

**FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: A  
COMPARATIVE STUDY BETWEEN CAMEROON AND SOUTH AFRICA**

**by**

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Date .....

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**DEDICATION**

This dissertation is dedicated to my parents and Therese Kabeyene.

## ABSTRACT

The causal relationship between financial development and economic growth is a controversial issue. For developing countries, empirical studies have provided mixed result. This study seeks to empirically explore the relationship and the causal link between financial development and economic growth in two sub-Saharan African countries between 1970 and 2006. The empirical investigation is carried out using time methods and the five most commonly used indicators of financial development in the literature. However, the causal relationship was carried out using two different methods which are the autoregressive distributed lag bounds testing (ARDL) and the vector error correction model (VECM). Using this above methodology the study first found that in both countries there is a positive and long-term relationship between all the indicators of financial development and economic growth which was proxied by the real per capita GDP. With respect to the causality test, the two methods used provide mixed results especially in South Africa. In Cameroon the study found that financial development causes economic growth using the two methods, whereas in South Africa economic growth causes financial development when the VECM method is used, while there is an independence relationship between the two variables in South Africa when using ARDL.

## Key Terms

Cameroon, South Africa, financial development, economic growth, vector auto-regression (VAR) model, vector error correction model (VECM), auto-regressive distributed lag (ARDL) model, co-integration test, causality test.

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## CHAPTER ONE

### INTRODUCTION

#### 1.0 Introduction

The last few years have seen a revival of interest in the determinants of long-term economic growth in Africa. New endogenous theories of economic growth have stimulated research in identifying the factors that could stimulate long-term growth rates in countries across Africa. This would result in a reduction of their dependence on aid and stimulate utilisation of their own resources capacity in order to improve their economic situation, consequently leading to a reduction in poverty. Many studies have shown that the best way for African countries to achieve 4 to 5% economic growth per year is to enhance the development of their financial sectors<sup>1</sup> (World Bank, 1989).

The aim of this first chapter is to outline the importance of prioritising research on the development of the financial sector, and to provide an overview of the entire study. The initial section of this chapter describes the background to the study, where the importance of financial sector development to the economy as a whole is highlighted. The crucial role of this sector in this respect is emphasised. In countries where the financial sector is underdeveloped, many aspects of the economy are negatively affected. An underdeveloped financial sector may pose serious problems for the development of trade within a country and at the international level, resulting in a negative effect on the economy. The speed of attraction and size of much-needed foreign direct investment could also be jeopardised. Once the importance of financial development in economic growth has been acknowledged, it is useful to outline the situation of the financial sector in sub-Saharan African countries. It is partly because of their still weak financial sectors that this study is being conducted. Thus, the second section will deal with the problem statement, which is presented in order to enable us to categorically state the particular problems confronting the financial sector in sub-Saharan African countries, since they are related to the rest of the economy. It is important to assert this at the beginning, because it

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<sup>1</sup> Throughout this study, the terms financial sector and financial system are used interchangeably as they both express the same ideas.

is the “raison d’être” of the study being undertaken. Thereafter, it is essential for this study to indicate what it hopes to achieve. Thus, section three of this chapter will state the objectives of the study. In the process, this study intends to determine whether (or not) financial sector development could affect economic growth in the two countries being studied (Cameroon and South Africa), utilising an econometric model. Section four highlights the significance of the study and an attempt will be made to explain how this study differs from previous ones by comparing two contrasting economies, those of Cameroon and South Africa. The final section of this chapter will describe the layout of the remaining chapters of the dissertation, which will give to readers an indication of how the dissertation will be developed, the justification for particular chapters and how they are related to each other.

### **1.1 Background to the study**

Achieving the Millennium Development Goals (MDG) of eradicating extreme poverty and hunger and to develop a global partnership for development, among other factors, an open, rule-based, predictable, non-discriminatory trading and financial system, will require rapid and sustained growth in sub-Saharan African countries.

It is now widely acknowledged that financial development plays a significant role in economic growth. According to Hamilton (1781)<sup>2</sup>, banks are the happiest engines that have ever been invented for spurring economic growth. The relationship of the financial sector to economic growth globally has recently been the subject of considerable empirical and theoretical research. The few works that have been published on Africa, especially in Sub-Saharan Africa, have generally concluded that financial development should lead to economic growth. Flowing from these studies<sup>3</sup> is the recommendation that African countries need to expand and improve the efficiency of their financial sectors, through appropriate regulatory and policy reforms, in order to promote faster economic

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<sup>2</sup>The quotation from Hamilton is taken from Levine et al. (2000).

<sup>3</sup>Ghirmay (2004), Xu (2000), Khalifa (2001), Honohan (1993), Akinboade and Makina (2006), Allen and Ndikumana (2000), Levine et al (2000) etc.



growth. The pertinent question to ask is: How can financial sector development affect growth in Sub-Saharan Africa or in an economy as a whole?

Apart from the obvious advantages to the economy of intermediation between people with surplus resources and those in need of them, financial sector development in itself has its own merits. By funnelling savings to firms in the process of transforming them into investments, financial intermediaries collect resources and allocate them more efficiently than individuals. Financial development improves the allocation of capital, by allocating funds to those projects in which the marginal productivity of capital is the highest. Thus, financial institutions, through their role as intermediaries, increase the productivity of capital, thereby contributing to growth by collecting information in order to evaluate alternative investment projects and induce individuals to invest in risky ventures.

Thus, establishing an appropriate financial sector policy is of paramount importance for the economic growth of a country, because financial intermediaries or institutions provide services such as: mobilisation of savings, risk management, acquiring information about investment opportunities, monitoring borrowers, exerting corporate control, and facilitating the exchange of goods and services.

Furthermore, in the same manner that financial services increase economic growth, they also reduce poverty. Financial sector development affects poverty, both directly and indirectly. Indirectly, it does so through its positive impact on economic growth (since evidence suggests that economic growth is usually beneficial for the poor) and directly, by the extent to which it results in increased access to financial services for the poor. For instance, having a bank account can improve access to other financial services, such as remittances or insurance, and enables the client to build up a financial history, thus improving their access to credit over time. Furthermore, financial sector development can strengthen the productive assets of the poor, by enabling them to invest in productivity-enhancing new 'technologies' such as new and better tools, equipment or fertilizers, or to invest in education and health. A poorly functioning financial sector could radically

reduce quality of life and productivity. Thus, financial sector development is one basic factor in reducing poverty in Africa, and its development could help Africa to achieve the first objective of the MDG, which is to reduce by half, during the period 1990-2015, the proportion of those people who live on less than \$1 a day. Despite some upturns in economic growth rates, poverty is still widespread and in many parts of the continent, extremely acute.

It is now accepted that the private sector should be the engine of growth, and that governments must work to create an enabling environment for private sector development. By facilitating transactions and making credit and other financial products available, the financial sector is a crucial building block of private sector development<sup>4</sup>. The mobilisation of savings by financial intermediaries also increases the availability of funds for lending. The availability of credit can be an important factor in the creation or expansion of small businesses, thus generating employment and increasing incomes. Therefore, an accessible and efficient financial sector is pre-requisites for the development of small and medium enterprises, and sustainable development.

Every component of modern society relies on the extension of financial services, and many industries or businesses are almost entirely built around a sophisticated financial system. Services provided by financial systems enable people, especially businesspeople, not to carry around a significant amount of money in cash; thus money transactions are safer, quicker and easier. Financial institutions also help governments and all organisations in the allocation of wages to workers, and facilitate transactions between them. Moreover, the financial sector is also an employer of labour and stimulates employment in the private sector. From a historical perspective, the financial sector has played a central role in opening up new areas for development. It has served as a catalyst for economic activity, as well as a key factor in enhancing economic productivity in many countries in Latin America and Asia.

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<sup>4</sup> See [www.fdimagazine.com/news/fullstory.php/aid/282/Sub-Saharan\\_rising\\_stars.html](http://www.fdimagazine.com/news/fullstory.php/aid/282/Sub-Saharan_rising_stars.html)

It is also acknowledged that, without adequate financial sector services, it will be difficult for African countries to attract opportunities that will facilitate the growth of their economies. Hence, many studies have shown that countries with better financial sector development attract more foreign direct investment (FDI). This is one of the reasons that capital flows more readily to Latin America, Asia and other countries than to African countries (Hermes and Lensink, 2003). Well-developed financial services are also an indicator of a sound business environment. Experiences in other regions have shown that investors choose countries with stable political and economic environments. Amongst others, open markets, good infrastructural facilities and regulations, efficient financial systems and low production costs are key factors in attracting and retaining foreign investments. The importance of foreign direct investment in economic growth has been widely debated and proven in modern economic literature.

Bringing these factors together has proven to be difficult for many countries in the sub-Saharan region, especially those that suffer from, amongst others, macroeconomic instability, poor infrastructure (physical, financial, human and institutional) and small domestic markets. However, there is evidence that, in all the countries in Africa (Sub-Saharan Africa) where financial systems (banking sectors as well as stock markets) have been developed, infrastructure, human capital, education, social and economic conditions are improved. Moreover, with the possible emergence of a common currency in Africa, the stability of economies, good governance and the development of financial systems are all-important to achieving this goal, which could be to the benefit of all African countries. Furthermore, a sound and robust financial system is a key contributing factor to financial stability in a country since it plays an important role in reducing the risk that distortion in the real economy will develop into a financial crisis, and could even minimise the adverse effects of such a crisis, in the event of it occurring.

Thus, the development of the financial sector serves to increase savings and investments, reduce poverty, stimulate small and medium business, encourage foreign capital inflows, and ensure that finance is allocated to the best (i.e. most productive) projects. In economic terms, this means that financial development boosts long-term growth. An

efficient financial sector provides better financial services, and thereby accords a greater boost to growth than less efficient ones (Levine, 1996: 161). The present study will complement many previous ones, which have emphasised the importance of the financial development to economic growth in African countries.

## 1.2 Problem statement

No region in the world is in more dire need of development than sub-Saharan Africa. Many empirical studies have established that well-functioning financial markets with sophisticated institutions and regulatory systems foster economic development through private initiatives and new technologies. Undoubtedly, the continued fragile nature of the African financial sector (especially in countries in sub-Saharan Africa) cannot be separated from the still brittle state of most of their economies. The dismal economic performance of the region has been widely explained by a number of elements such as famine, drought and civil war, and by the fact that agriculture is the principal economic activity; the region only contributed about 2% of global trade in 2003. Nevertheless, it is also recognised that there are other internal explanations for this, such as the dysfunctional nature of financial markets and institutions. Investments remain low in this region, limiting efforts to diversify economic structures and boost growth.

When compared to other developing countries in South Asia, Latin America and East Asia, the financial systems of sub-Saharan Africa show some distinctive features. African financial sectors are both shallower and narrower. In most countries of the region, the financial sectors are still underdeveloped and concentrate mainly on the banking sector. Financial sectors are thin, and experience difficulty in mobilising domestic savings and attracting foreign private capital. In most sub-Saharan African countries, financial sectors are uncompetitive, and credit allocation is often subject to government intervention.

In 2003, banking sectors in the region were highly concentrated, the average spread between lending and deposit rates being 12.4%<sup>5</sup> (reflecting a higher credit risk as well as a lack of competition), and the average share of nonperforming loans in the portfolio of

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<sup>5</sup> World Bank, *World Development Indicators* (2005).

the banking sector being above 20 percent (partly due to the weak legal systems and government interference in financial markets). The range of available financial products is unduly limited in sub-Saharan Africa, with the notable exception of some countries (such as South Africa). In most countries, no interest is paid on demand deposits; the maturity structures of both deposits and government securities are very short (also due to pronounced economic and political uncertainty), while both stock markets and inter-bank markets are largely underdeveloped.

The use of monetary policy instruments in sub-Saharan African countries also needs to be improved. Political interference in financial markets is still common. Central banks often rely on advances to commercial banks as a major instrument of monetary policy, and less on the use of open market operations. In addition, few countries have payment systems that can ensure rapid settlement of transactions, and inter-bank markets are often very thin. Banking supervision and regulations are often inefficient, and seldom independent of political pressure. Financial and commercial legislation, and the associated institutional environment, are inadequate in many countries. The low level of computerisation and the generally limited use of technologies also hamper the development of the financial system. The stock exchanges of most countries in the region are still young or not functioning properly.

According to a survey conducted by certain economists regarding commercial banks, investment banks and mutual fund managers in the region,<sup>6</sup> investors perceive the risk to be higher in investments in sub-Saharan Africa than in other regions, while they face greater impediments in identifying and exploiting profitable opportunities in the region. Similar conclusions could be reached when comparing the indicators of business climates and/or business environments in most sub-Saharan African countries with those in other developing countries such as in Latin America, South Asia or East Asia, as published by the World Bank (2008:a).

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<sup>6</sup> Amar Bhattacharya, Peter Montiel and Sunil Sharma (1997).

Furthermore, financial sectors in the region, as well as the rest of the economy, are fragmented; hence semi-formal, and informal, mechanisms and institutions are particularly important. While some of these microfinance institutions have had a significant impact on poverty (those in China for instance), others have been less successful, making it difficult to draw conclusions about the real impact of microfinance on economic growth. Thus, while microfinance could be viewed as a solution to the inefficiency of the formal financial sector experiences show that it cannot play the role of the latter.

Microfinance institutions generally cannot mobilise funds on a large scale or pool risks over very large areas in the way that more traditional, formal financial institutions can, and most microfinance institutions have only limited coverage<sup>7</sup>. The formal financial sector is more likely than the informal sector to command the time and capacity to collect process and compare information regarding many different enterprises, managers and market conditions, before choosing where to invest. For instance, with their large resource capacity, formal financial sector can fund large or small businesses as well as grant mortgage loans to people. This cannot be done by microfinance institutions. The argument here is not to eradicate microfinance institutions but rather to pay more attention to the formal financial sector, because its development will benefit a country more than that of microfinance institutions. Nonetheless, the formal financial sector needs help from microfinance institutions in order to reach those poor people whom they cannot access directly. Thus, a broadening of financial services provided by the formal financial sector or institutions (such as commercial banks and the stock exchange market) is necessary in order to tackle this problem on a large scale, and therefore the barriers to achieving this must be identified and addressed where possible.

All these above-mentioned weaknesses found in Africa's financial sector require attention, since they reduce the efficiency of financial intermediation, raise borrowing costs, reduce saving incentives, increase the risk of bank failure, and increase the

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<sup>7</sup>Honohan (2004) shows that MFIs reach less than 2% of the population (especially the poor) in most countries.

likelihood that private sector borrowers may be unable to obtain finance, even for viable projects. A more developed financial system, with lower information and transaction costs, facilitates a more efficient allocation of resources. It also leads to a more rapid accumulation of physical and human capital and faster technological progress, by enabling the identification and funding of better investment projects, mobilisation of savings, monitoring of managers, and allowing investors to trade, hedge, and diversify risks. According to Creane et al. (2003), countries with a high level of financial sector performance have performed better in all areas, particularly in terms of regulation, supervision and financial openness.

Although private investment has increased in many sub-Saharan African countries in recent years, because most of the countries in the region experienced some reform in their financial sectors during the early 1980s, it needs to increase more substantially in order to help achieve more dynamic and sustainable growth. Accordingly, many governments in the region are aware of the fact that investment in the financial sector is a significant catalyst for both economic and social development, and that they should intensify their efforts to create an environment that encourages private investment, notably one that promotes confidence in the sustainability of appropriate macroeconomic policies. Governments should implement sound macroeconomic policies, in order to fully restore and consolidate macroeconomic stability, which is needed to improve the development of financial sectors and economic growth.

The evidence shows that the macroeconomic environment is essential for growth. In particular, reducing the ratio of the overall fiscal deficit to the gross domestic product (GDP) may help to increase the growth rate appreciably. This reduction could be achieved through a combination of policies and measures, including implementing tax reforms, strengthening tax, and curbing unproductive spending. With a cutback in the overall fiscal deficit (reduction in public spending), government borrowing from the banking sector and government interference in financial markets should be limited and/or eliminated, thereby providing greater scope for bank financing of the private sector and the strengthening of monetary management. Providing and maintaining an adequate

financial service to meet the social and economic needs of the country must be one of the prime functions of governments. They must ensure that the necessary infrastructure and skilled labour are available, as well as create and maintain a transparent and efficient regulatory framework and judicial system that safeguards property rights, adequately enforces contracts, fosters healthy competition, and, more generally, ensures good governance. All these elements are essential for the better development of the financial sector and for boosting economic growth.

While many studies have focused on financial development and economic growth in developed and developing countries in Latin America, Asia and others, this has not been the case for developing countries in Africa. This has been widely justified either by the lack of sufficient data for analysis or by the fact that financial sectors in these countries are still too much in their infancy to allow for significant empirical analysis. As this study intends to show, there is evidence to suggest that financial sector development is important for growth and poverty reduction. Sub-Saharan African countries therefore face major challenges in increasing growth, reducing poverty, and integrating themselves into the world economy, since the rates of economic growth in the region are still not adequate to make a real difference in the reduction of poverty and to enable these countries to catch up with other developing nations. Given the rapid rate of globalisation and the dynamic nature thereof, there is tremendous pressure on sub-Saharan Africa to modernise its financial sectors in line with global trends, standards and best practices, and to avoid being left behind in the dynamic drive for faster, better and safer financial transactions.

### **1.3 Objectives of the study**

Based on the problem statement of the study, it could be argued that financial sector development is a prerequisite for an economy to attract more investment opportunities, create jobs and boost economic growth. Understanding the effects of financial development on economic growth in South Africa and Cameroon is essential in order to determine whether (or not) there is any relationship between financial development and economic growth in these two countries. The principal objective of this study is to



explore the linkages between financial sector development and economic growth in these two African countries. In the process, this study will employ a large number of indicators of financial sector development, with the objective of considering the main elements that could explain either the development or weaknesses of the financial sectors of these countries. This process should provide better guidance to policy-makers on conducting their economic policies and setting priorities for the development of their financial sector. The study will investigate this topic, using the Vector Error Correction (VECM) and Autoregressive Distributed Lag (ARDL) models in order to test the possible relationship and causality (or otherwise) between increasing economic growth in South Africa with its sophisticated financial sector, and in Cameroon, where it is not well developed. Data will be obtained from the International Monetary Fund's International Financial Statistics, the Central Banks of Cameroon and South Africa, and their commercial banks during the period of 1970 to 2006.

#### **1.4 Significance of the study**

Due to all the reasons previously mentioned, it is evident that there is a need to conduct significant research on the relationship between financial sector development and economic growth, especially in developing countries. The present study, unlike the previous ones (Ghirmay, 2004), will cover recent data on financial sector development in Cameroon and South Africa and employ two econometric models to analyse the relationship between financial development and economic growth.

The reason for the choice of Cameroon and South Africa as countries to be studied is dictated by the availability of long-term time series data and also by the facts that the relationship between financial sector development and economic growth is ambiguous and furthermore, that there is a need to conduct similar studies on countries at different stages of development. Many studies have provided different results regarding whether the effectiveness of financial development in promoting economic growth depends on the structure or level of development of the economy. While certain economists (Kletzer and Pardhan, 1987; Beck 2002) argue that financial development is much more effective in promoting economic growth in more industrialised economies than in less industrialised

or agricultural ones, others contend that countries in the early stages of development benefit more from financial development (McKinnon, 1973; Shaw, 1973; Fry, 1995). Therefore, as argued by Ghirmay (2004:418) and as just mentioned, it is necessary to conduct similar studies in countries at different stages of development in order to reach a more valid conclusion regarding the role of financial development in economic growth, especially in developing countries.

For this reason this study has chosen two contrasting countries, namely, South Africa, which is considered as an upper middle-income country, and Cameroon, which is a lower middle-income country, according to the classification of the World Bank (2008:b)<sup>8</sup>. The two selected countries also differ in terms of their historical colonization and have inherited different legal systems for their financial sector. Cameroon became independent in 1960, while South Africa embraced democratic rule in 1994. In terms of financial sector development, South Africa enjoys the most sophisticated financial system in Africa and has inherited the British legal system, while in Cameroon the financial sector is still not well developed and follows the French legal system.

A comparison between Anglophone financial sectors with that of Francophone financial sectors is not common and few studies have therefore conducted a causality test in this regard. These have employed the structural indicators of the financial sector, such as the legal environment, contract enforcement and many others. None of them have utilised indicators that reflect the real services of the financial sector, such as furnishing credit to the economy, mobilising savings and so on.

Moreover, from all the studies that have been conducted in sub-Saharan Africa with regards to the importance of financial sector development, most have focused mainly on the south or east of Africa. In Central Africa, there has not been very significant research in the field. The little research that has been conducted in the region, especially in Cameroon, has mainly focused on the regulation of the banking sector, while few studies

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<sup>8</sup> Site [resources.worldbank.org/DATASTATISTICS/Resources/CLASS.XLS](http://resources.worldbank.org/DATASTATISTICS/Resources/CLASS.XLS)

have used econometric models to test whether there is a relationship and or causality between financial sector development and economic growth in the country. This study intends to take a fresh look at this.

Having said this, this study will be different from many others with regard to the arguments previously mentioned. In addition, it is not common to consider the evolution of the financial sector of one country over a long period, which is the intention of the present study. However, the aim of this study, as with many other studies that have been conducted in this field, is to show African countries a new way in which to focus their economic objectives, and to identify whether or not policy-makers of these countries should gear their policies towards strengthening financial systems in order to stimulate economic growth.

## **1.5 Brief overview of chapters**

The first chapter establishes the central problem of the study, and explains the reason why this study is of interest. Five other chapters will follow logically; each one will deal with one specific issue that will assist the reader to follow the logic of the dissertation.

Following the brief overview in chapter one, it is important for this study to review salient theories in the field. Thus, chapter two will focus on a literature review of the theory regarding the importance of financial development to economic growth. It is important to review the said theory, as it will help one to understand how financial development and economic growth are linked. Chapter two will define what is meant by a financial system and enumerate the role of financial services provided by it and the impact of these on the real sector of the economy. Some alternative views regarding the relationship between financial development and economic growth will also be highlighted. All these different views and/or perspectives in terms of financial development and growth will constitute the review of the theory of this study

Chapter three covers the review of the empirical research. After having reviewed the theory behind financial sector and economic growth, it is useful to review the empirical

studies that have been conducted in the field, because it permits one to prove whether the theories reflect the reality and whether it would be beneficial to conduct/focus economic policy on these. In other words, the reviews of empirical research in this field will permit us to draw on one of the alternative views with regards to financial development and economic growth.

Since the study focuses its attention on South Africa and Cameroon, it is best to furnish an overview of the functioning, structure and evolution of the financial sector in these two countries, in order to better understand the acknowledged differences between them. Thus, chapter four will devote attention to this matter. In this chapter, an overview of economic experiences and the evolution of the financial sector as well as a comparison of how these experiences affected the indicators of financial sector development in both countries will be furnished. This chapter is fundamental for this study in the sense that it may provide some explanations of the wide differences between financial sectors of countries in the region (SSA), and, particularly, between Cameroon and South Africa. This chapter comes directly after the literature review because, after assimilating the theoretical and empirical importance of the financial sector and growth, it is useful to know about the history of the financial sector of the selected countries because this can enable us to make a statement concerning one specific theory for both countries.

Chapter five comprises the econometric methodology and data sources. After reviewing the theoretical literature and the real situation of the two selected countries, it is useful to radically state our analysis in terms of an econometric support or proof. This chapter will describe the major data and methodological issues of the study.

Thus chapter six will offer a discussion and analysis of the results. In order to implement the analysis, the study will employ various indicators of financial sector development and the two VECM and ADRL models in order to test the causality and relationship between financial sector development and economic growth. The results of this chapter will permit this study to categorically state whether or not policy makers in the selected countries could benefit in pursuing their policies in terms of enhancing the financial sector. This

chapter is crucial because its results could distinguish this study from many others, and could enable it to contribute something new to the economic literature.

The final chapter (Chapter seven) will summarise and conclude this study, by providing a general summary of the major findings as well as policy implications. Areas for further research are spelt out in this chapter.

## CHAPTER TWO

### LITERATURE REVIEW: THEORIES

*Does finance make a difference . . . ?*  
*Raymond Goldsmith (1969: 408)*

#### 2.0 Introduction

Economists hold the view that the development of the financial sector is a crucial element for spurring economic growth. Through their role of allocation capital, monitoring managers, mobilizing savings and promoting technological changes among others, financial intermediaries plays a significant role a significant role in economic growth. Finance has for a long time been a neglected area in development literature, but a number of recent writings have helped to redress this imbalance. This neglect of finance as regards economic development is somewhat surprising, considering key role that savings and investments play in the theory of economic growth as described by Harrod (1939), Domar (1946), Solow(1956) and the importance ascribed to it by Schumpeter (1911) in his theory of economic development, McKinnon (1973) and Shaw (1973) and proponents of their views. Whether or not they have provided definitive guidelines for financial policies, or even an understanding of the role of finance in economic growth, is another question.

Financial development can be defined as the ability of a financial sector to acquire information, enforce contracts, facilitate transactions and create incentives for the emergence of particular types of financial contracts, markets and intermediaries, and all this at a low cost (Rajan and Zingales, 2003:9; Levine, 1999:4). Financial development occurs when financial instruments, markets and intermediaries ameliorate – though not necessarily eliminate – the effects of information, enforcement and transaction costs, and therefore better provide financial services.

Thus, financial development involves improvements in the (i) production of ex-ante information about possible investments, (ii) monitoring of investments and

implementation of corporate governance, (iii) trading, diversification, and management of risks, (iv) mobilisation and pooling of savings, and (v) exchange of goods and services. Each of these financial functions/services may influence saving and investment decisions and hence economic growth. Since many market frictions exist, and laws, regulations and policies differ remarkably across economies and over time, the impact of financial development on growth may have different implications for resource allocation and welfare in the economy.

There are two distinct views of the finance-growth nexus in the traditional development economics. The first view was first proposed by Schumpeter (1911) who contends that services provided by financial intermediaries are essential drivers of innovation and growth. Thus, well-developed financial systems channel financial resources to their most productive use. Schumpeter's view was later formalised by Goldsmith (1969); McKinnon (1973); Shaw (1973); King and Levine (1993 a, b); Fry (1995) and Pagano (1993), to name just a few, who all believed that financial development is a catalyst for economic growth.

The second view suggests that the increase in the demand for financial services resulting from economic growth is the major driving force behind the development of the financial sector. This mechanism is stressed in the work of Robinson (1952). According to the latter as an economy grows, more financial institutions, financial products and services emerge in markets in response to a higher demand for financial services. Although conclusions must be drawn with caution, the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth (i.e. finance is related with and leads to economic growth).

The objective of this chapter is to provide policy makers, the research community, academics, donors and many other organisations, both non-governmental and governmental, who wish to conduct research in the field or learn more about it, with an idea of the theoretical relationship between financial development and economic growth,

as proposed by key economists in the field. It is therefore important to determine how the financial sector and overall economy are related to each other, and the implications of such a relationship for other sectors of the economy. A review of theory in this regard will guide us as we seek to understand the importance of the said relationship from a theoretical perspective.

In the remainder of this chapter the study first explains the theory of economic growth, because it will help one to understand the sources and/or the factors that might cause economic growth. The growth theory literature is very large. As such, this study will only focus on the part of the growth theory that pertains to savings, investment and technological progress. After, the study will review the theory of financial development. This will be done by explaining the functions of a financial system and how they affect growth of the real sector, according to the proponents of this view. All these points will be discussed in this section, since these researchers have all reached the conclusion that financial sector development is good for and causes economic growth. However, other economists do not share this view. According to them, in order to expect any increase or improvement in the financial sector, countries must first enhance economic growth. Thus, the next section will focus on those authors who believe that economic growth is a good predictor of financial sector development. The last section will summarise the chapter.

## **2.1 The theory of economic growth: a brief review**

Economic growth can be defined as an increase in real gross domestic product (GDP) (that is, GDP adjusted for inflation). Economic growth is a complex problem because several factors contribute to the growth process. In the economic literature several factors drive economic growth. These include investment ratio (Harrod-Domar model; Marx, 1867; Pagano (1993); Greenwood and Jovanovic (1990); Weber, 1905), human capital (Romer, 1986; Kaldor, 1957; Arrow, 1962), research and development and trade openness (Lewis, 1980; Bhagwati, 2004; Rodrik, 1999) and so on. As argued by Tridico (2006), all the theoretical predictions which assume that a single specific factor makes some countries richer than others do not find consistent empirical confirmation. According to the same author, some countries as Poland, Russia, and South Korea have



education levels which are close to those in the richest economies yet their GDP per capita is much lower.

In the early growth theories, a country's economic growth was regarded as being determined by the rate of utilisation of the factors of production – capital and labour – and the efficiency of their use. Continuing rise in per capita income is hence attributed to continuing progress in techniques of production. As such, many theorists of economic and social development have asserted that investment in labour and machines causes the long-term economic growth necessary for development. Marx (1867) traced the industrialization of Western Europe to investments in labour and machinery made possible by the creation of private property and changes in the organization of economic production. Later, Weber (1905) linked protestant ethics to capitalist accumulation: the investment of savings in the most efficient forms of production, which generated wealth, leading to more savings and more investment. The most efficient forms of production were those that employed machinery in other words, industry.

Though the theories of Marx and Weber appear to be in opposition to one another, they both rest upon the idea that the economic growth that fed Western Europe's Industrial Revolution was caused by investment in labour and machines (Raymond, 2008). Modern theories of economic growth have been premised on the same assumption about investment and saving as sources of economic growth. One model of growth in particular, the one by Domar (1946) and Harrod (1939), formed the underlying premise of most economic development strategies employed in Latin America, Africa, and Asia after World War II. The Domar-Harrod model specified the level of savings and productivity of capital as the keys to promoting economic growth. The Harrod-Domar model has been heavily criticised and extended by Solow (1956), who introduced some new factors of production (such as labour, technological change) and some assumptions into the model<sup>9</sup>.

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<sup>9</sup> Diminishing returns to labour and capital separately and constant return scale for both factors combined and introduce the technology as a variable distinct from capital and labour.

### 2.1.1 The Solow model of economic growth

The Harrod-Domar model has emphasized exogenous factor accumulation as a determinant of knife-edge growth. As a response to the Harrod-Domar model, Solow has shown that steady state growth is driven by technological change, while the adjustment to stable steady state growth is achieved by endogenous changes in factor accumulation. That is, the Solow model does not emphasize factor accumulation as a determinant of long-run growth. The Solow model assumes that GDP is produced according to an aggregate production function technology. Thus, following a Cobb Douglas form a representation of Solow model can be written as the follow.

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha} \quad 0 < \alpha < 1 \quad (2.1)$$

Where  $K_t$  is the capital input,  $L_t$  is the labour input. Macroeconomist tends to call increase in  $A_t$  the technological progress, but ultimately  $A_t$  is simply a measure of productive efficiency because an increase in  $A_t$  increase the productiveness of other factors. In the common empirical language  $A_t$  is also known as *total factor productivity* (TFP). Thus in addition to equation (2.1) Solow model also considered the following equations

- The capital accumulation of each period depends positively on the savings and negatively on depreciation of capital which is assumed to take place at the rate  $\delta$ .

$$\text{Thus : } \dot{K}_t = Y_t - C_t - \delta K_t \quad (2.2)$$

- The labour input grows at the rate “ $n$ ”

$$\text{Thus } \frac{\dot{L}_t}{L_t} = n \quad (2.3)$$

- Technological progress grows at rate “ $g$ ”

$$\frac{\dot{A}_t}{A_t} = g \quad (2.4)$$

- A fraction  $s$  of output is saved each period.

$$Y_t - C_t = sY_t \quad (2.5)$$

It is important to bear in mind the two well known features of Cobb Douglas production function which are the constant returns to scale and the decreasing marginal returns to factor accumulation. According to the Solow model the steady growth rate is

$$\frac{\dot{Y}_t}{Y_t} = \frac{g}{1-\alpha} + n \quad (2.6)$$

$\frac{\dot{Y}_t}{Y_t}$  is the GDP growth rate. Thus according to Solow model only the rate of technology which is  $g$  and the factor controlling the extent of diminishing marginal return to capital  $\alpha$  can affect the growth rate of output per worker. Although, from his model high saving rate can produce temporary increases of growth rate of output, it cannot get the economy to a path involving a faster steady-state growth rate as the technological changes. Thus from to Solow model the source of economic growth is exogenous (because he considered technological changes as exogenous). Similar argument is found in the study conducted by Senhadji (2000). He estimates a Cobb-Douglas production function and discriminates between growths due to capital accumulation on the one hand and factor productivity growth on the other. He finds large regional disparities and a particularly high contribution of productivity growth to real GDP growth in underdeveloped countries.

### 2.1.2 The endogenous growth model

Unlike Solow model the endogenous growth theorists believe that the sources of economic growth are endogenous. Until recently endogenous growth theorists have constructed a model in order to analytically illustrate the mechanisms by which savings can affect economic growth. Among them, Greenwood and Jovanovic (1990) and Pagano (1993) presented a model in which both capital accumulation and growth are endogenously determined. In order to implement their analysis, let consider the simplest endogenous growth model of production function proposed by Pagano (1993), in which the output ( $Y_t$ ) is produced during the period ( $t$ ) by one factor, which is capital ( $K_t$ ):

$$Y_t = F(K_t) \quad (2.7)$$

According to Pagano (1993), for the sake of simplicity, let us assume that the population is stationary, and that the economy only produces one good which can be consumed or invested. If invested, it could depreciate at the rate of  $\delta$  per period. In order to understand

the assumption made by the model regarding the production of one good, let us assume for example that this good is maize, the investor can sell its maize production directly to the market (i.e. for it to be consumed) or can sell it before production, that is, the investor can sell the production of the time (t+1) at the time (t). If depreciation of the price of maize occurs, then the investor will lose. This is what the model refers to as  $\delta$ . Thus, gross investment, according to Pagano (1993), can be expressed as follows:

$$I_t = K_{t+1} - (1 - \delta)K_t \quad (2.8)$$

In a closed economy with no government, capital market equilibrium requires that gross savings ( $S_t$ ) equal investment ( $I_t$ ) i.e.  $S_t = I_t$ . For reasons that will be made clear in the analysis below, it is convenient to assume that a proportion  $(1-\phi)$  of flow savings is lost in the process. In this way, the only part of savings that can be allocated to investments is  $\phi S_t$ , thus:  $\phi S_t = I_t$

At the time (t+1), the growth rate is:

$$g_{t+1} = \frac{Y_{t+1}}{Y_t} - 1 = \frac{K_{t+1}}{K_t} - 1 \quad (2.9)$$

$$K_{t+1} = I_t + (1 - \delta)K_t \quad (2.10)$$

By replacing  $K_{t+1}$  with its value, one will then have:

$$g_{t+1} = \frac{I_t + (1-\delta)K_t}{K_t} \quad (2.11)$$

$$g = A \frac{I_t}{Y_t} - \delta \quad \leftrightarrow \quad g = A\phi s - \delta \quad (2.12)$$

The rate of growth ( $g$ ) is equal to the product of the marginal productivity of capital ( $A$ ), the rate of savings ( $s$ ) and the proportion of savings funnelled to investments ( $\phi$ ) minus  $\delta$ . From this model, one can then conclude that: firstly, unlike the Solow model, both saving and productivity of capital affect positively long term economic growth. Secondly, the remaining fraction  $(1-\phi)$ , which can be considered as a tax imposed by government in the form of reserve requirements, transaction taxes etcetera, as suggested by Roubini and Sala-i-Martin (1992), may also reflect the X-inefficiency of intermediaries and their market power. Thus, if one can reduce this leakage of resources, that is, raises the saving rate  $\phi$  in equation (2.12), it also increases the growth rate ( $g$ ).

### **2.1.3 Why understand economic growth?**

Economic growth which is an increase in real gross domestic product is essentially for an increase in a society's average standard of living (Raymond, 2008). Understanding the theory around economic growth is about explaining the sources of economic growth. What causes economic growth to increase? To increase the average standard of living of a society, members of that society must produce more goods and services in a given unit of time. In this regard, economic growth is being earnestly sought by every country, but not everywhere successfully. Therefore sources, process and dimensions of economic growth are some of the themes that preoccupy recent development economics research. There are many reasons for this. Concern for alleviating poverty which appears to be widespread in the developing world is one reason. As such researchers that examine endogenous growth and the policy seek to do so from a poverty-alleviating growth perspective. The general belief is that if we have a good understanding of sources of economic growth, the wider might benefit through achieving economic and socio-political development.

More recently, drawing on new and improved data, researchers have been re-examining the question of what drives long-run economic growth. Looking through the lens of history, experiences of economic growth have varied, so has its duration. In 1988, China's GDP was half the Russia's and in 1998 Russia's GDP was the half of China's (Tridico, 2006). In ancient China, Greece, Rome, and in the Ottoman Empire, growth first tapered off and then turned into decline (Pamuk, 2004). Subsequent to the transfer of wealth from the colonies, Spain experienced a very lengthy period of stagnation, with economic and political decline (Elliott, 1963; 1970). In essence, sustaining economic growth cannot be taken for granted. Some other studies analyze the consequences that growth has on various aspects of development and welfare. In this regard, experts suggest that countries that grow strongly and for sustained periods of time are able to reduce their poverty levels significantly, strengthen their democratic and political stability, improve the quality of their natural environment, and even diminish the incidence of crime and violence (Dollar and Kraay, 2002; Fajnzylber, Lederman, and Loayza, 2002).

An understanding of the causes of economic growth generates insights about what types of policies will be growth enhancing and what distortionary policies may block growth when these distortionary policies are adopted. Researchers focus may then be to critically scrutinize a broad spectrum of policies, such as public infrastructure, regulatory framework, direct government intervention in industrial policies and financial development. It is this last part which is the main focus of this study.

## **2.2 The functions of a financial system**

Sophisticated financial systems are now seen as a defining feature of the advanced economies – but this was not always the case. Economists’ understanding of the nature of the relationship between financial systems and economic growth has evolved over time. One of the earliest to write on this issue was Bagehot in his book *Lombard Street: A Description of the Money Market* (1873). At the height of British industrial power, he wrote that what separated England from “all rude countries” was the ability of its financial markets to mobilize savings to finance “immense works”. Bagehot was the first to define the two primary roles of financial markets. First, they facilitate the *accumulation* of capital. Second, they *manage risk* inherent in particular investment projects and industries.

Later other economists such as Schumpeter (1911) pointed out that financial intermediaries facilitate technological innovation by assembling savings, evaluating investment projects, monitoring managers and facilitating transactions. In the Schumpeterian model, banks create entrepreneurs, who carry out new combinations of production that lead to economic growth, as indicated in his statement that “the structure of modern industry could not have been erected without it [credit]... and in carrying out new combinations *financing* as a special act is fundamental necessary in the theory as a practice” (Schumpeter, 1911). By not only transferring existing purchasing power to the fund user, but also creating new purchasing power for financing production, banks act as the initiators of the economic development process. Thus, the main argument of Schumpeter was that financial development affect economic growth through

technological changes and this is better provide by banking institutions than stock markets.

Goldsmith (1969), McKinnon (1973) and Shaw (1973) later emphasised the role of capital accumulation in economic growth. In the McKinnon-Shaw model, a well-developed financial system mobilises savings by channelling small-denomination savings into profitable large-scale investments. According to them, these savings might not be available for investment without the participation of financial institutions, because mobilising savings of diverse savers is usually costly, due to the existence of information asymmetries and transaction costs. Financial institutions lower the cost of mobilising savings and also provide attractive instruments and savings vehicles, while offering savers a high degree of liquidity. Unlike Schumpeter, they did not distinguish between the banking sector and the stock market. According to them, both of them play an important role in the process of economic growth.

Although Schumpeter (1911), McKinnon (1973), Shaw (1973) and so on emphasised the positive role of financial development on economic growth, they failed to explain clearly the channel through which finance affects growth. Levine (1997, 1999) has been at the forefront of those who explained clearly this link. Levine's innovation was to consider financial services as affecting economic growth through five main channels, described below. By considering the functions of the financial sector in a comprehensive manner, Levine is able to demonstrate a significant role for financial markets that was not present in earlier models that used a narrower definition (e.g. Goldsmith, 1969). The impact on economic growth occurs through the following channels according to Levine.

### **2.2.1 It mobilises savings**

Savings mobilization is the most fundamental function of capital markets. Individual savers typically cannot fund borrower needs completely. Thus, mobilisation and pooling of savings involves the agglomeration of capital from disparate savers for investment, and doing this is costly. Without access to multiple investors, many production processes would be restricted to economically inefficient scales (Sirri and Tufano, 1995).

Mobilising the savings of many disparate savers involves (a) overcoming the transaction costs associated with collecting savings from different individuals and (b) overcoming the informational asymmetries associated with making savers feel comfortable about relinquishing control of their savings. Thus, financial sectors are more able than individuals to aggregate savings, because they provide financial products and services such as credit cards, cheque books, internet banking, etcetera, which offer the opportunity for households to hold diversified portfolios, thus enabling investors to diversify their investments and increase the asset liquidity of the overall economy.

In terms of the framework of the endogenous growth model above presented in equation (2.12), financial intermediaries increase the economic growth through: (i) collecting information in order to evaluate alternative investment projects; and (ii) inducing individuals to invest in riskier but more productive technologies by providing risk-sharing. Thus, savings channelled through financial intermediaries are allocated more efficiently, and the higher productivity of capital results in higher growth.

### **2.2.2 It facilitates risk management**

Investment is inherently risky owing to imperfect information and exogenous events. Theory demonstrates that portfolio diversification is the best means to minimize risk. Having pooled the savings of individuals, financial markets are able to diversify across a range of investments, thereby minimizing risk to return. Financial institutions enable entrepreneurs, investors and savers to diversify and reduce risk. Two types of risks can be involved, liquidity risk<sup>10</sup> and idiosyncratic risk.<sup>11</sup> Liquidity, according to Levine (1997), is the ease and speed with which agents can convert assets into purchasing power at agreed prices. Thus, a liquidity risk, according to the latter, arises due to the uncertainties associated with converting assets into a medium of exchange. Information asymmetry

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<sup>10</sup> A liquidity risk arises in a situation in which a party interested in trading an asset cannot do so because nobody in the market wants to trade such an asset. Such a risk becomes particularly important to parties who are about to hold or currently hold an asset, since it affects their ability to trade. Liquidity is a measure of the ease and cost with which an asset can be turned into money (or means of payment).

<sup>11</sup> An idiosyncratic risk is one that is unrelated to the overall market risk. In other words, it is a risk that is firm-specific and can be diversified through holding a portfolio of stocks. It is also termed unsystematic risk.



and transaction costs may make it difficult to liquidate assets, hence intensifying the said risk.

Financial intermediaries emerge to reduce market frictions such as information and transformation costs, and thus reduce risk of this nature. Besides reducing risk, financial intermediaries can mitigate the risks associated with individual projects. For example, a person with a large surplus of money can invest it in different financial instruments provided by the financial sector. For instance, by investing in different firms or in different sectors, the investor can significantly reduce firm-specific or idiosyncratic risks. Of course, the investor may not be able to reduce market risk without the presence of financial intermediaries.

Economists such as Diamond and Dybvig (1983), Saint-Paul (1992), King and Levine (1993b) and Bencivenga and Smith (1991) have recently modelled the emergence of financial markets in response to these risks and have also examined how these financial markets affect economic growth. Bencivenga and Smith (1991) presented a model in which individuals face uncertainty about their future liquidity needs. They can choose to invest in a liquid asset – which is safe, but has low productivity – and/or an illiquid asset which is riskier but has high productivity. In this framework, the presence of financial intermediation increases economic growth by channelling savings into the activity with the highest productivity, while allowing individuals to reduce the risk associated with their liquidity needs. Although individuals face uncertain liquidity needs, financial intermediaries, by the law of large numbers, face a predictable demand for liquidity, and can therefore allocate investment funds more efficiently.

Saint-Paul (1992) follows a similar route by arguing that a developed financial system enables increased specialisation in production through diversification of demand risks. A small household enterprise producing a simple good and using a general purpose tool is better equipped for sudden changes in the composition of demand. Thus, in the absence of a financial system which offers risk sharing, productive units prefer to hedge risks through their choice of a less specialised technology; hence, productivity remains low and

economic growth is impaired. Besides reducing liquidity risks, financial systems may also reduce information asymmetry.

### **2.2.3 It acquires information about investment opportunities**

It is difficult and costly to evaluate firms, managers and market conditions. Individual savers may not have the time, capacity or means to collect and process information on a wide array of enterprises, managers and economic conditions. What happens in most financial contracts is that borrowers have more information than lenders concerning the borrowers' projects, resulting in information asymmetry, which creates the problems of adverse selection and moral hazards. Savers will be reluctant to invest in activities about which there is little reliable information. Consequently, high information costs may prevent capital from flowing to its optimal use. Financial intermediaries can reduce information costs by acquiring and comparing information about many competing investment opportunities, in the interest of all their savers, thus ensuring that capital is efficiently allocated to the best projects. The informational role of financial intermediation has been related to productivity growth by Greenwood and Jovanovic (1990), among others.

### **2.2.4 It monitors borrowers and exerts corporate control**

Besides reducing the costs of acquiring information *ex ante*, financial contracts, markets and intermediaries may arise in order to mitigate the information acquisition and enforcement costs of monitoring firm managers and exerting corporate control *ex post*, that is, after financing the activity. Thus, after providing loans, financial intermediaries monitor borrowers so as to ensure that borrowers use the loans as they claimed they would, and depositors/savers must receive their money as agreed with financial institutions. A firm's owner, for instance, will establish financial agreements that compel firm managers to manage the firm in the best interests of the owners. Also, "outside" creditors: banks, equity and bond holders, who do not manage firms on a day-to-day basis, will establish financial agreements to compel inside owners and managers to run firms in accordance with the interests of outside creditors.

Financial intermediaries monitor the performance of enterprises on behalf of many investors, and encourage managers to perform well. Without the participation of financial intermediaries *ex-post*, managers could stray from the objectives of the enterprise on their behalf, and this could lead to the collapse of the enterprise. The absence of financial agreements that enhance corporate control may impede the mobilisation of savings from disparate agents, and thereby prevent capital from flowing to profitable investments (Stiglitz and Weiss, 1981). Besides monitoring *ex post* firms, a financial sector can also facilitate corporate control. As Merton and Bodie (1995:14) argued, the "*financial sector*"<sup>12</sup> also makes possible the efficient separation of ownership from management of the firm. This in turn makes feasible efficient specialization in production according to the principle of comparative advantage".

### **2.2.5 It facilitates the exchange of goods and services**

Just as the creation of money as a unit of exchange greatly simplified trade compared to the barter system, so too do financial markets facilitate trade. Financial markets support individuals as they “buy now and pay later”, which adds tremendous efficiency to the economy. In facilitating savings mobilisation and thereby expanding the production technologies available to an economy, financial agreements that lower transaction costs can promote specialisation, technological innovation and growth. It is widely argued that transaction facilities, specialisation and innovation are positively related to the improvement of the productivity of goods and services. As Smith (1776:7) argued, the division of labour – specialisation – is the principal factor underlying productivity improvement. Thus, with greater specialisation and innovation, workers are more likely to create better machines or products. As Smith argued, the lower the cost of transactions the greater will be the specialisation, because specialisation requires more transactions than an autarkic environment. More recently, economists such as Greenwood and Smith (1997) have attempted to explain the relationship between exchange, specialisation and innovation. According to them, more specialisation requires more transactions, because each transaction constitutes a costly financial arrangement. Therefore, lower transaction costs will facilitate greater specialisation.

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<sup>12</sup> Word added by the present study.

### 2.3 The link between financial development and the real sector

The theoretical evidence that financial sector development fosters economic growth has been accumulating over many decades. Although Schumpeter (1911), McKinnon (1973), Shaw (1973) Goldsmith (1969), Levine (1999) and proponents of their view came with a clear understanding of the role of financial development on economic growth, they did not provide a clear explanation of the transmission of financial development to the real sector of the economy. Recently others researchers translate these abstract link between financial development and economic growth into concrete channels. It is widely acknowledged that the real sector of the economy includes household consumption, investment, trade (exports and imports) and government spending which is usually expressed as:

$$Y_t = C_t + I_t + (X_t - M_t) + G_t \quad (2.13)$$

Where

$Y_t$  is the gross domestic product,  $C_t$  is household consumption,  $I_t$  is domestic investment  $X_t$  stands for exports,  $M_t$  for imports and  $G_t$  is government spending. Thus, anything that can increase household consumption, investment, trade and government spending will definitely have a positive effect on the real sector of the economy.

#### 2.3.1 Financial development improves household consumption

Consumption is normally the largest GDP component. Many researchers judge the economic performance of a country mainly in terms of consumption level and dynamics. Consumption may be divided according to their durability of the purchased objects. Thus household consumption includes goods and services. One can distinguish durable goods (such as cars, television, and etcetera) from non-durable goods (such as food). Households demand for services include spending in health, education, and house among other. By mobilising households' savings, financial development enables households to purchase essential assets such as houses, start their businesses, insure them against income shocks, enjoy remittances and so on. Thus, financial development improves household welfare.

As argued by Claessens and Feijen (2006) financial development and household expenditure are highly correlated. According to them, although causality between financial development and household consumption is less clear than in the case of income, there is evidence that financial development is a leading indicator for increases in household consumption. They prove this by estimating the elasticity of household consumption with respect to private credit over a period 1980-2004. They conclude that if private credit increases by 1.6 percent annually in the next 10 years, world household expenditure would be range between 1.1 and 3.6 percent, which is higher than the current level (Claessens and Feijen, 2006).

### **2.3.2 Financial development increases investment**

Besides increasing the household welfare financial development also increases investment through the allocation of capital to private sector. As we all know access to finance is important for firms. According to the study conducted by the World Bank (2000) in 80 developing and developed countries the second leading constraint on doing business after taxes and regulation is finance. However, Batra *et al* (2003) ranked the lack of finance as the main constraint in Africa and China. Furthermore, using the World Business Environment Survey (WBES), recent research concludes that finance is the most important constraint on firm growth (Ayyagari et al, 2005).

Other studies that focus on this relationship include Rajan and Zingales (1998), Perotti and Volpin (2005) who found that the number of firms in an industry grew disproportionately faster in counties that have better financial development and also the number of firms in sector that are more dependent on external finance grows 0.7 faster in countries with better financial development. Furthermore, Black and Strahan (2002) in their study found that the odds of an individual starting business increase with 5.6 percent were that individual to move to a financially more developed region. However Guiso *et al* (2004) concluded that GDP is 1.2 percent higher in financially more developed regions. Thus with greater access to finance firm can growth faster.

As mentioned in the theoretical part above, financial intermediaries such as banks, stock market and so on are more able than individual to accumulate and efficiently allocate such a resources to disparate inventors. Moreover with their ability of monitoring investment, they also improved the efficiency of firms. Furthermore financial intermediaries facilitate better risk-sharing and as consequence investors are more willing to put their money in high-risk, high return projects as suggested by Bencivenga and Smith (1991) and Saint Paul (1992).

### **2.3.3 Financial development improves trade**

According to Claessens and Feijen (2006) the gains from better transaction services through more developed financial system can be large. By facilitating transactions, financial development improves trade at the national and international levels, because the easier it is to make reliable financial transaction, the friendlier is the trading environment (Claessens and Feijen, 2006). Beside this, financial intermediaries with their products such as credit cards, debit cards and so on also facilitate domestic and international payment service. It allows people, especially business men and women, from not carrying around huge amounts of money and enables convertibility between currencies, and the settlement of international payments. This also facilitates trade. For example, without the presence of financial intermediaries it will be difficult for developing countries to participate in world trade because their currency are not popular nor convertible compared with international currencies like the dollar, pound or euro.

Furthermore, a study conducted by Humphrey et al (2001) on the different types of payment system, suggested that many countries even the developed ones are still largely using paper-based system, when they can easily benefit from electronic payment system. According to them, United States for example would have saved between 1 and 1.5 percent of their GDP if they migrated from a paper-based to a well functioning electronic payment system. Beck (2003) however, found that an industry in a country with higher levels of financial development has higher export shares and trade balance in industries that use more external finance.

### **2.3.4 Financial development improves public sector development**

Determination of total government spending and its patterns is complex and may include many factors, such as fiscal conditions and political, cultural and economic factors. Governments of developing countries typically spend resources equivalent to between 15 and 30 percent of their GDP (Herrera and Pang, 2005). Hence, small changes in the efficiency of public spending could have a significant impact on GDP and on the attainment of government's objectives. On average, developing countries spend much less than developed countries. For example, total government outlays as a percentage of GDP in Organisation for Economic Cooperation and Development (OECD) countries range from 27 percent in 1960 to 48 percent in 1996 (Gwartney et al, 1998), compared to 13.35 percent in most developing countries. This low public spending might be explained by the underdevelopment of their financial sector.

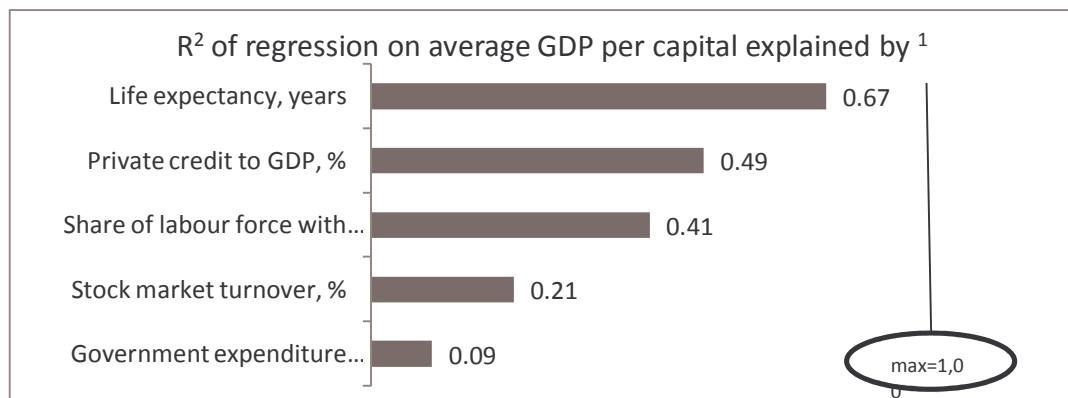
According to Claessens and Feijen (2006), a large and liquid government bond market could enable the government to raise cheap capital to finance its budget and invest in key infrastructures. This is quite true if these finances are efficiently used by government, if not it can lead to financial crisis. Evidence suggests that in most developing countries it is misused. In addition, mature government bond market can prevent crowding out of private investments in the banking sector. At the same time, active bond market can discipline profligate government, thereby reducing the risks of a fiscal crisis and its adverse consequences on the population (Claessens and Feijen, 2006).

### **2.3.5 The extent to which finance is important for growth**

Thus, from all these arguments, it is clear that little doubt remains that finance is one of the most important drivers of economic growth. In order to empirically prove this Claessens and Feijen (2006) in their studies tested the impact of a large number of variables on economic growth, using the ratio of credit to private sector as indicator of financial development the latter found that almost 50 percent of the variation in GDP per capita across countries can be explained by the variation of private credit to GDP. In their

analysis they ranked financial development as second among variables that are known for their substantial impact on GDP per capita (Figure 1).

Figure 1: Financial development has high explanatory power on per capita GDP, 1980-2004



Variables are logs of average for the period 1980-2004

Source: Claessens and Feijen (2006). World Bank Working paper number 89

Thus the channel through which finance can positively affect economic growth has been clearly identified in Figure 1. Financial development can also impact economic indirectly. This is discussed in the next section.

## 2.4 Indirect impact of financial development to economic growth

### 2.4.1 Financial innovation and economic growth

According to Scott and White (2002), financial innovation represents something new that reduces costs or risks, or provides an improved product, service and/or instrument that better satisfies participants' demands. Such innovation may involve inventing new products, modifying existing products, or combining features of several existing products (e.g. adjustable mortgage rates, exchange-traded index funds). Besides new financial products, these innovations also encompass new services (e.g. online securities trading), new production processes (e.g. electronic credit scoring) and new organisational forms (e.g. new types of electronic exchange for trading securities). Financial innovations may be motivated by a need to hedge some new economic risk, a new regulation, a change in fiscal and monetary policies, a need to lower transaction costs, a desire to reduce agency



costs caused by asymmetric information, or a desire of enterprises to increase profits. Thus, financial innovation functions to complete inherently incomplete markets.

The financial services industry is among the largest purchasers of information technology software and hardware in the economy, which helps drive the process of innovation and the dissemination of technology throughout the other sectors of the economy (Gordon, 2003). This was clarified by McKinnon (1973), when he argued that “without access to it [access to credit provided by the financial system], the constraint of self finance sharply biases investment strategy towards marginal variations within the traditional technology”.

In a similar line Tadesse (2005) argued that financial development explains the cross-country difference in industry rate of technological progress. In addition he concluded that the financial development has a significant impact on R&D expenditure through the credit to the private sector. Claessens and Feijen (2006) in their study found evidence that if Mexico had increased its private credit from 27.7 percent to 59.6 percent, it would have boosted its R&D expenditure with almost 0.36 percent a double its actual level. Thus financial development leads to technological innovation.

#### **2.4.2 Finance is associated with the millennium development goals (MDG)**

Besides spurring the technological progress financial development also helps in achieving key millennium development goals, which are reduction in poverty, undernourishment, attainment of gender equality and improved access to health and education. The relationships between financial development and the MDG goals have not been much researched to date. The few works that have focused on this generally conclude that financial development can help in achieving the MDGs. For example Claessens and Feijen (2006) found that there is a positive relationship between financial sector development and these MDGs, with some evidence of causal relationships, although the quality of data does not allow for strong tests. Supporting case study evidence—using household surveys and specific interventions—suggests, however, that there are beneficial causal impacts of financial development on these MDGs, as well (Claessens and Feijen (2006). Furthermore, Honohan (2004), in his study, suggested that 10 percent

increase in private credit to GDP reduces poverty ratios by 2.5 to 3 percent. This finding implies there is much to gain from financial sector development.

The channels through which finance helps economic development have been clearly identified: greater private sector development, increases in productivity and capital accumulation, improvements in competition and innovation, and greater risk-sharing and lower volatility. The evidence also shows that the benefits from greater financial sector development can come from all forms of financial intermediation such as banks, capital markets among other.

The main question to be asked is the following: Is this positive impact of financial development on economy the result of a high growth of economy or the reverse? In other words, does financial development lead to economic growth? Or it is the other way round? Could economic growth result in higher demand for capital and financial services inducing financial development? If true financial development would be less important to promote growth since it merely follows where economic growth leads, this is the main idea of Robinson (1952) and prominent of his view.

## **2.5 Growth is good for financial development**

Although plausible, the importance and correlation between financial sector development and economic growth is not the only possible description of reality, since growth can also be good for finance. Indeed, many well-known scholars, including Robinson (1952) and Ireland (1994), have long rejected this hypothesis on purely theoretical grounds. In their view, a lack of financial development is simply the manifestation of a lack of demand for financial services. As the real sector of the economy expands, the demand for various financial services increases, and will thus be met by the financial sector. Robinson (1952) argued that financial development follows growth, and articulated this causality argument by suggesting that "where enterprise leads finance follows" (p. 86).

Theoretical support for this view can also be found in the work of Friedman and Schwartz (1963) with regard to the demand for money. According to these two authors, the ratio of

broad money stock to nominal gross domestic product (GDP), which is a standard measure of financial development, is also the inverse of the velocity of circulation of broad money stock. One can formulate this mathematically as the quantity theory of money in the following way:

$$MV = PQ \quad (2.14)$$

Where M = amount of money in circulation in the average economy

$V_t$  = velocity of money for all transactions

And PQ = the nominal national or domestic product.

Equation (2.14) could also be written as:

$$V_t = \sum_{t=1}^n P_t Q_t / M \quad (2.15)$$

With

$$Y = \sum_{t=1}^n P_t Q_t \quad (2.16)$$

Thus, equation (2.15) means that:

$$V_t = Y/M \quad (2.17)$$

Hence, according to Friedman and Schwartz's view, a positive correlation between the level of financial development and real GDP ( $M/Y$ ) may be due to a downward trend in the velocity ( $1/V$ ) of money in circulation. If this is true, then the positive association between financial development and real GDP per capita may reflect income elasticity in the demand for money with respect to any income which is greater than 1. Thus, according to this argument, there could be a relationship between financial sector development and economic growth, but with the causality running from economic growth to financial sector development rather than the reverse.

## 2.6 Conclusion

From the preceding review, while conclusions must be drawn with caution and only with ample justification, it is clear that financial sector development plays a significant role in explaining economic growth. From the growth theory proposed by Max (1867), Weber (1905), Harrod (1946), Domar (1939), Solow (1956) and the endogenous growth model, one can note that financial development (materialised as saving) was always considered as source of economic growth, even if, it was not the main focus in some model such as the Max, Weber and Solow model. The proponents of finance development have been based on those models of economic growth in order to prove that finance positively affects the real sector of the economy. These economists are Schumpeter, (1911); Goldsmith, (1969), McKinnon, (1973) Shaw, (1973) and so on. Although they provide a mechanism by which finance can impact economic growth, they were not as clear as Levine (1997, 1999), who came out with five channels through which financial services provide by financial intermediaries affect the economic growth. Thus, financial institutions develop out of the need to deal with transaction costs and overcome information problems (Levine, 1997). They influence the real economy by enhancing capital accumulation and innovation. Capital accumulation as an endogenous determinant of real growth is in line with the traditional (neo-classical) growth theory.

There is a correlation between the growth of financial and real sectors; and wherever the financial sector growth rate exceeds than the growth rate of other real sectors, the appreciations in financial sector might start eating up economic growth potentials of other sectors.

However, other prominent economists such as Robinson (1952), Ireland (1994) and Friedman and Schwartz (1963) do not share this view, suggesting that it is economic growth that stimulates financial development. According to them, financial development is the result of growth in the real economy. Economic development creates a demand for particular types of financial arrangements, and the financial system responds automatically to these demands.

If these opposing theories are a correct representation of reality, then policy efforts to promote financial development will be premature, and will in fact amount to a waste of scarce resources. However, if the opposite theory is not correct, policy-makers should focus attention on the creation and promotion of modern financial institutions, including banks, non-banks and stock markets, in order to promote genuine and enduring economic growth. The literature review will also help one to understand the relationship between financial sector development and economic growth from a theoretical perspective. The term "theoretical" is used to describe a result which has been predicted by theory but has not yet been adequately tested: in order to obtain a clearer idea about the importance of the financial sector, one must consider the results of empirical studies that have been conducted in the field. The next chapter of this study will be devoted to this.

## CHAPTER THREE

### EMPIRICAL LITERATURE REVIEW

#### 3.0 Introduction

Having reviewed the salient theories underlying the effect of financial sector development on economic growth, it is important for this study to review some significant research that has been conducted in the field. This is in order to determine if the theory reflects the reality - in other words, to determine if the importance of financial sector development for economic growth, as suggested by the theory, can be verified in practice when examining the situation in developing and developed countries. Building on work by Schumpeter (1912), Shaw (1973), Goldsmith (1969) and McKinnon (1973), recent research has used different econometric methodologies and data sets to assess the role of the financial sector in stimulating economic growth. Without criticising them, this study will list and group them according to their findings. For every group, the data, sample period, countries used, dependent variables, independent variables and econometric models will be discussed, with a few remarks on each.

As with the theoretical aspect, there is also disagreement about the link between financial development and economic growth on the empirical side. While some studies have focused on testing the relationship between and mechanisms by which financial development affects growth, others, however, have been interested in examining the real direction of causality between the two variables. Other studies have instead aimed at determining which financial institution most explains economic growth. There are various types of questions that empirical studies have attempted to answer in order to determine if finance and economy growth are related, and if it could be beneficial for a country to undertake financial sector development as a policy to predict the increase in economic growth. This chapter has the objective of providing a review of the most relevant research with regard to the importance of finance for economic growth. It is important to review the empirical literature, because this helps the research community and academics to choose the best data and methods when studying the importance of and

relationship between financial sector development and economic growth. It could also help policy-makers to decide which policy is best for the economy or, in other words, to determine what benefits they can gain in terms of economic growth if they direct their policy at enhancing or developing the financial sector. An empirical literature review also provides an explanation for the large gap that exists between developed and developing countries, which is a key area of debate in economic literature.

The remainder of this chapter is divided into four sections. Section 3.1 will review the research that has focused on explaining the mechanisms by which the financial sector affects economic growth. It is important for this study to review these empirical studies in the beginning, because relationship between two variables in economic terms is significant. A correlation describes the strength of an association between two or more variables. An association between variables means that the value of one variable can be predicted, to some extent, by the value of the other. Thus, if economic growth and financial development are related, then one can affect or predict the other.

After reviewing this relationship, it is important for this study to review those studies that have focused on the causality between financial development and economic growth, because relationship does not imply causality. This means that a relationship cannot be used to infer a causal relationship between two variables. For policy purposes, it is important to determine, between two variables that are related which variable causes the other. Section 3.2 will thus focus on studies that attempt to determine the real direction of causality between financial development and economic growth. The causality between financial development and economic growth will help us to determine which variable can be used as an instrument to predict the other. In other words, whether (or not) financial development causes economic growth.

Other studies, however, believe that the causality between financial sector and economic growth depends on the structure of the financial sector. Thus, section 3.3 will deal with those studies that have focused on the type of financial institution that most explains economic growth in other words, is the banking sector more important than stock

markets in the process of economic growth, as Schumpeter suggested, or the reverse? The last section will conclude the chapter with a few remarks.

### **3.1 Relationship between finance and economic growth**

Table 1 below provides a summary of some empirical studies that have been conducted regarding the relationship between financial development and growth, and the mechanism by which the former affects the latter. These studies mainly investigated financial sector development in developed and developing countries in Latin America, Asia and Africa. The data used in these studies, for the most part, originated from various sources, such as the International Financial Statistics (IFS) Yearbook, World Bank indicators, and in some cases, the central banks and commercial banks of countries studied, and these data covered the period from 1860 to 2001. Thus, studies reviewed in Table 1 have mostly used sample countries superior or equal to each other at 30 ( $n \geq 30$ ), except the ones conducted by Jeannery, Hua and Liang (2006), Allen and Ndikumana (2000) and Al-Award and Harb (2005), who used 1, 12 and 10 countries respectively, and focused on either developed or developing countries, but not both of them.

The most common econometric model used is the cross-country regression, especially for studies conducted before 2000, and those studies have focused on developed and developing countries. However, they are a little bit old in terms of the period covered, since for the most part, this period is from 1960-1985. Therefore, studies conducted after 2000 covered a more recent period (1960-2001). They have mainly investigated developing countries and have almost always used cross-sectional regression. However, some of these studies used, in addition to cross-sectional regression, other models such as panel techniques, time-series techniques and generalised method of moment (GMM). Thus, their regression all the studies in Table 1 have used (for the most part) one indicator of economic growth and various indicators of financial development as dependent and independent variables respectively. Real per capita gross domestic product (GDP) growth was the most common indicator of economic growth, and in some cases, studies have added to it the ratio of gross national investment to GDP, productivity growth and the growth rate of the GDP deflator to measure inflation.



Table 1: Financial development only affects economic growth through raising investment efficiency

Authors	Sample	Sample period	model	Dependent variables	Independent variables	Result
Goldsmith (1969)	35 countries	1860	Cross sectional regression	-Real per capita GDP growth	-domestic credit to GNP	Rough correlation between financial development and economic growth
King and Levine (1993a)	77 for average values 57 for initial values of depth variables	1960-1989	Cross sectional regression	-Real per capita GDP growth -Growth in capital stock -Productivity growth -Investment share (of GDP)	-The ratio of liquid liabilities to GDP, -the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets. -the ratio of claims on the nonfinancial private sector to total domestic credit (excluding credit to money bank) -The ratio of claims on the non-financial private sector to GDP	-significance of all coefficients in cross-sectional regressions -initial data: initial values of depth also highly significant in cross-sectional regressions. -in pooled cross-sectional time series regressions, also strong significance for all four financial indicators. - only private has weaker significance
King and Levine (1993 b)	92, case studies: Chile, Korea, Philippines, Argentina, Indonesia	1960-1989	cross-section	-real per capita GDP growth -growth in capital stock -productivity growth -investment share (of GDP)	-the ratio of liquid liabilities to GDP. -the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets. -credit issued to private enterprises divided by credit issued to central and local governments plus credit issued to public and private enterprises. -credit issued to private enterprises divided by GDP.	Initial and average values of depth significant in cross-sectional regressions. all financial indicators significant in three-stage regressions (refinement of King/Levine 1993 a) case studies: financial sector reforms lead to higher level of financial development
King and Levine (1993c)	64-88 very rich, rich, poor, very poor countries	1960-1989	Cross-sectional regression	-real per capita GDP growth -growth in capital stock -productivity growth -investment share (of GDP)	the ratio of liquid liabilities to GDP. -the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets. -the ratio of claims on the nonfinancial private sector to total domestic credit (excluding credit to money bank) -The ratio of claims on the non-financial private sector to GDP	-initial and average value depth significant in cross sectional regression -all financial indicators in three stage regression (refinement of King and Levine 1993a) case studies: financial sector reforms lead to higher level of financial development
De Gregorio/ Guidotti (1995)	100, countries 12 Latin American countries	1960-1985 1950-1985	Cross-section	-real per capita GDP growth	-credit (domestic credit to the private sector / GDP)	-whole sample: positively related, primarily through increased efficiency instead of volume of investment. -subsamples: impact of financial development increases significantly from high to low income countries. -Latin America: credit significantly negatively related to growth because of liberalisation in poor regulatory environment
Ndikumana (2000)	30 sub-Saharan Africa countries (SSA)	1970- 1995	a dynamic serial-correlation investment mode)	-real per capita gross domestic product (GDP). - GNP per capita; -total gross domestic investment; - Private investment as a percentage of GDP; -the growth rate of the GDP deflator (base 1987).	-liquid liabilities. - Total credit to the private sector. -total domestic credit provided by the banking sector as a percentage of GDP. -Claims on government and other public entities as a percentage of GDP, -composite index	Financial factors are important determinants of domestic investment in sub-Saharan Africa, and financial development may affect long-term economic growth by facilitating the allocation of resources to investment activities.
Trabelsi (2002)	69 developing countries	1960-1990	Cross sectional and pooled cross-sectional time-series regression	-real per capita GDP growth rate (Gy), -the rate of gross national investment to GDP.	The ratio of the money stock to nominal GDP.	-the development of the financial sector only seems to affect growth only with cross-sectional estimates -Regressions carried out using panel data do not give any empirical support to the correlation between finance and growth. -The financial sector affects economic growth mainly through an increase in investment efficiency.
Jeanneney ,Hua and Liang (2006)	China	1993 - 2001	generalised method of moment (GMM)	-The growth rate of total factor productivity; -The growth rate of technical efficiency; -The growth rate of technical progress	-the ratio of deposits in China's financial institutions to GDP, -the ratio of loans in China's financial institutions to GDP, -the ratio of money and quasi-money (M2) to GDP	-Financial development significantly contributes to China's total factor productivity (TFP) growth. Thus financial development enhances China's productivity mainly through increasing efficiency
Levine et al 2000	74 developing countries 71 countries	1960-1995 1960-1995	Recent dynamic panel techniques (GMM) cross-sectional regression	-real per capita GDP growth,	-liquid liabilities/GDP - Ratio of commercial bank assets divided by commercial bank plus central bank assets - Private credit /GDP	-The exogenous component of financial intermediary development is positively associated with economic growth. -The findings suggest that legal and accounting reforms that strengthen creditor rights, contract enforcement, and accounting practices can boost financial development and accelerate economic growth. - The paper suggested that the finance-growth nexus runs primarily through total factor productivity growth and not through savings and physical capital accumulation.
Al-Award and Harb (2005)	10 Middle Eastern and North African countries	1969-2000	Panel co-integration , time series	-Real GDP,	-the ratio of private credit to the monetary base, -Real M1/GDP. -real government spending is used	-The results indicate that in the long-term, financial development and economic growth may be related on some level, as suggested by the panel co-integration tests - Time series methodologies support the findings of a strong relationship between financial development and real economic growth in the region, but they fail to clearly establish the direction of causality.
Allen and Ndikumana (2000)	12 SSA countries (SADC)	1970-1996	Pooled cross-sectional regression	-Real GDP growth	-Liquid liabilities M3, -volume of credit provided by bank/GDP, -credit to private sector/GDP	Positive correlation between financial development and growth of real per capita when using M3, but weak relationship when using the other variables

In terms of indicators of financial development, the most commonly used are the ratio of liquid liabilities to GDP (in some studies, when M3 was not available, they used M2), followed by the ratio of credit to private sector to GDP, and the ratio of domestic credit provided by financial intermediaries (especially banks) to GDP.

Using the abovementioned methodologies, studies in Table 1 have provided various results. Studies that used cross-sectional regression model, namely Goldsmith (1969), King and Levine (1993 a, b, c) and De Gregorio and Guidotti (1995), found that all the indicators of financial development were significantly and positively related to economic growth in developed and developing countries. Those that used generalised methods of moment, such as Jeanneney, Hua and Liang (2006) and Levine et al (2000), also support these findings, whereas studies that used pooled cross-sectional regression provided a somewhat ambiguous result.

Trabelsi (2002), when conducting his study of 69 developing countries over the period 1960-1990, using both cross-sectional and pooled cross-section time-series regressions, found that the development of the financial sector only seems to affect growth with cross-sectional regression, while regressions carried out with panel data do not provide any empirical support for the relationship between finance and growth. Furthermore, Allen and Ndikumana (2000), who used only pooled cross-sectional regression on 12 sub-Saharan African countries over a more recent period 1970-1996, concluded that there is only a positive relationship between financial development and economic growth when the ratio of liquid liability to GDP is used. When other indicators such as the ratio of volume of credit provided by bank to GDP and the ratio of credit to private sector to GDP are used as proxies of financial development, the relationship becomes weak.

However, according to all the studies reviewed in Table 1, finance and economic growth are positively related, and the mechanism by which the former affects the latter is by increasing the productivity of investments, and not by savings and physical capital accumulation. With regard to the findings of studies in Table, 1 this study agrees with Schumpeter (1911) and Goldsmith (1969) that the main mechanism by which financial

development affects growth is by increasing the productivity of capital. At the same time, many other studies have been conducted along the same lines as the previous one, but they provided mixed results. Table 2 below summarises these studies.

Using different models and more recent data, studies reviewed in Table 2 provide different results to the previous one in terms of the mechanism by which financial development affects economic growth. Most of these empirical studies were conducted in both developed and developing countries. These studies mostly covered a larger sample of countries ( $n > 30$ ), with the largest being 109 countries and the smallest being the one conducted by Benhabib and Spiegel on four emerging countries. The data employed in these studies was collected from the early 1960s to late 1997, and they used various types of models. Among the Geweke decomposition test, panel regression, cross-country regression and pooled cross-sectional regression, the most commonly used method was the generalised method of moment.

For the most part, the dependent and independent variables used to process their regression are the indicators of financial development and economic growth, and some indicators of other sectors of the economy, such as trade etc. Thus, in these studies, real per capita GDP growth is the most common indicator of economic growth, and financial sector development was measured by the ratio of credit to private sector to GDP and the ratio of broad money to GDP. Certain studies, however, included other indicators to measure certain sectors in the economy, in order to see if their result would remain strong when controlling some indicators of macroeconomic performance.

Thus, Calderon and Lui (2003) included as dependent variables things such as human capital, trade, government size, inflation rate and the black-market, while Levine (1992) and Rioja and Valev (2004) regarded them as independent variables. Rajan and Zingales (1998) however, included the exchange rate, index of industrial production and the producer price. Levine (1998) introduced other less commonly used indicators of financial development. He used certain legal indicators of the banking sector such as credit rights, contract enforcement, and so on.

Table 2: Financial development affects economic growth by increasing investment efficiency and capital accumulation

Authors	Sample	Sample period	Econometric model	Dependent variables	Independent variables	Result
Calderon and Lui (2003)	109 industrial and developing countries	1960-1994	Geweke decomposition test	-The real GDP per capita growth - included human capital, -initial income level, -government size, - black-market etc	-The ratio of broad money (M2) to GDP (M2/GDP)  -The ratio of credits provided by financial intermediaries to the private sector to GDP.	-Financial development enhances economic growth for all countries -Financial development has larger relative effects in less-developed economies than in more developed ones. -Financial development may enhance economic growth through both more rapid capital accumulation, and technological change, although it appears that the productivity channel is stronger.
Ndikumana (2005)	99 developing and developed countries	1965-1997	Panel data regressions and Cross-sectional regressions	-The ratio of gross domestic investment to GDP	liquid liabilities, credit to the private sector, net domestic credit, and bank credit, each as percentage of GDP; and the ratio of banks' assets as a percentage of the sum of banks' assets plus the assets of the central bank	This implies that financial development facilitates domestic investment to the extent that it is accompanied by an increase in the supply of funds to investors
Levine (1998)	44 developed and developing countries	1982-1995	GMM	-GDP and per capita GDP -stock growth, productivity growth	Credit to private sector/GDP,  Legal indicators as instrumental variables to extract the exogenous components of banking development, such as creditor rights.	-Countries with legal systems that rigorously enforce laws and contracts have better- developed banks than countries where enforcement is more lax. -The paper found that the exogenous component of banking development—the component defined by the legal environment— is positively associated with economic growth. -There is a relationship between banking development, accumulation of capital and productivity improvement.
Benhabib and Spiegel (2000)	Argentina, Chile, Korea and Indonesia	1965-1985	GMM	-GDP	-deposit money bank domestic assets/deposit money bank domestic assets +central bank domestic assets; -M2/GDP; -credit issue to private enterprise/GDP; -physical and human capital accumulation	-financial development affects both the rate of investment and total factor productivity growth -the liquid indicator and the ratio of financial assets of the private sector to GDP positively affects the growth after accounting the rate of factor accumulation -financial development has a positive influence on total factor productivity growth and rate of factor accumulation.
Rioja and Valev (2004)	74 countries	1966–1995	GMM	-GDP growth, -Initial income per capita,	Average years of secondary schooling, Private credit commercial – central bank Liquid liabilities, -government size, -Openness to trade, -Inflation rate, -Black market premium	-Financial development significantly impact on growth in the middle and high regions. -in low countries, finance may have a neglect effect on growth
Levine (1992)	87 countries	1960-1989	Pooled cross-sectional , and Time-Series Regression	-The initial level of real GDP per capita,  -dummy variable for countries from Sub-Saharan Africa,  -Dummy variable for Latin American countries.	-The ratio of M3 to GDP, - credit issued by deposit money banks divided by credit issued by the central bank, -credit issued to private enterprises divided by credit issued to central and local governments plus public enterprises plus private enterprises.	Financial intermediary services are significantly related to the rate of economic growth, and there is some evidence that financial services stimulate economic development. Financial institutions raise the portion of total savings devoted to investment, and avoid premature liquidation of capital. Banks, stock markets, and investment banks enhance growth by promoting the efficient allocation of investment through various channels.
Beck et al (2000)	63 countries  77 countries	1960-1995  1971-1995,	Cross-country regressions  Dynamic panel techniques	-The rate of real per capita GDP growth, -the aggregate real investment, -the level of total factor productivity - the capital share	-The value of credits by financial intermediaries to the private sector divided by GDP, -liquid liabilities, -the ratio of commercial bank domestic assets divided by commercial bank plus central bank domestic assets, -credits by deposit money banks to the private sector as a share of the GDP.	The paper finds an economically large and statistically significant relationship between financial intermediary development and both real per capita GDP growth and total factor productivity growth. -This paper's results support the view that better functioning financial intermediaries improve resource allocation and accelerate total factor productivity growth, with positive repercussions for long-term economic growth.
Rajan and Zingales (1998)	41 countries	1980-1990.	cross-country regression	The average annual real growth rate of value added in industry; The Gross Domestic Product, the Producer Price Index, the exchange rate, and the Index of Industrial Production	-the ratio of domestic credit plus stock market capitalisation to GDP. -the accounting standards in a country.	-financial development has a substantial supportive influence on the rate of economic growth. - Industries that are naturally heavy users of external finance grow relatively faster in economies with higher levels of financial development. Because these industries are usually R&D-intensive, in which more advanced technologies are used or new technologies are created, financial development might therefore contribute to productivity growth through providing necessary financial support to the development and expansion of these industries. - Financial market imperfections have an impact on investment and growth.

Despite the fact that the indicators of financial development and economic growth used in Table 1 and table 2 are almost the same, they provided mixed results. The empirical evidence in Table 2 further indicates that financial development and economic growth are positively related and that financial intermediaries stimulate growth through the more rapid accumulation of capital and the increasing of investment productivity. However, certain studies in Table 2 have provided other interesting results.

While some studies supported the view that financial development has a greater effect on developing economies than developed ones, other studies suggested the reverse. Calderon and Lui (2003) used a sample of 109 developed and developing countries over the period 1960-1994, in order to investigate the relationship between finance and growth. Using the Geweke decomposition test, they found that financial development has a greater effect on less developed countries than in more developed ones. On the other hand, Rioja and Valev (2004), when using the GMM on 74 countries over the period 1966-1995, found that financial development significantly affects growth in middle and high economies, whereas in low income countries, finance may have a negative effect on growth.

Furthermore, Rajan and Zingales (1998) found that industries that heavily depend on external finance grow relatively faster in economies with a higher level of financial development. Levine (1998) indicated that countries in which the legal system emphasises creditor rights and rigorously enforces contracts have better-developed banks than those in which laws do not give a high priority to creditors, and where enforcement is lax. Furthermore, he concluded that the exogenous component of banking development i.e. the component defined by the legal environment, is positively and robustly associated with per capita growth, physical capital accumulation and productivity growth.

Although, studies in Tables 1 and 2 have a different view on the mechanism by which financial development affects economic growth, the recommendation is that countries can benefit from encouraging a balanced expansion of their financial systems. While studies reviewed in Table 1 and 2 show that the level of financial development is a good predictor of economic growth, these results do not resolve the issue of causality. Other

studies, however, have used more recent data and different methods to investigate both the relationship and causality between financial development and economic growth.

### **3.2 The direction of the causality between finance and economic growth**

Having concluded that there is a strong relationship between finance and growth, other studies, however, have found it interesting to examine the real direction of causality between the two variables. A large number of studies, unlike those mentioned above, are relevant in terms of answering the question first asked by Patrick (1966): In what direction does the causality between finance and growth run, and at what stage in the development process does which causality prevail? One can divide those studies into three categories: those suggesting finance-led growth, growth-led finance and a bi-directional causality.

#### **3.2.1 Finance-led growth**

The finance-led growth hypothesis postulates a supply-leading relationship between financial development and economic growth. A number of studies have suggested that financial sector development is not only a good predictor, but also a leading factor in economic growth. Amongst others, this study has selected some relevant studies conducted in this regard, and has summarised them in Table 3 below. From this table, one can conclude that most of these studies are recent, and that they have focused mostly on developing countries in Africa, Asia, America and a few studies on developed countries. The sample period covered a much longer period, i.e. from 1960 to 2007, and the most commonly used econometric model is the time-series technique. While some studies used a multivariate vector autoregressive model, others used a bivariate one, and only one study used a different model, namely the generalised methods of moments.

Table 3: The finance-led growth hypothesis

Authors	Sample	Sample period	model	Dependent variables	Independent variables	Result
Odedokun (1996)	71 developing countries	1960-1980	Time series analysis	-Real GDP growth	-Depth (liquid liabilities over GDP) multiplied by growth rate of real liquid liabilities (=M3\GDP growth of M3) M2 used where M3 was not available	Positive and significant relationship in 45% of panel countries, positive and insignificant relationship in 39% of panel countries , significant especially in low income countries LDCs
Xu, Z (2000)	41 countries	1960-1993	Multivariate VAR	-Real GDP growth  real domestic investment ,	-ratio of liquid liabilities of the formal financial intermediaries to GDP, - the ratio of total bank deposit to GDP  -Ratio of liquid liabilities of the formal financial intermediaries to GDP, -total bank deposit in GDP.	The results of this study clearly rejected the hypothesis that financial development simply follows economic growth and has little effect on it. Instead, there is strong evidence that financial development is important to economic growth, and that domestic investment is the main channel through which financial development affects economic growth. In 41 countries, a positive long-term effect of permanent financial development on the growth of domestic investment and GDP was detected for 27 countries in each case.
Hinaunye Eita (2007)	Botswana	1977 to 2005	Granger causality through co-integrated vector auto regression methods.	real GDP per capita  the ratio of M2 to total GDP, the ratio of deposit liabilities to total nominal GDP, the ratio of credit extended to the private sector to total nominal GDP	the ratio of M2 to total GDP, the ratio of deposit liabilities to total nominal GDP, the ratio of credit extended to the private sector to total nominal GDP  real GDP per capita	The results of this paper indicate that financial development causes economic growth in Botswana. The results confirm that the relationship between financial development and economic growth in Botswana follows a supply- leading pattern
Suleiman and Abu-Quan (2005)	Egypt	1960-2001	Granger causality test using the co-integration and vector error correction model	-Real GDP per capita GDPPC,  -The share of investment in GDP  - The ratio of money stock - the ratio of M2 minus currency to GDP, - the ratio of bank credit to the private sector to nominal GDP, - the ratio of credit issued to nonfinancial private firms to total domestic credit	-The ratio of money stock - the ratio of M2 minus currency to GDP; - the ratio of bank credit to the private sector to nominal GDP - the ratio of credit issued to nonfinancial private firms to total domestic credit - The share of investment in GDP.  - Real GDP per capita. - The ratio of money stock - the ratio of M2 minus currency to GDP, - the ratio of bank credit to the private sector to nominal GDP.- the ratio of credit issued to nonfinancial private firms to total domestic credit  Real GDP per capita, -The share of investment in GDP	The results support the view that the increase in private investment that was facilitated by the financial liberalisation in 1990 led to a rebound in the economic performance of Egypt in the 1990s. Therefore, relaxing financial constraints and deepening the financial sector are essential to boost economic development through either increasing investment resources or enhancing investment efficiency.
Rousseau and Wachtel (1998)	USA, UK, Canada, Norway, Sweden	1870-1929	VAR	-real per capita GDP. - Monetary base. -financial intensity (=various indicators of financial development)	-real per-capita GDP -monetary base -financial intensity (=various indicators of financial development)	VECM and VAR specifications suggest that for all countries: (1) financial intensity measures share long-term features with output and monetary base (2) financial intensity measures Granger-cause real output, with little evidence of feedback effects (3) VECMs suggest the positive response of output to increases in financial intensity, not vice versa
Ghirmay (2004)	13 sun-Saharan African countries	30 years	VAR (Granger causality and ECM)	real GDP (Y),  the level of credit to the private sector by financial intermediaries	the level of credit to the private sector by financial intermediaries real GDP (Y),	The main finding may be summarised as follows: Firstly, in almost all (11 out of 13) of the countries, financial development and economic growth were co-integrated over the sample period, suggesting that in these countries, the two variables cannot drift apart in the long-term, and thus may not be considered independently from each other. Secondly, the VECMs yielded evidence of financial development causing economic growth in 8 countries, economic growth causing financial development (reverse causality) in 9 countries, and bidirectional causal relationships in six countries.
Jung (1986)	56 countries	1950-1980	Time series analysis	The ratio of M2/GDP  The ratio of currency to M1 Real per capita GDP	Real per capita GDP,  The ratio of M2/GDP The ratio of currency to M1	-finance causes growth: more frequently found in LDCs. -growth causes finance: more frequently found in industrialized countries. -temporal causality pattern: first finance causes growth, then vice versa, in both high and low growth LDCs, the finance causes growth pattern prevails, but different financial indicators are crucial
Lufeyo Banda (2007)	Zambia	1965-2004	Granger causality test and VECM and Toda Yamamoto	The real per capita investment rate is strictly gross fixed capital formation.	credit provided by the financial intermediaries to the private sector as a % of GDP; the wedge between interest rate of loans and deposits; The real domestic short-term interest rate; financial instability variable and openness of the economy; the openness of the economy	The results suggest that (1) in less developed countries like Zambia it is a supply-leading hypothesis, which features more predominantly than a demand following one. (2) the indirect causal relationship between credit and growth seems to confirm one possible explanation namely that we have Credit rationing taking place in the Zambian economy, whereby firms may find it difficult to source working capital from financial intermediaries for investment projects.

Khalifa Ghali (1999)	Tunisia	1963-1993	Granger causality test	The logarithm of the real per capita GDP series  The ratio of bank deposits liabilities to nominal GDP; the ratio of bank claims on the private credit to nominal GDP.	The ratio of bank deposits liabilities to nominal GDP; the ratio of bank claims on the private credit to nominal GDP.  The logarithm of the real per capita GDP series	The empirical result suggests the existence of a stable long term relationship between financial development ratios and per capita real output which is consistent with causality running from finance to economic growth.
Darrat (1999)	3 MENA countries	1964-1993	Granger causality test within a bivariate VAR	The growth rate of real GDP in 1990 prices (G).  The ratio of currency to the narrow money stock, - the ratio of broad money stock to nominal GDP	The ratio of currency to the narrow money stock, -the ratio of broad money stock to nominal GDP  The growth rate of real GDP in 1990 prices (G).	The results suggest some support for the supply-leading hypothesis that financial deepening promotes economic growth, although the strength and consistency of his evidence varies across countries.
Chloe et Moosa (1999)	Korea	1970-1992	VAR	- The growth rate of real GDP and - the growth rate of real gross fixed capital formation.  -financial assets of the household sector, -financial liabilities of the business sector	-financial assets of the household sector, -financial liabilities of the business sector  The growth rate of real GDP, -the growth rate of real gross fixed capital formation.	The results suggest that (a) financial development leads to real growth, and (b) despite the measures of capital market liberalization, financial intermediaries are still more important than capital markets in this cause and effect relationship
Acaravrci et al (2007)	Turkey	1986:1-2006:4	Dynamic times series model	the natural logarithm of real GDP (fixed at 1987 prices)  -domestic credit provided by the banking sector	- domestic credit provided by banking sector  the natural logarithm of real GDP (fixed at 1987 prices)	-The results show a one-way causality from financial development to economic growth. -The results do not provide evidence of a long-term causal relationship between financial development and economic growth in Turkey. -Granger causality test results show that financial development leads to economic growth and support the supply-leading hypothesis for Turkey. Thus, domestic credit provided by the banking sector and a healthy banking sector have been assumed to contribute to the growth of the Turkish economy.
Apergis et al (2007)	65 (low, middle and high income) developing and developed countries	1975-2000	the panel co-integration methodology developed by Pedroni (1999)	GDP per capita	-the liquid liabilities of the financial system. - the credit by deposit money banks to the private sector divided by GDP. -the value of credits by deposit money banks and other financial institutions to the private sector divided by GDP. -The average years of schooling, -output share of investment -government spending as a share of the GDP both used as and volume of trade as share of GDP,	-The results support a positive and statistically significant equilibrium relationship between financial development and economic growth for all different financial indicators that were tested for and in all groups of countries. -the results indicate a strong bi-directional causality between financial development and economic growth. -Such policies are especially important for the group of developing countries where the impact of financial sector development on growth is found to be stronger compared to that in industrial countries, underlying the significance of undertaking a number of reforms in the financial sector that could contribute further to economic growth.
Christopoulos and Tsianos (2004)	10developing countries	1970-2000	time series unit root tests along with panel unit root tests, The co-integration framework of Johansen (1988)	the quantity of output expressed as an index number (1995 = 100),  the ratio of total bank deposits liabilities to nominal GDP and the share of investment	the ratio of total bank deposits liabilities to nominal GDP and the share of investment, the share of gross fixed capital formation to nominal GDP; the consumer price index  the quantity of output of the share of gross fixed capital formation to nominal GDP; the consumer price index	-The empirical results provide clear support for the hypothesis that there is a single equilibrium relationship between financial depth, growth and ancillary variables, and that the only co-integrating relationship implies a unidirectional causality from financial depth to growth. -The empirical evidence also points to the fact that there is no short-term causality between financial deepening and output, so the effect is necessarily long-term in nature. The important policy implication is that policies aiming at improving financial markets will have a delayed effect on growth, but this effect is significant.
Habibullah and Eng (2006)	13 developing Asian countries	1990 to 1998	the GMM technique developed by Arellano & Bover (1995) and Blundell & Bond (1998)	Real GDP per capita  The ratio of domestic credit to GDP	the ratio of domestic credit to GDP  Real GDP per capita	The present study supports the belief that there is a strong link between the financial sector and economic growth, as found by King & Levine (1993a, 1993b). Our study supports the contention made by Calderon & Liu (2003) that 'financial depth contributes more to the causal relationships in developing countries. The result suggests that the supply-leading growth hypothesis indicates that financial intermediation promotes economic growth in the nine Asian developing nations for the period 1990-1998
Agbetsiafa (2003)	8 emerging countries in sub-Saharan Africa	1963-2001	Co-integration test proposed by Johansen and Juselius (1990) and the error-correction model	Per capita GDP  The ratio of money to income, the ratio of banking liabilities to income, the ratio of private sector credit to income, the share of private sector credit in domestic credit , the ratio of domestic credit to income.	The ratio of money to income, the ratio of banking liabilities to income, the ratio of private sector credit to income, the share of private sector credit in domestic credit , the ratio of domestic credit to income  Per capital GDP	The result is consistent with the view that financial development and economic growth are co-integrated in the long-term. The error correction based Granger causality test indicated that there was mostly a unidirectional causality running from financial development to economic growth in all countries of the sample, and the result also shows a bidirectional causality when some financial indicators are used in certain countries. The general findings give support to supply- leading hypothesis.



In terms of data used, most of these studies used, as the indicator of economic growth, either real GDP or real GDP per capita, and selected indicators of financial development. The most commonly used indicators of financial development are the ratio of liquid liabilities to GDP (M2 when M3 is not available), the ratio of bank credit to the private sector to GDP, the ratio of bank deposit to GDP, and in a few cases, the ratio of currency to narrow money is also used. In some studies, variables such as trade loans, foreign credits, average years of schooling, output share of investment and government spending as share of GDP etc are added to the regression. It is interesting to note here that both the indicators of financial development and economic growth are used alternatively as dependent and independent variables in studies of causal relationships. Using all the above mentioned instruments (data and model), these studies (in Table 3) provide interesting results.

Odedokun (1996), Hinaunye (2007), Suleiman and Abu-Quan (2005), Ghirmay (2004), Lufeyo (2007), Ghali (1999), Christopoulos and Tsianos (2004), Habibullah and Eng (2006) and Agbetsiafa (2003), who only conducted their studies on developing countries, found that in almost all the countries in their sample, financial development contributed to economic growth, and this is very significant. The studies using both developed and developing countries also supported this finding, for example, Xu (2000), Jung (1986) and Apergis et al. (2007). They used 41, 56 and 65 developed and developing countries respectively, in order to test the causality between finance and growth. Using many financial indicators (see Table 3) and real per capita GDP as indicator of economic growth, these authors found that finance caused economic growth more frequently in developing countries than developed ones, and in developed countries, growth caused financial development more often.

On the other hand, studies conducted only on developed countries suggested that finance causes economic growth most of the time. Rousseau and Watchel (1998), Chloe and Moosa (1999) and Darrat (1999) used a vector autoregressive model for the period 1870-1993, and Acaravrci et al (2007) used a dynamic time-series model for the period 1986-

2006 on developed countries. These authors found a one-way causality between finance and growth running from the former to the latter, and little evidence of feedback effects.

In terms of the models that are used in Table 3, studies that used vector autoregressive models, either bivariate or multivariate, and/or Granger causality, supported a stable long-term relationship between financial development and economic growth, and sometimes found a bi-directional causality between finance and growth when certain variables are used on certain countries. For instance, Jung (1986), in his sample of 56 countries, both developed and developing, suggested that when the currency/M1 is used as an indicator of financial development, a bi-directional pattern would prevail.

Studies that used the generalised method of moment, however, do not provide any information about the long-term relationship between the two variables (Habibullah and Eng, 2006), and those using dynamic time-series models do not provide evidence of a long-term causality between financial development and economic growth. However, all the studies reviewed in Table 3 supported the view that financial development causes economic growth. With regard to these studies, especially those conducted in developing countries, relaxing financial constraints (such as controlling interest rates) and deepening the financial sector are essential to boost economic development through increasing investment resources and enhancing investment efficiency.

### **3.2.2 Growth-led finance**

Confronted with this financial development and economic growth puzzle, a number of studies have rejected the hypothesis that finance is a good predictor of economic growth. According to them, financial development follows growth and has little effect on it. Before looking at more details of their findings, this study will give a brief summary of their methodologies. Although recent, the studies reviewed in Table 4 did not cover as wide a period as in Table 3. The former have, for the most part, covered the period from 1960-2004, in comparison to those in Table 3, that covered periods between 1960-2007. Studies in Table 4 have mainly focused on developed countries and Asian, American, Caribbean, and Middle East and North Africa (MENA) developing countries. Only a few

were conducted in sub-Saharan African countries, and those were specifically conducted in South Africa, Tanzania and Kenya. Most of the studies in Table 4 used bivariate and/or multivariate vector auto-regressive frameworks, and the Granger causality test was the most commonly used test. One study used a different model, which is the threshold regression model, and this study was conducted by Deidda and Fattouh (2002).

In their regression models, these studies used the real per capita GDP as an indicator of economic growth. In terms of financial development, the ratio to broad money to GDP, bank claims on the private sector to GDP, and the value of credit by financial intermediaries to the private sector divided by GDP were the most commonly used indicators. Other studies added certain macroeconomic indicators, such as interest rates, that measure the inflation rate and indicators of other sectors of the economy. Thus, the index of stock market price, the consumer price index, the sum of exports and imports to GDP and so forth were added as independent variables.

Using the abovementioned methodologies, studies in Table 4 below provided mixed results. While some studies conducted in developing countries supported some evidence of a supply-leading pattern, when using certain indicators of financial development, others, however, only supported a demand-following pattern. Demetriades and Hussein (1996), Habibullah (1999), Odhiambo (2007), and Boulila and Trabelsi (2004) only conducted their studies on developing countries and supported little evidence that finance causes growth. Most of the time, they found strong and significant evidence that growth causes finance. Other studies, such as Waqabaca (2004), revealed, when studying the case of Fiji, that there is a significant relationship between financial development and growth, with causality running from growth to finance. However, when the ratio of credit to the private sector to GDP is used as an indicator of financial development, the causality runs from finance to economic growth.

Table 4: Growth-led finance hypothesis

Authors	Sample	Sample period	model	Dependent variables	Independent variables	Result
Kar and Pentecost (2000)	Turkey	1963-1995.	Error correction model and vector autoregressive model	The gross national product (GNP) at 1968 constant prices  Ratio of broad money to income. - The ratio of bank deposit liabilities to income, - the ratio of domestic credit to income, - the private sector credit ratio, -the share of the private sector credit in the domestic credit. -ratio of bank deposit liabilities to income.	-ratio of broad money to income. -ratio of bank deposit liabilities to income. -the ratio of bank deposit liabilities to income. -the ratio of domestic credit to income. -the private sector credit ratio. -the share of the private sector credit in the domestic credit.  The gross national product (GNP) at 1968 constant prices	The empirical results show that the direction of causality between financial development and economic growth is sensitive to the choice of measurement for financial development in Turkey. For example, when financial development is measured by the ratio of money to income, the direction of causality runs from financial development to economic growth, but when bank deposits, private credit and domestic credit ratios are alternatively used as indicators of financial development, growth is found to lead to financial development. The author however, concluded that in Turkey, economic growth seems to lead to financial development.
Demetriades and Hussein (1996)	16 developing countries	At least 27 years	Time-series techniques	Real per capita GDP	bank deposit liabilities to nominal GDP  bank claims on private sector to nominal GDP	-Evidence from the ECM and VAR analysis suggests a little support that finance causes growth. -growth causes finance: :much bi-directionality patterns vary noticeably across countries
Thornton (1996)	22 developing countries	1960-1990	Granger causality test	The real GDP 1985 prices	The ratio of bank deposits to nominal GDP	The result suggested that financial development does not have much effect on economic growth. In 8 countries, no relationship was detected, and in 6countries, economic growth led to financial development.
Deidda and Fattouh (2002)	119countries	1960-1989	threshold regression model	Real per capita growth	-financial depth (liquid liabilities over GDP), initial and contemporaneous regressions.	no significant relationship between financial depth and economic growth was found in the low income sample. Only in the high-income sample, regressions confirmed the positive association between finance and growth
Ang and McKibbin (2007)	Malaysia	1960-2001	Co-integration and causality tests	Real per capita GDP, real interest rate RI and financial repression FR  M3/GDP, commercial bank assets to commercial bank assets plus central bank assets, domestic credit to private sectors to nominal GDP	liquid liabilities (or M3) to nominal GDP, commercial bank assets to commercial bank assets plus central bank assets, domestic credit to private sectors divided by nominal GDP  per capita real GDP, real interest rate RI and financial repression	Financial depth and economic development are positively related; but contrary to conventional findings, the results support Robinson's view that output growth leads to more financial depth in the long-run.
Neusser and Kugler (1996)	13OECD	1960-1994	Causality test	Total factor productivity.	GDP of the financial sector	The null hypothesis of no Granger causality from financial sector activity to manufacturing TFP was only rejected for the USA, Japan and Germany. The results suggested that in the case of several countries, manufacturing GDP (TFP) causes financial development
Shan et al (2001)	9 OECD and China	1960/70-1998 1980-1998 for the sub sample	VAR (Toda and Yamamoto 1995)	Real per capita GDP	-The ratio of loans made to the private sector by commercial banks and other deposit-taking banks to GDP. - Total factor productivity. -the ratio of the sum of import and exports to GDP. - The ratio of total capital expenditure to GDP. -the consumer price index., - The index of stock market price.	The model found evidence of reverse causality in some countries bidirectional causality in others and no evidence of causality running from financial development to economic growth
Zang and Kim (2007)	71 developing countries (produced by Levine et al 2000)	1961-1995.	Sims- Geweke Causality	real per-capita GDP growth rate  The ratio of commercial bank assets divided by commercial bank plus central bank assets. -the value of credits by financial intermediaries to the private sector divided by GDP.- liquid liabilities of the financial system (currency plus demand and interest bearing liabilities of banks and non-bank financial intermediaries) divided by GD.	-the ratio of commercial bank assets divided by commercial bank plus central bank assets. - The value of credits by financial intermediaries to the private sector divided by GDP. -liquid liabilities of the financial system (currency plus demand and interest bearing liabilities of banks and non-bank financial intermediaries) divided by GDP.  real per-capita GDP growth rate	The result showed no statistically significant evidence of positive causality running from financial development indicators to growth. High growth might lead to the emergence of more developed financial intermediaries and markets. As argued by Robinson (1952), financial development might primarily follow economic growth, as a result of increased demand for financial services.
Waqabaca (2004)	Fiji	1970-2000	Causality test.	Level of real GDP; level of real GDP per capita; ratio of investment to GDP.  Ratio of financial assets to GDP, ratio of liquid liabilities to GDP; -ratio of private sector credit to GDP.	Ratio of financial assets to GDP. - Ratio of liquid liabilities to GDP. The ratio of private sector credit to GDP.  Level of real GDP. Real GDP per capita. Ratio of investment to GDP.	Empirical results reveal a short-term relationship, predominantly running from economic growth to financial development. However, evidence of opposite causality was found in only one case, where private sector credit (financial development indicator) led to investment (economic growth indicator).

Guryay et al (2007)	Northern Cyprus	1986-2004	Granger causality	annual growth rate of real GDP	annual population growth; annual growth of export; ratio of domestic investments to GDP; ratio of deposits to GDP; ratio of loan to GDP	Empirical results show that there is a negligible positive relationship between financial development and economic growth in Northern Cyprus. The empirical evidence does not support the view that financial development promotes economic growth in Northern Cyprus. However, the study found that there is a casual relationship between GY, IY and LOA, which means that economic growth causes financial development. However, financial development does not cause economic growth.
Boulila and Trabelsi (2004)	16 MENA	1960 - 2002	bivariate vector auto-regressive model (bVAR)	Real GDP per capita.  Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP.	Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP.  The real GDP per capita.	-The results show that the financial sector does not seem to positively affect long-term growth. The empirical results also displayed strong evidence in favour of causality running from growth of GDP per capita to financial development for two countries. -For countries where financial development and growth indicators are not co-integrated, Granger causality tests were carried out with first-differenced VARs to tackle the issue of causality in the short-term. The evidence gave little support to the hypothesis that finance is a leading factor in the growth process. Moreover, for many countries in the sample, evidence was found of bidirectional causality and causality from the real to financial sectors.
Ram (1999)	95( high, medium and low growth countries)	1960-1989	Cross countries regression	Real GDP	Depth (liquid liabilities /GDP), annual rate of population, annual rate of exports, the ratio of gross domestic investment to GDP	individual countries (time series): negative effect and insignificance dominate cross-country; huge parametric heterogeneity across three subgroups, positive association only for high growth subsample
Odhiambo (2004)	South Africa	1968-2000	Co-integration and error correction model	Per capita income  M2/GDP, currency ratio, and ratio of bank claims on the private sector to nominal GDP	M2/GDP, currency ratio, and ratio of bank claims on the private sector to nominal GDP  Per capita income	This study revealed that the supply-leading hypothesis was rejected in South Africa. Indeed, there is an evidence of a demand-following relationship between financial development and economic growth in South Africa.
Suleiman et al (2007)	5 MENA countries (Algeria, Egypt Morocco, Syria and Tunisia)	1960 to 2004	Trivariate VAR	real GDP per capita  Ratio of money stock); ratio of M2 minus currency to GDP. -ratio of bank credit to the private sector to nominal GDP. - Ratio of credit issued to nonfinancial private firms to total domestic credit (excluding credit to banks).  Share of investment in GDP (IY).	ratio of money stock, - ratio of M2 minus currency to GDP, - ratio of bank credit to the private sector to nominal GDP, - ratio of credit issued to nonfinancial private firms to total domestic credit (excluding credit to banks), - share of investment in GDP.  real GDP per capita; , share of investment in GDP  Ratio of money stock); ratio of M2 minus currency to GDP. -ratio of bank credit to the private sector to nominal GDP. - Ratio of credit issued to nonfinancial private firms to total domestic credit (excluding credit to banks). Real GDP per capita.	The co-integration results weakly supported a long-term relationship between financial development and economic growth. Furthermore, where co-integration was detected, the long-term Granger causality results gave more support for the hypothesis that finance follows rather than leads economic growth, whereas short-term causality tests showed no evidence of causality between the two variables. They concluded that the financial reforms that most of the countries in this study have undertaken in the past two decades were not that successful in achieving the desired results of enhancing economic growth, either by improving efficiency or through increasing resources for capital accumulation. In order to achieve the desired benefits of financial development, efforts should be devoted to deepening the financial sector by restricting government involvement in financial systems, enhancing competition and investing in human resources and the legal environment on the one hand, and improving the quality of institutions on the other.
Odhiambo (2007)	South Africa, Kenya and Tanzania	1980-2005	VEC and VAR	Real GDP per capita	-Ratio of currency to narrow definition of money (CC/M1). -Ratio of bank claims on the private sector to GDP (DCP/GDP) - the ratio of broad money to GDP (M2/GDP)	The empirical results of the study showed that the direction of causality between financial development and economic growth is sensitive to the choice of measurement for financial development in the countries being studied. A demand-following response was found to be stronger in Kenya and South Africa, while in Tanzania a supply-leading response was found to predominate. These findings were also found to be consistent with Patrick's hypothesis, which postulates that the direction of causality between financial development and economic growth changes over the course of development.
Habibullah (1999)	7 developing Asian countries	1981:1 to 1994:4	Time-series analysis using granger causality test	Real gross national product GNP  The ratio of broad money to GNP. – The divisia monetary aggregates	The ratio of broad money to GNP. – The divisia monetary aggregates.  Real gross national product GNP	The results suggested that there is a strong relationship between financial development and economic growth. Finance-led growth was only supported in the case of the Philippines, but in the other Asian countries, the study found the demand-following hypothesis to prevail.

More recently, Zang and Kin (2007), Ang and McKibbin (2007), Guryay et al (2007), Odhiambo (2004) and Suleiman et al (2007) also examined the real causality between financial development and economic growth in developing countries, and found no statistically significant evidence of a positive causality running from financial development to economic growth at all.

Furthermore, studies that focused on both developed and developing countries did not suggest any significant relationship between financial development and economic growth in low-income countries. Deidda and Fattouh (2002) and Ram (1999), when using a sample of both developed and developing countries, revealed a positive relationship between finance and growth only in high-income countries, with causality running from the latter to the former. Following the similar line, Neusser and Kugler (1996), Kar and Pentecost (2000), and Shan et al (2001), also focused their studies on developed countries. Neusser and Kugler, when studying 13 OECD<sup>13</sup> countries, found that in most of its countries studied, economic growth causes financial development, except in three countries (USA, Japan and Germany), where the reverse causality was found. Furthermore, Shan et al, in their study of 9 OECD countries and China, gave support to causality running from economic growth to finance, with causality being bi-directional in others, and with no evidence of causality running from financial development to economic growth.

Kar and Pentecost (2000), when studying the situation in Turkey, concluded that the relationship between finance and growth is sensitive to the choice of measurement for financial development. For example, when financial development is measured by the ratio of money to income, the direction of causality runs from financial development to economic growth, but when bank deposits, private credit and domestic credit ratios are alternatively used as indicators of financial development, growth is found to lead to financial development. The authors, however, concluded that in Turkey, economic growth seems to lead to financial development.

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<sup>13</sup> OECD (Organisation for Economic Co-operation and Development).

Although in Table 4, there has been some evidence of bi-directional and supply-leading pattern, the demand-following hypothesis was the most predominant and significant result. Thus, according to studies reviewed in Table 4, one can argue with Robinson (1952) that, a high level of growth might lead to the emergence of more developed financial intermediaries and markets. However, studies in Table 4 do not provide any information about the long or short-term relationship between the two variables studied, except for Waqabaca (2004) and Boulila and Trabelsi (2004), who rejected a long-term relationship between financial development and economic growth.

### **3.2.3 Bi-directional causality**

Finally, bi-directional causality suggests a two-way causal relationship between financial development and economic growth. A country with a well-developed financial system could promote high economic growth through technological change, as well as product and service innovations, which will in turn create a high demand for financial services. As the financial sector responds to these demands, it will stimulate increased economic performance. Thus, finance can affect economic growth at a certain stage of development, and the reverse will be found later on. This is how the idea of a bi-directional relationship comes in. Table 5 (a and b) summarises studies supporting this view.

Table 5 has been split into two. There are those studies which are been more specific in terms of which pattern occurs first and at what stage of development (a), and those which are less specific (b). Studies reviewed in Table 5 (a) were conducted in developing Asian countries from 1961-1999. A causality test and unrelated regression estimation model were used in these studies. Using the real gross domestic product as a dependent variable and the ratio of liquid liabilities to GDP as an independent variable to measure economic growth and financial development respectively, these studies showed that in the early stages of development, financial development induces real innovation of investments before sustained, modern economic growth gets underway.

Table 5: (a) Bi-directional causality between financial development and economic growth

Authors	Sample	Sample period	model	Dependent variables	Independent variables	Results
Fritz (1984)	Philippines	1969-1981	Causality test	composite financial development index with 10 weighted sub-indicators of economic development  Composite economic development indicator with seven weighted sub-indicators	Composite economic development indicator with seven weighted sub-indicators  composite financial development index with 10 weighted sub-indicators of economic development	early stages of economic development: finance causes growth  more advanced stages of economic development: growth causes finance
Wang (1999)	Taiwan	1961-1999	Unrelated regression estimation method	marginal spillover (1) finance leading version : $\partial R / \partial F$  (2) real sector leading version: $\partial F / \partial R$ R=real goods sector output F=financial sector output	depth=(liquid liabilities/GDP) share of formal financial sector in total financial sector interest rate difference between formal and informal financial sector	Finance leading version dominates for Taiwan on average, i.e.(1)>(2), but marginal spillover from finance decreases over time relative to marginal spillover from the real sector. This means that finance caused growth in the earlier stages of Taiwan's economic development, while the relationship was reversed later on.
Wood (1993)	Barbados	1946-1990	Hsiao's 1979 causal test procedure	Growth of real gross domestic product GDP in 1974 prices.  Ratio of M2 to GDP	Ratio of M2 to GDP  Growth of real gross domestic product (GDP) according to 1974 prices.	The results showed evidence of a supply-leading causality pattern, emphasising the importance of financial development to the Barbados economy.

Table 5: (b) Studies that did not specify the direction of causality

Akinboade (1998)	Botswana	1972-1995	The residual based co-integration and error correction model	real non-mineral GDP per capita measuring in Botswana Pula (1990 prices)  The ratio of bank deposit liabilities to nominal non-mineral GDP, the ratio of bank claims on the private sector to nominal non-mineral GDP	The ratio of bank deposit liabilities to nominal non-mineral GDP, the ratio of bank claims on the private sector to nominal non-mineral GDP  real non-mineral GDP per capita	The result suggested evidence of a bi-directional causality between financial development and per capita income.
Yousif 2002	30 developing countries	1970-1999	VAR (Granger-causality test within an EC model)	- Ratio of currency/narrow money stock (M1). - Ratio of broad money stock (M2)/nominal GDP  economic growth by the growth rate of real per capita GDP	economic growth by the growth rate of per capita real GDP  The ratio of currency/narrow money stock (M1), the ratio of broad money stock (M2)/nominal GDP	- the causality between financial development and economic growth is a bidirectional one - the results are country specific and tend to vary with the kind of proxies used to measure financial development
Demetriades and Luintel (1996)	India	1961-1991	Co-integration and error correction model	Financial depth (=bank deposit liabilities /GDP)  Real per capita GDP	Banking sector controls (interest rate control, reserve and liquidity requirements, directed credit programmes) -Financial depth	Banking sector controls inhibited financial deepening  Bi-directional causality between finance and economic activity
Odhiambo (2005)	Tanzania	1960-2005	Vector error correction (VEC) and co-integration model	Real GDP per capita  Ratio of broad money /GDP; Ratio of currency , Ratio of banks claims on private sector /GDP	Ratio of broad money /GDP, Ratio of currency ; Ratio of banks claims on private sector /GDP  the real GDP per capita	When only the ratio of broad money /GDP is used, financial development leads to growth, but when the two others are used, there is a bidirectional causality.
Unalmis (2002)	Turkey	1970-2001	bivariate VAR model, The Granger non-causality test	-domestic credit as a ratio of GNP. -private credit as a ratio of GNP. -private credit as a share of domestic credit. - Ratio of road money supply to GNP. - Total deposits as a ratio of GNP.  Capita GNP at constant prices,	Capita GNP at constant prices,  Domestic credit as a ratio of GNP. -private credit as a ratio of GNP. -private credit as a share of domestic credit. - Ratio of road money supply to GNP. - Total deposits as a ratio of GNP.	Financial development significantly causes economic growth in the short-term, and in the long term there is a bidirectional relationship between financial development and economic growth.
Luintel and Khan (1999)	10 developing countries	1936-1941	Multivariate VAR	- total deposit liabilities of deposit banks\first lag of GDP  the logarithm of real per-capita output  Real interest rate  The logarithm of real per capita capital stock.	the logarithm of real per-capita output. The real Interest rate. -the logarithm of real per capita capital stock. Total deposit liabilities of deposit banks\first lag of GDP. Real per capita GDP -Total deposit liabilities of deposit banks\first lag of GDP. Real per capita GDP	Results of the multivariate vector auto regression suggested a bi-directional causality between financial and real sectors for all countries.
Chuah and Thai (2004)	Six Gulf Cooperation Council Countries (GCCC)	1973-2002	Bivariate time series model	-real total GDP. -per capita GDP (YC). -the ratio of investment to GDP. -Real non-hydrocarbon GDP. --real non-hydrocarbon GDP per capita.  Bank liquid liabilities as a ratio of nominal GDP, bank credit to the private sector as a ratio of nominal GDP.	Bank liquid liabilities as a ratio of nominal GDP, bank credit to the private sector as a ratio of nominal GDP.  Real total GDP. -per capita GDP (YC). -the ratio of investment to GDP. -Real non-hydrocarbon GDP.-real non-hydrocarbon GDP per capita.	The results indicated that the relationship between financial development and economic growth is bidirectional in five out of the six GCC countries, and unidirectional from finance to growth in one country. - Financial development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.



As real growth occurs, the supply-leading pattern gradually becomes less dominant, and a demand-following one occurs. Thus, in the early stages of development, financial development leads to growth, while the reverse happens in more advanced stages of development. More recently, other studies that have been conducted in this regard have found a bi-directional causality between finance and growth, but have failed to explain at what stage of development which hypothesis, either supply-leading or demand- following occurs (see Table 5 (b)).

Using data that are more recent over a wider period (1936-2005), these studies focused more on developing African countries. All of them used a vector autoregressive framework, either bivariate or multivariate, together with the error correction model. Unlike those in Table 5(a), studies in Table 5 (b) used a large indicator of financial development in order to process their regression. Real per capita GDP was the most commonly used indicator of economic growth, except for Akinboade (1998), who used non-mineral GDP per capita, and Chuah and Thai (2004), who used real non-hydrocarbon GDP with a set of other indicators, in order to capture the real impact of financial development on economic growth. The measures of financial development used by these studies were, among others, the ratio of domestic credit to GDP, the ratio of bank liquid liabilities to GDP, and the ratio of private credit to GDP.

Mixed results were obtained in these studies. Among the studies conducted in one specific country, different results were obtained. Akinboade (1998) and Demetriades and Luintel (1996), who focused on Botswana and India respectively, found evidence of a bi-directional causality between financial development and economic growth. Using almost the same data and model, but in Tanzania, Odhiambo (2005) suggested that the direction of causality between financial development and economic growth is a function of the indicator of financial development used. When only the ratio of broad money to GDP is used, financial development leads to growth, but when the two other indicators of financial development (ratio of currency to GDP, ratio of banks claims on private sector to GDP) are used, bi-directional causality prevails. Unalmis (2002), in his study on

Turkey, found that financial development led to growth in the short-term, but in the long-term, it is bi-directional causality.

On the other hand, certain studies that focused on a large sample of both developed and developing countries support the findings made by Ulmanis. Yousif (2002), in a study of 30 developing countries, gave some support to the supply-leading and demand-following pattern in certain countries, but concluded that they are not as significant as the bi-directional one. Luintel and Khan (1999) conducted their study on 10 developing countries, but unlike Yousif, they only found bi-directional causality for all the countries in their sample. Other studies were conducted in developed countries (see Chuah and Thai, 2004). In most countries, the authors found bi-directional causality. However, some support for the supply-leading pattern was found in a few countries. Thus, from all the studies reviewed in Table 5 (a, b) there is bi-directional relationship between financial development and economic growth.

### **3.3 Bank-centred versus stock market-based development**

A number of studies explained the mixed results found within either studies conducted on the relationship or causality between financial sector development and economic growth in terms of the type of the financial sector. According to these studies, either bank-centred or stock market-based development significantly and differently affects economic growth, and can thus explain why, in some countries, there is a positive relationship between finance and growth, whereas in other countries, there is not. Table 6 (a, b) provides a summary of these studies.

Most studies reviewed in Table 6 were mainly conducted on developing and developed countries, in which both stock markets and the banking sector exist. The problem here is that the developing countries reviewed in Table 6 are emerging or advanced emerging countries such as South Africa, Chile, and Korea and so on, which are more advanced than other developing countries, which the stock market does not exist. With regard to these studies, various types of models have been used, such as cross-country regression, panel techniques, time-series techniques and linear models (especially OLS), in order to

determine which financial institutions (either banks or stock markets) promote economic growth. Studies reviewed in Table 6 are more recent than the data used, and the data frequency is annual, covering the period from 1850-2001.

The dependent variable for most studies is the indicator of economic growth, which is the real per capita GDP. As independent variables, both indicators of the banking sector and the stock market were used, and some studies added other variables such as the inflation rate, government consumption and indicators of human capital (see Chung and Lee, 2006). Stock market liquidity and the ratio of M3/GDP were used as indicators of the stock market and banking sector respectively, but it is difficult to determine the most commonly used indicator of financial development, because each study used different indicators. What is certain is that they used both indicators of banking and stock market development separately and they provided mixed results. Most of the studies reviewed in Table 6 are responses to each other.

Atje and Jovanovic (1993) empirically tested the implications of their model on a sample of 40 developing and developed countries. Using two proxies of financial development, one measuring bank intermediation and the other approximating stock market activity, the authors found that, only the indicator of stock market turned out to perform well. Therefore, the authors concluded that stock markets improve long-term growth in per capita GDP. In contrast to this, Harris (1997) concludes that stock market activity has at best weak explanatory power for long-term growth in per capita output. He used data from 49 of the 60 countries that had official stock markets in 1991, covering the period 1980-1991. His paper was a direct response to Atje and Jovanovic (1993), and criticises their methodology.

Harris used a specification of the regression equation with current instead of lagged investment. By multiplying the initial level of stock market activity (value traded) with lagged investment, and by introducing the latter as a separate variable, Atje and Jovanovic wanted to account for the endogeneity of the variables. Harris essentially used the same econometric model, but not the same approach than Atje and Jovanovic,

because he found that, their approach was not appropriate. According to Harris, the lagged and current investments are not sufficiently correlated with each other. Instead, he proposed the use of instruments to account for the endogeneity of current investments. According to him, the effect of stock markets is therefore much weaker. Splitting the sample into developed and developing countries yields a slightly different result. In terms of developing countries, stock markets do not seem to promote long-term growth, whereas they have some explanatory power with regard to developed countries.

Levine and Zervos (1998) used data on a cross-section of 47 countries from 1976 to 1993, in order to assess the impact of variables measuring stock market activity on growth, capital accumulation, productivity improvement, and private savings. They found a robust, positive relationship between stock market liquidity, measured by initial value traded scaled by GDP and initial turnover ratio (value traded scaled by average market capitalisation), and current and future rates of GDP growth, capital accumulation and productivity growth. Other variables such as stock market size, volatility and integration into world capital markets are not robustly linked to growth. Entering stock market liquidity and banking development (measuring bank loans to the private sector over GDP) simultaneously into a regression yields significant results for both. The authors interpreted this as an indication that banks and stock markets provide different services.

Rousseau and Wachtel (2000) confirmed these findings using data for 47 countries over the period 1980-1995. In order to account for potential endogeneity between growth and finance, they applied a two-stage least squares regression model. The findings of their cross-sectional regressions suggest an impact of value traded, but not of market capitalisation (both scaled by GDP), on growth. Using a panel vector-auto regression model, they found evidence for causality running from both stock market indicators (per capita value traded and market capitalisation, scaled by a price index) to economic activity.

Table 6: (a) The stock market and economic growth

Authors	Sample	Sample period	Econometric model	Dependent variables	Independent variables	Result
Rousseau and Sylla (2001)	17 countries	1850-1997	Cross-country panel	-growth rate of real per capita income -real per capita income measured in 1960 U.S. dollars	ratio of the broadest available monetary aggregate to output	The results suggested that a well-developed financial system induces faster economic growth. Their analysis overlooked stock market development as one of the key components of a good financial system.
Atje and Jovanic (1993)	40 developed and developing countries	1966-1988	Cross sectional regression	Real per capita GDP growth	B=public and private credit to GDP S=value traded ratio (=annual value of all stock market trades/GDP) I=investment/GDP ratio initial values of S, lagged values of B, I because of endogeneity	Regressions confirmed a significant impact for the stock market variable but not for the indicator of bank development.
Guiglielmo et al (2005)	Chile, Korea, Malaysia, and Philippines	1979Q1 - 1998Q4	VARs (Toda and Yamamoto (1995))	ratio of gross fixed capital formation to nominal GDP, LI; ratio of the change in real GDP to the real level of total investment, LPI	-The market capitalisation ratio, which equals the value of listed shares divided by GDP -The value-traded ratio, which equals the total value of shares traded on the stock exchange divided by GDP	The result supported the evidence that stock markets can give a big boost to economic development. In addition, though, this study showed that stock market development enhances economic growth through its impact on investment productivity in the long -term.
Levine (1992)	87 countries	1960-1989 period	pooled, cross-sectional, time-series regressions,	ratio of gross domestic investment to GDP); change in per capita GDP divided by per capita investment rate	- ratio of M3 to GDP; - size of the banking sector relative to the central bank; - provision of credit to private enterprises relative to the government and public enterprises.	The study concluded that financial intermediary services are significantly related to the rate of economic growth, and there was some evidence that financial services stimulate economic development and also that the measures of financial services are frequently related to growth through both the "investment" and "efficiency" channels..
Chung Hua Shen and Lee (2006)	48 countries (SSA, Eastern and Asian countries )	1976 to 2001	Linear model,	Real per capita GDP growth	-Claims on the private sector by banks/GDP; -liquid liabilities to GDP -spread of borrowing and lending interest rates -Ratio of market capitalisation/GDP - Ratio of total stock traded value/GDP. - Stock turnover ratio. - Investment ratio. - Inflation rate -government consumption expenditure/ GDP - Secondary school enrolment rates in 1976 -log (initial real GDP per capita).	-Only stock market development had a positive effect on the growth of real GDP per capita, whereas banking development has an unfavourable or no effect at all. - the conditional variables of middle-income level, regional Latin American, Sub-Saharan African and East Asian dummies, banking and currency crises, good creditor protection and higher corruption strengthened the negative impact that banking development has on growth. - the conditional variables of middle-income level and Latin American, Sub- Saharan African, and East Asian dummies strengthened the positive impact of stock market development on growth. -The results do not vary qualitatively when we consider the effects of outliers, endogeneity, and data covering five-year averages. Nevertheless, when the squares of the bank development variables are also considered, the results do change. The previous negative coefficients become positive, whereas the squares of the financial variables are negative when LENDING and LIABILITIES are used, but SPREAD is not.
Levine and Zervos (1998)	47 countries	1976-1993	cross-country methods	-real per capita GDP growth -Growth in capital stock p.c. -productivity growth -gross private savings rate	Stock market liquidity= value traded ratio in 1976  Turnover ratio in 1976 (=total value of domestic shares traded/market capitalisation)	Initial level of stock market liquidity was a significant predictor for all components of growth. Initial levels of other variables (market capitalisation, stock return volatility, stock market integration) were not robustly linked with growth, and none of the financial indicators were closely associated with savings rate
Rousseau and Wachtel (2000)	47 countries	1980-1995	- cross-sectional -dynamic elements.	Cross-section (TSLS): real per capita. GDP growth  panel (VAR): real p.c. GDP	-Market capitalization/GDP -Value traded/GDP -Per capita value traded -per capita market capitalisation (both indicators for share-price vs. general price-level adjusted) - real per capita M 3	-Two-stage cross-sectional estimates suggested an impact on the growth of value traded but not market capitalization. -Panel VAR results indicated causality running from both stock market indicators to economic activity, in particular value traded, but general price-level adjustment overstated the effect of market capitalisation. Accordingly liquidity of stock markets was more important than size -M3 as an indicator of banking was also significant

Levine and Zervos (1996)	41 countries	over the period 1976-1993	pooled cross-country, time-series regressions	the growth rate of Gross Domestic Product (GDP) per capita	the ratio of market capitalization divided by Gross Domestic Product (GDP); the ratio of total value of trades on the major stock exchanges divided by GDP; the ratio of the total value of trades on the major stock exchanges divided by market capitalization; the multifactor International Arbitrage Pricing Model (IAPM);	The data suggest that stock market development is positively associated with economic growth. Moreover, the instrumental variables procedures indicate a strong connection between the predetermined component of stock market development and long-run economic growth. While these cross-country growth regressions imply a strong link between stock market development and economic growth
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Table 6: (b) The banking sector and economic growth

Authors	Sample	Sample period	model	Dependent variables	Independent variables	Result
Arestis, Demetriades and Luintel (2001)	5 developing countries	1968-1998	Time series analysis	Real per capita GDP	-Stock market capitalization/GDP -Domestic bank credit/GDP. -Stock market volatility.  Alternative for UK and USA only: stock market value traded/GDP and stock market turnover ratio.	In Germany, Japan and France: stock markets had made significant contributions to output growth, but banks were more important  USA, UK: link between finance and growth was found to be weak and to run from growth to financial development, alternative measures confirmed results.
Harris (1997)	49 of 60 countries that had official stock market in 1991	1980-1991	Cross-section models	Real per capita GDP	The ratio of total value share traded to GDP. the ratio of investment/GDP	Whole sample: insignificant Less developed subsample: insignificant Developed subsample: weak significance, lagged investment is bad indicator for current investment, so current investment with instruments is used in 2SLS regression to solve endogeneity problem.

Arestis, Demetriades, and Luintel (2001) conducted a time-series analysis using data on five industrialised countries covering the period 1968-1998. They used indicators such as stock market capitalisation (scaled by GDP) and volatility for all countries, but only value traded (scaled by GDP) and turnover ratio for the UK and the USA. They reported that stock markets have made significant contributions to growth in Germany, Japan and France. The effect of stock markets, however, is weaker than the impact of banking. In the USA and the UK, the link between finance and growth is not very robust, and seems to run from growth to finance.

### **3.4 Conclusion**

In summarising, one can conclude that studies using cross-sectional regressions generally concluded that financial developments positively affect economic growth through productivity of capital and accumulation of saving however they failed in explaining the real direction of causality between financial development and economic growth. It is also worth to note also that studies using this particular model are too old. Studies that used time series-techniques are those that have mostly focused on studying the causality between financial development and economic growth and they are more recent than studies using cross-sectional regression. However, studies using the time-series techniques arrived at a less uniform conclusion. In general, the view that in developing countries, finance causes growth in the earlier stages of economic development, and that in developed countries, growth causes financial development, prevailed. A significant number of studies, however, detected a bi-directional causality. It becomes evident that the causal relationship between financial development and economic growth depend on two main elements, indicators of financial development used and the level of development of the financial sector.

- **Indicators of financial development**

The indicator of financial development might matter when studying the relationship between finance and economic growth because it is always difficult to measure how well the financial sector performs each of its functions. As argued by Akinboade and Makina (2006), there can be a misleading interpretation of some variables. For

example the ratio of money to GDP which is always used as indicator of financial development could not be the same if it includes components such as short term inflow of foreign savings. When money supply to GDP ratio includes short-term inflow of foreign savings responding to the liberalization of capital accounts and comparatively high and positive real interest rates, its increase will only reflect a financial development if the inflow is stable and is productively deployed by the domestic financial system.

- **The level of financial development**

Furthermore other studies suggested that the type of financial institution might be the cause of this ambiguity in the relationship between financial development and economic growth. According to them, the impact of financial development on economic growth in a country where the banking sector and stock exchange are well developed (in developed countries) will not be the same as in a country where only the banking sector are developed (developing countries).

It seems that individual countries have to be studied and that general conclusions have to be treated with caution. Thus, differences in the level of financial development may have very important implications for the relationship between the latter and economic growth. The next chapter will therefore seek to identify these differences in terms of the two studied countries namely Cameroon and South Africa.



**CHAPTER FOUR**  
**OVERVIEW OF AND COMPARISON BETWEEN**  
**THE FINANCIAL SECTOR AND ECONOMIC GROWTH IN**  
**CAMEROON AND SOUTH AFRICA**

**4.0 Introduction**

Economic literature has provided ample evidence that the improvement in financial systems contributes to an increase in efficient resource allocation and hence growth. Savings are channelled into more productive uses, facilitating investment diversification as well as risk management for savers and investors. Furthermore, greater access to financial services for the economy, and especially for small and medium size enterprises and lower-income households, improves their ability to invest. Empirical and theoretical studies have shown evidence in this regard, and have provided different results across countries. According to these studies, the difference in the level of financial sector development may have very important implications for the correlation and direction of causality between financial sector development and economic growth. Thus, this chapter seeks to identify any differences that may exist in the financial sector of the two countries in the present study, before turning to a more econometric analysis in the next chapter.

Since the 1960s, in Cameroon and South Africa, as in many developing countries, the conventional view has been that government should actively intervene in financial markets, in order to influence the allocation of credit needs and control all financial prices. However, due to the economic crisis in the 1980s, which affected almost all African countries, Cameroon and South Africa went through many reforms, with the most important being the liberalisation of their markets, which occurred earlier in Cameroon (1989) than in South Africa (1994). These shocks and all the policies implemented in this regard significantly changed their financial markets either positively or negatively.

Comparing the financial sector in Cameroon and South Africa will help one to understand the differences between their financial systems. A comparative study is often conducted in the early stages of development of a branch of science in order to

help research to progress from the initial level of exploratory case studies to a more advanced level of general model invariance, such as causality. With a view to always wanting to improve on and learn about what is going on in other countries, governments or authorities can benefit from comparative studies, the results of which can stimulate them to ameliorate their systems. Furthermore, a comparative study can also help in understanding the root of the development and/or weakness of one system (economy). A comparison between the financial sectors of Cameroon and South Africa will help to identify whether or not the level and structure of a financial sector can explain differences in terms of the effects of the latter on economic growth.

After this brief overview, four other sections will follow. The first section will outline the economic growth experiences of the two countries. This section will assist in understanding their economic situations, in order to acknowledge the experiences of the two countries, which may constitute an explanation of their still weak and/or developing financial sectors. The second section will furnish an overview of the financial systems in the two countries. Here, a backward glance at the financial crises, financial liberalisation and all other policies implemented in this regard will be taken. After describing the economic growth experiences and financial sectors in the two countries, this study will evaluate how all the policies implemented in order to restore the economic situation in these countries affected their financial sector, either in terms of the number of players (financial widening), or in terms of their efficiency (financial deepening).

Thus, the third section will evaluate and analyse the impact of these policies, as well as the economic growth experiences in the two countries, on their indicators of financial sector development. In this section, a comparison of the trends in relevant indicators in both countries will be made. It is useful for this study to compare indicators of the financial sector for these two countries, because a well-defined set of measures of financial development is required for effective policy formulation, implementation and evaluation. Most of the financial indicators discussed in this section are related to the banking sector. Only a few remarks will be made with regard to the stock markets in the two countries, because Cameroon's stock market is not yet fully fledged. The last section will conclude the chapter with a few comments.

#### 4.1 Economic growth experiences in Cameroon and South Africa

Historical records show a broad range of outcomes in terms of achieving sustained economic growth<sup>14</sup>; while some countries have achieved high incomes many others remain at lower levels. Economists have long been interested in the factors which cause different countries to grow at different rates and achieve different levels of wealth. Some believe that characteristics of individual countries make a significant difference to their economic growth. According to Landau (1995:119), however, country characteristics explain very little about the difference in growth rates. In contrast, the difference in growth rates may be due to differences in the level of variables which affect all countries in a similar fashion – world economic conditions, natural disasters and so on.

Comparing the evolution of economic growth in Cameroon and South Africa will help to determine the reasons for their differences in terms of growth rate. In Cameroon, as in South Africa, macroeconomic policies have evolved over time. The first policies implemented in these two countries were motivated by a structuralist approach to development, which recommended market intervention. However, these interventions of government within the market, combined with the economic crisis of the 1980s, significantly altered the economic situation in these two countries. Based on the trend in growth rates, as illustrated in Figure 2 and in Table 7 below, one can discuss the trend in the real GDP growth rate of the two countries as follows:

Table 7: Real GDP growth in Cameroon and South Africa (1970-2006) (Average)

Countries	1970-73	1974-77	1978-81	1982-86	1987-90	1991-94	1995-98	1999-02	2003-06
Cameroon	3.09	4.29	10.71	7.31	-4.61	-2.00	4.81	4.18	3.26
South Africa	3.93	2.49	4.69	0.33	2.09	0.32	2.64	3.22	4.59

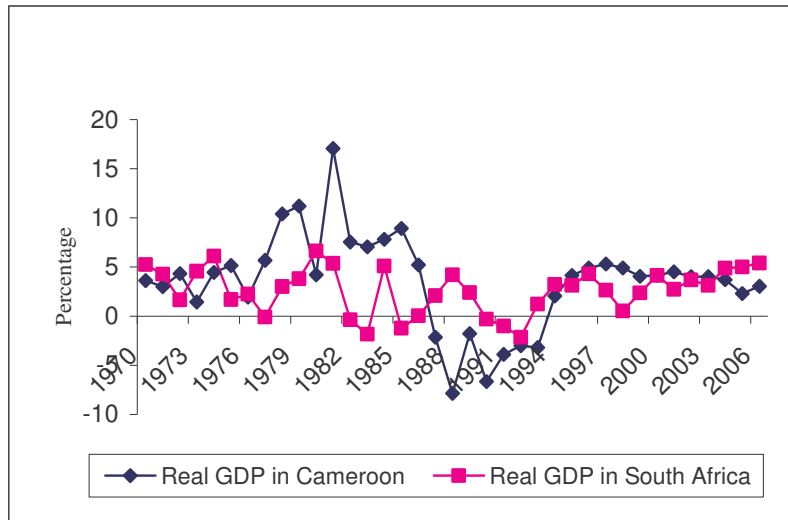
Source: IMF's International Financial Statistics (various editions)

As one can note from Table 7 and Figure 2, the data used only begins from 1970 (ending in 2006), because of the unavailability of data in Cameroon prior to 1970. However the selected period is long enough to enable the study to trace the trends of

<sup>14</sup> The simplest definition of economic growth is an increase in real gross domestic product (GDP) (this refers to GDP adjusted for inflation).

real GDP growth. Thus, in the two countries, their economic history can be divided into three phases (according to Table 7): economic expansion, economic crisis and return to growth.

Figure 2: Real GDP growth in Cameroon and South Africa (1970-2006)



Source: IMF's International Financial Statistics (various editions)

#### 4.1.1 The phase of economic expansion

In Cameroon, throughout the phase of economic expansion, that is, 1970-1986, the economy was characterised by the increase of the growth rate. During the early phase of expansion in Cameroon, real GDP gradually increased and averaged 3.09 in 1970-1973 and 4.29 during 1974-1977. Even though the economy depended mainly on the production of primary exports (such as cocoa and coffee), its dynamism was based on a diversified economic fabric and a workforce well adapted to its needs. By the end of the 1970s, the discovery and exploitation of oil led to a rapid growth; thus real GDP averaged 10.71 during the 1978-1981 periods, before declining slightly during 1982-1986. During this take-off period, Cameroon's economy was regarded as being well managed, and the country had one of the highest per capita incomes in sub-Saharan Africa. The high level of GDP during this period placed Cameroon in the category of countries with a middle income according to the World Bank classification (Fambon 2006:7).

In the case of South Africa, during the phase of expansion, real GDP was volatile and averaged 3.7 throughout the period. During the early 1970s, that is, 1970-1973, the GDP grew in South Africa, averaging 3.93 percent, because of the greatest contribution of manufacturing, mining and agriculture since the 1960s, which continued to dominate the economy even after that. However, since 1975, the GDP began to weaken, averaging 2.49 during 1974-1977. This slowing down of the real GDP rate in the mid 1970s was due to the decline of gold revenues, and also because of the rise of the import price of oil and the increase of international competition in other traditional export commodities. In fact, in 1977 the real GDP in South Africa was negative following dramatic oil price hikes (see Figure 2). Improvement was achieved by the end of 1970 when high prices for gold and other export commodities sparked a brief economic recovery, and consequently, the GDP increased to an average of 4.29 percent between 1978 and 1981.

#### **4.1.2 The phase of economic crisis**

From 1982 onwards the two countries entered a long period of turbulence and crisis, which dramatically reduced their growth rate. The phase of economic crisis thus occurred earlier in South Africa (1982-1994) than in Cameroon (1987-1994). In the early 1980s South Africa faced many impediments, which dramatically reduced the growth rate of the real GDP. Thus, the real GDP of the country significantly decreased from 5.36 in 1981 to -0.38 in 1982 and -1.84 in 1983 (see Figure 2). Despite a recovery in 1984, continued political uncertainty and growing social unrest were responsible for this erratic pattern. The country was hit by a series of droughts in the 1980s, which seriously affected agricultural output. Further erratic changes in gold prices led to a series of booms and busts, reducing the average real GDP growth to 0.33 during 1982-1986.

By the mid-1980s, there was a small recovery of the economy averaging 2.09, although the economy was distorted by apartheid policies which were designed to exclude many of South Africa's citizens from significant participation in the nation's wealth. This weak recovery of the economy during the period 1987-1990 might have been due to the decrease in the oil price in 1985, in addition to the huge reserve of gold revenues, which was continuing to affect the country's balance of payments (although its importance with regard to the GDP declined). Negligible growth in the

1980s in addition to the international sanctions and the withdrawal of most foreign corporations (especially foreign banks) from the country, led to an overall decline in living standards, while, furthermore, the population growth far outpaced economic expansion. Thus from 1990-1992, the real GDP in South Africa was negative (see Figure 2), with a small recovery in 1993 due to the dismantling of apartheid policy. Thus, GDP averaged 0.32 during 1991-1994.

In the case of Cameroon, the economic crisis began in 1987 with a sharp fall of real GDP to -2.15 per cent. In fact, the economic crisis actually started in 1985 in Cameroon with the depreciation of the US dollar which significantly hindered the trade<sup>15</sup> of the country. In addition, the combination of a fall in the prices of its primary products<sup>16</sup> (especially oil) and main commodities (coffee and cocoa) led to a considerable deterioration of the economy during 1987-1990, which was averaging -4.61. Faced with this situation, the Cameroon government introduced a number of structural programmes<sup>17</sup> in order to initiate economic recovery. However, this turned out to be insufficient to stem the economic crisis. Although the GDP improved slightly, it was still negative throughout the period 1991-1994, averaging -2.00 percent. One of the major problems in the country was the persistence of an overvalued exchange rate. Aware of the failure of previous programmes and the efforts undertaken to correct the price distortions caused by export subsidies and import duties, Cameroon and the other “*Communauté Française Africaine*” (CFA) zone countries decided, in January 1994, to devalue their currency.<sup>18</sup>

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<sup>15</sup> The depreciation of the US dollar caused a 44% fall in the terms of trade between 1986 and 1988, and the export price indices of primary products fell as follows: coffee (-11%), rubber (-20%), cocoa (-24%) and oil (-65%). For more details, see Fambon (2002).

<sup>16</sup> From 1985 onwards, oil prices witnessed a drastic fall, which continued in 1986: from 27 USD/barrel in 1985 to below 10 USD/barrel in 1986.

<sup>17</sup> The first programme established by the government was in 1987, basically aimed at reducing the government deficit and lightening the weight of the public sector in the economy. However, this turned out to be insufficient to stem the economic crisis. In effect, between 1987 and 1988, the GDP fell by 7.86 percent in real terms (2000=100), and the current account balance continued to deteriorate. Finally, the budget deficit remained high (5.8 percent of GDP), although with a downward trend relative to the preceding year (12.8 percent in 1986/1987) (Fambon, 2006:9). In view of the continued deterioration of the economic conditions in the country, the government reluctantly engaged in negotiations with Bretton Woods institutions. Given the extent of deterioration in terms of trade and its adverse impact on revenues, the government adopted an austerity programme in 1988, supported by an IMF and World Bank structural adjustment credit (SAC), which was aimed at: reducing spending, liberalising the trade regime, restructuring the banking system, and restructuring or privatising some public enterprises, among other things.

<sup>18</sup> From 1 French franc for 50 francs CFA to 1 French franc for 100 francs CFA.

### **4.1.3 The phase of return to growth**

From 1995 the phase of return to growth for the two countries began. In Cameroon, the devaluation of the franc (CFA) in 1994 and complementary macroeconomic and structural reforms since then have contributed to output growth between 1995 and 1997. Thus, in Cameroon, from 1995, the real GDP grew from 4.12 in 1995 to 5.31 in 1997, before becoming weak from 1998 onwards. This slowing down of the real GDP of the country might be explained by slow response of Cameroon exports to take advantage of the devaluation opportunities. In addition, the combination of the Asian crisis which affected almost all African economies and the high level of competition in the world trade and / or economy meant that in view of the thinness of Cameroon exports, the country was not able to face the situation. Consequently, the real GDP gradually decreased from 4.89 in 1998 to 3.03 in 2006.

In the case of South Africa, since 1994 (when the first democratically elected government came into power), the country has become politically stable with a more open and outwardly oriented economy. The rise in the growth rate in 1994 was short-lived, as by the end of 1995 a slight deceleration to 3.11 per cent occurred. South Africa's economic growth depended on increasing gold profits and foreign investments. In the mid-1990s, these continued to be important to the country's future, and both were directly linked to the ongoing dismantling of apartheid and political reconstruction.

The recovery continued in 1996, and GDP growth registered 4.60 per cent. However, the Asian crisis that began in late 1997, which consequently slowed down the global economy, impacted negatively on the South African economy as the GDP growth rate declined from 2.64 per cent in 1997 to 0.51 per cent in 1998 where it reached its lowest level during the phase of return to growth. Thus during the period 1995-1998 the real GDP averaged 2.64 in South Africa. The economy recovered in 1999 with a growth rate of 2.35 per cent being recorded; this continued up to 2006 where a rate of 4.15 per cent was reached. Thus, since 2003, the South African GDP grew at an average of 4.59, which was about double the growth rate recorded between 1980 and 1992 (which was 1.45 percent per year).

To sum up, economic growth of South Africa and Cameroon fluctuated throughout the period under review. From 1970 to the mid-1980 Cameroon's real GDP growth was at least three times higher than that of South Africa. However, South Africa has been more able to face the economic crisis. In Cameroon, during the period of economic crisis, growth of real GDP significantly decreased and was negative throughout the period. Even after the recovery of the two economies, since 1995 South Africa continued to perform better than Cameroon. While the real GDP in Cameroon gradually decreased from 1997 onwards, South Africa's real GDP increased markedly.

## **4.2 Financial sector development in Cameroon and South Africa: an overview**

In this section, this study intends to present the status of the financial sectors of the two countries; firstly, to acknowledge these sectors, and secondly, because certain arguments related to the historical background of their financial sectors could help explain certain differences that the study might later reveal when comparing the indicators of the development of their financial sectors.

### **4.2.1 Cameroon's financial sector**

The financial sector in Cameroon is still in its infancy. The system is mainly bank-centred, and the financial market is underdeveloped. There has been no significant development of leasing institutions, housing institutions, and hire-purchase companies amongst others, and the activities of commercial banks in the country have mainly been reduced to a traditional banking function, with a focus on short-term lending, which accounted for about 87.3 percent of all credit to the economy in 1995 (IMF, 2007:37). The distribution of banks is heavily skewed towards urban centres.<sup>19</sup> The implication of this is that a significant part of the country is denied access to banking facilities,<sup>20</sup> and the sector is still not monetised. There is a low volume of cheque clearance, which tends to concentrate on transactions with the government, and the financial innovations are weak and poorly supplied. For example, there are only about

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<sup>19</sup> In 2003, 80 % of the total bank branches were located in Douala and Yaoundé (the two largest cities in the country) (Avom, 2007:198).

<sup>20</sup> The intermediation rate, which is the ratio of the number of branches to the population, shows that the degree of bank penetration is still weak. Between 1995 and 2005, there was less than one bank branch per 100,000 people (IMF, 2007:35).



46 ATMs<sup>21</sup> throughout the country, which are often dysfunctional. The long-term market remains underdeveloped, with a relatively small stock exchange named the Douala Stock Exchange (DSX), established in 2002.

The key players in the Cameroonian financial sector are the *Banque Centrale des Etats de l'Afrique Centrale* (BEAC), which is the central bank of all the countries in the Economic Community of Central Africa States (CEMAC) to which Cameroon belongs, commercial banks, development banks, postal banks (CAMPOST), housing banks, insurance and non-banking financial institutions, and the Douala Stock Exchange. The major player in the financial sector of the country is the banking sector, which accounted for about 84.4 percent of the total assets of the sector in 2005, and contributed 19.6 percent to the GDP.

A number of factors have contributed to the current underdevelopment of the Cameroonian banking sector in which the main constraint is financial repression. The key elements of such repression include the extensive presence of the government within the financial sector, with government ownership of major financial institutions. Other restrictions are the high reserve requirements on deposits, statutory ceilings on bank lending and deposits, and quantitative restrictions on the allocation of credit amongst them. Before the reform of the early 1990s, state and foreign owned-banks dominated the Cameroonian banking sector. For instance, in 1986, the government was the shareholder in six out of eight commercial banks, and possessed a majority ownership in two of them (IMF, 2007:28).

This extensive presence of government within the financial markets led to a bank crisis in late 1985, as 60 percent of banking loans were non-performing (Wunde, 2001:229). In addition, the drop in the oil price and that of their main commodities (coffee and cocoa) in the mid-1980s, led to a deterioration of the economic situation. Thus, the banking sector experienced tight bottlenecks in liquidity, and the majority of commercial banks were basically insolvent, as government withdrew its reserves from commercial banks. As a result of this, a great number of banks with foreign equity holdings, in particular the American banks, withdrew from Cameroon while certain

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<sup>21</sup> Taking from the website of all the commercial banks in Cameroon. Assessed on October 2008

local subsidiaries were sold. The financial reform, which occurred in the wake of the structural adjustment programme, was designed to reduce state intervention and liberalise the financial sector. The country was to grant its central bank greater autonomy in conducting monetary policy, liberalise interest rates, abolish the allocation of credit, privatise banks, and in general develop and foster an environment conducive to the proper functioning of the financial sector. All this was in the hope of reversing decades of financial repression and enabling Cameroon's economy to grow faster.

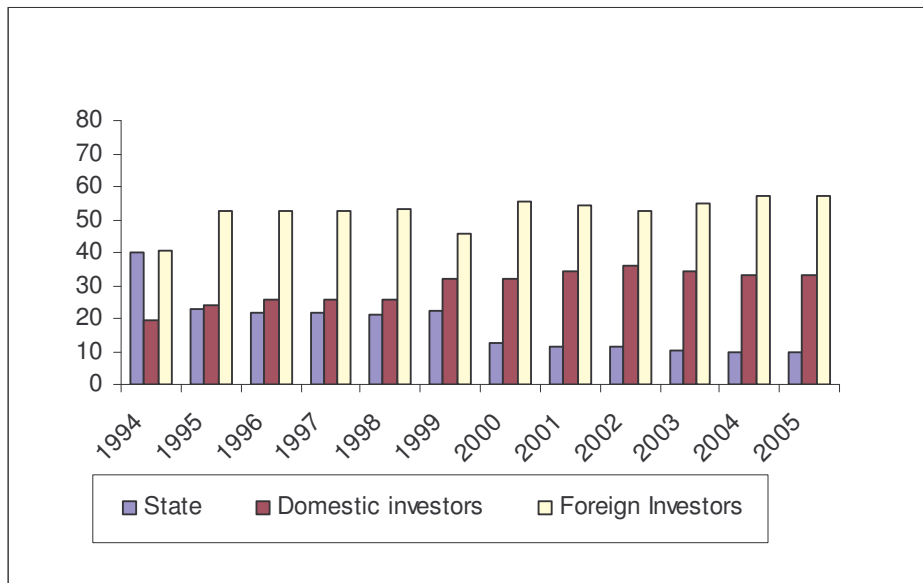
The effect of reform resulted in an increase in the number of commercial banks in the country, although bank branches significantly decreased and became concentrated in the big cities. Their numbers declined from 105 branches of 8 banks in 1995 to 104 branches for 10 banks in 2005 (see Figure 13 in the appendix). The public sector's stake in the banking sector markedly decreased after banks were restructured, in favour of the private sector in Cameroon (Figure 3). By the end of 2005, the government held a 35 percent stake in one bank and less than 30 percent in two banks. However, these three banks,<sup>22</sup> in which the state was a shareholder, are the three largest commercial banks in the country, which held 63 percent of the total deposits. If one adds to these three banks the Standard Chartered Bank of Cameroon and Afriland First banks, the five held 85 percent of total deposits and 72 percent of the total credit allocated to the economy.

Although the presence of foreigners within the sector has somewhat increased, the French presence is less numerous than during the pre-reform period (Njinkeu, 1997). Furthermore, in order to improve bank regulation and supervision, the Cameroonian government established a supranational banking commission, *Commission Bancaire de l'Afrique Centrale* (COBAC) in 1990. Thus, the supervision of the banking sector was no longer under the control of the Minister of Finance. Although the financial sector in Cameroon is still not well-developed, it encompasses the largest financial sector in the CEMAC zone, and contributes about 55 percent of CEMAC's financial assets in 2005, the bulk of which is from the banking sector.

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<sup>22</sup> Societe General des Banques au Cameroun (SGBC), Societe Commercial des Banques Cr dit Lyonnais Cameroun (SCB-CL) and Banque Internationale pour le Commerce et l'Industrie (BICIC).

Figure 3: Cameroon banks shareholders (in percentages) 1994-2005



Source: COBAC Annual Report (1995, 1999-2005); Europa: Africa South of Sahara (various editions)

#### 4.2.2 South Africa's financial sector

In South Africa, however, the private banking sector was dominated by commercial banks until the 1950s, when banking services began to diversify. Before the 1950s, commercial banks had avoided services such as personal loans, property leasing and credit card facilities, but since then, new institutions such as discount houses, merchant banks, and general banks have emerged to meet this demand. Commercial banks increasingly began to enter into medium-term credit arrangements with commerce and industry. They acquired interests in hire-purchase firms and leasing activities, and expanded their operations into insurance, even investing in manufacturing and commercial enterprises.

Currently, the key players in the South Africa financial sector are commercial banks, merchant banks, discount houses, general banks, mutual banks, insurance companies, development banks and the stock exchange, the Johannesburg Stock Exchange (JSE) that was established in 1881. However, the most important financial institutions in the country are the banks and the stock market. Their assets amounted to 109 and 187 percent of the GDP by the end of 2004 (IMF, 2005:37). The contribution of the financial sector to the South African GDP has grown steadily and continues to increase. According to Hawkins (2004:180), the sector contributes approximately 20

percent to economic activities measured in terms of GDP, of which the banking sector contributes an estimated 35 percent of this value added. At the apex of the banking system is the South African Reserve Bank, which is, inter alia, the primary monetary authority and custodian of the country's gold and foreign exchange reserves. The primary functions of the Reserve Bank are to protect the value of the rand and to control inflation. The banking sector is highly concentrated, with no government ownership.

Before the new democratic order emerged in 1994, the South African financial sector, though fairly developed, faced many obstacles (which basically repressed it) due to the political orientation of the previous minority government that resulted in international sanctions and political isolation. The country experienced a major foreign debt crisis in 1985 when a group of international banks, led by Chase Manhattan, withdrew substantial credit lines. The banks refused to roll over existing loans, and called in many of the short-term loans. The value of the rand dropped drastically as a result, and the government reacted by temporarily closing its stock and foreign exchange markets (U.S. Library of Congress, 1998).

Table 8: Market share of assets of major players in the banking industry

Expressed as % of total assets	1994	1998	2001	2005	2007
ABSA	29	23	19.3	21.36	22.73
Standard Bank	21	19.5	17.6	25.99	25.87
First National Bank	19	14.4	18.7	18.31	19.34
Nedbank (Nedcor)	15	15.7	13.8	18.06	17.14
Investec <sup>1</sup>	3	5.1	6	5.78	5.74
Foreign	1	4.2	7.7	7.86	6.97
Top 4	84	72.6	69.4	83.72	85.08
Top 5 (including Investec)	87	77.7	75.4	89.5	90.82
Share of others and foreign banks <sup>2</sup>	13	22.3	24.6	10.5	9.18
Total share	100	100	100	100	100

Sources: DI surveys and Banking Council from [www.reservebank.co.za](http://www.reservebank.co.za), Hawkins (2004)

<sup>1</sup> Foreign bank

<sup>2</sup> Excluded Investec

As a result of sanctions, more than 350 foreign corporations sold off their South African investments. Political liberalisation, which commenced with the unbanning of the African National Congress (ANC) in February 1990, and the successful transition to democracy culminating in the first democratic elections in April 1994, altered their

perceptions. South Africa quickly opened itself up again to international financial markets. The status of an emerging market was bestowed on the JSE and this witnessed the re-entry of foreign owned securities firms, ready to exploit the opportunities to be created by the anticipation of the eventual scrapping of exchange controls. The “stand-still” arrangement with foreign creditor banks was lifted and short-term bank credit was again available to South African banks, while foreign banks made a powerful re-entry into the market. Their market share of assets increased markedly, as shown in Table 8.

Although Cameroon and South Africa faced different economic shocks and crises, both of them experienced the liberalisation of their economies with the aim of restoring the balance within the economy by improving the financial sector. Whether or not these reforms helped to ameliorate the financial sector will be discussed in the next section, which analyses the trends of some relevant indicators of financial sector development.

#### **4.3 Financial indicator trends in Cameroon and South Africa**

This comparative study seeks to determine how the economic experiences of the two countries have affected their financial sector’s development. A well-defined set of financial development indicators is required for effective policy formation, implementation and evaluation. A complete set should cover the number of players, credit intermediation, liquidity management and risk management characteristics of the financial system. In addition, financial pricing mechanisms need to be considered in detail, including price setting and price flexibility aspects. Since monetary policy works with long and variable lags, policy makers need forward-looking indicators in order to predict the effect of policy changes on their intermediate and final target variables. The most useful indicators are those whose predictive capacity is unaffected by changes in the economic structure and the state of the economic cycle. Unfortunately, few such indicators exist. A second-best solution is to determine how the predictive power of an indicator changes as the economic structure or the state of the cycle changes. One can then use this information to determine which set of indicators is more likely to be reliable in a given situation.

Thus, a number of indicators are used to evaluate the response of the financial sector to policy reforms. The first sets of indicators that will be employed in this study are those which measure the widening of the sector, that is, the number of players within the financial sector. A major weakness of this indicator is that it does not take into consideration the functions of the financial system such as savings mobilisation and efficient allocation of investments. Thus, the second sets and the most often used indicators of the financial sector will be those that measure the deepening of the sector. Quantity indicators based on monetary and credit aggregates are the traditional measures of financial development and deepening. They are proxy measures of savings and credit intermediation in an economy and are expected to increase in response to improved price signalling, represented primarily by the establishment of positive real interest rates. Therefore, the simplest indicators of financial deepening used in this section relate to ratios of money supply (M1, M2 and M3) and their ratio to GDP. Generally, an increase in the ratio would imply that financial assets are growing.

Other financial indicators measuring the competitiveness of the financial sector will also be used, including the availability, and efficient allocation, of credit to the economy. Improved availability of credit, for instance, can be indicated by the increase in supply of long-term credit from bank, non-bank and securities markets. It may also reflect the lowering of reserve requirements on long-term instruments that fund long-term credit and/or the introduction of new financial institutions in an environment of stable, long-term inflationary expectations and interest rates. Thus, in order for a financial market to efficiently provide short, medium or long-term finance to the private sector and/or business, both a stock market and a banking sector must be present within the financial sector. Theory and evidence have suggested that stock market liquidity influences long-term economic growth (Levine and Zervos, 1998). Thus, this study will use the ratio of value-traded to GDP as an indicator of the development of the stock market (as motivated by Levine, 1991 and Bencivenga et al, 1995). However, most of the indicators employed to analyse the development of the financial sector in this section will be those of the banking sector.

It should also be noted that conventional monetary and financial aggregates cannot provide a comprehensive picture of financial sector development, since they do not

directly capture qualitative issues such as those relating to institutional strength, openness and quality of regulation, etcetera. They will also possess other weaknesses as proxies for financial development, owing to data limitations (particularly national account data) and the fact that many other variables will not be taken into consideration (such as the government's monetary and fiscal policy stance etc). In addition, the misleading interpretation of certain variables can also constitute another limitation of the section, because the definition of certain monetary variables such as M1 and M2 varies from one country to another. As Akinboade and Makina (2006:112) argued, the ratio of money supply to the GDP, if it includes the short-term inflow of foreign savings responding to the liberalisation of capital accounts, could be misleading in its interpretation. According to them, an increase in the ratio resulting from this inflow would only represent the long-term development of the financial system if the inflow is stable and is productively deployed by the domestic financial system. Notwithstanding, a mere increase in the ratio does not necessarily mean that a well-developed financial market has evolved; hence the need to consider a number of performance indicators. With all these limits in mind, these aggregates can, however, highlight broad trends. Qualitative information will be discussed, although, by its nature, it is more difficult to obtain without more detailed survey evidence, which is beyond the scope of this study.

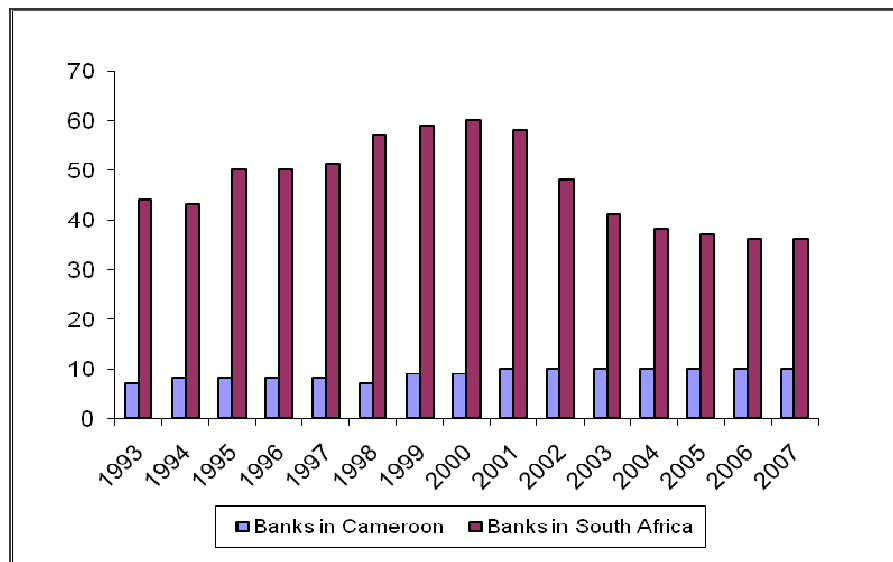
#### **4.3.1 Indicators of financial widening**

The number of players in a country's financial sector is one of the best indicators of the level of financial sector development in that particular country as argued by Takaendesa and Odhiambo (2007). Figure 4 therefore compares the financial sectors of the two countries on the basis of the number of players within their banking sectors.

In Cameroon, the period following the liberalisation has led to an increase in the number of commercial banks which reached its peak of 10 banks in 2001 where it remains stable. Whereas in South Africa, the number of commercial banks increased steadily from 1995 to 2000 where it reached its maximum at 60 banks; afterwards it began to decrease to 36 banks in 2007. This drop in the number of commercial banks in South Africa is the result of acquisitions and merging with small banks by the largest ones. As mentioned by Hawkins (2004:194), between 2001 and 2002, 23

banks were acquired and or taken over in South Africa while 2 were liquidated. On considering Figure 4, it is evident that South Africa boasts more than triple the number of banks in Cameroon, which suggests that the financial sector is stronger in South Africa than in Cameroon.

Figure 4: Number of banks in Cameroon and South Africa (1993-2007)



Source: SARB, BEAC, COBAC, Africa South of Sahara: Europa (various editions).

Following Takaendesa and Odhiambo (2007), a comparison of the financial sectors of the two countries, based on other indicators of financial sector development (financial deepening), may also be of importance in rendering support to the findings based on the number of financial institutions (financial widening). A comparison of these indicators follows.

#### 4.3.2 Indicators of financial deepening

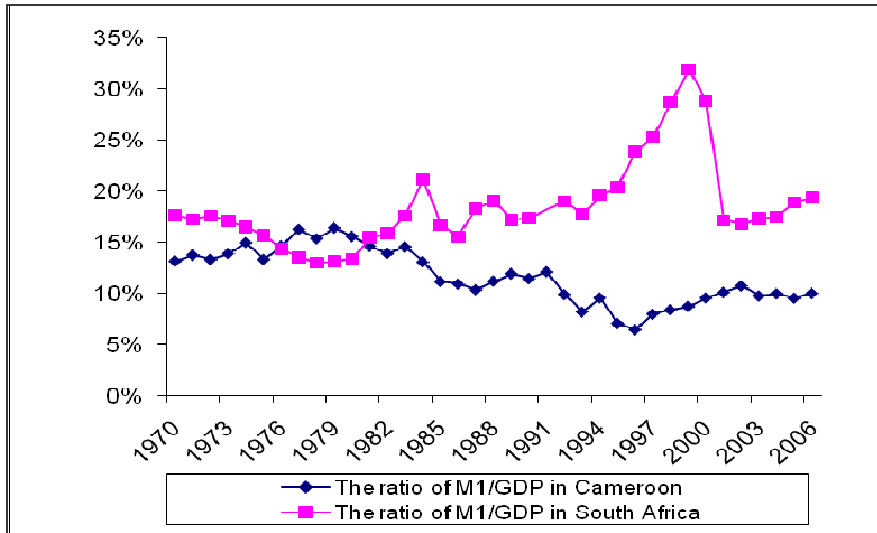
##### 4.3.2.1 The ratio of M1 to Gross Domestic Product (GDP)

The ratio of narrow money to GDP represented in Figure 5, measures the degree of monetisation of one economy. This ratio provides valuable payment to the financial sector, and it should increase in line with economic transactions. This ratio was increased in Cameroon from 1970 to 1980, averaging 14.59 percent of GDP. During 1976-1981 the ratio in Cameroon exceeded that of South Africa. Since then it has decreased before improving slightly since 1999. Whereas in South Africa, the ratio



decreased from 1970 to 1980, after which it began to increase from 1981 to 1999 before experiencing a drop in 2002.

Figure 5: The ratio of M1/GDP in Cameroon and South Africa 1970-2006



Source: International Monetary Fund's *International Financial Statistics yearbooks* (various)

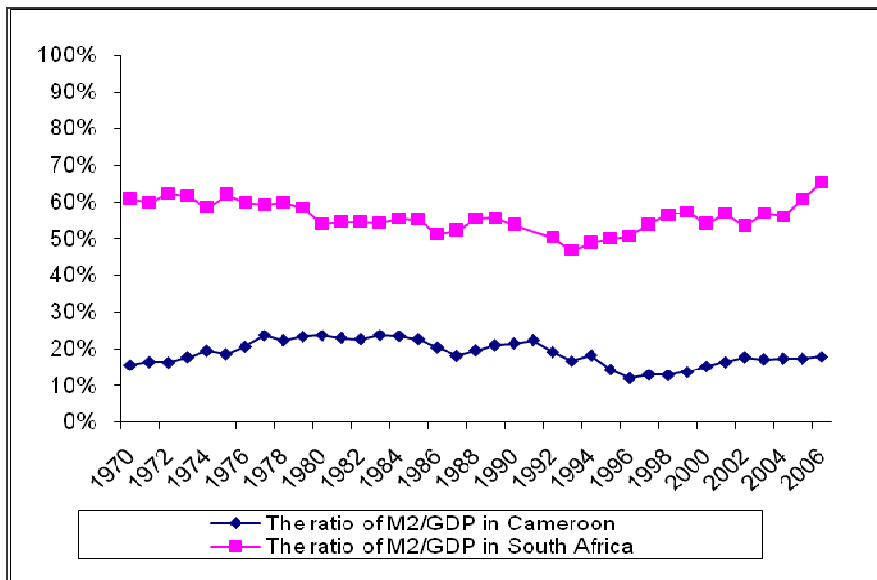
#### 4.3.2.2 The ratio of M2 to Gross Domestic Product (GDP)

The M2 monetary aggregate is usually defined as narrow money (M1), comprising transferable deposits and currency outside money deposited in banks, plus quasi-money comprising time, savings and foreign currency deposits of banks. The ratio M2 to GDP can provide a measure of the real size and depth of the financial sector and financial development. The ratio tends to be in line with the development of financial systems as the range of savings instruments spreads and liquidity increases, but will then tend to fall again as other non-deposit based forms of savings instruments develop. Figure 6 depicts the evolution of the ratio for Cameroon and South Africa over the period 1970-2006.

The ratio of M2 to GDP was volatile in both countries and averaged 18 percent and 56 percent of the GDP in Cameroon and South Africa respectively during the period 1970-2006. During the pre-reform period, the decrease of this ratio in South Africa may be attributed to the international sanctions and withdrawal of many foreign banks, while in Cameroon the ratio was steadily increasing. The increase in this ratio

in Cameroon was due to the entrance of many foreign banks, especially American banks, in the early 1980s owing to the discovery of oil there.

Figure 6: The ratio of M2/GDP in Cameroon and South Africa (1970-2006)



Source: International Monetary Fund's *International Financial Statistics yearbooks* (various)

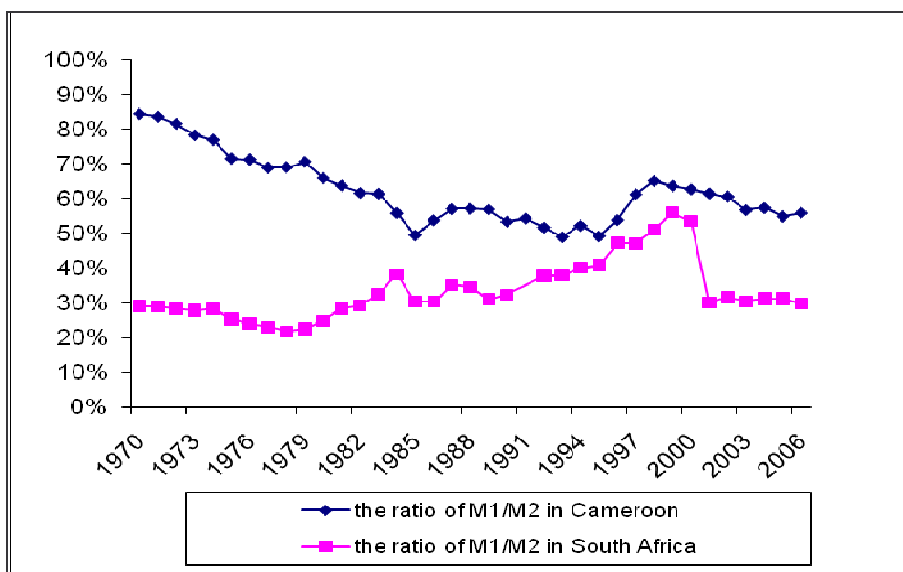
However, after the liberalisation of the financial sector, the economy improved in South Africa. Since 1994, this ratio steadily increased in South Africa and reached 66 percent of GDP, which reflected greater access and new entrants to the banking system. In Cameroon, however, with the upsurge of the crisis in the mid-1980, this ratio steadily decreased due to the withdrawal of some banks with foreign equity holdings, in particular the American and British banks, from Cameroon. However, after banks reformed in 1989, the ratio improved during the first two years and thereafter decreased, owing to the liquidation and restructuring of most of the biggest banks of the country. From 1997 the ratio began to increase until 2006, partly due to the entrance of new private Cameroonian banks in the sector (between 1997 and 2006, four new banks entered the market).

#### 4.3.2.3 The ratio of M1 to M2

The ratio of narrow to broad money is examined in Figure 7. This ratio should be inversely related to a country's level of financial development. If this ratio decreases, financial sector development increases, as savings deposits increase more rapidly than

transaction balances when the financial system expands. In many developing countries, there is a preference for liquidity, and demand deposits therefore have abnormal weight in term of total deposits; this significantly limits the capacity of the financial sector to support the development process in these countries. This ratio illustrates the extent to which the financial sector attracts savings, and if one examines the ratio over time, it can act as a proxy for the pace at which the financial sector develops. A ratio of 100% suggests that all deposits are kept on a sight basis, but as confidence grows in the banking system and more financial savings products become available, the ratio will fall as savings move to longer-term deposits. In the two countries this ratio remains high, reflecting the financial system's difficulty in attracting financial savings and promoting capital accumulation

Figure 7: The ratio of M1 to M2 in Cameroon and South Africa (1970-2006)



Source: International Monetary Fund's *International Financial Statistic yearbooks* (various)

Thus, in Cameroon, this ratio has been decreasing since 1970, before increasing between 1986 and 1991 and again between 1996 and 2006. Between 1970 and 1986 the Cameroonian banking sector was efficient, as the government was investing a huge amount of its budget surplus (due to the discovery of oil) into the banking sector. Thus, financial savings were increasing. However, prior to the financial crisis in 1985 many banks were liquidated and or closed down and this led to a loss of confidence in them. Thus, this ratio began to increase until 1988. Financial liberalisation, which occurred in 1989, improved the situation slightly and the ratio decreased from 1990 to

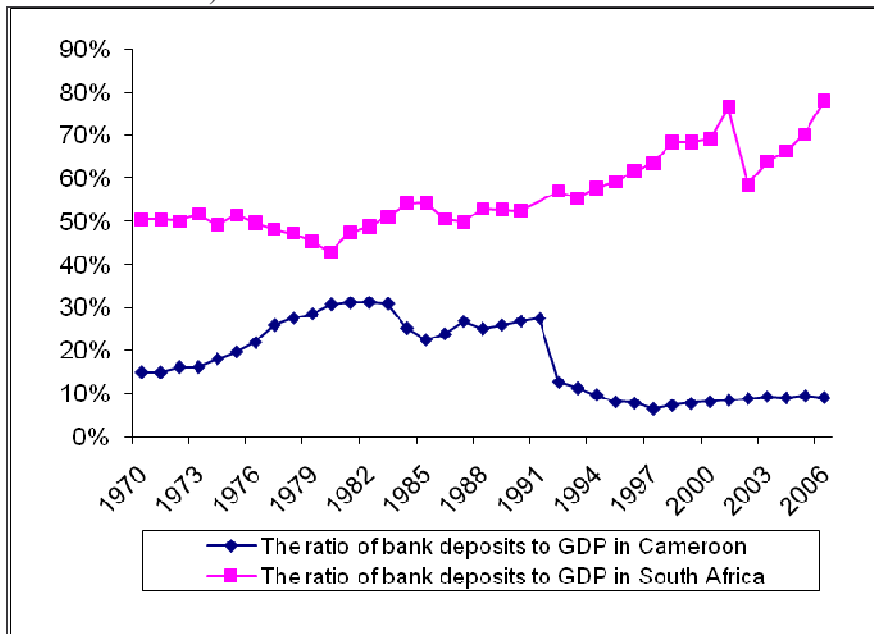
1995. From 1996 to 1999 the ratio increased again, partly due to the devaluation of the currency in 1994. Since 1999 there has been a small improvement, but the ratio remains high in the country, averaging 59 percent during the period 1999-2006.

With regard to South Africa, the ratio of M1/M2 has been volatile, and has followed a declining trend between 1970 and 1978, with an average of 26.2 percent of GDP. This period represents the most developed period of South Africa's banking sector. Around this time, some financial sector restructuring possibly led to the introduction of new savings instruments, as a result of which demand deposits declined. From 1979 to 2000, the ratio gradually increased. In fact, progress was made during the 1988-90 period when this ratio began to fall; however from 1994 to 2000 this ratio rose to 47.8 percent, reflecting an increased need for demand deposits as individuals from previously disadvantaged communities became more involved in the economy. The highest ratio of about 53 percent occurred in 2000. This suggests that, since the introduction of democracy in 1994, limited efforts have been made to further develop the financial sector. It also reflects the inability of the banking sector to introduce new financial products in order to attract more savings from the wider population. However, since 2001, new financial products have been made available in South Africa; but the ratio is still high, averaging 30.6 percent during the period 2001-2006.

#### ***4.3.2.4 The ratio of bank deposits to GDP***

The ratio of bank deposits as shown in Figure 8 below provides an illustration of the extent to which local savings are being effectively mobilised. This ratio is typically very low in developing countries, as in Cameroon where it represented 18 percent of the GDP throughout the period 1970-2006. Between 1970 and 1977, the ratio increased and averaged 18.5% of the GDP in Cameroon. Prior to the discovery of oil in 1978, this ratio began to increase more rapidly than before, and maintained an average of 30 percent of the GDP during the period 1978-1983. This represents the most highly developed period of the financial sector in Cameroon. From 1984-1991, the ratio decreased slightly, averaging 25 percent of the GDP. This fall in the ratio was partly due to the banking crisis that began in late 1985.

Figure 8: The ratio of bank deposits to GDP in Cameroon and South Africa (1970-2006)



Source: International Monetary Fund's *International Financial Statistics yearbooks* (various)

The restructuring of the sector in 1989 did not improve the situation: although there has been a small increase in the ratio from 1990-1991, it dropped from 27.5 in 1991 to 12.7 in 1992 and remained at this low level until 2006 where it represented only 6 percent of the GDP. This decrease in bank deposits was due to the collapse of one of the biggest banks in the country (*Banque Internationale pour l'Afrique Occidentale (BIAO)*) and the liquidation of many other small banks. Thus, this low ratio of bank deposits in Cameroon reflects either the inability of the bank to provide new financial products which could attract more savings, or the inefficiency of reform policy.

As in Cameroon, this ratio was volatile in South Africa, but maintained an upward trend, averaging 56 percent of the GDP throughout the period 1970-2006. From 1970 to 1993, this ratio averaged 50 percent of the GDP. Thereafter, it maintained an upward trend, averaging 61 percent during the period 1994 to 2006. This suggests that since 1994, local short-term savings have been more effectively mobilised than previously.

#### ***4.3.2.5 The ratio of domestic credit to GDP***

The ratio of domestic credit to GDP is employed to measure the growth of the banking system. It may provide an indication of financial depth and the degree to which the formal banking sector plays a role in the economy. Domestic credit can then be allocated to the government or private sector. The private/public sector split of domestic credit may provide an indication of the role of the state in the financial and real sectors of the economy. Figure 9 shows the evolution of the ratio for Cameroon and South Africa respectively.

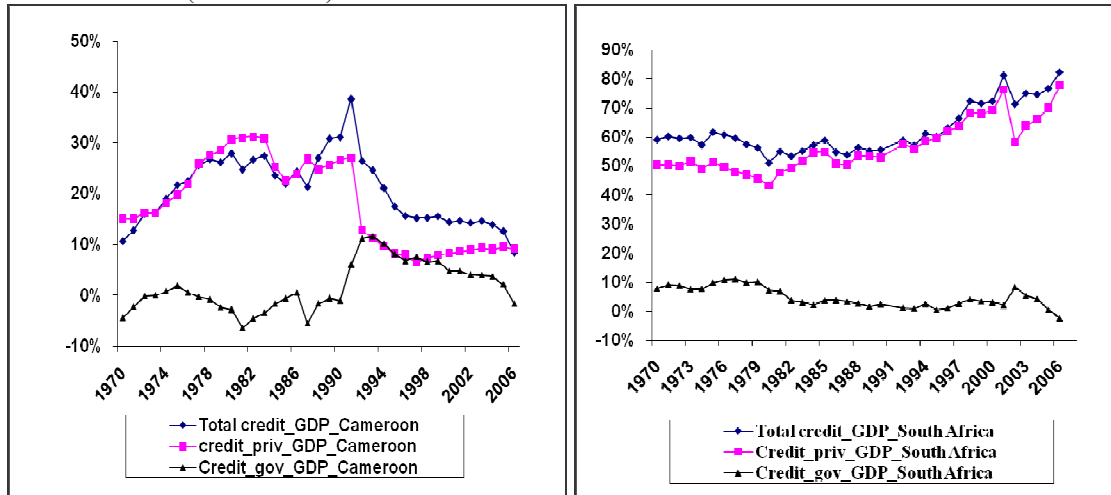
During 1970 and 1983, the ratio increased in Cameroon, and the total domestic credit as a proportion of GDP was 21.71 percent. The amount allocated to the private sector was 23.44 percent. State involvement was not important in Cameroon during that period; in fact the government was funding the private sector (government surplus was about 1.73 percent of GDP). During that period the credit to the private sector exceeded the domestic credit. This reflects a favourable climate for investment in the country.

Between 1984 and 1991, while credit to the private sector declined slightly, total domestic credit also declined from 1983 to 1987 but afterwards it steadily increased until 1991 when it reached its peak at 38.6 percent of the GDP. Even during this period, although government surplus decreased to 0.55 percent of GDP, government continued to support the private sector. Credit to the private sector continued to exceed domestic credit from 1984-1987, while from 1988 to 1991 this trend reversed.

From 1992 to 1997, the total domestic credit and credit to the private sector significantly decreased, when credit to the public and/or government increased. This decrease in the ratio of total domestic credit and credit to the private sector was evident, given the large amount of non-performing loans during that period. In fact in 1995, non-performing loans accounted for 40 percent of the total credit to the private sector (see Figure 14 in the appendix). From 1998 to 2006, domestic credit and credit to the private sector improved slightly. During that period, domestic credit averaged 13.71 percent while the amount allocated to the private sector was 8.66 percent. State

involvement in Cameroon is now important, which attracted an average of 3.9 percent of the total credit to GDP, reflecting the risky investment climate in the country.

Figure 9: The ratio of domestic credit to GDP in Cameroon and South Africa (1970-2006)



Source: International Monetary Fund's *International Financial Statistic yearbooks* (various).

In the case of South Africa, however, both the ratio of total and private sector credit were volatile throughout the period 1970-2006, generally increasing, especially since the liberalisation of the economy in 1994. During the 1970-80 period, total domestic credit as a proportion of the GDP averaged 58 percent. The amount allocated to the private sector constituted 50 percent of the GDP. State involvement (which attracted an average of 9 percent of total credit to the GDP) was important in South Africa at this time, reflecting the risky investment climate in the country, the effect of sanctions and disinvestment, and the reluctance of banks to lend, given the already large number of non-performing loans extended by the banking system to public enterprises. Between 1980 and 1993, total domestic credit declined to 55 percent of the GDP.

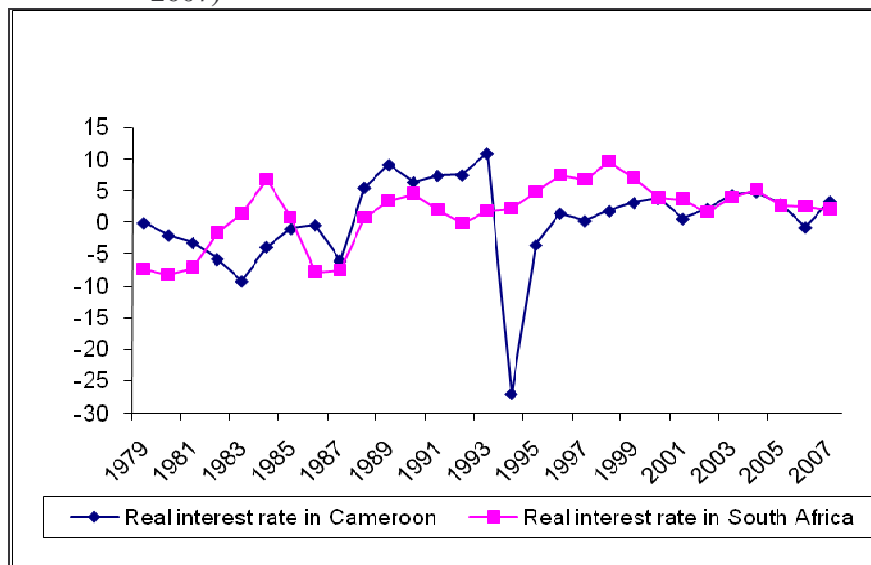
The ratio of private sector credit to the GDP was 52 percent, which reflects a low level of government borrowing during this period. Since banking sector reforms accompanied economic liberalisation, total credit to the economy has risen since 1994. Between 1994 and 2006, total domestic credit increased to 71 percent of the GDP. This increase is accounted for by a greater extension of credit to the private sector (66 percent of the GDP), especially taking into consideration that fiscal deficit decreased significantly from about 9 percent between 1970-1980 to 3.1% between

1981-1993 and just over 0.5 percent in 2005. In 2006 the country experienced a fiscal surplus that was 2.2 percent of the GDP.

#### 4.3.2.6 Real interest rate on time deposits

The real interest rate is one that has been adjusted to remove the effects of inflation, in order to reflect the real cost of funds to the borrower and the real yield to the lender. The real interest rate of an investment is calculated as the amount by which the nominal interest rate is higher than the inflation rate. In this study, the deposit rate was considered to be the nominal interest rate. When the real interest rate is low, inflation is higher and the return on savings will be lower. This may lead to a decrease in financial savings. Strict interest rate controls provide nominal interest rate stability, but only at the “expense” of real interest rate instability, if inflation is variable. The only way to achieve low nominal interest rate stability without creating damaging real interest rate volatility is to achieve a low stable rate of inflation. Market determined interest rates are often an early sign of financial sector reform and liberalisation. The real deposit interest rate is the most important financial market price. A fundamental precondition for substantial financial deepening is that it should be positive. Fragmented markets in lagging economies often produce negative real deposit rates, which discourage savings in financial assets.

Figure 10: Real interest rates on time deposits in Cameroon and South Africa (1979-2007)



Source: International Monetary Fund's *International Financial Statistics* yearbooks (various)



In Cameroon, during the period 1979-1987 the nominal interest rate was fixed and the inflation rate very high, which resulted in a negative real interest rate at this time. This negative interest rate did not affect bank deposits (see figure 10) because government was the main owner of commercial banks. However, from 1988 onwards, the real interest rate became more positive and reached its peak in 1993 at 10.9 percent. One year later it began to fall again to -27 percent before rising to 3.57 percent in 1995 and becoming positive again between 1996 and 2006. This negative real interest rate in Cameroon in 1994 was due to the high inflation rate at the time, caused by the devaluation of the currency.

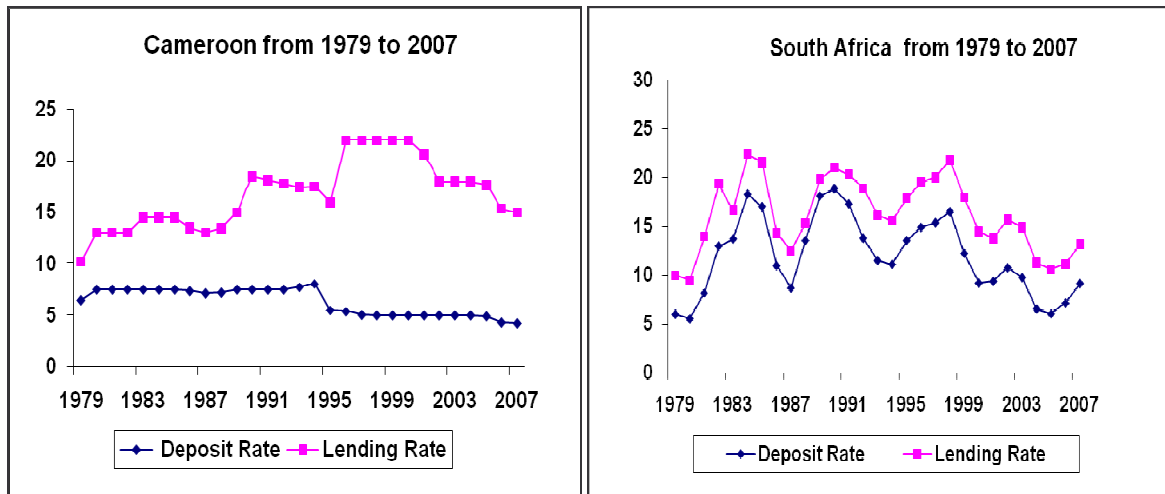
In the case of South Africa during the 1970s and 1980s, interest rates were fixed; progress made towards liberalising interest rates began in the 1990s, and since then, interest rates have been relied upon to a large extent to conduct monetary policy. During the 1979-82 decade, the real interest rate was largely negative, averaging -6.09 percent. This followed a decreasing trend although it was still negative during the 1986-87 periods, before rising again from 1988 onwards. Following South Africa's successful political transition in 1994, the real interest rate increased faster than before and reached 9.6 percent in 1998 when it started to decrease again, but remained positive until 2007, averaging 4.5 percent during the period 1994-2007. This might explain why bank deposits have not ceased to increase since the liberalisation in 1994.

#### ***4.3.2.7 Interest rate spread***

The financial sector plays a crucial role in the operation of most economies, as it provides intermediation between borrowers and lenders of funds. To the extent that financial intermediaries are efficient institutions for channelling funds from savers to borrowers, they can affect economic growth. The behaviour of lending rates, deposit rates and their difference or "spread" are key issues in the financial sector because they reflect the cost of intermediation. High spreads are generally viewed as impediments to the development of the financial sector, since they discourage potential savers with low returns on their deposits, and reduce the gross return of potential investors. Figure 11 depicts the interest rate in the two countries.

In Cameroon, the spread between deposit and lending rates is wider compared to that in South Africa. The deposit rate in Cameroon was fixed at about 7.5 percent during the period 1979 to 1993, and at 4 percent between 1994 and 2007, while the spread between deposit and lending rates averaged 10 percent from 1979-2006, compared to 4.25 percent in South Africa during the same period.

Figure 11: Interest rate spread in Cameroon and South Africa (1979-2007)



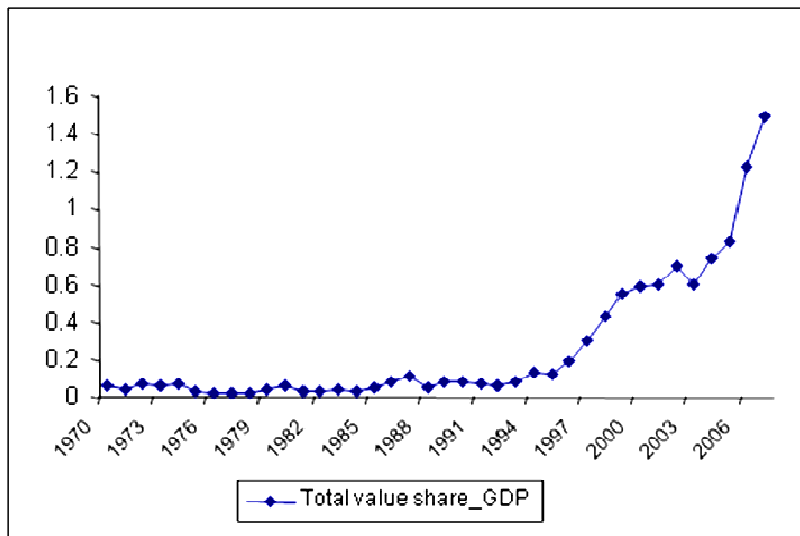
Source: International Monetary Fund's *International Financial Statistics yearbooks* (various)

As argued by Akinboade and Makina (2006:122), real returns may continue to reflect significant dispersion because of information asymmetry and high transaction costs, a symptom of the poor physical, technical, tax and regulatory infrastructure. This gap between lending and deposit rates may decrease as the financial system develops (as in the case of South Africa) and increase if the sector becomes less efficient (as in Cameroon). According to these two authors, in order to eliminate information asymmetry within the financial sector, new institutions must be created (such as credit-rating agencies, in order to produce higher quality information). New technology must be utilised in order to improve the processing and dissemination of information, and adoption of efficient business practices must be considered, as well as market organisation and ongoing deregulation. In addition, the presence of a well-developed stock market is also required in order to reduce information asymmetry, but in the case of Cameroon, the stock exchange is still too new to be functioning properly.

#### 4.3.2.8 Stock market development

The total value of shares traded relative to the size of the gross domestic product can provide an indication of the health of an economy. It is expected that this ratio will increase over time as one possible indicator of the trend in higher long term economic growth. Figure 12 below illustrates the evolution of the ratio of value share to GDP in South Africa. During the 1970-93 period, the value of shares traded on the Johannesburg Stock Exchange expressed as a proportion of gross domestic product, was low, almost stagnant, at less than 5.44 percent. During this period, the effect of economic sanctions probably contributed towards a lack of interest amongst foreign investors. With political and economic liberalisation being pursued during the 1990s, foreign and domestic investors increased their presence and activities on the JSE, leading to rising liquidity and an increase in the ratio of shares traded relative to the size of the economy. The ratio, which was about 8 percent in 1993, rose to about 12 percent in 1994, averaging 60 percent over the entire period. This represents a considerable improvement in the ratio of shares traded relative to the size of the economy during the 2005 period, which averaged 0.6 percent.

Figure 12: Total value of shares to GDP in South Africa (1970-2007)



Source: IMF's International Financial Statistic (various editions)

In the case of Cameroon, the Douala Stock Exchange (DSX) has been idle since it was established in 2002. At the end of 2006, only one company was listed, and trading has been minimal, partly due to the regional stock exchange that was

established in Libreville (Gabon) in 2003 (Europa 2007:199). This may have generated increased competition for the DSX, in view of the thinness of the CEMAC market.

#### **4.4 Conclusion**

In this chapter, economic growth experiences and financial sector development in Cameroon and South Africa, during the 1970-2006 periods, were discussed. The study has employed various quantitative indicators of economic growth and financial sector development. It has been suggested that in Cameroon, during the pre-reform period, the country as well as the financial sector, excelled the most, partly due to the discovery of oil in 1978. However, it has been found that the economic shocks that hit the country in the mid 1980s significantly affected the financial sector, as the government was the main shareholder of almost all the banks. All the policies implemented in the country have failed to improve the economic situation.

Thus, the post-reform period was the worst, as indicated by almost all the indicators that were applied to the financial sector. The banking sector was unable to efficiently collect savings and allocate these to the economy, possibly because of the loss of confidence in the banking sector although few efforts were made to attract savings from the economy. Furthermore, the real interest rate, which reflects the real cost of funds to the borrower and the real yield to the lender, was almost negative throughout the period under review, and did not attract savings, even when it was positive. When the cost of borrowing is too high in a country this leads to an increase in information asymmetry within the sector, given the evolution of non-performing loans as shown in Figure 14 (in the appendix). Even if non-performing loans have decreased in Cameroon, they are still very high, accounting for 12.4 percent of total credit to the private sector in 2006. However, there has been an increase in some of the indicators of the financial sector's development in the country since 1999.

In the case of South Africa, despite the financial repression and all the sanctions that affected the country in the 1980s, the financial sector has shown a potential to respond to the needs of the economy. Even after the liberalisation of the economy in 1994, the sector performed well which placed it in the position of being one of the most

sophisticated in Africa. Throughout the period under review, there has been a trend of an increase in almost all the indicators of the financial sector selected. Savings have been better mobilised and effectively allocated to the economy and the financial sector has done well since the liberalisation of the sector. However, much more effort needs to be exerted in order to further develop the financial sector and incorporate the majority of South Africans excluded from the sector during the apartheid era.

From the above review of financial sector development and economic growth in South Africa and Cameroon, one can conclude, to some extent, that financial liberalisation has been more successful in improving the financial sector in South Africa than Cameroon. Although certain indicators of the financial sector have increased in both countries, no definite statement can be made concerning the relationship between financial sector development and economic growth from this chapter. It has at least been established that there is some evidence of financial development in the two countries and that it has been greater in South Africa than in Cameroon. What remains is to empirically test the relationship between financial development and economic growth, which is the focus of the next chapter.

## CHAPTER FIVE

### METHODOLOGY AND DATA SOURCES

#### 5.0 Introduction

Having established in the previous chapter that there is some evidence of financial development and economic growth in Cameroon and South Africa, this study now intends to empirically test the association and causality between the two variables in these countries. Economists have long debated the empirical importance of the relationship between financial development and economic growth. The ambiguity which still surrounds the relationship is mainly in terms of how to measure financial development. In order to overcome the problem of measuring the latter, this study uses the five most commonly used indicators of financial development in the literature. By using a broadest selection of indicators, this study can determine whether or not the financial indicators tell similar stories about their relationship with economic growth.

In the process, this study intends to use an econometric model to explore the association and casual relationship between financial development and economic growth in Cameroon and South Africa. Econometrics combines economic theory with statistics in order to analyse and test economic relationships. The goal of econometrics is twofold: to provide economic theory with empirical data, and to empirically verify them. An econometric model is always used by economists to analyse the association and/or relationship between variables, usually with the hope of determining causality. Econometric models are not perfect, but they often provide an approximation that is useful when trying to understand and forecast changes in the economy. Researchers and policy-makers use econometric models extensively in order to understand what the implications for the economy will be if certain variables are changed.

After this brief introduction, the rest of the chapter is organised as follows: the first section will focus on measurement and data sources - thus, all the indicators of financial sector development and economic growth, as well as some additional ones, will be mentioned. In this section, the reason for choosing each indicator and its importance will be highlighted. However, the relationship of each indicator to

economic growth will not be discussed, because this has already been done in the previous chapter. After presenting the variables that will be used in this study, it is worthwhile to describe the model that is employed, in order to test their association. Thus, the second section discusses the methodology that is used in order to examine the possible association between financial development economic growth and all the other additional variables. In this regard, the Vector autoregressive framework (VAR) will be used in order to explore the relationship between financial development and economic growth. This method has been proven in the literature to be the best when studying this type of relationships, especially the ones involving tests of causality between variables. Other methods, such as the cross-sectional method (King and Levine, 1993a, b; Levine and Zervos, 1998; De Gregorio and Guidotti, 1995, among others), fail to explicitly address the potential biases due to the endogeneity of the explanatory variables and the existence of cross-country heterogeneity. These problems may lead to inconsistent and misleading estimates (Quah, 1993; Caselli et al. 1996, Ghirmay, 2004). Nevertheless, recent empirical studies have used dynamic panel data methods, such as the first differenced generalised methods of moments (GMM), as a way to control for potential sources of biased coefficient estimates in cross-country regressions (Levine et al, 2000; Benhabib and Spiegel, 2000 and Rioja and Valev, 2004 etc). In particular, it is assumed that the slope coefficient is identical across the countries included in the panel, that is financial development generates equivalent investment and productivity across countries. This is, of course, not evident. Thus, since time-series data is used, it has been suggested that variables must be stationary in order to avoid spurious regression. Thus, after briefly discussing the model specification, the study will present the unit root test, followed by the cointegration procedure. Having test the relationship between the variables used, the study next investigate the direction of causality between them. Thus, the description of the causality framework will be highlighted in section three and section four will provide a brief conclusion of the chapter.

## **5.1 Measurement of variables and data sources**

One of the most important issues in assessing the relationship between financial sector development and economic growth is how to obtain a satisfactory empirical measure

of financial development. The purpose of this section is to present all the indicators that will be used later on when estimating the equation.

### **5.1.1 Definition of indicators**

Direct measurement of how well the financial sector performs each of its functions is difficult. One can, for example, not observe directly the quality and quantity of the monitoring services performed by a bank when it extends a loan, at least not for a large set of countries. Hence, researchers have taken refuge to using proxies. Thus, to avoid the problem of choosing from the vast number of applicable financial development indicators, this study has chosen, in line with Kar and Pentecost (2000), a reasonable set of proxies of financial development. The advantage in choosing such a reasonable number of financial development indicators is the ability to determine whether or not all of them tell similar stories about the relationship between financial development and economic growth.

In the literature, the most commonly used measure of financial development is the ratio of broad money to GDP, usually called liquid liabilities (M2/GDP). Broad money consists of currency held outside the banking system, plus the demand and interest-bearing money of bank and non-bank financial intermediaries. (The variable M2 can be found in the IFS line 34+35=M2 for Cameroon, and in the case of South Africa, it is the line 59mb). This indicator, which measures the degree of monetisation of an economy, has been used as a standard measure of financial development in numerous studies, including King and Levine (1993a, b); Wood (1993); Murinde and Eng (1994); Lyons and Murinde (1994); Gelb (1989); Calderon and Lui (2003); Odhiambo (2004), amongst others. In this study, the ratio of broad money to GDP, referred to as M2/GDP, is the first proxy of financial development. This ratio has, however, been the subject of many criticisms. Its major weakness, according to Ghirmay (2004), is that it is likely to measure the extent to which transactions are monetised, rather than functions of the financial system such as savings mobilisation, as presented in the theoretical models.

Thus, an alternative to the broad money ratio is the ratio of bank deposits to GDP (IFS line 22d) as a quality proxy for financial development, which is the second proxy of financial development in this study (see Demetriades and Hussein (1996); Luintel and



Khan (1999); Suleiman and Abu-qarn (2007)), and will be referred to as BD/GDP. In developing countries, a large component of the broad money stock is currency held outside the banking system. In principle, a rising ratio of broad money to income may reflect the more extensive use of currency, rather than an increase in the volume of bank deposits. Therefore, in order to obtain a more representative measure of financial development, currency in circulation should be excluded from the broad money stock, and this is the ratio of bank deposits to GDP, according to Xu (2000). In terms of the latter, currency is excluded from the measure because it is not intermediated through the banking system. Although this indicator of financial sector development reflects the capacity of financial intermediaries to mobilise savings, it may, however, not be closely related to financial services such as risk management and information processing.

The ratio of credit to the private sector to GDP (excluding public enterprise), referred to as Pcre/GDP (IFS line 32d for Cameroon and line 52d for South Africa), is used as the third proxy of financial development (Ang and McKibbin, 2007; Zang and Kim, 2007; Odhiambo, 2007; Lufeyo, 2007; and Apergis et al, 2007). This ratio is frequently used to assess the allocation of financial assets, which the first two indicators (the ratios of broad money to GDP and bank deposits) cannot provide. Therefore, an increase in these first two ratios does not necessarily mean an increase in productive investments. On the other hand, the ratio of private credit to GDP is related to the quantity and efficiency of investment, and hence to economic growth (De Gregorio and Guidotti, 1995). It is assumed that credit provided to the private sector generates increases in investment and productivity to a much larger extent than credit provided to the public sector. It is also argued that loans provided to the private sector better shows the improved quality of investments emanating from financial intermediaries' evaluation of project viability than loans directed at the public sector.

The fourth indicator of financial development is the ratio of domestic credit to GDP, referred to as Tcre/GDP. This represents the domestic assets of the financial sector. It is the major item on the asset side of the consolidated balance sheet of the financial sector, and is expected to increase in response to improved price signalling. This ratio has been used extensively in numerous studies, including Odedokun (1989);

Acaravrci et al (2007); Apergis et al (2007), Habibullah and Eng (2006); Agbetsiafa (2003); Kar and Pentecost (2000); and Unalmis, (2002), amongst others.

The fifth proxy of financial development is the share of private sector credit in domestic credit, referred to here as  $Pcre/Tcre$ . This indicator may capture the essence of domestic asset distribution within an economy. A financial system that simply funnels credit to the government or state-owned enterprises may not be evaluating managers, selecting investment projects or pooling risks to the same degree as a financial system does when it allocates credit to the private sector. Lynch (1996) argues that government credit from banks in countries with a highly regulated financial system is frequently captive, and that banks have no control over its use. Consequently, the banks' important role of allocating credit is best represented by their lending to the private sector. Thus, the share of credit given to the private sector in domestic credit may reflect another aspect of the financial sector. Thus, it is important to use it as a proxy of financial development.

In terms of the literature, economic growth will be measured by an increase in real per capita GDP. In this study, economic growth will be measured by the real per capita GDP (2000 price = 100), and will be denoted as  $Y$  (which equals to  $y/p$ ). In the case of financial sector development, the issue of what represents an appropriate measure remains controversial.

### **5.1.2 Definition of additional variables**

In addition to the previously defined variables of financial development and economic growth, this study will include three other variables: the index of financial liberalisation; the labour force; and the real interest rate. In line with Luintel and Khan (1999), the real interest rate will be used here to measure financial repression. A positive real interest rate increases financial depth through the increased volume of financial savings mobilisation, and promotes growth through increasing the volume and productivity of capital. In line with Odedokun (1996), labour force growth was proxied by population growth which was, in turn, calculated as the annual growth rate of population size (or line 99z of the IFS). The introduction of all these additional variables is due to the fact that this study wants to test if the relationship/causality

between financial sector development and economic growth will remain when controlling for other sectors of the economy.

### 5.1.3 Data sources

In this study, annual time-series data covers the period 1970-2006 for both countries. The main sources of data for most of the variables are the International Monetary Fund's International Financial Statistics (IFS) CD-ROM (2006), and the World Bank indicators CD-ROM (2007). However, gaps in IFS data were filled with matching data from the South African Reserve Bank and Banque des Etats de l'Afrique Centrale, as well as from other Internet sources such as Youmbi (2002)<sup>23</sup>.

## 5.2 Methodology

### 5.2.1 Model specification

In this study the relationship between financial development and economic growth is examined by regressing financial indicators variables on real income, real interest rate and labour force. The research question is whether financial development and economic growth are positively or negatively related. Following Nejjib (2005) such a model can be expressed as follow.

$$\text{Log (FD)}_t = \beta_0 + \beta_1 \log Y + \beta_2 R + \beta_3 \text{Labforce} + \beta_4 \text{Log (FD)}_{t-1} + \text{ECT}_t \quad (5.1)$$

Where:

FD = the indicator of financial sector development

Y = real per capita GDP (fixed at 2000 prices)

R = real interest rate

Labforce = labour force

Unlike Nejjib (2005) who considered the density of bank branches, this study has included the labour force (following Odedokun, 1996) as a measure of market size, and it captures the effect of demographics on financial sector development. In order to capture the effect of financial liberalisation which seems to have an impact on the development of the financial sector in the both countries as shown in chapter four, this

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<sup>23</sup>Youmbi (2002). Source: [www.memoireonline.com/02/07/337/m\\_determinants-epargne-menages-cameroun5.html](http://www.memoireonline.com/02/07/337/m_determinants-epargne-menages-cameroun5.html) - 39k - *Cached - Similar pages.*

study included a dummy variable which takes the value 0 during financial repression and 1 during the financial liberalisation. Thus, the second equation to be estimated is the following:

$$\text{Log (FD)}_t = \beta_0 + \beta_1 \log Y + \beta_2 R + \beta_3 \text{Labforce} + \beta_4 \text{Log (FD)}_{t-1} + \beta_5 D + \text{ECT}_t \quad (5.2)$$

With  $D^{24}$  = financial liberalisation

To estimate the financial deepening and output equations, the study use the Hendry's general-to-specific approach. The rationale of this approach is to re-estimate the general model (5.1) and (5.2) by dropping the lagged values of independent variables with insignificant parameters from the system. However before conducting this estimation, it has been suggested that all the variables must be stationary and co-integrated.

### 5.2.2 The stationary test

Since time-series data are being used, this study should naturally begin by testing for stationarity. This requires the testing of the order of integration of the data set, the so-called unit root tests. A stationary series is said to be integrated of order ( $d$ ) if it achieves stationarity after being differenced ( $d$ ) times. Many studies have shown that models with non-stationary variables tend to produce spurious regressions and make the usual test statistics ( $t$ ,  $F$ ,  $DW$ , and  $R^2$ ) unreliable (see for example Granger and Newbold, 1974 and Harris and Sollis, 2003). If differenced appropriately, a non-stationary variable can achieve stationarity (Harris and Sollis, 2003). The appropriate number of differencing is called the order of integration. Hence, if a time-series, for example  $Z$ , becomes stationary after being differenced  $d$  times,  $Z$  is said to be integrated of order  $d$ , denoted by  $Z \sim I(d)$ .

Thus, in line with many other studies, including those of Ghirmay (2004) and Yousif (2002), this study will employ the augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests. These tests will be conducted in three steps: firstly, it will test the model with only a constant, secondly, with only a trend, and thirdly, with a constant and linear time trend, in order to determine the degree of integration of the data series.

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<sup>24</sup> Which is the combination of D89 and D94 which are the index of financial liberalisation in the Cameroon and South Africa respectively?

The essence of conducting two distinct stationarity tests is to be sure that series enter model to be estimated in non-explosive form and mainly to address the issue of tests with low power (Agu and Okechukwu, 2008).

### 5.2.2.1 Hypothesis testing

In the two tests, the null hypothesis is being accepted this means that the relevant series is not stationary, against the alternative hypothesis that the series is stationary. The next step after testing whether or not the variables are stationary is to test their co-integration.

### 5.2.3 The co-integration test

After establishing that variables are stationary, it is necessary to determine whether or not there is any long-term relationship between them, this means testing the co-integration. Thus, two time-series integrated in the order  $d$  are said to be co-integrated if one unique linear combination of these series exists which is integrated in an order inferior to  $(d-b)$  with  $b \geq 1$ . Thus, in order to test the co-integration between variables, two approaches can be used: the Engler-Granger two-step approach or the Johansen procedure.

#### 5.2.3.1 The Engler-Granger two step approach

According to this method, testing co-integration between two non-stationary time-series variables simply requires running an Ordinary Least Squared (OLS) regression, saving the residuals and then running the ADF or PP tests on the residual, in order to determine whether or not it is stationary. This test is essentially used in the case of two variables:

$$\check{Z}_t = \omega \check{Z}_{t-1} + \eta_t$$

If  $|\omega| = 1 \rightarrow$  then the series has a unit root and  $x_t$  and  $y_t$  are not co-integrated

If  $|\omega| < 1 \rightarrow$  then  $Z_t$  is stationary and the variables are co-integrated.

#### 5.2.3.2 The Johansen procedure

Although the Engler-Granger co-integration method could be adequate in a bivariate system, additional evidence regarding co-integration could be provided by applying the more general technique developed by Johansen (1988, and 1992) and Johansen-

Juselius (1990, 1992). They proposed a maximum likelihood estimation procedure which allows researchers to simultaneously estimate a system involving two or more variables, in order to circumvent the problems associated with the traditional regression methods of Engler-Granger. Furthermore, this method is independent of the choice of an endogenous variable, and it allows researchers to estimate and test for the presence of more than one co-integrating vector in a multivariate system. In order to identify the co-integration relationship between variables, the Johansen procedure uses a vector autoregressive model (VAR (p)), which can be expressed as follows:

$$\Delta Z_t = \Pi Z_{t-1} + \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \mu_0 + \varepsilon_t \quad (5.3)$$

This VAR (p) can be re-written as follow

$$\Delta Z_t = \mu_0 + \Pi Z_{t+1} + \sum_{i=1}^p \Gamma_i \Delta Z_{t-i} + \varepsilon_t$$

$$\Pi = \sum_{i=1}^p A_i - I \quad \text{and} \quad \Gamma = \sum_{j=i+1}^p A_j$$

Where

The Johansen maximum likelihood co-integration technique is used to test for the existence of co-integration and the number of co-integrating vectors (Johansen, 1988; Johansen and Juselius, 1990). Johansen thus proposes two different likelihood ratio tests – the trace test and the maximum eigenvalue test, illustrated in equations (5.4) and (5.5).

$$J_{trace} = -T \sum_{i=r+1}^n \ln(1 - \tilde{\lambda}_i) \quad (5.4)$$

$$J_{max} = -T \sum_{i=r+1}^n \ln(1 - \tilde{\lambda}_{r+1}) \quad (5.5)$$

Here, T is the sample size  $\Pi$ ,  $\tilde{\lambda}_i$  is the  $i^{\text{th}}$  eigenvalue and r is the rank of the  $\Pi$  matrix.

### 5.2.3.3 Hypothesis testing

The trace test tests the null hypothesis of  $r$  co-integration against the alternative hypothesis of  $n$  co-integration vectors. The maximum eigenvalue test, on the other hand, tests the null hypothesis of  $r$  co-integrating vectors against the alternative hypothesis of  $r + 1$  co-integrating vectors. Thus, in order to proceed to the co-

integration test, this study will use the Johansen method to test the co-integration between the variables.

### **5.3 The causality test**

On an intuitive level, the Granger causality test examines whether or not past changes in one variable help to explain current changes in another variable, over and above the explanation provided by past changes in itself. If this is true, then one can conclude that Granger causes, otherwise it does not Granger cause. Thus, in order to explore the causal relationship between financial development and economic growth, this study uses, for each country (Cameroon and South Africa), two different approaches, reflecting two different methods: Granger causality tests based on vector error correction model (VECM) and autoregressive distributed lag (ARDL) model. The point here, of using two approaches is that, the study intends to find out if the direction of causality between financial development and economic growth will remain the same. According to Zachariadis (2006) these two models may provide different results. If true one may conclude that the direction of causality between financial development and economic growth depend on the approach used. If not it will only make stronger the direction of causality between the two variables. The description of those two models is as follow:

#### **5.3.1. VECM model**

The Granger causality test has been widely used in economics, though the methodology has been subject to criticism, with authors such as Conway *et al* (1984) being highly critical of this method. The use of the standard Granger causality test (which does not account for the error correction mechanism) is subject to more criticism than the more advanced Granger causality test, such as the one based on the vector error correction model (VECM). Engle and Granger (1987) have shown that if the variables are co-integrated, then the classical Granger test (the one which does not consider the error correction vector) is not appropriate. They thus recommend the use of the other methods, such as VECM. The VECM procedure involves, testing the stationary properties of the variables through unit root tests, performing co-integration analysis and formulating a VECM model for the examination of short-run and long-

run interactions as well as Granger causality between variables. According to the literature, such a model may be specified as following Ghirmay (2004):

$$\Delta \ln Y_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta \ln Y_{t-i} + \sum_{j=1}^p \alpha_{2j} \Delta \ln FD_{t-j} + \alpha_3 \Phi + \alpha_4 ECT_{t-1} + \varepsilon_t \quad (5.6)$$

$$\Delta \ln FD_t = \beta_0 + \sum_{j=1}^n \beta_{1j} \Delta \ln FD_{t-j} + \sum_{i=1}^p \beta_{2i} \Delta \ln Y_{t-i} + \beta_3 \Psi + \beta_4 ECT_{t-1} + \varepsilon_t \quad (5.7)$$

Where  $\Delta$  represents the difference operator,  $Y_t$  and  $FD_t$  are the indicators of economic growth and financial development (which are five in the case of this study) respectively.  $\Phi$  and  $\Psi$  are the set of additional variables;  $\Phi$  is the labour force, whereas  $\Psi$  is equal to the labour force and real interest rate. Although co-integration indicates the presence of Granger causality at least in one direction, it does not indicate the direction of causality between variables. The direction of causality can only be detected through the error correction model derived from the long-run co-integrating vectors. Thus the long run causal relationship between financial development and economic growth will be determined through the error correction term.

### 5.3.1.1 Hypothesis testing

The null hypothesis that economic growth does not granger causes financial development in equation (5.6) is rejected if  $\alpha_4$  is significantly different from zero. Likewise the null hypothesis that  $FD_t$  does not cause  $Y_t$  in equation (5.7) is rejected if  $\beta_4$  is significantly different from zero. Thus, using equations (5.6) and (5.7), Granger causality can be examined in the three following ways, according to Zachariadis (2006 and 2007):

- i) By observing the significance of the lagged difference of the variables in the abovementioned equations through a joint Wald test or F-test, which is a measure of short-term (or weak) Granger causality.
- ii) By reviewing the significance of the error-correction term in the above equations as a measure of long-term causality - the t- statistic of coefficients  $\alpha_4$  and  $\beta_4$  is sufficient for this purpose.



- iii) By testing the joint significance of the error correction term and the lagged variables in each VECM variable through a joint Wald or F-test, sometimes mentioned as a measure of strong Granger causality (Oh and Lee, 2004).

### **5.3.2. ARDL model**

The autoregressive distributed lag (ARDL) model is not commonplace in financial development studies. This can be explained by the fact that the introduction of unit root and co-integration methods, which found that some regressions may be spurious if the time-series properties of variables are not examined, almost dismissed the ARDL model as inappropriate (Zachariadis, 2007). The revival of ARDL methods occurred in the late 1990s with the help of work done by Pesaran et al (2001), and many analysts have recently used it for Granger causality - these include Zachariadis (2006, 2007), Long and Samreth (2008), Harvie and Pahlavani (2006) and so on.

The advantages of using the ARDL approach are the following. Firstly the ARDL model is applicable irrespective of whether the underlying regressors are stationary  $I(0)$  or integrated in the first order  $I(1)$ . Secondly it provides two sets of critical bounds in which  $I(0)$  represent a lower bound and  $I(1)$  an upper bound. If the F-test value of the estimated equation falls outside this bound, then one can conclude and proceed with the co-integration process without knowing whether the underlying variables are  $I(0)$ ,  $I(1)$  or fractionally co-integrated. Thirdly, the model is also reliable even for small observations unlike to the Engler and Granger (1987) model. Fourthly, the ARDL technique generally provides unbiased estimates of the long run model and valid t-statistics even when some of the regressors are endogenous (see also Harris and Sollis, 2003).

The ARDL approach involves testing whether or not a long-term relationship exists among the variables involved in a model - for this purpose, a "bounds testing" approach has been developed (Pesaran et al, 2001). This study will test whether or not there is a long-term relationship between an indicator of financial development and

economic growth. In accordance with the ARDL approach, financial development and economic growth can be initially modelled following Zachariadis (2006)<sup>25</sup>:

$$\Delta \ln FD_t = \beta_0 + \sum_{j=1}^n \beta_{1j} \Delta \ln FD_{t-j} + \sum_{i=0}^p \beta_{2i} \Delta \ln Y_{t-i} + \beta_3 \ln Y_{t-1} + \beta_4 \ln FD_{t-1} + \text{Labforce} + R + \varepsilon_t \quad (5.8)$$

$$\Delta \ln Y_t = \lambda_0 + \sum_{i=1}^n \lambda_{1i} \Delta \ln Y_{t-i} + \sum_{j=0}^p \lambda_{2j} \Delta \ln FD_{t-j} + \lambda_2 \ln Y_{t-1} + \lambda_4 \ln FD_{t-1} + \text{labforce} + \varepsilon_t \quad (5.9)$$

Where the symbols denote the corresponding variables explained in the above section and  $\varepsilon_t$  is an error correction term. Pesaran et al (2001) have proven that the distribution of this F-statistic is non-standard, irrespective of whether the regressors are I (0) or I (1), and have tabulated the appropriate critical values. Depending on the number of regressors and on whether an intercept and/or time trend is included in the equation, a pair of critical values are provided, which constitute an upper and a lower bound respectively. If the F-statistic is greater than the upper bound, the null hypothesis ( $H_0$ ) is clearly rejected and a long-term relationship exists among the test variables. If the F-statistic is smaller than the lower bound, then the null cannot be rejected and estimation can continue to assume no long-term relationship. If the statistic falls between the two bounds, then the result is inconclusive (Zachariadis, 2007).

### 5.3.2.1 Hypothesis testing

The hypothesis to be tested is whether causality runs from financial development to economic growth or vice versa. The long-term causality running from economic growth to financial development will be accepted if  $\beta_3$  and  $\beta_4$  equals 0 and is significant and financial development will cause growth if  $\lambda_3$  and  $\lambda_4$  equal 0 and significant. The short-term causality will be tested through a standard Wald test for the joint significance of coefficient  $\beta_{2i}$  (that is economic growth causes finance) and  $\lambda_{2j}$  (finance causes economic growth).

<sup>25</sup> In his study Zachariadis (2006) tested the direction of the causality between energy and economic growth

#### **5.4 Conclusion**

The aim to this chapter was to present the methodology and the set of data that this study uses. This study has used multivariate vector autoregressive (VAR) framework in order to identify the relationship and the causality between financial development and economic growth. As Argued by Xu (2000) the advantage of using the multivariate vector autoregressive framework in economy are the following. Firstly it allows for different economic and institutional arrangements in each country. Secondly it can deal with simultaneity problem between financial development and other domestic variables. Thus avoiding the difficult task of determining which variables are truly exogenous. Thirdly, it permits to identify not only the short term effect but also the long term cumulative effect of financial development on domestic variables by allowing the interaction among these variables. Having presented the methodology and discussed the data used, the study reports the results/findings in the next chapter.

## **CHAPTER SIX**

### **EMPIRICAL RESULTS**

#### **6.0 Introduction**

This chapter discusses the empirical results of the relationship between financial sector development and economic growth in Cameroon and South Africa. The discussion is reported as follows. The first section present results of the unit root tests, while results of the co-integration tests are in the second section. The discussion of the association (either positive or negative) between financial development and economic growth is highlighted in section three and the causality test results are in section four. Section five concludes the chapter.

#### **6.1 Stationary test results**

Table 20 in the appendix presents definitions of all the acronyms of indicators of financial development, economic growth and the additional variables used in this chapter. It must also be mentioned that the maximum lag length has been chosen using the Schwarz information criterion. The result of the stationary test on level based on augmented Dickey–Fuller (ADF) and Phillip-Perron (PP) techniques are presented in Tables 9 and 10. Thus these tables show that, all the variables failed to pass both the ADF and Phillip-Perron tests when they are in levels except the real interest rate. Having established that other variables (apart from real interest rate) are not stationary in levels, the next step is to difference them once. Thus, the result of the stationary test on first level is presented in Table 11 and 12. These tables show that after being differenced once, all the variables are confirmed to be stationary. The ADF and Phillip-Perron tests have both rejected the hypothesis of non-stationarity of variables, and the study can thus conclude that the variables used are integrated in the same order. Once the stationarity status of the variables has been determined, one can then move on to the next step, which is the test of co-integration between variables.

Variables	ADF			Phillip – Perron			Decision
	None	Constant	Constant & intercept	None	Constant	Constant & trend	
LM2/GDP (9)	-0.531751	-1.731453	-2.108236	-0.523932	-1.820043	-2.163994	I (1)
LBD/GDP(9)	0.297534	-0.586498	-2.180374	0.133903	-0.880680	-1.909494	I (1)
Lpcr/GDP(9)	0.297534	-0.586498	-2.180374	0.133903	-0.880680	-1.909494	I (1)
Ltcr/GDP(9)	0.044909	-0.879954	-1.742838	-0.004350	-1.208870	-1.742838	I (1)
Lpcr/Tcr (9)	-1.164864	-1.579932	-0.200715	-1.279673	1.680541	-0.427543	I (1)
LY (1)	0.547696	-1.990397	-1.888641	0.566182	-1.938912	-1.841978	I (1)
Labforce	-1.609484	-1.386704	-1.812496	-0.717031	0.024129	-1.699175	I(1)
R	-4.491179***	4.47850***	-5.063840***	-4.35151***	-4.334566***	-6.020381***	I(0)

Variables	ADF			Phillip – Perron			Decision
	None	Constant	Constant & intercept	None	Constant	Constant & trend	
LM2/GDP (9)	-1.415244	0.679761	-2.161547	-1.353048	0.679761	-2.207936	I (1)
LBD/GDP(9)	-1.156732	-0.431569	-2.684276	-1.272107	-0.031672	-2.536251	I (1)
Lpcr/GDP(9)	1.173950	-0.505200	-2.933486	-1.306914	-0.085878	-2.832919	I (1)
Ltcr/GDP(9)	-1.162803	0.551284	-1.606032	-1.160666	0.276159	-1.242970	I (1)
Lpcr/Tcr (9)	-1.307942	-1.585583	-1.773141	-1.319990	-1.660346	-1.902103	I (1)
LY (9)	0.587913	-1.170038	-0.523137	0.690933	-0.984132	-0.295035	I (1)
Labforce	-1.313774	2.427087	0.914453	-1.407582	0.637795	-1.131239	I(1)
R	-2.944176**	-2.971782**	-4.382604***	-3.09970***	-3.125392**	-4.221742***	I(0)

\*: Stationary at 10% level of significance; \*\*: Stationary at 5% level of significance; \*\*\*: Stationary at 1% level of significance

Variables	ADF			Phillip – Perron			Decision
	None	Constant	Constant & intercept	None	Constant	Constant & trend	
DLM2/GDP (9)	-5.411542***	-5.340650***	-5.293798***	-5.411542***	-5.340650***	-5.293798***	I (0)
DLBD/GDP (9)	-4.307621***	-4.266228***	-4.343731***	-4.307621***	-4.266228***	-4.343731***	I (0)
DLPcre/GDP (9)	-4.307621***	-4.266228***	-4.343731***	-4.307621***	-4.266228***	-4.343731***	I (0)
DLTcre/GDP (9)	-4.345261***	4.266352***	-5.465394***	-4.238399***	-4.141993***	-5.465394***	I (0)
DLPcre/Tcre 9)	-4.432046***	-4.313227***	-4.572992***	-4.432046***	-4.313227***	-4.572992***	I (0)
DLY (1)	-3.794107***	-3.901941**	-3.800310***	-3.7994107***	-3.800311***	-3.902326**	I (0)
Dllabforce (9)	-3.503141***	-3.671075***	-6.548886***	-4.415916***	-4.034212***	-6.840478***	I(0)

\*: Stationary at 10% level of significance; \*\*: Stationary at 5% level of significance; \*\*\*: Stationary at 1% level of significance

Variables	ADF			Phillip – Perron			Decision
	None	Constant	Constant & intercept	None	Constant	Constant & trend	
DLM2/GDP (9)	-4.917237***	-5.232794***	-5.525160***	-4.917237***	-5.232794***	-5.525169***	I (0)
DLBD/GDP (9)	-7.208801***	-7.405173***	-4.343731***	-7.208801***	-7.405173***	-7.584012***	I (0)
DLPcre/GDP (9)	-7.156078***	-7.347641***	-7.478621***	-7.156078***	-7.347641***	-7.478621***	I (0)
DLTcre/GDP (9)	-7.837995***	-8.033073***	-8.659855***	-7.837995***	-8.033073***	-8.659855***	I (0)
DLPcre/Tcre 9)	-5.401721***	-5.372986***	-5.308355***	-5.401721***	-5.372986***	-5.308355***	I (0)
DLY (9)	-3.348106***	-3.361841**	-3.612831**	-3.348106***	-3.361841**	-3.612831**	I (0)
Dllabforce (1)	-5.296528***	-6.520616***	-8.210643***	-6.060098***	-6.781689***	-8.59332***	I(0)

\*: Stationary at 10% level of significance; \*\*: Stationary at 5% level of significance; \*\*\*: Stationary at 1% level of significance

## 6.2 Co-integration test results

After establishing that all the variables are stationary, it is necessary to determine whether there is any long-term relationship among them i.e. among each financial development indicator and the explanatory variables (per capita GDP, real interest rate and labour force). The results of the co-integration tests are reported in Table 13 and 14 below.

Table 13: Johansen-Juselius maximum likelihood co-integration test for Cameroon

Null hypothesis	Trace test			Maximum Eigenvalue test		
	Alternative hypothesis	Statistic	95 % critical value	Alternative hypothesis	Statistic	95 % critical value
<b>Co-integration Test – LM2/ GDP</b>						
$r = 0$	$r \geq 1$	151.9945***	47.85613	$r = 0$	97.38409***	27.58434
$r \leq 1$	$r \geq 2$	54.61038***	29.79707	$r = 1$	31.68595***	21.13162
$r \leq 2$	$r \geq 3$	22.92443***	15.49471	$r = 2$	22.10134***	14.26460
$r \leq 3$	$r \geq 4$	0.823086	3.841466	$r = 3$	0.823086	3.841466
<b>Co-integration Test – LBD/ GDP</b>						
$r = 0$	$r \geq 1$	185.3945***	63.87610	$r = 0$	95.84149***	32.11832
$r \leq 1$	$r \geq 2$	89.55300***	42.91525	$r = 1$	35.69164***	25.82321
$r \leq 2$	$r \geq 3$	53.86135***	25.87211	$r = 2$	31.01706***	19.38704
$r \leq 3$	$r \geq 4$	22.84430***	12.51798	$r = 3$	22.84430***	12.51798
<b>Co-integration Test – LPCRE/ GDP</b>						
$r = 0$	$r \geq 1$	185.3945***	63.87610	$r = 0$	95.84149***	32.11832
$r \leq 1$	$r \geq 2$	89.55300***	42.91525	$r = 1$	35.69164***	25.82321
$r \leq 2$	$r \geq 3$	53.86135***	25.87211	$r = 2$	31.01706***	19.38704
$r \leq 3$	$r \geq 4$	22.84430***	12.51798	$r = 3$	22.84430***	12.51798
<b>Co-integration Test – LTCRE/ GDP</b>						
$r = 0$	$r \geq 1$	169.6553***	63.87610	$r = 0$	70.57444***	32.11832
$r \leq 1$	$r \geq 2$	99.08086***	42.91525	$r = 1$	51.37821***	25.82321
$r \leq 2$	$r \geq 3$	47.70265***	25.87211	$r = 2$	34.56952***	19.38704
$r \leq 3$	$r \geq 4$	13.13313**	12.51798	$r = 3$	13.13313**	12.51798
<b>Co-integration Test – LTCRE/PCRE</b>						
$r = 0$	$r \geq 1$	122.2860***	47.85613	$r = 0$	59.14133***	27.58434
$r \leq 1$	$r \geq 2$	63.14467***	29.79707	$r = 1$	39.43133***	21.13162
$r \leq 2$	$r \geq 3$	23.71334***	15.49471	$r = 2$	18.79492***	14.26460
$r \leq 3$	$r \geq 4$	4.918418**	3.841466	$r = 3$	4.918418**	3.841466

Notes: \* denotes rejection of the hypothesis at 5 % (10%) significance level; \*\*: denotes rejection of the hypothesis at 5% (5%) significance level; \*\*\* denotes rejection of the hypothesis at 5% (10%) significance level.  $R$  stands for the number of co-integrating vectors

The results reported in Tables 13 and 14 show that there is a stable long-term relationship between each financial development indicator and the explanatory variables, i.e. real per capita GDP, real interest rate and labour force. Both the trace test and the maximum Eigenvalue test statistics reject the null hypothesis of non co-integration (i.e.  $r = 0$ ) at the 5 % level of significance in both countries. It is worth noting here that there is the presence of more than one co-integrating equation/vector in each country.

Table 14: Johansen-Juselius maximum likelihood co-integration test for South Africa

Null hypothesis	Trace test			Maximum Eigenvalue test		
	Alternative hypothesis	Statistic	95 % critical value	Alternative hypothesis	Statistic	95 % critical value
<b>Co-integration Test – LM2/GDP</b>						
$r = 0$	$r \geq 1$	68.74611***	54.07904	$r = 0$	32.54593***	28.58808
$r \leq 1$	$r \geq 2$	28.25616**	35.19275	$r = 1$	29.15627***	22.29962
$r \leq 2$	$r \geq 3$	15.86885	20.26184	$r = 2$	13.96387	15.89210
$r \leq 3$	$r \geq 4$	1.904987	9.164546	$r = 3$	1.904987	9.164546
<b>Co-integration Test – LBD/ GDP</b>						
$r = 0$	$r \geq 1$	97.79651***	63.87610	$r = 0$	49.21432***	32.11832
$r \leq 1$	$r \geq 2$	48.58220***	42.91525	$r = 1$	25.85034***	25.82321
$r \leq 2$	$r \geq 3$	22.73185	25.87211	$r = 2$	17.04833	19.38704
$r \leq 3$	$r \geq 4$	5.683520	12.51798	$r = 3$	5.683520	12.51798
<b>Co-integration Test – LPCRE/ GDP</b>						
$r = 0$	$r \geq 1$	64.79232***	47.85613	$r = 0$	34.86509***	27.58434
$r \leq 1$	$r \geq 2$	29.92724**	29.79707	$r = 1$	23.47269**	21.13162
$r \leq 2$	$r \geq 3$	6.454543	15.49471	$r = 2$	6.263093	14.26460
$r \leq 3$	$r \geq 4$	0.191450	3.841466	$r = 3$	0.191450	3.841466
<b>Co-integration Test – LTCRE/ GDP</b>						
$r = 0$	$r \geq 1$	50.75752***	47.85613	$r = 0$	28.800001**	27.58434
$r \leq 1$	$r \geq 2$	21.95751	29.79707	$r = 1$	12.29337	21.13162
$r \leq 2$	$r \geq 3$	9.664136	15.49471	$r = 2$	9.389037	14.26460
$r \leq 3$	$r \geq 4$	0.275999	3.841466	$r = 3$	0.275099	3.841466
<b>Co-integration Test – LTCRE/PCRE</b>						
$r = 0$	$r \geq 1$	266.4889***	63.87610	$r = 0$	113.5365***	32.11832
$r \leq 1$	$r \geq 2$	152.9524***	42.91525	$r = 1$	76.70181***	25.82321
$r \leq 2$	$r \geq 3$	76.25056***	25.87211	$r = 2$	54.98823***	19.38704
$r \leq 3$	$r \geq 4$	21.26234***	12.51798	$r = 3$	21.26234***	12.51798

Notes: \* denotes rejection of the hypothesis at 5 % (10%) significance level; \*\*: denotes rejection of the hypothesis at 5% (5%) significance level; \*\*\* denotes rejection of the hypothesis at 5% (10%) significance level.  $R$  stands for the number of co-integrating vectors



In Cameroon, all the indicators of financial development present at least three co-integrating relationships with per capita income and other variables, while South Africa shows only two co-integrating relationships (except the ratio of private credit to domestic credit where there are four and total credit in the economy where there is one).

### **6.3 Interpretation of model following estimation of equations 5.1 and 5.2**

After confirming that all the variables are stationary and co-integrated, the study next estimates equations (5.1) and (5.2). The estimation is done by including an error correction term lagged once in the set of explanatory variables in order to test for the possible existence of a long-term relationship between the financial development indicators and independent variables (per capita GDP, real interest rate, financial liberalisation and labour force). The results are presented in Tables 15 and 16 for Cameroon and South Africa respectively. The coefficient of the error-correction term represents the speed of adjustment in response to a deviation from long-term equilibrium, which can be useful for policy analysis. The error correction model, however, is particularly powerful, since it allows one to estimate both short-term and long-term effects of explanatory time-series variables. Tables 18 and 19 present the results of the estimation of equations (5.1) and (5.2) for both countries. The ordinary least square (OLS) technique is used to estimate the two equations. In the process, the study used several criteria in order to determine the maximum lag length. The Akaike Information criterion (AIC), the sequential modified LR test statistic and the Schwarz Bayesian information criterion (SIC) were used in order to determine which appropriate maximum lag length to use for each variable.

The optimal lag length for almost all the variables in Cameroon was set to 4. For South Africa, the lag order selected by the criterion was 4 for the ratio of private credit to total domestic credit, and 3 for the other variables. The standard general-to-specific reduction procedure of Hendry (1995) was applied in order to obtain the most congruent coefficient of error correction specification for financial development. As argued by Helmut (2007), this procedure is used in order to reduce the model as much as possible to obtain a congruent, more parsimonious model for the data generation process of equations (5.1) and (5.2). The reduction is made by eliminating the most statistically insignificant variables, by ensuring that the results are congruent with

some criterion. The congruency of the model in this study is tested through an array of residual and stability tests – the ARCH test effect, Reset test, White test, Durbin-Watson test and the Jarque-Bera residual normality test.

The Durbin-Watson statistic shows the absence of the autocorrelation problem in the residual – this can be seen in Tables 15 and 16 by the high values of the Durbin-Watson test (which are almost superior or equal to 2 for both countries), while the Jarque-Bera statistic indicates the normality of the residual. There is no heteroscedasticity problem detected by the White test (i.e. the variance of error term is constant for each observation) and no functional form of problem is detected by the Reset test. Moreover, the F-statistic, which examines the significance of the association between variables, is highly significant. It should be noted that equation (5.1) does not contain any index of financial liberalisation.

### **6.3.1 Interpretation of equation (5.1)**

Thus, as argued by economists supporting the view that finance is good for economic growth, the result of equation 5.1 shows that in both countries economic growth and financial sector development are positively and significantly related. With exception of when the ratio of total domestic credit is used as a proxy in Cameroon and the ratio of private credit to total domestic credit in South Africa, when economic growth seems to be not significant. That means in both countries an increase in financial development leads to an increase of per capita GDP as suggested by economic theory.

The error correction term (ECT) has the expected sign (negative) and is significant except when the ratio of private credit to total domestic credit is used as an indicator of financial development where the sign is negative but not significant. The negative sign means that when the economy is shocked out of equilibrium, it adjusts back to the equilibrium.  $ECT_{t-1}$  term is statistically significant at 1 and 5 percent level. The size of the co-efficient for the most part of the indicators is low, which suggests that the speed of adjustment is rather sluggish. This slow speed indicates that there are some impediments to financial sector development. It is therefore important for further research to be undertaken to establish the nature of these impediments.

Table 15: Modelling of financial development in Cameroon

Variables	Indicators of financial development									
	DLM2/GDP (1)	DLM2/GDP (2)	DLBD/GDP (1)	DLBD/GDP (2)	DLPCRE/GDP (1)	DLPCRE/GDP (2)	DLTCRE/GDP (1)	DLTCRE/GDP (2)	DLPCRE/TCRE (1)	DLPCRE/TCRE (2)
Constant	0.057711 (0.390577)	0.596937 (20293651)*	0.725678 (2.657558)**	1.253501 (2.610435)	0.725678 (2.657558)**	1.253501 (2.610435)	-0.518779 (-1.637570)**	-1.009135 9-2.581844)**	1.069406 (3.634091)***	1.503668 (3.020578)***
ALM2/GDP (-1)	0.340515 (1.782296)*	0.637130 (2.710061)**								
ALBD/GDP (-4)										
ALPCRE/GDP (-4)			0.203535 (0.827357)	0.506000 (0.827357)*	0.203535 (0.827357)	0.506000 (0.827357)*				
ALTCRE/GDP (-1)							1.359093 (3.112354)***	0.987253 (3.120467)***		
ALTCRE/GDP (-2)							1.486087 (3.491654)***	1.1706676(4.047287)***		
ALTCRE/GDP (-3)							1.4931105 (3.490923)***	1.265314 (34.29946)***		
ALPCRE/TCRE (-1)									-0.413339 (-1.972960)*	-0.558736 (-2.392610)**
ALPCRE/TCRE (-2)									-0.474488(-2.193799)**	-0.570953 (-2.327612)**
ALY (-1)							-0.983173 (-1.599723)			
ALY (-2)	0.551130 (1.97246)*	0.326833 (1.075663)					0.696938 (1.374272)	0.630058 (1.443409)	0.868306 (2.009495)*	
ALY (-3)							0.164255 (0.377806)	0.507214 (1.295368)		
ALY (-4)			0.878807 (2.133441)**	0.825024 (1.952741)*	0.878807 (2.133441)***	0.825024 (1.952741)*		0.289573 (0.782281)	1.085824 (2.441012)**	1.155143 (2.336915)**
R (-1)	0.003451 (1.419385)	0.007692 (2.97203)***					-0.028957 (-3.727994)***	-0.026644(-4.727888)***		
R (-2)				-0.012103 (-1.86643)*		-0.012103 (-1.86643)*			-0.002949 (-0.860002)	-0.003758 (-0.993402)
R (-4)		0.006120 (2.084303)**	-0.00811 (-2.46408)**	-0.00976 (-2.73846)**	-0.008119 (-2.464082)**	-0.00976 (-2.73846)**				
Δlabforce (-1)	-0.023256 (-0.439098)						-19.22092 (-3.727994)**	-11.93040 (-2.917528)**	-1.972788 (-2.257568)**	-2.690318 (-2.595938)**
Δlabforce (-2)		-1.754243 (-1.89574)*					49.47774 (2.918981)**	31.24465 (2.665810)**	2.646299 (2.118827)**	3.414315 (2.478880)**
Δlabforce (-3)		3.302679 (1.989085)**					-50.36016 (-2.948965)**	-32.20082 (-2.733950)**		
Δlabforce (-4)		-1.721732 (-2.09259)**	-1.707726 (-2.03711)*	-0.85226 (-1.805775)*	-1.707726 (-2.037115)*	-0.85226 (-1.805775)*	20.24201 (2.998364)***	13.17625 (2.886197)**	-1.076320 (-2.252894)**	-1.269330 (-2.544419)**
D 89		-0.187225 (-2.326053)**		-0.129647 (-1.091186)		-0.129647 (-1.091186)		0.194679 (1.759406)**		-0.086858 (-0.710088)
ECT (-1)	-0.381274 (-2.482909)**	-0.657168 (-3.63383)***	-0.350104(-3.0311)***	-0.41043(-3.01219)***	-0.350104 (-3.019691)***	-0.41043(-3.01219)***	-1.377507 (-2.716907)**	-1.280924 (-4.41113)***	-0.219145 (-1.670188)	-0.192070 (-1.373338)
Statistic and residual tests										
R <sup>2</sup>	0.511439	0.583010	0.666905	0.675025	0.666905	0.675025	0.776993	0.766744	0.545348	0.588455
Adjusted R <sup>2</sup>	0.341505	0.393469	0.508288	0.469778	0.508288	0.469778	0.506198	0.571003	0.328847	0.328562
F-Statistic [CV]	3.009630 [0.018243]	3.075903 [0.013400]	4.204506[0.002692]	3.288842[0.010118]	4.204506[0.002692]	3.288842[0.010118]	2.869304[0.026121]	3.947255[0.004351]	2.518917[0.035772]	2.263957[0.053941]
Durbin-Watson statistic	1.983883	2.164478	2.159360	2.355888	2.159360	2.355888	1.717940	1.604361	2.105251	2.095973
White test F statistic [CV]	2.301195 [0.0564]	2.216165 [0.0576]	0.862027 [0.5798]	0.757689[0.6836]	0.862027 [0.5798]	0.757689[0.6836]	0.490068[0.9182]	0.543921[0.8724]	0.667285[0.7415]	0.658414 [0.7686]
Reset test [CV]	0.359258 [0.5550]	2.011038 [0.1708]	59.99105[0.00000]	43.33401[0.0000]	59.99105[0.00000]	43.33401[0.0000]	3.182252[0.0978]	1.0896078[0.1875]	1.933357[0.1797]	2.386723 [0.1398]
ARCH test [CV]	3.089254 [0.0894]	0.546126 [0.4656]	0.842500[0.3663]	0.020487[0.8872]	0.842500[0.3663]	0.020487[0.8872]	0.594215[0.4470]	0.687838[0.4137]	1.405680 [0.2454]	1.231850 [0.2762]
Jarque-Bera	3.595541	1.624848	7.410220	4.727146	7.410220	4.727146	1.139464	3.624273	4.929791	3.625207

(1) Denotes the estimation of equation 1. (2) Denotes the estimation of equation 2. \*, \*\*, \*\*\* are significance at 10%, 5%, and 1 % respectively. CV stands for critical values.

Table 16: Modelling of financial development in South Africa

Variables	Indicators of financial development									
	DLM2/GDP (1)	DLM2/GDP (2)	DLBD/GDP (1)	DLBD/GDP (2)	DLP CRE/GDP (1)	DLP CRE/GDP (2)	DLTCRE/GDP (1)	DLTCRE/GDP (1)	DLP CRE/TCRE (1)	DLP CRE/TCRE (2)
Constant	0.119544 (3.347956)***	0.093518 (1.791810)*	-0.028238 (-0.304874)	-0.102465 (-0.970213)	0.027225 (0.341505)	-0.107506 (-1.2178483)	-0.033194 (-1.278483)	-0.126912 (-2.292941)*	-0.100949 (-0.781620)	-0.050562 (-0.750508)
ALM2/GDP (-1)	-0.388531 (-2.221522)**	-0.338633 (-1.773239)*								
ALM2/GDP (-2)	-0.581129 (-3.65122)***	-0.505834 (-2.602588)*								
ALBD/GDP (-1)				0.799486 (1.893500)*						
ALBD/GDP (-2)			0.634655 (1.8468846)*	0.662028 (1.989463)*						
ALBD/GDP (-3)			0.435247 (1.827198)*	0.468442 (2.000142)*						
ALPCRE/GDP (-1)						0.874272 (2.035339)*				
ALPCRE/GDP (-2)					0.593294 (1.785537)*	0.778093 (2.287482)**				
ALPCRE/GDP (-3)					0.468058 (2.015534)*	0.535066 (2.365697)**				
ALTCRE/GDP (-3)							0.291442 (1.868532)*	0.204979 (1.266412)		
ALPCRE/TCRE (-1)									-1.379077 (-1.863397)*	-1.054041 (-1.997677)*
ALPCRE/TCRE (-2)									-1.422361 (-1.949965)*	-0.834477 (-1.882352)*
ALPCRE/TCRE (-3)									-1.464764 (-2.089199)*	-0.993551 (-2.302166)**
ALY (-1)			1.121381 (1.859693)*	1.073186 (1.750693)*	1.118532 (1.926963)*	0.868353 (1.531924)	0.989999 (2.532174)**	0.978844 (2.530148)**	0.294828 (0.697697)	
ALY (-3)	0.650206 (2.137275)**	0.652112 (2.120888)**						0.827902 (2.307842)**		
ALY (-4)									0.426801 (-1.518002)	0.817836 (2.090052)*
R (-1)	0.011007 (3.626598)***	0.009379 (2.423424)**	-0.007676 (-1.498872)	-0.011075 (-1.94539)*	-0.006651 (-1.354773)	-0.012161 (-2.090308)**	0.004142 (1.951856)*			-0.006744 (-2.763808)**
R (-2)	-0.011204 (-3.96976)***	-0.010985 (-3.82755)***								
R (-4)										-0.010129 (-3.11801)**
Alllabforce (-1)	-0.042443 (-2.728887)*	-0.033992 (-1.706001)	-0.547853 (-1.94233)*				-0.204049 (-1.189599)		-1.090549 (-1.498262)	
Alllabforce (-2)			1.304331 (2.305948)**		1.086516 (2.044270)*	0.353241 (-2.670647)**	0.498605 (1.498423)	0.188232 (2.322340)**		0.014165 (0.501246)
Alllabforce (-3)			-0.744535 (-2.46860)**	-0.518440 (-1.802585)**	-0.662045 (-2.279593)**	-0.317767 (-2.522692)**	-0.277684 (-1.551248)			
D 94		0.018482 (0.690200)		0.074830 (1.488349)		0.102344 (2.249146)**		0.050134 (2.18445)**		0.080653 (2.290172)**
ECT (-1)	-0.236542 (-1.458122)	-0.232251 (-1.415584)	-1.63920 (-2.93194)***	-1.624659 (-2.31948)***	-1.520136 (-2.90104)***	-1.678793 (-3.312253)***	-0.432427 (-2.670226)**	-0.650447 (-4.50548)***	1.035590 (1.831464)*	0.833457 (1.904633)*
Statistic and residual tests										
R <sup>2</sup>	0.632594	0.639744	0.444426	0.493386	0.445639	0.494650	0.543428	0.549484	0.488543	0.495498
Adjusted R <sup>2</sup>	0.529720	0.519659	0.153411	0.189417	0.193657	0.264945	0.36770	0.399312	-0.132512	0.159163
F-Statistic [CV]	6.149219 [0.000299]	5.327417 [0.000649]	1.527160 [0.194454]	1.623147 [0.163324]	1.768536 [0.127338]	2.153414 [0.064397]	3.041714 [0.0150502]	3.659028 [0.006399]	0.78634 [0.684567]	1.473226 [0.222011]
Durbin-Watson statistic	2.159372	2.075388	2.061909	2.360691	1.994347	2.082944	2.287852	2.490143	2.155224	1.970866
White test F statistic [CV]	0.763946 [0.691855]	0.673863 [0.776252]	0.809794 [0.676351]	2.300247 [0.097824]	1.393829 [0.281118]	1.299634 [0.319205]	0.569705 [0.869906]	2.302375 [0.050458]	1.75026 [0.241298]	1.441006 [0.320387]
Reset test [CV]	1.615341 [0.215924]	1.050346 [0.316086]	10.28469 [0.0044251]	6.205107 [0.022156]	8.992113 [0.006842]	6.5685547 [0.018127]	1.967272 [0.174692]	0.424617 [0.521101]	2.576785 [0.132449]	3.704303 [0.071175]
ARCH test [CV]	0.686288 [0.413972]	0.951838 [0.337054]	2.649982 [0.114010]	2.938936 [0.096783]	1.137393 [0.294712]	0.997223 [0.325971]	0.046918 [0.829982]	1.21434 [0.279025]	0.326699 [0.572013]	0.000350 [0.985197]
Jarque-Bera	1.312315	1.487468	2.378150	3.058642	3.913522	9.040679	2.917434	0.438206	28.45713	6.977136

(1) Denotes the estimation of equation 5.1. (2) Denotes the estimation of equation 5.2. \*, \*\*, \*\*\* are significance at 10%, 5%, and 1 % respectively. CV stands for critical values.

The impact of real interest rate on financial development in the two countries is almost negative and significant for all the indicators, except for the ratio of broad money to GDP in the two countries, which shows positive and significant relationship with real interest rate in the first lag in Cameroon. The impact of real interest rate on this indicator is similarly negative and significant in the other two lags for South Africa. This means that in the two countries financial repression helps improve broad money and hinder the development of the other indicators of financial development. On the other hand, labour force is almost in all cases negatively affecting financial sector development for both countries. In Cameroon this can be explained by the fact that 70% of the labour force is employed in the agricultural sector and 17% in other services (Fonjong, 2001). In South Africa it can be explained by the fact that apartheid did not allow for the participation of a large part of the population (i.e. the majority black population) in the labour force.

### **6.3.2 Interpretation of equation (5.2)**

When the index of financial liberalisation is included into the equation, the results are somewhat mixed. However, the coefficient of error correction term is still negative and significant. The impact of labour force and real interest rate on financial sector development are still negative for both countries as in the equation (5.1). However the other variables show mixed results.

In Cameroon, the association between financial sector development and economic growth is only significant in three (The ratio of bank deposits to GDP, the ratio of private credit to GDP and the ratio of private credit to the total domestic credit to the economy ) out of the five indicators of financial development. Even then, the impact is slow kicking in at the fourth lag. Moreover these three variables are the one that are not significantly related to the index of financial liberalisation. This means that in Cameroon financial liberalisation did not improve bank deposits, credit to the private sector and the ratio of private credit to the total domestic credit. The two other proxies which did not show any significant relationship with economic growth were the ones that were significantly related to the index of financial liberalisation, which is the ratio of M2/GDP that is negatively linked to the index of financial liberalisation, and the ratio of total domestic credit that is positively related. Thus, in Cameroon financial liberalisation leads to the increase of the total credit to the economy but the credit was

not allocated to the private sector rather it was allocated to government or public enterprise, and this can be the consequence of the negative relationship with the ratio of broad money to GDP.

In contrast to Cameroon, the estimation of equation (5.2) in South Africa provides better results. All the proxies of financial development (except the ratio of private credit to the economy) present positive and significant association with economic growth. In the case of the index of financial liberalisation, it is positively and significantly related to three out of five indicators of financial sector development which are the ratio of credit to the private sector, the ratio of total domestic credit to economy and the ratio of private credit to the total domestic credit. This means that financial liberalisation helps to improve the efficiency of the financial sector in South Africa. Although the ratios of M2/GDP and bank deposit are not significantly linked to the index of financial liberalisation, the result shows that their coefficients are higher in equation (5.2) than in equation (5.1).

#### **6.4 The causality result**

On the basis of the co-integration results, causality test for the pairs of variables were performed following two different approaches: VECM and ARDL. Contrary to Cameroon where the two causality tests almost provide the same results, in South Africa it was different. The results provided by the two models in the two countries are presented in Tables 17 and 18.

##### **6.4.1 Cameroon**

According to VECM approach in Cameroon, the “*supply-leading*” pattern prevails than the demand “*following pattern*”<sup>26</sup>. Out of the five indicators of financial development only three of them show causal relationship with economic growth. When the ratio of bank deposit to GDP and the ratio of credit to the private sector to the GDP are used as proxies of financial development, financial sector development seems to cause economic growth in both the short and long-term. However, when the ratio of total domestic credit to GDP is the proxy of financial development, there is bi-

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<sup>26</sup> We must remember here that the supply leading pattern occurs when financial development causes economic growth, and when it is the reverse i.e. when economic growth causes financial development it is the “*demand-following*” pattern.

directional causality between financial development and economic growth in both the long and the short term.

On the other hand, the ARDL provides unidirectional causal relationship between financial development and economic growth in Cameroon. From the result provided by the ARDL method, all the indicators of financial development in Cameroon show one way causality running from financial development to economic growth, only in long-term and this is highly significant. Whereas in the short-term, it seems that there is no relationship between the two variables in the country, which means the two variables are independent in short-term.

#### **6.4.2 South Africa**

The results provided by the VECM approach based on Granger causality tests in South Africa show short-term evidence of two-way causal relationships between financial development and economic growth, but the significance is weak (significant at 10%). Thus, when the broad money to GDP is used as the proxy of financial development, economic growth seems to cause financial development (as found by Odhiambo 2007), whereby when the total domestic credit to GDP is used it is financial development which causes economic growth. Empirical evidence of the long-term relationship is however more uniform. In the long-run, economic growth seems to cause financial development when the ratio of broad money to GDP, the ratio of bank deposit to GDP and the ratio of credit to the private sector are used as proxies to financial development. Whereas, when the ratio of total domestic credit to GDP is used as indicator of financial development there is a bi-directional causality.

With the ADRL approach however, the study found that most of the time financial development and economic growth seems to be independent in South Africa, but where causality is found, it is running from financial development to economic growth.

Table 17: VECM-based Granger causality test in Cameroon and South Africa

Variables	Short-term effects or weak Granger causality (F-statistic)		Direction of causality (short-term)	Ect <sub>t-1</sub> effect (t-statistic) long-term causality	Long-term/ joint short-term or strong Granger causality (F-statistic)		Direction of causality (Long-term)
	FD	Yp			Ect <sub>t-1</sub> FD	Ect <sub>t-1</sub> yp	
	<b>Cameroon</b>						
M2/GDP	-	0.572927 (0.6868)		0.381274 (-2.482909)**	-	1.144865 (0.3828)	
Yp3	1.559548 (0.2380)	-		-0.273003 (-1.872953)*	1.430682 (0.2692)	-	
BD/GDP	-	0.491559 (0.7421)		-0.350104 (-3.037115)***	-	0.684269 (0.6431)	
Yp4	4.163995 (0.0306)**	-	FD→Y	-0.32148 (0.5201)	4.061424 (0.0284)**	-	FD→Y
Pcre/GDP	-	0.491559 (0.7421)		-0.350104 (-3.037115)***	-	0.684269 (0.6431)	
Yp4	4.163995 (0.0306)**	-	FD→Y	-0.32148 (0.5201)	4.061424 (0.0284)**	-	FD→Y
Tcre/GDP	-	4.750867 (0.0124)**	Y→FD	-1.377507 (-2.716907)**	-	4.099148 (0.0168)**	Y→FD
Yp3	2.896890 (0.0786)*	-	FD→Y	-0.182353 (0.6569)	2.602252 (0.0929)*	-	FD→Y
Pcre_tcre	-	1.252867 (0.3341)		-0.219145 (-1.670188)	-	1.570375 (0.2319)	
Yp3	2.040680 (0.1487)	-		-0.883513 (-4.301248)***	2.059712 (0.1341)	-	
<b>South Africa</b>							
M2/GDP	-	2.534760 (0.0875)*	Y→FD	-0.236542 (-1.458122)	-	2.505075 (0.0766)*	Y → FD
Yp3	1.269802 (0.3183)	-		-0.665598 (-0.083368)	1.412072 (0.2749)	-	
BD/GDP	-	1.537888 (0.2372)		-1.639200 (-2.931948)***	-	3.204005 (0.0360)**	Y → FD
Yp3	0.039285 (0.9896)	-		-0.039086 (-0.885965)	0.135021 (0.9671)	-	
Pcre/GDP	-	1.853281 (0.1718)		-1.520136 (-2.901047)***	-	3.655221 (0.0227)**	Y → FD
Yp3	1.279669 (0.3151)	-		-0.600763 (-2.614172)**	1.075043 (0.4013)	-	
Tcre/GDP	-	1.761028 (0.1887)		-0.432427 (-2.670226)**	-	5.364234 (0.0046)***	Y → FD
Yp3	3.086486 (0.0571)*	-	FD→Y	-0.277589 (-2.542876)**	2.489329 (0.0848)*	-	FD→Y
Pcre_tcre	-	0.539981 (0.6607)		1.035590 (1.831464)*	-	0.489243 (0.7436)	
Yp	0.157357 (0.9234)	-		1.035590 (1.831464)*	0.213158 (0.9273)	-	

\* denotes significance at 10%; \*\*: denotes significance at 5%; \*\*\* denotes significance at 1%.



Table 18: ARDL-Bounds test for causality in Cameroon and South Africa

Dependent variables	Exogenous variables	Lag order	F- statistic		Direction of causality Long-term	Direction of causality Short-term
			Long-term	Short-term		
<b>Cameroon</b>						
M2/ GDP	Real per capita GDP	(4,4)	3.375626	2.249209		independent
Real per capita GDP	M2/GDP	(4,4)	6.736139***	0.769802	FD→Y	independent
BD/GDP	Real per capita GDP	(2,2)	0.516710	1.794224		independent
Real per capita GDP	BD/GDP	(4,4)	6.136282***	0.375930	FD→Y	independent
PCRE/GDP	Real per capita GDP	(2,2)	0.516710	1.794224		independent
Real per capita GDP	PCRE/GDP	(4,2)	6.136282***	0.375930	FD→Y	independent
TCRE/GDP	Real per capita GDP	(1,4)	0.148388	0.018582		independent
Real per capita GDP	TCRE/GDP	(4,1)	7.741121***	1.419529	FD→Y	independent
PCRE_TCRE	Real per capita GDP	(1,4)	1.870912	2.265637		independent
Real per capita GDP	PCRE_TCRE	(4,1)	4.000278*	0.42363	FD→Y	independent
<b>South Africa</b>						
M2/ GDP	Real per capita GDP	(2,2)	0.117012	0.649111	independent	independent
Real per capita GDP	M2/GDP	(1,1)	1.315753	0.497549	independent	independent
BD/GDP	Real per capita GDP	(1,1)	0.031709	0.544314	independent	independent
Real per capita GDP	BD/GDP	(2,2)	2.227474	1.417726	independent	independent
PCRE/GDP	Real per capita GDP	(1,1)	0.014188	0.518866	independent	independent
Real per capita GDP	PCRE/GDP	(2,2)	1.927809	1.643131	independent	independent
TCRE/GDP	Real per capita GDP	(2,2)	1.422117	1.613068		independent
Real per capita GDP	TCRE/GDP	(2,2)	9.942822***	5.480420**	FD→Y	FD→Y
PCRE_TCRE	Real per capita GDP	(1,1)	1.797655	0.336551		independent
Real per capita GDP	PCRE_TCRE	(2,1)	3.595043*	0.919756	FD→Y	independent

**Note:** The significance of the coefficient in this Table 18 has been given following the asymptotic critical values on table 21 on the appendix. \* denotes significance at 10%; \*\*: denotes significance at 5%; \*\*\* denotes significance at 1%.

Table 19: Summary of causality test

Countries	Model	General conclusion
Cameroon	VEC model	There is short and long-run unidirectional causal flow from financial development economic growth when the ratios of bank deposit and credit to the private sector to GDP are used as indicators of financial development
		There is bidirectional relationship between financial development and economic growth when the total domestic credit is used as indicators of financial development
	ARDL	There is long term relationship between economic growth and all the five indicators of financial development running from the latter to the former and no short-term causality.
South Africa	VEC model	There is short and long-run unidirectional causal flow from economic growth to financial development economic growth when the ratios of broad money to GDP, bank deposit to GDP and credit to the private sector to GDP are used as indicators of financial development
		There is short-term unidirectional causality from financial development to economic growth when the ratio of total domestic credit to GDP is used and long term bidirectional and this highly significant when the same indicators are used.
	ARDL	There is prevalence of independence between financial development and economic growth, but when there is a presence of causality it is from financial development to economic growth.

## 6.5 Conclusion

Throughout this chapter, the main objective was to empirically verify the association and the direction of the causality between financial development and economic growth in Cameroon and South Africa. Before performing this investigation, this study first test the stationarity and the co-integration between the variables used, since this study uses time series data. Following the literature it has been found that, in the two countries almost all the indicators of financial development are positively related with economic growth.

Having found that there is a positive association between financial development and economic growth, the study proceed to a causal test between them. In this regard, two different methods were used as the study wanted to see whether these two approaches

would speak the same language about the direction of causality between financial development and economic growth in the two countries being studied. It is important to undertake the causality test because it may help policy-makers of the two countries being studied in order to see whether they can gain in economic growth by enhancing their financial sector.

Ghirmay (2004) suggests that it is important to conduct comparative study regarding financial development and economic growth between countries at different levels/stages of development, in order to reach to a more conclusive causal relationship between these two variables. Thus, the two methods (VECM and ARDL) used in order to test the causal relationship between financial development and economic growth have indicated that in Cameroon, financial development highly and significantly causes economic growth, whereas in South Africa the result are mixed. When VECM method has supported the view that economic growth leads to financial development in South Africa, the ARDL has suggested independence between the two variables in the country with some minor support of the view that financial development leads to economic growth.

Thus, from the result provided by the VECM method one can agree with Patrick (1966)'s view that in the early stage of development of a country, financial development leads to economic growth (supply-leading pattern) as found in Cameroon, and as modern economic growth occurs, the supply-leading impetus gradually becomes less and less important as the demand-following pattern (economic growth leads to financial development) becomes more dominant. Thus, the result obtained from the VECM method is not surprising, since according to Kuznets hypothesis Cameroon is between the first and the second stage of financial sector development when South Africa<sup>27</sup> is on the third stage (a more advanced stage).

This difference, in term of the direction of causality between financial development and economic growth, found in both countries studied deserves some explanation. In Cameroon the financial sector is almost entirely dominated by the banking sector<sup>28</sup> whereas in South Africa, the banking sector contributes 35 percent of the value added

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<sup>27</sup> For more information about Kuznets hypothesis see Akinboade and Makina (2006).

<sup>28</sup> see IMF, 2007:27

of the financial sector<sup>29</sup>. What this means is that the banking sector alone cannot reflect the full weight of the entire financial sector in South Africa especially as it relates to economic growth. This might be closer to the situation in Cameroon. Thus, the introduction of an indicator for the stock market development could have changed the result in South Africa. However this is above the scope of this study. Introducing a separate indicator of stock market into this study will have made a comparison of the situation in Cameroon very difficult as the stock market in Cameroon is still young to be able to provide significant data for analysis.

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<sup>29</sup> Hawkins, 2004:180.

## CHAPTER SEVEN

### CONCLUSIONS AND POLICY RECOMMENDATIONS

#### 7.0 Introduction

In this chapter, the study draws conclusions about the research question and puts forward policy recommendations and suggestions for future research on financial sector development in Cameroon and South Africa. New endogenous theories of economic growth have stimulated research on identifying the factors that could stimulate long-term growth rates in developing countries especially those in Africa. It has been suggested that there are many sectors on which countries across Africa can focus their economic objectives on, in order to ameliorate their economic situation, as discussed in chapter one of this study. Among others, the development of the financial sector is suggested to be important for African countries in order to achieve sustainable economic growth. The theory behind this was detailed in chapter two, with particular reference to the works of Schumpeter (1911), McKinnon (1973), Shaw (1973) and proponents of their views.

According to the latter authors, financial development is not only good for economic growth, but also causes to it. Although they provide an understanding of the role and importance of financial development in economic growth, there are other economists who provide different opinions on the relationship between the two variables. Robinson (1952) argued that financial development is not that important, but is simply a response to economic growth. Friedman and Schwartz (1963) analytically proved Robinson's view.

As with the theoretical overview, the empirical review in this study also reveals this ambiguity regarding the importance of financial development. The empirical debate about the relationship between financial development and economic growth is centred around three points, firstly the mechanism through which the former affects the latter, secondly the real direction of the causality between them and the third point is around the type of financial institution which affects economic growth the most.

Studies focusing on the different mechanisms by which finance affects growth arrive at the same conclusion that financial development is important for economic growth. In contrast studies conducted on the direction of causality between financial development and growth, have provided mixed results. Those studies that have supported the view that finance causes economic growth are mainly those that have focused more on developing countries than on developed countries. Other studies that have focused on both developing and developed countries have however suggested opposing results i.e., that causality is running from economic growth to financial development for developed countries finding no relationship between the two variables for developing countries. Furthermore, other studies that report bi-directional relationship between financial development and economic growth explain it by the fact that in the early stages of development of one country finance first causes growth and later on it is the reverse.

However, some studies conclude that the direction of causality between financial development and economic growth is sensitive to the choice of the measurement instrument for financial development. Furthermore, other studies, explain that the result obtain could depend on the type of financial institutions prevailing in a country. According to them, the financial sector of countries where both banks and stock markets are well developed will not affect economic growth in the same way as in countries where only banks are well developed.

Thus, before conducting comparative studies on many countries, it is important to acknowledge the different level of the development of their financial sector and that they are at different levels of economic developments as well. This is important because it can have an impact on the relationship as well as the direction of causality between finance and economic growth. It can also help in achieving a deeper understanding of the situation when analysing or interpreting the results of the econometric tests. Thus, chapter four of this study provided an overview of the financial sector, as well as economic growth experiences of the countries being studied (Cameroon and South Africa), before highlighting some differences in terms of their financial sector development. In this chapter, the study found that although both countries faced many impediments which hinder the development of their respective economies and financial sectors, there is evidence that certain indicators of

financial development have positively impacted on economic growth. The econometric analysis in chapter five has tried to verify this finding.

To test the finance-growth relationship in the two countries (Cameroon and South Africa), five proxies of financial development have been used, each measuring one specific service provided by the financial intermediaries. These five indicators are fairly large compared to what most other studies have used in the literature (most of the time they used either two or three indicators). Real per capita GDP has been chosen to serve as the indicator of economic growth consistent with what is obtained in the literature. Some indicators were also added in order to take in account the contributing influence other important sectors of the economy.

The results obtained from the econometric tests suggest that economic growth and financial development in both countries are positively and significantly related. Since the relationship between two variables does not show the causality between them, this study next tested the causal relationship between financial development and economic growth in both countries. Thus, Granger causality tests based on VECM and the ARDL models have been used in this regard and these causality tests have been done. As argued by Zachariadis (2007) the two models provide different results especially in South Africa. Although the results from the two methods were different for South Africa, both of them finally concluded that in Cameroon, financial development leads to economic growth most of the time. In South Africa economic growth seems to lead to economic growth. As conclude in the empirical review of this study, financial development seems most to lead to economic growth in developing countries (Cameroon) than developed ones (South Africa).

### **7.1 Policy recommendations**

In the light of the above summary, the recommendations that can be drawn from this study are the following:

- As the relationship between economic growth and financial sector development in the two countries is positive, governments of the two countries should gear their policies toward strengthening and developing the financial

sector. Some measures such as ameliorating the judicial system, building reliable regulation and supervision for the financial system, could contribute towards strengthening the financial sector especially in Cameroon and could promote faster economic growth.

- Research in this important field is poor for African countries. Thus, there is a need to conduct more studies on this topic focusing on Central Africa and other Francophone Africa. These countries have been under-researched in the past.
- Since financial development is such an important element for economic growth, further support/research should be devoted towards the exact mechanism by which it influences economic growth.
- In this regard, further studies should include other indicators of financial development used in the literature such as the number of ATM, number of bank branches and usage of credit/debit card and so on as proxies of financial development. This might provide better results about the relationship between financial development and economic growth.
- Furthermore most of the studies that have been conducted on South Africa have looked at the causality between financial development and economic growth using the VECM framework which is quite good. Other newly developed causality methods should be also used, in order to see whether they can better explain puzzling results.
- The comparison between financial sectors of sub-Saharan African countries is not too common, thus there is a need to conduct more comparative studies between African countries with different levels of development in order to arrive, as argued by Ghirmay (2004), at a more general conclusion on the relationship between financial development and economic growth across Africa.



→ Moreover, further studies that seek to compare South Africa with another African country should, where possible, include data of the stock market as part of the indicator of financial development. This could provide better insight on the direction of causality between financial development and economic growth.

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## APPENDIX

Table 20: Data coding and definition

Data code	Definition
Y	Real per capita GDP
M2/ GDP	Ratio of money supply (M2) to nominal GDP
BD/GDP	Ratio of bank deposits to nominal GDP
Pcre/ GDP	Ratio of bank credit to private sector over nominal GDP
Tcre/ GDP	Ratio of domestic credit to nominal GDP
Pcre/Tcre	Ratio of private sector credit to total domestic credit
Labforce	Labour force
R	Real interest rate
D89	Index of financial liberalisation in Cameroon
D94	Index of financial liberalisation in South Africa

Table 21: Asymptotic critical values

Level	1%		5%		10%	
	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
Pesaran et al (2001) P.300 Table CI (ii) Case II	4.94	5.58	3.62	4.16	3.02	3.51
Narayan (2005) P. 1987 appendix: Case II	5.593	6.333	3.937	4.523	3.210	3.730

Figure 13: Commercial banks and bank branches in Cameroon from 1980-2005

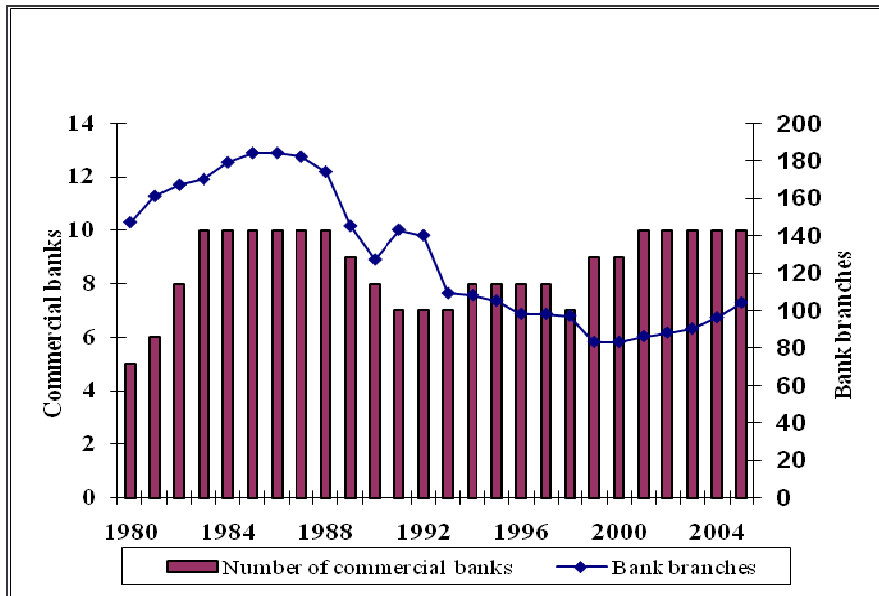
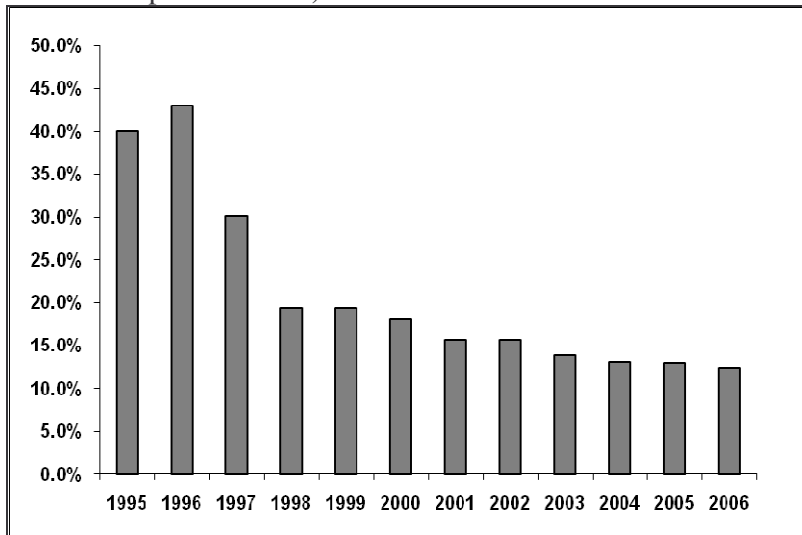


Figure 14: Cameroon non-performing loans from 1995-2006 (Percentage of credit to private sector)



Source: Various annual reports of COBAC and the IMF Working Paper (2007) No 07/287