. the ratio of other financial institutions' assets to GDP.

The second set of variables consists of indicators that measure the importance of parts of the financial sector relative to each other and to the whole financial system. These variables are the ratio of central bank assets to total financial assets; the ratio of deposit money bank assets to total financial assets; the ratio of other financial institutions assets to total financial assets; the ratio of deposit money banks assets to the sum of deposit money banks and central bank assets. Usually, the relative size of financial institutions changes with the process of development and financial reforms. In the early stages of development and in financially repressed economies, the relative size of the central bank is expected to be higher than the other financial institutions. However, in the later stages particularly when financial liberalisation takes place the other financial institutions are expected to gain greater weight than the central bank.

The third set of measures is the measure of the activity of financial intermediaries; these measures help to assess the activity of financial intermediaries in the function of channelling savings into investors. Financial development is usually associated with the relaxation of the liquidity

constraint, increasing the number and the efficiency of financial intermediaries is expected to increase credit available to the private sector. Three different measures refer to the activity of financial intermediaries. The first one is the private credit, which is the financial resource provided to the private sector such as loans and trade credits and other accounts receivable that establish a claim for repayment; for some countries these claims include credit to public enterprises. This broad measure includes the credit by all of the financial institutions including the credits issued by the monetary authority and government agencies. This measure was used by Edwards (1996).

The second measure is the ratio of private credit by deposit money banks to GDP; this measure was used by Levine, 1998 and Beck et al, 2000. It refers to the financial resources directed to the private sector by deposit money banks. However, this proxy is not able to reflect the influence of other financial institutions rather than banks such as stock and share markets. Therefore, this weakness makes this proxy more efficient to use in developing countries rather than developed countries (De-Gregorio and Guidotti, 1995).

The third measure is the ratio of private credit by deposit money banks and other financial institutions to GDP. This measure is broader than the second measure because it includes the credit by other financial institutions to the private sector. According to Beck et al (2000), this measure is quite efficient in measuring the activity of financial intermediaries, because it isolates credit issued to the private sector as opposed to credit issued to the government and public enterprises. Moreover, it concentrates on credit issued by intermediaries other than the central bank.

### 6.2.2 Savings Indicators

Savings, like other macro-variable is recorded in the national income accounts. However, it differs from the others by the way it is calculated as the residual between income and consumption. Therefore, the accuracy of

savings data depends extremely on the definition of income and consumption and the way they are calculated. Most of the applied studies use the aggregate savings data from the World Bank and the IMF publications. Schmidt-Hebbel and Serven (1999) argued that these aggregate data suffer from conceptual and empirical shortcomings. For example, the national accounts use a current account measure of saving that is inconsistent with consumption theory, which is based on a capital account measure of savings obtained as the change in net wealth derived from flow-of-funds accounts of each sector. The capital account measure of savings take into account the net capital gains from revaluations of assets and liabilities, and equities and houses due to inflation and changes in real exchange rate, whilst the current account measure of savings do not consider the net capital gains, whose might sometimes be large in developing countries.

Another problem of savings measurement is the reliance on aggregate measures of savings such as national savings, domestic savings and private sector savings, even though the relevant decision unit is the household or the individual (Schmidt-Hebbel and Serven, 1999). Therefore, the use of aggregate savings in examining the relationship between savings and growth is not adequate because it is the financial savings rate that matters for capital accumulation and growth, not the national or domestic savings rate or even the private savings rate.

### 6.2.3 Data Types

This section describes the different variables and types of data used in the estimation process. As this thesis aims to examine different issues with respect to the relationship between savings, financial development, and growth by using long run "cointegration" and causality techniques, there are several variables that will be used in the empirical analysis.

- The log level of financial system deposits (LFSD): This is demand, time and savings deposits plus foreign currency deposits in Deposit

Money Banks (DMBs) and other Banking Institutions (OBIs). Data are deflated by the Consumer Price Index (CPI) and transformed into logs. LFSD is an indicator of financial savings and is used in the first empirical model to examine the long run determinants of financial savings.

- The log level of real per capita GDP (LRGDPC): calculated as the GDP at current prices deflated by CPI, and divided by population and transformed into logs. LRGDPC is used as an indicator of real output (income) to assess the relationship between savings and real output (income) and the impact of financial sector development on growth.

- The real interest rate (RI): it is defined as the nominal interest rate minus inflation rate. RI is used to assess the impact of real interest rate on financial savings in the first empirical model, and it is used to examine the long run impact of real interest rate on investment in the second model.

- The log level of real Gross Domestic Investment (LGDI): it is gross domestic investment in current prices deflated by the CPI and transformed into logs. The LGDI is used as an indicator of investment in the second model to assess the long run impact and the causality between financial sector indicators, real output and investment.

- The log level of credit (LCREDIT): it is the total credit by DMBs; the data are deflated by the CPI and transformed into logs. The LCREDIT variable is used in the empirical model as an indicator of financial development to assess the long run relationship and the causality between financial sector development, investment and real output.

- The inflation rate (INF): it is the annual percentage change in the CPI. It is used in the first model to assess the impact of macroeconomic uncertainty on financial savings in the long run.

### 6.2.4 Data Sources

All the data series used were in real terms before deflating and transforming and on annual basis from 1970 to 2005 which was equivalent to 36 observations. Data on demand, time and saving, foreign currency, interest rate and credit was obtained from records of the Central Bank of Libya (CBL), such as annual and quarterly reports, Key Monetary and Financial indicators and electronic database. Data such as GDP, per capita GDP, CPI and GDI were obtained from Secretary of Planning.

In order to further understand the dynamic of the underlying processes, interviews were held with key people in the Secretary of Finance, Secretary of Economic and Central Bank of Libya. Discussion centred on banking policy, financial sector, current innovations and future strategies. The information gathered through the interviews was used in strengthening the interpretations and conclusions, and putting into context the policy suggestions.

## 6.3 Econometric Methodology

Econometrics is the unification of economic theory, statistics and mathematics where the statistical data are used to measure the economic relationships. Three major econometric techniques are usually used in applied studies; cross-sectional approach, panel-data approach and time-series approach. The econometric methodology used to examine the relationships between savings, financial development and real outputs is based on a time-series approach because we are interested in studying economic relationships in one country over time (Brooks, 2002)..

### 6.3.1 Time Series Analysis

Time series analysis has witnessed major developments since the mid 1980s. One of these developments is the concept of cointegration. Before the appearance of cointegration methods, traditional ordinary least square method (OLS) dominated the time series literature. However, this approach

studies the relationship between economic variables without recognising the possibility of the existence of non-stationarity in the data. A series is said to be stationary if it tends to return to its mean value and fluctuated around it within a more or less constant range, while a non-stationary series has a different mean at different points in time and its variance increase with the sample size.

A stationary series can be defined as one with a constant mean, constant variance and constant autocovariances for each given lag (Harris and Sollis, 2003).

As noted by Nelson and Plosser (1982) many macroeconomic time series are non-stationary. As noted above, this means that the traditional ordinary least square method cannot be applied; failure to recognize and take account of non-stationarity will result in what is called the spurious regressions where the results obtained a regression of a high $R^2$ (coefficient of determination) and significant coefficient even if the variables are totally unrelated. For example, regressing one non-ststionary variable onto another could result in a very high $R^2$ for the regression, implying a good correlation between the two variables.

To overcome this problem (non-stationary series) Granger (1986) and Engle and Granger (1987) establish the concept of cointegration (the property where exists a long run relationship between two non-ststionary series).

### 6.3.2 Unit Root Tests

Before conducting the cointegration test, it is crucial to study the time-series property of the data. In other words, it is necessary to test for stationarity of the data before conducting regression analysis to avoid the problem of spurious regression. Testing for the stationarity of the data means testing the order of integration of each variable in the model, if a variable is integrated of degree (1) that means it is an I(1) variable, or in other words, it has a unit root (non-stationary variable). Therefore, testing for non-stationarity is the

same to testing if there is unit root in the series. In addition, if a variable found to be non-stationary it is essential to know how many times we need to difference it to become stationary. For example, when we need to difference it twice to become stationary, it is called I (2) variable, which needs to be taken into account when examining the cointegration relationships because it has different implications on the number of cointegration relationships. In order to test whether a variable is stationary or non-stationary, the Dickey-Fuller test and Phillips-Perron test are implemented.

### 6.3.2.1 Dickey-Fuller Test

The Dickey-Fuller (DF) test for a unit root in time series was derived by Dickey and Fuller (Fuller, 1976 and Dickey and Fuller, 1979). The basic objective of the test is to examine the null hypothesis of a unit root (non-stationarity) against the alternative of the stationarity of the data in an autoregressive model, AR (1).

$$y_t = p y_{t-1} + x_t \delta + u_t \qquad (6.1)$$

in which $x_t$ are optional exogenous regressors which may consist of constant or a constant and trend or neither, $p$ and are parameters to be estimated, and u is assumed to be white noise. If $|p| = 1$, $y_t$ is a nonstationary series and if $|p| < 1$, $yt$ is a stationary series.

Subtracting $y_{t-1}$ from both sides of the equation gives the following AR(1) process:

$$\Delta y_t = \alpha y_{t-1} + x_t{}'\delta_t + u_t \qquad (6.2)$$

Where $\alpha = p-1$, if $\alpha = 0$, then $y_t$ is a nonstationary series and if $\alpha < 0$ then the series is stationary. Dickey and fuller calculated the critical values (CV) using Monte Carlo techniques to test for the stationarity of the data.

### 6.3.2.2 Augmented Dickey-Fuller Test

The augmented Dickey-Fuller test is used to test for unit roots in processes that are AR(P) rather than AR(1), where p>1. If a standard Dickey-Fuller

model is used when $y_t$ follows an AR(p) process, then the error term will be autocorrelated to compensate the misspecification of the dynamic structure of yt. This will invalidate the use of the Dickey-Fuller distributions, which are based on the assumption that the error term is white noise. Consequently the basic Dickey-Fuller test is extended to the following estimated equation:

$$y_t = \Psi_1 y_{t-1} + \Psi_2 y_{t-2} + \ldots + \Psi_p y_{t-p} + u_t \qquad (6.3)$$

this can be expressed:

$$\Delta y_t = \Psi^* y_{t-1} + \Psi^*_1 \Delta y_{t-1} + \Psi^*_2 \Delta y_{t-2} + \ldots + \Psi^*_{p-1} y_{t-p+1} + u_t \qquad (6.4)$$

Where

$$\Psi^* = (\Psi_1 + \Psi_2 + \ldots + \Psi_p) - 1 \qquad (6.5)$$

Here, if $H_0$: $\Psi^* = 0$ is found to hold against $H_1$: $\Psi^* < 0$, then y contains a unit root (nonstationary series).

### 6.3.2.3 Phillips-Perron (PP) Test

An alternative test for stationarity is proposed by Phillips and Perron in 1988. It has become known as the PP test. To understand the P-P test, it is useful to compare the standard Dickey-Fuller test to the Augmented Dickey-Fuller test. The second test involves adding an unknown number of lagged first differences of the dependent variable to capture autocorrelated omitted variables that would otherwise enter the error term. Instead of adding an extra terms in the data generating process to the regression model when the series is of an order greater than AR(1), the Phillips-Perron test undertakes a non-parametric correction to the t-test statistic to account for autocorrelation that will be present. The CV for P-P test are the same as in the ADF test.

### 6.3.2.4 Problems with Unit Root Tests

There is a trade-off between the size and the power of unit root tests, namely that they must have either a high probability of falsely rejecting the null of

non-stationarity when the true data generation process DGP is a nearly stationary process, or low power against a stationary alternative (Blough, 1992). This is because in finite samples it has been found that some unit root processes display behaviour closer to stationary white nose than to a non-stationary random walk, while some trend-stationary processes behave more like random walks.

Therefore, unit root tests with high power against any stationary alternative will have high probability of false rejection of the hypothesis of a unit root when applied to near-stationary processes. These problems, occurring when there is near equivalence of non-stationary and stationary processes in finite samples are partly due to using critical values based on the Dickey-Fuller asymptotic distribution (Harris and Sollis, 2003).

### 6.3.3 Cointegration

The discovery that the variables of interest are nonstationary means that OLS techniques are not applicable, and so it is necessary to adopt a different strategy to determine the relationship between the non-stationary variables. The concept of cointegration of variables is vital in this regard.

The economic interpretation of cointegration is that if two or more series are linked to form an equilibrium relationship spanning the long run, then the series will move closely together over time, and the difference between them will be stable (stationary). If a two or more nonstationary variables are found to be cointegrated, this means that the variables exhibit a long-run relationship (Harris and Sollis, 2003).

#### 6.3.3.1 Testing for Cointegration

Once time-series have been established to be non-stationary, it is important to test whether any relationships appearing when using OLS are purely spurious, or whether the data exhibit common stochastic trends. Consider two series $x_t$ and $y_t$. If these series are both I(d), then one would expect in the

absence of cointegration that the residuals of a regression of $x_t$ on $y_t$ would also be I(d). However, if there exists a vector that can be applied to the series such that the residual of the regression is of a lower order of integration I(d-b), where b>0, then the two series is said to be cointegrated of order (d,b), suggesting that the series have a long-run equilibrium, despite both being non-stationary; any differences between their time paths arising from an exogenous shock will not be continued in le long run. Thus, the concept of cointegration produces the existence of a long equilibrium to which an economic system converges over time (Harris and Sollis, 2003). There are different methods used to test for cointegration of time series.

- **Engle-Granger approach**

The Engle-Granger (1987) approach to testing the null hypothesis, that two I(1) series, $x_t$ and $y_t$ are not cointegrated, involves testing whether the error terms of the OLS regression of one variable on the other are stationary I(0) or non-stationary I(1). This test can be performed using any one of a number of tests, including the Dickey-Fuller and Augmented Dickey-Fuller tests discussed earlier.

However, while the null hypothesis of a unit root and no cointegration is based on a t-test with a non-normal distribution, in this case the standard Dickey-Fuller critical values (or ADF) can not be used in this test because the distribution of the test-statistics under the null hypothesis is affected by the number of regressors included in the regression. These required different critical values, these critical values are provided by Mackinnon (1991).

There are limitations connected with the Engle-Granger approach. If there are more than two variables in the model, there may be more than one cointegration vector. Assuming that there is only one cointgration vector when in fact there are more, will be inefficient since we can only obtain a liner combination of these vectors when estimating a single equation in the model.

- **Johansen approach**

The concerns about the limitations of the Engle-Granger approach, outlined above, resulted in the development of an alternative procedure to test for cointegration among economic variables, which can cope with an n-variable structure and in which up to n-1 cointegration relations can exist. Johansen (1988) and Johansen and Juselius (1990) established a Maximum Likelihood ratio tests to determine the number of cointegration vectors in a multi-equation structure. This approach has two important elements, specifically the vector error correction model (ECM) and the method of reduced rank regression to test for cointegration.

The Johansen procedure proceeds as follows. A VAR model is created, in which a matrix of parameters of lag length p and a vector of constants are regressed onto a vector of endogenous stationary and nonstationary variables. VAR models such as this are helpful because they enable one to estimate dynamic relationships between jointly endogenous variables without imposing strong prior restrictions.

The system is presented in a reduced form with each variable in *y* regressed only on lagged variables of both itself and the other variables in the system. Therefore, OLS is an efficient method to estimate each equation in the VAR, which comprises a common set of predetermined regressors (Harris, 1995 and Harris and Sollis, 2003).

Consider the following formulation:

$$y_t = \mu + \sum A_i y_{i-1} + \varepsilon_t \qquad (6.6)$$

Where $y_t$ is an (n x 1) vector of endogenous I(0) and I(1) variables, A is an (n x n) matrix of parameters, $\mu$ is an (n x 1) vector of constants, and $p$ is the lag length. The system is in a reduced form with each variable in *y* regressed only on lagged variables of both itself and other variables in the system.

Equation (6.) can be rearranged into an error correction mechanism form to give the VECM:

$$\Delta y_t = \sum \Gamma_i \Delta y_{t-1} - \Gamma I\, y_{-I} + u_t \qquad (6.7)$$

Where $\Gamma_i = -(I_k - A_1 - \ldots - A_i)$, $(i = 1, \ldots, p-1)$ and

$\Pi = I_k - A_i - \ldots - A_p$

The long run matrix Π can be written as $\alpha\ \beta$ where α and $\beta$ are (n x r) matrices. $\beta$'s cointegrating vectors are the ECMs and α comprises the parameters which give the speed of adjusting of the system to long run equilibrium parameter levels in other words the short run dynamics. The rank (r) of the long run matrix determines how many linear combinations of the dependent variables are stationary.

If the matrix is of full rank then the series of the dependent variables are all stationary. On the other hand, if the rank is zero then the long run matrix is zero, and thus the differences of the dependent variable series are stationary, and all combinations of this series are nonstationary. Another possibility is the case in which the matrix is of reduced rank. Here there are r cointegrating vector, in other words, there are r stationary linear combinations of the dependent variables. The most important part in the above is the determination of the cointegrating rank (r). There are two popular methods for determining the cointegrating rank:

1. The maximum eigenvalue

Let $\lambda_i$ denote the estimated eignvalues, where $i = 1, 2 \ldots\ldots, n$. Then the maximum eigenvalue test is calculated as:

$$\lambda_{max} = -T\, log(1 - \hat{\lambda}_i) \qquad (6.8)$$

The null hypothesis is that there are r = n cointegrating vectors against the alternative is that $r \leq n + 1$.

2. The trace test

The trace test is similar to the maximum eigenvalue test.

$$\text{Trace} = -T \sum \log (1 - \hat{\lambda_i}) \qquad (6.9)$$

In this case the null hypothesis is again that there are r = n cointegrating vectors, but alternative is that r ≤ n.

The Johansen approach is widely applied because it offers the best and most reliable way in testing for long run relationships between non-stationary variables. In order to implement Granger causality tests, which are discussed in next section, it is necessary to establish whether variables are non-stationary, and if so, whether cointegration relations exist.

### 6.3.4 Testing for Causality

It is important to test for causality in time series studies because it helps to understand the relationships among economic variables in a way that provides practical policy implications. The Grange-causality test is the most commonly used and was developed by Granger (1969). This test examines the impact of past values of a variable $x_t$ on the current value of a variable $y_t$. Consider the Following VAR, which contains two time series $y_t$ and $x_t$ that are stationary in levels I(0) or first differences. Suppose these variables are generated by a VAR process of order p:

$$y_t = \alpha_1 + a_{11}(L)\, y_{t-1} + a_{12}(L) x_{t-1} + u_{1t} \qquad (6.10)$$

$$x_t = \alpha_2 + a_{21}(L)\, y_{t-1} + a_{22}(L)\, x_{t-1} + u_{2t} \qquad (6.11)$$

where $\alpha_1$ and $\alpha_2$ are constant drifts and $a_{ij}$ (L) are polynomials of order *p-1* in the lag operator L. If $a_{12}$ (L) is different from zero it can be concluded that $x_t$ Granger causes $y_t$ and if a21 (L) is not equal to zero it can be concluded that $y_t$ Granger causes $x_t$. Standard econometric test such as F-tests enable us to

conduct such test. In practice, Granger causality tests on a VAR are carried out using the unrestricted OLS equation:

$$Y_t = \alpha_0 + \sum \alpha_i Y_{t-i} + \sum \beta_i X_{t-i} + u_t \quad (6.12)$$

## 6.4 Conclusion

This chapter has laid out the data issues and the econometric methodology employed in the empirical study. Several indicators of financial sector development, which were used in previous empirical studies have been presented. The use of monetary variables as indicators of financial development have been criticised as insufficient because of the inefficiency of these variables in reflecting the activities of the financial sector. Using the interest rate as an indicator of financial liberalisation on its own is open to question, and the use of a financial liberalisations index that takes into account the different aspects of liberalising financial system, such as these which were constructed by Bandiera et al (2000) is preferable. However, constructing such index in developing countries is a difficult if not impossible work, because of the lack of sufficient data. In addition, it was shown that using aggregate measures of saving such as gross domestic saving particularly when studying saving-growth relations is not adequate and might lead to inaccurate results.

The chapter also provided an outline of the econometric methodology including, test for stationarity, cointegration and causality. It is important to perform the test for stationarity of the data to avoid the problem of spurious results. The ADF and PP test are implemented in the empirical part were discussed. In addition, this chapter briefly discussed Engle-Granger and Johansen cointegration approach and the causality test. The next chapter presents the results of empirical analysis.

# CHAPTER SEVEN
# RESULTS OF THE EMPIRICAL ANALYSIS

## 7.1 Introduction

This chapter provides the results of the empirical analysis after establishing the statistical characteristics of the data representing the different macroeconomic variables. The resulted are subjected to a series of diagnostic tests, especially the status of the data with regard to unit root tests, to ensure both their viability and reliability in making inferences and policy recommendations. Two tests of unit root are implemented to test the stationarity of the variables. These tests are the traditional Augmented Dickey-Fuller (ADF) and the Philips-Perron (PP). The EViews econometric package is used to conduct the empirical analysis including the unit root tests, descriptive analysis, cointegration tests, regression and causality tests.

The impact of the interest rate on savings in the Libyan economy is discussed in this chapter in order to test the assumption of the McKinnon-Shaw hypothesis that liberalising the interest rate would lead to an increase in savings and to an increase in the supply of credit, which leads to an increase in investment and then economic growth. The mixed results of the empirical studies on the issue of the relationship between the interest rate and saving (see Chapter Two) have resulted in confusion regarding the financial liberalisation theorem. Furthermore, it has been shown in Chapter Five that the interest rate was liberalised in Libya as a part of the economic reform programme. The main aim of the liberalisation of the interest rate was to mobilise more saving by attracting individuals to transfer their wealth from unproductive types of saving to financial saving, which would increase the financing of productive investment and then, would increase economic growth. Therefore, the impact of the real interest rate on the Libyan economy is assessed by examining the long-run relationship between the real interest rate and financial savings, and between the real interest rate and domestic investment.

The relationship between savings and economic growth is presented in this chapter because the early discussion in Chapter Three of this study has established that there is no clear-cut answer to the relationship between economic growth and savings. Furthermore, it has established that there is no agreement on the direction of the causality between the two variables. However, it has been argued in the study, that it is the financial savings that matter for economic growth, not the total savings, and this is particularly so in developing countries that might have a high rate of saving, but where the savings are held in unproductive forms such as in gold, estates, etc. The argument of the research was built on the fact that, for savings to have an impact on growth, they should be available for investment, which is the engine of growth. Therefore, it is the ratio of financial savings that affects investment and economic growth.

The issue of causality between savings and growth is important because it has important suggestions for development policy. Most of the recent studies (described in Chapter Three) have shown that the direction of causality is from growth to savings, therefore, there is an increasing call for more focus on growth-promoting policies instead of savings promoting policies. However, finding evidence of a causal effect from savings to growth would support the argument that savings lead to growth, and thus, savings-promoting policies are important for economic growth. This discussion gives rise to a testable hypothesis, which is the relationship between savings and economic growth in Libya, in order to establish whether there was a long-run relationship represented by the presence of a cointegration vector and the causality issue between financial savings and income.

Testing the relationship between financial sector development, investment and growth is the third issue that is addressed in this chapter. The relationship between financial sector development and economic growth is still controversial. Theoretically, there is no agreement on the importance of the financial sector for growth and development policies, despite the fact that most of the recent endogenous growth models argue that the financial sector is fundamental for growth because of its vital intermediation role in

transferring the mobilised savings into productive investment. However, some economists have argued that the impact of the financial sector on growth is not important (see Chapter Two). In addition, the direction of causality between financial development and economic growth is still ambiguous because there is no clear-cut answer to determine this direction. The review of the evolution of Libya's financial sector has shown the inefficiency of the financial sector in general and the banking sector in particular, which might be the reason for the fragile relationship between savings, investment and economic growth, which led to the unsustainable rates of growth and economic development in Libya. Therefore, it is important to assess the role of the financial sector in the Libyan economy by examining the cointegration and causality issues between financial sector development, real interest rate, and domestic investment and real output.

The chapter proceeds as follows: the next section provides the results of unit root tests. Section 7.3 discusses the empirical results of the estimation of savings' determinants. Section 7.4 presents the results of the impact of financial sector development on domestic investment and real output.

## 7.2 Results of Unit Root Tests

The unit root tests were based on both the Augmented Dickey Fuller (ADF) and the Philips Perron (PP) test statistics. With regard to the inclusion of a constant and a trend, the general principle is to choose a specification that is a plausible description of the data under both the null and alternative hypotheses.

Table 7.1 shows the test statistics (TS) and the corresponding critical values (CV) at the relevant levels of significance. The null hypothesis for the presence of a unit root is rejected if the TS value is bigger (in absolute terms) than the corresponding CV statistic. Rejection of the null hypothesis implies that the series is stationary. The test results seem to support the argument that the series became stationary after the first difference.

***Table 7.1**: Results of Tests for Unit Roots*

| Variable | Levels | | | | First Difference | | | |
|---|---|---|---|---|---|---|---|---|
| | ADF | | PP | | ADF | | PP | |
| | CV | TS | CV | TS | CV | TS | CV | TS |
| **LFSD** | -4.2436 | -3.8222 | -4.2436 | -4.1044 | -4.2528 | -6.6634 | -4.252 | -6.6275 |
| **LRGDPC** | -3.5442* | -1.9894 | -4.2436 | -2.0543 | -4.2528 | -6.6241 | -4.252 | -6.5706 |
| **RI** | -3.2046** | -0.5934 | -4.2436 | -1.0657 | -4.2528 | -4.6130 | -4.252 | -4.5737 |
| **INF** | -4.2436 | -2.7685 | -4.2436 | -2.7685 | -4.2528 | -7.2930 | -4.252 | -7.3339 |
| **LGDI** | -4.2436 | -4.0206 | -4.2436 | -4.0012 | -4.2628 | -5.7629 | -4.252 | -7.9860 |
| **LCREDIT** | -4.2436 | -4.3503 | -4.2436 | -4.2526 | -4.2528 | -9.7188 | -4.252 | -13.658 |

Unless indicated [(*) 5% and (**) 10%] the Critical values (CV) correspond to 1% level of significance.

The results in Table 7.1 show that the unit root null of the level of all variables is accepted. The observed CV values are higher than TS in ADF and PP tests with constant and trend. However, the null hypothesis of the unit root for the first difference for the LFSD, LRGDPC, RI, NFI and LGDI is rejected because the TS values of ADF and PP tests are higher than the corresponding critical values (CV). The only exception is the Case of Credit, where the null of the unit root of the variable is not very significantly accepted at the 1% in both tests. Thus, to obtain a full stationary variable, it was first differenced.

## 7.3 The Determinants of Financial Savings

This section aims to examine the determinants of savings in the long run with a particular focus on assessing the relationship between financial savings and growth, and testing the impact of the real interest rate. In line with the research hypotheses, and consequently the early argument in this chapter

that it is financial savings that matter for growth, financial savings are used instead of aggregate measures of savings. In addition, using the Johansen approach provides information on the behaviour of the variables in the VAR model in the long run, and enables the long run causality test to be conducted.

### 7.3.1 Model Specification

The VAR model includes four variables; the first variable is financial system deposits (LFSD) as an indicator of savings in the financial sector, and the second one is real interest rate (RI) as the indicator of financial liberalisation. According to the financial liberalisation hypothesis, the impact of the interest rate on savings and economic growth is expected to be positive.

In addition, two other variables are included in the VAR model. The first is the per capita income indicator (LRGDPC), which is included to test the relationship between savings and income level because the absolute income Keynesian and Life Cycle theories hypothesise that income has a positive impact on savings.

The inflation rate (INF) as an indicator of the economic uncertainty is the second variable included in the model. The impact of the inflation rate on savings is expected to be positive because higher macro-uncertainty encourages economic units to consume less and save more as a precaution against unexpected shocks.

However, high inflation might negatively impact upon the real interest rate and decrease the real interest rate of returns on financial savings, and this induces individuals to invest in gold and estates.

### 7.3.2 Descriptive Analysis

The dataset used in the VAR model covered the period 1970-2005. The results of the unit root tests presented in Section 7.2 show that the LFSD, LRGDPC, RI and INF variables are I(1). The plots of the data over time are

shown in Figure 7.1. It can be seen that there appear to be a very high negative correlation between financial savings (LFDS) and real interest rate (RI), and a negative correlation between financial savings and inflation rate (INF). The correlation between FSD and LRGDPC (income or growth) is high and positive.

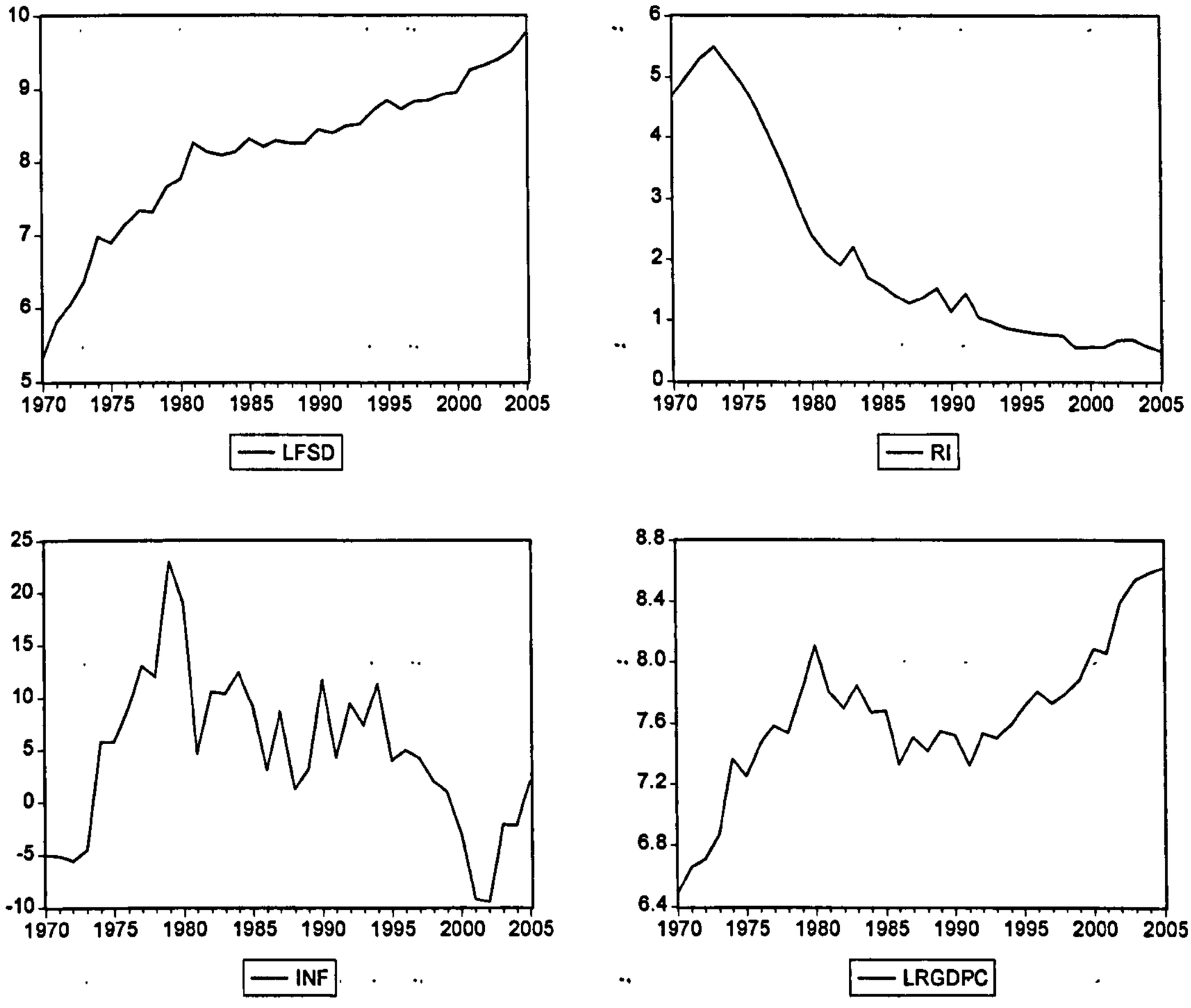



**Figure 7.1:** Line Plots of Variables (LFSD, RI, INF and LRGDPC)

These observations are supported by the estimation of the correlation matrix in Table 7.2. This demonstrates a negative and very high correlation between the level of financial savings and real interest rate, and a very small negative correlation between the level of financial savings and the level of inflation rate. It also shows that the correlation between the level of financial savings and the level of per capita income is positive and very high, and that

there is a small positive correlation between the level of inflation rate and the level of interest rate.

***Table 7.2:*** *Correlation Matrix between LFSD, RI, INF and LRGDPC*

| Variable | LFSD | RI | INF | LRGDPC |
|---|---|---|---|---|
| LFSD | 1.0000 | -0.9365 | -0.0115 | 0.8650 |
| RI | -0.9365 | 1.0000 | 0.0106 | -0.7117 |
| INF | -0.0115 | 0.0106 | 1.0000 | 0.0704 |
| LRGDPC | 0.8650 | -0.7117 | 0.0704 | 1.0000 |

### 7.3.3 Testing for Cointegration

Given that the variables were non-stationary in levels, it was necessary to determine whether they were cointegrated, in order to support the argument of a long-run equilibrium and the application of an error correction model (ECM). According to Engel and Granger (1987), it is always of interest to test whether a set of variables are cointegrated because of the economic recommendations such as whether the system is in equilibrium in the long run.

EViews, the statistical package used in this analysis, implements a Vector Autoregressive (VAR) based cointegration test using the methodology developed by Johansen (1995). Johansen's method is to test the restrictions imposed by cointegration on the unrestricted dynamic VAR model involving the series, and compute both the Trace Statistic and Max-Eigend estimator in a multivariate relationship.

Table 7.3 presents the results of the cointegration test and show rejection of the hypothesis of no cointegrating vectors under both the trace and maximal eigenvalue forms of the test. In the case of the trace test, the null hypothesis of no cointegrating vectors is rejected since the test statistic of 102.7670 is

greater than 5% critical value of 62.99 and 1% critical value of 70.05. Moving on to test the null of at most 1 cointegrating vectors, the trace statistic 55.67521 is greater than 5% critical value of 42.44 and 1% critical value of 48.45, so the null hypothesis is rejected. In the case of the Max test, the null hypothesis of no cointegrating vectors is rejected at 5% and 1% critical value since the Max statistic of 47.09179 is greater than 5% critical value of 31.46 and 1% critical value of 36.65.

Therefore, the null hypothesis of no cointegrating vectors is rejected by the trace test at the 1% and 5% levels and by the Max test at 5% and 1%, and hence the assumption of, at least, one cointegrating vector.

**Table *7.3:*** *Testing for Cointegration among LFSD, RI, LRGDPC and INF*

**Sample:** 1972-2005
**Included observation:**34
**Series:** LFSD RI LRGDPC INF

| Eigenvalue | Trace Statistic | 5% Critical Value | 1% critical value | Hypothesised No. of CE(s) |
|---|---|---|---|---|
| 0.781089 | 102.7670 | 62.99 | 70.05 | None** |
| 0.641909 | 55.67521 | 42.44 | 48.45 | At most 1** |
| 0.406911 | 23.83920 | 25.32 | 30.45 | At most 2 |
| 0.218534 | 7.644468 | 12.25 | 16.26 | At most 3 |

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 2 cointegrating equations at both 5% and 1%

| Eignenvalue | Max-Eigen statistic | 5% Critical Value | 1% critical Value | Hypothesised No. of CE(s) |
|---|---|---|---|---|
| 0.781089 | 47.09174 | 31.46 | 36.65 | None** |
| 0.641909 | 31.83601 | 25.54 | 30.34 | At most 1** |
| 0.406911 | 16.19473 | 18.96 | 23.65 | At most 2 |
| 0.218534 | 7.644468 | 12.25 | 16.25 | At most 3 |

Max-eigenvalue test indicates 2 cointegrating equations at both 5% and 1%

### 7.3.4 Error Correction Term and Long-run Equilibrium

The ECM term (Ehat) was obtained as an error term ($\epsilon_t$) of the static cointegrating (long-run equilibrium) regression equation of the following type:

$$y_t = \alpha_0 + \alpha_1 x_t + \epsilon_t \qquad (7.1)$$

.

*Table 7.4: Static Cointegrating Regression Results (LFSD)*

**Dependent Variable: LFSD: Method: Least Squares**

**Sample: 1970 2005**

**Included observation:36**

| Variable | Coefficient | Std.Error | t-Statistic | Prob |
|---|---|---|---|---|
| C | 2.258628 | 0.905627 | 2.493994 | 0.0180 |
| RI | -0.409606 | 0.032825 | -12.47852 | 0.0000 |
| INF | -0.004728 | 0.005169 | -0.914773 | 0.3672 |
| LRGDPC | 0.880044 | 0.112124 | 7.848821 | 0.0000 |
| R-squared | 0.957986 | Mean dependent var | | 8.100245 |
| Adjusted R-squared | 0.954047 | S.D.dependent var | | 1.057168 |
| S.E. of regression | 0.226621 | Akaike info criterion | | -002663 |
| Sum squared resid | 1.643422 | Schwarz criterion | | 0.149307 |
| Log likelihood | 4.479507 | F-statistic | | 243.7175 |
| Durbin-Watson | 0.799306 | Prob(F-statistic) | | 0.0000 |

The results are presented in Table 7.4. The respective coefficients for variables are interpreted in the context of the long-run equilibrium solution. The purpose of estimating this (first-stage) regression at this point was to generate the ECM term (Ehat), which is later used as an adjustment variable

in the estimation of the short-run (second-stage) model. However, the results, in Table 7.5, which relate to the whole model, are explained below, in order to support the assumption that the estimated long-run equation indeed represents a cointegrating relationship, and that ehat can appropriately be used in the estimation of the short-run model

Using the F-statistic to test the null hypothesis that all of the slope coefficients excluding the constant in a regression are zero, the associated probability value (p = 0.0000), rejected the hypothesis of zero coefficients. The entire model was, therefore, relevant and statistically significant.

The value of adjusted R-squared (95.4%) indicates an appropriate measure of the model's success in predicating the values of the dependent variable (financial savings) within the sample. The inference is that the explanatory variables were able to explain up to 95.4% of the variation in financial savings.

The variable Ehat may be described as the liner difference of the I(1) series regression involving y and x in level. In order to confirm cointegration in Equation 7.1, ehat was tested for stationarity using the ADF and PP tests. The ADF statistic value of -4.502586 and PP statistic value of -6.375378, were greater (in absolute terms) than -4.2528 at 1% critical value, indicating the rejection of the null hypothesis.

In addition, the Lagrange Multiplier (LM) test value, for serial correlation (see Adam, 1992), of 4.266027, and a corresponding p-value of 0.038882, for no serial correlation was not rejected at the 5% level of significance (see Table 7.5). Finally, a graphical review of Ehat (Figure 7.2) indicated that the variable showed no specific trend and could, therefore, be considered stationary and rightfully used in the estimation of the short-run model.

*Table 7.5: Results of Testing for Serial Correlation of Ehat*

| **Breusch-Godfrey Serial Correlation LM Test** | | | |
|---|---|---|---|
| **F-statistic** | 0.304438 | Probability | 0.739790 |
| **Obs*R-squared** | 0.716116 | Probability | 0.0699032 |

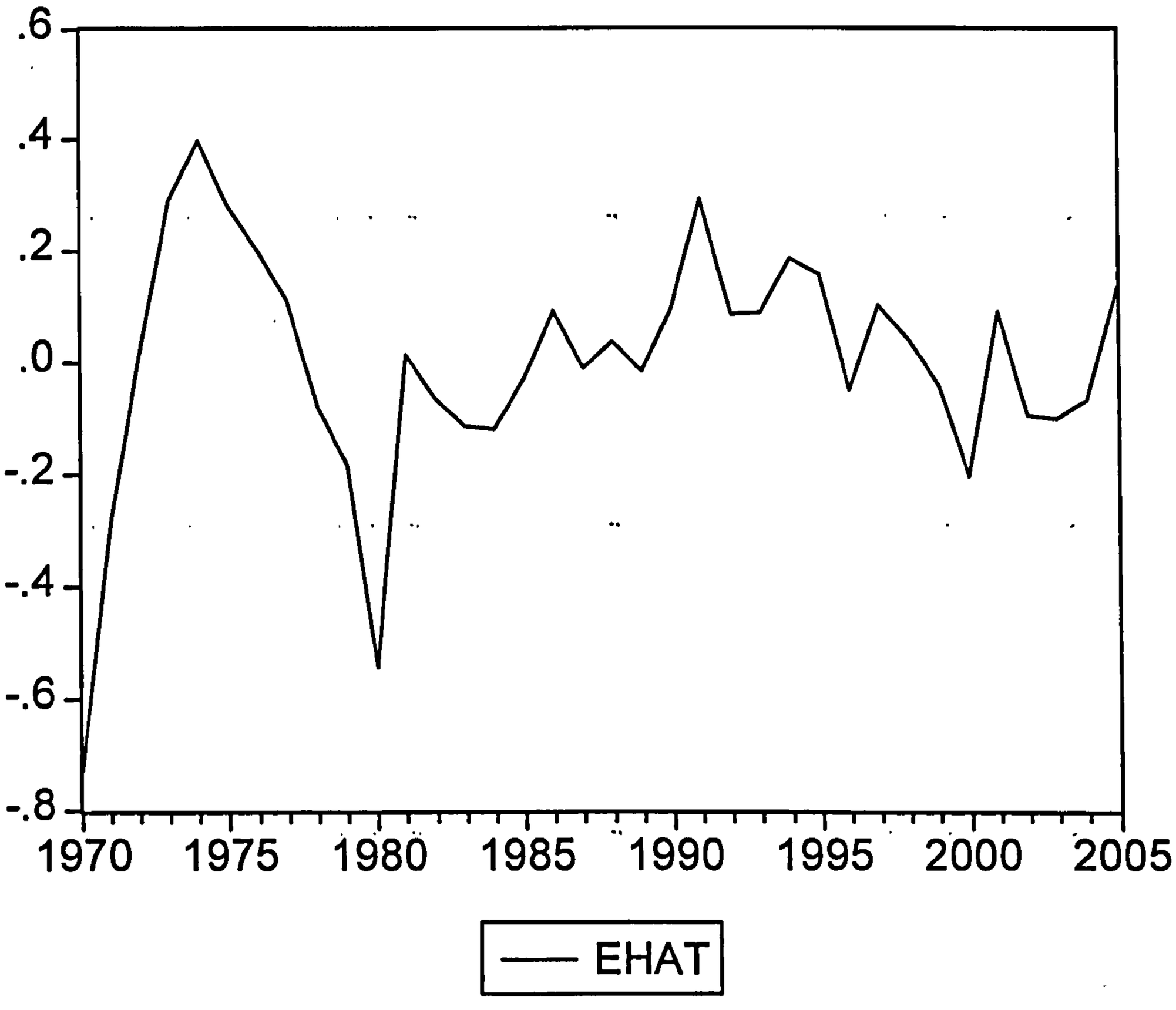



**Figure 7.2:** Line Plot of Ehat (first model)

### 7.3.4.1 Estimation of the (Short run) Error Correction Model (ECM)

Once cointegration has been established, one can proceed to estimate an over-parameterised error correction model with the initial specification having lags on all variables as long as the data can permit. The ECM term (ehat), however, is only lagged once before it is included in the model. Since the tests conducted above seemed to confirm that the static regression represented a cointegrating vector, the lagged value of ehat, which is the stationary representation of the long-run equilibrium, was included in a stationary error correction model as follows:

$$A(L)\Delta Y_t = B(L)\Delta X_t + \Psi ehat\ (-1) + u_t \qquad (7.2)$$

Where A(L) and B(L) are the general lag polynomials of the differenced *y* and x variable, and u is the error correction coefficient, which must be less than zero if the system is to represent convergence to equilibrium. The lag level was set between 2 and 3, mainly on consideration of the sample size. The initial over-parameterised model and the subsequent results after removing redundant variables are presented in Table 7.6.

The process of reducing the initial over-parameterised model was largely based on identification of variables with large p-values, which implied that the coefficient of such variables were statistically equivalent to zero, and could, therefore, be treated as being redundant in the model. A sub-set of all such variables was then subjected to a redundancy test, which allows one to establish the statistical significance of such a sub-set. More formally, the test is for whether all the variables in the selected sub-set have zero coefficients and might thus be removed from the equation. If the test fails to reject this hypothesis, then the variables in the sub-set can be deleted or removed without any significant loss of information.

However, alongside such a statistical test, economic theory was considered as a fundamental aspect for the justification of the variables to be retained in the model. In addition, consideration was given to the statistical significance

of individual coefficients and indicators of goodness of fit, notably, the adjusted R-squared and the F-statistic for each round of testing.

***Table: 7.6:*** *Results for the Model Estimation Process (DLFSD)*

**Dependent Variable: DLFSD Method: Least Squares**

| | Over-parameterised model | | Tests for Redundant Variables | | | |
|---|---|---|---|---|---|---|
| | | | First Test | | Second Test | |
| **Log Likelihood ratio** | | | 5.63425 | | 3.819109 | |
| **Probability** | | | 0.582424 | | 0.050671 | |
| **Variable** | **Coefficient** | **Prob** | **Coefficient** | **Prob** | **Coefficient** | **Prob** |
| **C** | 0.109905 | 0.0122 | 0.110745 | 0.0002 | 0.097764 | 0.0005 |
| **DLFSD(-1)** | 0.088940 | 0.6461 | | | | |
| **DLFSD(-2)** | 0.224778 | 0.2205 | | | | |
| **DLFSD(-3)** | 0.451772 | 0.0248 | 0.446094 | 0.0009 | 0.365396 | 0.0031 |
| **DRI** | -0.068968 | 0.5611 | | | | |
| **DRI(-1)** | 0.222499 | 0.0885 | 0.183294 | 0.0015 | 0.176402 | 0.0026 |
| **DRI(-2)** | 0.094309 | 0.2911 | | | | |
| **DRI(-3)** | 0.257236 | 0.0105 | 0.216750 | 0.0021 | 0.158284 | 0.0069 |
| **DLRGDPC** | 0.820989 | 0.0001 | 0.821842 | 0.0000 | 0.7822090 | 0.0000 |
| **DLRGDPC(-1)** | -0.289266 | 0.1854 | -0.206634 | 0.1091 | | |
| **DLRGDPC(-2)** | -0.388463 | 0.0688 | -0.288190 | 0.0317 | -0.233133 | 0.0769 |
| **DLRGDPC(-3)** | -0.131471 | 0.4309 | | | | |
| **DINF** | -0.004266 | 0.5334 | | | | |
| **DINF(-1)** | -0.001991 | 0.7815 | | | | |
| **DINF(-2)** | 0.016404 | 0.0497 | 0.015747 | 0.0038 | 0.015196 | 0.0061 |
| **DINF(-3)** | 0.023113 | 0.0229 | 0.020004 | 0.0002 | 0.019040 | 0.0004 |
| **Ehat(-1)** | -0.841081 | 0.0011 | -0.747007 | 0.0000 | -0.686643 | 0.0000 |
| **Adjusted$R^2$** | 0.592844 | | 0.668895 | | 0.643144 | |
| **S.E of Regression** | 0.108184 | | 0.097558 | | 0.101281 | |
| **D-W Stat** | 2.714600 | | 2.598978 | | 2.438288 | |
| **F-statistic** | 3.821114 | 0.006447 | 7.958417 | 0.0000 | 7.983721 | 0.0000 |

It should be noted that, after the first test, the probabilities corresponding to individual variables seemed to reject the hypotheses for zero coefficients, such that there were no other variables, which could be treated as redundant in the model. Moreover, the standard error of the first round regression (0.097558) was smaller than that of the second round regression (0.101281). Thus, the final reduced model results are presented in Table 7.7 The reduced model was hereafter, subjected to a set of diagnostic tests.

***Table 7.7:*** *Results of the Reduced Model (DLFSD)*

**Dependent Variable: DLFSD Method: Least Squares**

**Sample: 1970-2005**

| **Variable** | **Coefficient** | **Std.Error** | **t-Statistic** | **Prob** |
|---|---|---|---|---|
| **C** | 0.110745 | 0.024659 | 4.491065 | 0.0002 |
| **DLFSD(-3)** | 0.446094 | 0.116976 | 3.813562 | 0.0009 |
| **DRI(-1)** | 0.183294 | 0.050513 | 3.628687 | 0.0015 |
| **DRI(-3)** | 0.216750 | 0.062197 | 3.484911 | 0.0021 |
| **DLRGDPC** | 0.821842 | 0.127872 | 6.427084 | 0.0000 |
| **DLRGDPC(-1)** | -0.206634 | 0.123736 | -1.669953 | 0.1091 |
| **DLRGDPC(-2)** | -0.288190 | 0.125645 | -2.293691 | 0.0317 |
| **DINF(-2)** | 0.015747 | 0.004861 | 3.239525 | 0.0038 |
| **DINF(-3)** | 0.020004 | 0.004458 | 4.487075 | 0.0002 |
| **Ehat_1** | -0.747007 | 0.127776 | -5.846219 | 0.0000 |
| **R-squared** | 0.765022 | Mean dependent var | | 0.107789 |
| **Adjusted R-squared** | 0.668895 | S.D. dependent var | | 0.169543 |
| **S.E of regression** | 0.097558 | Akaike info criterion | | -1.566427 |
| **Sum squared resid** | 0.209388 | Schwarz criterion | | -1.108385 |
| **Log likelihood** | 35.06284 | F-statistic | | 7.958417 |
| **Durbin-Watson stat** | 2.598978 | Prob(F-statistic) | | 0.0000 |

The diagnostic tests were largely intended to establish the strength of the model and its ability to offer correct and reliable inferences about the behaviour of financial savings as the key variable being investigated. The major diagnostic tests conducted included a review of the measure of goodness of fit, equation error statistics, and model stability.

With regard to goodness of fit, the main statistics reported and considered were: the adjusted R-square, the Durbin-Watson (DW), and F-test. According to Table 7.7, the adjusted R-square, which shows the extent to which the regressors explain the dependent variable, indicated that the included variables could explain up to 66.88% of the dependent variable, while the F-statistic (7.958417) for the overall model, had a corresponding probability of zero and hence rejected the null hypothesis of zero coefficients.

The equation error statistics provided information on the structure of the residuals which should be 'white noise' that do not change over time and hence have no serial correlation. The underlying theory is that, all empirical macroeconomic models are stochastic in nature and so allow for error components or 'shocks' (Hendry, 1995). If serial correlation is indicated in the residuals, then the standard errors would be considered invalid and should not be used for inference.

The LM (Lagrange Multiplier) test, adopted in this study, is a general test for error autocorrelation and allows for cases with higher orders or more complex forms of error correlation (Asteriou and Hall, 2006). The null hypothesis of the LM test is that there is no serial correlation up to lag order p, where p is a pre-specified integer.

The results, indicated in Table 7.8, show that the test did not reject the null hypothesis of no serial correlation in the residuals. It can be seen that the F-statistic and LM statistic are quite low with a probability value above 0.05 such that the test for no serial correlation could not be rejected. The implication is that the model had valid standard errors and could be used for making inferences and valid economic policy suggestions.

*Table 7.8: Test Results for Serial Correlation*

| **Breusch-Godfrey serial Correlation LM Test** | | | |
|---|---|---|---|
| **F-statistic** | 2.163434 | Probability | 0.141071 |
| **Obs*R-Squared** | 5.691640 | Probability | 0.058087 |

It was also necessary to test for heteroscedasticity, which arises when the variance of the residuals is changing across the sample, and could be a result of economic behaviour, incorrect data transformation, or model mis-specification among others (Hendry, 1995). The presence of heteroscedasticity would invalidate the conventionally computed standard errors as the ordinary least squares (OLS) estimates would still be consistent.

White (1980) describes a general test for model mis-specification, since the null hypothesis underlying the test assumes that the errors are both homoscedastic and independent of the regressors, and that the linear specification of the model is correct (Asteriou and Hall, 2006). In this case, as can be seen from table 7.9 the Obs*R-squared statistic value of 14.96038 had a probability of 0.664686 such that it did not reject the null hypothesis of no heteroscedasticity.

**Table 7.9: Test Results for Heteroscedasticity - White's Test**

| **White Heteroscedasticity Test** | | | |
|---|---|---|---|
| **F-statistic** | 0.634094 | Probability | 0.817432 |
| **Obs*R-squared** | 14.96038 | Probability | 0.664686 |

In addition to testing for stability of individual coefficients, recursive residuals were computed to provide an examination of the goodness of fit of the model. This test shows a plot of the recursive residuals about the zero line together with the (±2) standard errors. Residuals outside the standard error bands suggest instability in the parameters of the model. As shown in Figure 7.3, apart from a short period towards the end of 2000 and 2002, the model showed a high degree of stability.

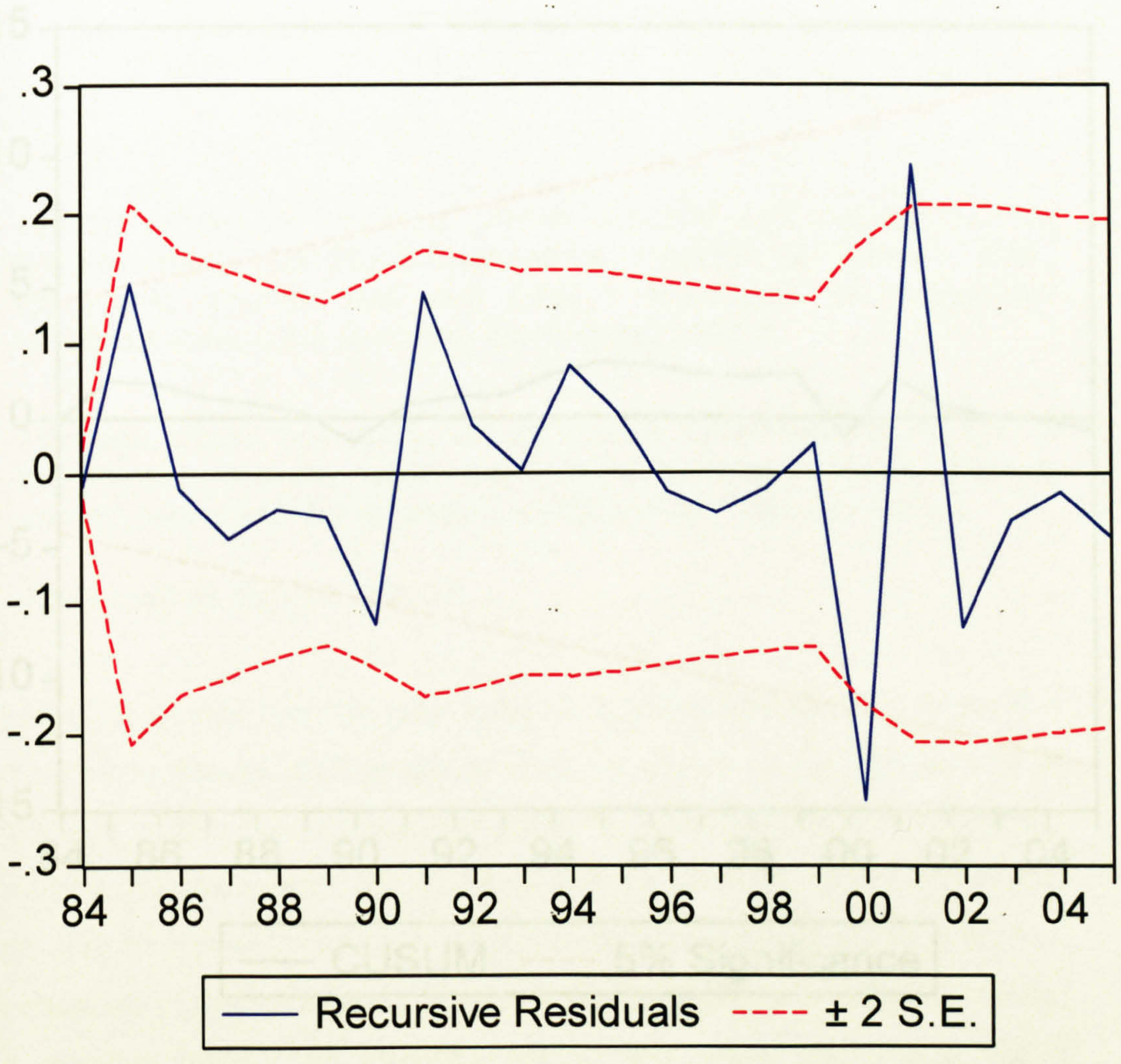



**Figure 7.3:** Recursive Residuals for the DLFSD Model

An additional test for instability, the CUSUM (cumulative sum of the recursive residuals) test was conducted to support the above test. The CUSUM test option plots the cumulative sum together with the 5% critical lines, and would

indicate parameter instability if the cumulative sum goes outside the area between the two critical lines.

The results shown in Figure 7.4 did not indicate the presence of any instability in the model. In fact, the line indicating stability of the model remained close to the zero line, which is a sign of no instability.

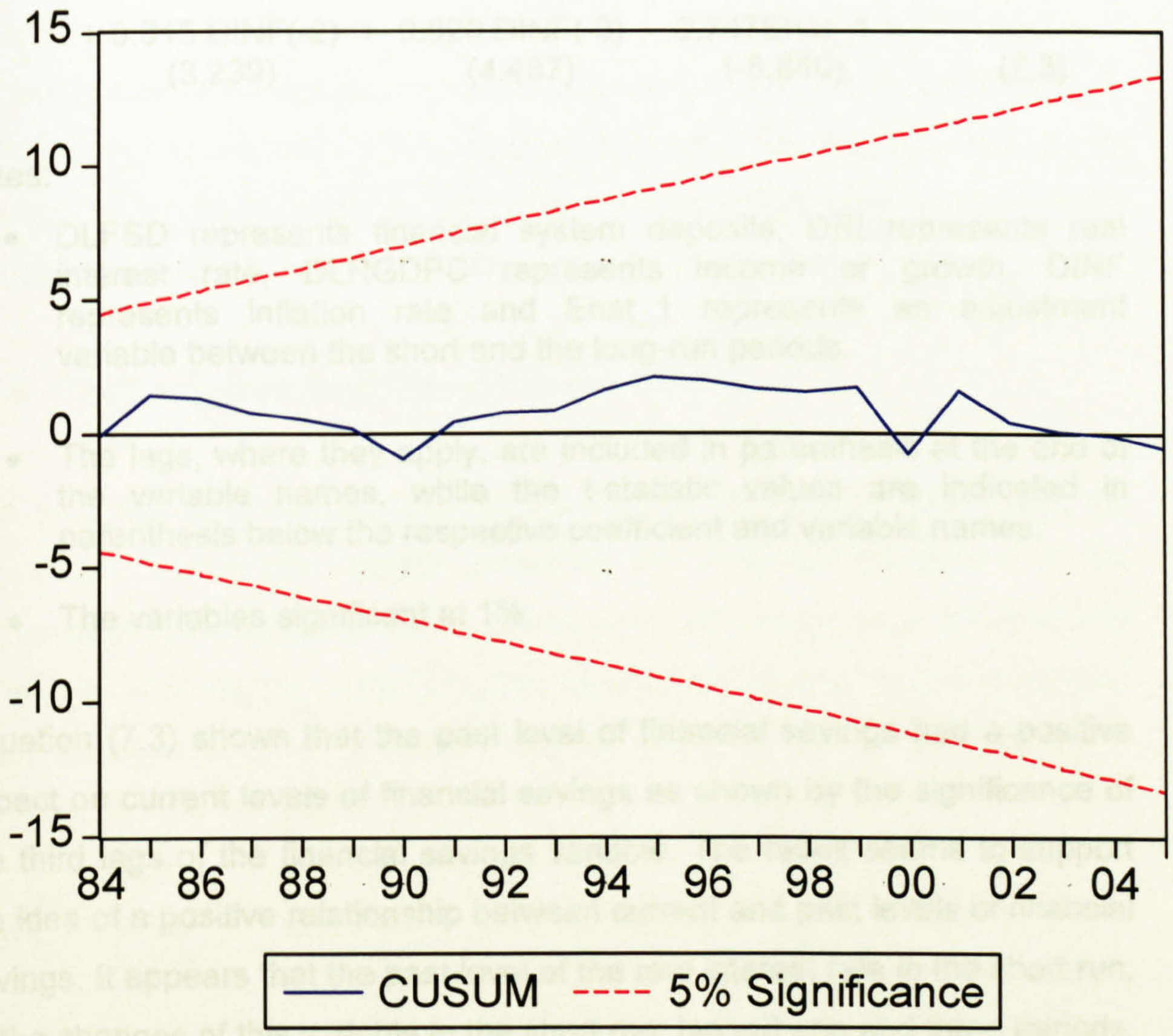



**Figure 7.4:** CUSUM Test for DLFSD Model Stability

### 7.3.5 The Short-Run Model (DLFSD)

For the short run regression, Equation (7.3), financial savings formed the dependent variable while the explanatory variables included: lagged value of

financial saving, real interest rate, GDP per capita and inflation rate. An error correction term (Ehat- 1) was included among the explanatory variables to capture the speed of adjustment between the short and long-run periods.

$$\begin{aligned} DLFSD = {} & \underset{(4.491)}{0.110} + \underset{(3.813)}{0.446}\, DLFSD(-3) + \underset{(3.628)}{0.183}\, DRI(-1) + \underset{(3.484)}{0.216}\, DRI(-3) \\ & + \underset{(6.427)}{0.821}\, DLRGDPC - \underset{(-1.669)^*}{0.206}\, DLRDPC(-1) - \underset{(-2.293)^*}{0.288}\, DLRGDPC(-2) \\ & + \underset{(3.239)}{0.015}\, DINF(-2) + \underset{(4.487)}{0.020}\, DINF(-3) - \underset{(-5.840)}{0.747} Ehat\_1 \qquad (7.3) \end{aligned}$$

Notes:

- DLFSD represents financial system deposits, DRI represents real interest rate, DLRGDPC represents income or growth, DINF represents inflation rate and Ehat_1 represents an adjustment variable between the short and the long-run periods.

- The lags, where they apply, are included in parenthesis at the end of the variable names, while the t-statistic values are indicated in parenthesis below the respective coefficient and variable names.

- The variables significant at 1%

Equation (7.3) shows that the past level of financial savings had a positive impact on current levels of financial savings as shown by the significance of the third lags of the financial savings variable. The result seems to support the idea of a positive relationship between current and past levels of financial savings. It appears that the past level of the real interest rate in the short run, or the changes of this variable in the short run, lagged one and three periods, had a positive impact on financial saving and were statistically highly significant. Therefore, this finding regarding the impact of the real interest rate on financial saving is consistent with the expectation of financial liberalisation theory.

The results in equation (7.3) indicate that the level of per capita income in the short run had a positive and statistically highly significant impact on financial savings. This result is consistent with the absolute-income Keynesian and

Life-Cycle theory, and with the findings of the previous empirical results such as those of Edwards (1996), Hussein and Thirwall (1999), and Agrawal (2001). However, the past levels of per capita income as shown by the significance of the first and third lags, had a negative impact on financial savings. The first and third lags of past levels of per capita income only were significant at 10%. This finding is consistent with Duesbeary's hypothesis. The past levels of inflation rate had a positive and statistically significant impact on financial savings by the significance of the second and third lags. In addition, the error correction term (Ehat _1), representing the speed of adjustment between the short and the long-run periods, had a coefficient of –0.747, being statistically highly significant at 1%. The negative sign is an indicator of model consistency both in the short and long run, and the model actually converges to long-run equilibrium (Harris and Sollis, 2003).

### 7.3.6 The Long-Run Equilibrium Results (LFSD)

The acceptance of cointegration in the statistic regression meant that the parameter cointegrating vector contained the long-run equilibrium of the relationship between financial savings and the respective independent variables. The results of the long-run equilibrium function are summarised below as equation (7.4). It applies only for variables that were significant at the level of 10% and below.

$$LFSD = \underset{(2.050)^*}{1.845} - \underset{(-12.324)}{0.401RI} + \underset{(8.391)}{0.934\,LRGDPC} \qquad (7.4)$$

Notes:

- LFSD represents financial savings, RI represents real interest rate and LRGDPC represents income or growth.
- The t-statistic values are indicated in parenthesis.
- * significant at 10%, otherwise 1%

Equation (7.4) shows that, the long-run equilibrium will depend on the income or growth and real interest rate. It also shows that the level of per

capita income has a positive and statistically highly significant impact on financial savings in the long run; an increase of 10% in the level of GDP per capita leads to 9.34% increase in the level of financial savings. This finding is consistent with the Life-Cycle and absolute-income theory. It confirms that the level of income is a vital factor behind saving behaviour.

Against the expectation of the financial liberalisation hypothesis, the real interest rate has a negative and statistically highly significant impact on financial savings in the long run. In particular, the coefficient of–0.401 on the real interest rate indicates that, an increase of 10% in real interest rate will reduce the financial savings by 40%. Additionally, the inflation rate is very small and statistically insignificant at 10%, as was, therefore, not included in the equation (7.4).

### 7.3.6.1 The Results of Causality Tests

***Table 7.10:*** *The Results of the Granger–Causality Tests*

**Granger Causality Tests**

**Sample: 1970 to 2005**

**No of observations = 33, Lags (K = 3)**

| Null Hypothesis | F-statistic | Probability |
|---|---|---|
| **LRGDPC does not Granger Cause LFSD** | 2.31315 | 0.09940 |
| **LFSD does not Granger Cause LRGDPC** | 0.19190 | 0.90130 |
| **RI does not Granger Cause LFSD** | 0.37439 | 0. 77217 |
| **LFSD does not Granger Cause RI** | 6.263135 | 0.00241 |

The results in Table 7.10 indicate that there is an overall causality from LRGDPC to LFSD. The null hypotheses that the LFSD does not have Granger Causality in respect of LRGDPC and that RI does not have Granger Causality in respect of LFSD were not rejected. Therefore, the results indicate that there is an overall causality from LRGDPC to LFSD.

## 7.4 Financial Sector Development

The discussion in Chapter One indicated that there is some controversy about the relationship between financial development and growth. One way to resolve this controversial issue is by looking at it empirically. In line with the purposes of this research that aims to assess the role of the financial sector in the Libyan economy, we find it useful and meaningful to test the long-run relationship and causality between financial development, domestic investment, and real output in a multivariate system.

However, the issue of causality between the financial sector and growth is still open to question, and to date there have only been a few time series studies on the issue of causality between these two variables (see Chapter Two).

### 7.4.1 Model Specification

Financial liberalisation theory suggests that liberalising the interest rate would increase financial savings and the provision of credit to the private sector, which leads to an increase in capital accumulation and investment and therefore, to an increase in economic growth. In addition, endogenous growth models assume that financial sector development endogenously affects the output; Pagano's (1993) model shows that the effectiveness of financial intermediation is a key factor for transferring the mobilised savings into investment, which leads to a higher growth rate.

The capital fundamentalism school suggests that the differences in capital stocks are the primary determinant of real output and that rapid capital accumulation is the vital factor for increasing growth rates (Harrod, 1993; Domar, 1946; and Lewis, 1954). Furthermore, empirical studies such as those of Romer (1989) and Levine and Renelt (1992), found a positive impact by the rate of investment on economic growth. In comparison, the accelerator model postulates that changes in output lead to changes in

investments, so when output rises the increased demand leads to acceleration in investment (Fielding, 1997).

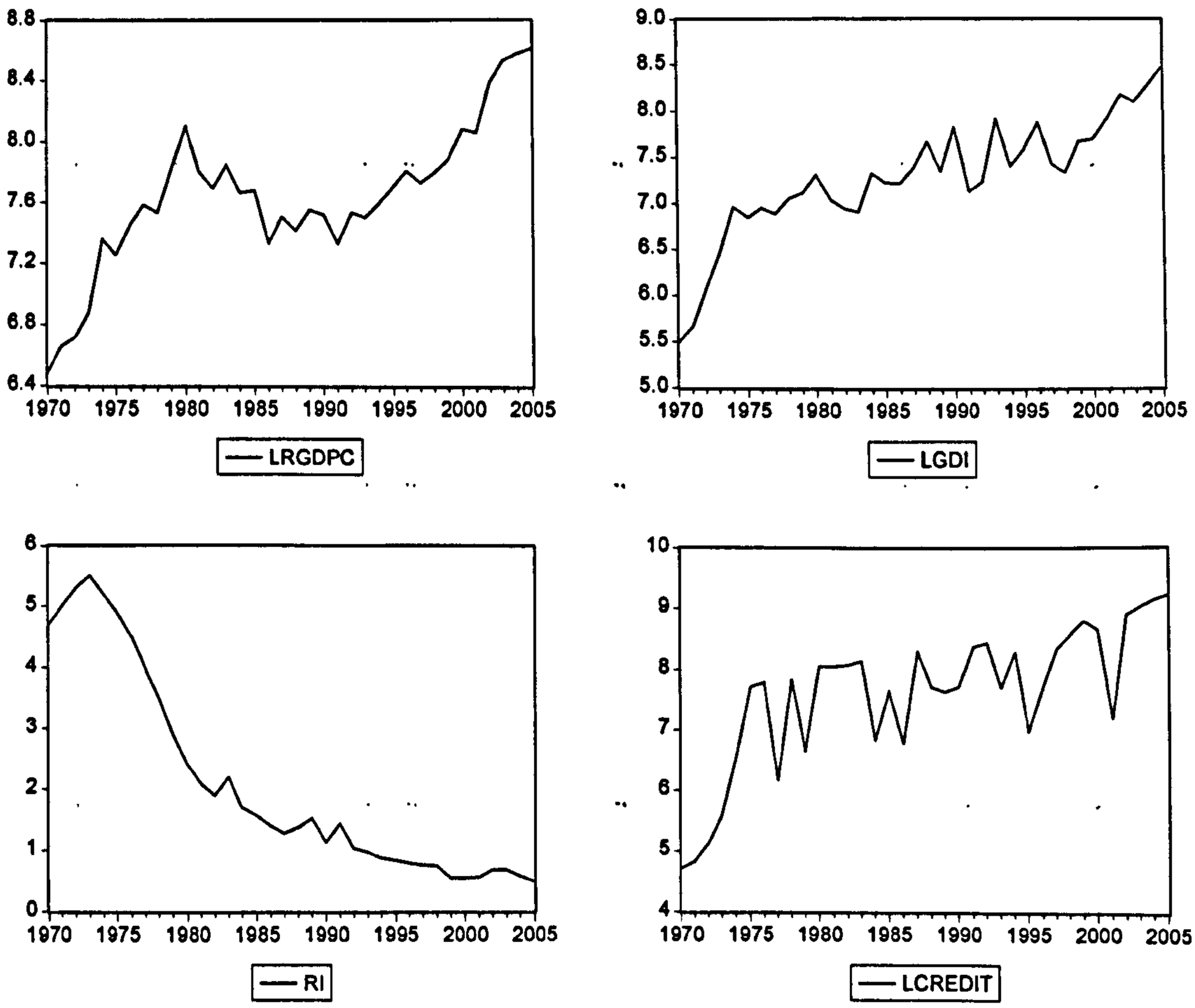
In addition, Podrecca and Capreci(2001) and Easterly and Levine (2001), argued that economic growth might affect investment rates, rather than the relationship being the other way around as is argued by the capital fundamentalisms, or that there might be a bi-directional effect between the two variables.

The model in this section is specified to include the following variables; the domestic investment (LGDI), the real interest rate (RI), the real GDP per capita (LRGDPC), and the Credit (Credit). The aim is to assess the impacts of financial sector indicators - real interest rate (RI), and credit, on domestic investment in the long run, which have important implications for development policy.

Finding evidence of correlation or causality between credit and investment is an important factor for capital accumulation and economic growth. Similarly, finding evidence of correlation or causality between the real interest rate and domestic investment would suggest that interest rate policy is important for investment and capital accumulation. In addition, the causality between financial intermediation and economic growth and between investment and growth are investigated.

### 7.4.2 Descriptive Analysis

The results of the unit root tests in Section 7.2 indicated that the LRGDPC, RI, LGDI and LCREDIT are I (1). The level of the variables is plotted in Figure 7.5. The correlation matrix between the levels and first differences of the variables are presented in Table 7.11.




**Figures: 7.5:** Line Plots of Variables (LRGDPC, LGDI, RI and LCREDIT)

It is obvious that there is a very high positive correlation between (LRGDPC) and (LGDI), (LRGDPC) and (LCREDIT), and between (LGDI) and (LCREDIT). Also, it can be seen that there is a negative and very high correlation coefficient between (RI) and (LRGDPC), and a negative and high correlation between (RI) and (LGDI).

***Table 7.11**: Correlation Matrix between LRGDPC, LGDI, RI and LCREDIT)*

| | LRGDPC | LGDI | RI | LCREDIT |
|---|---|---|---|---|
| **LRGDPC** | 1.0000 | 0.86227 | -0.71179 | 0.80783 |
| **LGDI** | 0.86227 | 1.0000 | -0.82073 | 0.80052 |
| **RI** | -0.71179 | -0.82073 | 1.0000 | -0.75553 |
| **LCREDIT** | 0.80783 | 0.80052 | -0.75553 | 1.0000 |

### 7.4.3 Testing for Cointegration

*Table 7.12: Testing for Cointegration among Second Model Variables*

**Sample:**1972-2005

**Included observation:**31

**Series:** LGDI LRGDPC RI LCREDIT

| **Eigenvalue** | **Trace Statistic** | **5% Critical** | **1% Critical** | **Hypothesised No. of CE(s)** |
|---|---|---|---|---|
| 0.900183 | 163.9163 | 62.99 | 70.05 | None** |
| 0.785627 | 92.47941 | 42.44 | 48.45 | At most 1** |
| 0.594571 | 44.73823 | 25.32 | 30.45 | At most 2** |
| 0.417461 | 16.75113 | 12.25 | 16.26 | At most 3** |

*(**) denoted rejection of the hypothesis at 5%(1%) level

Trace test indicates 3 cointegration equations at both 5% and 1% level

| **Eigenvalue** | **Max-Eigen Statistic** | **5% Critical** | **1% Critical** | **Hypothesised No. of CE(s)** |
|---|---|---|---|---|
| 0.900183 | 71.43688 | 31.46 | 36.65 | None** |
| 0.785627 | 47.79118 | 25.54 | 30.34 | At most 1** |
| 0.594571 | 27.98710 | 18.96 | 1896 | At most 2** |
| 0.417461 | 16.75113 | 12.25 | 13.26 | At most 3** |

*(**) denotes rejection of the hypothesis at 5%(1%) level

Max-eignvalues test indicates 3 cointegration equations at both 5% and 1% level

The cointegration test statistics for the four variables in the VAR system, shown in Table 7.12 indicate that there are three cointegration vectors. The null of no cointegration is rejected at 5% and 1% against the alternative that there is at most one cointegration vector.

The Johansen test statistics show rejection of the null hypothesis of no cointegration vectors under both the trace and maximal Eignenvalue forms of the test. In the case of the trace test, the null hypothesis of no cointegrating vectors is rejected since the test statistic of 163.9163 is greater than the 1% critical value of 70.05.

In the case of the max-test, the null hypothesis of no cointegration is rejected at 1% since the test value is greater than the critical value. The results indicate three Cointegration equations in both tests. This indicates that variables in the model move together towards a long-run equilibrium stationary relationship defined by the cointegration vector.

### 7.4.4 Error Correction Term and Long-run Equilibrium

The ECM term (Ehat) was also obtained as an error term (*Et*-Ehat) of the static cointegrating (long-run equilibrium) regression equation the same as in equation (7.1). The results are presented in Table 7.13, although the respective coefficients for variables are interpreted in section 7.4.5, in the context of the long-run equilibrium solution.

The purpose of estimating this regression at this point was to generate the ECM term (Ehat), which is later used as an adjustment variable in the estimation of the short-run model. However, the results in Table 7.13, which relate to the whole model, are explained below, in order to support the assumption that the estimated long-run equation definitely represents a cointegrating relationship, and that Ehat can appropriately be used in the estimation of the short-run model.

Using the F-statistic to test the null hypothesis that all of the slope coefficients excluding the constant in a regression are zero, the associated probability value ($p = 0.0000$), rejected the hypothesis of zero coefficients. The model was, therefore, relevant and statistically significant.

The value of adjusted R-squared (81.7%) indicates an appropriate measure of the model's success in predicting the values of the dependent variable (domestic investment) within the sample. The inference is that the explanatory variables were able to explain up to 81.7% of the variation in domestic investment.

*Table 7.13: Static Cointegrating Regression Results of the Second Model*

**Dependent variable: LGDI: Method: Least Square**

**Sample: 1070-2005**

**Included observations: 36**

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|---|---|---|---|---|
| **C** | 1.971946 | 1.122827 | 1.756233 | 0.0886 |
| **LRGDPC** | 0.680458 | 0.169814 | 4.007076 | 0.0003 |
| **RI** | -0.150262 | 0.044837 | -3.351290 | 0.0021 |
| **LCREDIT** | 0.055748 | 0.075673 | 0.736700 | 0.4667 |
| **R-squared** | 0.833166 | Mean dependent var | | 7.278817 |
| **Adjusted R-squared** | 0.817526 | S.D.dependent var | | 0.654601 |
| **S.E.of regression** | 0.279626 | Akaike info criterion | | 0.393711 |
| **Sum squared resid** | 2.502102 | Schwars criterion | | 0.569658 |
| **Log Likelihood** | -3.086805 | F-statistic | | 53.26931 |
| **Durbin-Watson** | 1.214070 | Pro(F-statistic) | | 0.0000 |

The results of the ADF and PP test for ehat confirmed the cointegration results. The ADF statistic value of -4.14 and the PP statistic value of -4.20, which were greater (in absolute terms) than -3.632900 at 1% critical value, indicated the rejection of the null hypothesis.

In addition, the Lagrange Multiplier (LM) test value, for serial correlation (see Adam, 1992), of 5.493747 and a corresponding p-value of 0.064125, for no serial correlation was not rejected at the 5% level (see Table 7.1). Finally a graphical review of ehat (Figure 7.6) indicated that the variable showed no

specific trend and could, therefore, be considered stationary and rightfully used in the estimation of the short-run model.

***Table 7.14: Results of Testing for Serial Correlation of Ehat***

| **Breusch-Godfrey serial correlation LM test** | | | |
|---|---|---|---|
| **F-statistic** | 2.701318 | Probability | 0.083423 |
| **Obs*R-squared** | 5.493747 | Probability | 0.064125 |

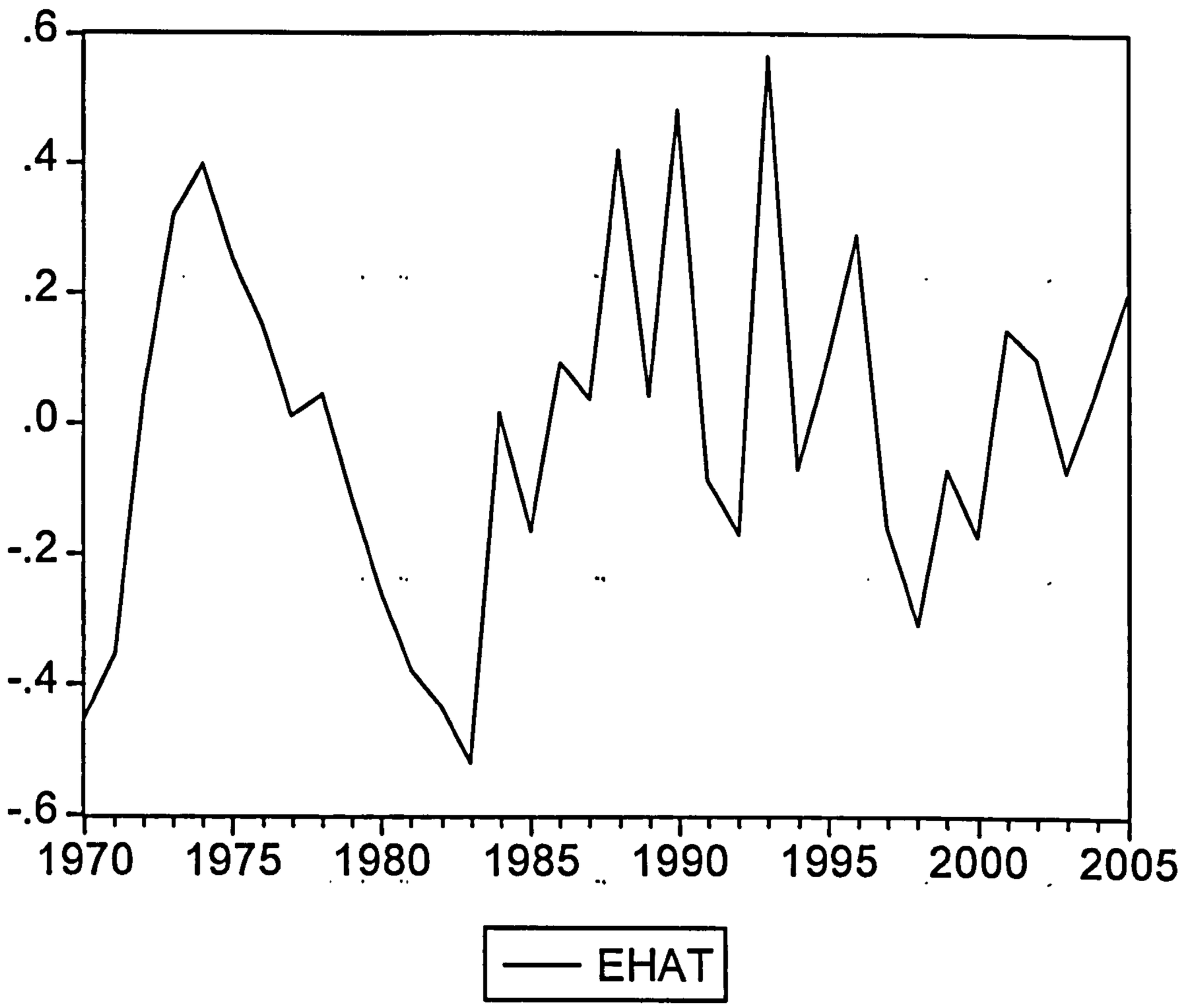



**Figure 7.6:** Line Plot of Ehat (Second Model)

### 7.4.4.1 Estimation of the (Short-run) Error Correction Model

The same procedure was followed as in Section 7.3.4.1. Firstly, an over-parameterised error correction model was estimated with the initial specification having lags on all variables. Then the lag level was set between 2 and 3, mainly on consideration of the sample size, and finally the ECM term (Ehat) was lagged only once before it was included in the model.

The initial over-parameterised model and the subsequent results after removing redundant variables are presented in Table 7.15. The process of reducing the initial over-parameterised model was largely based on identification of variables with large p-values, which implied that the coefficients of such variables were statistically equivalent to zero, and could therefore, be treated as being redundant in the model. A sub-set of all such variables was then subjected to a redundancy test. More formally, the test is for whether all the variables in the selected sub-set have zero coefficients and might thus be removed from the equation.

However, alongside such a statistical test, economic theory was considered as a fundamental aspect for the justification of the variables to be retained in the model. In addition, consideration was given to the statistical significance of individual coefficients and indicators of goodness of fit, notably, the adjusted R-squared and F-statistic for each round of testing.

It should be noted that, after the second test, the probabilities corresponding to individual variables seemed to reject the hypotheses for zero coefficients, such that there were no other variables, which should treated as redundant in the model. More so, the standard error of the second round regression (0.203300) was smaller that that of the preceding first round regression (0.204817). Thus, the remaining variables after the second test were treated as comprising the final reduced model whose detailed results are presented in Table 7.16. The reduced model was, hereafter, subjected to a set of diagnostic tests, partly to establish its stability and reliability.

*Table 7.15: Results for Model Estimation Process (DLGDI)*

**Dependent Variable:** DLGDI **Method:** Least Squares

| | Over-parameterised Model | Tests for Redundant Variables | | | |
|---|---|---|---|---|---|
| | | First test | | Second test | |
| **Log Likelihood** | | 16.23098 | | 0.779365 | |
| **Probability ratio** | | 0.093209 | | 0.377335 | |
| **Variable** | **Coefficient** | **Prob** | **Coefficient** | **Prob** | **Coefficient** | **Prob** |
| **C** | 0.064388 | 0.3013 | 0.030102 | 0.5466 | 0.028760 | 0.5311 |
| **DLGDI(-1)** | -0.130708 | 0.6000 | | | | |
| **DLGDI(-2)** | 0.080093 | 0.7016 | | | | |
| **DLGDI(-3)** | 0.369799 | 0.0500 | 0.216443 | 0.1120 | 0.181798 | 0.1509 |
| **DLRGDPC** | 0.685459 | 0.0242 | 0.561944 | 0.0171 | 0.519453 | 0.0211 |
| **DLRGDPC(-1)** | 0.228928 | 0.4207 | | | | |
| **DLRGDPC(-2)** | 0.372246 | 0.2065 | | | | |
| **DLRGDPC(-3)** | 0.428421 | 0.1832 | -0.178132 | 0.4398 | | |
| **DRI** | -0.435334 | 0.0422 | -0.470034 | 0.0108 | -0.461421 | 0.0112 |
| **DRI(-1)** | 0.093379 | 0.6896 | | | | |
| **DRI(-2)** | 0.322962 | 0.1141 | 0.493735 | 0.0077 | 0.516381 | 0.0046 |
| **DRI(-3)** | 0.171975 | 0.4303 | | | | |
| **DLCREDIT** | -0.027545 | 0.6230 | | | | |
| **DLCREDIT(-1)** | -0.070696 | 0.2685 | | | | |
| **DLCREDIT(-2)** | -0.030499 | 0.6221 | | | | |
| **DLCREDIT(-3)** | 0.042736 | 0.4362 | | | | |
| **EHAT_1** | -0.617014 | 0.0243 | -0.698853 | 0.0001 | -0.680050 | 0.0001 |
| **Adjusted $R^2$** | 0.540604 | | 0.542258 | | 0.549012 | |
| **S.E of regression** | 0.205187 | | 0.204817 | | 0.203300 | |
| **D-W stat** | 2.375498 | | 2.252276 | | 2.126834 | |
| **F-statistic** | 3.279993 | 0.013227 | 7.120627 | 0.0001 | 8.547607 | 0.0000 |

*Table 7.16: Results of the Reduced Model (DLGDI)*

**Dependent Variable: DLGDI Method: Least Squares**

**Sample: 1970-2005**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.028760 | 0.048848 | 0.588775 | 0.5611 |
| DLGDI(-3) | 0.181798 | 0.122840 | 1.479965 | 0.1509 |
| DLRGDPC | 0.519453 | 0.211664 | 2.454139 | 0.0211 |
| DRI | -0.461422 | 0.168940 | -2.73128 | 0.0112 |
| DRI(-2) | 0.516381 | 0.166721 | 3.097277 | 0.0046 |
| Ehat_1 | -0.680050 | 0.150526 | -4.51782 | 0.0001 |
| R-squared | 0.621752 | Mean dependent var | | 0.063199 |
| Adjusted R-squared | 0.549012 | S.D. dependent var | | 0.302730 |
| S.E. of regression | 0.203300 | Akaike info criterion | | -0.180905 |
| Sum squared resid | 1.074605 | Schwarz criterion | | 0.09320 |
| Log likelihood | 8.894485 | F-statistic | | 8.547607 |
| Durbin-Watson Stat | 2.126834 | Prob(F-statistic) | | 0.0000 |

As in the previous reduced model of the determinant of financial savings, the diagnostic tests were largely intended to establish the strength of the model and its ability to offer correct and reliable inferences about the behaviour of domestic investment as a key variable being investigated. The major diagnostic tests conducted included a review of the measure of goodness of fit, equation error statistics, and model stability.

With regard to goodness of fit, the main statistics reported and considered were: the adjusted R-squared, the Durbin-Watson (DW) and the F-test. According to Table 7.16, the adjusted R-square, which shows the extent to

which the regressors explain the dependent variable, indicated that the included variables could explain up to 55% of the dependent variable, the DW statistic of 2.126 was not so different from the standard value of 2, while the F-statistic (8.547607) for the overall model, had a corresponding probability of zero, and hence rejected the null hypothesis of zero coefficients.

Regarding the equation error statistic, the results, indicated in Table 7.17, show that the test did not reject the null hypothesis of no serial correlation in the residuals. It can be seen that the F-statistic and LM statistic are quite low, with the implication that the model had valid standard errors and could be used for making inferences and valid economic policy suggestions.

***Table 7.17:*** *Test Results for Serial Correlation*

| **Breusch-Godfrey Serial Correlation LM Test** | | | |
|---|---|---|---|
| **F-statistic** | 0.601375 | Probability | 0.556108 |
| **Obs*R-squared** | 1.527136 | Probability | 0.466001 |

The White's test was used to test of the null hypothesis of no heteroscedasticity. As can seen from Table 7.18 the Obs* R-squared statistic value of 13.48194 had a probability 0.197692 such that it did not reject the null hypothesis of no heteroscedasticity.

***Table 7.18:*** *Test Results for Heteroscedasticity White's Test*

| **White Heteroscedasticity Test** | | | |
|---|---|---|---|
| **F-statistic** | 1.528890 | Probability | 0.197692 |
| **Obs*R-squared** | 13.48194 | Probability | 0.197960 |

In addition to testing for the stability of individual coefficients, recursive residuals were computed to provide an examination of the goodness of fit of the model. This test shows a plot of the recursive residuals about the zero

line together with the (±2) standard errors. Residuals outside the standard error bands suggest instability in the parameters of the model. As shown in Figure 7.7, below, apart from a short period towards the end of 1985, the model showed a high degree of stability.

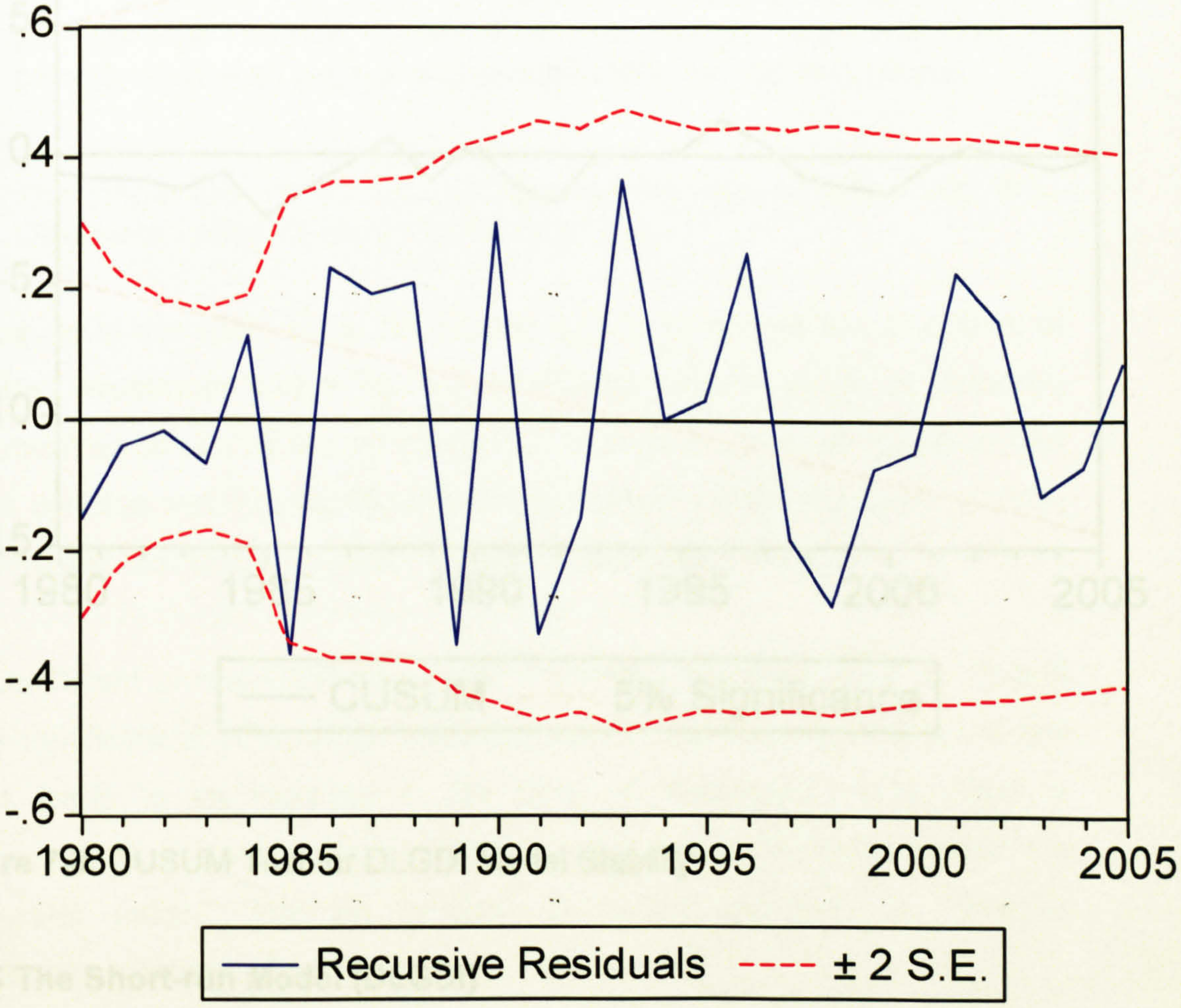



**Figure 7.7:** Recursive Residual for DLGDI Model

An additional test for instability, the CUSUM test, was employed to support the above test. The CUSUM test option plots the cumulative sum together with the 5% critical lines, and indicates parameter instability if the cumulative sum goes outside the area between the two critical lines. The results shown in Figure 7.8 did not indicate the presence of any instability in the model. In fact, the line indicating stability of the model remained close to the zero line, which is a sign of no instability.

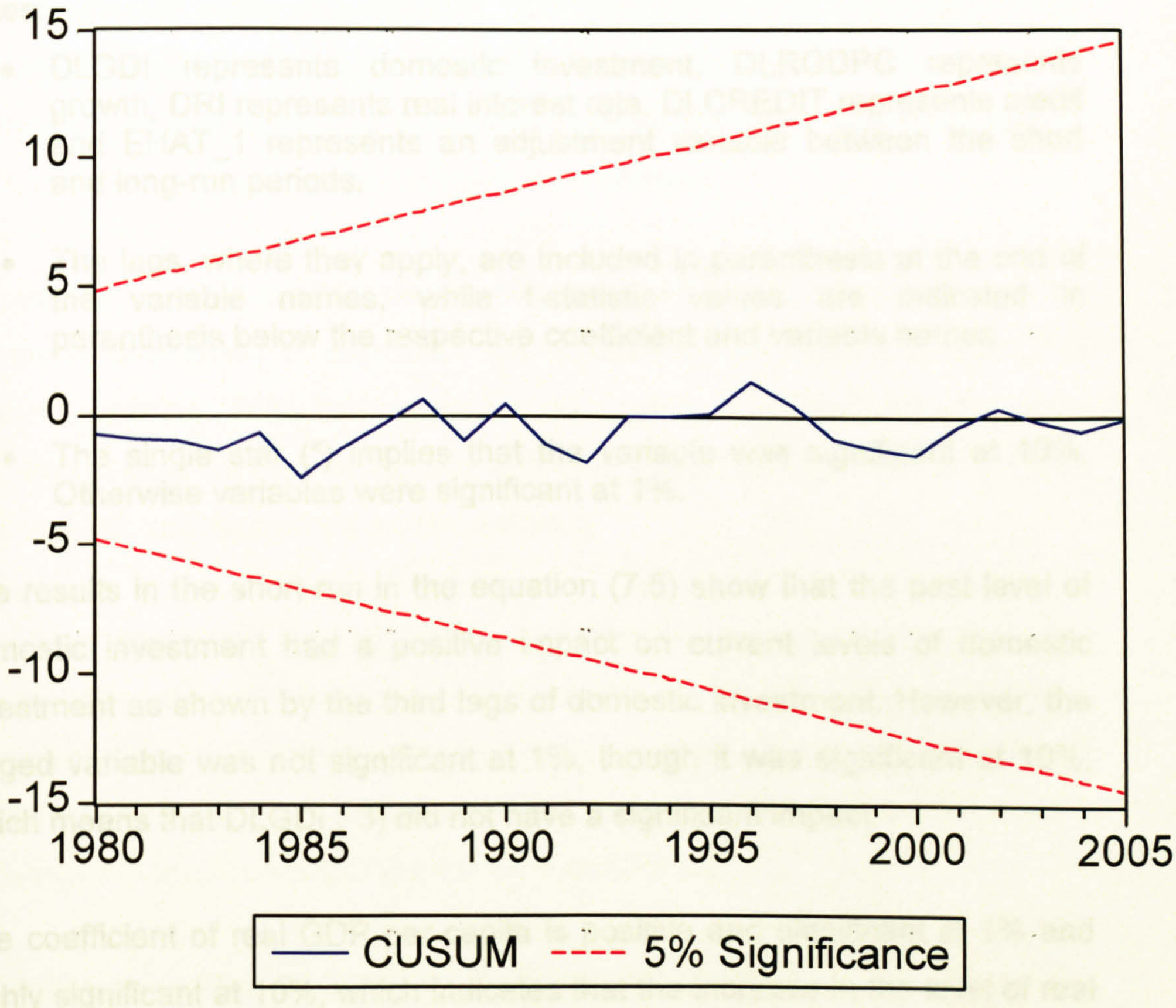



**Figure 7.8:** CUSUM Test for DLGDI Model Stability

### 7.4.5 The Short-run Model (DLGDI)

For the short run regression equation (7.5), domestic investment formed the dependent variable while the explanatory variables included: lagged value of growth, real interest rate, and Credit. Ehat_1 as the error correction term was included among the explanatory variables to capture the speed of adjustment between the short-run and long-run periods.

$$\begin{aligned} DLGDI = {} & \underset{(0.588)}{0.0287} + \underset{(1.479)^{*}}{0.181}\, DLGDI(-3) + \underset{(2.454)}{0.519}\, DLRGDPC + \underset{(-2.731)}{0.461}\, DRI \\ & + \underset{(3.097)}{0.516}DRI(-2) - \underset{(-4.517)}{0.680}EHAT\_1 \end{aligned} \qquad (7.5)$$

Notes:

- DLGDI represents domestic investment, DLRGDPC represents growth, DRI represents real interest rate, DLCREDIT represents credit and EHAT_1 represents an adjustment variable between the short and long-run periods.

- The lags, where they apply, are included in parenthesis at the end of the variable names, while t-statistic values are indicated in parenthesis below the respective coefficient and variable names.

- The single star (*) implies that the variable was significant at 10%. Otherwise variables were significant at 1%.

The results in the short-run in the equation (7.5) show that the past level of domestic investment had a positive impact on current levels of domestic investment as shown by the third lags of domestic investment. However, the lagged variable was not significant at 1%, though it was significant at 10%, which means that DLGDI (-3) did not have a significant impact.

The coefficient of real GDP per capita is positive and significant at 1% and highly significant at 10%, which indicates that the increase in the level of real output leads to an increase in the level of investment. This result is consistent with the suggestion of the new classical investment theory "the accelerator model", that an increase in output will have a feedback accelerating effect on investment.

The real interest rate variable had a coefficient of -0.461, which was statistically significant at 1%. The negative sign was against the expectations of the McKinnon-Shaw theory, since the impact of the real interest rate on the level of investment is negative and significant. The finding is consistent with the Keynesian and post-Keynesian argument that increasing the real rate of interest rate would reduce the expected yields and increase the cost of capital, and hence, reduce investment.

However, the past level of real interest rate had a coefficient of 0.516, which was statistically highly significant at 1%. The positive sign was inconsistent with the Keynesian and post-Keynesian arguments. This finding could be interpreted as demonstrating that if the interest rate were fully liberalised in the Libyan economy, investment could be increased.

In addition, equation (7.5) shows that the credit had no impact on the domestic investment in the short run, indicating that the development of financial intermediaries had no impact on capital accumulation in the short run. This finding was not consistent with that of Beck et al (2000), who found a strong link between credit and investment.

The error correction term (Ehat_1), representing the speed of adjustment between the short and long-run periods, had a coefficient of -0.680 and was statistically highly significant at 1%. The negative sign is an indicator of model consistency both in the short and long run, and the model actually converges to long-run equilibrium (Harris and Sollis).

### 7.4.6 The Long-Run Equilibrium Results (LGDI)

The results of the long-run equilibrium function are summarised below in equation (7.6), only for variables that were significant to a level of 10% and below.

$$LGDI = 1.971 + 0.68\,LRGDP - 0.150\,RI \qquad (7.6)$$
$$\quad (1.756)^{*} \quad (4.007) \qquad (-3.351)$$

Notes:

- LGDI represents domestic investment, LRGDPC represents growth or real GDP per capita, and RI represents real interest rate.
- The t-statistic values are indicated in parentheses.
- * significant at 10%, otherwise 1%

Equation (7.6) shows that, in the long run, equilibrium will depend on real GDP per capita or real output and interest rates. In particular, the coefficient of 0.68 on the growth or real GDP per capita indicates that an increase of 10% in GDP will increase domestic investment by 6.5%.

The coefficient of GDPC is positive and highly significant, which indicates that the increase in the level of real output or GDP will increase investment as in the short run. Thus, this finding is supported by the results of the correlation matrix (see Table 7.11), which confirms that the growth or real GDP per capita is a vital factor behind the investment in Libya.

Against the expectation of the McKinnon-Shaw hypothesis, the impact of real interest rate on the level of investment was negative and significant, the coefficient of -0.150 on the real interest rate indicates that an increase of 10% in RI will reduce domestic investment by 1.5%. This finding is consistent with the Keynesian and post-Keynesian argument. This result was supported by the correlation between the two variables.

The impact of credit on domestic investment was highly insignificant at 10%, so the coefficient of credit was removed from the equation (7.5), which indicates no impact of credit on the level of investment. This finding was against the expectation of Beck et al (2000).

### 7.4.6.1 The Results of Causality Tests

The results of the overall causality test indicate that there is a strong overall causation from real output or real GDP per capita to investment as was suggested by the "accelerator model". However, the corresponding probabilities in the above table indicate that the hypothesis for the domestic investment not causing growth was not rejected. The null hypothesis of no causality from real interest rate to domestic investment and growth or real output was rejected, indicating that the interest rate is an important instrument that affects economic activities. In addition, it seems that no

causality from credit to domestic investment and to real output is found, thereby indicating the insignificant impact of credit on both variables.

***Table 7.19: The Results of Granger Causality Tests***

| **Granger Causality Tests** | | |
|---|---|---|
| **Sample: 1970 to 2005** | | |
| **No of Observations = Lags (K=3)** | | |
| **Null Hypothesis** | **F-statistic** | **Probability** |
| LGDI does not Granger Cause LRGDPC | 0.04017 | 0.98900 |
| LRGDPC does not Granger Cause LGDI | 1.57245 | 0.21992 |
| RI does not Granger Cause LGDI | 2.92866 | 0.05243 |
| LGDI does not Granger Cause RI | 0.04017 | 0.98900 |
| RI does not Granger Cause LRGDPC | 0.78844 | 0.51130 |
| LRGDPC does not Granger Cause RI | 0.63788 | 0.59742 |
| LCREDIT does not Granger Cause LGDI | 0.09889 | 0.95992 |
| LGDI does not Granger Cause LCREDIT | 5.87645 | 0.00034 |
| LCREDIT does not Granger Cause LRGDPC | 0.60874 | 0.61534 |
| LRGDPC does not Granger Cause LCREDIT | 2.49165 | 0.08234 |

## 7.5 Conclusion

This chapter has provided the results of unit root tests in selected macroeconomic variables that are used in the empirical analysis. The traditional ADF and the PP tests were implemented in order to test the degree of integration in the time series data for Libya over the period 1970-2005. The results from both the ADF and PP tests indicate that the variables are integrated in the order one, I (1).

Three main hypotheses were tested in this chapter, these being the impact of the real interest rate on savings, the relationship between savings and growth, and the relationship between financial development, domestic investment, and growth. This was followed by testing for the presence of a cointegrating vector/equation; "the cointegration" Johansen approach in a

multivariate VAR model was used to assess the long-run relationship between the variables in two models, which led to the adoption of the error correction model (ECM). In addition, a Granger Causality test was conducted to examine the overall causality between the variables in the first model of the determinants of financial savings, and the second model of the impact of financial development.

In line with the predictions of the Keynesian absolute-income and the life-cycle theories, it was found that real (output) income has a positive impact on the level of financial savings in both the short and the long run. Against the suggestion of the financial liberalisation school, the finding shows that the real interest rate has a negative impact on financial savings in the long run. However, in the short run, the past levels of the real interest rate have a positive impact on financial savings. In addition, the results of Granger causality tests between real (output) income and financial savings, and between the real interest rate and financial savings, indicate that there is an overall causality from income to financial savings, but no causality from the real interest rate to financial savings. Furthermore, the past levels of inflation rates have a positive and significant impact on financial savings in the short run; however, the impact of the inflation rate on financial savings is insignificant.

The findings of the negative impact of the real interest rate on financial savings in the long run, and the acceptance of the null hypothesis regarding the causality test, suggest that there is not full liberalisation of interest rates in Libya's financial sector, and there is a strong need for other aspects of financial development such as improving the effectiveness of financial institutions and the diversification of financial assets may play a more important role in mobilising domestic savings and boosting the financial sector. In addition, the increase in income level is a vital factor for financial savings in the long run; so, an improvement in economic performance that increases the level of national income is expected to have positive consequences on savings in the long run.

The results of assessing the impact of financial development on domestic investment revealed that the real interest rate has a negative and significant impact on the domestic investment in the long run and short run. However, the past value of the real interest rate has a positive impact on domestic investment in the short run in Libya. The causality test indicated that there was causality from the real interest rate to domestic investment. In addition, the finding indicates that the impact of credit on domestic investment in both the short and the long run, was very small and statistically insignificant. This was supported by the results of the Granger causality test which indicates that there is no overall causality from credit to domestic investment. Furthermore, the results of causality tests show no overall causality from credit to growth or real GDP per capita. Therefore, aspects of financial repression such as the high reserve ratio and in particular, the directed credit programmes should be removed, and private sector access to domestic credit and to financial sector services should be increased such that these services become much more available. Furthermore, policies that aim to improve the effectiveness and the efficiency of financial intermediation in allocating credit to the productive users should be considered when setting the development policies in Libya.

# CHAPTER EIGHT
# CONCLUSION, IMPLICATIONS AND AREAS FOR FURTHER RESEARCH

## 8.1 Summary of Findings

The aim of the thesis was to explore the complex relationship between financial sector development, savings and economic growth, particularly focussing on Libya as the case study. In Chapter Two, a literature review on financial sector development, financial liberalisation controversy and economic growth was provided, which showed the fact that that there is increasing attention being paid to the important role of the financial sector in promoting economic growth and enhancing the development process, both in theoretical and empirical studies. However, whilst the majority of the empirical work has found financial sector indicators to have a positive impact on growth, the issue of causality between the two variables is still problematic.

Financial liberalisation assumes that a high and positive interest rate leads to higher financial savings, to higher lending to the private sector, and hence to increase investment and growth. Nonetheless, such assumptions have been criticised by the Keynesians and the post-Keynesians, and by the structuralism school. And empirical studies have found mixed results on the impact of the interest rate on savings, so there has been minimal support from these for financial liberalisation theory. In fact, for the most part, the magnitude of the coefficient of real interest rate in savings regression was small.

As argued in Chapter Two, the financial sector is important to any economy, since its major functions are mobilising domestic savings, transferring savings into investments and increasing the productivity of investments.

A theoretical and empirical review of the main determinants of savings was outlined in Chapter Three, highlighting obvious differences in savings

behaviour throughout the world and across countries in the same regions. Theoretically, consumption theories such as the Keynesian absolute-income, the permanent-income, and the Life-cycle theories advocate that both income (output) level and growth are the major determinants of savings. Empirically, most studies have found that the indicators of income (output) level and growth have positive impacts on savings rates. In addition, the direction of causality between savings and growth has been shown to flow from growth to savings. *This said, there is still no* definitive position in this respect, since most studies used aggregate measures of savings. Other factors that affect savings were also discussed in Chapter Three, such as income distribution, demographic factor, fiscal policy and inflation and uncertainty.

The economic background of Libya prior to the discovery of oil and until the post-reform programmes in the early 1990s was outlined in Chapter Four. Three benchmarks were highlighted: the early attempt at development before the discovery of the oil, the nationalisation following the 1969 Revolution and the impact of the oil industry and the implementation of the economic reform and structural adjustment programmes in the early 1990s. Since the revolution in 1969, the country has moved from a capitalist to socialist structure, state intervention in the economy has increased and the public sector has dominated the country's economic activities.

The improvement in economic conditions following the discovery of oil and the implementation of nationalisation was not sustained, and the decline in oil prices in the 1980s, and the inefficiency of the public sector, negatively affected the economy, which severely deteriorated during the 1980s with the increase in the inflation rate, a deteriorating exchange rate and budget deficit reaching the highest ever in Libya. Thereafter followed a remarkable decline in savings, investment and growth rate, and in an attempt to overcome the severe economic problems, Libya adopted the economic reform and structural adjustment programmes in the early 1990s. Measures such as trade liberalisation, financial liberalisation, financial reforms and privatisation were introduced, with the result that economic conditions markedly improved,

favourably affecting inflation rates, the budget deficit, the balance of payments, and the exchange rate. However, GDP growth and investment did not increase to the levels required to achieve sustainable rates of growth and development; the GDP growth increased from -0.4% in 1999 to 4.5% in 2001, to 3.3% in 2002, to 9.1% in 2003, to 4.6% in 2004 and to 3.5% in 2005: It remains low with fluctuations.

The evolution of the financial sector from 1968 until the post-reform programmes was discussed in Chapter Five. The early activities of Libya's financial sector began with the establishment of an agricultural bank in 1968 in Benghazi and two branches of the Bank of Rome in 1907. The banking industry was dominated by the foreign banks until late 1963 when the (Libyanisation) policy was adopted by the Central Bank of Libya. Following the 1969 Revolution, all foreign shares in commercial banks were nationalised and the ownership of all shares in all commercial banks reverted to the state. Therefore, the share of the public sector in the banking industry gradually increased until it completely dominated the financial sector. Libya's financial sector, through the banking sector, was affected by the economic situation in 1980s, and this in turn, negatively impacted upon the general budget of the state, which led to a considerable GDD of LD 5345.4 million. That was covered by the Central Bank of Libya and the commercial banks.

After nationalisation, the financial sector was excessively repressed, characterised by a low interest rate, high reserve ratios, directed credit programmes, the complete absence of other financial institutions such as a capital market, and the domination and intervention of the state. This excessive repression led to private investment being squeezed out and to the domination of demand deposits on the structure of savings, and hence, to a low rate of savings. Together with the inefficiency of public investment, this led to a low rate of growth in the 1980s and early 1990s. Furthermore, the financial sector's efficiency in mobilising and transferring savings to productive investment was low, and the low rate of interest, high reserve ratios and directed credit programmes pushed the savings to the informal sector.

The financial reforms and liberalisation measures that were introduced in the early 1990s aimed to liberalise the economy and to encourage the domestic and foreign private sector to contribute to the development process of Libya's economy and financial sector. However, the domination of the public sector continued, with the inevitable reluctance of the private sector to become involved in financial activities. Moreover, the lack of competitiveness within the financial sector and the restricted access to domestic credit by the private sector was insufficient to significantly raise investments and growth.

Chapter Six showed that using aggregate measures of savings when studying the relationship between savings and growth is not adequate, and that measures such as financial savings are much reliable. In addition, it demonstrated that the measurement of financial development is a problematic issue because of the complexity and the multi-dimensional aspects of such development. The econometric methodology used in the empirical analysis was also outlined in Chapter Six, where it was shown that most of the macro variables have the property of non-stationarity that might impact upon the results of the standard OLS method. Thus, testing for unit root is an important preliminary step in time series analysis. Two unit root tests were briefly highlighted in this chapter the ADF and PP tests. In addition, this chapter provided a brief discussion of the concept of cointegration including the Granger method and the multivariate VAR Johansen method.

The results of the unit root tests for selected macro variables from Libya were presented in Chapter Seven. The findings from the two unit root tests show that all variables that are used in the empirical analysis are integrated in the order of one.

The Johansen approach of cointegration in the VAR model was used to examine the long-run determinants of financial savings in Libya over the period 1970-2005. The results indicated that the coefficient of the real interest rate in the long-run financial savings function is negative and significant, and the coefficient of per capita income (output) is positive and

significant. However, the results in the short run indicate that the current level of financial savings has a positive relationship with the past levels of financial savings. The coefficients of past levels of the real interest rate in the short-run function are positive and significant, and the coefficient of current level of per capita income is positive and significant. Nonetheless, the coefficients of past levels of per capita income are negative and insignificant at 1%. The causality tests pointed to a long-run and overall causality from per capita GDP to financial savings, meaning that the increase in real output (income) in the long run will cause an increase in financial savings. Furthermore, the causality tests indicated that the increase in the real interest rate in the long run, did not increase or cause the financial savings in Libya, meaning that the real interest rate needs to be fully liberalised in the Libyan economy.

The Johansen cointegration approach was used to assess the role of financial sector development in Libya's economy by examining the long-run relationship and causality between domestic investment, real output, real interest rate and financial intermediation over the period 1970-2005. The results show that, in line with the predictions of the accelerator model, the GDP per capita has a positive and significant impact on the domestic investment in the long term. However, the impact of the real interest rate on domestic investment in the long run is negative and significant. In addition, the impact of credit on domestic investment in the long run is very small and insignificant.

The results in the short term show that the real interest rate has a negative and significant impact on the domestic investment, but the past level of real interest rate has a very significant and positive impact on domestic investment. The impact of GDP per capita on domestic investment in the short run is positive and significant, meaning that the result is consistent with the suggestion of the new classical investment theory "the accelerator model". In addition, the results show that the credit has no impact on domestic investment in the short run. The results of causality tests indicated a strong long-run causal impact from real output to domestic investment, an overall causal impact from the real interest rate on domestic investment and

real output. In addition, there is no causal impact from credit as an indicator of financial development to domestic investment. These findings support the need to increase the effectiveness of financial sector intermediation through relaxing liquidity constraints and increasing the share of the private sector in domestic credit. This is vital for capital accumulation and economic growth in Libya.

## 8.2 Concluding Remarks

The sustainability of economic growth and economic development is the most important target for developing countries in their efforts to overcome economic obstacles and to improve their position in the global economy. However, the achievement of sustainable growth and development requires high rates of savings and investment. Without savings and investment, growth will not occur in any economic system.

However, whilst a high rate of aggregate savings is a necessary condition to ensure an increase in investments and the enhancement of growth, it is not in itself a sufficient condition, and it is the rate of financial savings that matters to guarantee investment and capital accumulation. In other words, transforming unproductive savings into productive financial savings is the main factor for financing capital accumulation and investment.

The efficiency of the transformation process from unproductive savings (non-financial savings) into productive financial savings, is determined by the level of financial sector development. Hence, well-structured and regulated financial institutions, effective financial intermediation and efficient capital market and contractual savings are the major factors that stimulate financial savings and improve savings mobilisation.

The above discussion raises an important fact about the crucial role of the financial sector in linking savings with growth through mobilising savings, transferring the mobilised savings into investments, and increasing the productivity of investments. Therefore, it can be concluded that reforming the

financial sector and improving the efficiency of financial intermediation, are key issues that should be addressed by the policy-makers in developing countries when setting development policies and implementing structural adjustment programmes.

Theoretically, consumption theories such as the Keynesian absolute-income, permanent income, and lifecycle theories, pointed to the income and growth levels as the major factors for saving rates. Empirically, time series, cross-section and panel data studies confirmed this argument in most, if not all, cases considered. Therefore, if the financial sector could efficiently mobilise domestic saving and effectively allocate these savings into high productivity investment, real output (income) level and growth would be promoted, in both the short and the long term. The higher level or growth of income would in turn be likely to increase the rate of total savings, which would consequently lead to a higher financial savings rate. However, such a virtuous circle will only arise if the financial sector continues to be efficient, effective, well regulated, updated and regularly reformed to keep up with the international and regional standards.

In conclusion, the virtuous circle of savings, investment and growth in developing countries can be enhanced by the existence of a well-structured and developed financial system. In Libya, the volatility of economic growth and unsustainability of the development process is attributed to the lack of virtuous savings-investment-growth circle, which is not yet firmly established. The relatively under-developed and under-performing banking sector, the complete absence of capital market activities, and the inefficiency of contractual savings institutions, are among the key reasons for the weakness of the savings-investment-growth circle in Libya.

Financial sector reforms were the major elements of the whole economic reform and structural adjustment programmes in the early 1990s, which aimed to enhance the effectiveness of the financial sector in mobilising savings and financing investments by encouraging private participation, reducing government control over the financial system, and the

establishment of a capital market. The economic performance following the reform programmes has been satisfactory. Economic growth increased, the budget deficit disappeared and a surplus was created, and the inflation rate decreased compared to the 1980s and the early 1990s. Nonetheless, problems, such as high unemployment, low rates of savings and investments, and unsustainable growth rates remained.

Several reasons can be seen to have hindered the attempt to restore the savings-investment-growth circle over the period 1970-2005. Firstly, the excessive government intervention in the economy between the early 1970s and late 1980s, and the resultant nationalisation policies, marked an extremely repressed period. Secondly, the complete dependency on oil revenues prevented the growth of a mixed economy. Moreover, the domination of the public sector in the banking industry, the excessive financial repression and the deficiency of financial sector, all led to a decrease in savings and investments and to a low growth rate. Consequently, the financial sector's competitiveness and efficiency were extremely weak, and in the face of the continuous domination of the public sector by the government, competition in the financial market was very limited. As a result, the private sector was crowded out because of the high liquidity constraints on the credit provided to the private sector and this led to a limitation of private investment, which together with the inefficiency of public investment, led to the deterioration in investment and, therefore, growth rates.

Undoubtedly, Libya's fortunes improved with the reform programmes in the 1990s that led to a positive impact on economic growth. However, these reform and structural adjustment measures did not promote sustainable growth and development, and by the end of the 1990s, financial savings and investment were in decline and GDP per capita unstable. The combined efficiency of the financial sector reforms, the absence of capital market, and the under-performance of the contractual saving institutions, contributed to the problem of low financial savings and investment rates.

In spite of liberalising the interest rate and reducing the size of public banks through the privatisation programme in the late 1990s, the competitiveness of the financial market did not improve because the financial system continued to be dominated by the state-owned banks, and the role of the domestic and foreign private sector in the financial system was still very weak. The interest rate remained susceptible to government policy rather than being not market-led, such that it was unable to reflect the real cost of borrowing and the real rate of lending, and subsequently could not equilibrate savings and investments in the Libyan economy.

The absence of an independent financial agency or authority with responsibility for formulating policy and regulating the sector's activities, contributed to the inefficiency of Libya's financial sector. The Central Bank of Libya, which is under the control of the government, remains as the owner of the public banks, and as the authority responsible for setting monetary and financial policy. Moreover, the overstaffing, the high level of bureaucracy in the public banks, the low skills of the workers and the management, and the weak lending to the small and medium enterprises contributed to the inefficiency of public banks. As a result, the effectiveness of the banking sector in mobilising savings and channelling savings into investments, and then increase or improve growth, was limited.

## 8.3 Implications

The enhancement of the virtuous circle of savings, investments, and growth is essential for sustaining economic growth and development. The financial sector is the key factor that influences this relationship, by mobilising domestic savings, transferring these into productive investments, and thus promoting growth. Therefore, reforming the financial sector is an essential step for the economic development process.

The savings-investment-growth circle is still weak and not yet firmly established in Libya. The under-development of the financial sector is a key reason for the non-establishment of the virtuous circle of savings,

investment, and growth. The reform measures introduced in the early 1990s as part of the economic reform and structural adjustment programmes are necessary but not sufficient to overcome the financial sector's ineffectiveness, and consequently new measures are needed in order to enhance its competitiveness and efficiency.

The results of the empirical analysis provide evidence against the predictions of financial liberalisation theory that a positive and high real interest rate is expected to increase financial savings, investment and growth rate. The results of estimation of the long-run financial savings function over the period 1970-2005 in Libya indicated that the coefficient of the real interest rate is negative and small. In addition, the results indicated that there is no short-run relationship between financial savings and real interest rate. The finding of a strong positive correlation between the level of income and the level of financial savings when there were long periods of negative interest rate in Libya, shows that the interest rate policy is not the major determinant of savings mobilisation, and that rather, it is the level of income that has a strong influence on individuals' decision to save. The results showed that the impact of the real interest rate in the long run is negative and very small. In addition, they indicated the same impact of the real interest rate on domestic investment in the short run. Therefore, it can be concluded that interest rate liberalisation is not the key aspect of financial sector reforms that aim to increase savings and investment and then promote economic growth in Libya.

Other aspects of financial liberalisation such as relaxing liquidity constraints, minimising the size of directed credit programmes, reducing reserve ratios, as well as other financial reforms such as increasing the efficiency of financial intermediation, the establishment of capital market and reforming contractual saving institutions, may have equally positive consequences on the economic performance in Libya. Therefore, more attention should be paid to these aspects of financial liberalisation and financial reforms by Libya's policy-makers.

The results of the causality tests indicated that there is causality from income growth to financial savings, which suggests that growth-promoting policies such as trade policy, technological progress, and investment in human capital would lead to an increase in the national income, and thus increase savings. Similarly, savings mobilisation policies are important in growth promotion for Libya.

The findings of the impact of credit as an indicator of financial sector development on domestic investment in the short and long term, lead to an important policy suggestion, since the indication is that credit has an insignificant impact on domestic investment and growth in the long term and no impact at all in the short run. Therefore, financial liberalisation policies that aim to relax liquidity constraints and increase the private sector's share of domestic credit, are crucial for sustaining economic growth and development in Libya. Additionally, increasing the share of small and medium enterprises in the supply of domestic credit from the banking sector is important for sustaining economic growth and development because this helps to reduce the high rates of unemployment and poverty in Libya, which are the major targets of the development policies. Therefore, introducing measures in the banking sector that relax the liquidity constraints for small and medium enterprises, and provide these enterprises with the technical consultancy assistance that helps them in the evaluation of their project proposals, are important factors for increasing the volume and productivity of investments in the private sector. Hence, this would have a positive impact on total capital accumulation and investment in the economy, and at the same time, would help to reduce unemployment and increase the standard of living among the poor people, with the consequence that the chances of sustaining economic growth and development will increase.

The findings of causality tests between domestic investment, growth and financial intermediation indicators confirm the argument for focusing more on improving Libya's financial sector performance by enhancing its efficiency, modernising the financial institutions, and reducing the aspects of excessive government intervention in the financial system. In this context, the efficiency

and competitiveness of the financial system in Libya should be improved through: (i) encouraging and opening the banking sector to domestic and foreign private banks, and seeking strategic investors for the privatisation of state-owned banks, (ii) improving the performance of the public banks by extending the banking network and financial services to cover all the cities; increasing the number of branches; diversifying financial services and tools; modernising and adopting advanced technology; improving the level and skills of the staff and management; and increasing the share of the private sector in the credit provided by public banks, (iii) increasing the quality and the effectiveness of financial sector supervision and regulation, (iv) establishing a well-structured capital market and linking it into the financial sector and reforming the contractual saving institutions in Libya. Additionally, it is essential for the policies and reform programmes to include the issue of raising the level of trust and confidence between individuals and the financial sector in Libya.

## 8.4 Areas for Further Research

Having conducted this study, it is apparent that a number of potential areas for further research exist. Firstly, it may be necessary to undertake further research on the determinants of private savings in Libya and in the MENA region with a particular focus on the impact of public savings on private savings. Conducting a long-run and causality test between private savings and public savings in time series case studies or in panel data would help to clarify the impact of government policies on the behaviour of the private sector or household sector savings.

Secondly, further research is recommended on the issue of the relationship between foreign direct investment (FDI), the financial sector and economic growth in the MENA region. This should have a particular focus on the role of local financial markets and the link between FDI and growth, in order to learn whether countries with a better financial system can exploit FDI more efficiently. Thus, there is a need to run regressions to examine the role of

FDI on growth through financial markets by using cross-sectional data between 1960 and 2006.

Thirdly, further theoretical and empirical evaluation of the state of contractual savings institutions in Libya and in the MENA region is of great importance. On the one hand, this would help to increase the awareness of policy-makers about the important role of these institutions in mobilising long-term savings and facilitating investment into more productive projects. On other hand, it would increase the awareness of individuals in MENA region of the advantages of these institutions in reducing the uncertainty and providing long-term investment instruments that would provide a long-term source of finance for growth.

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