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## ACRONYMS

|               |                                                   |
|---------------|---------------------------------------------------|
| <b>ABA</b>    | Australian Bankers' Association                   |
| <b>ACCC</b>   | Australian Competition and Consumer Commission    |
| <b>ADF</b>    | Augmented Dickey-Fuller                           |
| <b>ADI</b>    | Authorised Deposit-taking Institutions            |
| <b>AltX</b>   | Alternative Exchange                              |
| <b>APRA</b>   | Australian Prudential Regulation Authority        |
| <b>APX</b>    | Asia Pacific Stock Exchange                       |
| <b>ARDL</b>   | Autoregressive Distributed Lag                    |
| <b>ASIC</b>   | Australian Securities and Investments Commission  |
| <b>ASX</b>    | Australian Securities Exchange Group              |
| <b>ATM</b>    | Automated Teller Machine                          |
| <b>BASA</b>   | Banking Association South Africa                  |
| <b>BESA</b>   | Bond Exchange of South Africa Limited             |
| <b>BIS</b>    | Bank of International Settlement                  |
| <b>CBB</b>    | Central Bank of Brazil                            |
| <b>CHX</b>    | Chicago Stock Exchange                            |
| <b>CMA</b>    | Capital Markets Authority                         |
| <b>CMN</b>    | Central Monetary Council                          |
| <b>COMESA</b> | Common Market for Eastern and Southern Africa     |
| <b>CPI</b>    | Consumer Price Index                              |
| <b>CPL</b>    | Continuous Processing Line                        |
| <b>CSD</b>    | Central Securities Depository                     |
| <b>CUSUM</b>  | Cumulative Sum of Recursive Residual              |
| <b>CUSUMQ</b> | Cumulative Sum of Squares of Recursive Residual   |
| <b>CVM</b>    | Securities and Stock Exchange Commission (Brazil) |

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| <b>DF-GLS</b>       | Dickey-Fuller Generalised Least Square                         |
| <b>DPFB</b>         | Deposit Protection Fund Board                                  |
| <b>dti</b>          | Department of Trade and Industry                               |
| <b>EACB</b>         | East African Currency Board                                    |
| <b>ECM</b>          | Error-Correction Model                                         |
| <b>ERS</b>          | Economic Recovery Strategy                                     |
| <b>FCS</b>          | Financial Claims Scheme                                        |
| <b>FDIC</b>         | Federal Deposit Insurance Corporation                          |
| <b>FSA</b>          | Financial Services Authority                                   |
| <b>FSB</b>          | Financial Services Board                                       |
| <b>GDP</b>          | Gross Domestic Product                                         |
| <b>GLS</b>          | Generalised Least Squares                                      |
| <b>GNP</b>          | Gross National Product                                         |
| <b>GS</b>           | Guarantee Scheme                                               |
| <b>IMF</b>          | International Monetary Fund                                    |
| <b>IPO</b>          | Initial Public Offer                                           |
| <b>JSE</b>          | Johannesburg Stock Exchange                                    |
| <b>KBA</b>          | Kenya Bankers Association                                      |
| <b>LDCs</b>         | Least Developed Countries                                      |
| <b>LSE</b>          | London Stock Exchange                                          |
| <b>NASDAQ</b>       | National Association of Securities Dealers Automated Quotation |
| <b>NASDAQ: NDAQ</b> | NASDAQ OMX Group, Inc.                                         |
| <b>NPS</b>          | National Payment System                                        |
| <b>NPSD</b>         | National Payment System Department (of the SARB)               |
| <b>NSE</b>          | Nairobi Securities Exchange                                    |
| <b>NSX</b>          | National Stock Exchange of Australia                           |
| <b>NYSE</b>         | New York Stock Exchange                                        |

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| <b>NYSE:NYX</b> | New York Stock Exchange Euronext                       |
| <b>OECD</b>     | Organisation for Economic Co-operation and Development |
| <b>OLS</b>      | Ordinary Least Squares                                 |
| <b>PASA</b>     | Payments Association of South Africa                   |
| <b>POS</b>      | Point of Sale                                          |
| <b>PP</b>       | Phillips-Perron                                        |
| <b>RBA</b>      | Reserve Bank of Australia                              |
| <b>RTGS</b>     | Real-Time Gross Settlement                             |
| <b>SAMOS</b>    | South African Multiple Option Settlement               |
| <b>SARB</b>     | South African Reserve Bank                             |
| <b>SEC</b>      | Securities and Exchange Commission                     |
| <b>SRO</b>      | Self-regulatory organisations                          |
| <b>STRATE</b>   | Share Transactions Totally Electronic                  |
| <b>TFP</b>      | Total Factor Productivity                              |
| <b>UK</b>       | United Kingdom                                         |
| <b>UKLA</b>     | United Kingdom Listing Authority                       |
| <b>UNCTAD</b>   | United Nations Conference on Trade and Development     |
| <b>USA</b>      | United States of America                               |
| <b>VCT</b>      | Venture Capital Trust Scheme                           |
| <b>VECM</b>     | Vector Error-Correction Model                          |

## **CHAPTER 1**

### **INTRODUCTION TO THE STUDY**

#### **1.1 Background to the Study**

The relationship between bank-based and market-based financial development and economic growth has generated a considerable amount of debate for many years among development economists – but with little consensus. To date, the debate surrounding the impact of financial development – both bank-based and market-based – on economic growth is still raging. Although a growing body of work (Gelb, 1989; Roubini and Salai-Martin, 1992; King and Levine, 1993a; 1993b) reflects the positive impact of financial development on economic growth, alternative views still exist. Studies that support a positive relationship between financial development and economic growth include those of Schumpeter (1911), Goldsmith (1969), McKinnon (1973), Shaw (1973), King and Levine (1993a) and Odedokun (1996), among others, while Van Wijnbergen (1983) and Buffie (1984) support a negative relationship. Still, besides these two opposing groups, there are other studies, such as Robinson (1952), Lucas (1988) and Stern (1989) that either find no association, or a negligible relationship, between financial development and economic growth.

As with the general impact of financial development – both bank-based and market-based – on economic growth, the debate on the direction of causality between financial development – both bank-based and market-based – and economic growth has been on-going for some time now. Extensive empirical work has been conducted on this subject in a number of countries, but with conflicting results.

Empirically, four views exist in the literature on the causal relationship between financial development and economic growth. The first one is the “finance-led growth hypothesis”, also known as the “supply-leading hypothesis”. This view argues that financial development is important – and that it leads to economic growth. It is a viewpoint that has been widely supported by McKinnon (1973), Shaw (1973), and King



and Levine (1993a), among others. The supply-leading hypothesis attaches greater importance to the role played by financial sector development on economic growth.

The second view is the “growth-led finance hypothesis”, also termed the “demand-following hypothesis” which postulates a causal relationship between economic growth and financial development. According to this view, the latter is considered to be demand-driven (see also Robinson, 1952; Gurley and Shaw, 1967; Goldsmith, 1969; Jung, 1986).

The third view is the “feedback hypothesis”, or the “bidirectional-causality view,” which assumes a positive two-way causal relationship between financial development and growth. It ascribes equal importance to both the financial and real sectors of the economy (see also Patrick, 1966).

Then there is the fourth view which sees no causal relationship at all between financial development and economic growth. In other words, it sees neither of these two sectors as having any significant effect on the other (Lucas, 1988; Graff, 1999).

Although a number of studies have been done in an attempt to solve the finance-growth puzzle, many of these studies concentrated on bank-based proxies of financial development and ignored market-based proxies (see, for example, Christopoulos and Tsionas, 2004; Majid, 2008; Akinlo and Egbetunde, 2010). It can be argued that results and conclusions of such studies may not provide a complete set of actions for policy makers. Studies that explicitly explored the dynamic causal relationship between economic growth and financial development, proxied by market-based proxies of financial development, are scant. This also applies to the studies that have explored the causal link between economic growth and financial development, proxied by both bank-based and market-based proxies of financial development (see, for example, Levine and Zervos, 1996; Shan *et al.*, 2001; Arestis *et al.*, 2005; Adjasi and Biekpe, 2006; Nurudeen, 2009; Ujunwa and Salami, 2010; Bernard and Austin, 2011; Marques *et al.*, 2013). Further, the empirical findings of these studies are largely far from being conclusive.

Another interesting, and equally important debate that has not received much attention in the finance-growth-nexus literature is whether a country's level of development has any influence in the nature of the finance-growth link. Most studies examined the finance-growth link in a single country or in countries with the same income levels (see, among others, Ahmed and Ansari, 1998; Güryay *et al.*, 2007; Kargbo and Adamu, 2009; Adu *et al.*, 2013). While certain economists (Kletzer and Pradhan, 1987; Beck, 2002) argue that financial development is much more effective in promoting economic growth in high income countries than in low income countries, others argue that countries in the early stages of development benefit more from financial development, *ceteris paribus* (McKinnon, 1973; Fry, 1995).

There are other two arguments that are still on-going, though they are not covered in this study. One argument is on the complementarity or substitutability of bank-based and market-based financial development in enhancing economic growth. There are conflicting views on the different roles played by financial intermediaries and stock markets. An important element of the debate concerns the relative contributions of banks and financial markets in spurring growth. Some researchers (Beck, 2002) argue that while overall development of the financial system is important, the distinction between bank-based and market-based systems is relatively unimportant in explaining growth; while others (Sitglitz, 1985) argue that a bank-based financial system is much better than a market-based financial system. Other researchers (Levine, 1997; Boyd and Smith 1998) argue oppositely. The other argument is on convergence and divergence. Some researchers argue that in the early stages of development the relationship between financial development and economic growth is stronger, such that in the long run, low income countries will catch up with middle and high income countries in terms of economic growth, *ceteris paribus* – a phenomenon called convergence (Fung, 2009). However, there are other studies that support the view that the relationship between financial development and economic growth is stronger in the later stages of development such that less developed countries with less developed financial systems will never catch up with the middle and high income countries in terms of economic growth – a phenomenon called divergence (Evrensel, 2002). This debate is still on-going to date.

Given the conflicting evidence on the subject to date, it is important to revisit the issue so as to provide policy makers with sound advice on how they can put economies – with differing development levels – on the sustainable growth path.

The experiences of six countries are investigated in this study in order to re-examine the relationship, and establish the direction of causality, between bank-based and market-based financial development and economic growth. The six countries are South Africa, Brazil, Kenya, the United States of America (USA), the United Kingdom (UK) and Australia. These countries have been selected for the following reasons: first, the selection includes three ‘developing’ countries (South Africa, Brazil and Kenya) and three countries designated as ‘developed’ (USA, UK and Australia). Thus these countries have been selected so as to enable the conducting of parallel studies on countries at different stages of development. Second, since the components of financial development are important in this study, it is of paramount importance that some of the selected countries have more developed financial and stock markets than financial intermediaries when compared to the others – and vice versa. Brazil, South Africa, Australia, the UK and the USA have market-based financial systems, while Kenya has a bank-based financial system (Demirguc-Kunt and Levine, 2001). Third, the availability of long term historical time-series data, especially stock market data, prompted the selection of these six countries. Overall, the selection is a modest representation of financial systems prevailing in both the developing and the developed countries.

## **1.2 Statement of the Problem**

Academic literature on the relationship between financial development and economic growth dates back to as early as the early 20<sup>th</sup> Century (Schumpeter, 1911), but surprisingly, there is no consensus to date on any conclusions arrived at. The controversy surrounding the finance-growth nexus comes at a time when almost all countries in the world are battling to improve their economic growth rates, or at least maintain them, in order to improve the living standards of their citizens, curb public deficits and point the debt/GDP ratio onto a steadily declining path (Claessens *et al.*, 2010). Although sustainable economic growth has always been a challenge to many countries, and yet their most sought after target, the recent global financial crisis of

2008 has worsened the situation. Many countries, especially the middle and low income countries, therefore, face major challenges in their efforts to increase growth, reduce poverty and unemployment rates and integrate themselves into the world economy. Given the rapid and dynamic rate of globalisation, there is tremendous pressure on a number of developing countries to modernise their financial sectors in line with global trends, standards and best practices, to avoid being left behind in the dynamic drive for faster, better and safer financial transactions. Even the developed economies are under immense pressure to enhance economic growth and modernise their financial sectors so as to, at least, maintain their economic growth rates and keep setting global trends. Amidst all this, there remains the question of whether financial development is important to a country's economic growth process.

Given the declining growth rates of many economies across the globe on the one hand and the confusion on the nature of the relationship between economic growth and financial development on the other hand, the need for further significant research on the finance-growth nexus does not need to be over-emphasised. This study aims to contribute positively to this need and help to guide policy and settle this debate which has dragged on for centuries.

It is against this backdrop that the current study attempts: (i) to examine the relative impact of bank-based and market-based financial development on economic growth in the study countries, using the newly developed auto regressive distributed lag (ARDL) bounds testing approach; and (ii) to investigate the causal relationship between financial development and economic growth, with financial development disaggregated into bank-based and market-based financial development, in the study countries within a trivariate Granger-causality setting, using the newly developed ARDL bounds testing approach. In order to incorporate the various proxies of bank-based and market-based financial development in the empirical analysis, the study employs the method of means-removed average to construct both bank-based and market-based financial development indices.

## **1.3 Objectives and Hypotheses of the Study**

### **1.3.1 Objectives of the Study**

The main objective of this study is to examine the dynamic relationship between financial development and economic growth in both the developing and the developed countries.

The specific objectives of this study are to:

- (i) empirically test the impact of bank-based financial development on economic growth in the study countries;
- (ii) empirically test the impact of market-based financial development on economic growth in the study countries;
- (iii) examine the causal relationship between bank-based financial development and economic growth in the selected developing and developed countries;
- (iv) test the causal relationship between market-based financial development and economic growth in the selected developing and developed countries.

### **1.3.2 Hypotheses of the Study**

The following hypotheses are tested in this study:

- a) Bank-based financial development leads to economic growth in the study countries.
- b) Market-based financial development leads to economic growth in the study countries.
- c) The causal relationship between bank-based financial development and economic growth in the study countries follows a distinct supply-leading response (i.e. bank-based financial development drives economic growth).

- d) The causal relationship between market-based financial development and economic growth in the study countries follows a distinct supply-leading response (i.e. market-based financial development drives economic growth).

#### **1.4 Significance of the Study**

This study differs essentially from the majority of previous studies on the subject in several ways. First, it splits financial development into bank-based and market-based components and examines the relative impact of each component on economic growth. It also investigates the causal flow between each component and economic growth. Most previous studies failed to make such a distinction – and focused on financial development and economic growth in general only – thereby making their studies more general in nature.

Second, unlike the majority of previous studies that used one or a few indicators of bank-based financial development, which might not sufficiently capture the breadth and depth of a financial sector, this study constructs a bank-based financial development index from a number of bank-based financial indicators. In addition, it uses a market-based financial development index constructed from a number of market-based financial development indicators. The use of these indices should ensure a holistic picture of the relationship between financial development and economic growth in the study countries.

Third, this study uses control variables to produce bias free estimates and robust results, unlike most studies that use financial development indicators as the only independent variables. Most studies, thus, neglect other growth determining variables; hence, their estimates of the impact of financial development variables could hardly be free of bias stemming from the omitted variables.

Fourth, this study carries out separate impact and causal studies in each of the study countries. Most previous studies have been based mainly on the causal relationship between financial development and economic growth, and usually interpret the sign of the coefficient of a variable under a causality test to determine the impact of financial development on economic growth. Very few studies have examined in detail the

relative impact of both bank-based and market-based financial development on economic growth. To the best of my knowledge, this study is among the first studies to examine in detail the dynamic impact of financial development – both bank-based and market-based – on economic growth, and to test the dynamic causal relationship between financial development – both bank-based and market-based – and economic growth in a single study.

Fifth, the study tests causality within a trivariate Granger-causality model. Most of the studies on causality have used a bivariate framework to examine the causal relationship between financial development and economic growth although it is now known that the results of the bivariate causality tests may be invalid, due to the omission of important variables affecting both financial development and economic growth in the causality model (Odhiambo, 2009a). As pointed out by Loizides and Vamvoukas (2005), as well as Odhiambo (2009a), the introduction of an additional variable into the causality framework may not only alter the direction of causality but could also affect the magnitude of the estimates.

Sixth, unlike most of the previous studies on the subject, this study employs the newly developed autoregressive distributed lag model in the impact analysis and causality tests. The majority of the previous studies have mainly used either the residual-based cointegration test associated with Engle and Granger (1987), or the maximum-likelihood test based on Johansen (1988) and Johansen and Juselius (1990). Yet it is now widely recognised that these cointegration techniques may not be appropriate when the sample size is too small (see Odhiambo, 2008a).

Seventh, this study analyses two country groups, the developing-country group and the developed-country group, each consisting of three countries. All these study countries are chosen from across the globe. Although the results cannot be extrapolated to every country in general, the varied selection of countries paints a fuller picture on the relationship between financial development (both bank-based and market-based) and economic growth. Most of the existing studies on the subject focus on one country only – or are continent-specific.

Finally, this study employs time-series data and econometric techniques. The results from such data analysis give country-specific results that incorporate country-specific effects. Ensuing policy prescriptions are therefore country specific. Most of the previous studies over-relied on cross-sectional data, which may not have satisfactorily addressed country-specific issues (Ghirmay, 2004; Casselli *et al.*, 1996).

The findings of this study will not only contribute to the settlement of the still on-going finance-growth nexus debate, but could also provide policy guidance on finance-growth matters in South Africa, Brazil, Kenya, the USA, the UK and Australia. This study, therefore, stands to benefit the body of economic knowledge in more ways than one as it addresses the shortfalls of most related studies of the same nature.

### **1.5 Organisation of the study**

The rest of the study is organised as follows: Chapter 2 surveys country-based literature on financial development and economic growth in the developing countries, while Chapter 3 covers country-based literature on financial development and economic growth in the developed countries. Theoretical and empirical literature on financial development and economic growth is reviewed in Chapter 4. Chapter 5 discusses the estimation techniques used in this study and the choice of variables used, while Chapter 6 covers the empirical modelling and the discussion of results. Finally, Chapter 7 concludes the study.



## **CHAPTER 2**

# **FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES**

### **2.1 Introduction**

This chapter discusses the financial sector development and economic growth experiences and trends in South Africa, Brazil and Kenya. The chapter is divided into five major sections. Section 2.2 presents financial development in South Africa. This section is divided into two sub-sections: bank-based financial development and stock market development in South Africa. Under bank-based financial development, the following issues are discussed: an overview of South Africa's banking sector; bank-based financial sector reforms; trends in banking sector growth and economic growth in South Africa and the challenges facing the country's bank-based financial development. Under stock market development in South Africa the following issues are discussed: the origins of the stock market; stock market reforms; trends in stock market growth and economic growth; and challenges facing stock market development in South Africa.

Section 2.3 focuses on financial development in Brazil. This section is divided into two sub-sections: bank-based financial development and development of the stock market. Under the former, the following issues are discussed: an overview of Brazil's banking sector; discussion of bank-based financial sector reforms, trends in banking sector growth and economic growth as well as the challenges facing bank-based financial development in Brazil. Under stock market development in Brazil the following issues are discussed: the origin of the Brazilian stock market; stock market reforms; stock market growth and economic growth trends; and challenges facing the country's stock market development.

Section 2.4 presents financial development in Kenya. This section is divided into two sub-sections: bank-based financial development and stock market development. Under bank-based financial development in Kenya the following issues are discussed: an overview of Kenya's banking sector; its bank-based financial sector reforms; trends

in banking sector growth and economic growth; and challenges facing bank-based financial development in Kenya. Under stock market development the following issues are discussed: the origin of the stock market in Kenya; stock market reforms; trends in stock market growth and economic growth; and challenges facing stock market development in Kenya. Finally, some concluding remarks are presented in Section 2.5.

## **2.2 Financial Development in South Africa**

The financial sector in South Africa, backed by a sound regulatory and legal framework, compares favourably with those of industrialised countries (IMF, 2008). By international standards, this sector consists of a sophisticated bank-based segment and a relatively developed market-based segment. In South Africa, since securities markets share centre stage with banks in driving economic growth via savings mobilisation and allocation, exerting corporate control, and easing risk management, South Africa is generally referred to as having a market-based financial system.

### **2.2.1 Bank-Based Financial Development in South Africa**

Although South Africa is generally referred to as a market-based financial system, both the bank-based and the market-based financial segments are quite well-developed in terms of international standards. This section presents a detailed discussion of the banking segment. Section 2.2.1.1 gives an overview of South Africa's banking sector, while section 2.2.1.2 traces bank-based financial sector reforms. Trends in banking sector growth as well as economic growth are outlined in Section 2.2.1.3, while the challenges facing bank-based financial development in South Africa are highlighted in Section 2.2.1.4

### 2.2.1.1 Overview of South Africa's Bank-Based Financial System

#### ***Origin of the Central Bank of South Africa, the South African Reserve Bank***

The Central Bank of the Republic of South Africa, commonly known as the South African Reserve Bank (SARB) was established in 1921 in terms of a special Act of Parliament, the Currency and Banking Act, 1920 (Act No. 31 of 1920) (SARB, 2012).

Before the SARB was established, South African commercial banks issued banknotes to the public. However, the legislation on the issuing of banknotes by commercial banks was not uniform (SARB, 2012). According to the SARB (2012), the price of gold in the United Kingdom rose above its price in South Africa after World War I, thus leaving the South African banks to trade at a loss.

To protect their financial viability, the commercial banks requested the Government to release them from the obligation to convert their banknotes into gold on demand. This led to the Gold Conference of October 1919. Following the recommendations of the Conference, a Select Committee of Parliament recommended the establishment of a central bank to assume, among other responsibilities, responsibility for the issuing of banknotes and for taking over the gold held by commercial banks (SARB, 2012). Parliament subsequently accepted the recommendation on the creation of a central bank. In December 1920, the Currency and Banking Act, which provided for the establishment of the SARB, was promulgated. Effect was given to its various provisions in the course of the subsequent six months and the Reserve Bank commenced operation on 30 June 1921 (SARB, 2012).

The SARB is responsible for the monetary policy goal of containing inflation. Its main purpose is to maintain financial stability via price stability in South Africa. Additionally, it formulates and implements monetary policy; acts as banker to government; supervises the banking sector; ensures effective functioning of the national payment system; manages gold and foreign-exchange reserves; issues notes and coins; acts as lender of last resort in certain circumstances; and administers the country's exchange controls (SARB, 2012).

The structure of shareholding in the SARB has, however, not been amended since its inception. The SARB and seven other central banks (in Belgium, Greece, Italy, Japan, Switzerland, Turkey and the USA) have shareholders other than the governments of their respective countries (SARB, 2012).

### ***Overview of the Banking Sector in South Africa***

The South African banking industry is governed by, among other acts, the South African Reserve Bank Act 90 of 1989 as amended; the Banks Act 94 of 1990 as amended; the Mutual Banks Act 124 of 1993 as amended; the Currency and Exchanges Act 9 of 1933 as amended; the National Payment System Act 78 of 1998 as amended; the Financial Intelligence Centre Act 39 of 2001 as amended; and the Financial Advisory and Intermediary Services Act 37 of 2002 as amended (SARB, 2012). In addition to these Acts, South Africa's banks are regulated in accordance with the principles set by the Basel Committee on Banking Supervision. Consequently, the banks comply with sound international practice and offer a sophisticated banking system to the public (Bank of International Settlement "BIS", 2012a).

Over the past decades, South Africa has established a well-developed banking system, which compares favourably with those in many developed countries; and which sets South Africa apart from many other emerging economies (BIS, 2012a). The sector has undergone a lot of changes, with the early 1990s being characterised by a process of consolidation, resulting from mergers of a number of banks (the Banking Association South Africa "BASA", 2010).

The promulgation of the Banks Act of 1990 led to a number of banking licenses being issued and by the end of 2001, there were 43 registered banks in South Africa. However, the announcement of Saambou's financial troubles in 2002 resulted in a run on smaller banks. This resulted in a number of banks not renewing their banking licenses and others seeking financial assistance from foreign shareholders (BASA, 2010). Other banks also experienced financial difficulties during that period and were placed under curatorship (BASA, 2010).

Although the South African banking sector has been through a process of volatility and change in the past, it has attracted a lot of interest from abroad with a number of foreign banks establishing a presence in the country and others acquiring stakes in major banks (BASA, 2010). To date, South Africa has a relatively well-developed financial sector, which compares well with some of the BRICS countries (Brazil, Russia, India, China and South Africa) and with other developed countries.

South African banks also dominate the banking landscape in Africa. Out of Africa's top 200 banks in 2008, South African banks accounted for 40.4% of total banking assets, 34.6% of net earnings, 49.9% of bank credit, and 42.4% of bank deposits (Mlambo and Ncube, 2011). The sector is, however, heavily concentrated, with the largest four banks accounting for over 80% of total bank assets. Over time, the South African banking sector has become marginally more concentrated as the total number of banks has also declined, falling from 58 (41 domestic, 2 mutual banks and 15 branches of international banks) in 2003 to 33 (18 local banks, 2 mutual banks and 13 branches of international banks) in 2009; and further down to 36 (17 domestic, 3 mutual banks, 1 co-operative bank and 15 local branches of foreign banks) in 2012 (Mlambo and Ncube, 2011; SARB, 2012).

Although its structure has not changed much over the last few years, the banking system in South Africa has continued to grow in terms of assets, deposits, profitability and product offerings. The growth has been mainly underpinned by a number of changes in respect of the regulatory environment, product offerings, and number of participants, resulting in a greater level of competition on the market from smaller banks which have targeted the low income and the previously unbanked market (BASA, 2010).

#### **2.2.1.2 Bank-Based Financial Reforms in South Africa**

The boom in the global financial industry over the past decades has been fuelled by an explosive combination of economic growth, demographic changes, technology and financial innovation. In this rapidly changing world, characterised by financial engineering, computer technology, e-commerce, volatile international capital flows and

powerful global financial conglomerates, the optimal alignment of regulatory instruments has become a complex and highly dynamic process. Even tested approaches to standard regulatory challenges now require some serious reconsideration (Falkena *et al.*, 2001).

To keep pace with national demands for development; and global demands for modernisation, South Africa, like all other countries, embarked on a banking sector reform journey many decades ago. Reforms in South Africa have sought to improve the legal, regulatory and supervisory aspects of the financial sector. They have also focused on reducing financial repression, restoring bank soundness and modernising financial infrastructure (BIS, 2012b).

According to Falkena *et al.* (2001), the reform of the South African banking sector can be categorised into three phases, as dictated by the regulatory regimes of the 1980s, 1990s and 2000s. The 1980s were characterised, firstly, by the hesitant steps taken by authorities to free the economy from over-regulation (Falkena *et al.*, 2001; p.157). In the 1990s, the ethos of regulation rapidly changed, as its structures moved strongly in the direction of deregulation, with significantly more reliance on market forces. In the 2000s, the banking sector reforms in South Africa intensified, as bank regulation and supervision were aligned with directives of the Basel Committee (Falkena *et al.*, 2001).

In the early 1980s, true forces of competition did not exist in the South African banking sector (Falkena *et al.*, 2001). Building societies had favourable funding benefits from government, effectively resulting in controlled lending and deposit rates until the mid-1980s. According to Falkena *et al.* (2001), price competition between banks and building societies started in earnest on the asset side on their balance sheets in 1984 and on the liability side in 1998 – when the phasing-out of the tax privileges on building society shares began. A level playing field between banks and building societies materialised only with the Deposit-taking Institution Act of 1990 (renamed the Banks Act in 1996) (Falkena *et al.*, 2001).

In the 1990s, the ethos of regulation rapidly changed as the financial institutions faced the challenges of financial innovation, capital mobility and global financial conglomerates (Falkena et al., 2001). Once again the structure of regulation moved strongly in the direction of deregulation, with significantly more reliance on market forces. More importantly, the consumer moved to centre stage while for the first time, the authorities took consumer protection issues more seriously. As a result, corporate governance rules, disclosure, transparency and accountability became key concepts in regulation (Falkena *et al.*, 2001).

In 1994, the SARB took the lead in the modernisation process of the domestic payment system under the auspices of the national payment system (NPS) project. One of the outputs of the project was the South African National Payment System Framework and Strategy Document (the Blue Book) published in 1993. In 1996, a payments system management body known as the Payments Association of South Africa (PASA) was established. This body plays an important role in the South African NPS by assisting the SARB to manage the safety and integrity of the NPS, through which all payments flow (Payments Association of South Africa, 2012).

In March 1998, the leader of the sector (the SARB) decided to establish the Banking Council South Africa, which was an executive-driven body structured to address challenges in the sector. However, the name of this Board changed in March 2005 to Banking Association South Africa (BASA) because this was a more appropriate description of the structure of the body and of its role. As the mandated representative of the sector, BASA addresses industry issues via lobbying; policy influence; guiding transformation in the sector; acting as a catalyst for constructive and sustainable change in the sector; research and development; and engagement with critical stakeholders. BASA is responsible for updating and publishing the Code of Banking Practice, which is a self-regulatory code for its members (banks) (Banking Association South Africa, 2012). In the same year, the National Payment System Act 78 of 1998 was passed and the South African Multiple Option Settlement (SAMOS) system was introduced so as to align domestic interbank settlement practices with international best practice. In the 2000s, there were further banking sector reforms in South Africa

as bank regulation and supervision were aligned with Basel Committee Directives (BIS, 2012b).

In 2006, the Competition Commission of South Africa established the Banking Enquiry to investigate, amongst other things, the level of competition within the banking industry and the level and structure of bank charges levied by banks, as well as by other providers of payment services (Department of National Treasury, 2011). This report was published in 2008, marking the commencement of the interdepartmental process led by the Department of National Treasury, aimed to facilitate the implementation of the recommendations of the report (Competition Commission of South Africa, 2012). As a result of the process, the SARB, in an effort to stimulate more competition, further revised its directive on designated banks to allow qualifying non-bank financial service providers to participate in the payments clearing space. However, the settlement space was left as a preserve for banks because of its high risk levels.

In 2007, the SARB issued Directive No. 2 of 2007, recognising and formalising the role played by system operators in providing services relating to payment instructions to the people (SARB, 2012). In February 2011, The Department of National Treasury released a policy document called “A safer financial sector to serve South Africa better,” commonly known as the Red Book. The Red Book highlights the South African Government’s recognition that international efforts are necessary to secure global financial and economic stability and to prevent future crises similar to the 2008 global financial meltdown. These commitments were based on South Africa’s domestic situation (Department of National Treasury, 2011). The Red Book also proposes changes in regulation of financial institutions to a Twin Peaks Model, where prudential and market conduct regulation are separated and the responsibility for each given to separate regulatory institutions (Department of National Treasury, 2011).

In December 2011, the Minister of Finance, under section 90 of the Banks Act No. 94 of 1990, issued regulations, with effect from January 2012, covering a wide spectrum of issues within the banking sector. The regulations, among other things, set out financial reporting standards requiring banks to report to the central bank in a uniform



format. They also included issues relating to risk definition, classification, measurement and exposure together with governance issues and audit guidelines (SARB, 2012).

These rigorous reforms over time have given rise to a developed and well-regulated banking system which compares favourably with those of industrialised countries and which dominates the banking landscape in Africa. Despite this remarkable advancement in the banking system, the South African financial authorities are pushing for further reform of the banking sector, as evidenced by the continuous dialogue between the Minister of Finance and the banking industry and the release of The National Payment System Framework and Strategy Vision 2015 by the SARB.

#### **2.2.1.3 Banking Sector Growth and Economic Growth in South Africa**

The South African bank-based financial sector has evolved over time. In 1991 several classes of banks were grouped together into banking institutions. There was also a transformation of most building societies into mutual societies, then into banking institutions. The banking institutions were further merged into large banking groups. Barriers to entry into the payments space by financial institutions were also reduced. In addition, other restrictions on the entry of new foreign banks were also lifted (SARB, 2012). Despite the enabling environment for active participation by foreign banks that had been created by monetary authorities during the early 1990s, most of the banks' total assets were still owned by only four banking groups, with more than 3 000 branches countrywide by the mid-1990s (SARB, 2012).

By 1997, South Africa had 51 licensed financial entities and five mutual banks. Out of the 51, 32 were registered banks; eight were branches of foreign banks, whilst 11 were subsidiaries of foreign banks. Today there are about 36 licensed financial entities in South Africa, including 17 registered banks, 15 branches of foreign banks, three mutual banks and a co-operative bank. It can be noted that over the years – from the 1990s to 2000s – the number of registered banks and mutual banks has been in decline. However, in 2012 the number of mutual banks increased by one only. Although the cause of this decline is not well known, it could possibly have been due

to tightening of the prudential regulations by monetary authorities, making it hard for some banks to comply.

Although South Africa is currently considered to have one of the most developed and sophisticated financial systems in sub-Saharan Africa, which compares well with the developed countries, its market share is still dominated by only a few financial institutions. The financial authorities are, however, attempting to indirectly dilute the dominance of these few entities by stimulating competition (Department of National Treasury, 2011). These efforts are evidenced by the emergence of another category of banks in the country, the co-operative banks category. Besides the introduction of co-operative banks in the banking industry, the financial authorities have been encouraging competition by opening up access into the national payment system through allowing designated banks to compete with the traditional banks. As a result, to date, more than 80% of banks' total assets are held by only four banking groups as compared to the mid-1990s where these same four groups held more than 95% of banks' total assets.

South Africa's two public banks are so small that they hold less than 10% of total bank assets. Most of the shares in private banks in the South African banking sector are held by foreign shareholders. As of December 2011, 43.2% of the nominal value of the South African banking sector's shares in issue was held by foreign shareholders as compared to 42.3% in December 2010. Domestic shareholders accounted for 27.5% and minority shareholders 29.3% of the nominal value of the banking sector shares in issue at the end of December 2011 as compared to December 2010 with 30% and 27.6% respectively (SARB, 2012). Table 2.1 shows the number of banks in South Africa during the period 2002 - 2012.

**Table 2.1: Number of Banks in South Africa (2002-2012)**

| Indicator                                       | 2002      | 2003      | 2004      | 2005      | 2006      | 2007      | 2008      | 2009      | 2010      | 2011      | 2012      |
|-------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Registered banks                                | 30        | 22        | 20        | 19        | 19        | 19        | 19        | 18        | 17        | 17        | 17        |
| Mutual banks                                    | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 3         |
| Co-operative banks                              | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 1         |
| Local branches of foreign banks                 | 14        | 15        | 15        | 15        | 14        | 14        | 14        | 13        | 13        | 12        | 15        |
| Foreign banks with local representative offices | 52        | 44        | 43        | 47        | 43        | 46        | 43        | 42        | 41        | 43        | 43        |
| <b>Total</b>                                    | <b>98</b> | <b>83</b> | <b>80</b> | <b>83</b> | <b>78</b> | <b>81</b> | <b>78</b> | <b>75</b> | <b>73</b> | <b>74</b> | <b>79</b> |

Source: The SARB, various issues (2012).

Banking sector development in South Africa is also evidenced by growth in private sector credit extension. Although the second half of the 1970s was characterised by almost constant credit provided by financial institutions to the private sector, the early 1980s saw a modest increase from 76.4% of GDP in 1980 to 96.8% in 1985. Thereafter, the lending was again almost constant during the second half of the 1980s. From 1990, South Africa's credit extension to the private sector steadily increased until the early 2000s when the lending rate increase slowed down. By 2010, credit extension to the private sector was at 182.2% of GDP, which is well above that of other sub-Saharan African countries (World Bank, 2012a).

South Africa's non-performing loans, though generally low, have seen an increase during the second half of the 2000s. Credit information is easily available to both consumers and banking institutions. Both consumers and institutions have strong legal rights. Table 2.2 displays some of the banking indicators showing the development of South Africa's banking sector.

**Table 2.2: Growth of Banking Sector in South Africa (2000-2010)**

| Indicator                                              | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Domestic Credit Extension to Private Sector (% of GDP) | 152.5 | 184.3 | 159.8 | 163.1 | 169.6 | 178.5 | 192.9 | 195.2 | 172.2 | 184.4 | 182.2 |
| Bank Non-performing Loans to Total Gross Loans (%)     | -     | 3.1   | 2.8   | 2.4   | 1.8   | 1.5   | 1.1   | 1.4   | 3.9   | 5.9   | 5.8   |
| Credit Depth of Information Index (0=low to 6=high)    | -     | -     | -     | -     | 5     | 5     | 5     | 6     | 6     | 6     | 6     |
| Strength of legal rights index (0=weak to 10=strong)   | -     | -     | -     | -     | 10    | 10    | 10    | 10    | 10    | 10    | 10    |

Source: World Bank Development Indicators (2012a)

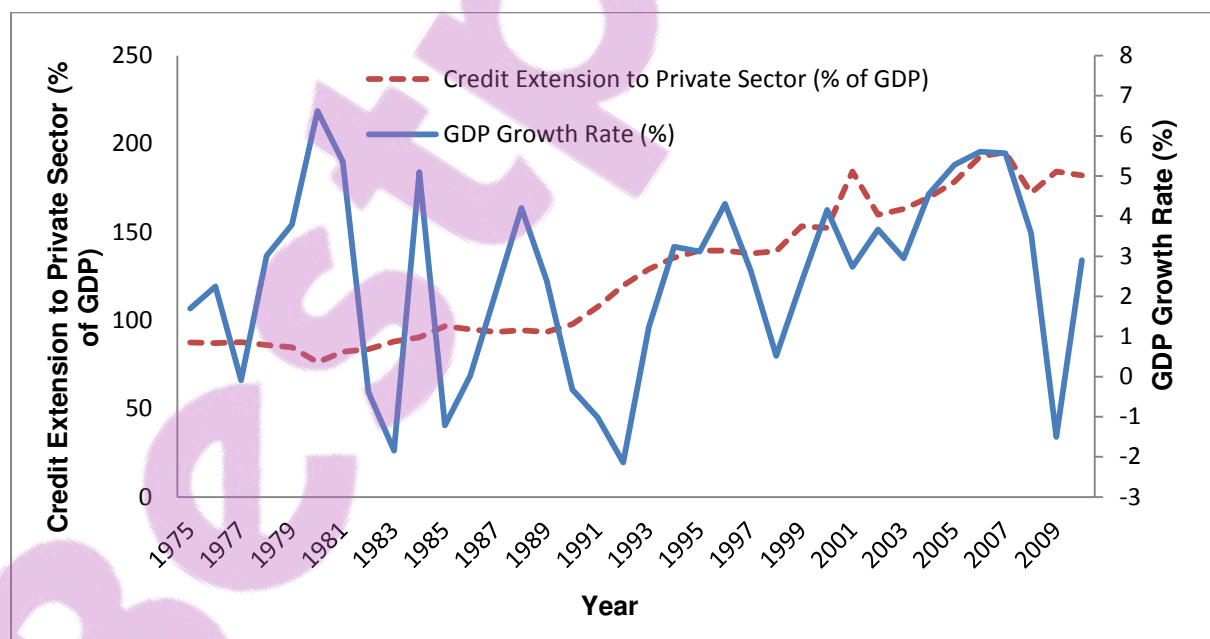
The growth of South Africa's banking sector can also be portrayed by the increasing number of Automated Teller Machines (ATMs). Technological innovations have transformed the South African financial sector landscape in the past decade, thereby helping to extend financial services to millions of people. By the end of December 2008, the total number of ATMs and branches of the four major banks stood at 22 920 and 2 644 respectively as compared to 14 323 and 2 593 respectively in 2004. The number of ATMs and branches further increased to 24 063 and 3 436 respectively in 2010. The point of sale devices also increased from 236 626 in 2008, to 273 798 in 2009 and to 277 478 in 2010 (BASA, 2010).

From the economic growth perspective, South Africa is one of the highly ranked emerging African economies. Real GDP in South Africa expanded by 3.2% in the second quarter of 2012 over the previous quarter. Historically, from 1993 until 2012, South Africa's GDP growth rate averaged 3.26% reaching an all-time high of 7.6% in December 1994 and a record low of -6.3% in March 2009 (World Bank, 2012a).

The year 2000 witnessed the doubling of the economic growth rate from the previous year. However, the economic growth rate slowed, before slightly surpassing its 2000 levels of 4.2% in 2004. Thereafter, the economic growth rate increased to 5.3% in 2005 and 5.6% in 2006 and 2007. In 2008, the growth slowed to 3.6%; and further declined significantly to -1.7% in 2009, due to the global financial crisis. The year 2010 saw an improvement in the economic growth of South Africa, with a growth rate of 2.8 % (World Bank, 2012a).

Per capita GDP in South Africa averaged US\$3436 between 1975 and 2010. Historically, from 1975 until 2010, South Africa's GDP per capita reached an all-time high of US\$8070.00 in 2011 and a record low of US\$1403.95 in 1976 (World Bank, 2012a). Between 1975 and 2010, GDP per capita exhibited an upward trend in general, though with some fluctuations here and there. Figure 2.1 illustrates trends in banking sector growth, as measured by credit extension to the private sector as a percentage of GDP and economic growth, as measured by real GDP growth rate, in South Africa during the period 1975 - 2010.

**Figure 2.1: Trends in Banking Sector Growth and Economic Growth in South Africa (1975-2010)**



Source: World Bank Development Indicators (2012a)

#### **2.2.1.4 Challenges Facing Bank-Based Financial Development in South Africa**

Although the South African financial system is by far the largest, the most developed, and the most sophisticated in Africa, many challenges still remain. South Africa's banking sector has for some years faced several inter-related challenges, including financial inclusion, lack of a deposit insurance scheme, high bank charges, and high levels of unsecured lending (IMF, 2008; Department of National Treasury, 2011).

According to the IMF (2008), the lack of a deposit insurance scheme remains a challenge faced by the South African banking system. Without this facility, depositors are most likely to lose their deposits if there were to be bank failures. However, the absence of such a scheme would put pressure on the national fiscus as the government would be required to bail out ailing financial institutions.

Moreover the banking sector in South Africa faces a financial inclusion challenge. Although South Africa has so far achieved a financial inclusion rate of 79%, where 75% of the adult population has a transactional account, a substantial number of the existing accounts (21%) are used only for cashing out all the money as soon as it is deposited – thereby reducing the potential improvement in the quality of life enabled by improved financial inclusion. As it stands, South Africa also faces the challenge of encouraging usage of the already acquired products, as well as to include the currently financially excluded. The challenge is also to improve efficiency in the payments environment, decrease costs and find more optimal ways of exploiting the already existing payments infrastructure to benefit the customers, without compromising financial stability and integrity or the consumer protection ethos.

High bank charges are also a challenge in the South African banking system. The Banking Enquiry Report found evidence of inadequate disclosure and abuses in the setting of some fees and charges in the South African banking industry (Competition Commission of South Africa, 2008). A report by Accenture, on bank charges, and in particular, ATM cash withdrawal fees, states that bank charges in South Africa remain high relative to other countries. According to this report, South Africa, out of 27 countries surveyed, had the highest average ATM cash withdrawal fees of nearly \$2 a transaction and the highest average branch withdrawal fees, at \$4.59. However, when

comparing South African bank fees against fees in other jurisdictions, the uniqueness of the South African banking system is often ignored (Department of National Treasury, 2011). On the other hand, in addition to high bank charges, of late unsecured lending has been reaching levels that the financial authorities are not comfortable with.

Moreover there is less than desired competition within the banking system, thus hindering progressive development of the industry. Currently, the South African banking industry is dominated by four large banks, which hold more than 80% of total banks' assets. Although the National Payment System Act has been revised to improve access in the payments industry, there has been insufficient entry to push down bank charges and set and follow truly excellent market conduct principles (Competition Commission of South Africa, 2008).

The openness of the country's banking sector constitutes an unavoidable challenge. Financial sector related problems experienced in other banking industries are most likely to be felt in South Africa.

### **2.2.2 Stock Market Development in South Africa**

The South African stock market is quite well-developed by African standards and compares favourably with its counterparts in the developed countries. Although the country's bank-based and market-based financial segments are quite advanced in general, South Africa is generally referred to as having a market-based financial system.

This section covers the stock market in South Africa in more depth and is organised as follows: Section 2.2.2.1 covers the origin of the South African stock market while Section 2.2.2.2 traces stock market reforms. Section 2.2.2.3 traces the trends in stock market growth as well as economic growth in South Africa. Section 2.2.2.4 concludes the section by highlighting the challenges facing stock market development in South Africa.

### **2.2.2.1 Origin of the Stock Market in South Africa**

There is one stock exchange in South Africa, established in 1887, called the Johannesburg Stock Exchange (JSE). It is the largest stock exchange in Africa. For the past couple of years, the JSE has secured a place in the top 20 largest stock markets worldwide (JSE, 2012a). In South Africa trading in stocks dates back to as early as the 1880s when many mining and financial companies were launched following the discovery of gold on the Witwatersrand.

In 2001, the JSE acquired SAFEX, the South African Futures Exchange. During the early 2000s, JSE launched AltX, which is the Alternative Exchange, and meant for small and medium high growth companies. In 2006, the JSE Limited was listed on the JSE (JSE, 2012a).

The JSE aims to be recognised as the South African exchange providing the leading fully integrated financial market for African securities, as well as an effective gateway to international products and markets for African investors (JSE, 2011). The JSE is a vertically and horizontally integrated, fully electronic, exchange which offers issuance, trade and post-trade services (vertical) across five markets: equity, equity derivatives, commodity derivatives, spot and derivative interest rate products, and currency derivatives (horizontal). As a self-regulating organisation keeping up with international practice, the JSE regulates issuers and investors in accordance with the Securities Services Act, 2004, and is supervised by the exchange's regulator, the Financial Services Board (FSB) (JSE, 2011).

### **2.2.2.2 Stock Market Reforms in South Africa**

To keep pace with the global economy, the South African stock market had to undergo an extensive reform process, which saw the transformation of the stock market to the great African bourse it is today. These reforms began in earnest in the late 1990s.

The first major change occurred in November 1995, when the Stock Exchanges Control Act was amended in order to modernise stock trading and deregulate the JSE. The South African Institute of Stockbrokers was formed during the 1990s, and tasked



with setting standards for stock-brokers' qualifications. In December 1995, the market capitalisation surpassed the R1 trillion mark for the first time (JSE, 2012a).

In 1996, the traditional open outcry trading floor gave way to an order-driven, automated trading system called the Johannesburg Equities Trading (JET) system. This system is less colourful, but provides a faster screen-based system. The mid-1990s was characterised by the opening up of corporate membership by the JSE, resulting in foreign banks rushing to buy out most of the major local broking firms.

According to the JSE (2012a), in 1999, the Insider Trading Act was promulgated. In the same year, the JSE established the electronic settlement system, STRATE (Share Transactions Totally Electronic) in collaboration with South Africa's four largest commercial banks so as to replace the manual settlement of scrip (JSE, 2012a). In 2008, the new Companies Act of 2008 was passed, replacing the Companies Act 61 of 1973. The Act is an important piece of legislation governing conduct in capital markets in general and the stock market in particular (FSB, 2011).

During the first half of 2009, the JSE acquired the Bond Exchange of South Africa Limited (BESA). Following discussions with various shareholders and the BESA board, the JSE and BESA proposed a scheme of arrangement in December 2008. This was successfully finalised in June 2009. As a consequence, on 22 June 2009, the JSE acquired 100% of the shares and voting interests in BESA for a consideration of R240.6 million.

In 2010, the Listings Requirements were amended to require companies to apply King III or to explain why they have not done so. King III is globally accepted as the leading edge in the corporate governance field and companies are required to make the necessary disclosure for financial years starting on or after 1 March 2010 (JSE, 2010).

The year 2011 saw the passing of the Financial Markets Bill, which is a product of various processes, including consultation with self-regulatory organisations (JSE and STRATE), global financial markets crises, legislative developments in the country, and the G-20 recommendations. The aim of the bill was to put financial markets' regulation

in line with international best practice; to strengthen the self-regulatory organisations' regulatory model; and to implement the 2008 World Bank and International Monetary Fund recommendations as well as South Africa's commitment to improve investor protection in cross-border transactions (FSB, 2011).

The implementation of various reforms in South Africa's stock market has seen the stock market keeping pace with global developments and requirements, leading to the recognition of the country's stock market across the globe.

### **2.2.2.3 Stock Market Growth and Economic Growth in South Africa**

South Africa's stock market responded positively to most of the reforms implemented since the 1990s and has continued to experience growth over the years. Between 2004 and 2008, the number of listings on the JSE increased from 20 in 2005 to 36 in 2006 and to 62 in 2007, while the de-listings in the same period fluctuated, recording 34 in 2005, 25 in 2006 and 40 in 2007.

Given 2008's turbulent markets, new listings numbers declined as experienced by most stock exchanges around the world. However, the drop in JSE's new listing fees was compensated for during the year by heightened corporate activity among listed companies, resulting in a rise in documentation fees. A total of 10 equity issuers joined the boards in 2009, as compared to 23 in 2008. The listings were mostly substantial. There was also substantial delisting, with 410 companies listed on the exchange at the end of 2009 – 15 companies fewer than those listed at the end of 2008 (JSE, 2009).

In 2010, the number of new company listings on the JSE rose to 14, of which 13 were on the Main Board and one on AltX (JSE, 2010). This was an improvement on the previous year, but was still subdued. New listings activity in other JSE-listed instruments, which also contribute to issuer services revenue, contributed R15 million to the issuer services revenue base as compared to R5 million in 2009, while corporate activity contributed R6 million (JSE, 2010). In all, the division's revenue rose to R86 million. This was R7 million more than in the previous year (JSE, 2010). During the same period, 17 companies were delisted in 2010, against 25 in 2009. The main reasons for delisting were corporate actions and companies not complying with the

Listings Requirements. Despite this, the JSE's listings pipeline remained good (JSE, 2010).

The number of new company listings on the JSE rose to 16 in 2011, as compared to 14 in 2010, of which 13 were on the Main Board and three on AltX. This represented a 14% increase on the previous year's numbers. Although still subdued, this was in line with the experience of most other members of the World Federation of Exchanges. While 16 companies listed in 2011, 17 delisted. There was no change in the number of de-listings from that of the previous year. The main reasons for de-listing were schemes of arrangements where parties recognised value and opportunities, resulting in offers to shareholders (JSE, 2011).

In 2003, AltX began to list young, fast-growing companies. However, it had a turbulent year in the aftermath of 2008. AltX comprised 76 listed companies at end-2009, one company less than it had in 2008. Its market capitalisation declined by 34.9% ending the year at about R12 billion, as compared to R18 billion in 2008. This market remains an on-going focus for the JSE as it (the JSE) believes AltX has a valuable place in providing equity funding to a significant segment of South African business. During 2009 three companies graduated out of AltX to move their listings to the main board (JSE, 2009). The number of listed companies on the JSE's main board, which is the stock exchange's major listing, reached a peak in 2010, with almost 400 listed companies. Currently, there are 354 companies listed on the main board of the JSE.

Since AltX was launched on 27 October 2003, 100 companies have listed on this market for small and growing businesses with its century mark reached on 20 August 2012. Of the 100 companies, 21 have successfully transferred to the Main Board while 16 have delisted. Currently 63 companies are listed on AltX. More than R1.25 billion has been raised via this market. Industries constitute the biggest number of companies on AltX, while Financials constitute 46% of the overall market capitalisation of over R12.5 billion (JSE, 2012b). Since its inception then, AltX has expanded rapidly, from 10 listed companies in 2004 to 15 in 2005, 37 in 2007; and 75 in 2007, before reaching a peak of 77 in 2008. After the peak, the number of listed companies on this market began its fairly modest descent by registering 76 companies in 2009, 68 in

2010 and 63 in 2012 (JSE, 2012b). Table 2.3 shows the growth of South Africa's stock market, in terms of the number of listed companies, during the period 2006 - 2012.

**Table 2.3: Number of Listed Companies on the JSE (2006-2012)**

| <b>Year</b> | <b>Main Board (MB)</b> | <b>AltX</b> | <b>Total number of listed on JSE (MB + AltX)</b> |
|-------------|------------------------|-------------|--------------------------------------------------|
| 2006        | 364                    | 37          | 401                                              |
| 2007        | 347                    | 75          | 422                                              |
| 2008        | 348                    | 77          | 425                                              |
| 2009        | 334                    | 76          | 410                                              |
| 2010        | 399                    | 68          | 467                                              |
| 2011        | 340                    | 66          | 406                                              |
| 2012        | 354                    | 63          | 417                                              |

Source: JSE (2012a)

The growth of South Africa's stock market can also be explained by stock market capitalisation of listed companies, total value of stocks traded and turnover ratio of stocks traded. Market capitalisation ratio usually equals the value of listed shares divided by GDP and analysts frequently use the ratio as a measure of stock market size. The South African stock market size, as measured by stock market capitalisation, was very small during the late 1970s, recording a market capitalisation less than 10% of GDP. A modest growth momentum started in the early 1980s, recording a double digit market capitalisation, though it was less than 20%. Between 1987 and 1997, the stock market maintained an upward trend as market capitalisation increased. However, from 1997, the growth began to fluctuate, causing shallow oscillations during the late 1990s and early 2000s; but becoming deeper from 2003, reflecting a volatile stock market.

The growth of the stock market reached its peak in 2007, recording a market capitalisation of more than 290% before succumbing to global financial crises in the following year, recording a market capitalisation of 179%. South Africa's stock market, however, quickly regained momentum and recorded a market capitalisation of 249% in 2009; 278.5% in 2010; and with a slight decline fell to 209.6% in 2011. Given South

Africa's stock market capitalisation trend this is a remarkable performance for an emerging economy, when compared to those of the developed countries. Thus the developing countries in general and other emerging economies in particular, have not been able to match South Africa's stock market growth in terms of market capitalisation (World Bank, 2012a).

Liquidity is also used to assess the stock market development in South Africa. While economists advance many theoretical definitions of "liquidity," analysts generally use the term "liquidity" to refer to the ability to easily buy and sell securities. Although a comprehensive measure of liquidity would quantify all the costs associated with trading, including the time costs and uncertainty of finding a counterpart and settling the trade, this study simply uses two measures of realised stock trading.

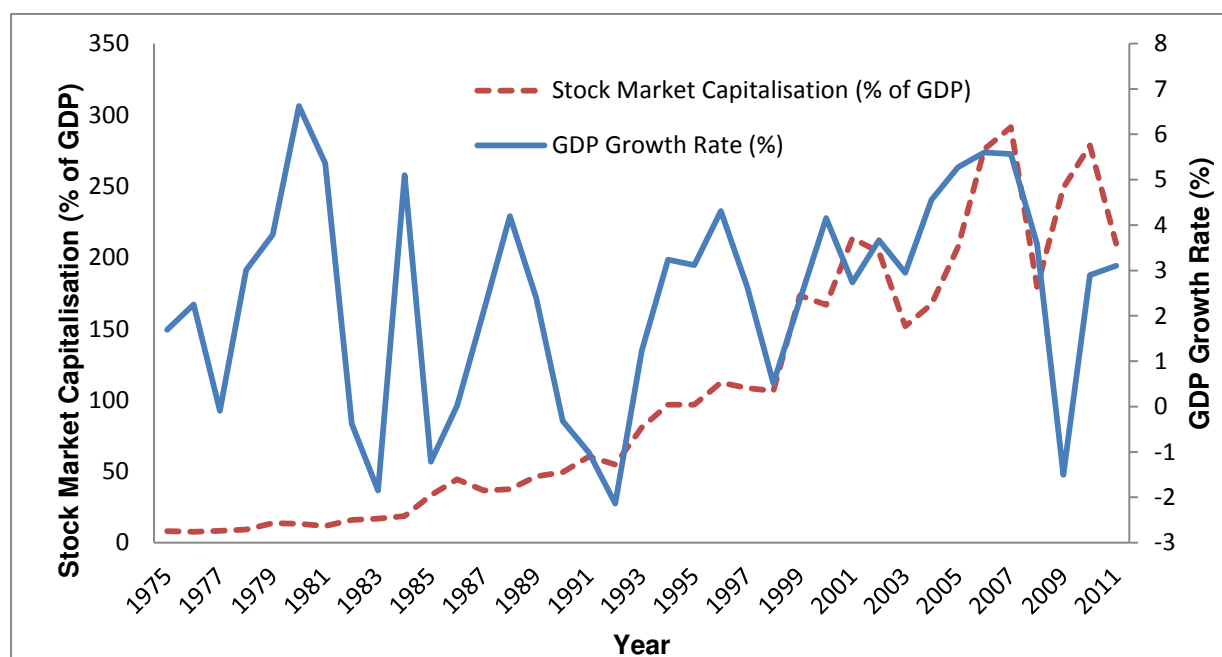
South Africa had a less liquid market between the late 1970s and the early 1990s. The liquidity only improved at the beginning of 1995. However, just as with stock market capitalisation, the total value of stocks traded and the turnover ratio exhibited a general upward trend but with fluctuations, which left the two trends depicting two peaks, one between 2001 and 2002 and the other between 2007 and 2009. The total value of stocks traded reached its peak in 2007, recording 148.8% before slowing to 91.2% in 2011, while the turnover ratio reached its peak in 2008, recording 60% before declining to 39.8% in 2011 (World Bank, 2012a).

Given the trends in the total value of stocks traded and the turnover ratio, it shows that South Africa's stock market is generally less liquid. Although it compares favourably with other emerging markets, it is way below the standards of the developed countries, which are registering total value of stocks traded and turnover ratios of well over 200% (World Bank, 2012a). It shows that in South Africa's stock market, trading has been quite highly concentrated in the stocks of just a few companies (FSB, 2011).

In terms of economic growth, South Africa's growth performance fluctuated for the rest of the period between 1975 and 2011, recording an average of 2.1% growth between 1975 and 1979; 2.2% in the 1980s; 1.2% in the 1990s; 3.9% in the 2000s; and 3.1% in 2011. Per capita GDP growth has also depicted an upward trend, in general, between

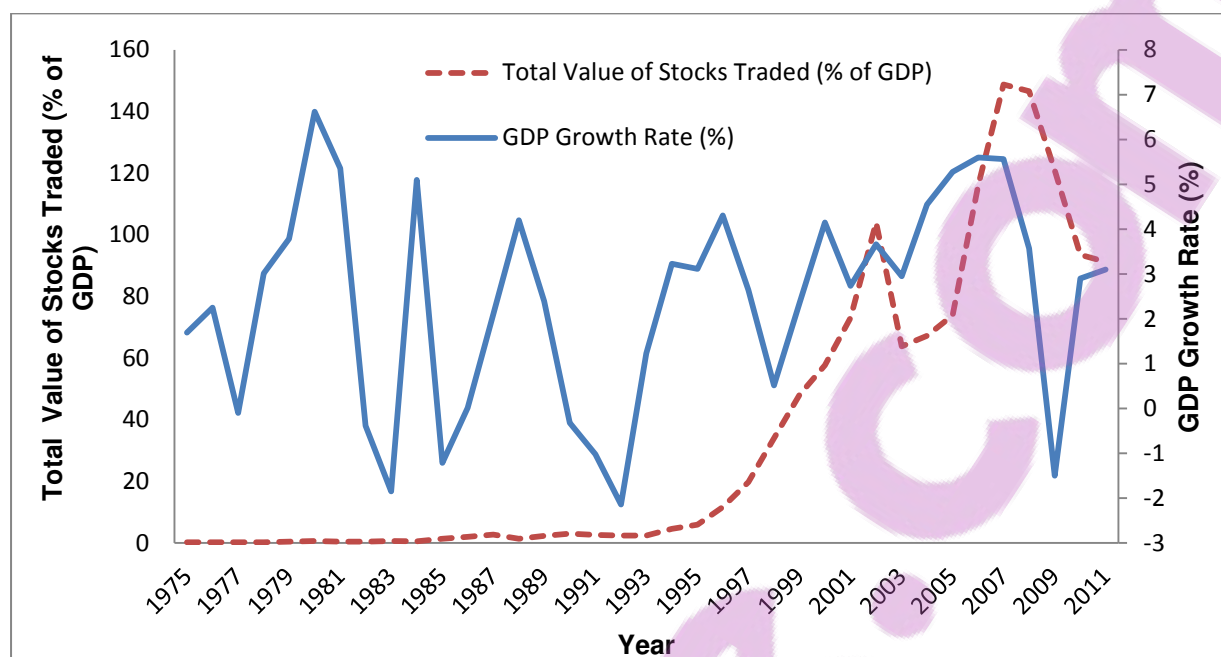
1975 and 2011. Historically, from 1975 until 2011, South Africa's GDP per capita averaged US\$3131.59, reaching an all-time high of US\$8070.00 in 2011 and a record low of US\$1403.95 in 1976 (World Bank, 2012a). Figures 2.2 - 2.4 track the performance and growth of the South African stock market and economy during the period 1975 - 2011.

**Figure 2.2: Trends in Stock Market Capitalisation and Economic Growth in South Africa (1975-2011)**



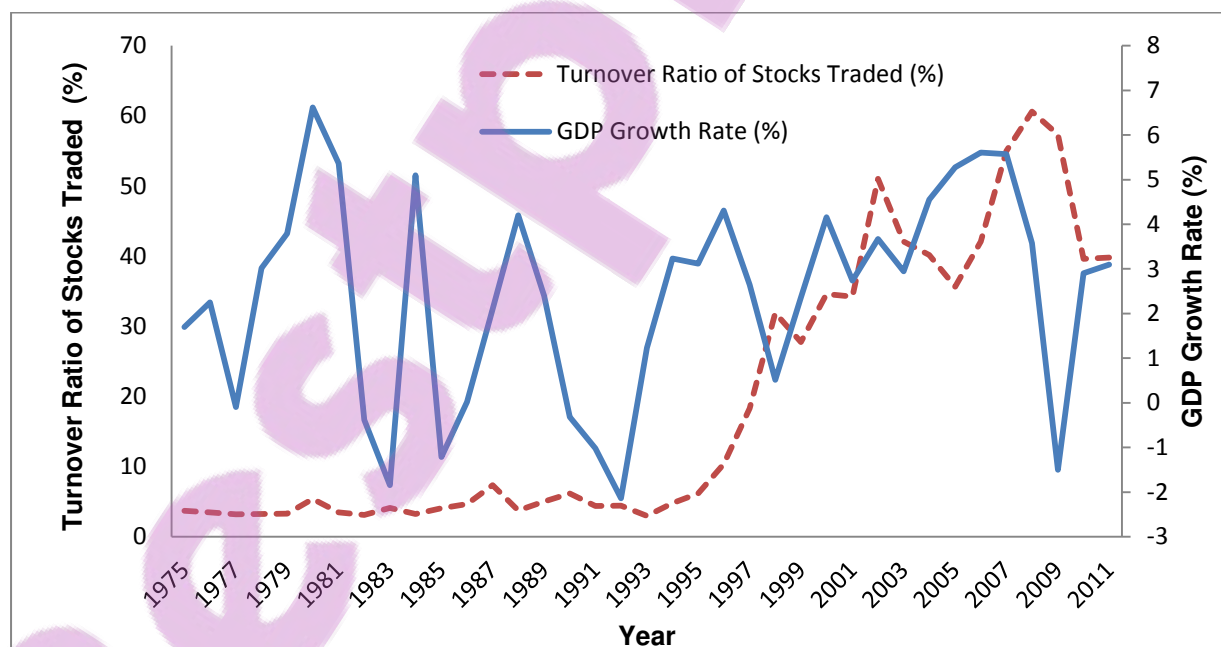
Source: World Bank Development Indicators (2012a)

**Figure 2.3: Trends in Total Value of Stocks Traded and Economic Growth in South Africa (1975-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 2.4: Trends in Turnover Ratio of Stocks Traded and Economic Growth in South Africa (1975-2011)**



Source: World Bank Development Indicators (2012a)

#### **2.2.2.4 Challenges Facing Stock Market Development in South Africa**

The latest World Economic Forum (WEF) Global Competitiveness report, of September 2011, ranks South Africa first out of 142 countries for its regulation of securities exchanges, for the second consecutive year (JSE, 2012b). This, together with several other elements of the report, suggests that the country's exchange is a sound environment in which to invest. However, despite the WEF ranking and the impressive performance of most of the stock market indicators in South Africa highlighted in the previous section, relative to the stock markets in the developed countries, the country's stock market is still developing and still faces its own fair share of challenges. The rest of this section highlights some of the impediments to the development of the South African stock market.

There is a lack of public awareness, hence limited public participation in the stock market. According to Misati (2006), the public is reluctant to engage in securities purchases or trading because they do not understand stock market operations. Most schools and universities in the country do not offer courses related to stock market operations. Accordingly, people who invest their funds in these markets are either professionals or self-educated, thus the capital market is lacking a large number of potential investors (Misati, 2006),

Liquidity is also a major challenge in South Africa's stock market. Stock market liquidity is much lower relative to other emerging markets. This reflects, in part, a few large listings and the buy to hold approach by some domestic institutional investors (IMF, 2008).

Moreover, while opening up operations to the international world is regarded as progress in the development of a country's stock market, in South Africa it has also brought along further challenges. The openness of the South African stock market to the international world exposes it to greater risks emanating from problems faced by international stock markets. For example, in its 2009 Annual Report, the JSE reported that the challenges of 2009 were significant. Trade in equity derivatives fell owing to the global market crisis fallout. Thus, volatile international markets can lead to volatility of the domestic market (JSE, 2009).



The slow pace of economic growth in South Africa has also posed a challenge to the development of the country's stock market. It has reduced the willingness of companies to get listed; while the slow economic growth abroad has increased anxiety on global markets, thus also affecting the local exchange negatively (JSE, 2011).

Confusion and lack of clarity on national policy has also dampened the developmental spirits of the stock market in South Africa. Discussions on transaction taxes and nationalisation have increased uncertainty. If this uncertainty continues unchecked the nature and extent of investment in the country's economy will be affected negatively, as will be the stock exchange (JSE, 2011).

However, according to the JSE (2011), despite these challenges the JSE strives to be recognised as the South African exchange providing the leading fully integrated financial market for African securities, as well as an effective gateway to international products and markets for African investors (JSE, 2011).

### **2.3 Financial Development in Brazil**

The Brazilian financial system is the largest and most sophisticated in Latin America (World Bank, 2007). The sector consists of both the banking segment and the capital market segment. Although both segments are still developing by international standards, the capital market segment plays an important role in driving economic growth, alongside the banks. The Brazilian financial system is therefore commonly referred to as a "market-based" financial system (Demirguc-Kunt and Levine, 2001).

In Brazil, financial institutions are regulated by the Banking Act of December 1964 (Law 4, 595/64) and by the Capital Market Act of July 1965 (Law 4,728/65). There is also legislation concerning agricultural loans (Law 4,829/65), credit unions (Law 5,764/71), liquidation of financial institutions (Law 6,924/74) and crimes against the financial system (Law 7,492/86) (Sales, 2002).

The official regulatory institutions are the Central Monetary Council (CMN); the Central Bank of Brazil (CBB); the Brazilian Private Securities and Stock Exchange

Commission (CVM) and the Bureau of Private Insurance. These institutions regulate the financial system as a whole (Sales, 2002).

### **2.3.1 Bank-Based Financial Development in Brazil**

Brazil's financial services market is today one of the most developed in the emerging market world. It is the largest and arguably most sophisticated financial system in Latin America (World Bank, 2007). Brazilian banks – private and public – rank among the largest in the region. The Brazilian banking sector is strong, diversified, and adequately capitalised (De Paula, 2011). Its high level of capitalisation has allowed it to face the global economic slowdown and even grow at an impressive rate during the crisis. A history of stringent regulations and rapid economic growth in the country has allowed the banking sector in Brazil to attract international financial and economic players (White, 2011).

This section discusses the banking segment in detail and is organised as follows: Section 2.3.1.1 gives an overview of Brazil's banking sector, while Section 2.3.1.2 traces its bank-based financial sector reforms. Section 2.3.1.3 traces the trends in banking sector growth as well as economic growth in Brazil. Section 2.3.1.4 concludes by highlighting the challenges facing bank-based financial development in Brazil.

#### **2.3.1.1 Overview of Brazil's Bank-Based Financial System**

##### ***Origin of the Central Bank of Brazil***

The Central Bank of Brazil (CBB) (Portuguese: *Banco Central do Brasil*) is Brazil's central bank. It was established on December 31, 1964, by the Bank Reform Law Number 4,595 of December 31, 1964 as an autonomous federal institution (Central Bank of Brazil, 2012a). The Central Bank is linked with the Ministry of Finance. The CBB is the second principal monetary authority of the country, after the National Monetary Council (CMN). It received this authority when it was founded by three different institutions: the Bureau of Currency and Credit (SUMOC), the Bank of Brazil, and the National Treasury (Central Bank of Brazil, 2012a).

Unlike the financial structures of many economies, it is interesting to note that in Brazil, the CMN is at the apex, giving it a senior entity position in the National Financial System. Its main duty is to formulate credit and monetary policies in order to maintain a stable currency on one hand and to promote the economic and social development of the country on the other hand (Brazil Government, 2012). The CMN's additional duty, according to the Brazil Government, is to oversee financial institutions (Brazil Government, 2012).

It is, however, the responsibility of the CBB to implement policies established by the National Monetary Council. The CBB also monitors the behaviour of banks and brokers that operate in Brazil. It also authorises the entry of new financial companies and monitors their financial transactions (Brazil Government, 2012). The CBB is active in promoting financial inclusion policy and is a leading member of the Alliance for Financial Inclusion. It was also one of the original 17 regulatory institutions to make specific national commitments to financial inclusion under the Maya Declaration during the 2011 Global Policy Forum in Mexico (Central Bank of Brazil, 2012a).

### ***Overview of the Banking Sector in Brazil***

Public banks were established in Brazil during the early 20<sup>th</sup> Century, with the purpose of impelling economic growth. According to the Central Bank of Brazil (2012a), prior to 1964, there existed only a handful of state banks. Because there was high inflation and currency volatility at the time, private banks were prevented from engaging in long-term capital financing. Since private banks could not take uncertain long-term positions, and there were not enough state banks to handle the country's demand for long-term financing, the Brazilian government responded by increasing the number of state banks. This arbitrary increase led to significant problems which included a lack of proper management and sufficient transparency, thus leading to abuse of these banks by their respective state governments (Central Bank of Brazil, 2012a). As a remedy, private banks were encouraged to enter and actively participate in the market (Central Bank of Brazil, 2012a).

Despite the challenges in the banking sector, the new macroeconomic scenario of the 1990s made Brazil's financial sector more attractive to foreign investors. Their presence was boosted by an explicit message from the Cardoso administration, emphasising that greater foreign participation in the banking sector was in the country's best interest, as this would increase the efficiency of local banks and reduce dependence on the Central Bank as the lender of last resort (Trusted Sources Research and Networks, 2009). As a result of this policy orientation, Brazil opened up to foreign bank investment in both private and public domestic banks. Hence international banks play an important role in Brazil's banking system today.

By the year 2008, the private banks had the largest market share (45.99%), followed by public banks (31.06%), and then foreign banks (22.95%) (Trusted Sources Research and Networks, 2009). The number of banks in Brazil totalled 180 in 2002.

#### **2.3.1.2 Bank-Based Financial Reforms in Brazil**

The late 1980s marked the commencement of banking sector reform in Brazil. These reforms were wide-ranging in scope and included programmes for creating specialised financial institutions and for restructuring private sector and state-controlled banks. In addition, a policy decision was made allowing foreign banks to enter the national financial system. These reforms also gave rise to specialised institutions (Carneiro *et al.*, 1993) with commercial banks specialising in short-term credit operations, while investment and development banks specialise in long-term loans (Carneiro *et al.*, 1993). However, according to Carneiro *et al.* (1993), the end-result financial system was far less segmented than the legislation indicated.

The Real Plan started important changes in the Brazilian banking system. Following the loss of profits from the float of funds following a period of chronic high inflation, the banking industry faced severe problems from 1995 to 1996. However, this was solved with the assistance of government restructuring programmes (Rocha, 2001). Measures in areas such as prudential regulation, supervision and monitoring were subsequently introduced to secure a solid and safe financial system. Similarly – and also aiming at encouraging competition – public banks were privatised and the sector

was opened to foreign capital. This included the sale of large domestic bank retail institutions which had never happened before in Brazilian bank history (Rocha, 2001).

However, changes in the competition environment did not depend only on actions by the monetary authority. The corporations themselves followed the recent financial system developments influenced by worldwide liberalisation and deregulation (Rocha, 2001). The scope of activities was enlarged well beyond traditional financial intermediation, creating and exploring new markets and diversifying investments, both geographically and by introducing new products – the outcome of financial innovation. This environment has fostered a pursuit of scale and market power, which is at the roots of the current world trend of mergers and acquisitions, causing direct and significant impacts to the industry's level of concentration (Rocha, 2001).

In 2005 the International Capital and Foreign Exchange Market Regulation was established under Circular no. 3280. This regulation provided guidance on how the foreign exchange market should operate and how Brazilian capital abroad and foreign capital in Brazil should be handled. The aim was to improve the records of foreign transactions and to reduce risks, among other financial system challenges (Central Bank of Brazil, 2012a). Thus International Capital and Foreign Exchange Market Regulation underwent a number of changes to suit the changing financial sector environment.

The reform of the Bankruptcy and Judicial Recovery Law (Law 11101) in 2005 was an important step in the evolution of the Brazilian credit market, since it established the priority of bank liabilities over tax liability. The result was a more efficient debt collection process, especially for home loans and vehicle financing (IMF, 2012a).

### **2.3.1.3 Banking Sector Growth and Economic Growth in Brazil**

The banking sector reforms undertaken in Brazil from the late 1980s saw the beginning of the evolution of the Brazilian bank-based financial system. This led to changes in how banks were to operate (Resolution 1524) and saw a subsequent increase in the number of banks.

Resolution 1524 issued in 1988 led to a shift in approach - from specialised institutions to universal institutions. This approach has had an impact on the number of banks in the Brazilian financial sector (Central Bank of Brazil, 2012b). The number of institutions thus increased dramatically and by 1994, the number of financial institutions stood at 244, double the 1988 figure (Central Bank of Brazil, 2012b). Table 2.4 shows the number of banks in Brazil from 1996 to 2011.

**Table 2.4: Growth of Banks in Brazil by Capital Structure (1996-2011)**

| Year                                                                                   | Banks <sup>1</sup>  |                  |          |                                            |                                          |                             | Total |
|----------------------------------------------------------------------------------------|---------------------|------------------|----------|--------------------------------------------|------------------------------------------|-----------------------------|-------|
|                                                                                        | Public <sup>2</sup> | Private          |          |                                            |                                          |                             |       |
|                                                                                        |                     | Private<br>Total | National | with Foreign<br>Participation <sup>3</sup> | Under<br>Foreign<br>Control <sup>4</sup> | Foreign<br>Full<br>Branches |       |
| 1996                                                                                   | 32                  | 198              | 131      | 23                                         | 25                                       | 16                          | 230   |
| 1997                                                                                   | 27                  | 190              | 118      | 23                                         | 33                                       | 16                          | 217   |
| 1998                                                                                   | 22                  | 182              | 105      | 18                                         | 43                                       | 16                          | 204   |
| 1999                                                                                   | 19                  | 175              | 95       | 15                                         | 50                                       | 15                          | 194   |
| 2000                                                                                   | 17                  | 175              | 91       | 14                                         | 57                                       | 13                          | 192   |
| 2001                                                                                   | 15                  | 167              | 81       | 14                                         | 61                                       | 11                          | 182   |
| 2002                                                                                   | 15                  | 152              | 76       | 11                                         | 56                                       | 9                           | 167   |
| 2003                                                                                   | 15                  | 150              | 78       | 10                                         | 53                                       | 9                           | 165   |
| 2004                                                                                   | 14                  | 150              | 82       | 10                                         | 49                                       | 9                           | 164   |
| 2005                                                                                   | 14                  | 147              | 82       | 8                                          | 49                                       | 8                           | 161   |
| 2006                                                                                   | 13                  | 146              | 81       | 9                                          | 48                                       | 8                           | 159   |
| 2007                                                                                   | 13                  | 143              | 77       | 10                                         | 49                                       | 7                           | 156   |
| 2008                                                                                   | 12                  | 147              | 78       | 7                                          | 56                                       | 6                           | 159   |
| 2009                                                                                   | 10                  | 148              | 82       | 6                                          | 54                                       | 6                           | 158   |
| 2010                                                                                   | 9                   | 148              | 77       | 11                                         | 54                                       | 6                           | 157   |
| 2011                                                                                   | 9                   | 151              | 73       | 16                                         | 56                                       | 6                           | 160   |
| 1 - It includes multiple banks, commercial banks and saving banks                      |                     |                  |          |                                            |                                          |                             |       |
| 2 - It includes Federal Saving Bank                                                    |                     |                  |          |                                            |                                          |                             |       |
| 3 - It includes banks with foreign participation                                       |                     |                  |          |                                            |                                          |                             |       |
| 4 - Multiple and commercial banks under foreign control (except foreign full branches) |                     |                  |          |                                            |                                          |                             |       |

Source: Central Bank of Brazil Annual Reports (various) (2012c)

Growth in the Brazilian banking sector can also be evidenced by non-performing loans. Their percentage decreased continuously from 8.3% in year 2000 to a low of 3.0% in 2007, as measured by bank non-performing loans to total gross loans (World Bank, 2012a). However, the percentage increased to 4.2% in 2009 and fell to 3.1% in 2010 before increasing to 3.2 in 2011. Although the trend reflected some instability between 2007 and 2011, overall, Brazil is performing well on this front when compared with other countries, especially a developing one like Kenya which recorded a low of 7.8% in 2010. This development is commensurate with Brazil's knowledge of credit related information as evidenced by credit depth of information index. On a scale of zero to six, where 0 represents low and six represents high, the index was five (5) from 2000 onwards (World Bank, 2012a).

Development in the Brazilian banking sector is also portrayed by growth in private sector credit extension. The late 1970s saw a modest increase in the credit provided by financial institutions to the private sector. Brazil did well from 1975 to the early 1990s with a steadily increasing private sector credit extension until the period 1985 to 1988 when lending to the private sector skipped from 50.9% to 165.5% before reaching a peak of 212.9% in 1989. Thereafter, credit extension to the private sector decreased to between 80 and 90% in the two subsequent years before increasing to 180% in 1993. Subsequently, it decreased steadily to 59.4% in 1997. After 1997, credit extension steadily increased over the years and in 2004, it stood at 98.4% (World Bank, 2012a). While this number is not higher than its 1994 level, the quality of lending has improved significantly (World Bank, 2012a).

With the growth of the banking sector came the reinforcement of national private banks' dominance within the bank-based financial sector in Brazil, while the strength of public banks decreased. This is clearly reflected by the share of banking assets among the major participants – national private banks, banks under foreign control and public banks. Table 2.5 presents some of the banking indicators showing the development of Brazil's banking sector.

**Table 2.5: Growth of Banking Sector in Brazil (2000-2011)**

| Indicator                                              | 2000 | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  |
|--------------------------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Domestic Credit Extension to Private Sector (% of GDP) | 71.9 | 72.5  | 74.5  | 74.0  | 72.6  | 74.5  | 86.6  | 92.2  | 96.9  | 95.8  | 95.2  | 98.4  |
| Bank Non-Performing Loans to Total Gross Loans (%)     | 8.3  | 5.6   | 4.5   | 4.1   | 2.9   | 3.5   | 3.5   | 3.0   | 3.1   | 4.2   | 3.1   | 3.2   |
| Credit Depth of Information Index (0=low to 6=high)    | -    | -     | -     | -     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     |
| Strength of legal rights index (0=weak to 10=strong)   | -    | -     | -     | -     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
| <b>Share of Banking sector Assets</b>                  |      |       |       |       |       |       |       |       |       |       |       |       |
| Public Banks (+ State Savings Bank) (%)                | -    | 4.30  | 5.87  | 5.79  | 5.52  | 5.09  | 4.50  | 4.25  | 3.12  | 2.13  | 2.02  | 1.98  |
| Banco do Brasil (%)                                    | -    | 16.76 | 17.12 | 18.40 | 17.41 | 15.36 | 14.46 | 13.77 | 14.38 | 17.44 | 16.35 | 16.84 |
| Federal Saving Bank ("Caixa Econômica Federal") (%)    | -    | 10.97 | 11.66 | 13.04 | 11.51 | 12.05 | 10.68 | 9.91  | 8.83  | 9.57  | 9.40  | 10.28 |
| National Private Banks (%)                             | -    | 37.21 | 36.93 | 40.76 | 41.70 | 43.12 | 47.12 | 50.33 | 51.11 | 51.61 | 52.70 | 52.93 |



| Indicator                       | 2000 | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  |
|---------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Banks under Foreign Control (%) | -    | 29.86 | 27.38 | 20.73 | 22.43 | 22.89 | 21.70 | 20.24 | 21.24 | 17.80 | 17.92 | 17.96 |
| Credit Unions                   | -    | 0.90  | 1.04  | 1.28  | 1.43  | 1.49  | 1.54  | 1.50  |       |       |       |       |
| Total (%)                       | -    | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   |

Source: World Bank Development Indicators (2012a); Central Bank of Brazil (various) (2012a)

The growth of Brazil's banking sector can also be revealed by the increasing number of Automated Teller Machines (ATMs) and point of sale (POS) devices. The number of ATMs in Brazil have increased over the years from 139 457 in 2004 to 165 567 in 2009, registering a 19% increase. POS terminals for credit cards increased from 1 078 763 in 2004 to 3 374 740 in 2009 while terminals for debit cards increased from 1 106 011 to 2 780 043 during the same period. This led to more than a doubling of the number of terminals per million inhabitants over the same period (Central Bank of Brazil, 2009a).

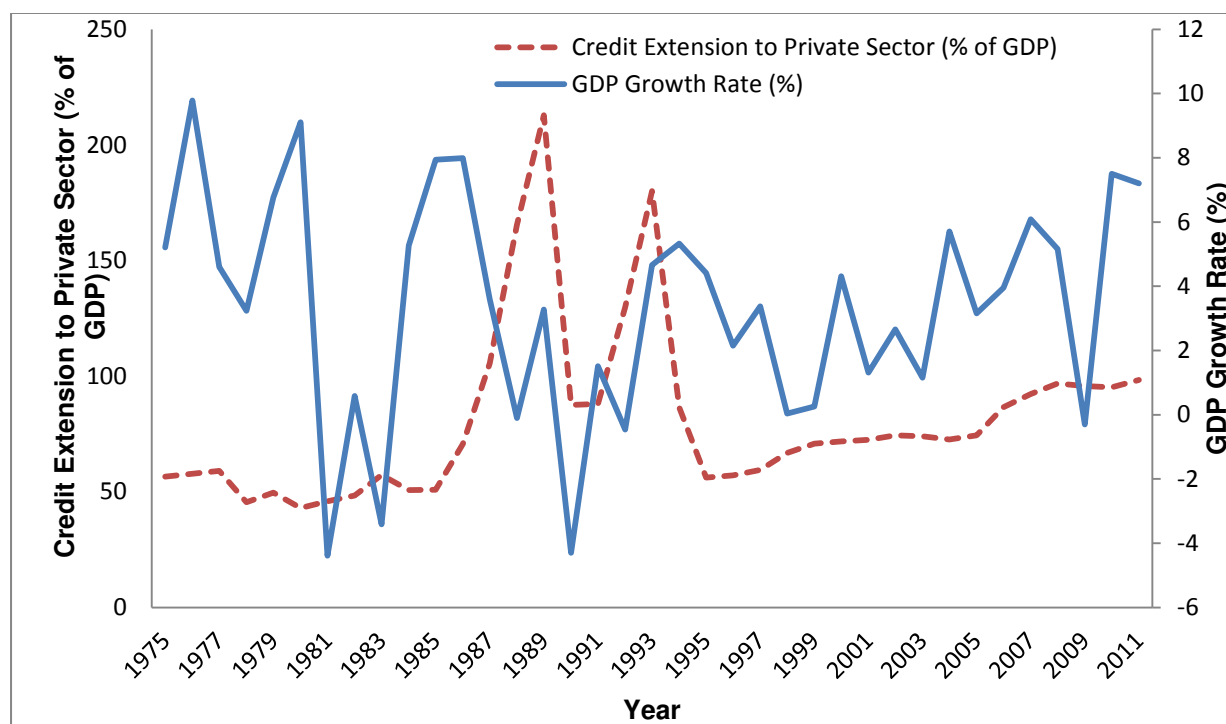
On the economic growth front, Brazil is one of the fastest growing emerging economies in the world. Its economy ranks higher than most other South American countries (World Bank, 2012b). The Gross Domestic Product (GDP) in Brazil expanded by 0.2% in the first quarter of 2012 from the previous quarter. Historically, from 1996 until 2012, Brazil's GDP growth rate averaged 0.77%, reaching an all-time high of 4.5% in 1996 and a record low of -4.2% in 2008 (World Bank, 2012a) .

Brazil has made remarkable economic and social progress in the last decade and is on a path of inclusive and environmentally sustainable growth (World Bank, 2011). Since 2003, the country has gradually improved its economic stability. For example, Brazil weathered the global financial downturn with relatively minor impacts (World Bank, 2012b). Following remarkable growth in 2007 and 2008, Brazil was hit by the global financial crisis of 2008. According to the World Bank (2012b), the country was one of the last to fall into recession in 2008 and among the first to resume growth in 2009. However, overall, Brazil's strong domestic market is less vulnerable to external

crisis, and Brazilians are benefiting from stable economic growth, relatively low inflation rates and improvements in social well-being (World Bank, 2011).

As with overall GDP, per capita GDP in Brazil has had its highs and lows. The GDP per capita in Brazil was reported at \$12 593.89 in 2011 (World Bank, 2012a) and is equivalent to 38% of the world's average. Historically, from 1960 until 2011, Brazil's GDP per capita averaged US\$3 084.1, reaching an all-time high of US\$12 593.89 in 2011 and a record low of US\$1 448.1 in 1960 (World Bank, 2012a). Figure 2.5 shows the trends in banking sector growth (as shown by credit extension to private sector) and economic growth in Brazil during the period 1975-2011.

**Figure 2.5: Trends in Banking Sector Growth and Economic Growth in Brazil (1975-2011)**



Source: World Bank Development Indicators (2012a)

#### 2.3.1.4 Challenges Facing Bank-Based Financial Development in Brazil

Brazil is one of the emerging economies, with a fairly well-developed economy, having achieved a strong policy framework (fiscal responsibility, inflation targeting and a flexible exchange rate). However, its bank-based financial sector still faces some

challenges. The efficiency of the banking system lags behind that of other Latin American countries (Belaisch, 2003). The intermediation is relatively low and inefficient due to the presence of a non-competitive market structure (Belaisch, 2003). Some of the challenges facing the bank-based financial sector in Brazil include coping with constraints on budget and human resources, ensuring adequate legal protection, and having to face a rise in non-performing loans and cuts in lending rates.

Banks in Brazil have been on a remarkable growth path over the last decade, as economic stability has driven a rapid growth in borrowing, while sky-high interest rates have led to record profits (World Bank, 2012a). However, the recent economic slowdown has led to slower loan growth and a rise in non-performing loans. In 2007, the banks' non-performing loans to total gross loans in percentage terms was at 3.0 but the rate increased to 3.1 in 2008, and further increased to 4.2 in 2009 before declining to its 2008 level in 2010. However, 2011 saw an increase in the non-performing loans to 3.2 (World Bank, 2012a). According to the CBB's recent report, Brazilian loans overdue by more than 90 days hit 6.0% in May 2012, the highest since records began in 2000 (Central Bank of Brazil, 2012a).

Brazil's bank-based financial sector faces an interest rate challenge. The financial intermediation costs remain among the highest in the world. On the other hand, credit is not readily available to a major proportion of the economy (World Bank, 2007). The central bank has slashed its benchmark interest rate by 400 basis points in less than 10 months to a record low of 8.5% following a political push by the government to get banks to reduce lending rates in a move expected to spur growth. Despite the move, banks have been reluctant to speed up lending because of the steady rise in non-performing loans (World Bank, 2007).

Legal rights are also a challenge in Brazil's banking sector. There is a need to enhance judicial procedures and legal rights within the financial sector contract management environment.

Like most countries, Brazil faces financial inclusion challenges. Although the Central Bank of Brazil notes the country's progression towards financial inclusion, it sees

potential for further progress (Central Bank of Brazil, 2009b). The CBB has called for improvements in governance, transparency, regulation, credit, technology, distribution channels, and product diversification. Although access to and use of financial services in Brazil has increased from 2006 to 2010, the CBB report pinpoints certain areas that could benefit from further improvement. These areas include the following: revision of Microfinance Institutions' (MFIs) governance structures; more transparency in the Brazilian financial system; creation of a certification system for MFI transparency to ensure that all information, whether good or bad, is released to the public to allow the market to make informed decisions regarding which institutions to work with; establishment of credit bureaus for the sector to allow MFIs to share information about clients and prevent over-indebtedness; a revision of the regulatory framework, in order to ease MFI transitions from non-regulation to regulation; alternative distribution channels to allow for an inexpensive and reliable way to take products to market (such as the use mobile technology that is safe, dependable, and easily assimilated into the market); and diversification of MFI products and services to reach more people (Central Bank of Brazil, 2009b). Products that go beyond microenterprise credit (such as micro-insurance or financing for renovation and construction) can help meet the needs of a low-income market, and bring more sustainability to MFIs (Central Bank of Brazil, 2009b).

### **2.3.2 Stock Market Development in Brazil**

The Brazilian stock market has enjoyed years of development, especially during the 1990s and the late 2000s. As a result of its relative development, the Brazilian stock market has passed the “underdeveloped phase” but has not developed sufficiently to be called a “developed stock market”. It is in-between the underdeveloped and the developed – commonly known as the “emerging economy”.

Although still developing, stock market growth in Brazil is a key policy issue going forward in order to foster savings, investment and absorptive capacity in a context of rising capital flows. Brazil's savings and investment levels as a share of GDP are still low by international standards. As such, deepening capital markets would be important to increase incentives for savings and for allocating these efficiently for

investments. Deep and liquid capital markets could also help bolster resilience to capital flows by developing greater absorptive capacity (IMF, 2012b).

This section discusses Brazil's stock market in detail and is organised as follows: Section 2.3.2.1 covers the origin of the Brazilian stock market while Section 2.3.2.2 traces stock market reforms. Section 2.3.2.3 traces stock market growth trends as well as economic growth in Brazil. Section 2.3.2.4 concludes the section by highlighting key challenges facing stock market development in Brazil.

### **2.3.2.1 Origin of the Stock Market in Brazil**

The history of the stock market in Brazil dates back to as early as 1817, when the first Brazilian stock exchange (now the inactive Salvador Exchange) was inaugurated. This was before the Brazilian independence process had begun. Several stock exchanges gradually emerged over the years. However, these gradually acquired one another and/or merged over the years to form one big stock exchange, the BM&FBovespa.

#### ***The Rio de Janeiro Stock Exchange/Bolsa de Valores do Rio de Janeiro (BVRJ)***

In 1820, three years after the first Brazilian stock exchange was established, the Rio de Janeiro Stock Exchange/Bolsa de Valores do Rio de Janeiro (BVRJ) was inaugurated. It was the Brazil's second largest exchange after the Bovespa stock exchange in São Paulo, and the oldest of the active Brazilian stock exchanges. From its founding and through the early 1970s, it remained the most important Brazilian Exchange. Following the 1971 market crash, little by little, the BVRJ lost ground to the Bovespa. After a national stock markets' crash in 1989, this stock exchange lost its ranking as the main stock exchange of the country and in Latin America to the São Paulo Stock Exchange – Bovespa; then on April 11, 2002, it was sold to the Brazilian Mercantile and Futures Exchange / Bolsa de Valores, Mercadorias (BM&F).

#### ***The São Paulo Stock Exchange/Bolsa de Valores de São Paulo (Bovespa)***

In 1890, the São Paulo Stock Exchange/Bolsa de Valores de São Paulo (Bovespa), was founded. In 2007, the Exchange demutualised and became a for-profit company (Ministry of Finance, Brazil, 2012). Through self-regulation, Bovespa operated under the supervision of the Securities and Exchange Commission of Brazil/Comissão de

Valores Mobiliários (CVM), analogous to the American Securities and Exchange Commission (Ministry of Finance, Brazil, 2012).

In 1990, the negotiations through the Computer Assisted Trading System (CATS) were concurrently operated with the traditional system of open outcry. These systems were replaced by a new system of electronic trading, called the Mega Bolsa, in 1997 which was used in order to extend volumes of information processing. Consequently the Exchange could increase its overall volume of activities.

### ***The São Paulo Commodities Exchange (BMSP).***

In 1917, the São Paulo Commodities Exchange (BMSP) was founded and subsequently became the first Brazilian institution to engage in forward trading. As time progressed, BMSP established its dominant practice of trading in agricultural commodities.

### ***Mercantile & Futures Exchange (BM&F)***

The Mercantile & Futures Exchange (BM&F) was founded in 1985 but trading sessions began in earnest in 1986. In 1991, BMSP and BM&F combined their operations and became known as the Brazilian Mercantile & Futures Exchange, which maintained BM&F as its title. In 2002, the BM&F Foreign Exchange Clearing House commenced its activities. In the same year, BM&F also acquired all of the Rio de Janeiro Stock Exchange (BVRJ) equity memberships.

### ***BM&FBOVESPA***

On May 8, 2008, the São Paulo Stock Exchange (Bovespa) and the Brazilian Mercantile and Futures Exchange (BM&F) merged, creating the world's third largest stock exchange, the BM&FBOVESPA, located in São Paulo, Brazil. Today BM&FBOVESPA is Brazil's most sophisticated stock exchange. As at 31 December 2011, it enjoyed a market capitalisation of US\$1.22 Trillion, securing a spot in the top 10 largest stock exchanges in the world (BM&FBovespa, 2012). As of April 30, 2008, there were 381 companies listed at Bovespa, increasing to 594 in mid-2012 (BM&FBOVESPA, 2012). There are currently 533 listed companies at BM&FBOVESPA. Although it is a Brazilian company/exchange, BM&FBOVESPA has

offices in London, Shanghai and New York (BM&FBovespa, 2012). It is the most important Brazilian institution for intermediate equity market transactions and the only securities, commodities and futures exchange in Brazil. BM&FBOVESPA further acts as a driver for Brazilian capital markets and currently is a fully electronic exchange (BM&FBovespa, 2012).

BM&FBOVESPA is Latin America's leader in the securities and derivatives segments. Its mission is to operate in the macroeconomic dynamics of market growth and to make the Exchange and Brazil a socially-responsible international financial hub for trading excellence in stocks, derivatives, commodities, bonds and structured transactions (BM&FBovespa, 2012).

It has created both the BM&FBOVESPA Mid Large Cap Index (MLCX) and the Small Cap Index (SMLL) to measure segmented performances of companies listed on the Exchange. Its Mid Large Cap Index measures the returns of a portfolio composed of large and mid-market capitalisation companies, whereas the Small Cap Index measures the returns of small capitalisation companies (BM&FBovespa, 2012).

The stock market in Brazil is monitored and regulated by the Securities and Exchange Commission (CVM). Its main responsibility is to monitor over-the-counter markets publicly traded companies, fund and equity administrators, and stock exchange and futures markets (Securities and Exchange Commission (CVM) 2012).

#### **2.3.2.2 Stock Market Reforms in Brazil**

With a new government coming to power in 1964, national building became a priority: hence a programme aimed at great national economy reforms was launched. Amongst these reforms was a restructuring of the financial market that came with the enactment of new laws and the revision of existing laws governing the stock market (Ministry of Finance, Brazil, 2012).

Laws that changed the face of the Brazilian stock market included Law No. 4.537/64 which introduced monetary adjustment by the creation of the Brazilian Readjustable National Treasury Bond; Law No. 4.595/64 which revamped the whole national

financial intermediation system and instituted the National Monetary Council and the Central Bank; and Law No. 4.728 of 1965, commonly known as the first Capital Market Act which instituted order in the market and introduced measures for its development (Ministry of Finance, Brazil, 2012).

Sporadic attempts had been made prior to 1975 for foreign traders to enter the Brazilian stock market. However, restrictions involving taxation of foreign holdings, difficulty in repatriation of funds, and currency exchange difficulties discouraged investment by non-Brazilians (Ministry of Finance, Brazil, 2012). No general trend was developed to attract outside investment since it was felt that the internal incentives were sufficient to generate capital formation. Thus foreign investment was deemed to imply further balance of trade distortions, with the eventual removal of sorely needed capital from Brazil. Equity markets, in spite of their rapid growth, were thin and any sizable influx of funds could create distortions. However, a Decree Law 1401 of 7 May 1975 and the Central Bank Resolution 323 of 8 May 1975 enabled entry of foreign capital for debt-equity investment (Ministry of Finance, Brazil, 2012). Eventually in 2010, BM&FBOVESPA released a document that consolidated the trading rules.

The Brazilian stock market reform process encompassed technological innovation. Owing to the advent of technology, the stock market has gradually evolved from a traditional system of open outcry to a new system of electronic trading, known as the Mega Balsa. The stock market is computerised and information dissemination is now online and operates in real time as well.

### **2.3.2.3 Stock Market Growth and Economic Growth in Brazil**

The Brazilian stock market responded well to some of the reforms but not so well to other reforms. In response to the stock market reforms implemented, the ratio of stock market capitalisation to GDP in Brazil increased from 8% in the 1980s to just over 26% between the years 1993 and 1998. The ratio of trading volumes also increased from 2.7% to 15.6% during the same period (Gilson *et al.*, 2010).

However, although market capitalisation was increasing, the numbers of publicly listed companies and liquidity in local markets were dwindling. Consequently, the Bovespa



trading volume plummeted from more than \$191 billion in 1997 to \$101 billion in 2000; and further declined to \$65 billion in 2001 (BM&FBovespa, 2012). However, as time progressed, the Brazilian stock market again picked up momentum.

As of July 2007, around BRL23 billion (roughly USD 12 billion) of initial public offers (IPOs) were launched on the market in 12 months. In 2004, seven companies performed IPOs amounting to BRL4.5 billion, while for 2005, eight companies performed IPOs amounting to BRL5.4 billion. In 2006, a sharp rise was observed in the number of companies accessing the equities market when around BRL30 billion was tapped using this type of instrument. IPOs to the value of BRL15.4 billion (about USD7.5billion) were realised. This represented an overall record in terms of capital raised in BOVESPA since the early 1990s. This activity ranked the Brazilian Stock Exchange as second in terms of capital raised activity among emerging markets. In 2007, 31 businesses went public, raising about BRL18.6 billion as of June 2007, and attracting 378 thousand investors (National Treasury, Brazil, 2007).

The total trading value increased 66% in 2006 as compared to 2005, reaching BRL599 billion, the highest ever registered as at that date. The new market raised the daily average to BRL2.4 billion, 51% higher than the BRL1.6 billion registered in 2005 – and stood at BRL4 billion in June 2007. The number of trades increased 39%, levelling 21.5 million in 2006 against 15.5 million in 2005 (National Treasury, Brazil, 2007). Impressive performance was also observed in intra-day deals. The activity augmented signalling that participants were taking advantage of arbitrage derived from market opportunities (National Treasury, Brazil, 2007).

The number of listed companies in the Brazilian stock market has been on the increase, although only marginally. In 2006, there were 394 listed companies at Bovespa. The number increased to 419 in 2007 and to 594 in 2012 (BM&FBovespa, 2012). The growth of the Brazilian stock market can also be explained with reference to stock market capitalisation of listed companies and to total value and turnover ratio of stocks traded. The Brazilian stock market, as measured by stock market capitalisation, remained stagnant in the late 1980s – with a sharp decline in 1990 – but there was growth in 1993, reaching 34.6% of GDP in 1994, before it deteriorated to

19% in the following year. From 1996 to 2003, there were sharp oscillations, thereby creating an impression of an overall upward trending zig-zag.

The year 2007, registered a peak in market capitalisation of 100.3% of GDP – the highest so far in the history of Brazil's stock market. However, later the stock market suffered a heavy blow as market capitalisation fell below the 2003 level, due to the global financial crisis that started in 2008. Despite the economic meltdown, the Brazilian stock market showed a quick recovery by registering a market capitalisation of more than 70% of GDP in 2009, compared to 35.7% in 2008. Given Brazil's market capitalisation trend, it shows that it is an emerging economy, with a remarkable stock market performance when compared with other developing countries. However this is not a particularly impressive performance when compared to that of the developed countries which have registered a stock market capitalisation ratio of more than 155% (World Bank, 2012a).

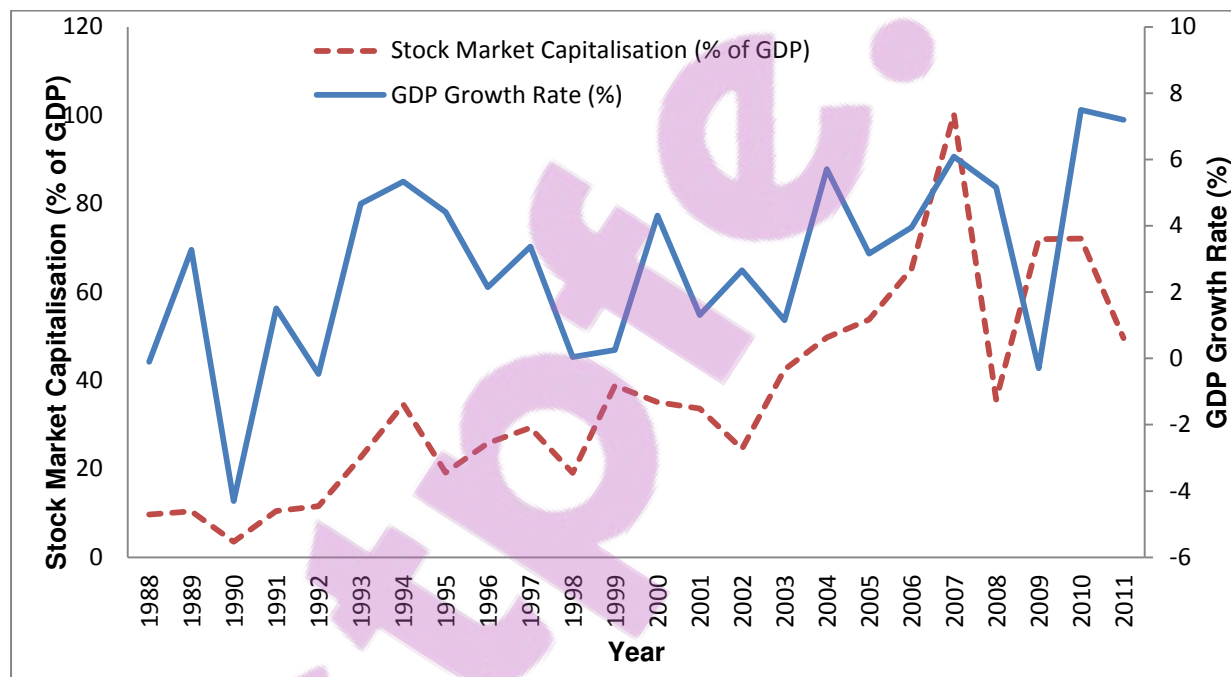
In terms of market liquidity, as measured by total value traded/GDP and turnover ratio, Brazil had a less liquid market during the late 1980s. However, just like stock market capitalisation, total value of stocks traded and the turnover ratio fluctuated upwards, forming a zig-zag trend from 1988 to 1997. Thereafter, the two declined, only to pick up momentum again in 2002, reaching a peak in 2007, thereby creating a deep and wide trough between 1997 and 2007 before resuming a zig-zag pattern (World Bank, 2012a).

Despite the genuine depth and sophistication of Brazilian financial markets, Brazil's stock market can still exploit further possibilities. Its trading had once been quite highly concentrated in the stocks of just a few companies, although this trend has been reverted to lately, reflecting the fact that family groups (or, in the cases of recently privatised firms, small consortia of controlling shareholders), continue to control even most publicly traded private enterprises (National Treasury, Brazil, 2007).

In terms of economic growth, Brazil's growth performance has had no distinguished pattern. It has fluctuated from one decade to another, recording an average of 5.9% growth between 1975 and 1979; 2.9% in the 1980s; 1.7% in the 1990s; 3.2% in the

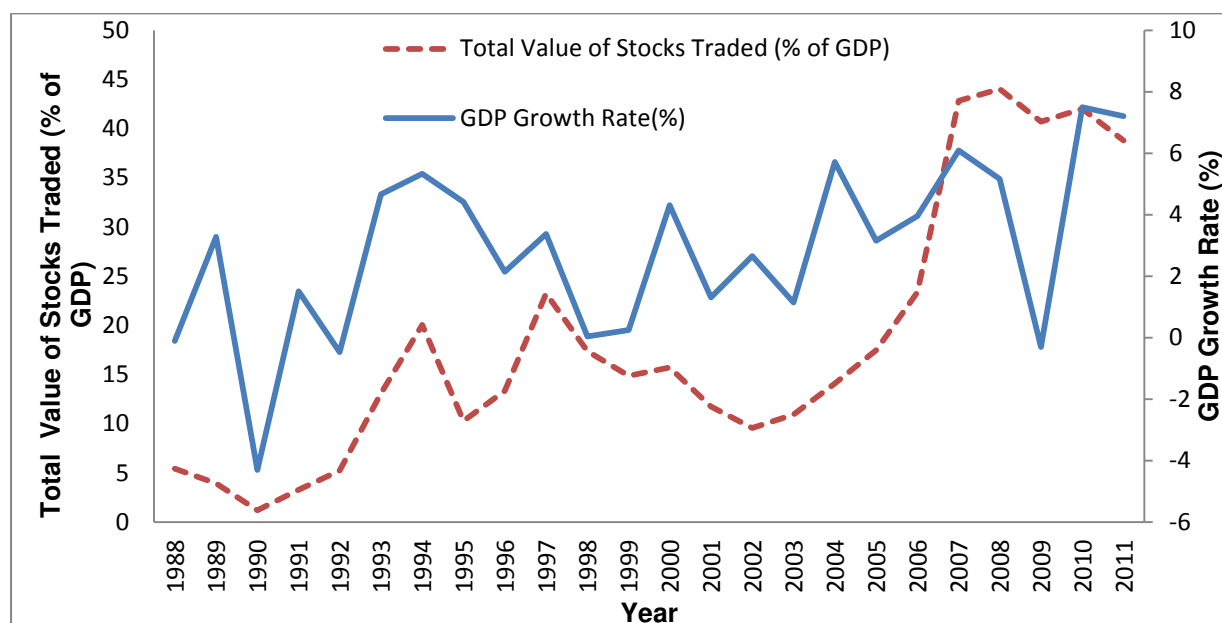
2000s; and a remarkable 7.3% between 2010 and 2011. Per capita GDP growth has also depicted an upward trend between 1975 and 2010, partly due to the sharp decline in the population growth rate during the 1980s and the early 1990s (World Bank, 2012a). Thus Brazil's per capita GDP has increased over the years. Historically, from 1975 until 2011, Brazil's GDP per capita averaged US\$3084.1, reaching an all-time high of US\$12593.89 in 2011 and a record low of US\$1143.09 in 1975 (World Bank, 2012a). Figures 2.6 - 2.8 track the performance and growth of both the Brazilian stock market and economy during the period 1988 - 2011.

**Figure 2.6: Trends in Stock Market Capitalisation and Economic Growth in Brazil (1988-2011)**



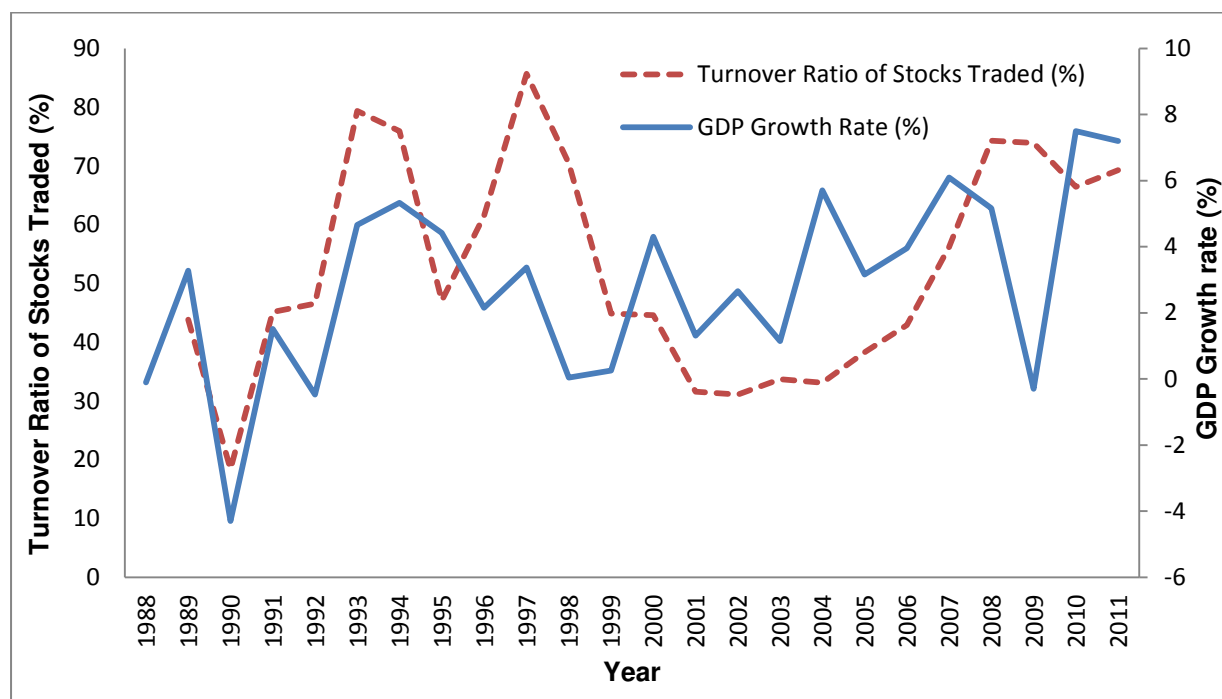
Source: World Bank Development Indicators (2012a)

**Figure 2.7: Trends in Total Value of Stocks Traded and Economic Growth in Brazil (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 2.8: Trends in Turnover Ratio of Stocks Traded and Economic Growth in Brazil (1988-2011)**



Source: World Bank Development Indicators (2012a)

#### **2.3.2.4 Challenges Facing Stock Market Development in Brazil**

During the past decade, Brazil has achieved substantial progress in stock market development. The menu of available financial instruments has been expanded, market infrastructure has been reformed and strengthened, and a diversified investor base has been built up. This was a high-priority agenda for the authorities, and the reforms were introduced in close cooperation with market participants.

Nonetheless, challenges remain. The development process will need careful management (Park, 2012). Despite the country's great potential (owing to a large economy, sound fiscal management, and large mutual fund industry), Brazil's stock market still faces a number of challenges. These include still prevalent short-term indexation, still low liquidity in the secondary market, and the managing of the role of Brazil's National Development Bank (BNDES) (Park, 2012).

Brazil's stock market remains focused on short term instruments, thus posing a developmental challenge. Most financial contracts among residents are indexed to the overnight interest rate, although there has been a gradual trend towards increasing duration in recent years. This largely short term structure reflects long-standing fundamental factors, including a legacy of past high inflation that typically is associated with a more short-term focus for investing. Thus, a high level of short-term interest rates and the degree of indexation of debt holders contribute to a low secondary market turnover ratio, thereby constraining overall market development (IMF, 2012b).

Although Brazil's equity market has grown rapidly in terms of both market capitalisation and transaction volumes, it still has a small number of listings. Following a record 76 offerings (IPO and follow on) in 2007, in the past three years the offering numbers have stabilised at lower levels, in part reflecting weak global financial conditions (IMF, 2012b). Thus the growth in market capitalisation and the number of listed companies has slowed in recent years. Cross-country comparisons show that the number of listed companies is still lower than in advanced economies and in Brazil's peers in Asia. Indeed, the share of the top 10 companies in market capitalisation has remained over 50% in recent years, showing limited diversification

of issuer base, in line with similar experiences in several other emerging markets (IMF, 2012b).

Another challenge facing the stock market in Brazil is the relatively high number of foreign investors as significant players in the equity market. Foreigners are majority investors, especially in the public offering market. Most non-resident investors are domiciled in the USA and in Europe, introducing an important link between the offering market and conditions overseas. In August and September 2011, for example, there was no share issuance. Several public offerings were cancelled or postponed due to investors' concerns on contagion risks from the Eurozone. Cross-country analysis also shows that foreigners' share in market capitalisation has been higher than in other large emerging economies (IMF, 2012b).

Although BNDES has traditionally had an important role in the Brazilian financial system, this role needs to be managed, according to the IMF (2012b). BNDES has typically been a major source of long-term financing for industry and infrastructure. During the crisis, it played an important counter-cyclical role, as private bank credit fell off sharply in 2009 at the height of the Lehman-related global tensions. However, this has been accompanied by a doubling of the size of BNDES' balance sheet from 7.5% of GDP in 2007 to over 15% of GDP in 2011.

The challenge is that BNDES has traditionally provided significant financing to large strategic companies in Brazil, notwithstanding that these have recourse to alternate sources of financing. Recently, however, its resource distribution has shifted at the margin towards its more traditional development banking operations. Yet, according to the IMF (2012b), looking further ahead, BNDES could gradually shift toward promoting the development of long-term stock/capital markets, by playing a role in standardisation and market-making, such as co-financing of infrastructure projects with the private sectors, in the long-term financing market (IMF, 2012b).

## **2.4 Financial Development in Kenya**

Kenya's financial sector consists of the banking segment and the capital market segment. Although both segments are still at a developing stage, it is the banking sector that plays a leading role in savings mobilisation, capital allocation, oversight of investment decisions of corporate managers, as well as the provision of risk management vehicles. It is for this reason that Kenya is generally referred to as having a bank-based financial system.

### **2.4.1 Bank-Based Financial Development in Kenya**

The banking segment in the country is relatively more developed than the market-based financial segment, although both are quite underdeveloped in terms of international comparisons. In the following sections the Kenyan banking segment is discussed in detail as follows: Section 2.4.1.1 gives an overview of the banking sector, while Section 2.4.1.2 traces bank-based financial sector reforms. Section 2.4.1.3 traces trends in banking sector growth as well as economic growth in Kenya. Section 2.4.1.4 concludes the section by highlighting the challenges facing bank-based financial development in Kenya.

#### **2.4.1.1 Overview of Kenya's Bank-Based Financial System**

##### ***Origin of the Central Bank of Kenya***

The Central Bank of Kenya ("the Bank") was established in 1966 through the Central Bank of Kenya Act of 1966, after the dissolution of the East African Currency Board (EACB) (Central Bank of Kenya, 2012a). The establishment of the Bank was a direct result of the desire among the three East African states to have independent monetary and financial policies. During the colonial period of Eastern Africa, the EACB was the governing body for finances and currency for the British colonies of Kenya, Tanzania, and Uganda. This Board was disbanded in 1966 when these countries became independent and acquired their own central banks. At that point, the Central Bank of Kenya was established through an Act of Parliament. Headquartered in Nairobi, the Bank has branches in Mombasa, Eldoret and Kisumu (Central Bank of Kenya, 2012a).

The Bank, which falls under the Minister for Finance's docket, is responsible for the formulation and implementation of the Kenyan monetary policy and for fostering the liquidity, solvency and proper functioning of the financial system. Thus it plays an oversight role and its activities are governed by the Central Bank of Kenya Act of 1966 which sets objectives and functions and gave the Central Bank limited autonomy. Since the amendment of the Central Bank of Kenya Act in April 1997 the Bank has now greater monetary autonomy as its operations have been restructured to conform to on-going economic reforms.

### ***Overview of the Banking Sector in Kenya***

The Banking industry in Kenya is governed by, among other acts, the Banking Act of 1985, as amended, the Central Bank of Kenya Act of 1966, as amended – and also the various prudential guidelines issued by the Central Bank of Kenya (Central Bank of Kenya, 2012a). For decades since independence from Britain in 1963, Kenyan banking was dominated by local units. These have been, however, challenged by home-grown institutions targeting the lower end of the market. Currently, there are 43 licensed commercial banks and one mortgage finance company (Central Bank of Kenya, 2012b). Of these 44 institutions, 31 are locally owned and 13 are foreign-owned. The locally owned financial institutions comprise three banks (all with significant shareholding by the Government and State Corporations), 27 commercial banks and one mortgage finance institution. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banking sector's interests. The KBA serves as a forum to address issues affecting its members (Central Bank of Kenya, 2012a).

Over the last few years, the banking sector in Kenya has continued to grow in assets, deposits, profitability and product-offerings. The growth has been mainly underpinned by an industry-wide branch network expansion strategy both in Kenya and in the East African community region, and the automation of a large number of services with growing emphasis on complex customer needs, rather than on traditional 'off-the-shelf' banking products (Central Bank of Kenya, 2012a). As the financial sector develops, greater institutional diversity is expected, together with diversification of the services offered. Although Kenya's financial sector could be described as being relatively



diversified in terms of the number of financial institutions, banking services still continue to dominate the sector.

#### **2.4.1.2 Bank-Based Financial Reforms in Kenya**

The banking sector is driven by numerous policies and Kenya's banking sector is no exception. This section presents the Kenyan banking sector policies since the 1970s.

During the late 1970s, the 1980s and the early 1990s, the Kenyan government introduced a number of policy reforms aimed at gradually liberalising the banking sector. These reforms, together with various reforms aimed at strengthening the institutional framework of the financial system, were supported by Financial Sector Adjustment Credit from the World Bank. Government intervention in the banking sector in Kenya since independence has had two main objectives. The first one was the control of monetary aggregates for macro-economic stabilisation; and the second one was the direct development of the banking sector, and in particular, the nature of its asset allocation, in accordance with political and economic priorities. The third objective of prudential regulation and supervision did not initially receive much attention but it has been increasingly emphasised since the mid-1980s (IMF, 2002).

The financial system that existed at independence was dominated by foreign-owned commercial banks concentrating on trade-related finance, and serving the white settler community. As a result, financial gaps were perceived to exist, consisting of the credit requirement of African entrepreneurs and the long-term financial needs of the business sector. To close this perceived gap, parastatal financial institutions were set up to provide finance to segments of the market (such as farmers and small businesses). However, financial performance of most of them was very poor, largely because many of their clients were not profitable (Central Bank of Kenya, 2012a).

Commercial banks and other financial institutions in both the private and public sectors were largely free of formal government controls over the sectoral allocation of their lending, with an exception of a stipulation that they extend credit to agriculture, amounting to at least 17% of their deposit liability. However, compliance was low, since there were no penalties imposed on financial institutions which failed to meet

this requirement (Demirgüç-Kunt *et al.*, 2004). It can be noted, however, that formal influence over public and private financial institutions was exerted by government and politicians through the placement of parastatal deposits in particular financial institutions (Central Bank of Kenya, 2012a).

In 1993, there was an 81% devaluation of the Kenyan Shilling, which led to an instant increase in external debt to 143% of GDP, and a decrease in inflation to pre-1970s levels. In the same year, under pressure from the IMF, the World Bank and other donors, the Central Bank of Kenya put around 16 financial institutions into liquidation, while others, including a government-owned commercial bank, were recapitalised by their shareholders (Central Bank of Kenya, 2012a).

In 1995, the banking sector was liberalised and exchange controls were lifted. The Central Bank of Kenya Act of 1966, which set out the objectives and functions and gave the Central Bank limited autonomy, was amended in April 1997, thereby restructuring the Central Bank operations to conform with on-going economic reforms, and granting it greater monetary autonomy (Central Bank of Kenya, 2012a). In 2007, the Government published a long-term development plan for the country entitled “Kenya’s Vision 2030” which prioritised financial services provision in the planned economic growth path through to the year 2030 (Government of Kenya, 2007).

In 2009, calls to improve financial inclusion by the international community and the need to implement Vision 2030 saw Kenya pass the Finance Act of 2009 that became operational in January 2010. This Act further amended the Banking Act, to enable the use of third-party agents by banks (Financial Sector Deepening “FSD” Kenya, 2010). Banks were, therefore, able to leverage additional cost-effective distribution channels to offer financial services. This initiative was informed by the need to leap-frog access to financial services in Kenya. The National Financial Access Survey of 2009 showed that 32% of Kenya’s bankable population remained totally outside the orbit of financial services, with many more being served by the informal financial system (FSD Kenya, 2010).

Although government intervention in the banking system has been wide-ranging, Kenya has managed to avoid some of the most damaging features of financial repression that characterised several other Sub-Saharan Countries (Central Bank of Kenya and FSD Kenya, 2009). This is reflected in the expansion of the financial system in terms of both the volume of its liabilities and assets, and the diversity of its institutions over four and a half decades following independence. In 1966, broad money amounted to 22.9% of GDP but by 1990 it was at 43.3% of GDP (Central Bank of Kenya and FSD Kenya, 2009).

#### **2.4.1.3 Banking Sector Growth and Economic Growth in Kenya**

At independence in 1963, the bank-based financial system of Kenya consisted of nine foreign-owned commercial banks, together with several non-bank financial institutions. In the decade following independence, the government established the Central Bank of Kenya, three parastatal commercial banks and a number of non-bank financial institutions. During the 1970s, the non-bank financial institution sector began to expand rapidly. It was stimulated by differences in the regulatory treatment of banks and non-bank financial institutions, which created market opportunities for the latter (Central Bank of Kenya, 2012a).

The growth of locally owned financial institutions accelerated during the 1980s, and began to include commercial banks, some of which were set up by the owners of existing non-bank financial institutions. During the mid-1980s, the financial system suffered its first episode of financial fragility. This saw some of locally owned financial institutions closing down due to severe liquidity problems, the result of mismanagement and fraud (Central Bank of Kenya, 2012a). It is this crisis that led to a series of revisions to the banking laws and the strengthening of bank supervision (Central Bank of Kenya, 2012a).

Non-bank financial institutions, which were set up to offer long-term credit in the 1980s increased in number over the years, almost tripling from the 1981 level, while commercial banks experienced a 50% growth. The growth of the bank-based financial segment of the Kenyan financial sector can be traced as far back as 1970, when there were only 11 commercial banks. Five years down the line, only three banks were left

but the growth momentum had picked up by 1981, with a total of 16 commercial banks. The upward trend in the total number of commercial banks continued to dominate, with 22 banks in 1984 and 24 banks in the year that followed. However, in 1986, there was a slight drop to 23 commercial banks in the sector before a return in 1988 to the 1985 level. By 1990, there were 26 commercial banks in Kenya. The number significantly increased to 33 in 1993, and continued to increase over the years, until it reached a peak of 53 in 1997, before falling to 49 the year that followed. Currently, there are 43 commercial banks in Kenya (Central Bank of Kenya, 2012b).

In 1990, the review of the Banking Act, though aimed at strengthening the sector's institutional framework, further strengthened the position of the banks in the financial system. From 1996, many of the non-bank financial institutions converted to banks, as indicated by the increase in the number of banks in the same period. However, the banking crisis of 1998 and 1999 saw the collapse of some of the smaller of these banks (Beck *et al.*, 2010).

Although the banking sector in Kenya has faced challenges, such as domestic financial crises, it has grown, both in number of institutions and quality of offerings. The percentage of non-performing loans decreased from 33.3% in year 2000 to a low of 7.8% in 2010, as measured by bank non-performing loans to total gross loans (World Bank, 2012a). This development is commensurate with an improvement in the knowledge of credit-related information, as evidenced by credit depth in the information index. On a scale of zero to six, where 0 represents low and six represents high, the index was zero (0) in 2004, and improved to two (2) in 2005, and further improved to four (4) in 2007, but remained stagnant up to 2010. Although the index has not yet reached six (6), there has been development in terms of credit information, a tool which also determines access to financial services (World Bank, 2012a).

The development of the banking sector in Kenya is also evidenced by the growth in private sector credit extension. The late 1970s saw a modest increase in credit provided by financial institutions to the private sector. Kenya did well from 1975 to the early 1990s. It had a steadily increasing lending rate until 1995, when the rate fell from

slightly above 50% to 40% of GDP. Thereafter private sector lending was around 40% of GDP until 2009 (World Bank, 2012a).

With the growth of the banking sector, came a shift in the dominance of foreign versus local banks. Foreign banks had dominated the banking sector in Kenya, since its independence but their share of the market has been decreasing gradually, while that of the locally owned banks is increasing (World Bank, 2012a). This is clearly portrayed by the share of banking assets among three major participants – foreign, private local and government-owned banks. The government market share in the banking sector is also decreasing. Table 2.6 illustrates some of the banking indicators, showing the development of Kenya's banking sector, and the increase in the number of locally owned financial institutions.

**Table 2.6: Growth of Banking Sector in Kenya (2000-2010)**

| Indicator                                              | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Domestic Credit Extension to Private Sector (% of GDP) | 39.2 | 37.5 | 40.3 | 39.8 | 40.2 | 38.4 | 38.0 | 37.3 | 40.5 | 44.8 | 51.0 |
| Loans (Net of Provisions)/GDP (%)                      | 20.9 | 20.2 | 20.9 | 20.5 | 22.8 | 23.5 | 23.6 | 24.8 | -    | -    | -    |
| Bank Non-Performing Loans to Total Gross Loans (%)     | 33.3 | 13.1 | 18.1 | 34.9 | 29.3 | 25.6 | 21.3 | 10.9 | 9    | 7.9  | 6.3  |
| Credit Depth of Information Index (0=low to 6=high)    | -    | -    | -    | -    | 0    | 2    | 2    | 4    | 4    | 4    | 4    |
| <b>Share of Banking Sector Assets</b>                  |      |      |      |      |      |      |      |      |      |      |      |
| Foreign (%)                                            | 44.3 | 46.3 | 48.3 | 48.7 | 45.3 | 43.4 | 43.8 | 43.5 | -    | -    | -    |
| Private Domestic (%)                                   | 21.9 | 22.7 | 22.6 | 24.1 | 25.7 | 28.7 | 29.9 | 31.0 | -    | -    | -    |
| Government (%)                                         | 7.1  | 7.1  | 6.6  | 6.0  | 6.2  | 5.6  | 5.3  | 4.8  | -    | -    | -    |

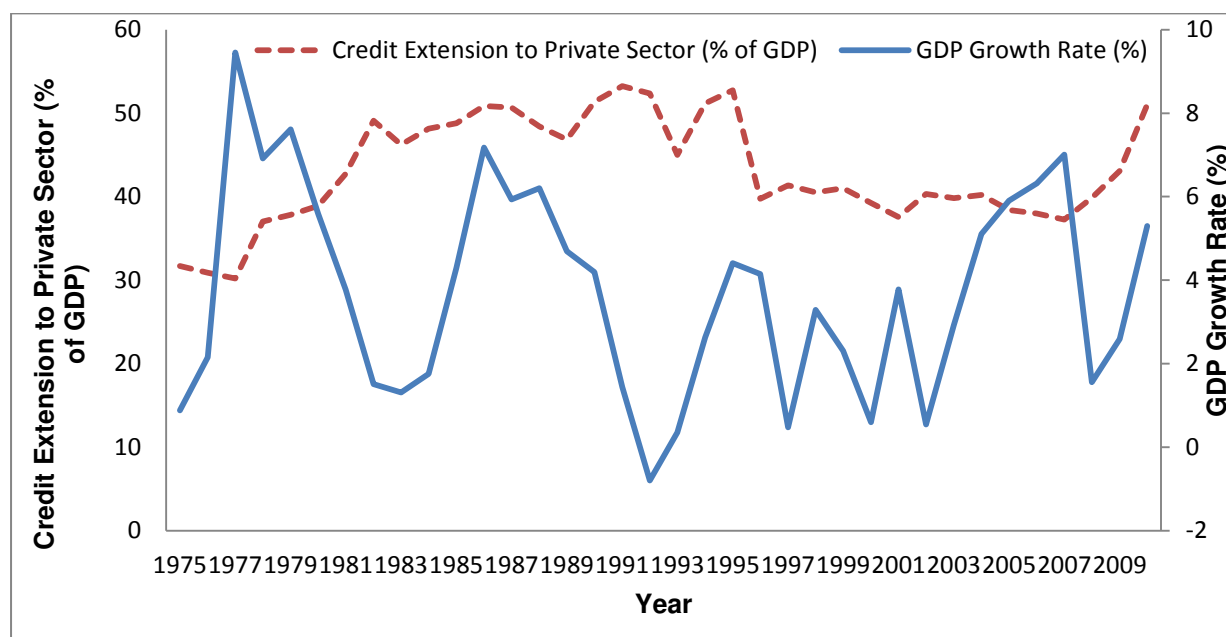
Source: World Bank Development Indicators (2012a)

The growth of Kenya's banking sector can also be portrayed by the increasing number of Automated Teller Machines (ATMs). Technological innovations have transformed the Kenyan financial sector landscape in the years since 2002, by helping to extend financial services to millions of poor people at relatively low cost. For example, since 2006, automated teller machines have become a major feature of the landscape, with 1,510 ATMs in the country by December 2008. Competition at the lower end of the market has clearly intensified because of the expansion of microfinance into rural areas. Having realised that microfinance is a potentially profitable activity, a number of mainstream banks have started to open branches in rural areas (in some cases, having closed them only a few years earlier) and to downscale the design of some products to provide microfinance services – either on their own account – or by looking for strategic partnerships to do so (FSD Kenya, 2010).

On the economic growth front, Kenya's economic growth was strong in the first two decades after independence but it was weak thereafter. In 2009, there was modest improvement with 2.6% growth, while the 2010 growth figure was 5.3%. Between 1975 and 2010, the highest GDP growth rate, of 9.5%, was recorded in 1977 while the lowest, of -0.8%, was recorded in 1992 (World Bank, 2012a).

As with GDP growth in Kenya, real per capita GDP has had its highs and lows. It was higher in 1980 than in 1963. However, by 2004, it was at US\$463.84, surpassing the 1980 one by US\$17.22. Since then, the per capita GDP has maintained an upward trend, despite a slight decrease in 2009, recording US\$526.13 in 2005; US\$615.81 in 2006; US\$726.60 in 2007; US\$793.62 in 2008; US\$774.93 in 2009; and US\$794.76 in 2010 (World Bank, 2012a). Figure 2.9 illustrates the trends in banking sector growth, as shown by credit extension to private sector, and also indicates economic growth in Kenya during the period 1975-2009.

**Figure 2.9: Trends in Banking Sector Growth and Economic Growth in Kenya (1975-2009)**



Source: World Bank Development Indicators (2012a)

#### **2.4.1.4 Challenges Facing Bank-Based Financial Development in Kenya.**

Although the financial system of Kenya is by far the largest and most developed in East Africa, and its stability has improved remarkably over the years, many challenges still remain (Popiel, 1994). Kenya's banking sector has, for some years, faced several inter-related challenges, including high interest rate spreads, high overhead costs and relatively high profit margins (FSD Kenya, 2010). One factor has been the lack of credit information-sharing, which is seen as one of the several reasons for the high incidence of non-performing loans. Further factors are the deficiencies in the legal and institutional framework that limit the range of assets available to banks as acceptable collateral (FSD Kenya, 2010).

Financial inclusion remains a challenge in the Kenyan banking sector. Efforts are, however, being made by the government and the banking industry to improve access, especially to those in rural and remote areas, via innovative banking solutions, like M-Pesa and the introduction of agent banking, where banks can improve their presence in remote areas via an agent (Central Bank of Kenya and FSD Kenya, 2009).

Another challenge faced by Kenya's banking sector is unfair lending practices. Like most African countries, Kenya is faced with expensive financial services, as evidenced by high interest rate spreads and account fees. This challenge has had a feedback loop on access to financial services. The more expensive it is to have a bank account, the more likely one is to be excluded from accessing financial services (Capital Markets Authority *et al.*, 2011).

Although there is a deposit insurance scheme (DPFB), insurance coverage is still very low in relation to the total exposure of the Fund. Consequently, there is a need to continue building the fund, as well as to ensure that the financial system is sound. According to the FSD Kenya (2010), the operations of the Fund are governed by different laws, including the Central Bank Act; the Banking Act and the Companies Act, and these hamper smooth operations resulting in the now urgent need to harmonise the relevant sections into a single piece of legislation. Another challenge is that loan recovery is hampered by slow and costly court processes in which debtors have undue advantage via use of procedural technicalities to the detriment of creditors and of the financial sector (FSD Kenya, 2010).

The banking sector in Kenya also faces human-resource challenges. Better financial regulation requires a system that can readily identify weaknesses and emerging vulnerabilities. In addition, it should be capable of analysing and so adequately pricing risks. Moreover, the system needs to provide appropriate incentives (and penalties) to induce prudent behaviour in the market place; it needs to build strong institutions that can withstand shocks, give confidence to the market and support both the regulated and the regulator.

These pillars hinge on human-resources capital availability and appropriate application. The challenges, therefore, call for enhanced human-capital development to cope with this changing and dynamic world. The Governor of the Central Bank of Kenya, in his speech at the opening ceremony of the Joint Kenya School of Monetary Studies and COMESA Monetary Institute Symposium for Central Banks' Human Resource Directors (2012), said that Kenya's banking sector is facing human-resource challenges. He, therefore, encouraged the human-resources specialists in attendance



to formulate capacity development initiatives to equip banking staff with the necessary skills and competencies to effectively manage these challenges in a manner that would guarantee a balance between efficiency and stability (Central Bank of Kenya, 2010). The industry also continues to experience accounting challenges, which include the lack of a uniform chart of accounts, unrealistic or lack of provisioning, and poor compliance with International Financial Reporting Standards (IFRS) (Capital Markets Authority *et al.*, 2011).

## **2.4.2 Stock Market Development in Kenya**

Kenya's stock market is the most developed among those of the Eastern and Central African countries. It is rated the second largest stock market in Africa, but by international standards it is still young and developing. However it plays an important role in the process of economic development in Kenya through various ways, which include the mobilisation of domestic savings to bring about reallocation of financial resources and enhancement of the inflow of international capital, as well as facilitation of the government's privatisation programmes (Capital Markets Authority, 2012).

This section discusses the stock market in detail and is organised as follows: Section 2.4.2.1 covers the origin of the Kenyan stock market while Section 2.4.2.2 traces stock market reforms. Section 2.4.2.3 traces the trends in stock market growth as well as economic growth in Kenya. Section 2.4.2.4 concludes the section by highlighting the challenges facing stock market development in Kenya.

### **2.4.2.1 Origin of the Stock Market in Kenya**

Shares and stock trading in Kenya began in the 1920s, although trading was not conducted on a formal basis. By then, the trading was characterised by gentlemen's agreements (Nairobi Stock Exchange, 1996). Following a proposal by an estate agent to the then Minister of Finance, Kenya established a national stock exchange in 1954. The stock exchange was named the Nairobi Stock Exchange (NSE) (Nairobi Stock Exchange, 1996). During inception, the stock exchange had 46 listed companies (Nairobi Stock Exchange, 1996). In 1963, Kenya became independent. In the first three years of independence, the economic development was stable, market

confidence was restored, and the exchange operated several highly oversubscribed public issues (Nairobi Stock Exchange, 2002).

According to the Capital Markets Authority (2002), the NSE has three market segments, the Main Investment Market Segment (MIMS); the Alternative Investment Market Segment (AIMS); and the Fixed Income Market Segment (FIMS). The MIMS is the main quotation market. Companies listed under this segment are further categorised into four sectors that describe the nature of their business, namely: a) agricultural; b) industrial and allied; c) finance and investment; and d) commercial and services (Capital Markets Authority, 2002). The AIMS offers alternative ways of raising capital for small and medium-sized companies. Finally, the FIMS offers an independent market for fixed income securities (Capital Markets Authority, 2002; Nairobi Securities Exchange, 2012).

The Exchange now operates an Automated Trading System, designed to electronically match buy and sell orders in a transparent process that involves member firms of the NSE placing bids and asking prices in a centrally accessible electronic order book (Nairobi Securities Exchange, 2012). The major functions of the NSE include the listing of companies, the settlement of trading, market administration and control, market surveillance, the publication of a monthly review, the monitoring of the activities of listed companies and the announcement of price-sensitive, or other information, on listed companies through online channels.

#### **2.4.2.2 Stock Market Reforms in Kenya**

In the 1980s, the Kenyan Government embarked on a reform process in order to promote the growth and development of the Kenyan stock market. In 1984, International Financial Corporation (IFC), in partnership with the Central Bank of Kenya, carried out a study called “The Development of Money and Capital Markets in Kenya”, which became a blueprint for structural reforms in the Kenyan financial markets. The recommendations of this study led to the establishment of the stock market regulatory body in 1989, known as the Capital Markets Authority (CMA). The establishment of the CMA marked a shift from a self-regulatory to a statutory

regulatory system, thereby creating an environment favourable for the growth and development of the country's capital markets (Nairobi Stock Exchange, 1996).

In September 2006, an electronic trading system replaced the open outcry method in an effort to boost trading volumes and to speed up transaction times (Capital Markets Authority, 2012). However, in spite of the efforts made to invigorate the stock market, the growth of the primary market remains very slow. There has been no appreciable increase in the number of companies listed since the beginning of the reform process.

It can also be noted that the stock exchange still suffers from concerns about liquidity, which cause investors to concentrate their funds on only about half of the listed stocks. Exchange officials expect, however, that an improved economic environment could boost the prospects of listed companies, making them more attractive targets for investors (Capital Markets Authority *et al.*, 2011).

#### **2.4.2.3 Stock Market Growth and Economic Growth in Kenya**

The extent of Kenyan stock market growth can be evidenced by the rate of increase in the number of listed companies. There were 56 listed companies in 1960, 63 in 1969, and 64 in 1970. From a peak of 64, the number of listed companies dropped to 57 in 1979 and remained stagnant at 57 in 1989; then it increased slightly to 58 in 1998, before decreasing to 50 in 2005. Finally there was an increase to 60 in 2012 (Nairobi Securities Exchange, 2012).

The growth of the stock market in Kenya can also be explained by capitalisation of listed companies, the total value of stocks traded, and the turnover ratio of stocks traded. The stock market size of Kenya was stagnant in the late 1980s and only started improving in 1991, reaching 43% in 1994, before it deteriorated, creating a deep and wide trough between 1995 and 2006. However, the market size improved vastly between 2001 and 2006. Although the late 2000s registered stock market capitalisation of 50%, this is still very low when compared to most of the high income countries' registered stock market capitalisation ratio of 155% (World Bank, 2012a).

In terms of market liquidity, as measured by total value traded/GDP and turnover ratio, Kenya had a less liquid stock market. The total value traded was low and constant at below 2% between the early 1990s and the early 2000s. Thereafter, it picked up over the years to 6% in 2006, before it fell back to 2% again in 2009. It is interesting to note that Kenya's stock market capitalisation and total value traded showed a similar trend. Where market capitalisation improved, the total value traded improved, and vice versa. However, market capitalisation was more elastic than total value traded. In general, market capitalisation was somewhat higher, while the total value traded was lower from 1990 to 2003, meaning there was little trading. The markets were, in general, less liquid. From 2004 onwards, the total value traded improved, reflecting a liquidity improvement and hence, some development of the stock market (World Bank, 2012a).

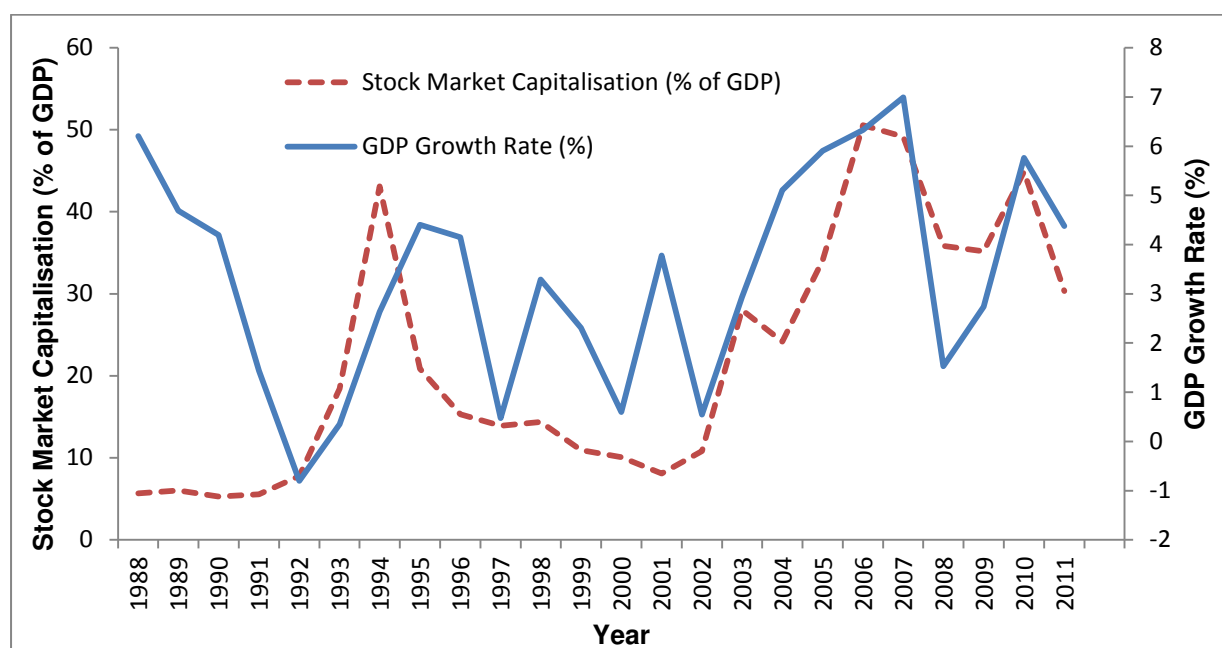
As with the total value traded, the turnover ratio was also low, averaging 4% from 1990 to 2002, and thus reflecting a less active stock market. There was, however, an improvement in the activity of the market between 2002 and 2008, as depicted by the rising turnover ratio. It may be noted that the three measures of stock market development used in this study point to the same trend, although with differing elasticity. This can be explained by the market-based policies put in place which affected these three proxies of market-based financial development in the same way.

In terms of economic growth, it can be noted that the economy grew at an average real growth rate of 5% between 1963 and 1970 and at 8% from 1970 to 1980. The 1980s recorded an average growth rate of 4% while the 1990s had an economic growth rate of 2%. From the mid-2000s the economy improved, registering a GDP growth rate of 2.8% in 2003, 4.3% in 2004, 5.8% in 2005, 6.1% in 2006, and 7.0% in 2007. However, in 2008, the growth rate came down to 2% possibly due to post 2007 election violence, drought and the global financial crisis (United States Department of State, 2012). Subsequent years saw an improvement in the growth rate, recording 2.6% and 5.3% in 2009 and 2010, respectively (World Bank, (2012a).

Real per capita GDP reflects similar fluctuations, with an average of US\$309.81 recorded between 1975 and 1980. An average of US\$366.42 per capita income was

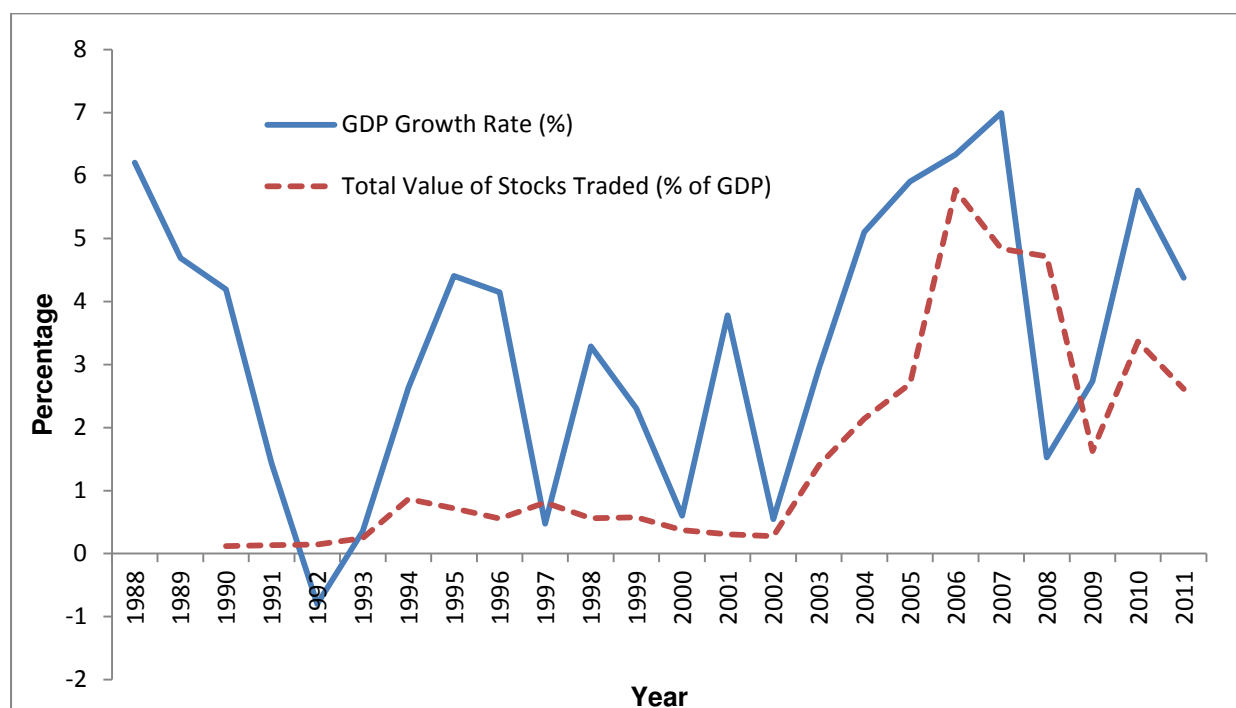
achieved in the 1980s; US\$363.00 in the 1990s; US\$555.21 in the 2000s, while in 2010 a per capita GDP of US\$794.76 was recorded (World Bank, (2012a). Figures 2.10 - 2.12 track the performance and growth of the Kenyan stock market, and economy during the period 1988-2011.

**Figure 2.10: Trends in Stock Market Capitalisation and Economic Growth in Kenya (1988-2011)**



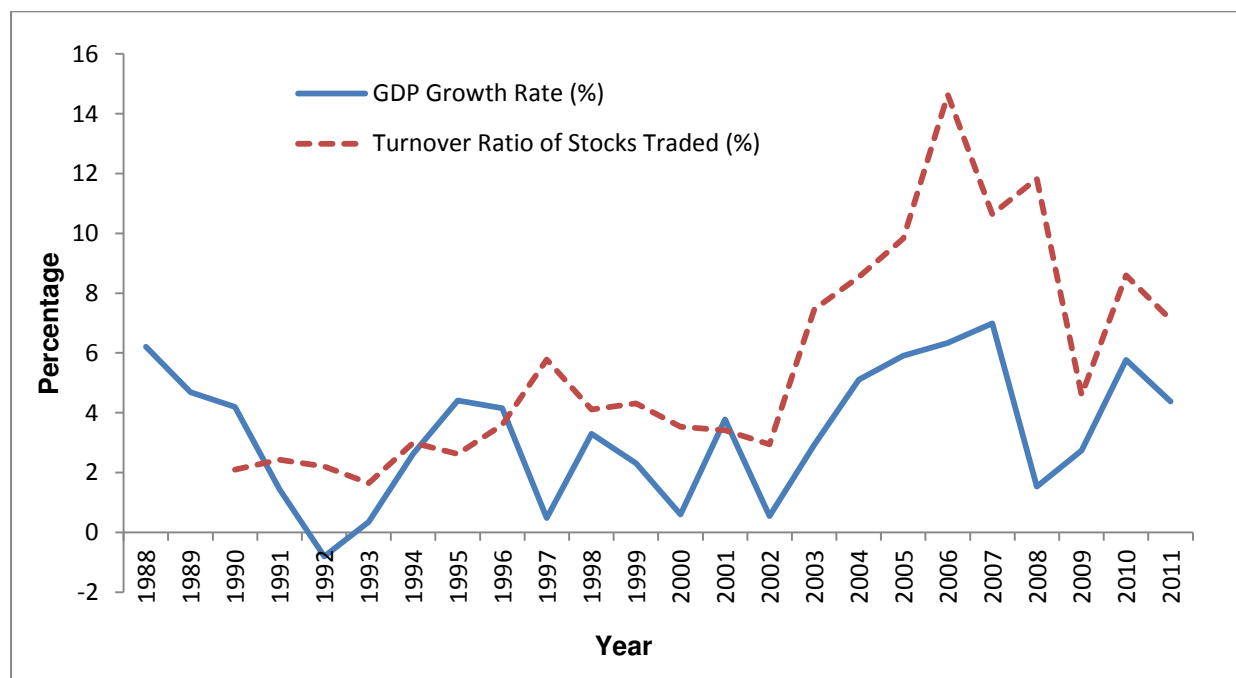
Source: World Bank Development Indicators (2012a)

**Figure 2.11: Trends in Total Value of Stocks Traded and Economic Growth in Kenya (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 2.12: Trends in Turnover Ratio of Stocks Traded and Economic Growth in Kenya (1988-2011)**



Source: World Bank Development Indicators (2012a)

#### 2.4.2.4 Challenges Facing Stock Market Development in Kenya

Kenya's stock market is faced with a wide range of challenges. These include the following: a lack of awareness, low investor confidence, a lack of competitive pressure in the local market, vulnerability to shocks, and a low level of capital market liquidity. Generally, there is lack of awareness and information on how the stock market and the CMA operate among business entities and potential investors. Many Kenyans do not know enough about the NSE and the CMA. The market does not seem to market itself adequately to potential investors, or to provide a variety of products to attract companies. This may be attributed to financial and human resource constraints (Capital Markets Authority *et al.*, 2011). The lack of public awareness on NSE operations remains a major deterrent to corporate participation in the stock market (Capital Markets Authority *et al.*, 2011).

The low level of capital market liquidity is a major challenge facing Kenya's stock market (Capital Markets Authority, 2012). Although the NSE is generally considered a more liquid and active market than most of its East African, by international standards it is small, less liquid and volatile with regard to prices and returns. Low liquidity is particularly evident in the secondary bonds and in the equity markets (Capital Markets Authority, 2012). In addition, there is a high incidence of "buy and hold" particularly among institutional investors who dominate the market (Capital Markets Authority, 2012).

Increasing listing at the NSE has always been a challenge, especially in recent years. Over the last fifteen years, the number of stocks traded at the NSE has stagnated at around 55 quoted companies (Nairobi Securities Exchange, 2012). Currently, there are sixty (60) listed companies, in contrast to the hundreds of companies operating in Kenya (Nairobi Securities Exchange, 2012). The limited listings have a negative impact on the supply of new equities. An insufficient supply of new equities in the capital market has restricted the use of the equity market as a source of financing. In view of the past failure to attract new equity, the most difficult hurdle for the NSE is increasing the number of listings on the NSE of medium-sized and large family-owned businesses and state-owned companies operating in Kenya (Nairobi Securities Exchange, 2012). Generally, the main factors limiting the supply of shares include the

reluctance of small, family-owned businesses to dilute ownership as well as the costly and tedious process of making public offers (Capital Markets Authority, 2012).

High real short-term interest rates have reduced the demand for capital market instruments and crowded out substantial domestic savings in favour of short-term government securities (Capital Markets Authority, 2012). This situation was particularly evident in 2001, when the Treasury Bill rate was 12.6% compared to an inflation rate of 0.8%. However, the situation is being reversed, as Treasury Bill rates have fallen to about 8% – resulting in an increased demand for both equity and debt instruments (Capital Markets Authority, 2012). Interest rate spreads are high. Currently they are standing at about 13%. Deposit rates are too low and lending rates too high, thereby discouraging domestic savings and investment. The domestic savings are less than 10% of GDP; and they are consequently insufficient to meet investment needs or to generate any significant demand for equities and debt instruments (Nairobi Securities Exchange, 2012).

The stock market in Kenya is vulnerable to market shocks, as the method of determining share prices may result in the market capitalisation of a counter being heavily affected by a small lot deal. People and businesses have low confidence in the performance of capital markets. They also have a perception of low standards in corporate governance, since neither the NSE nor the brokers publish their corporate governance reports (Capital Markets Authority *et al.*, 2011). As a result, players in such a market are limited. Any efforts to innovate the market are not well-cultivated, thereby leading to another challenge, which is the slow pace of innovation, lack of flexibility and limited access to capital. Deep markets are constantly developing products, such as securities, derivatives and options – for both funding and risk management. Additionally, Kenyan capital markets have been slow to develop products and have left companies to depend on short-term money markets (Nairobi Stock Exchange, 2002).

## **2.5 Concluding Remarks**

In this chapter South African, Brazilian and Kenyan banking systems and stock market development have been surveyed. Trends in economic growth and financial



development (both bank- and market-based) have also been discussed for the three countries. Based on the issues discussed in this chapter, the following conclusions can be drawn. All three countries have enjoyed improved economic growth over the years. However, they all face a common challenge of how to make such growth sustainable. It is worth noting that the growth rate was highest during the late 1970s and the mid-1980s for Brazil and Kenya, while it was highest in 1980 and during the mid-2000s for South Africa. For all three countries, the growth rate was unstable and fluctuated throughout the period. The financial crisis of the late 2000s was felt by the three countries, with South Africa being the hardest hit, recording a negative economic growth while Kenya was the least affected.

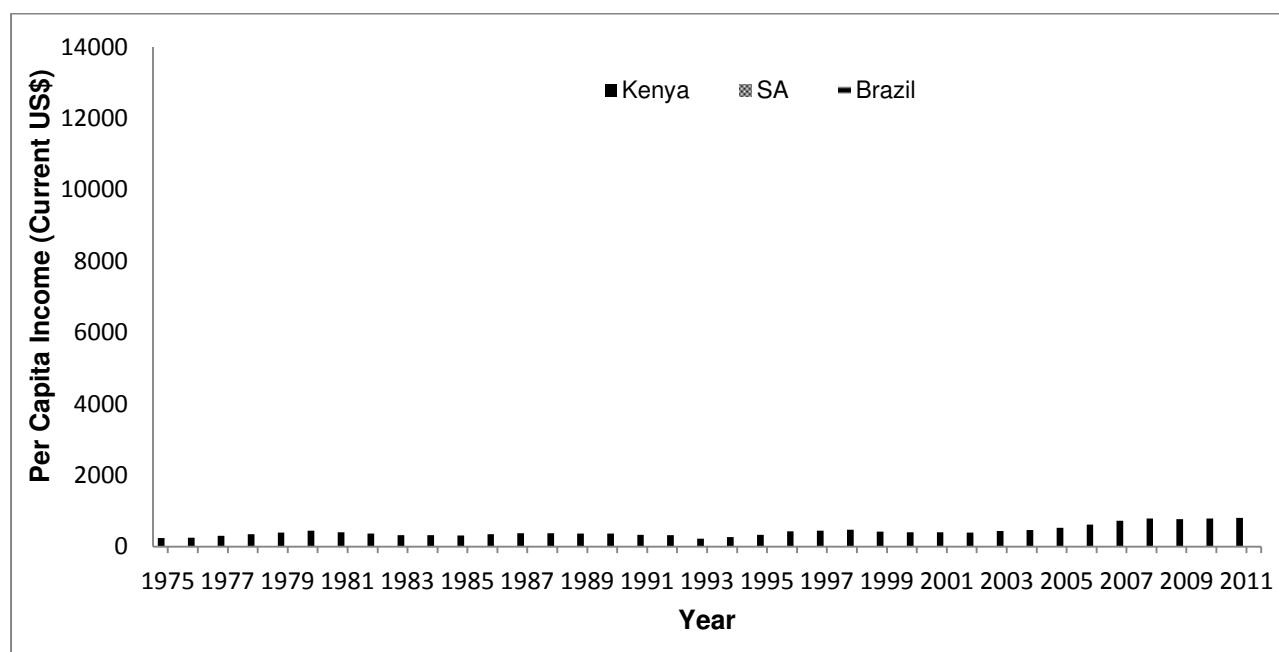
In terms of GDP per capita, Kenya experienced an almost steady growth in GDP per capita throughout the period while South Africa and Brazil maintained an upward trend in general, despite minor fluctuations. Of the three countries, Brazil has the highest per capita income, followed by South Africa, then lastly Kenya. However, the disparity in per capita income between Kenya and the other two countries is very big. Figures 2.13 and 2.14 compare the economic growth rates and the per capita income, respectively.

**Figure 2.13: A Comparison of GDP Growth Rates for South Africa, Brazil and Kenya (1975-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 2.14: A Comparison of Per Capita Incomes for South Africa, Brazil and Kenya (1975-2011)**

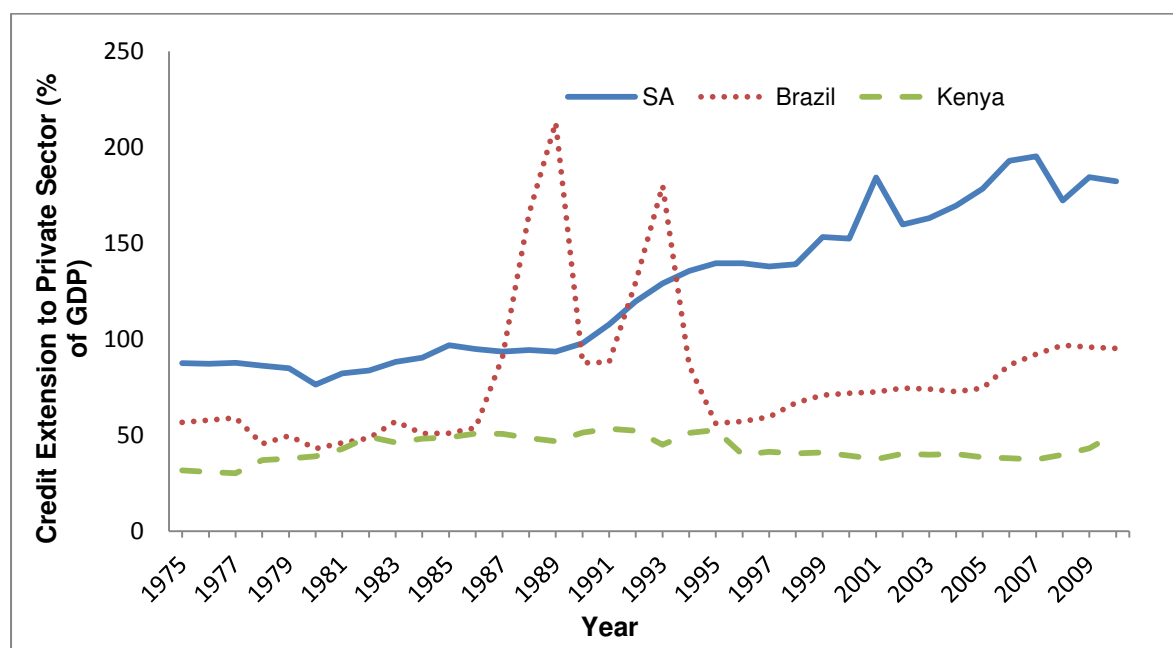


Source: World Bank Development Indicators (2012a)

In terms of the total number of banks, Brazil has the highest number, followed by South Africa, then Kenya. The margin between the numbers of banks in each country, currently, is very high – 160 for Brazil; 79 for South Africa and 43 for Kenya. While the number of banks has been decreasing over the period in Brazil and South Africa, it has been increasing in Kenya.

In terms of credit extended to private sector within the period of study, South Africa started and finished off in the best position of the three countries, reaching a peak of almost 200% in 2007 while Kenya had the worst performance with the lowest credit extended to the private sector throughout the period although it did increase marginally from 30% in 1975 to 50% in the late 1980s/early 1990s and the late 2000s. Brazil's rate of credit extension to the private sector was just above that of Kenya for the greater part of the period, except during the 1989 and 1993 when it experienced a spurt in lending. Thereafter, Brazil maintained a gradually increasing credit extension rate, reaching almost 100% in 2009 and 2010. Figure 2.15 compares the rate of credit extension to the private sector for South Africa, Brazil and Kenya during the period 1975 to 2010.

**Figure 2.15: A Comparison of Credit Extended to Private Sector for South Africa, Brazil and Kenya (1975-2010)**



Source: World Bank Development Indicators (2012a)

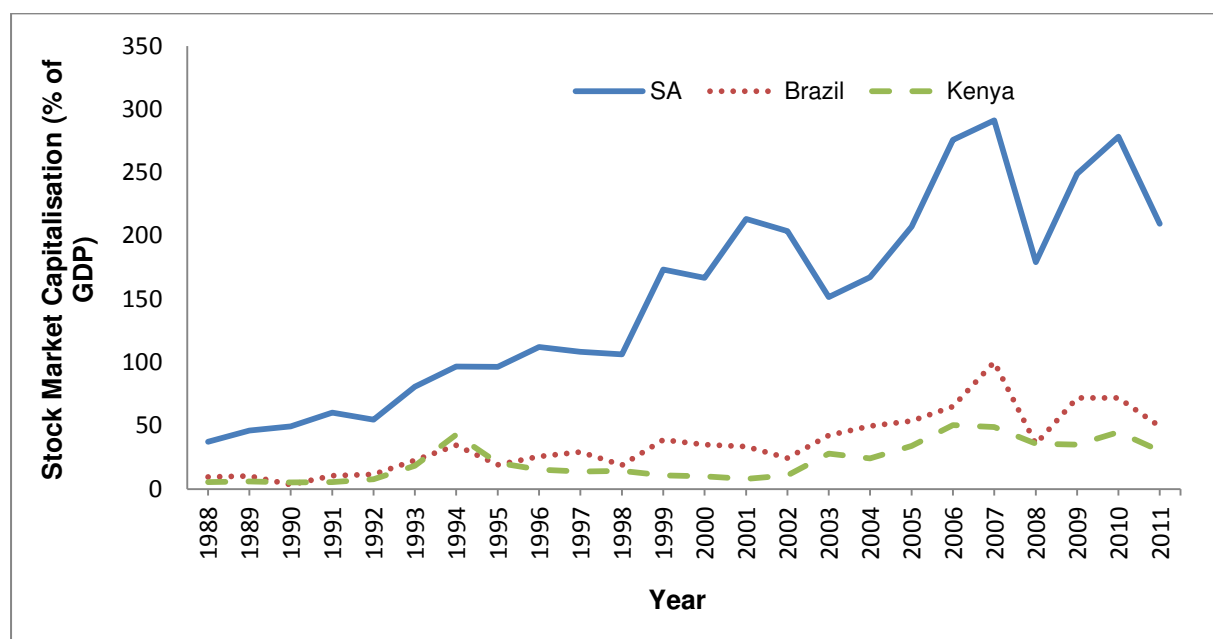
The institutional framework for the three countries is strong in general, with South Africa having the strongest framework. The central banks of the three countries enjoy greater autonomy and there is less government intervention. This is reflected in the relative strength of the institutional frameworks of the three economies. Unlike South Africa and Kenya whose central banks are at the apex, in Brazil the top position in financial regulation and oversight is occupied by the National Monetary Council, followed by the Central Bank of Brazil.

The authorities in all three economies appreciate the importance of a well-developed economy in general and of their banking sectors in particular. They have all embarked on extensive reforms to improve their banking sectors. However these reforms differ in several respects despite their common purpose.

With regard to their banking sectors, all three countries are faced with challenges. Though these differ in dimension and magnitude, financial inclusion is a common prioritised challenge since it is viewed as a stepping stone to poverty reduction. It should, however, be noted that Brazil has done a lot more on this front than have South Africa and Kenya.

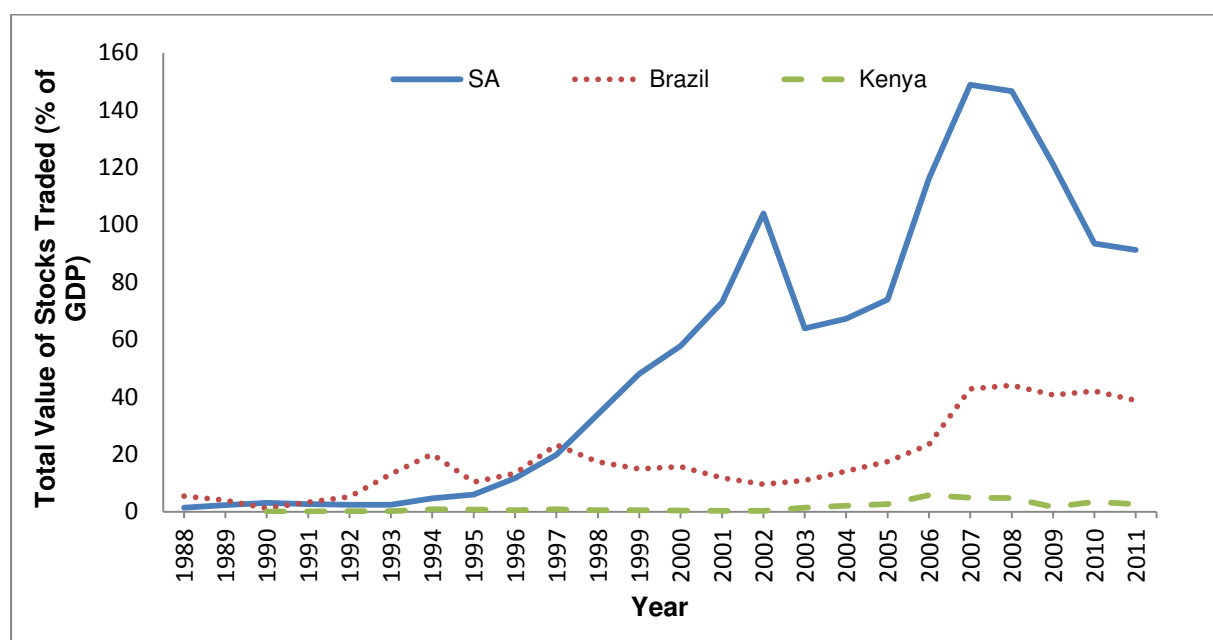
On the stock market front, Kenya has the smallest and most inactive stock market in all respects – in terms of the number of listed companies, stock market capitalisation, stocks traded and turnover ratio. South Africa, on the other hand, has the biggest stock market in general, and specifically in terms of market capitalisation and total value of stocks traded. However, it has slightly fewer listed companies than has Brazil. Moreover, its turnover ratio has been somewhat lower than that of Brazil since the mid-2000s. Figures 2.16 - 2.18 compare the stock market size and activity for South Africa, Brazil and Kenya during the period 1988 to 2011.

**Figure 2.16: A Comparison of Stock Market Capitalisation for South Africa, Brazil and Kenya (1975-2010)**



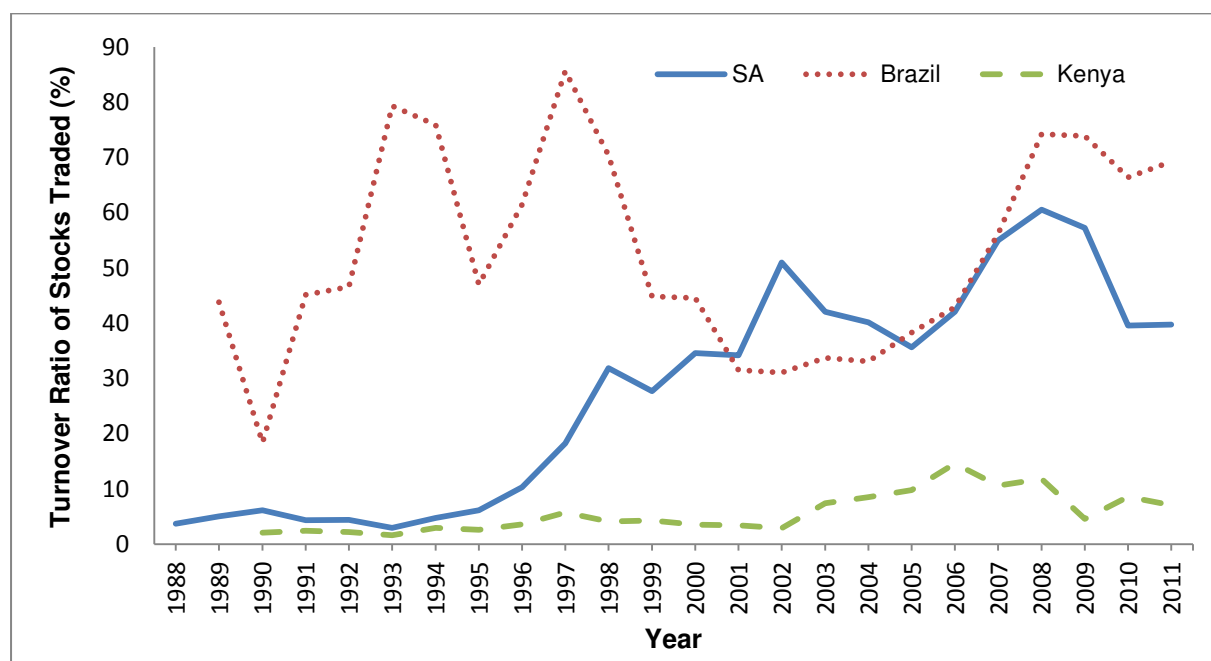
Source: World Bank Development Indicators (2012a)

**Figure 2.17: A Comparison of Total Value of Stocks Traded for South Africa, Brazil and Kenya (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 2.18: A Comparison of Turnover Ratio of Stocks Traded for South Africa, Brazil and Kenya (1988-2011)**



Source: World Bank Development Indicators (2012a)

Thus it can be concluded that the stock markets in the three countries are faced with various challenges – the most common one being the liquidity challenge. It can, however, be noted that with regard to institutional framework and market discipline and integrity, the South African stock market is stronger than that of Brazil and Kenya. The governments of all three countries, therefore, have an important role to play in reducing financial sector frictions and making financial markets work efficiently.

## **CHAPTER 3**

### **FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN DEVELOPED COUNTRIES**

#### **3.1 Introduction**

This chapter surveys financial sector development and economic growth experiences and trends in the United States of America (USA), the United Kingdom (UK) and Australia. The chapter is divided into five major sections. Section 3.2 covers financial development in the USA (bank-based financial development and stock market development). Under bank-based financial development the following are addressed: an overview of the USA's banking sector; its bank-based financial sector reforms; trends in banking sector growth and economic growth in the USA; as well as challenges facing its bank-based financial development. Under stock market development in the USA, the following issues are discussed: the origin of the American stock market; stock market reforms; trends in stock market growth and economic growth; and finally, challenges facing stock market development in the USA.

Section 3.3 focuses on financial development in the United Kingdom (UK). This section is divided into two sub-sections – bank-based financial development and stock market development in the UK. Under bank-based financial development the following are presented: an overview of the UK's banking sector; bank-based financial sector reforms; trends in banking sector growth and economic growth; and the challenges facing bank-based financial development in the UK. Under stock market development in the UK the following issues are discussed: the origin of its stock market; stock market reforms; trends in its stock market growth and economic growth; and challenges facing stock market development in the UK.

Section 3.4 presents financial development in Australia. This section is divided into two sub-sections – bank-based financial development and stock market development. Under bank-based financial development the following issues are discussed: an overview of Australia's banking sector; bank-based financial sector reforms; trends in banking sector growth and economic growth; and the challenges facing bank-based

financial development in Australia. Under stock market development in Australia the following issues are discussed: the origins of its stock market; stock market reforms; trends in stock market growth and economic growth; and challenges facing stock market development in Australia. Finally, some concluding remarks are presented in Section 3.5.

### **3.2 Financial Development in the United States of America (USA)**

By any standard, modern or otherwise, the speed and success with which a banking system and capital markets emerged in the United States as mobilisers of domestic and international resources after 1790 is nothing short of remarkable. To date, the USA has a highly developed financial sector which ranks very high in terms of the development and sophistication of its bank and non-bank financial institutions and also of its financial markets (stocks, bonds, forex and derivatives), as well as the size, depth and access available to its financial services. The USA was ranked number 1 in 2010 and number 2 in 2011, in terms of financial development, based on the Financial Development Index rankings (World Economic Forum, 2011a).

#### **3.2.1 Bank-Based Financial Development in the USA**

Although the bank-based segment of the financial system in the country is relatively less developed than the market-based segment, both are quite well developed in terms of international comparisons. This section discusses the banking segment in detail and is organised as follows: Section 3.2.1.1 gives an overview of the USA's banking sector while Section 3.2.1.2 traces the bank-based financial sector reforms. Section 3.2.1.3 traces the trends in banking sector growth as well as economic growth in the USA. Section 3.2.1.4 concludes the section by highlighting the challenges facing bank-based financial development in the USA.



### 3.2.1.1 Overview of the USA's Bank-Based Financial System

#### ***Origin of the Central Bank of the USA, the Federal Reserve System***

The Federal Reserve System, often known as the Federal Reserve or just "the Fed," is the central bank of the USA. Its history dates back to as early as the late 18<sup>th</sup> Century when the first central bank known as the First Bank of the United States (BUS), was created in 1791, with its headquarters in Philadelphia (Federal Reserve Bank of New York, "the New York Fed," 2012).

In 1816 the second BUS took over from the first BUS until its death in 1836. The severe financial panic of 1907 resulted in bank failures, signalling the need for a central bank. Following the Glass-Willis proposal of 1912, the Federal Reserve Act was passed in 1913 establishing regional reserve banks and the Fed to control and coordinate their operations (New York Fed, 2012a).

Among its responsibilities, the Fed is responsible for supervising and regulating banks and other important financial institutions to ensure the safety and soundness of the nation's banking and financial system and to protect the credit rights of consumers. It is also responsible for monetary policy related matters and the maintenance and stability of the financial system (Federal Reserve Bank, 2012).

Reserve Banks are responsible for supervising and examining all bank holding companies and commercial banks for soundness and safety; for providing accounts to depository institutions and for participating in setting monetary policy (Federal Reserve Bank, 2012). The Federal Reserve System consists of a Board of Governors and 12 regional Federal Reserve Banks, located in the nation's major cities (Federal Reserve Bank, 2012).

#### ***Overview of the Banking Sector in the USA***

The American banking industry is governed by, among other acts, the National Banking Acts of 1863 and 1864; the Banking Act of 1933; the Depository Institutions Deregulation Act of 1980 and the Garn-St Germain Depository Institutions Act of 1982

(Federal Reserve Bank, 2012). In addition to these Acts, Federal Reserve regulations also play a role in banking regulation. The American banks are also regulated in accordance with the principles set by the Basel Committee on Banking Supervision. Consequently, the banks comply with sound international practice.

According to the Bank of International Settlement (2003: 433), the legal framework governing payment activity, as well as the regulatory structure for financial institutions that provide payment services in the USA are complex and uneven. Most countries have only one bank regulator, but the USA's banking system is regulated at both federal and state levels (Bank of International Settlement, 2003). Among the regulators are the Office of the Comptroller of the Currency and the Office of Thrift Supervision.

Another spectacular feature of the USA banking system is deposit insurance, known as the Federal Deposit Insurance Corporation (FDIC). Unlike most countries where only a few banks dominate the market, in the United States there are 6,291 commercial banks, 1,500 savings and loan associations, 400 mutual savings banks, and 10,000 credit unions. The total number of banks has, however, declined, falling from 14,210 in 1986 to 9,520 in 1996; and further to 7,401 in 2006, before reaching the 6,291 mark in December 2011. The fall in the number of banks during the late 2000s was mostly as a result of the late-2000s financial crisis, which many economists considered to be the worst financial crisis since the Great Depression of the 1930s (FDIC, 2012).

According to Terrell and Key (2012: 54), one of the most significant recent developments in both international banking and the structure of banking within the United States, has been the rapid growth in foreign bank operations in the United States. This growth has resulted from an expansion of the activities of banks with existing USA operations as well as de novo entry into the USA market by additional foreign banks. The USA-based offices of foreign banks currently offer a broad range of banking services to both foreign and domestic customers. Their increasing importance in USA markets has resulted in various legislative proposals to establish a uniform

Federal policy concerning their activities (Terrell and Key, 2012; Federal Reserve Bank, 2012).

### **3.2.1.2 Bank-Based Financial Reforms in the USA**

In 1913, the Federal Reserve Act was passed, creating the country's central bank, the Federal Reserve System (the Fed) in order to promote an even safer banking system. However, although the Fed enhanced financial stability, it did not do much to prevent the failure of many US banks during the 1930 - 1933 financial crisis (Tregenna, 2009).

In the wake of the Depression of the early 1930s, a number of important banking reforms were ushered in. Among the reforms was the Banking Act of June 1933, which led to the establishment of the federal deposit insurance and federal regulation of interest rates on deposits (FDIC, 2012). The federal insurance for deposits was, and is still, administered by the Federal Deposit Insurance Corporation (FDIC) which guarantees a standard insurance amount per depositor, per insured bank. Funding for the FDIC comes from premiums paid by member institutions. The United States was the first country to officially enact deposit insurance to protect depositors from losses by insolvent banks (FDIC, 2012).

Two years later, the Banking Act of 1935 was passed. The Act created the Fed and strengthened the central banks' powers by making them less decentralised than they had been.

Between 2008 and 2010, the FDIC insurance was expanded when Congress temporarily increased the Insurance limit to \$250,000 but this later became permanent. Historically, insurance limits were \$2,500 in 1934; \$5,000 in 1935; \$10,000 in 1950; \$15,000 in 1966; \$20,000 in 1969; \$40,000 in 1974; \$100,000 in 1980; and \$250,000 in 2008 (FDIC, 2012). The Depositors' Insurance Fund (DIF) insures deposits in excess of the FDIC limits at state-chartered savings banks.

In 2010, the 111th United States Congress passed the Dodd - Frank Wall Street Reform and Consumer Protection Act (Public Law 111-203), signed into federal law by

the President on July 21, 2010; and which became effective instantly (United States Government Printing Office, 2012).

### 3.2.1.3 Banking Sector Growth and Economic Growth in the USA

There were about 20,000 banks in 1907, and about 30,000 by the early 1920s. In the early 2000s, cheap credit led to a housing and commercial real estate boom, which later led to the global financial crisis during the late 2000s. This crisis saw further reduction in the total number of banks in the United States as many large banks collapsed (FDIC, 2012). Table 3.1 shows the number of FDIC-insured commercial banks, branches and total number of offices in the United States during the period 1935-2011.

**Table 3.1: The Number of FDIC-Insured Commercial Banks, Branches and Total Number of Offices in the USA (1935-2011)**

| Year | Institutions | Branches | Offices |
|------|--------------|----------|---------|
| 1970 | 13,511       | 21,839   | 35,350  |
| 2000 | 8,315        | 64,900   | 73,215  |
| 2001 | 8,082        | 65,667   | 73,749  |
| 2002 | 7,888        | 66,940   | 74,828  |
| 2003 | 7,770        | 68,258   | 76,028  |
| 2004 | 7,631        | 70,892   | 78,523  |
| 2005 | 7,526        | 73,510   | 81,036  |
| 2006 | 7,401        | 76,568   | 83,969  |
| 2007 | 7,284        | 79,126   | 86,410  |
| 2008 | 7,088        | 82,910   | 89,998  |
| 2009 | 6,840        | 83,041   | 89,881  |
| 2010 | 6,530        | 82,572   | 89,102  |
| 2011 | 6,291        | 83,209   | 89,500  |

Source: FDIC (2012)

The development of the American banking sector is also reflected by growth in private sector credit extension. The period from 1975 to 1981 was characterised by an almost constant degree of credit provided by the financial institutions to the private sector, averaging 120% of GDP. Thereafter, private sector lending increased to 150% until 1987 when it became constant again, only to improve three years later. From 1991 to 2011, private sector lending maintained an upward trend, despite minor fluctuations between 1999 and 2003 and also between 2007 and 2009. Historically, between

1975 and 2011, private sector lending reached an all-time low, of 115.2% in 1981; and an all-time high of almost 250% in 2007 (World Bank, 2012a).

Non-performing loans, though generally low, have been on the increase since 2008. Credit information is easily available to both consumers and banking institutions. Both consumers and institutions have strong legal rights. Table 3.2 depicts some of the banking indicators showing the development of the USA's banking sector.

**Table 3.2: Growth of Banking Sector in the USA (2000-2011)**

| <b>Year</b> | <b>Domestic Credit Extension to Private Sector (% of GDP)</b> | <b>Bank Non-Performing Loans to Total Gross Loans (%)</b> | <b>Credit Depth of Information Index (0=low to 6=high)</b> | <b>Strength of Legal Rights Index (0=weak to 10=strong)</b> |
|-------------|---------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------|
| 2000        | 198.41                                                        | 1.1                                                       | -                                                          | -                                                           |
| 2001        | 206.11                                                        | 1.3                                                       | -                                                          | -                                                           |
| 2002        | 198.8                                                         | 1.4                                                       | -                                                          | -                                                           |
| 2003        | 214.43                                                        | 1.1                                                       | -                                                          | -                                                           |
| 2004        | 221.25                                                        | 0.8                                                       | 6                                                          | 9                                                           |
| 2005        | 225.17                                                        | 0.7                                                       | 6                                                          | 9                                                           |
| 2006        | 235.14                                                        | 0.8                                                       | 6                                                          | 9                                                           |
| 2007        | 242.68                                                        | 1.4                                                       | 6                                                          | 9                                                           |
| 2008        | 222                                                           | 3                                                         | 6                                                          | 9                                                           |
| 2009        | 234.9                                                         | 5.4                                                       | 6                                                          | 9                                                           |
| 2010        | 232.9                                                         | 4.9                                                       | 6                                                          | 9                                                           |
| 2011        | 233.3                                                         | 4.7                                                       | 6                                                          | 9                                                           |

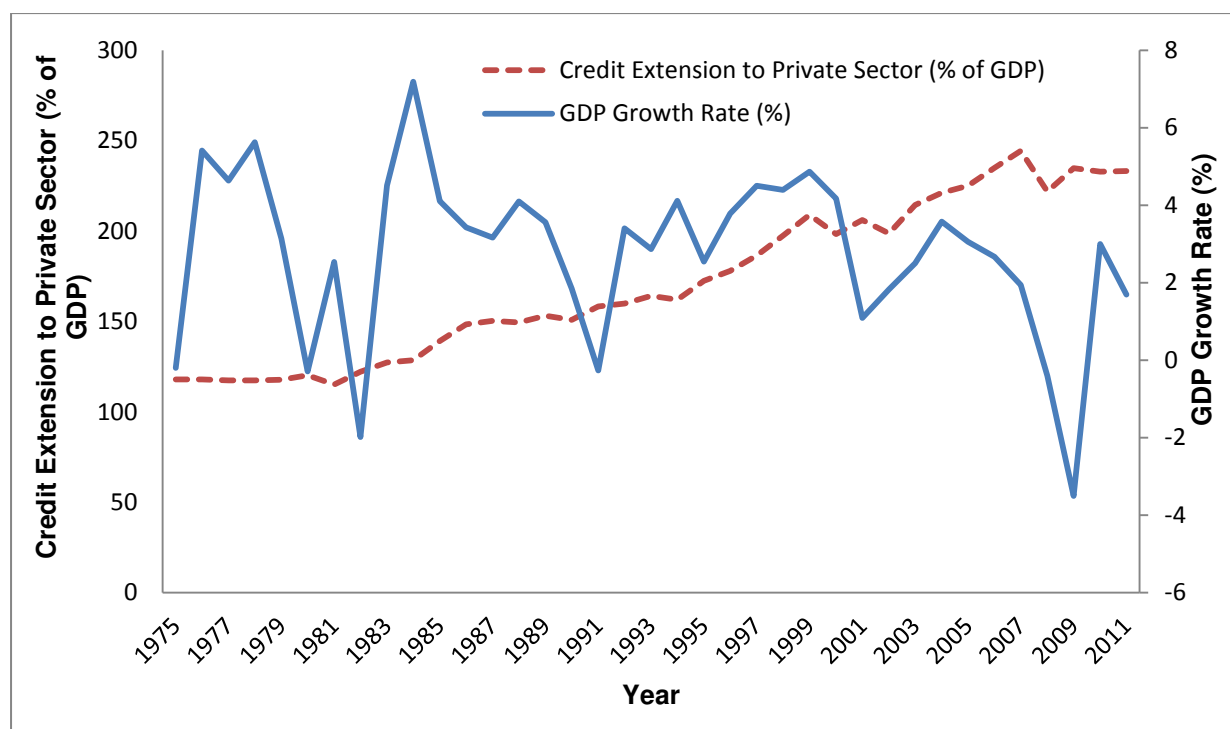
Source: World Bank Development Indicators (2012a)

The growth of the American banking sector can also be indicated by the increasing number of Automated Teller Machines (ATMs) which has risen steadily over the years, from 352,000 ATMs in 2002 to 396,000 in 2005, to 425,010 in 2008; and slightly down to 403,000 in 2009 (United States Department of State, 2012).

From an economic growth perspective, the economy of the United States is the world's largest national economy and the world's second largest overall economy, after that of the European Union (IMF, 2012c).

Per capita GDP in the United States averaged US\$26954.92 between 1975 and 2010. Historically, from 1975 until 2010, GDP per capita reached an all-time high of US\$48442.00 in 2011 and a record low of US\$7516.68 in 1975 (World Bank, 2012a). Between 1975 and 2010, GDP per capita exhibited an upward trend in general. Figure 3.1 shows the trends in banking sector growth, as indicated by credit extension to the private sector, and economic growth in the United States during the period 1975-2012.

**Figure 3.1: Trends in Banking Sector Growth and Economic Growth in the USA (1975-2012)**



Source: World Bank Development Indicators (2012a)

#### 3.2.1.4 Challenges Facing Bank-Based Financial Development in the USA

Although the US banking sector is recovering from the financial crisis of the late 2000s, it is far from fully recovered. On the contrary, it still faces a number of challenges that include: a shrinking mortgage market, increasing non-performing asset levels, weak economic growth, and the threat of contagion from Europe.

Although the incidence of non-performing loans in the USA banking sector is low compared to those in the emerging economies, an upward trend is evident in the last few years when viewed against the country's historical statistics.

According to IMF (2012c), weak economic growth in the US poses a challenge to the country's banking sector. During such times when economy recovery is patchy and growth is below its potential, banks have difficulties in coming up with cutting edge strategies for survival. Capital is also a challenge as banks will need more capital to support additional lending as part of the on-going economic recovery, and to both meet stiffer regulatory requirements in the future and withstand any future shocks to their balance sheets (IMF, 2012c).

Since the USA is among the world leading economies, its banking system is open to the international world, making it prone to the not so favourable/harsh conditions prevailing in other economies. Currently, the US banking sector is threatened by the contagion from Europe – the European sovereign debt crisis. Natural Disasters have also become a threat to the USA banking industry which is affected by disasters such as tropical cyclones, like Hurricane Sandy. Banking infrastructure and, to some extent, bank personnel, may be lost.

Another challenge facing the USA banking system, in the view of the New York Fed (2012b) is the “too-big-to-fail (TBTF)” challenge since there are some very big banks whose failure, if allowed, is catastrophic. The New York Fed (2012b) further states that, the market's belief that a TBTF firm is more likely to be rescued in the event of distress than other firms weakens the degree of market discipline exerted by capital providers and counterparties. Although a number of policy measures that alter incentives and reduce the probability of distress have been put in place, they only help to reduce the chances of TBTF occurring, but do not completely eliminate the problem (New York Fed, 2012b).

### **3.2.2 Stock Market Development in the USA**

Although the USA bank-based and market-based financial segments are both well developed by international standards, the latter segment is relatively more developed than its bank-based counterpart. Consequently, the USA economy is generally referred to as market-based (Demirguc-Kunt and Levine, 2001).

According to Sylla (1998), the precocity of USA banking development was duplicated in the development of the stock market. Following the debt refinancing of 1790 and the launching of the BUS a year later, securities markets sprang up virtually overnight in the major cities of Philadelphia, New York, Boston and Baltimore so as to provide regularised trading opportunities for the new claims (Sylla, 1998). The national market securities, which then included the USA debt issues and Bank stock, traded in each city and were joined by steadily growing lists of local securities. Sylla (1998) further points out that even a securities' market crash in early 1792 could not for long arrest the rapid deepening of these markets. This leap in asset liquidity allowed investors, both domestic and foreign, to overcome their reluctance to hold USA securities. By 1803 more than half of the government's debt and the stock of the Bank, and half of all American securities issued to that date, were held by European investors (Sylla, 1998). Thus, for the United States, capital market globalisation arrived early in the nation's history, long before the more celebrated capital market globalisations of the late 19th and late 20th centuries (Sylla, 1998).

To date, the United States has the most highly developed capital markets in the world and the size of the USA stock market is one of many examples that indicate this (World Federation of Exchanges, 2012). The combined market capitalisation (total dollar value of all stocks) of the NASDAQ OMX and NYSE Euronext is over \$17.5 trillion – more than the next six largest exchanges combined (World Federation of Exchanges, 2012).

The following section covers the stock market in the USA in more depth and is organised as follows: Section 3.2.2.1 covers the origin of the stock market in the USA while Section 3.2.2.2 presents stock market reforms. Section 3.2.2.3 traces the trends in stock market growth and economic growth in the USA. Section 3.2.2.4 concludes



the section by highlighting the challenges facing stock market development in the USA.

### **3.2.2.1 Origin of the Stock Market in the USA**

In the USA, the history of stock market activities dates back to as early as 1792 when an agreement that established the rules for buying and selling bonds and shares was signed. Nonetheless, the first USA stock exchange was inaugurated in 1817, today the New York Stock Exchange Euronext (NYSE:NYX/NYSE Euronext). The USA had several stock exchanges, which gradually acquired one another and/or merged over the years to form three big stock exchanges – the biggest one being the NYSE Euronext, followed by the NASDAQ OMX, which is two-thirds the size of the NYSE Euronext by market capitalisation, followed by the Chicago Stock Exchange (CHX) (see World Stock Exchanges, 2011; NYSE:NYX, 2012; NASDAQ OMX, 2012; and Chicago Stock Exchange, 2012).

Although these three are the most visible stock exchanges in the USA, there are other exchanges that specialise in financial instruments, other than stocks. These include: i) the Chicago Mercantile Exchange (CME) (often called "the Chicago Merc," or "the Merc"), which is an American financial and commodity derivative exchange based in Chicago and founded in 1898 as the "Chicago Butter and Egg Board" (CME Group, 2014) ; ii) the International Securities Exchange (ISE), which operates a leading USA options exchange and offers options trading for over 2,000 underlying equity, ETF, index, and FX products (International Securities Exchange, 2014); iii) the Boston Options Exchange (BOX), which is an electronic equity options market co-owned by seven broker-dealers and the TMX Group (Boston Options Exchange, 2014); and iv) the Chicago Board Options Exchange (CBOE), which is the largest options exchange in the world (Chicago Board Options Exchange, 2014). In addition to exchange-traded funds, index and equity options, the CBOE also features proprietary options offerings, including the CBOE Volatility Index (VIX), a global benchmark for market volatility, and also the S&P 500 (SPX), an American index producing the highest volume of trades (Chicago Board Options Exchange, 2014).

In the history of the USA stock market, there are some USA stock exchanges that did not survive. These include: i) the US Futures Exchange (USFE), which was an electronic futures market that barely survived a few years of operation (Stock Exchanges around the World, 2014). Although approval for the exchange was awarded in 2004, USFE did not launch until first-quarter 2007, and subsequently terminated all operations in December 2008; and ii) the Boston Equities Exchange (BeX), which was a short-lived regional exchange launched by the Boston Stock Exchange with backing from Wall Street (Stock Exchanges Around the World, 2014). Below is a detailed account of the origin and expansion of the three major stock exchanges in the USA.

### ***New York Stock Exchange Euronext (NYSE:NYX)***

The biggest stock exchange in the USA and the world's largest equities platform is the New York Stock Exchange Euronext, Inc. (NYSE:NYX). The aggregate market capitalisation of its listed issuers is greater than that of issuers listed on the next four largest exchanges combined (New York Stock Exchange Euronext “NYSE:NYX”, 2012). NYSE:NYX is a Euro-American multinational financial services corporation, (with headquarters in New York, USA and Paris, France). It operates multiple securities exchanges that include New York Stock Exchange, the world's largest cash equities market; NYSE Euronext, the Eurozone's largest cash equities market; NYSE Arca (formerly known as ArcaEx), a fully electronic exchange for growth-oriented enterprises; and NYSE Alternext, a Pan-European market designed specifically for emerging companies (NYSE:NYX, 2012).

NYSE:NYX has its origin in the Buttonwood Agreement that was signed on 17 May 1792 (NYSE:NYX, 2012). In 2007, the NYSE Group, Inc. merged with Euronext N.V. to form the New York Stock Exchange Euronext, headquartered in New York. According to NYSE:NYX (2012), the historic combination of NYSE Group and Euronext in 2007 marked a milestone for global financial markets as it brought together major market places across Europe and the United States with histories stretching back more than four centuries. The combination was by far the largest of its kind and the first to create a truly global marketplace group (NYSE:NYX, 2012). The

other NYSE Euronext New York Exchanges are NYSE Arca, NYSE Amex and ArcaEdge. NYSE Euronext is fully computerised (NYSE:NYX, 2012).

***The NASDAQ OMX Group, Inc. (NASDAQ: NDAQ)***

The NASDAQ OMX Group, Inc. (NASDAQ: NDAQ) is an American multinational financial services corporation that owns and operates the NASDAQ stock market in the USA. It has its headquarters in New York.

In 2006, NASDAQ completed its separation from the NASD and began to operate as a national securities exchange. In 2007, NASDAQ combined with the Scandinavian exchange group, OMX, and officially became the NASDAQ OMX Group, further demonstrating commitment to technology and innovation across global markets (NASDAQ OMX, 2012). In the same year, NASDAQ OMX acquired the Boston Stock Exchange (NASDAQ OMX, 2012). In 2008, NASDAQ OMX acquired: i) the Philadelphia Stock Exchange; ii) the Philadelphia Board of Trade, known today as NASDAQ OMX Futures Exchange; and iii) Chicago-based Bloom Partners, a leading market intelligence firm. In the same year, it also created NASDAQ Last Sale, the first USA stock exchange to facilitate free, universal access to real-time stock data (NASDAQ OMX, 2012).

In 2010 NASDAQ OMX acquired the SMARTS Group, the world-leading technology provider of market surveillance solutions to exchanges and regulators. It also acquired FTEN, which is a leading provider of Real-Time Risk Management solutions for the financial securities market, thereby enabling broker-dealers to manage risk and improve the investment process (NASDAQ OMX, 2012).

According to NASDAQ OMX (2012), the NASDAQ OMX Group currently owns and operates 24 markets, 3 clearing houses, and 5 central securities depositories, spanning six continents. Eighteen of the 24 markets trade equities. The other six trade options, derivatives, fixed income, and commodities. NASDAQ OMX is a public company listed on the NASDAQ Global Select Market (NDAQ) and has been part of the S&P 500 since 2008 (NASDAQ OMX, 2012).

### ***Chicago Stock Exchange (CHX)***

The Chicago Stock Exchange (CHX) was established in the city of Chicago (Chicago Stock Exchange, 2012). In 1949, the CHX merged with the exchanges of Cleveland, St. Louis and Minneapolis to form an exchange called the Midwest Stock Exchange (Chicago Stock Exchange, 2012). In 1959, the New Orleans Stock Exchange joined the Midwest Stock Exchange (Chicago Stock Exchange, 2012). In the 1990s, the Exchange underwent a transformation which included a name change to Chicago Stock Exchange in 1993 (Chicago Stock Exchange, 2012).

All the stock exchanges in the USA are regulated by the US Securities and Exchange Commission, the SEC. The SEC has its origins in the Securities Act of 1933 which was passed after the Great Crash of 1929 (USA SEC, 2012).

#### **3.2.2.2 Stock Market Reforms in the USA**

In the aftermath of the stock market crash of 1929, and during the ensuing Great Depression, the USA saw the need for reforming its stock market. As part of the ensuing reform process, the Securities Act of 1933 was passed. The objectives of the Act were to prohibit deceit, misrepresentations, and other forms of fraud in the sale of securities, as well as to ensure that investors receive financial and other significant information concerning securities being offered for public sale. This Act was the first example of major federal legislation to regulate the offer and sale of securities (US SEC, 2012).

The Securities Exchange Act of 1934 was enacted in order to empower the SEC with broad authority over all aspects of the securities industry (US SEC, 2012). In 1940, the Investment Company Act was passed to regulate the organisation of companies in order to minimise conflicts of interest that arise in complex operations within the stock market (US SEC, 2012).

In 1977, the Foreign Corrupt Practices Act (FCPA) was enacted, generally prohibiting the payment of bribes to foreign officials for obtaining or retaining business (US SEC, 2012). The FCPA can apply to prohibited conduct anywhere in the world and extends to publicly traded companies and their officers, directors, employees, stockholders,

and agents. FCPA enforcement continues to be a high priority area for the SEC's enforcement programme. From 2009 to 2012, the SEC recorded a total of 51 enforcement actions against FCPA violators (US SEC, 2012).

In the same year, in order to facilitate the establishment of a national system for the clearance and settlement of equities and securities transactions, the SEC adopted rules applicable to transfer agents. The rules were intended: i) to ensure that registered transfer agents perform functions in a prompt and secure manner; ii) to provide early warning of inadequate transfer agent performance; iii) to apply limitations on the expansion of transfer agent activities when these agents are unable to meet the performance-time standards; iv) to ensure prompt response to enquiries concerning the status of items presented for transfer; and v) to require the maintenance and preservation of certain records necessary to monitor compliance with the proposed rules (US SEC, 2012).

In 1983, in order to further the national system for the clearance and settlement of securities transactions under the Securities Exchange Act of 1934 and to ensure the prompt and accurate clearance and settlement of such transactions, the SEC adopted a number of rules that amongst others required registered transfer agents: i) to maintain certain information concerning security holder records; ii) to maintain current and accurate security holder records; iii) to post promptly all transfers, purchases and redemptions to those security holder records and to notify their appropriate regulatory agency if they were unable to do so; iv) to exercise diligent and continuous attention in resolving record inaccuracies; v) to disclose directly to the issuers for whom they perform transfer agent functions and to their appropriate regulatory agency information regarding record inaccuracies; and vi) to buy-in certain record inaccuracies that result in a physical over-issuance of securities (USA SEC, 2012).

In 1993 the SEC adopted additional revisions to its rules and forms to facilitate financing by small business issuers under the Securities Act of 1933 and to ensure their compliance with the reporting requirements under the Securities Exchange Act of 1934. A year later, in 1994, the SEC announced the implementation of Financial Data Schedules required to be furnished in connection with certain electronic filings

processed by the Divisions of Corporation Finance or Investment Management that are submitted on the Electronic Data Gathering, Analysis, and Retrieval ("EDGAR") system (US SEC, 2012). In the third quarter of the same year, the SEC passed quite a number of rules in a bid to improve the US financial markets in general. Some of these rules applied specifically to the stock market. They included rules related to i) Recordkeeping and Reporting Requirements for Trading Systems Operated by Broker-Dealers; ii) Self-Regulatory Organisations; iii) Adoption of Updated EDGAR Filer Manuals; iv) Exemptive Relief and Simplification of Filing Requirements for Debt Securities to be Listed on a National Securities Exchange and v) Amendments to Proxy Rules for Registered Investment Companies (US SEC, 2012).

In 1995, the SEC passed rules that allowed the self-regulatory organisations to establish a formal, two-part continuing education programme for securities industry professionals. This programme included a Regulatory Element requiring uniform, periodic training in regulatory matters and also a Firm Element requiring members to maintain on-going programmes to keep their registered persons up-to-date on job and product-related subjects (US SEC, 2012). In 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Pub.L. 111-203, H.R. 4173) was passed following the recession of the late-2000s. The legislation gave regulators important tools to better oversee the world's most dynamic markets and helped reduce the chance that a similar crisis could occur in the future (US SEC, 2012).

As the US stock market developed over the years, open outcry trading was replaced by floor trading, which in turn was overtaken by an electronic trading system. NASDAQ is fully electronic while NYSE, though electronic, sometimes conducts part of its trade through floor trading.

### **3.2.2.3 Stock Market Growth and Economic Growth in the USA**

Before the global economic meltdown of the late 2000s, the USA suffered three major stock market crashes, one in 1929, one in 1987 and the other in 2000. Each crash was followed by the introduction of some stock market rules and/or other activities aimed at improving the regulatory framework and triggering the growth of the market.

The stock market reacted positively to some of the reforms introduced and not so positively to others. However, the USA stock market continued to grow. Between 2003 and 2012, the number of new listings on the NYSE increased from 50 in 2003 to 80 in 2005 and to 148 in 2007. In 2008, it decreased to 131 but increased to 285 in 2011, before declining to 187 in 2012 (NYSE, 2012). Although fewer IPOs were registered in 2008 compared to the IPO numbers in 2007, 2011 and 2012, the NYSE raised more IPO proceeds than any other major exchange anywhere in the world (NYSE, 2012).

In 2008, the NYSE raised \$26 billion in IPO proceeds, representing 21% of IPO capital raised on a global basis, owing to listing some of the largest, most recognised companies (one raised \$17.86 billion/€11.5 billion while the other raised \$2.42 billion/€1.566 billion). Although both USA's and global IPO activity fell sharply from the previous year (2011) due to challenging market conditions, NYSE Euronext raised the most IPO proceeds worldwide for the 5th consecutive year, according to NYSE (2012). In 2008, NYSE Euronext raised approximately \$45 billion; followed by Hong Kong which raised \$12 billion (NYSE, 2012). The annual share volume maintained an increasing trend between 2001 and 2005, increasing from 308 billion shares in 2001 to 363 billion in 2002 and then to 367 billion in 2004 – and to 404 billion in 2005 (NYSE, 2012).

NASDAQ had 2852 listed companies in 2009 and 2778 in 2010. The number of domestic listed companies in the USA also shows the growth of the US stock market. In 1988, there were 6689 domestic companies listed. The number increased over the years, reaching a peak of 8851 in 1997, before gradually declining over the years, to 4171 in 2011. Table 3.3 shows the number of listed domestic companies in the USA during the period 1988 - 2011 (World Bank, 2012a).

**Table 3.3: Number of Listed Domestic Companies in the USA (1988-2011)**

| Indicator                 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Listed Domestic Companies | 6680 | 6727 | 6599 | 6742 | 6699 | 7246 | 7692 | 7671 | 8479 | 8851 | 8450 | 7651 |
| Indicator                 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| Listed Domestic Companies | 7524 | 6355 | 5685 | 5295 | 5231 | 5143 | 5133 | 5130 | 5603 | 4401 | 4279 | 4171 |

Source: World Bank Development Indicators (2012a)

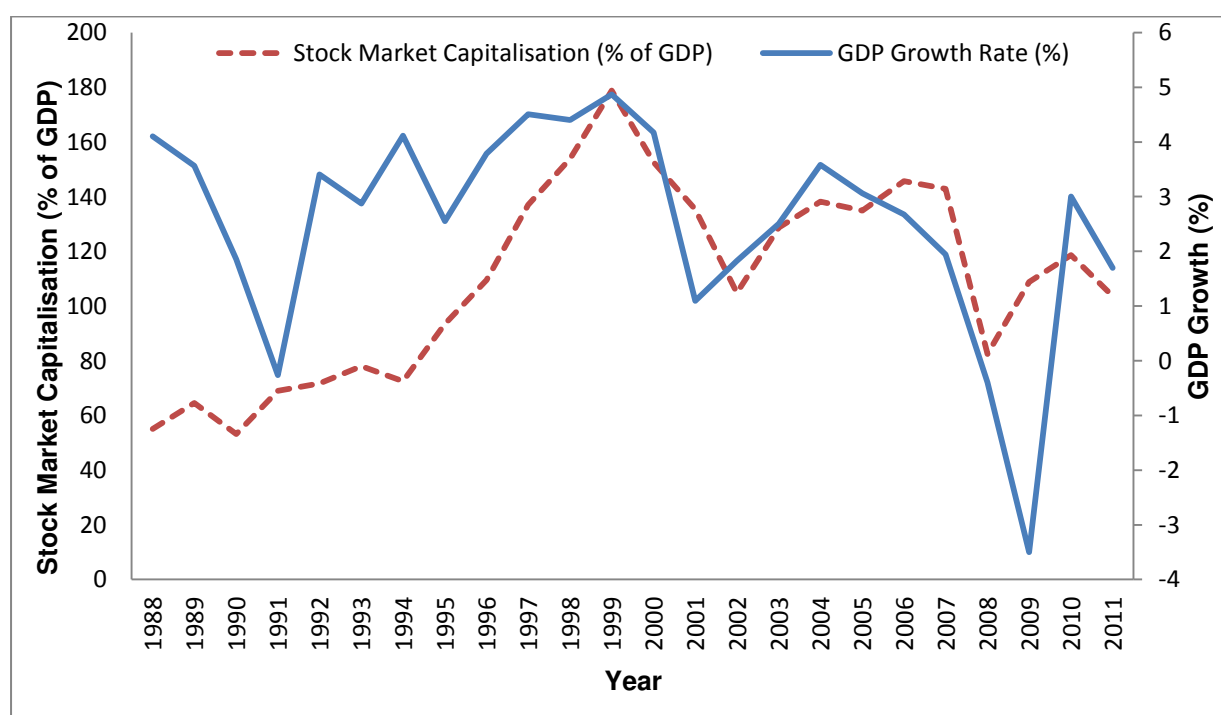
The growth of the USA stock market can also be explained by stock market capitalisation of listed companies, and also total value and turnover ratio of stocks traded. The stock market size of the USA, as measured by stock market capitalisation expressed as percentage of GDP, was growing at a slow pace between 1988 and 1994, only to increase growth momentum between 1995 and 1999. Market growth reached its peak in 1999, registering a market capitalisation of 178.9%. However, in the year that followed, the stock market size dwindled sharply, only to improve after 2002, although it failed to reach its 1999 size. In 2007, the USA stock market suffered another blow which saw the market capitalisation tumbling, reaching a low of 80% in 2008. Since then, the market has never fully recovered from the aftermath of the late 2000s financial crisis (World Bank, 2012a).

In terms of market liquidity, as measured by total value traded/GDP and turnover ratio, the USA had a less liquid stock market until 1995 – although it was relatively more liquid than other countries' stock markets during the same period. The total value of stocks traded improved from almost 70% of GDP in 1995 to 150.4% in 1998 to 321.9% in the year 2000, before decreasing in the subsequent years, and registering a low of 140% in 2003. Thereafter, the total value of stocks traded on the USA stock market increased, reaching a peak of 420.2% in 2008, then sharply declined soon afterwards to 210.8% in 2010 and further down to 203.7% in 2011. Thus, the overall trend depicted by the total value of stocks traded is that of two peaks, one higher than the other, during the late 1990s and the early 2000s and the other during the late 2000s, with a deep wide trough between the peaks. The turnover ratio depicted the same trend as that of total value of stocks traded (World Bank, 2012a).



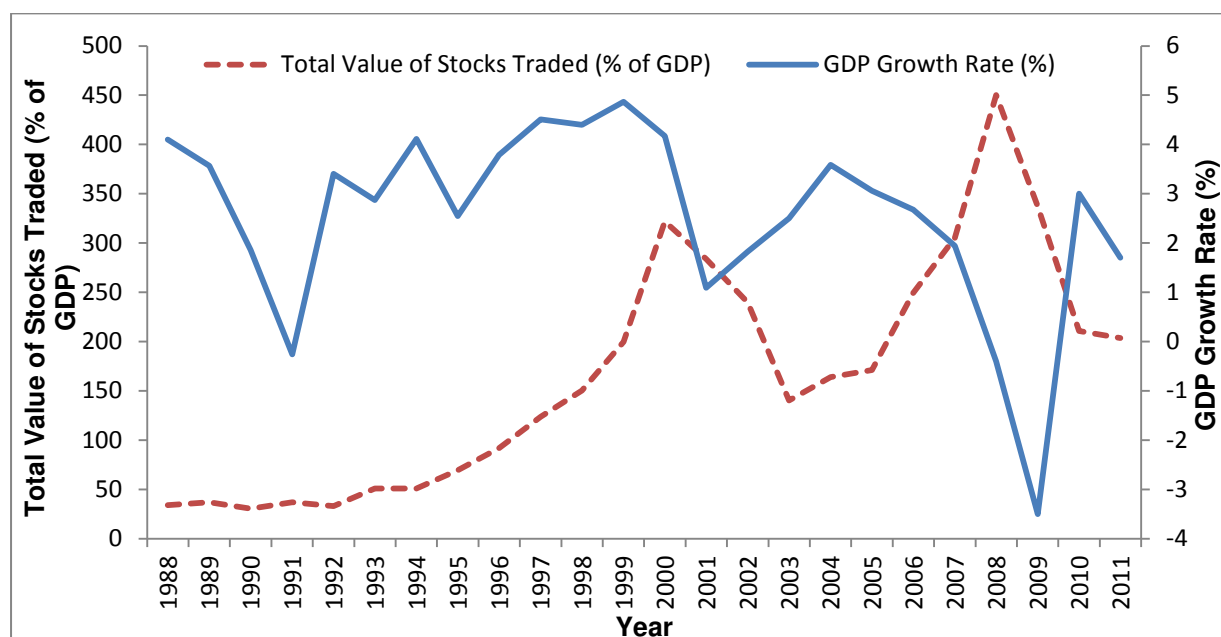
In terms of economic growth, the USA's performance displayed no distinguished pattern. It fluctuated from one decade to another, recording an average of 3.7% growth between 1975 and 1979; 3.0% in the 1980s; 3.2% in the 1990s; 1.7% in the 2000s – and 2.4% between 2010 and 2011. Per capita GDP growth followed an upward trend between 1975 and 2011 (World Bank, 2012a). Per capita GDP in the USA increased over the years. Historically, from 1975 until 2011, America's GDP per capita averaged US\$26954.92, reaching an all-time high of US\$48442.00 in 2011 and a record low of US\$7516.68 in 1975 (World Bank, 2012a). Figures 3.2 - 3.4 track the performance and growth of the American stock market, and economy during the period 1988 - 2011.

**Figure 3.2: Trends in Stock Market Capitalisation and Economic Growth in the USA (1988-2011)**



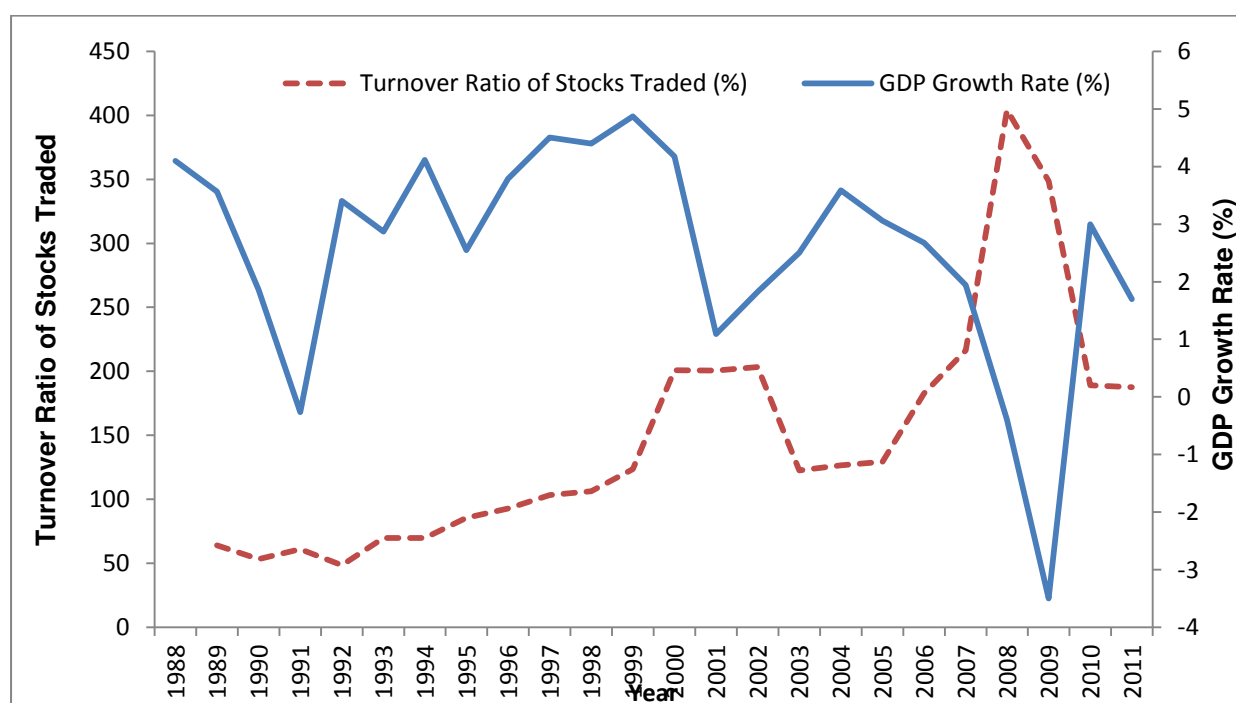
Source: World Bank Development Indicators (2012a)

**Figure 3.3: Trends in Total Value of Stocks Traded and Economic Growth in the USA (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 3.4: Trends in Turnover Ratio of Stocks Traded and Economic Growth in the USA (1988-2011)**



Source: World Bank Development Indicators (2012a)

#### **3.2.2.4 Challenges Facing Stock Market Development in the USA**

Although the US stock market enjoys the title of being one of the biggest stock markets in the world, it has its challenges. These include the following: the Eurozone contagion; the undesirable consequences of recent stimulus spending; regulation challenges exacerbated by the changing stock market landscape, and the slow pace of economic growth in the USA.

Continuing deficit problems in the European Union (EU) pose challenges to the US stock market. The economic situation in Europe has been unsettled for the better part of two years, with pressure on sovereign debt markets and local banking systems. High debts, large deficits and slow growth in several European countries have called into question the sustainability of the entire Euro area. Although it appears that the EU countries are doing a lot to steer the ship in the right direction, there is much more to be done and there could be additional problems and setbacks (New York Fed, 2012b). The resulting strains in European markets have affected the USA economy adversely. Severe stresses in European financial markets disrupt financial markets in the USA, leading to USA stock market volatility (New York Fed, 2012b).

In the USA, stimulus spending, although it contributed to improving the economic stability, had undesirable consequences for the stock market. Since the collapse of Lehman Brothers, the US Federal Reserve has lowered interest rates to the zero-bound and undertaken unprecedented monetary accommodation measures. It has leveraged its balance sheet to become an effective lender, insurer, and buyer of last resort for the American financial system. While these extraordinary measures have surely contributed to stabilising the global financial markets, they have also had several undesirable consequences. The Fed's balance sheet has tripled since late-2008 and the world is awash with cheap liquidity. Instead of helping drive investments and boost aggregate demand, this liquidity has flown into the stock markets and amplified market volatility (New York Fed, 2012b).

The US stock market faces regulation challenges exacerbated by the changing stock market landscape. Some of the latest challenges facing the US stock market regulators include today's stock markets that are bigger, more volatile, more complex

and more technically advanced on the one hand, but with limited resources and increasing regulatory demands on the other hand (USA SEC, 2012).

As with any other stock market around the globe, there is a lack of public awareness, and hence limited public participation. Most members of the public are reluctant to engage in securities purchases or trading because they have limited understanding of stock market operations. Most schools and universities in the economy do not have courses related to stock markets. Accordingly, people who invest their funds in these markets are either professionals or self-educated. The capital market, therefore, fails to attract a large number of potential investors.

The slowness of the economic pace in the USA has also posed a challenge to the recovery of the stock market. It has dampened the appetite for new listings. In addition, the economic growth impasse and uncertainty abroad (for example, in the EU) has heightened anxiety on global markets, including the USA stock market (New York Fed, 2012b). However, despite these challenges, the USA stock market remains one of the global stock market leaders.

### **3.3 Financial Development in the United Kingdom (UK)**

The financial system plays a very important role in the functioning of the economy in the United Kingdom (UK). A multitude of financial transactions are handled through the system on a daily basis (Bank of England, 2012a). The Bank of England ensures that the financial system is safe and is functioning well (Bank of England, 2012a).

Both the bank-based and the market-based segments of the UK's financial system are well developed. However, the securities markets share centre stage with banks in propelling economic growth, hence UK financial system is referred to as "market-based financial system" (Demirguc-Kunt and Levine, 2001; European Central Bank, 2002).

### **3.3.1 Bank-Based Financial Development in the UK**

This section discusses the banking segment in detail and is organised as follows: Section 3.3.1.1 gives an overview of the UK's banking sector while Section 3.3.1.2 traces the bank-based financial sector reforms. Section 3.3.1.3 discusses trends in both banking sector growth and economic growth in the UK. Finally, Section 3.3.1.4 highlights the challenges facing bank-based financial development in the UK.

#### **3.3.1.1 Overview of the UK's Bank-Based Financial System**

##### ***Origin of the Central Bank of the UK (Bank of England)***

The Bank of England (BoE/the Bank), founded in 1694, is the central bank of the UK. Its role is to promote and maintain monetary and financial stability so as to ensure a healthy economy (Bank of England, 2012a). Although the Bank of England was established as the Government's banker and debt-manager, its role developed over time to include a focus on the management and oversight of the economy's currency (Bank of England, 2012a).

Public finances were weak when King William and Queen Mary came to the throne in 1688, thereby creating a need for a bank, which was then established in 1694 (Bank of England, 2012b). The role of the Bank was to manage the accounts of the Government and to make loans which were used to fund expenditure in times of peace and war. However, the Bank became lender of last resort during the 19<sup>th</sup> Century and provided stability in times of several financial crises.

The Bank of England was nationalised in 1946, although it remained the Treasury's adviser and debt manager (Bank of England, 2012a). The Bank was granted operational independence in 1997 (Bank of England, 2012a).

The Bank's main purposes include the maintenance of a stable and efficient monetary and financial framework (Bank of England, 2012a). In achieving its first core purpose of monetary stability, the Bank has the following strategic priorities: i) keeping inflation on track to meet the Government's 2% target; and ii) ensuring that the Bank has the

policies, tools and infrastructure in place to implement monetary policy and to issue banknotes.

To achieve the second core purpose of financial stability, the Bank has the following strategic priorities: i) to maintain stability and improve the resilience of the financial system; ii) to deliver macro-prudential policy, operating through the Financial Policy Committee and iii) to complete the transition of micro-prudential supervision and infrastructure oversight (Bank of England, 2012a).

### ***Overview of the Banking Sector in the United Kingdom***

The UK banking sector is governed by, among other pieces of legislation, the Bank of England Act 1694; the Charter of the Bank of England 1694; the Bank Charter Act 1844; the Bank of England Act 1946; the Charter of the Bank of England 1998; the Bank of England Act 1998; the Banking Act 2009; and various Orders (Bank of England, 2012a).

In Accenture's (2012) view, the banking sector in the United Kingdom is unique in its size, breadth and diversity. The UK, and not just London, is home to both a large domestic banking industry and to a large international industry. The domestic sector is predominantly centred on personal and corporate lending, whereas the international sector helps to enable the functioning of global capital markets and provides investment management services from the UK to corporations, governments and individuals around the world (Accenture, 2012).

According to the Bank of England (2010), services offered by banks increased during the 18<sup>th</sup> Century. In the 19<sup>th</sup> Century, a new joint stock bank was formed, followed by other financial institutions (Bank of England, 2012a). The collapse of two banking institutions in 1866 and in 1878 caused significant reputational damage. However, as a result, accounting and record keeping improved. In 1896, twenty small private banks came together to form a new joint-stock bank (Bank of England, 2012a).

With the outbreak of war in the 20<sup>th</sup> Century, banking flourished and a series of takeovers and mergers commenced (Bank of England 2010: 323). According to

Silicon Valley Bank (2008), to date, the UK has a mature, competitive and efficient banking market comprised of domestic and foreign banks, building societies and credit unions. There are four major domestic banks that provide a full range of banking services to corporate clients (Silicon Valley Bank, 2008). The major UK banks are direct participants in the clearing systems and have a nationwide branch network. This allows companies to hold one account and make deposit and withdrawals from any branch. Being direct participants in all the clearings, the major UK banks have a dominant share in processing payments by cash, cheques and electronic payments. It is common for foreign banks to engage the clearing services of UK banks to offer domestic cash management services to their clients (Silicon Valley Bank, 2008).

According to IMF (2011), the UK financial sector is large, with bank balance sheets amounting to approximately five times GDP. Leading UK banks are among the most complex in the world and London is a premier financial centre. Some major banks have more of a focus on retail and business banking, while others have material wholesale and capital markets' businesses on a global scale. In addition to the six main banks and building societies, there are important foreign banks (both commercial and investment banks) and some 180 smaller banks and building societies (IMF, 2011).

In IMF's (2011) view, the late 2000s financial crisis has materially affected the structure of the UK banking sector. The UK banks faced losses from structured products and off-balance sheet vehicles to a degree, but also from asset quality problems in mortgages and business lending, as a result of previous high growth, coupled with over-reliance, in some cases, on short-term wholesale funding (IMF, 2011). Certain banks and building societies had strategic concentrations that led to asset quality problems, such as concentrations in commercial real estate. Mergers of banks were already occurring prior to the crisis, and subsequent mergers occurred as part of attempts to resolve specific problems. Concentration in the banking sector has, therefore, increased. The five largest banks, the largest building society, and the largest foreign bank together account for close to 90% of retail deposits (IMF, 2011).

A number of medium-sized banks and building societies failed during the crisis, and two large banks required material injections of public money (IMF, 2011). The authorities have conducted major stress tests of a range of banks as part of the response to the crisis and to determine recapitalisation needs. The United Kingdom has also participated in European stress tests (IMF, 2011).

The British Bankers' Association (BBA) is part of the UK banking sector landscape. It is the leading trade association for the UK banking and financial services sector. The objective of BBA is to influence decision-making through the promotion of a legislative and regulatory system for banking and financial services in the UK, Europe and internationally. This system takes account of the association's members' needs and concerns – and also provides an effective and competitive market place in which their businesses can prosper (British Bankers' Association, 2012). The BBA also promotes and defends the industry by engaging with government, devolved administrations and Europe, as well as the media and other key stakeholders to ensure that the industry's voice is heard and to highlight the strength and importance of UK banking (British Bankers' Association, 2012).

### **3.3.1.2 Bank-Based Financial Reforms in the UK**

The banking crisis of 1824/25 triggered a series of reforms in the United Kingdom's financial sector. This allowed banks to be incorporated as joint stock companies (Bank of England, 2010). In 1971, the Bank of England introduced competition and credit control, with the objective of promoting competition within the banking sector (Bank of England, 2010). According to Cameron (1998), the reforms in the financial sector enhanced the relative competitiveness of banks, as they continued to face pressure from non-bank financial institutions.

In 2000, deposit insurance was introduced in the UK, under the name: Financial Services Compensation Scheme (FSCS). The FSCS is the UK's statutory fund of last resort for customers of financial services firms. This means that FSCS can pay compensation to consumers if a financial services firm is unable, or likely to be unable, to pay claims against it. The FSCS is an independent body, set up under the Financial Services & Markets Act 2000 (FSMA). The FSCS compensates 100% of the first



£85,000 per person per firm (for claims against firms declared in default from 31 December 2010) (Financial Services Compensation Scheme, 2012).

In IMF's (2011) view, the global financial crisis of the late 2000s triggered further bank-based financial sector reforms. The UK framework for crisis management and safety nets has evolved rapidly since the start of the crisis. The failure of some of its significant banks exposed significant gaps in the legal framework for bank resolution, prompting an emergency response in the form of the Banking (Special Provisions) Act of 2008. Consequently, the UK authorities had to take decisive policy actions to ensure the stability of the financial system (IMF, 2011).

When the Bank of England acted as a lender of last resort to one of its failing banks in September 2007, Parliament passed emergency legislation in the form of the Banking (Special Provisions) Act in February 2008. It provided resolution tools – that were later enacted permanently in the 2009 Banking Act – to facilitate the resolution of failing banks.

In April of the same year, the Bank of England, in coordination with HM Treasury and the Debt Management Office, launched the Special Liquidity Scheme (SLS), which allowed swaps between building societies and banks (for up to three years) of high-quality, mortgage-backed, securities for UK Treasury Bills (IMF, 2011).

In October 2008, at the height of the crisis, the UK authorities took several measures, which included: i) raising the guarantee on bank deposits from £35,000 to £50,000; ii) launching the Government Recapitalisation Scheme, wherein the government made capital investments in some banks in order to help increase their Tier 1 capital and strengthen their finances – a holding company called the UK Financial Investments Limited was set up to manage investments in these banks; and iii) launching the Credit Guarantee Scheme, under which the government would guarantee new issuances of short-term or medium-term debt securities by eligible institutions in order to help refinance their funding obligations (Financial Services Compensation Scheme, 2012).

In January 2009, the UK Government introduced two other facilities. The first was an Asset Protection Scheme to insure/guarantee participating banks' toxic assets. The second was an Asset Purchase Facility in which the Bank of England would buy high-quality assets, financed by the issue of Treasury Bills and the Debt Management Office's cash-management operations (Bank of England, 2010). Under the programme, the central bank would purchase assets (UK Government Bonds and high-quality debt issued by private companies) from private sector institutions such as insurance companies, pension funds, banks or non-financial firms. In 2009, the Monetary Policy Committee began a programme of asset purchases for monetary policy purposes (quantitative easing) under the Asset Purchase Facility (IMF, 2011).

In February 2009, the Banking Act 2009 was passed. The Act established a permanent regime for the resolution of distressed banks and building societies. The Special Resolution Regime provided the Bank of England and the HM Treasury with resolution tools involving mandatory transfers of property and forced changes to capital structure pre-insolvency (IMF, 2011). The Act also modified the arrangements for the liquidation and administration of insolvent banks and building societies. Also noteworthy are the provisions of Part 5 of the Act, which enhanced the Bank of England's role in payment system oversight. The resolution regime was used successfully in the resolution of a moderate sized building society in 2009 (Bank of England, 2012a).

In June 2010, the Independent Commission on Banking, "the Vickers Commission", was established in the UK so as to consider structural and related non-structural reforms to the UK banking sector for the promotion of financial stability and competition. It was established following the global financial crisis which began in 2007. The Commission made its recommendations to the UK Government on 12 September 2011. According to the HM Treasury (2012), its headline recommendation was that British banks should 'ring-fence' their retail banking divisions from their investment banking arms to safeguard against riskier banking activities. The Commission also made a number of other recommendations on bank capital requirements and competition in retail banking (HM Treasury, 2012).

On 12 October 2012, the UK Government published the draft Financial Services (Banking Reform) Bill to implement the recommendations of the Independent Commission on Banking (the September 2011 recommendations by the Vickers Commission). According to the HM Treasury (2012), the draft Bill is the first step in the legislative process towards a more resilient, stable and competitive banking sector. The Government remains on track to have all legislation enacted by the end of the current Parliamentary session (2015) and reforms will be in place by 2019. The legislation will now be scrutinised by the Commission on Banking Standards, prior to its formal introduction into Parliament (HM Treasury, 2012).

### **3.3.1.3 Banking Sector Growth and Economic Growth in the UK**

The growth of the UK banking sector can be explained by the number of banks operating within the sector over the years. In the 1950s, there were about 100 banks operating in the UK (Bank of England, 2010). However, only 16 of them together held 85% of total UK banking assets.

The 1960s and the 1970s marked the commencement of foreign-owned banks' activities in the UK banking sector (Davies, 2002). Presently, there are more than 300 banks and building societies operating in the United Kingdom. However, there is a high concentration of retail banking services as evidenced by the fact that four big banking groups hold almost 80% of the stock of UK customer lending and deposits (Bank of England, 2010). Table 3.4 shows the growth of banks in the UK during the period 2001 - 2012.

**Table 3.4: Number of Banks in the UK (2001-2012)**

| <b>Year</b> | <b>Banks incorporated in the United Kingdom</b> | <b>Banks incorporated outside the EEA authorised to accept deposits through a branch in the UK</b> | <b>Banks incorporated in the EEA entitled to accept deposits through a branch in the UK</b> | <b>Banks authorised in the EEA entitled to establish branches in the UK but not to accept deposits in the UK</b> | <b>Total</b> |
|-------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------|
| 2001        | 185                                             | 104                                                                                                | 94                                                                                          | 20                                                                                                               | 403          |
| 2002        | 184                                             | 104                                                                                                | 91                                                                                          | 16                                                                                                               | 395          |
| 2003        | 171                                             | 93                                                                                                 | 90                                                                                          | 22                                                                                                               | 376          |
| 2004        | 173                                             | 89                                                                                                 | 88                                                                                          | 25                                                                                                               | 375          |
| 2005        | 157                                             | 75                                                                                                 | 91                                                                                          | 25                                                                                                               | 348          |
| 2006        | 160                                             | 81                                                                                                 | 95                                                                                          | 24                                                                                                               | 360          |
| 2007        | 159                                             | 83                                                                                                 | 99                                                                                          | 21                                                                                                               | 362          |
| 2008        | 155                                             | 83                                                                                                 | 88                                                                                          | 21                                                                                                               | 347          |
| 2009        | 154                                             | 81                                                                                                 | 96                                                                                          | 21                                                                                                               | 352          |
| 2010        | 154                                             | 80                                                                                                 | 79                                                                                          | 22                                                                                                               | 335          |
| 2011        | 155                                             | 79                                                                                                 | 82                                                                                          | 30                                                                                                               | 346          |
| 2012        | 156                                             | 80                                                                                                 | 81                                                                                          | 30                                                                                                               | 347          |

Source: Financial Services Authority (2012)

Note: There is no definition of a 'bank' in the Financial Services and Markets Act 2000. The above is the number of regulated firms which businesses and the public would think of as banks, similar to that which the Bank of England (until May 1998) and the FSA (from June 1998 until November 2001) used to publish under the Banking Act 1987.

The number of banks shows an expansion of the banking sector from around 100 banks in the 1950s to a total of 403 banking institutions in the year 2001. However, from 2001, the number of banks began to decrease gradually, due to acquisitions, amongst other factors. In the late 2000s, there was a sharp decrease in the number of banks operating in the UK banking sector. This was because of bank failure triggered by the global financial crisis of the late 2000s. By 2012, the number of banks in the UK banking sector stood at 347 (Financial Services Authority, 2012). According to the Bank of England (2011), in the decade before the financial crisis, the UK financial services sector grew more than twice as fast as the UK economy as a whole. Measured output growth in the UK financial services sector averaged over 6% per year, compared with an overall UK GDP growth of 3% per year. The sector's share of the economy also grew significantly – more so than in most other major advanced economies (Bank of England, 2011).

The growth of the UK banking sector is also evidenced by growth in private sector credit extension. In 1975, credit provided by financial institutions to the private sector was 50% of GDP. However, this decreased slightly during the late 1970s and slightly increased during the early 1980s, creating a shallow trough between 1975 and 1984. During the mid-1980s, credit extension to the private sector improved remarkably, reaching 115.2% of GDP in 1991. Thereafter, the extension of credit to the private sector continued to increase at a modest rate, reaching a peak of 229.2% in 2009, only to decline to 222.6% in 2010 and still further down to 213.8% in 2011. Although credit provided to the private sector has declined in the past few years, due to the aftermath of the global financial crisis, it remains very much higher than that of developing countries and of other developed economies (World Bank, 2012a).

The UK's non-performing loans, though generally low, have been on the increase since 2008. Credit information is easily available to both consumers and banking institutions. Both consumers and institutions have strong legal rights. Table 3.5 shows some of the banking indicators pointing to the development of the UK's banking sector.

**Table 3.5: Growth of Banking Sector in the UK (2000 – 2011)**

| <b>Year</b> | <b>Domestic Credit Extension to Private Sector (% of GDP)</b> | <b>Bank Non-performing Loans to Total Gross Loans (%)</b> | <b>Credit Depth of Information Index (0=low to 6=high)</b> | <b>Strength of Legal Rights Index (0=weak to 10=strong)</b> |
|-------------|---------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------|
| 2000        | 130.12                                                        | 2.5                                                       | -                                                          | -                                                           |
| 2001        | 135.74                                                        | 2.6                                                       | -                                                          | -                                                           |
| 2002        | 140.76                                                        | 2.6                                                       | -                                                          | -                                                           |
| 2003        | 144.87                                                        | 2.5                                                       | -                                                          | -                                                           |
| 2004        | 153.24                                                        | 1.9                                                       | 6                                                          | 10                                                          |
| 2005        | 161.91                                                        | 1                                                         | 6                                                          | 10                                                          |
| 2006        | 171.94                                                        | 0.9                                                       | 6                                                          | 10                                                          |
| 2007        | 188.44                                                        | 0.9                                                       | 6                                                          | 10                                                          |
| 2008        | 213.50                                                        | 1.6                                                       | 6                                                          | 10                                                          |
| 2009        | 229.20                                                        | 3.5                                                       | 6                                                          | 10                                                          |
| 2010        | 222.60                                                        | 4                                                         | 6                                                          | 10                                                          |
| 2011        | 213.80                                                        | -                                                         | 6                                                          | 10                                                          |

Source: World Bank Development Indicators (2012a)

The growth of the UK banking sector can also be depicted by the increasing number of Automated Teller Machines (ATMs). Technological innovations have transformed the UK financial sector landscape in the past decade by helping to extend financial services to millions of people. In 2010 there were close to 65 000 ATMs (from 34 000 in year 2000) of which slightly more than half were owned by banks and building societies, leaving the remainder under the ownership of independent deployers (Bank of England, 2010).

On the economic growth front, the UK is one of the most developed economies. Its Gross Domestic Product (GDP) expanded 1% in the 3rd quarter of 2012 over the previous quarter. According to the World Bank (2012a), historically, from 1955 until 2012, the UK GDP growth rate averaged 0.6%, reaching an all-time high of 5.3% in March 1973 and a record low of -2.5% in June 1958. As in the case of many other developed nations, the services sector is the most important sector of the economy and accounts for more than 75% of total GDP (World Bank, 2012a).

The UK economy has been weak in recent years following the recent recession with growth largely flat since 2010. The UK experienced a double dip recession which was

the longest and deepest in 50 years between the last quarter of 2011 and the second quarter of 2012. However, recent figures have shown that the UK economy has been improving, picking up again in Q3 2012, growing by 1.0% – the fastest rate of GDP growth since third quarter of 2007 (World Bank, 2012a).

The International Monetary Fund (IMF) downgraded its forecast for UK growth in 2012 by more than any other developed nation and warned that the world economy was weakening. According to IMF (2012d), the UK economy, which was then in recession, was to increase by 1.4% in 2013 – a 0.6 % cut from its previous 2% forecast. The big picture on growth is one of stagnation since late 2010. After turning negative in the last quarter of 2010, growth recovered modestly to 0.7% in 2011 before declining again by 0.3% in the first quarter of 2012, in line with renewed economic weakness in Europe. This broad stagnation has left output per capita a staggering 14% below its pre-crisis trend and 6% below its pre-crisis level (IMF, 2012d).

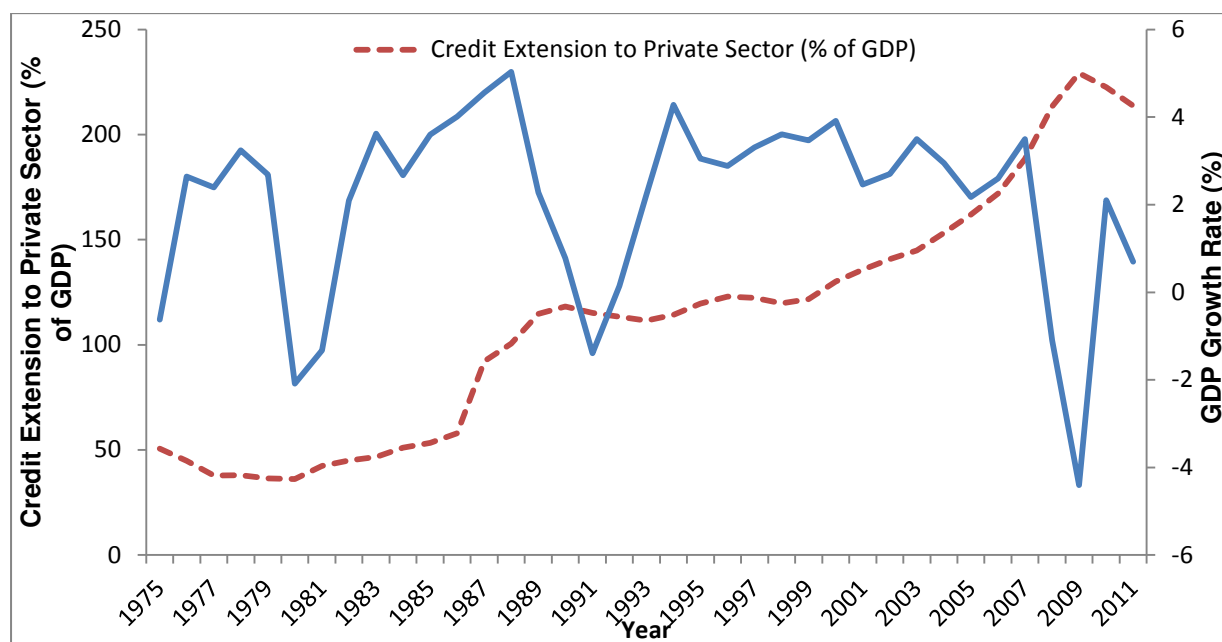
According to the IMF (2012d), weak growth has kept unemployment high at 8.2%. Relative to growth, however, labour markets have been surprisingly resilient, with fewer employment losses than in the aftermath of previous major UK recessions. This stark divergence between growth and employment has left labour productivity well below its pre-crisis trend (IMF, 2012d).

According to the IMF (2012d), leading up to the financial crisis, economic growth in the UK was brisk, led by consumption and fuelled by declining national savings and rising leverage. The IMF (2012d), further observed that with the household share of national income falling sharply, households reduced their saving and borrowed more to sustain both consumption growth and a housing bubble. Public finances entered the crisis with little policy space and deteriorated sharply when the crisis hit, with much of this deterioration in the fiscal position being structural, reflecting permanent revenue losses and a sharp drop in potential GDP growth during the crisis (IMF, 2012d).

Per capita GDP in the UK was US\$28032.79 in 2011 (World Bank, 2012a). Historically, from 1960 until 2011, the UK's GDP per capita averaged US\$18761.00, reaching an all-time high of US\$28928.90 in 2007 and a record low of US\$10479.70 in

1960 (World Bank, 2012a). Between 1975 and 2010, GDP per capita exhibited an upward trend in general, though with some fluctuations here and there. Figure 3.5 illustrates the trends in banking sector growth, as shown by credit extension to the private sector, and economic growth in the UK during the period 1975 - 2011.

**Figure 3.5: Trends in Banking Sector Growth and Economic Growth in the UK (1975-2011)**



Source: World Bank Development Indicators (2012a)

#### 3.3.1.4 Challenges Facing Bank-Based Financial Development in the UK

Although the public infrastructure supporting effective banking supervision is well-developed and business laws (including contract, bankruptcy and property law) are also well-developed and reliable, the UK banking sector still faces some challenges. These challenges include less than adequate disclosure standards, contagion risk from the Eurozone, squeezed interest margin and uncertainties caused by changes in regulatory regimes.

According to the IMF (2011), the UK banking sector disclosure is less than disclosure in other markets. Regular financial statement disclosures related to market risk, liquidity risk and credit concentrations, for example, appear to be less than in some other major markets. The FSA does not itself publish extracts from regulatory returns, although this is recommended. The FSA publishes an annual Financial Risk Outlook



(replaced – from 2011 – by a Prudential Risk Outlook and Conduct Risk Outlook); and the Bank of England publishes biannual financial stability reports. Despite these publications, overall, disclosure is less than that in other leading markets and the authorities are encouraged to review the adequacy of disclosure (IMF, 2011).

According to the IMF (2011: 6), oversight of investment banking activities, as well as of core market infrastructure, needs to be improved further in the new regulatory structure. The UK is a financial markets' hub and a major home and host country to bank and non-bank financial institutions. Oversight of investment banking and trading activities are a challenge, given the limitations to what the United Kingdom can do alone, particularly with respect to the institutions that it hosts, such as branches of foreign bank entities. Without intensive supervision of investment banks' risk-taking, the IMF (2011) is of the opinion that domestic and global financial stability cannot be assured. It is, therefore, critical that financial market infrastructure, including central counterparties, also maintain robust prudential and risk-management standards and that contingency plans are put in place to deal with potential failures (IMF, 2011).

### **3.3.2 Stock Market Development in the UK**

The UK is one of the first economies in the world to have a well-developed financial system. Although both the bank-based and the market-based segments of this system are well-developed in general, the latter segment is relatively more developed than the former. The UK economy is therefore generally referred to as a market-based financial system.

The following section discusses the UK's stock market in detail and is organised as follows: Section 3.3.2.1 covers the origin of the UK stock market while Section 3.3.2.2 outlines stock market reforms. Section 3.3.2.3 traces the trends in stock market growth as well as economic growth in the UK. Section 3.3.2.4 concludes by highlighting the challenges facing stock market development in the UK.

### **3.3.2.1 Origin of the Stock Market in the UK**

There are various exchanges in the UK that specialise in different trades, such as the London International Financial Futures and Options Exchange (LIFFE), a futures exchange based in London; the London Metal Exchange, an exchange for futures contracts and options on base and other metals; and the Baltic Exchange, a membership organisation at the heart of the global maritime market place providing independent daily shipping markets information and also maintaining professional ship-broking standards and resolving disputes. However, the London Stock Exchange (LSE) is the main stock exchange of the United Kingdom where stocks, bonds, and other financial instruments are sold on a day-to-day basis. The LSE utilises telecommunication and electronic resources to accept and execute trades. The Financial Times Stock Exchange (FTSE) 100 Share Index (or "Footsie") is the dominant index of the LSE. It has two equity markets, the Main Market and the Alternative Investment Market where international stocks are traded (LSE, 2012a).

The LSE was founded in 1801 and is located in London. The Exchange is part of the London Stock Exchange Group. Evidence of organised trading in securities, in the UK, dates back to as early as 1698. By 1761 150 stock brokers had organised themselves into a club to buy and sell shares (LSE, 2012a). In 1801 the club was formalised on a membership subscription basis, giving birth to the modern Stock Exchange. The exchange evolved over time to become what is known today as the London Stock Exchange (LSE, 2012a).

The LSE has the main market and a secondary market called the AIM. The Main Market, with about 1600 listed companies from 60 countries across the world, is for the listing and trading of equity, debt and other securities, while the AIM is the Exchange's international market for young and growing companies. By 2012, AIM had over 1,100 companies (LSE, 2012a).

The UK stock market is regulated by the Financial Services Authority (FSA), which sets the standards that the market must meet. It can take action against firms and stock exchanges for failure to meet set standards (FSA, 2012a).

### **3.3.2.2 Stock Market Reforms in the UK**

The UK stock market underwent various forms of reforms. The Big Bang of 1986, which saw the deregulation of the UK stock market, marked the commencement of a chain of serious reforms (Yadav and Pope, 1990; Peel *et al.*, 1993; Chambers, 2009). The deregulation took various forms that included the change from open-outcry to electronic trading and the abolition of fixed commission charges. The changes in stock market rules in 1986 were called the "Big Bang" as there was anticipation of hyperactivity following an aggregation of measures intended to ensure a complete alteration of the stock market's structure.

The stock market reforms also encompassed reform of the stock market regulatory landscape, leading to the formation of a single regulatory body for the financial sector, the Financial Services Authority, in 1997 (FSA, 1997). The Government's decision to establish a single regulator for the full range of financial business provided an important opportunity to enhance the regulatory system in ways which benefited firms, consumers and investors (FSA, 1997).

In 1999, the LSE launched the "Share Aware" campaign in London in order to encourage more people to consider equity investment. In the same year the LSE went ahead with demutualisation (LSE, 2012a). In 1999 the London Stock Exchange also announced the launch of a new market for technology companies – techMARK. The new market brought together London listed companies involved in leading edge technologies, thereby creating a central focus for investors. Streamlined rules provided a wider range of young, innovative growth companies with access to the UK equity market. The new market went live in November 1999, linking companies from across the main market. This was particularly beneficial to smaller companies which gained from the increased visibility of being grouped with their peers (LSE, 2012a).

By 2010, the Listing Regime had been reviewed with the purpose of ensuring greater clarity with regard to the regime's structure and of issuers' obligations. According to the United Kingdom Listing Authority ("UKLA", 2012), this was done so that investors could make more informed investment decisions, and to provide issuers with more appropriate flexibility in raising of capital. Changes to the Listing Regime (effective

from 6 April 2010) include the following: i) restructuring the regime into two segments, namely Premium and Standard, where Premium indicates the more stringent super-equivalent standards and Standard indicates European Union (EU) minimum standards. However, companies were able to migrate from one listing segment/category to another without the need for cancellation and relisting; ii) strengthening the corporate governance standards for overseas companies by requiring those with a Premium Listing of equity shares to 'comply or explain' against the UK Combined Code and to offer pre-emption rights; iii) requiring overseas companies with a Standard Listing of shares or global depository receipts (GDRs) to comply with the EU Company Reporting Directive which required them, amongst other things, to provide a corporate governance statement – and to describe the main features of their internal control and risk management systems; and iv) making the Standard Listing Segment (previously only for overseas companies) available to UK companies from 6 October 2009 so as to provide a level playing field (UKLA, 2012).

In 2010, a number of stock market disclosure requirements were updated to improve transparency to the public, investors and potential investors (LSE, 2012a). Changes introduced applied to Short Selling disclosures. In 2012, in a further action aiming to make the UK one of the best places in the world to start, run and grow a business, the Government developed a set of ambitious proposals with the London Stock Exchange to attract entrepreneurs and high-growth companies (UK Department for Business, Innovation and Skills, 2012). Proposals included a planned new route to the UK IPO market for high-growth companies. This will ensure that the needs of dynamic businesses and their investors are met (UK Department for Business, Innovation and Skills, 2012).

### **3.3.2.3 Stock Market Growth and Economic Growth in the UK**

The UK stock market has responded largely positively to most stock market reforms. To date, there are more than 500 firms worldwide that trade as members of the London Stock Exchange, while about 2,494 companies are listed on the LSE, with a total market value of GBP3.8 trillion (LSE, 2012a). The growth of the stock market has awarded LSE the honours of being the most international of all stock exchanges, with companies from over 70 countries admitted to trading in their markets (LSE, 2012a).

The number of listed companies on the LSE did not change much over time. From 2895 in 1999, the number of listed companies decreased to 2778 in 2000 but bounced back to 2927 in 2001. Between 2001 and 2004 the number decreased while it again increased between 2005 and 2007, creating a “V” impression. The number of listed companies reached a peak in 2007, recording 3305 listed companies. With the global financial crisis, the number started its descent in 2008, with 3298 companies listed before further tumbling to 2792 in 2009. Since then, listed companies have decreased. Between 1999 and 2012, the highest number of listed companies was recorded in 2006 while the lowest number was in 2012. Table 3.6 shows the number of listed companies on the LSE during the period 1999 to 2012.

**Table 3.6: Number of Listed Companies on the LSE (1999-2012)**

| <b>Indicator</b>                      | <b>1999</b> | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Number of Listed Companies on the LSE | 2895        | 2778        | 2927        | 2880        | 2814        | 2681        | 2844        |
|                                       |             |             |             |             |             |             |             |
| <b>Indicator</b>                      | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> |
| Number of Listed Companies on the LSE | 3088        | 3305        | 3298        | 2792        | 2670        | 2594        | 2494        |

Source: London Stock Exchange (2012a)

The number of domestic listed companies in the UK shows the growth of the UK stock market as well. Between 1988 and 2001, the number fluctuated around 2000, increased to 2405 in 2002, decreased slightly in 2003 before increasing again in the subsequent year, and then reaching a peak of 2913 in 2007. From then the number decreased gradually over the years until it reached 2001 in 2011 (World Bank, 2012a). Table 3.7 shows the number of listed domestic companies in the UK during the period 1988 and 2011.

**Table 3.7: Number of Listed Domestic Companies in the UK (1988-2011)**

| <b>Indicator</b>          | <b>1988</b> | <b>1989</b> | <b>1990</b> | <b>1991</b> | <b>1992</b> | <b>1993</b> | <b>1994</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>1999</b> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Listed Domestic Companies | 2054        | 2015        | 1701        | 1623        | 1874        | 1646        | 2070        | 2078        | 2171        | 2157        | 2087        | 1945        |
|                           |             |             |             |             |             |             |             |             |             |             |             |             |
| <b>Indicator</b>          | <b>2000</b> | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> | <b>2010</b> | <b>2011</b> |
| Listed Domestic Companies | 1904        | 1923        | 2405        | 2311        | 2486        | 2759        | 2913        | 2588        | 2584        | 2179        | 2056        | 2001        |

Source: World Bank Development Indicators (2012a)

The growth of the U.K stock exchange can also be gauged by the number of terminals taking the Exchange's real-time market data. In 2006, there were 104 000 terminals as compared to 95 000 in 2005, representing a 9% growth (LSE, 2006). Of this total, 88 000 terminals as compared to 83 000 in 2005, were attributable to professional users. SEDOL Masterfile, which is the extension to the Exchange's securities numbering service, now provides unique identification for more than a million securities on a global basis. On the other hand, Proquote, which is the Exchange's provider of financial market software and data, increased the number of screens at year end by 11% to 3,000 – 300 more than the 2005 figure (LSE, 2006).

In 2010, there were 93,000 professional users accessing London Stock Exchange real time data via the stock exchange's direct network and also via over 200 network service providers and market data vendor partners (LSE, 2010). While these figures were lower than a year earlier – 104,000 in 2009 – the number of users stabilised in the second half of the year. Although the Exchange expected the financial year that followed to show signs of improvement alongside an economic upturn, the number of professional users accessing real time data remained at 93 000 in 2011 but decreased to 90,000 in 2012 as a consequence of adverse market conditions (LSE, 2012c) The LSE has, however, managed to offset this decline by introducing fees for non-display data licences, taken by customers using trading algorithms, smart order routers or for data used in databases (LSE, 2012c).

In 2006, companies raised a record £29.4 billion through IPOs on the London Stock Exchange's markets, with IPO fund raising by companies up 81% from 2005. By the end of December, the total money raised by IPOs on the London Stock Exchange had reached £29.4 billion. The Exchange's Main Market and AIM attracted IPOs from a total of 367 companies during 2006. During the same year, the Exchange attracted 107 international IPOs from companies incorporated in 26 countries. Between them, these international companies raised £14.0 billion on the Exchange's markets, of which £2.9 billion was raised on AIM (LSE, 2012b).

During 2007, London's markets attracted 86 international IPOs by companies from 22 countries (excluding the UK). Between them, they raised £14.5 billion. Overall, companies across the Exchange's markets raised £43.8 billion in new and further issues during the year. This included 252 IPOs on the Main Market, Professional Securities Market and AIM which raised £26.1 billion in total. An additional £17.5 billion was raised through further issues, including a record £8.6 billion in further issues on AIM. It can be, however, noted that the number of IPOs and the amount raised from IPOs in 2007 declined as compared to the 2006 figures (LSE, 2012b).

In 2012, a total of 159 new companies were listed or admitted to trading on LSE markets, compared to 185 in 2011 (LSE, 2012c). Although the number of IPOs on the LSE has been on a gradual decrease since 2007, the number had been higher than that of some reputable stock markets; and much higher than IPOs in developing economies. According to the LSE (2012d), the global financial crisis and a downturn in economic activities have been the major culprits for this decline.

The growth of UK stock market can also be explained using stock market capitalisation of listed companies, together with total value and turnover ratio of stocks traded. The stock market size of the UK, as measured by stock market capitalisation expressed as a percentage of GDP, was growing at a slow pace between 1988 and 1992, with fluctuations just below 100%, only to increase growth momentum between 1993 and 1999 (World Bank, 2012a). This growth reached its peak in 1999, registering a market capitalisation of 195.2%, 16.3% more than the USA's peak during the same period (World Bank, 2012a). However, during the year that followed, the stock market

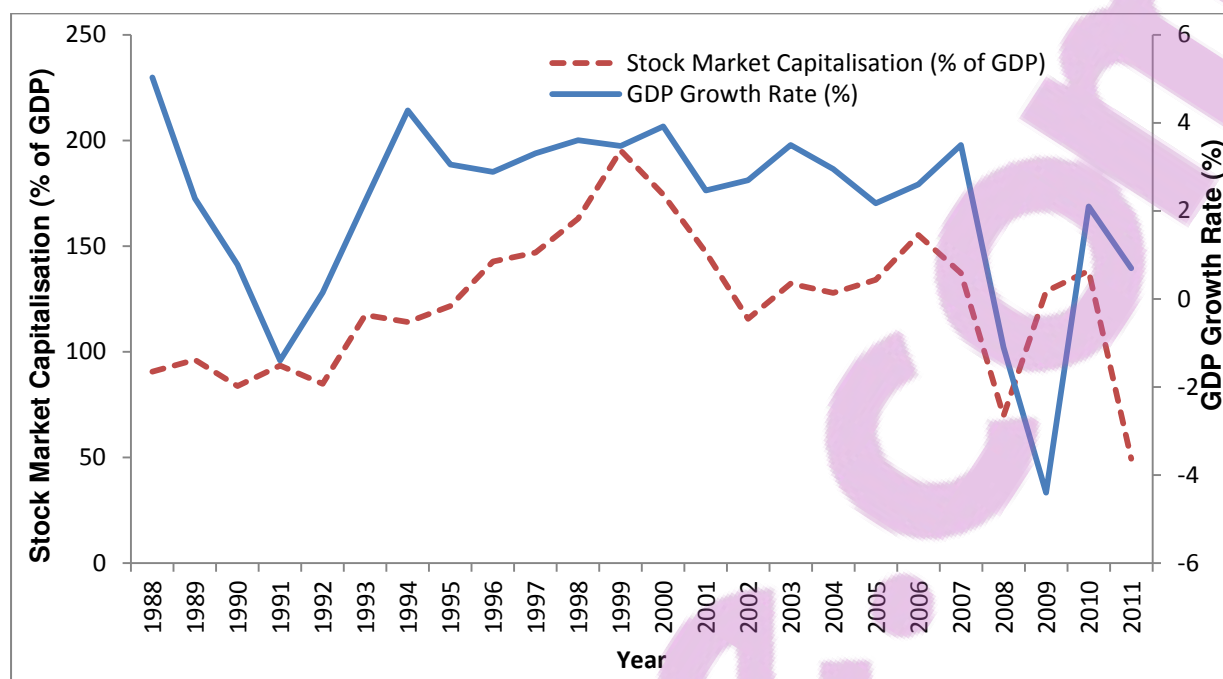
size dwindled sharply, only to improve after 2002, although it failed to reach its 1999 size. In 2007, the UK stock market suffered another blow, which saw the market capitalisation tumbling, reaching a low of 69.7% in 2008. Since then the market has never fully recovered from the aftermath of the late 2000s financial crisis (World Bank, 2012a).

In terms of market liquidity, as measured by total value traded/GDP and turnover ratio, the UK had a less liquid stock market until 1997, although it was relatively more liquid than other countries' stock markets during the same period. According to the World Bank (2012a), the total value of stocks traded improved from 61% of GDP in 1997 to 126.5% in 2001 to 182.8% in 2005, before further increasing to a peak of 367.3% in 2007. However, it declined sharply soon afterwards to 246.1% in 2008 and further down to 122.2% in 2011. The turnover ratio depicted the same trend as that of total value of stocks traded, reaching its peak in 2007 at 269.8%, before sharply declining to 227.2% in 2008, 146.4% in 2009, 101.9% in 2010, and then slightly increased to 137.9% in 2011 (World Bank, 2012a).

In terms of economic growth, the UK performance had no distinguished pattern. Although it fluctuated annually, per decade it averaged around 2%. Between 1975 and 1979, the UK economic growth averaged 2.1%. It reached 2.4% in the 1980s; 2.2% in the 1990s; 1.8% in the 2000s; and 1.4% between 2010 and 2011 (World Bank, 2012a). Per capita GDP growth depicted an upward trend between 1975 and 2011 (World Bank, 2012a). Per capita GDP in the UK increased over the years. Historically, from 1975 until 2011, UK's GDP per capita averaged US\$20482.76, reaching an all-time high of US\$46122.79 in 2007 and a record low of US\$4014.04 in 1976 (World Bank, 2012a). Figures 3.6 - 3.8 track the performance and growth of the stock market as well as the economy in the UK during the period 1988-2011.

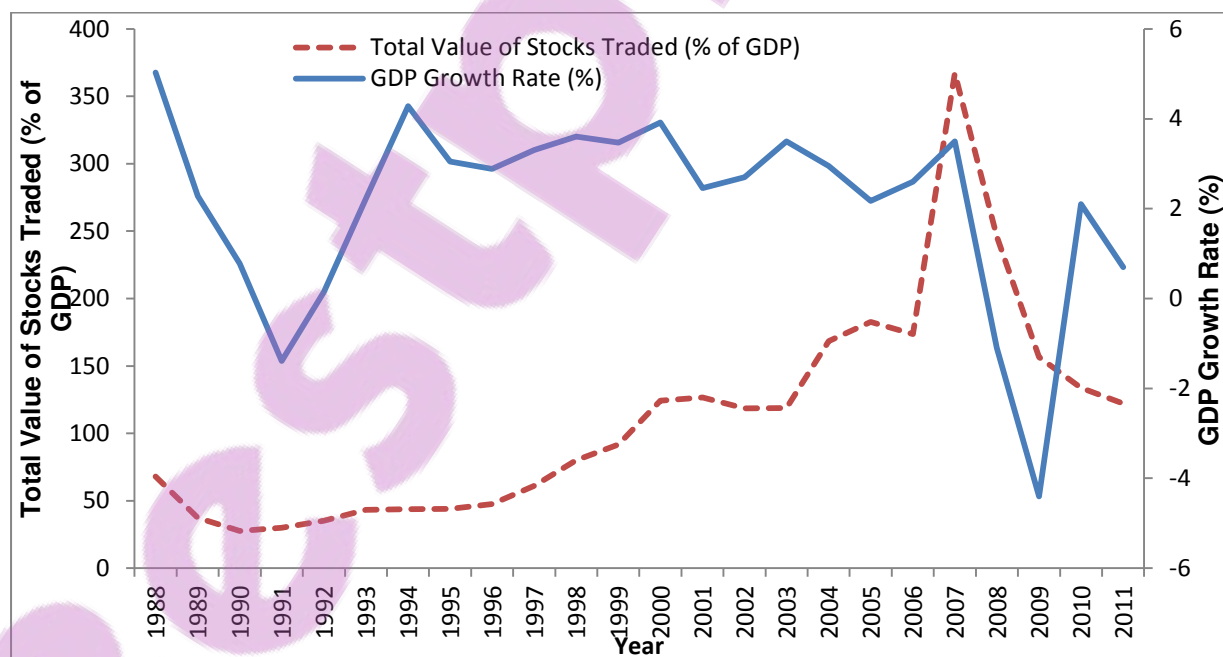


**Figure 3.6: Trends in Stock Market Capitalisation and Economic Growth in the UK (1988-2011)**



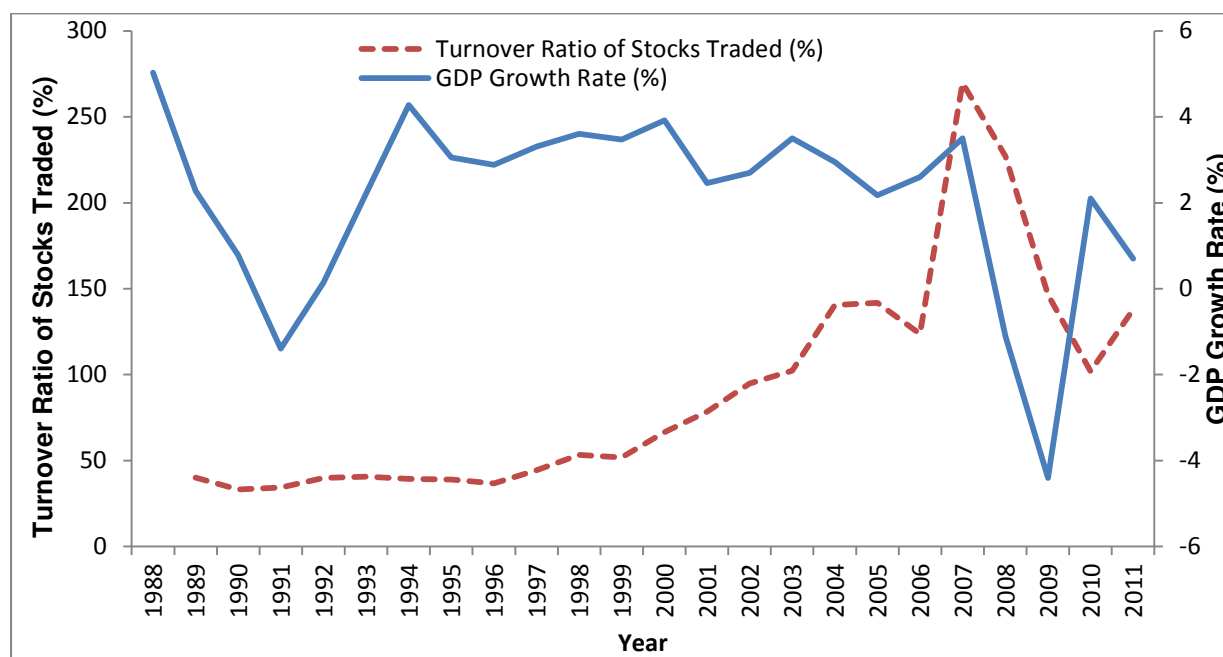
Source: World Bank Development Indicators (2012a)

**Figure 3.7: Trends in Total Value of Stocks Traded and Economic Growth in the UK (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 3.8: Trends in Turnover Ratio of Stocks Traded and Economic Growth in the UK (1988-2011)**



Source: World Bank Development Indicators (2012a)

### 3.3.2.4 Challenges Facing Stock Market Development in the UK

The LSE continues to operate in an environment where new regulations and regulatory changes dominate at domestic and international levels. Although fundamental shifts in the way markets are structured and governed create significant opportunities, they have also created challenges for the UK stock market. Despite the outcomes of all these regulatory changes not yet being clear, the LSE is committed to active engagement and discussion with policy makers around the world so as to promote a safe, efficient, competitive, innovative and successful stock market culture in which all participants can thrive (LSE, 2012c).

The UK stock market also faces the challenges that come with the globalisation of financial markets which has escalated rapidly in recent decades. It has become easy for financial firms and markets to operate across borders, thus leading to the emergence and growing importance of large, complex financial institutions operating on an international scale (HM Treasury, 2009). Although financial integration can bring benefits for financial stability as risk is diversified more widely, thus helping to increase prosperity as new markets develop, the growing importance of cross-border firms and

markets also brings with it challenges with regards to financial stability for the responsible authorities. The scale, complexity and cross-border nature of firms and their activities – straddling national boundaries, legal jurisdictions and supervisory remits – present particular challenges to national authorities in preventing, managing and resolving crises in financial markets in general and the UK stock market in particular. These issues have been highlighted by the financial crisis and have demonstrated the need for strong domestic regulatory systems to be complemented by enhanced supervision of international firms and markets via implementation of robust international standards, closer cooperation between authorities, and a more coherent international regulatory architecture (HM Treasury, 2009).

Although the opening up of operations to the international world is regarded as progress and development of a country's stock market, it has also brought along its challenges in the UK stock market. The openness of the UK stock market to the international world exposes it to greater risks emanating from problems faced by international stock markets. Thus volatile international markets may lead to volatility of the domestic market.

A slowing economic pace in the UK has also posed a challenge to the development of the stock market. It has dampened the appetite for new listings and the number of LSE listed companies has been dwindling of late (see Table 3.6).

The sovereign debt crisis has also left the UK stock market volatile, with the value of UK stocks mostly fluctuating as markets across the continent are rocked by waves of panic selling amid renewed fears about the impact of savage austerity measures on the Eurozone's third and fourth biggest economies.

### **3.4 Financial Development in Australia**

The Australian economy enjoys a well-developed financial sector. It ranked fifth amongst the world's leading capital markets and financial systems in two consecutive years, 2010 and 2011 (World Economic Forum, 2011b). According to the IMF (2012e) Australia's financial system is sound and resilient. Australia is one of the few

developed economies to be relatively unaffected by the global financial crisis because of its strength and soundness (IMF, 2012e).

The economy's financial sector is made up of bank- and market-based financial segments, which are all well developed in general. The Australian stock market shares a centre stage with banks in propelling economic growth, hence Australia is generally referred to as having a market-based financial system.

### **3.4.1 Bank-Based Financial Development in Australia**

This section surveys the banking segment in detail and is organised as follows: Section 3.4.1.1 gives an overview of the Australian banking sector, while Section 3.4.1.2 highlights bank-based financial sector reforms. Section 3.4.1.3 traces the trends in both banking sector growth and economic growth in Australia. Section 3.4.1.4 concludes by highlighting the challenges facing bank-based financial development in Australia.

#### **3.4.1.1 Overview of Australia's Bank-Based Financial System**

##### ***Origin of the Central Bank of Australia (the Reserve Bank of Australia)***

The Reserve Bank of Australia (RBA) is Australia's central bank. The history of the RBA dates back to as early as 1911 when the legislation to establish the Commonwealth Bank of Australia was enacted. The Commonwealth Bank of Australia evolved over time, becoming more independent, and changing its name to the Reserve Bank of Australia (Reserve Bank of Australia, 2013).

The Reserve Bank of Australia is responsible for monetary policy and related matters, and must ensure that the Australian financial fundamentals are in order (Reserve Bank of Australia, 2013). The role and functions of the Reserve Bank are guided by various pieces of legislation which include the Reserve Bank Act 1959, Payment Systems (Regulation) Act 1998, Payment Systems and Netting Act 1998 and the Corporations Act 2001 (Reserve Bank of Australia, 2013).

### ***Overview of the Banking Sector in Australia***

The Australian banking sector is made up of banks, credit unions and building societies, known as Authorised Deposit-taking Institutions (ADIs). The ADIs provide most of the banking services to the Australians on three fronts: households, businesses and governments. These financial institutions are prudentially regulated by the Australian Prudential Regulation Authority (APRA). Non-deposit taking finance institutions are also a feature of the Australian banking system and are a competitive force within the industry (Australian Trade Commission, 2011).

Historically, the Australian banking system was tightly regulated until the 1980s (Australian Bankers Association, 2012). Because of tight regulation, there was no foreign bank participation in Australia at that time. As a result, Australia had relatively few banks. To date, Australia has a sound, well capitalised banking sector, in the view of the Reserve Bank of Australia (2013). According to the Australian Trade Commission (2011), there are 65 banks operating in Australia. The four major domestic banks have the largest market shares in the retail and commercial banking sectors.

According to Bologna (2010), Australian banks were resilient to the global financial crisis as a result of good fundamentals and a sound prudential and supervisory framework. Banks were not substantially affected by the crisis on the asset side of their balance sheet, with little exposure to US structured credit products and a limited increase in non-performing loans. On the liability side, banks were successful in rolling over most of their short-term debt in international markets when markets were impaired after the collapse of Lehman Brothers. The authorities' wholesale funding guarantee and liquidity support also helped banks meet their funding needs (Bologna, 2010).

The Australian banks, in the context of a sound and effective supervisory environment, are well capitalised and hence well-placed to face the forthcoming regulatory changes on capital, as pointed out by Bologna (2010). Potential increases in credit risk do not appear to pose a threat to the stability of the system although vigilance is warranted in terms of possible risks stemming from the mortgage sector (Bologna, 2010). However,

Australian banks are improving the stability of their funding by reducing their reliance on short-term wholesale funding. The increase in liquid assets helps to make the system more resilient to a potential liquidity shock (Bologna, 2010).

The growth in banks' profits has, however, slowed in recent reporting periods as the decline in bad and doubtful debt charges has slowed, or in some cases, increased (Reserve Bank of Australia, 2012). Revenue growth has been constrained by modest credit growth and pressures on margins. Even so, aggregate profitability of the banks remains strong. While there is little recent evidence of banks imprudently easing lending standards in a bid to boost their credit growth, they are seeking ways to sustain the growth in their profitability, including, in some cases, through cost cutting. Such strategies will need to be pursued carefully to ensure that risk management capabilities and controls are maintained (Reserve Bank of Australia, 2012).

Responsibility for banking sector regulation is split mainly between the Australian Securities and Investments Commission (ASIC) and the Australian Prudential Regulatory Authority (APRA). ASIC is responsible for market integrity and consumer protection as also the regulation of investment banks and finance companies. APRA on the other hand, is responsible for the licensing and prudential supervision of ADIs, life and general insurance companies and superannuation funds. These regulators are independent statutory authorities without direct oversight by a government department (Reserve Bank of Australia, 2012).

The Australian Bankers' Association (ABA) is also part of the Australian banking landscape. It works with its member banks in providing analysis, advice and advocacy and contributes to the development of public policy on banking and other financial services. ABA's aim is to ensure Australian banking customers continue to benefit from a healthy, stable and competitive banking industry.

### **3.4.1.2 Bank-Based Financial Reforms in Australia**

According to Grenville (1991), Battellino and McMillan (1989) and Perkins (1989), the financial reform period could be divided into three phases: (i) a fully regulated era which stretched up to the late 1960s; (ii) a phase of attempted reform during the 1970s; and (iii) a reformed era which started during the 1980s and onwards.

According to Neal (2004: 175), deregulation of the banks in the 1980s led to rapid credit growth fuelled by bank lending and the development of an asset-price bubble towards the end of the 1980s. Very tight monetary policy in 1988 and 1989 caused the bubble to burst, and led to some degree of financial instability and a marked weakening of bank balance sheets in the early 1990s (Neal, 2004).

Another important regulatory development early in the first decade of the 2000s was the implementation of the Corporate Law Economic Reform Programme (CLERP). This commenced in 1997 and led to the introduction of a number of legislative changes over the subsequent seven years, all designed to improve the financial infrastructure. Changes included reforms to accounting standard-setting arrangements, audit independence, directors' duties and corporate governance requirements, fundraising and takeover procedures, corporate disclosure requirements, compliance arrangements, provisions for electronic commerce, and shareholder rights (Davies, 2011).

Further reforms brought the Financial Services Reform Act which took effect on 11 March 2002. This Act allocated an additional responsibility for consumer protection matters to ASIC while the ACCC retained the administration and oversight of consumer protection matters (Carmichael, 2000).

In 2006, the RBA set out benchmarks for setting credit and debit card interchange for card schemes. The setting of wholesale ('Interchange') Fees in the Designated Credit Card Schemes Standard set out the process for determining a common benchmark for interchange fees in the MasterCard and Visa credit card schemes. In accordance with this Standard, and using data supplied by issuers of credit cards and the two schemes, the Reserve Bank calculated that the common benchmark to apply for the

three years from 1 November 2006 is 0.50% (Reserve Bank of Australia, 2006). This can be compared with the previous average interchange fee in these schemes of a little under 0.55% (Reserve Bank of Australia, 2006). The standard also required that MasterCard and Visa publish their interchange fees and that the weighted-average interchange fee in each scheme does not exceed the 1 November 2006 benchmark whenever any interchange fee is introduced, varied or removed (Reserve Bank of Australia, 2006).

In a bid to improve competition in the banking sector, the RBA announced further payments system reforms, targeting a change in ATM regime from an indirect to a direct charge model on 10 December 2008. The reform package came into effect on 3 March 2009.

In 2011, the Australian financial regulatory authorities further reformed the banking sector. These new reforms started with a ban on mortgage exit fees on new home loans from 1 July 2011 (Australian Banking Reforms, 2013). This was done to help boost competition in the home loan market, and give consumers greater freedom and ensure that they get a better deal. A ban on mortgage exit fees allowed lenders hiding unfair fees to be fined, enabled more financial choices and increased competition, making it easier to switch to a better deal. In the spirit of competition, some lenders have even removed fees on contracts entered into before 1 July 2011 (Australian Banking Reforms, 2013).

From 1 January 2012, lending institutions were compelled by regulation to provide home loan fact sheets to their customers on request. The fact sheets provide a standardised layout of information for a loan one considers taking. Because all lenders must provide customers with information in the same way, it becomes easier to shop around and compare loans. Through regulation, it has also been made easier for one to move an everyday transaction account from one financial institution to another. Consequently these banking sector reforms have stimulated competition among financial institutions (Australian Banking Reforms, 2013).



In May 2012, the government amended the Privacy Act 1988 to allow more comprehensive credit reporting. The changes were in response to an earlier Australian Law Reform Commission Inquiry into the application of the Act. The reforms aim to allow credit providers to build a fuller picture of individuals' financial circumstances when determining their eligibility for credit, thereby enabling more accurate assessments of credit worthiness. The reforms also improve consumer protection under the Act, by making it easier for individuals to dispute and correct any errors on their credit file (Reserve Bank of Australia, 2012).

#### **3.4.1.3 Banking Sector Growth and Economic Growth in Australia**

Historically, banking in Australia was tightly regulated. However, there was increased competition from non-bank lenders during the 1990s. Following a string of bank failures, consolidation ensued, as a number of banks were merged. This included the takeover of at least one other bank by each of the major banks through the 1990s, thereby entrenching the already high degree of concentration in Australian banking. According to Neal (2004: 175), in the latter half of the 1990s, there was pressure from the major banks for further consolidation, with the major banks pressing for the abolition of the “four pillars” policy, such as the government ban on a merger between any two of the four major banks. Neal (2004) further lamented that this was partly driven by globalisation and the perceived need for a “national champion”, such as a bank that was large enough to compete with other transnational banks on a global scale. However, to date the Australian banking sector continues to be dominated by four big banks.

As at March 2012, there were 65 banks in Australia (these include Australian owned banks, foreign subsidiary banks and branches of foreign banks), nine building societies and 93 credit unions, showing a further reduction in the number of building societies and credit unions from the 2011 figures (Australian Bankers' Association, 2013).

The growth of the Australian banking sector is also indicated by growth in private sector credit extension. In 1975, credit provided by financial institutions to the private sector was 45.6% of GDP. It, however, remained between 38% and 44% between

1977 and 1984, before increasing to 49.5% in 1985. Thereafter, the Australian private sector credit extension increased modestly and gradually over the years, reaching a peak of 146.6% in 2010 – despite a slight decrease in 2009 due to the aftermath of the global financial crisis. In 2011, credit extension to the private sector in Australia was 145.1% of GDP (World Bank, 2012a).

The non-performing loans in the Australian banking sector, though generally low, have been on the increase since 2006, from 0.2% of total gross loans in 2005, to 0.6% in 2006 and 2007, increasing to 1.3% in 2008 and further to 2% in 2009 and then to 2.2% in 2010 and 2011. Australian banks' conservative lending practices, together with robust supervision by APRA and the Australian economy's strong performance since the global crisis, have contributed to a low non-performing loan ratio compared to other advanced countries (Jang and Sheridan, 2012). Credit information is relatively easily available to both consumers and banking institutions. Both consumers and institutions possess strong legal rights. Table 3.8 shows some of the banking indicators pointing to the development of the Australian banking sector.

**Table 3.8: Growth of Banking Sector in Australia (2000-2011)**

| Year | Domestic Credit Extension to Private Sector (% of GDP) | Bank Non-performing Loans to Total Gross Loans (%) | Credit Depth of Information Index (0=low to 6=high) | Strength of Legal Rights Index (0=weak to 10=strong) |
|------|--------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|
| 2000 | 93.23690805                                            | 0.5                                                | -                                                   | -                                                    |
| 2001 | 94.76392457                                            | 0.6                                                | -                                                   | -                                                    |
| 2002 | 101.3208308                                            | 0.4                                                | -                                                   | -                                                    |
| 2003 | 105.1387993                                            | 0.3                                                | -                                                   | -                                                    |
| 2004 | 109.812814                                             | 0.2                                                | 5                                                   | 9                                                    |
| 2005 | 114.2686502                                            | 0.2                                                | 5                                                   | 9                                                    |
| 2006 | 119.7380372                                            | 0.6                                                | 5                                                   | 9                                                    |
| 2007 | 136.9305927                                            | 0.6                                                | 5                                                   | 9                                                    |
| 2008 | 144.4561941                                            | 1.3                                                | 5                                                   | 9                                                    |
| 2009 | 144.079981                                             | 2.0                                                | 5                                                   | 9                                                    |
| 2010 | 146.592661                                             | 2.2                                                | 5                                                   | 9                                                    |
| 2011 | 145.1217048                                            | 2.2                                                | 5                                                   | 9                                                    |

Source: World Bank Development Indicators (2012a)

The growth of the Australian banking sector can also be portrayed by the increasing number of Automated Teller Machines (ATMs). Technological innovations have transformed the Australian financial sector landscape in recent years, by helping to extend financial services to millions of people. The ATM reforms undertaken by the Australian banking sector from 2007 onwards have also contributed significantly towards an improved ATM landscape in the country. The number of ATMs in Australia grew from 13,289 in 2001 to 30,154 in 2011 (Australian Bankers' Association, 2013).

On the economic growth front, the Australian economy has been growing faster than economies of most advanced countries, benefiting from its trade linkages with Asia, and in particular with China. Growth accelerated from 2.73% in the second half of 2011 to 4% during the first half of 2012, driven by private domestic demand and by exports (IMF, 2012f). According to the IMF (2012f), growth has, however, been uneven, with mining-related sectors expanding strongly, in contrast with below-trend growth in other sectors. The high Australian dollar is weighing on trade-exposed manufacturing and tourism, which, along with the uncertain global economic outlook, has been contributing to a broadly pessimistic mood, and to weak investment growth outside the mining sector (IMF, 2012f). However, although survey measures of consumer and business sentiment remained below their long-run averages, household consumption grew in line with solid household income growth (IMF, 2012f).

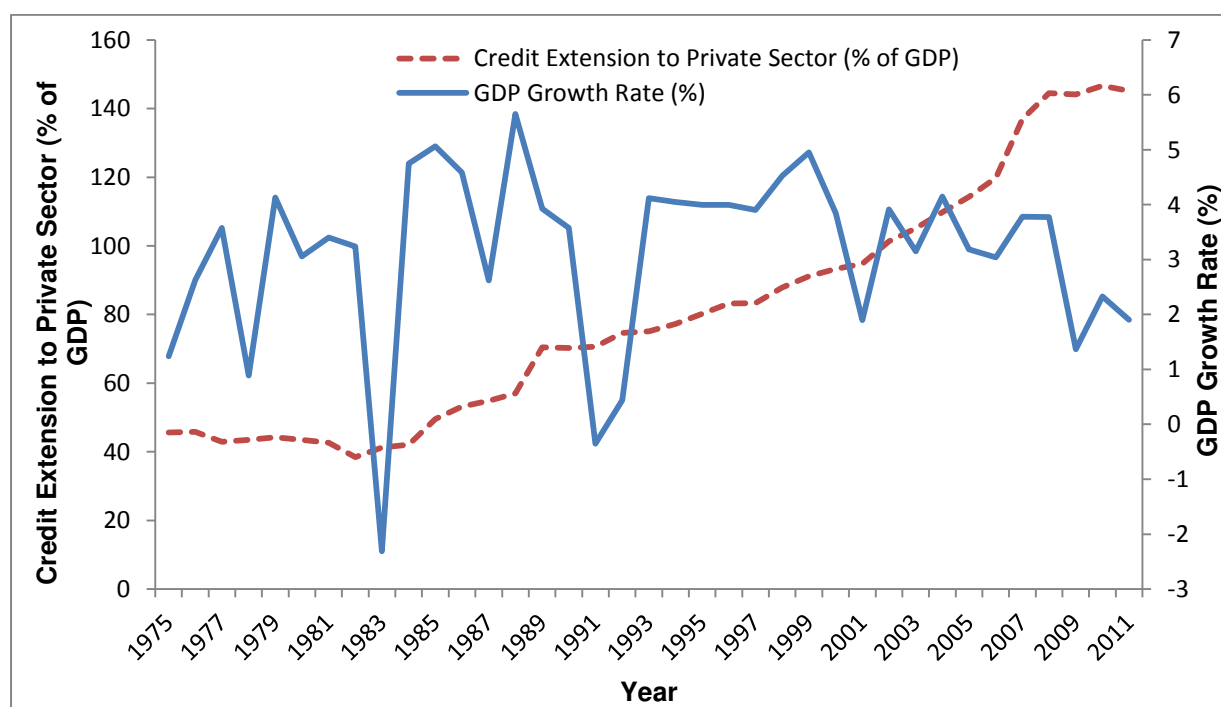
Despite Australia's resilience to the global economic crisis, the IMF trimmed its 2013 forecast for Australia's economy and warned of sluggish global growth for the two years that followed. In its 2012 World Economic Outlook, the Fund estimated that the Australian economy would grow by 3% in 2013, a downgrade from its previous April forecast of 3.5%.

Australia experienced much of its economic growth between 1979 and 1990 and also between 1993 and 2008, recording a gross domestic product (GDP) annual percentage growth of mostly between 3% and 5.6%. However, in-between these years of growth, there were intermittent periods of slower or even negative growth, as for example, in 1983 where growth was -2.3%; then in 1991 the growth rate was -0.4% and in 2001 1.9%. The aftermath of the global financial crisis saw the Australian

economic growth rate tumbling down to 1.2% in 2009 and slightly increasing to 2.3% in 2010, before decreasing slightly to 1.9% in 2011. Historically, between 1975 and 2011, the highest economic growth of 5.6% was recorded in 1988, while the lowest rate of -2.3% was recorded in 1983 (World Bank, 2012a).

Australia's per capita GDP was US\$60979.02 in 2011. Historically, from 1975 until 2011, the Australian GDP per capita reached an all-time high of US\$60979.02 in 2011 and a record low of US\$6992.44 in 1975 (World Bank, 2012a). Between 1975 and 2011, GDP per capita exhibited an upward trend in general, though with a few fluctuations here and there. Per capita GDP growth rate fluctuated between -1% and 4% for the rest of the period (1975-2011). Figure 3.9 shows the trends in banking sector growth and economic growth in Australia during the period 1975 - 2011.

**Figure 3.9: Trends in Banking Sector Growth and Economic Growth in Australia (1975-2011)**



Source: World Bank Development Indicators (2012a)

#### 3.4.1.4 Challenges Facing Bank-Based Financial Development in Australia

According to IMF (2012e), the Australian banking system was resilient during the global financial crisis. This can be attributed, in part, to intensive supervision and

sound regulation. The banking sector remains profitable, with capital above regulatory minimums. However, challenges still remain. These include bank concentration and exposure.

According to Jang and Sheridan (2012: 3), banks' main vulnerabilities are their exposure to highly indebted households through residential mortgage lending, together with their sizeable short-term offshore borrowing. Household debt is high, at about 150% of disposable income. However this debt is held mainly by higher income households. Moreover, exposure to high-risk mortgages is small. The potential risks associated with household lending are mitigated by a number of factors, including banks' prudent lending practices and the Australian Prudential Regulation Authority's conservative approach in implementing the Basel II framework, as well as the banks' reduction of short-term offshore wholesale funding usage by increasing deposits and lengthening the tenor of their funding. Nevertheless, short-term external debt remains sizable (Jang and Sheridan, 2012: 3).

Offshore foreign currency funding is still large, according to the IMF (2012g). Australian banks rely on funding from outside the country, and with the crisis in Europe and the global economy suffering, these funding sources are volatile (IMF, 2012g).

### **3.4.2 Stock Market Development in Australia**

The Australian stock market shares a centre stage with banks in propelling economic growth, hence Australia is generally referred to as having a market-based financial system. This section discusses the Australian stock market in detail and is organised as follows: Section 3.4.2.1 covers the origins of the Australian stock market, while Section 3.4.2.2 outlines stock market reforms. Section 3.4.2.3 traces the trends in stock market growth and economic growth in Australia. Section 3.4.2.4 concludes by highlighting the challenges facing stock market development in Australia.

### **3.4.2.1 Origin of the Stock Market in Australia**

The Australian stock market is made up of three stock exchanges, namely the Australian Securities Exchange Group (ASX), the National Stock Exchange of Australia (NSX) and the Asia Pacific Stock Exchange (APX). These stock exchanges were born out of a string of stock exchanges that merged over time.

#### ***Australian Securities Exchange Group (ASX)***

Australian Securities Exchange Group (ASX) is Australia's primary securities exchange. According to the Australian Securities Exchange Group (ASX) (2013), the ASX was formed in 1987, following the passing of the legislation that allowed the consolidation of six independent state-based stock exchanges into one stock exchange. In 2006, the Australian Stock Exchange merged with the Sydney Futures Exchange and operated under the name Australian Securities Exchange (ASX, 2013). However, from 1 August 2010, the Australian Securities Exchange became known as the ASX Group (ASX, 2013).

The ASX Group aims to ensure that its: (i) markets are Australia's pre-eminent forum for capital formation (both equity and debt), capital allocation and corporate control; (ii) market information (trading and corporate action data) is high quality and timely – and that it offers a range of delivery options; (iii) clearing facilities improve capital management (position netting and margin offsets) and operating efficiency (through straight-through processing); (iv) securities depository and settlement facilities deliver efficient depository and settlement management (payments netting, electronic holdings, payments and corporate actions, and straight-through processing); (v) processes and systems are fair, reliable and transparent (with regard to prices, spreads, liquidity, latency and access); and (vi) that its monitoring and enforcement of compliance with its operating rules generates confidence in the markets that rely on the ASX Group's infrastructure (ASX, 2013).

#### ***National Stock Exchange of Australia (NSX)***

The National Stock Exchange of Australia (NSX) is a stock exchange based in Newcastle, Australia and is the second biggest stock exchange in Australia after ASX.

It is owned and operated by NSX Limited, which is listed on the Australian Securities Exchange (NSX, 2013). In 2006, the Newcastle Stock Exchange changed its name to National Stock Exchange of Australia but still maintained the acronym of NSX (NSX, 2013). The history of the NSX dates back to 1937 when it was founded. In 2000, it was revamped and reactivated and in 2005, it acquired Bendigo Stock Exchange (BSX) (NSX, 2013).

### ***Asia Pacific Stock Exchange (APX)***

The Asia Pacific Stock Exchange (APX) is one of the securities exchanges in Australia founded in 2004 (APX, 2013). The APX provides listing facilities to companies and securities issuers. It also provides trading facilities to stock brokers, traders and investors enabling them to buy and sell shares/securities. Shares issued by companies, units issued by trusts, pooled investment products and fixed interest instruments such as bonds are some of the securities traded on APX (APX, 2013).

The Australian Securities and Investments Commission has responsibility for the supervision of real-time trading on Australia's domestic licensed financial markets and the supervision of the conduct by participants (including the relationship between participants and their clients) on those markets (Australian Securities and Investments Commission "ASIC", 2013).

### **3.4.2.2 Stock Market Reforms in Australia**

The Australian stock market has undergone a period of reform in order to spearhead the development of its market. In 1987, the formation of the Australian Stock Exchange Limited coincided with the launch of the Stock Exchange Automated Trading System (SEATS).

In 1989, the normal floor trading was extended to after-hours, with an after-hours electronic trading platform. Ten years later, according to the ASX (2013), some stock exchanges closed their trading floors and started 24-hour screen trading. In terms of the settlement system, the FAST system of accelerated settlement was set up in

1993. The evolution of these trading systems improved the efficiency of the Australian stock market (ASX, 2013).

In 2009, changes to the supervision of Australia's financial markets, that enhanced the integrity of Australia's financial markets and took another step towards establishing Australia as a financial services hub in the region, were announced. According to the Australian Treasury (2009), the Government decided to make provision for the Australian Securities and Investments Commission to supervise real-time trading on all of Australia's domestic licensed markets. This meant that ASIC was now responsible for both supervision and enforcement of the laws against misconduct on Australia's financial markets (Australian Treasury, 2009).

As part of the Government's drive to improve regulation of the financial industry, supervisory responsibility for Australia's financial markets was transferred to ASIC as it was more appropriate for an agency of the Government to perform this important function, as compared to the pre-reform arrangements where individual financial markets were required to self-supervise trading on their individual markets (Australian Treasury, 2009). This reform was in line with the move towards centralised or independent regulation in other leading jurisdictions. According to the Australian Treasury (2009), having one whole-of-market supervisor helped to consolidate the then individual supervisory responsibilities into one entity, streamlining supervision and enforcement, and providing complete supervision of trading on the market. However, the changes meant that ASIC became responsible for supervising trading activities by broker participants which takes place on a licensed financial market, while individual markets (such as the ASX) retained responsibility for supervising their listed entities (Australian Treasury, 2009).

In 2010, the Corporations Amendment (Financial Market Supervision) Act 2010 was passed. The Act provided for a new type of rule called “market integrity” rules. These rules were made by ASIC and applied to market operators, market participants, other prescribed entities and financial products traded on the relevant markets (ASIC, 2010). These integrity rules were motivated by global equity markets undergoing considerable changes, which are now overwhelmingly electronic and automated. In



response to these technological advances, the ASIC passed rules, which aimed to: (i) build confidence in the integrity of Australia's capital markets; (ii) protect retail investors; and (iii) facilitate international capital flows (ASIC, 2010). These rules ranged from pre-trade to post-trade transparency. Market participants were obliged to provide trade information on reasonable commercial terms and on a non-discriminatory basis (ASIC, 2010).

In 2011 and 2012, the ASIC Market Integrity Rules (Competition in Exchange Markets), 2011; and ASIC Market integrity Rules (Competition in Exchange Markets) Amendments, 2012; were passed respectively. These rules focused on improving competition and assisting new entrants in the stock market. Market participants were obliged to share potentially explosive information with each other in a timely manner so as to contain potential risks. Exchanges were also required to publish timely market information (ASIC, 2011; 2012). According to ASIC (2011; 2012), market operators were also required to immediately notify ASIC, as well as other market operators and participants, upon becoming aware of any technical problem (including a power outage) affecting a market operator's trading, compliance monitoring and reporting systems and that might interfere with the fair, orderly or transparent operation of any Market.

#### **3.4.2.3 Stock Market Growth and Economic Growth in Australia**

The Australian stock market has responded largely positively to most stock market reforms. In general, the Australian stock market has experienced strong growth in the size of the market and in its sophistication. To date, there are more than 2000 companies listed on the ASX, with a total market value of A\$1.3 trillion (ASX, 2013). The dynamism of the stock market in Australia reflects many years of innovation and development, and is among the fastest growing and most sophisticated in the world (AFMA, 2012).

The number of listed companies on the ASX increased from 1421 in 2002 to 1471 in 2003. A major increase in the number of listed companies occurred between 2004 and 2005, from 1583 to 1807; and further to 1908 in 2006. In 2007, 2077 companies were listed on the ASX, before decreasing to 2043 in 2009. By 2012, there were 2056 listed

companies on the ASX (ASX, 2013). Table 3.9 shows the number of listed companies during the period 1999 to 2012.

**Table 3.9: Number of Listed Companies on the ASX (1999-2012)**

| Indicator                             | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---------------------------------------|------|------|------|------|------|------|------|
| Number of Listed Companies on the ASX | -    | -    | -    | 1421 | 1471 | 1583 | 1807 |
|                                       |      |      |      |      |      |      |      |
| Indicator                             | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Number of Listed Companies on the ASX | 1908 | 2077 | 2086 | 2043 | 2072 | 2079 | 2056 |

Source: Australian Securities Exchange (2013)

The number of domestic listed companies shows the growth of the Australian stock market as well. According to the World Bank (2012a), in 1988 there were 1380 listed domestic companies in Australia. The number, however, declined over the years to 957 in 1991, before taking an upward turn in the year that followed, when there were 1030 listed domestic companies. The number kept increasing gradually over a number of years until it slightly surpassed its 1988 level in 2003, recording 1405 companies. The number reached a peak of 1924 in 2008. However, the global financial crisis saw this number going down to 1882 in 2009, before it increased to 1913 in 2010 and to 1922 in 2011 (World Bank, 2012a). Table 3.10 shows the number of listed domestic companies in Australia during the period 1988 - 2011.

**Table 3.10: Number of Listed Domestic Companies in Australia (1988-2011)**

| Indicator                 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Listed Domestic Companies | 1380 | 1258 | 1089 | 957  | 1030 | 1070 | 1186 | 1178 | 1190 | 1159 | 1162 | 1217 |
|                           |      |      |      |      |      |      |      |      |      |      |      |      |
| Indicator                 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| Listed Domestic Companies | 1330 | 1334 | 1355 | 1405 | 1515 | 1643 | 1751 | 1913 | 1924 | 1882 | 1913 | 1922 |

Source: World Bank Development Indicators (2012a)

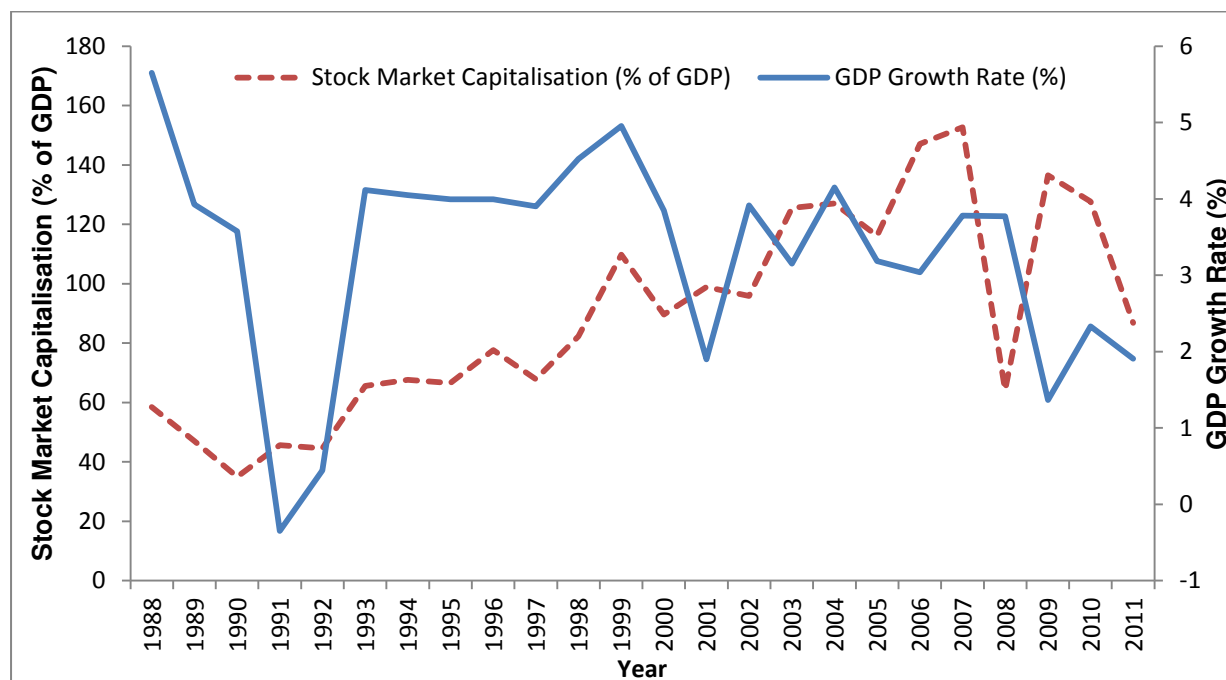
The growth of the Australian stock market can also be explained using stock market capitalisation of listed companies as well as total value and turnover ratio of stocks traded. The stock market size as measured by stock market capitalisation expressed as a percentage of GDP, had been growing at a modest pace between 1990 and 1998, although there were minor fluctuations here and there, reaching a market capitalisation of 109.8% of GDP in 1999 (World Bank, 2012a). However, the stock market growth reached its peak in 2007, registering a market capitalisation of 152.7%. Then in the year that followed, the stock market size dwindled sharply to 64.2%, less than half its size of the previous year. This poor stock market performance was, however, short-lived as the market capitalisation rose to 136.5% in 2009. Since then, the Australian stock market size has not been stable; instead it has been fluctuating annually, below the 2009 mark (World Bank, 2012a).

In terms of market liquidity, as measured by total value traded/GDP and turnover ratio, Australia had a less liquid stock market, with total value traded of less than 40% until 1998. The total value of stocks traded improved from 40.3% of GDP in 1998 to 50.4% in 2000 and then to 89% in 2005, before further increasing to a peak of 155.6% in 2007, but sharply declined soon afterwards to 96.7% in 2008 and further down to 82.6% in 2009. In 2010, the total value of stocks traded improved to 107.3%, before declining to 90.4% in 2011. The turnover ratio depicted the same trend as that of total value of stocks traded, reaching its peak in 2007 at 110.5%, before gradually declining over the years to 94% in 2011 (World Bank, 2012a). It is, however, interesting to note that the liquidity of the Australian stock market was less than half of the UK's over the same period.

In terms of economic growth, the Australian performance had no distinguished pattern. It sharply fluctuated annually, averaging around 3% per decade. Between 1975 and 1979, the Australian economic growth averaged 2.5%; followed by 3.4% in the 1980s; 3.3% in the 1990s; 3.2% in the 2000s; and 2.1% between 2010 and 2011 (World Bank, 2012a). Per capita GDP growth showed an upward trend between 1975 and 2011 (World Bank, 2012a). Per capita GDP in Australia increased over the years. Historically, from 1975 until 2011, it averaged US\$17238.24, reaching an all-time high of US\$60979.03 in 2011 and a record low of US\$6992.44 in 1975 (World Bank,

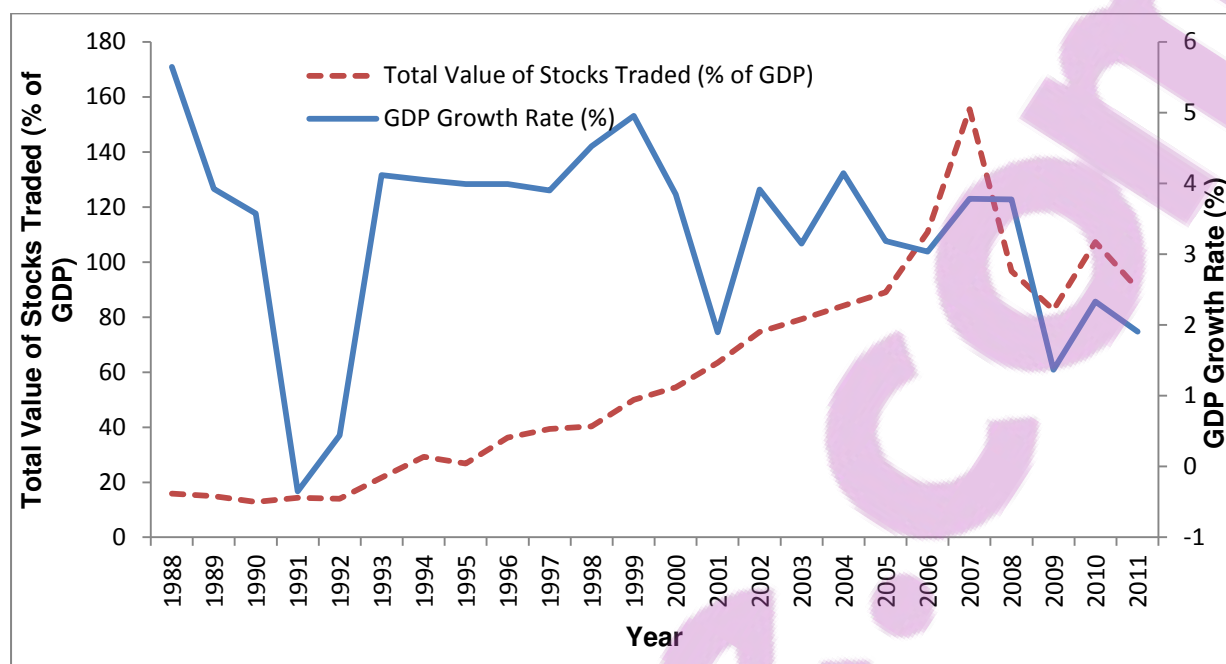
2012a). Average GDP per capita growth between 1975 and 2011 was 1.4%, recording a highest per capita GDP of 3.9% in 1988 and the lowest growth rate of -3.5% in 1983 (World Bank, 2012a). Figures 3.10 - 3.12 track the performance and growth of the Australian stock market and economy during the period 1988 - 2011.

**Figure 3.10: Trends in Stock Market Capitalisation and Economic Growth in Australia (1988-2011)**



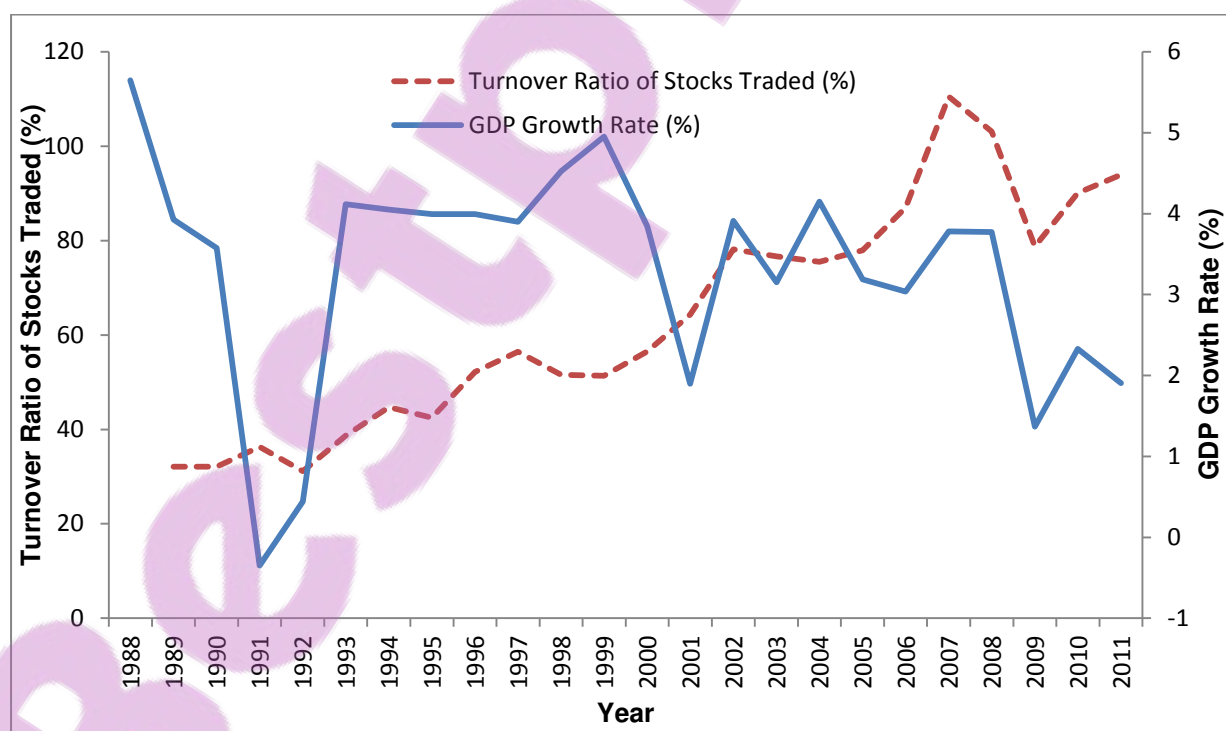
Source: World Bank Development Indicators (2012a)

**Figure 3.11: Trends in Total Value of Stocks Traded and Economic Growth in Australia (1988-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 3.12: Trends in Turnover Ratio of Stocks Traded and Economic Growth in Australia (1988-2011)**



Source: World Bank Development Indicators (2012a)

#### **3.4.2.4 Challenges Facing Stock Market Development in Australia**

Although the Australian stock market has been resilient during the global financial crisis, and continued to develop over the years, it still faces several challenges. These include the increased economic uncertainty overseas, the downtrend in global financial markets and restrained consumer confidence in Australia. The regulatory and operational changes, including the transfer of supervision to the Australian Securities and Investment Commission, a new disclosure regime for short selling and securities lending, and a new set of market integrity rules also all pose challenges to the Australian stock market (ASX, 2011).

ASIC shares its regulatory responsibility for Clearing Participants with Australian Stock Exchange Group (ASX) that sets and monitors capital requirements. Australian Prudential Regulation Authority's (APRA) role in supervision is very limited, although it is the primary prudential regulator in Australia. According to IMF (2012h), the splitting of prudential supervisory responsibilities emphasises the need for close cooperation, which is currently undertaken through the Council of Financial Regulators and done bilaterally. However, there seems to be a need to assess whether this current regulatory structure is appropriately equipped to respond effectively to present and future challenges (IMF, 2012h).

ASIC is an enforcement regulator. Its reputation as an effective and credible enforcer of market regulation and corporate law has been enhanced in recent years through a series of high profile and successful prosecutions. However, it is less focused on on-going, proactive supervision which is an area that requires increased attention to complement the current enforcement efforts and to add to its deterrent effect (IMF, 2012h).

According to IMF (2012h), the extent of ASIC independence is questionable, yet it is still the main stock market regulator in Australia. Moreover, the IMF (2012h) considers that although the relevant Minister has powers ranging from giving directions to ASIC (under the ASIC Act) to making supervisory decisions relating to market infrastructure, most of these powers have rarely, if ever, been used, and furthermore they do not generally include decision-making on day-to-day technical matters. This is the

situation although the use of these powers is generally subject to a clear and transparent process and decisions relating to market infrastructure are made on the basis of the advice of ASIC. Hence the extent of these powers remains a concern (IMF, 2012h).

Financial instability, globally, has left financial regulators in most jurisdictions, including Australia more alert than ever. As a result, the domestic and global efforts by authorities to stabilise the financial sector leaves the Australian stock market subject to domestic and international regulation. The implementation of these regulations and reforms presents a significant challenge to the Australian stock market as the stock market participants must comply with these rules. Such rules include those related to disclosure integrity (IMF, 2012h).

The Australian stock market also faces competition challenges. Despite the Australian Government's announcement in 2010 supporting competition between markets trading in listed shares, there is only one overwhelmingly dominant exchange market group in Australia, which is the ASX Group. Until late 2011, it had no significant competition in Australia (IMF, 2012h).

Sovereign debt crisis has not spared the Australian stock market either. In 2012 equities markets exhibited no growth in traded value, principally due to investor concerns globally about the scale of European sovereign debt refinancing challenges, as well as indicators of a more sluggish than anticipated USA economy (AFMA, 2012).

The openness of the Australian economy to the international economies has posed a significant threat to the Australian stock market. Although Australia is perceived to have a stronger, more resilient economy when compared to its international peers, as well as a resilient banking system and a stable AAA sovereign credit, indicators of a more sluggish than anticipated USA and EU economies have had negative effects on the performance of the Australian stock market (AFMA, 2012). Volatility in other stock markets is also felt on the Australian stock market. Recent years have been punctuated by rolling crises in the global markets which have posed many challenges for Australia's domestic market and its participants (AFMA, 2012). Investors were

firstly unnerved as the USA struggled to increase its debt ceiling, and then by the subsequent downgrade of its sovereign debt rating by Standard and Poor's (AFMA, 2012). This was quickly followed and overtaken by the escalation of the European sovereign debt crisis and, more recently, by the fears that China's economic growth could experience a less-than-soft landing (IMF, 2012h). The USA and European crises, particularly, were the drivers of a "risk off" mindset in the latter half of 2011. Only prompt and coordinated action by global authorities in early 2012 encouraged investors to re-enter the markets (AFMA, 2012; IMF, 2012h).

### **3.5 Concluding Remarks**

In this chapter, bank-based financial development and stock market development in the USA, the UK and Australia have been discussed. Trends in economic growth and financial development (both bank- and market-based) have also been discussed for these three economies. Based on the issues discussed in this chapter, the following conclusions can be drawn.

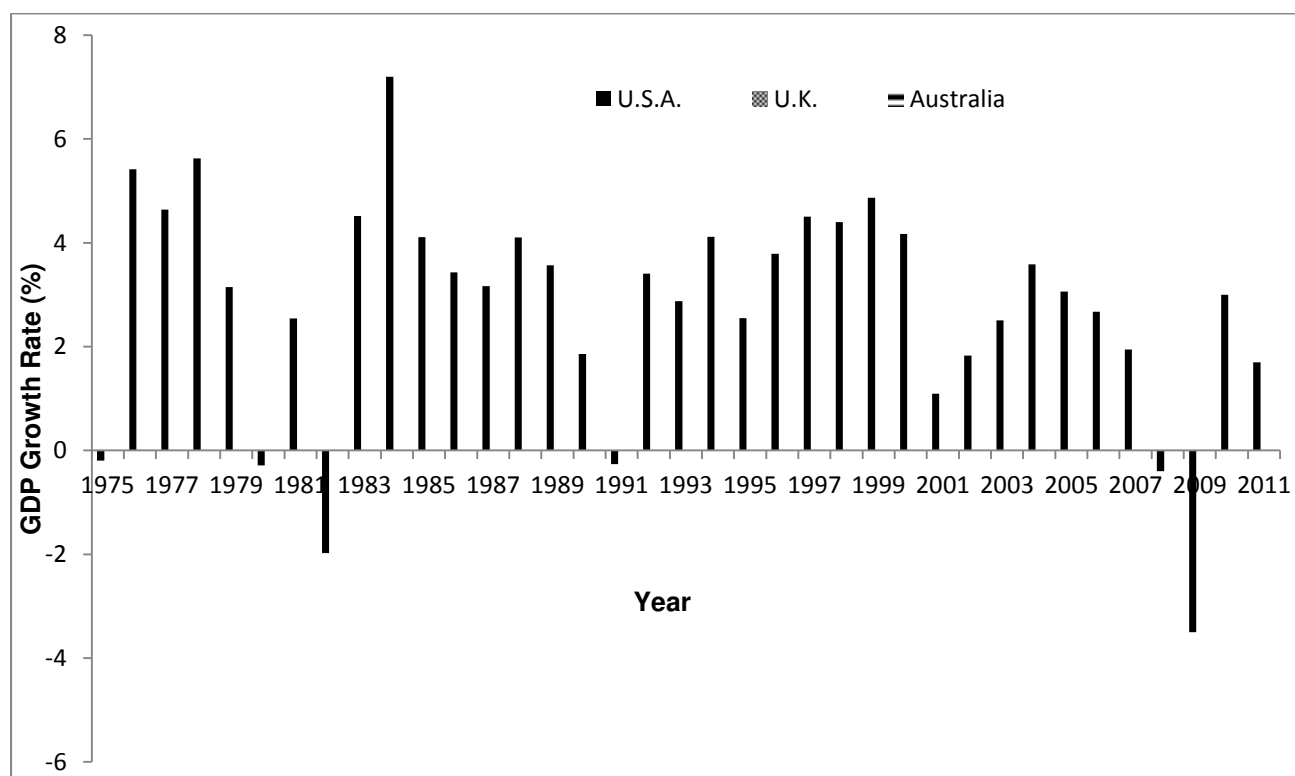
All the three countries enjoy well-developed economies although the annual economic growth rate levels have been slightly lower than those of the emerging economies. However, it is worth noting that the growth rate was highest during the late 1970s, mid-1980s and late 1990s for the USA, but highest during the mid-1980s and late 1990s for the UK and Australia. For all the countries, the growth rate has been unstable, with fluctuations throughout the period. The recent financial crisis was felt by all three countries. However, the USA and the UK were hardest hit, recording negative economic growth, while Australia was the least hit. Currently, all three economies continue tirelessly to seek growth solutions through various reforms in order to return economic growth to pre-crisis levels.

In terms of the GDP/per capita, all the economies have maintained an upward trend. While the USA had a continuously growing per capita GDP, the UK and Australia had minor fluctuations in their per capita GDP, especially during the mid-1980s, mid-1990s and the early 2000s. Of the three countries, the USA had the highest per capita income, leaving the UK and Australia to alternate in taking second and third positions.



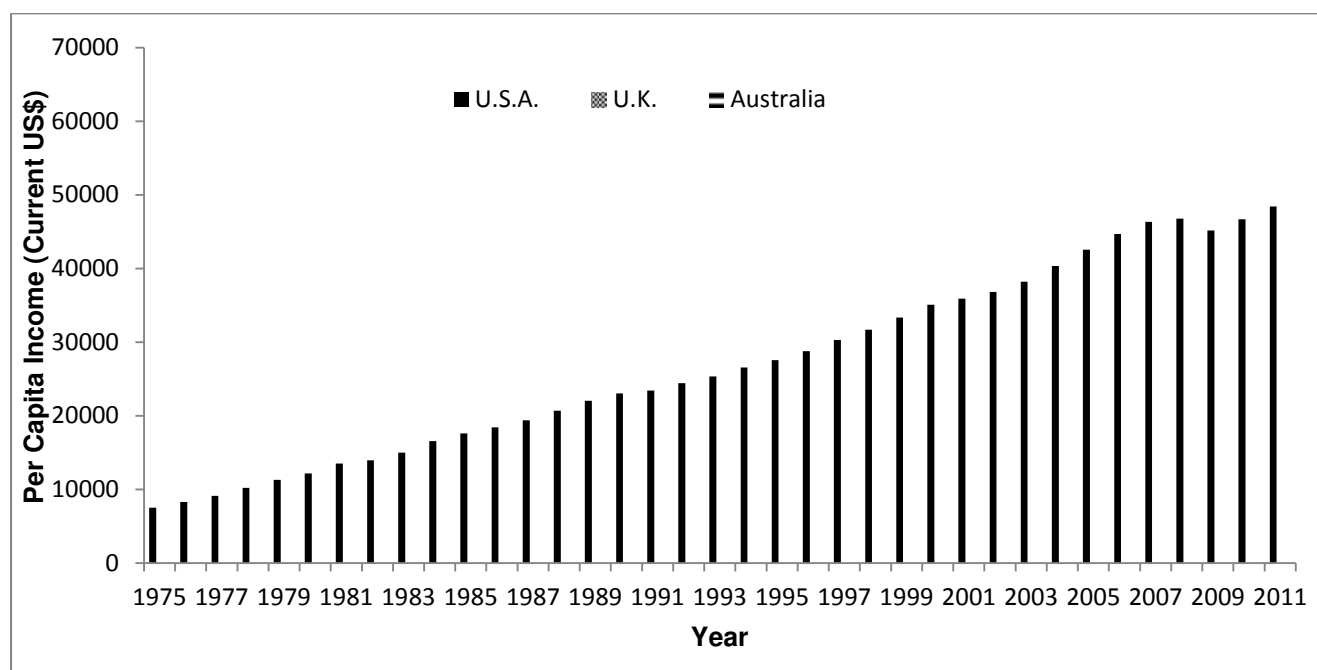
More recently, however, Australia has occupied the first position. Nevertheless, the disparity in per capita income among the three economies remains small. Figures 3.13 and 3.14 provide comparisons of economic growth rates and per capita income for the USA, the UK and Australia during the period 1975 to 2011.

**Figure 3.13: A Comparison of GDP Growth Rates for the USA, the UK and Australia (1975-2011)**



Source: World Bank Development Indicators (2012a)

**Figure 3.14: A Comparison of Per Capita Income for the USA, the UK and Australia (1975-2011)**

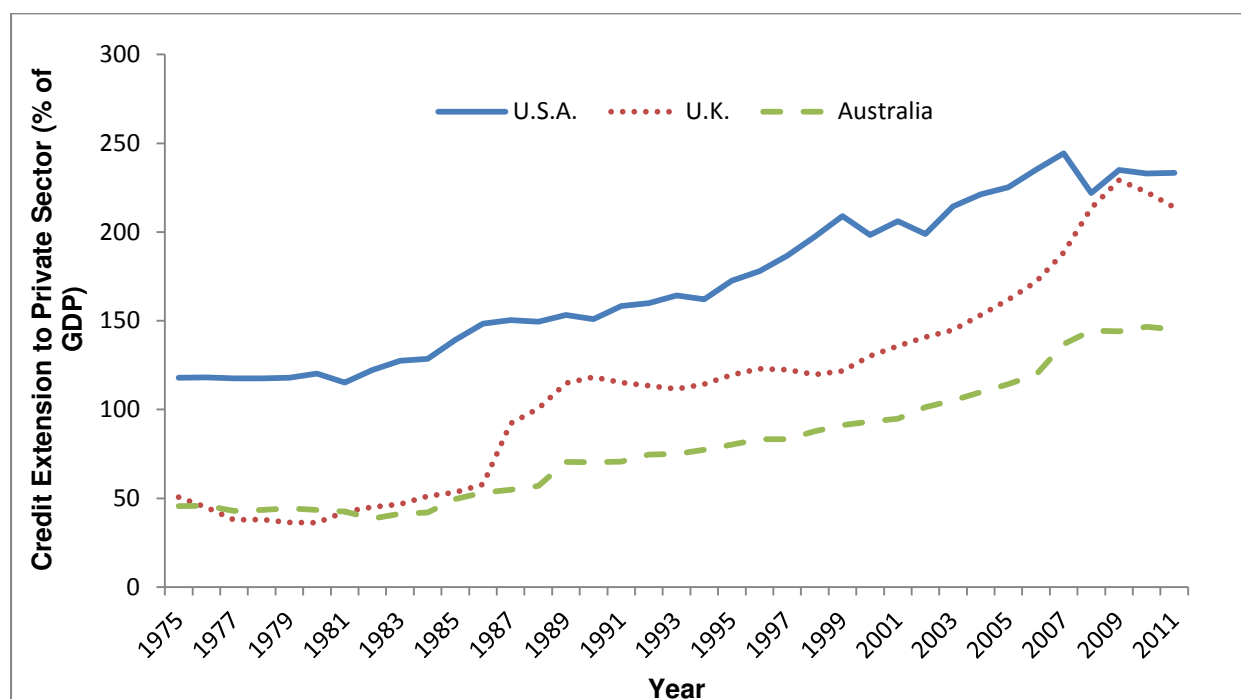


Source: World Bank Development Indicators (2012a)

In terms of the total number of banks, the USA has the highest number, followed by the UK and then Australia. The margin between the numbers of banks and other deposit-taking institutions in each country, currently, is very high – a total of almost 6300 in the USA; 350 in the UK and 65 in Australia. The number of banks has decreased in each economy since the recent financial crisis.

In terms of credit extended to private sector by the banking sector within the time period of the current study, the USA started and finished off in the best position of the three economies, reaching a peak of almost 250% in 2007, while Australia had the worst performance with the lowest credit extended to the private sector for the greatest part of the period and never exceeding the 150% mark. Figure 3.15 compares the rate of credit extension to the private sector for the USA, the UK and Australia during the period 1975 to 2011.

**Figure 3.15: A Comparison of Credit Extended to Private Sector for the USA, the UK and Australia (1975-2011)**



Source: World Bank Development Indicators (2012a)

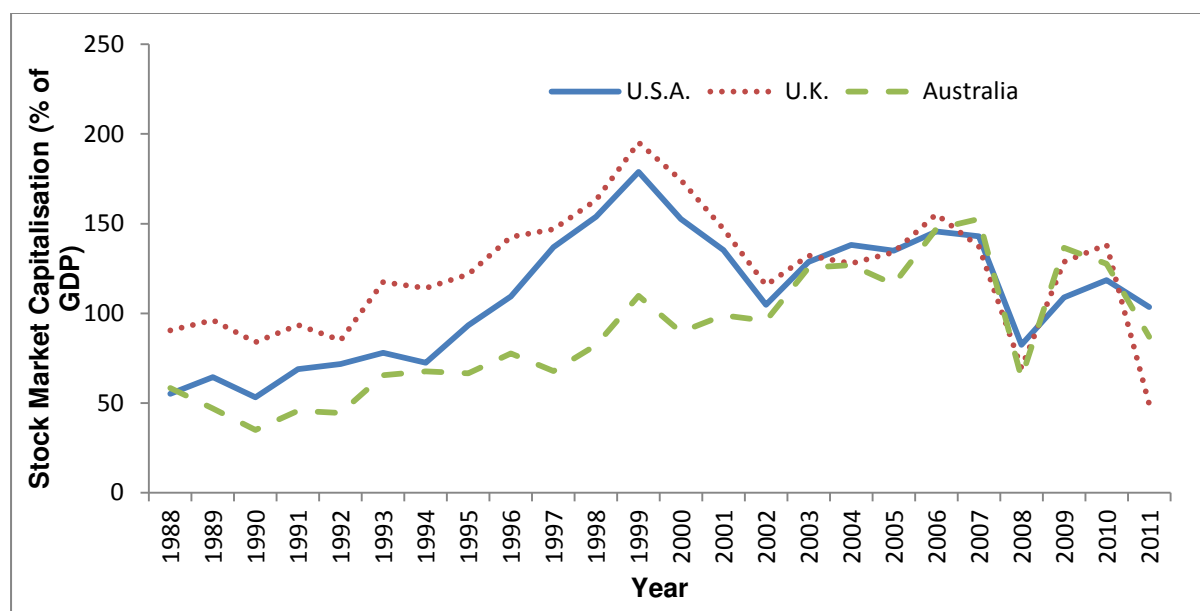
The institutional frameworks for the three countries remain strong, in general. The central banks of all three economies enjoy greater autonomy, with less government intervention. This is reflected in the strengths of institutional frameworks of the three economies. For all three, the central banks are at the apex of their financial sectors.

The authorities of the three economies appreciate the importance of well-developed economies in general, and banking sectors in particular; and they have embarked on extensive reforms to improve their banking sectors. However, reforms differed in several aspects although all were aimed at the development of the banking sectors and the economies at large.

Banking sectors of the three economies are faced with challenges. Though these challenges differ in dimension and magnitude, reduced bank profitability and the Eurozone contagion seem to top the list.

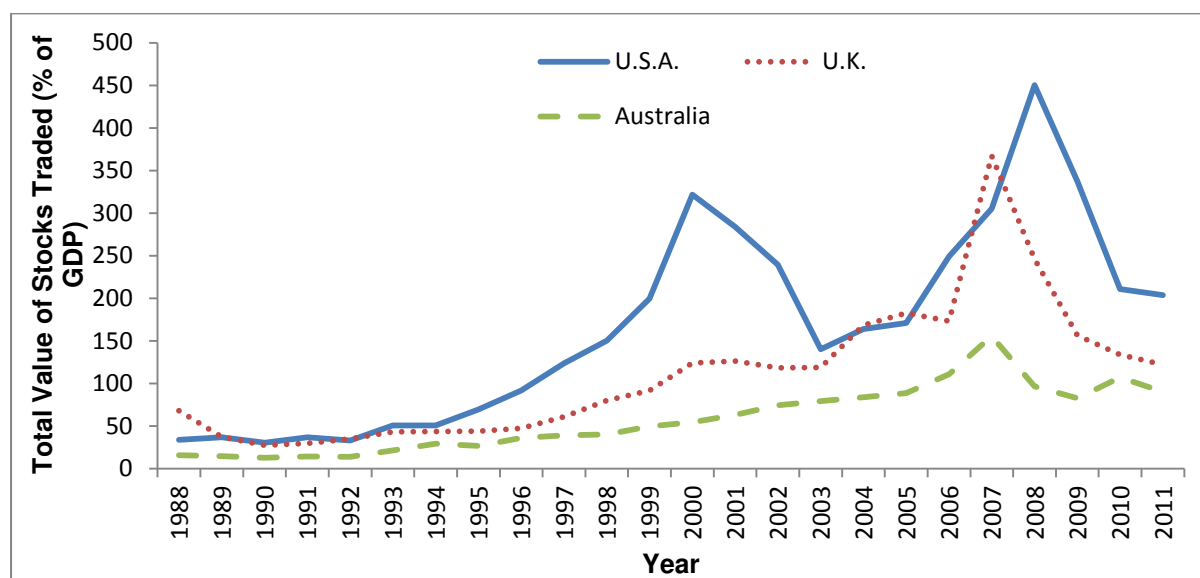
On the stock market front, Australia has the smallest and most inactive stock market in all respects – in terms of number of listed companies, stock market capitalisation (except during the late 2000s), total value of stocks traded and turnover ratio – while the USA has the biggest stock market in general. The UK had the biggest stock market size – as measured by stock market capitalisation – until 2002 when the stock market sizes of the three economies were almost of similar size. However, the USA has the most liquid stock market. Figures 3.16 - 3.18 compare stock market size and activity for the USA, the UK and Australia during the period 1988 to 2011.

**Figure 3.16: A Comparison of Stock Market Capitalisation for the USA, the UK and Australia (1975-2011)**



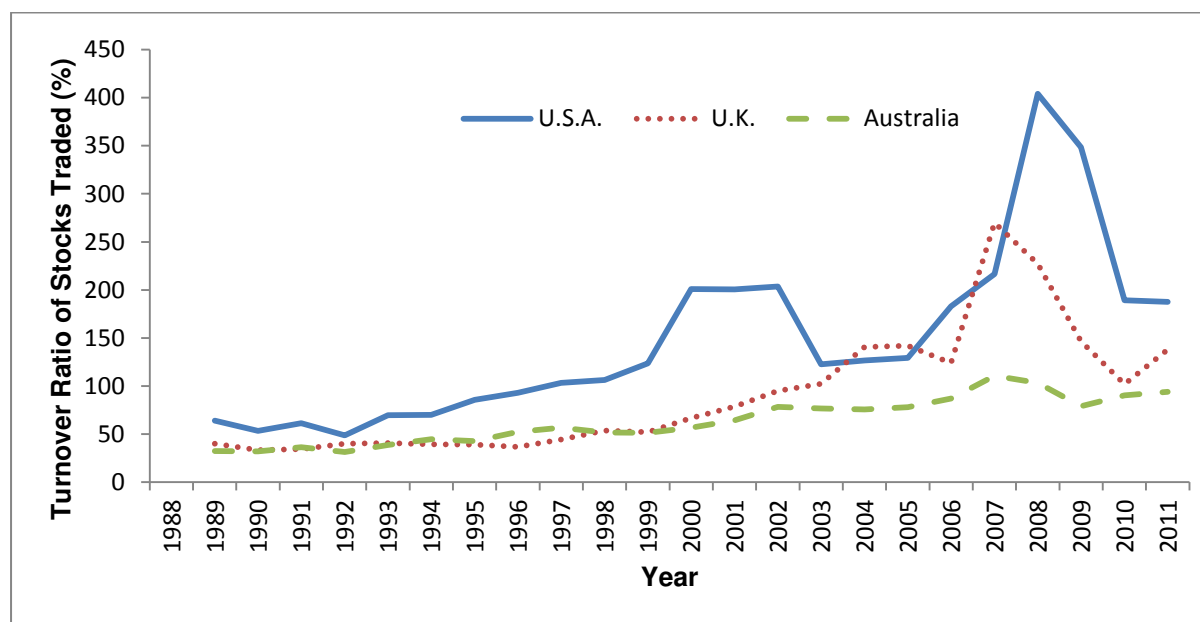
Source: World Bank Development Indicators (2012)

**Figure 3.17: A Comparison of Total Value of Stocks Traded for the USA, the UK and Australia (1988-2011)**



Source: World Bank Development Indicators (2012)

**Figure 3.18: A Comparison of Turnover Ratio of Stocks Traded for the USA, the UK and Australia (1988-2011)**



Source: World Bank Development Indicators (2012)

Stock markets in the three countries continue to be faced with various challenges, the most common one being that of liquidity. It can, however, be noted that institutional

framework, market discipline and integrity are strong in all three jurisdictions as the respective governments continue to push for improved stock market regulation and oversight. The governments of the three countries, therefore, have an important role to play in reducing financial sector frictions and in making financial markets work more efficiently.

## CHAPTER 4

### FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: THEORETICAL AND EMPIRICAL LITERATURE REVIEW

#### 4.1 Introduction

This chapter discusses both theoretical and empirical literature on financial development and economic growth. The chapter is divided into five sections. Section 4.2 reviews theoretical literature on the relationship between financial development and economic growth. In Section 4.3 empirical evidence on bank-based financial development and economic growth is reviewed. Section 4.4 covers empirical literature review on market-based financial development and economic growth. Finally, some concluding remarks are presented in Section 4.5.

#### 4.2 Financial Development and Economic Growth: A Theoretical Framework

A financial system plays an important role in the development of an economy by influencing savings and investment decisions and hence growth (Levine, 1997). The more developed the financial system is, the better will be financial resource allocation and monitoring of productive borrowers. A number of studies have illustrated the existence of a positive correlation between financial development and the development of the economy as a whole (Levine, 1997).

In general, financial systems are divided into bank-based and market-based types, according to the relative role of financial intermediaries and financial markets in an economy. Whether the comparative development of financial markets and banks can influence economic growth is, however, a question that has long been hotly debated; and to date the debate is far from being concluded.

If financial intermediaries (banks and bank-like financial institutions) play a leading role in driving an economy, that economy's financial system is generally referred to as "a bank-based financial system" (Demirguc-Kunt and Levine, 2001). The development of financial intermediaries or the banking system is what is broadly termed "bank-based financial development".

Bank-based financial sector development includes both bank-based financial widening and deepening. According to Ahmed and Ansari (1998), financial widening refers to the expansion of financial services and growth of financial institutions, while financial deepening refers to either an increase in per capita amount of financial services and institutions or an increase in the ratio of financial assets to income.

If financial markets (like stock and bond markets) share center stage with banks in driving economic growth via savings mobilisation, resource allocation, exerting corporate control, and easing risk management, that economy is referred to as having “a market-based financial system” (Demirguc-Kunt and Levine, 2001). Thus the development of financial markets is what is broadly termed “market-based financial development”.

In a market-based financial system, the preponderance of financial power is held by the stock market and economic mood is dependent on how well or poorly the stock market is doing (Trehan, 2013). Banks in a market-based financial system are less dependent upon interest from loans and gain much of their revenue through fee-based services such as checking accounts. Further, in a market-based financial economy, wealth is spread more unevenly. It is constantly shifting and each individual within the society has the opportunity to gain or lose on any given day (Trehan, 2013).

Sanusi (2011) argues that financial systems play a central role in the development of every economy by mobilising resources for productive investments and also by providing a conduit for the implementation of monetary policy. The role of banks and stock markets in economic development is widely acknowledged in literature. In particular, Schumpeter (1911) places the role of financial sector at the centre of economic development by asserting that it plays a pivotal role in economic development. He argues that it does this by affecting the allocation of savings, thereby improving productivity, technical change and the rate of economic growth (Schumpeter, 1911).

The endogenous growth literature supports the argument that financial development has a positive effect on economic growth (Bencivenga and Smith, 1991). According to



endogenous growth literature, well-functioning financial systems are able to mobilise savings, allocate resources efficiently, enhance the flow of liquidity, reduce information asymmetry and transaction costs, and provide an alternative to raising funds through individual savings (Bencivenga and Smith, 1991). In the light of these functions, it may confidently be stated that financial systems have a positive impact on growth.

This section reviews theoretical literature on financial development and economic growth. Section 4.2.1 discusses the role of financial systems in the economic growth process. Section 4.2.2 discusses the advantages and disadvantages of a bank-based financial system while Section 4.2.3 delves into the advantages and disadvantages of a market-based financial system. Section 4.2.4 gives a brief overview on growth models. Finally, theoretical literature on the direction of causality between financial development and economic growth is reviewed in Section 4.2.5.

#### **4.2.1 The Role of Financial Systems in the Economic Growth Process**

Levine (1997; 2004) differentiates five basic channels through which financial development can spur economic growth. These are: (i) facilitation of risk management; (ii) information production and allocation of capital; (iii) monitoring of managers and control over corporate governance; (iv) savings mobilisation and (v) easing the exchange of goods and services. These channels are discussed in detail below, following Levine (1997; 2004).

Financial systems promote economic growth through the facilitation of risk management. Given the availability of specific information and transaction costs, financial markets and institutions may arise to ease the trading, hedging, and pooling of risk, with implications for resource allocation and growth. Financial intermediaries may enhance liquidity and reduce liquidity risk. According to Bencivenga and Smith (1991) and as echoed by Levine (2004), banks can increase investment in high-return, illiquid assets and accelerate growth by eliminating liquidity risk.

Given the presence of specific costs associated with information and transaction, the presence and operations of financial systems may arise to facilitate the trading,

hedging, and pooling of risk in a way that re-allocates resources thereby enhancing growth. Costs that arise from informational asymmetries and transaction costs may inhibit liquidity and intensify liquidity risk which usually arises as a result of uncertainties associated with converting assets into a medium of exchange. These frictions, therefore, create motivations for the emergence of liquidity enhancing markets. In Levine's (1997; 2004) view, the association of liquidity and economic development arises because capital markets convert liquid financial instruments into long-term capital investments in illiquid production processes. Thus, according to Levine (1997), financial systems that easily enable people to diversify risk are likely to induce a shift toward projects with higher expected returns. Thus, by their ability to facilitate trade, banks and stock markets reduce liquidity risk (Levine, 1997).

Financial systems may also improve inter-temporal risk. In examining inter-temporal risk sharing, theory has focused on the useful role intermediaries play in easing inter-temporal risk smoothing (Allen and Gale, 1997; Levine, 2004). Risks such as macroeconomic shocks that cannot be diversified at a particular point in time can be diversified across generations. A financial system can facilitate inter-generational risk-sharing by investing with a long-run perspective and offering returns that are fairly low in boom times and fairly high in slack times (Levine, 1997).

Financial systems also play an information production and capital allocation role in the economic growth process. Unlike individual savers and borrowers, financial systems collect, process, and produce information regarding plausible investments (Levine, 1997; 2004). In so doing, the costs of acquiring, processing and producing information are reduced and resource allocation is improved (Boyd and Prescott, 1986). Insufficient information production or failure thereof, leads to sub-optimal capital allocation. Financial systems have the ability to provide information at low costs, which promotes capital to flow to its highest value use. Thus, this shows that financial systems improve the assessment of investment opportunities with positive implications on resource allocation by economising on information acquisition costs (Levine, 1997 and 2004).

Besides playing the information production and capital allocation role, financial systems can monitor firms and exert corporate governance (Levine, 1997; 2004).

Efficient financial systems lead to optimal allocation of capital, thereby promoting economic growth. According to Levine (2004), the extent to which the providers of capital can efficiently monitor and influence how the capital is used has implications for both savings and allocation decisions at a national level (Levine, 2004).

According to Levine (1997; 2004), the financial sector promotes economic growth through savings mobilisation which involves the agglomeration of capital from incongruent savers for investment. However, mobilising the savings of many disparate savers is costly. Given transaction and information costs associated with mobilising savings from many agents, numerous financial arrangements can reduce frictions and facilitate pooling, thereby strongly affecting economic development (Levine (1997).

A financial system also eases exchange, thereby promoting economic growth. Financial arrangements that lower transaction costs can promote specialisation, technological innovation, and growth (Smith, 1776). In today's world, through continuous innovation, financial systems are able to move the value of money from one party to another almost instantly, irrespective of the distance between the transacting parties. This eases exchange and facilitates business with positive ramifications for economic growth.

#### **4.2.2 Advantages and Disadvantages of a Bank-Based Financial System**

It is still believed, by many, that a bank-based financial system is superior to a market-based system. In particular, it is claimed that economic growth can be better encouraged within a bank-based system because of its ability to induce longer-term investment in the real sector, while investment in a market-based system setup may be too sensitive to stock market prices involving short-term investment (Hoshi *et al.*, 1990).

The bank-based system can encourage productive investment as it is less affected by unstable financial markets. Even in times of economic distress, the close link between banks and business can allow firms to continue with investment without leading them into bankruptcy (Demirguc-Kunt and Levine, 2001).

However, the bank-based financial system is not without its own disadvantages. It is prone to inefficient capital allocation and high debt ratio problems (Demirguc-Kunt and Levine, 2001). While government bailouts in periods of financial crisis can prevent the financial and economic crisis from getting worse, they can also have negative effects, thereby making the system more fragile and prone to further financial crises. The negative outcomes of bailouts include encouragement of risky investments, placing a burden on the taxpayers, as well as fraud promotion and loss of public trust. The view that government bailouts harm the economy has also been aired by Greenspan (1999).

#### **4.2.3 Advantages and Disadvantages of a Market-Based Financial system**

In this section, both the advantages and disadvantages of the market-based financial system are discussed. The case for a market-based system not only highlights the positive role played by markets in facilitating risk management and capital allocation, but also facilitates a counterattack on the bank-based view by focusing on the problems created by powerful banks.

According to Levine (2004), powerful intermediaries with a huge influence over firms may exist in bank-based systems and this influence may be negative. As an example, Levine emphasises that, once banks attain significant inside information about firms, they can extract rents from these firms as firms pay for access to capital.

In Morck and Nakamura's (1999) view, financial institutions as debt issuers are biased toward prudence. As such, bank-based systems may stifle corporate innovation and growth. While firms with a close relationship with a main bank have greater access to capital than firms without a main bank, Levine (2004) points out that firms using a main bank tend to use a conservative approach and do not grow faster than firms without a main bank. They have also been found to use more capital intensive processes than non-main bank firms holding other things constant; and they also produce lower profits, a scenario consistent with rent extraction by powerful banks.

Another advantage of market-based financial systems, according to Levine (2004), is that markets provide a better set of tools to manage risk. These tools permit greater customisation of risk-ameliorating instruments (Levine, 2004).

The market-based financial system is not without its own disadvantages. Supporters of bank-based financial systems claim that well-developed markets reveal information more easily in public markets, thereby reducing investors' incentives to acquire information (Stiglitz, 1985). As a result, greater market development may reduce incentives for identifying innovative projects that foster growth.

#### **4.2.4 Growth Models and Financial Sector Development: A Theoretical Review**

There are several traditional theoretical models that show the interaction between economic growth and financial development. These models are briefly discussed in the sections that follow. Section 4.2.4.1 presents the Harrod-Domar growth models and financial sector development while Section 4.2.4.2 covers the neoclassical growth models and financial sector development. The endogenous growth models and financial sector development are discussed in Section 4.2.4.3 while the Schumpeterian growth models and financial sector development are covered in Section 4.2.4.4.

##### **4.2.4.1 Harrod-Domar Growth Models and Financial Sector Development**

According to Bouton and Sumlinski (1998), growth economists have been trying to explain the sources of economic growth since the days of Adam Smith. The work of Harrod (1939) and Domar (1947) provided pointers, leading economists to a better understanding of economic growth. At the heart of this model is the concept of the steady accumulation of physical capital through savings and investment translating into higher production levels (Bouton and Sumlinski, 1998).

The Harrod-Domar condition for equilibrium growth requires that both the labour force and capital stock be fully employed as the economy grows. Rising unemployment of labour violates the full-employment growth assumption, and is also accompanied by

deficient demand and falling prices. On the other hand, under-utilisation of the capital stock drives profits and investment incentives down, reducing investment and the demand for output.

The requirement that capital stock be fully utilised as the economy grows points to the basic dynamic process highlighted by Harrod and Domar in the early 1940s. The level of investment is associated with the level of output through the multiplier, while it is also associated with growth rates of output through changes in the capital stock. Thus, the Harrod-Domar model suggests that the economy's rate of growth depends on the levels of saving and productivity of investment, as in the capital output ratio. The existence of financial intermediaries in an economy plays an important role in fulfilling the Harrod-Dormar conditions for growth. They facilitate the mobilisation of savings in the economy and direct the pooled resources towards high-return investment projects. Thus a well-functioning financial sector can promote capital flow to its highest value use, with positive ramifications on resource allocation, output, income and economic growth.

#### **4.2.4.2 Neoclassical Growth Models and Financial Sector Development**

Works by Solow (1956) led growth theorists to abandon the Harrod-Domar framework in favour of what the neoclassical growth model had to offer. The neoclassical growth model has been the central building block for the bulk of theoretical and empirical literature on economic growth following Solow's 1956 article which introduced a different angle on the role of investment in the economic growth process, thus leading to a new phase in growth literature.

According to Solow (1956), steady state growth is determined by technological change, and can be achieved by endogenous variations in factor accumulation. However, rather than emphasising factor accumulation as a determinant of long-run growth, Solow's model assumes that GDP is produced based on an aggregate production function technology which relates potential output to the levels of capital and labour inputs and to multi-factor productivity.

The neoclassical theory attributes underdevelopment to poor resource allocation caused by incorrect pricing policies and excessive state intervention. However financial intermediaries can help improve resource allocation and consequently can impact positively on economic growth.

In 1956, Solow formulated the basic neoclassical growth model based on the assumptions that investment and savings constitute a fixed fraction of output and that the labour force growth rate is given exogenously. The neoclassical growth model is built on a production function with constant returns to scale, capital and labour substitutability, and diminishing marginal productivities. The production function is homogeneous of degree one and exhibits constant returns to scale. This means that if all inputs are changed proportionately, then output will change by the same proportion.

According to Solow (1956), some positive level of investment is required to replace capital as it depreciates and also to maintain the size of the capital stock so that it remains constant in relation to labour force. A well-developed financial sector channels resources to viable investment projects, thereby promoting economic growth. Thus, countries with higher investment levels and capital levels per worker will enjoy higher levels of per capita output.

The neoclassical model, suitably modified to take account of technical progress, seems also to be generally relevant to the developed or industrial economies, since the assumption of constant returns to scale and the maintenance of full employment, at least since the 1940s, may be generally valid in these economies. In developing countries, there is a much wider scope for increasing returns to scale. This would change the shape of the production function and lead to the possibility of multiple equilibrium positions. Thus, following Solow's model, the major forces behind economic growth are capital stock, labour, savings, investment and technological change.

Financial Institutions can assist in pooling savings and making the funds available to investors. Financial intermediaries can also help in channelling funds to viable investment projects. Thus, based on the neoclassical growth model, a more

developed financial sector can promote economic growth through savings mobilisation, investment and technological change.

#### **4.2.4.3 Endogenous Growth Models and Financial Sector Development**

Unlike the neoclassicals, the endogenous growth theorists have a belief that the sources of economic growth are endogenous. The line of thinking in this model is that economic growth can be generated without relying on exogenous factors such as changes in technology or population (Romer, 1989; Grossman and Helpman, 1990; Levine, 1991; Bencivenga and Smith, 1991).

According to Grossman and Helpman (1990), the advances in growth theory has enabled the modern day researchers to address many issues that have been central to the financial development and economic growth for a long time. For example in what ways, and to what extent do financial systems serve as an engine for growth?

Amongst the first researchers to propose the endogenous growth models as ways of finding channels through which the financial system affects long-run economic growth were Levine (1991) and Bencivenga and Smith (1991). They put emphasis on the important role financial markets play in spreading agents' risk – both investment and liquidity risk. According to Levine (1991) and Bencivenga and Smith (1991), financial markets also entice more savings into productive investment at the same time preventing untimely withdrawal of capital invested in long-term projects.

According to endogenous growth theory, the functions of a financial sector can effectively increase the rate of economic growth. By increasing the quality and probability of success of an undertaken innovation, these functions can positively affect the level and progress of technology available in the economy. Additionally, since technology plays such a pivotal role in new growth models, a financial system can substantially influence economic performance. By mobilising savings, banks and equity markets increase capital accumulation and again can exert a positive impact on the equilibrium growth rate.



The insights and techniques of endogenous growth models – which have revealed that there can be self-sustaining growth without exogenous technical progress and that the growth rate can be associated with preferences, technology, income distribution and institutional arrangements – have led to the recent revival of interest in the link between financial development and growth (Pagano, 1993).

To capture the potential effects of financial development on growth within an endogenous growth model, Pagano (1993: 614) proposed a simple endogenous growth model, known as the ‘AK’ model, where aggregate output is a linear function of the aggregate capital stock:

$$Y_t = AK_t \dots\dots\dots(4.1)$$

where each firm faces a technology with constant returns to scale (see also Romer, 1989) but productivity is an increasing function of the aggregate capital stock  $K_t$ , such that in an economy with  $N$  identical firms, each producing output  $y_t = Bk_t^\alpha$  with its capital stock  $k_t$ , and that  $B$  is regarded as a parameter by individual firms but actually responds to the average capital stock according to  $B = Ak_t^{1-\alpha}$ , then aggregate output,  $Y_t = Ny_t$ , is given by (4.1). According to Pagano (1993), the AK model can be alternatively derived based on the assumption that  $K$ , is a composite of physical and human capital (see also Lucas, 1988).

To further simplify the model, Pagano (1993) assumed that population is stationary and that there exists one good economy, where the good can be consumed or invested. If invested, it depreciates at the rate  $\delta$ , such that gross investment equals

$$I_t = K_{t+1} - (1 - \delta)K_t \dots\dots\dots(4.2)$$

Under the assumption that the economy is closed with no government, capital market equilibrium requires that gross saving  $S_t$ , equals gross investment  $I_t$ . If a portion of savings flow  $(1 - \phi)$  is ‘lost’ in the process of financial intermediation, then:

$$\emptyset S_t = I_t \dots\dots\dots(4.3)$$

From (4.1), the growth rate at time  $t + 1$  is  $g_{t+1} = \frac{Y_{t+1}}{Y_t} - 1 = \frac{K_{t+1}}{K_t} - 1$ .

Using (4.2) and dropping the time indices, the steady-state growth rate can be expressed as:

$$g = A \frac{I}{Y} - \delta = A \emptyset s - \delta \dots\dots\dots(4.4)$$

where gross savings rate  $S/Y$  is denoted by  $s$ , following the use of the capital market equilibrium condition (4.3).

According to Pagano (1993), Equation (4.4) concisely reveals how financial development can affect growth within the endogenous growth framework. Thus, it may affect growth by increasing  $\emptyset$ , which is the proportion of savings channelled to investment. However, it may also increase  $A$ , the social marginal productivity of capital; and it can influence  $s$ , the private saving rate (Pagano, 1993).

#### 4.2.4.4 Schumpeterian Growth Models and Financial Sector Development

Another strand of endogenous growth theory is the Schumpeterian approach to economic growth. In this strand, economic growth is mainly driven by innovations within the entrepreneurial environment. These innovations, in turn, are influenced by the institutional environment. According to Dinopoulos (2006), the development of Schumpeterian growth theory started in the early 1990s, motivated by diverging national growth rates, Japan's challenge to United States technological leadership and the inability of the neoclassical growth theory to account for the long-run causes of technological progress.

The Schumpeterian approach to economic growth is centred on three core ideas. These are: (i) innovation is the primary source of technological progress; (ii) innovations are created by self-interested firms, entrepreneurs, and researchers who expect rewards through monopoly rents if their innovation is successfully implemented; and (iii) the monopoly rents are eventually dissipated when new processes and/or products introduced by the innovators become out-dated and are driven out of the market by newer technologies.

Schumpeter assumes a perfectly competitive economy which is in stationary equilibrium. In such a stationary state, there is perfect competitive equilibrium with no profits, no interest rates, no savings, no investments and no involuntary unemployment. This equilibrium is termed “circular flow”.

Discontinuous technical changes lead to economic growth, according to Schumpeter. He further says that the process of economic development can be set in motion by five events, which are: (i) the introduction of a new product or (ii) of a new method of production; (iii) the opening up of a new market; (iv) the conquest of a new source of raw materials and (v) the change in the structure and organisation of some industry, such as the creation of a monopoly. As a result of these changes, the absorption of factors of production changes, thereby leading to further development.

Schumpeter’s model starts with the breaking up of the circular flow with an innovation in the form of a new product by an entrepreneur for the purpose of earning a profit. Once the innovation becomes successful and profitable, other entrepreneurs follow it. Furthermore, according to the model, innovations in one field may induce other innovations in related fields.

It was Schumpeter, who put the role of financial intermediation at the centre stage of economic development with his first articulated statement about how financial transactions take central stage in economic growth. He eschewed the modern phrasing of financial transactions but used the banker as an example. Instead of using the term, economic growth, he used the term, development. According to the Schumpeterian growth models, the services provided by financial intermediaries,

(such as mobilising saving, evaluating projects, managing risks and facilitating transactions) are essential for technological innovation and for economic development.

#### **4.2.5 Financial Development and Economic Growth: Direction of Causality**

The relationship between financial development and economic growth has been a subject of considerable interest, receiving considerable attention in the growth literature. A large and growing body of theoretical work has emerged following the pioneering work of Schumpeter (1911), and more recently of McKinnon (1973) and Shaw (1973), yet with little consensus. Although it is now well recognised that financial development is crucial for economic growth, there are some studies that assert the contrary (Lucas, 1988).

In his early work, Schumpeter (1911) points out the productivity and growth-enhancing effects of the services provided by a developed financial sector. He argues that financial systems play a crucial role in fostering technological innovation and economic growth by providing basic services such as mobilising savings, monitoring managers, evaluating investment projects, managing and pooling risks and facilitating transactions.

The seminal works of McKinnon (1973) and Shaw (1973) have supported Schumpeter's view on promoting development of a financial sector to ensure economic growth. The authors criticise the Keynesian or financial repressionist view adopted by many governments in developing countries in the early 1970s. They argue that government restrictions on the banking system (such as interest rate ceilings, high reserve requirements and directed credit programmes) hinder financial development and reduce output growth. Similarly, the endogenous growth literature stresses the influence of well-developed financial markets on economic growth as these markets promote investment and growth by channeling financial resources to their most productive uses.

However, while most of the growth economists have, in general, emphasised the fundamental role financial intermediaries and stock markets can play in the economic

growth process, the empirical evidence on the relationship between financial development and economic growth is apparently inconclusive. A number of studies have revealed a positive impact that financial development has on economic growth. Such studies include those by King and Levine (1993b), Neusser and Kugler (1998), Rousseau and Wachtel (1998), Levine et al. (2000), Khan and Senhadji (2003), Chistopoulos and Tsionas (2004), Khan *et al.* (2005) and Khan and Qayyum (2006). On the other hand, some studies, for example Lucas (1988), reject the existence of a finance-growth relationship. Although there is little consensus on the importance of financial development on economic growth, the bulk of the empirical literature attests to the positive relationship between the two.

The direction of causality between financial development and economic growth is also a hotly debated issue. Although it is crucial to establish the direction of causality between financial development and economic growth because of the policy implications behind the causal flow, this causal relationship remains unclear.

The debate regarding direction of causality between financial development and economic growth has been ongoing since the 19<sup>th</sup> Century. For a long time, the conventional wisdom has been in favour of the supply-leading response, where the development of the financial sector is expected to precede that of the real sector (Odhiambo, 2008a). To date four views exist in the literature regarding the finance-growth nexus. These are: (i) “the finance-led growth hypothesis” or the “supply-leading hypothesis”; (ii) “the growth-led finance hypothesis” or the “demand-following hypothesis”; (iii) “the feedback hypothesis” or the “bidirectional causality view” and (iv) “the independent hypothesis” that suggests that the role of financial development in driving economic growth is exaggerated, and that there is no causal relationship between the two. This study shall, however, focus on the literature regarding the first three views, due to the limited availability of literature on the fourth view.

The supply-leading hypothesis argues that financial development is important and leads to economic growth. This view has recently been widely supported by McKinnon (1973), Shaw (1973), and King and Levine (1993b), among others. Although Schumpeter (1911) is generally acknowledged as the first proponent of the supply-

leading theory, the support for the supply-leading response can be traced as far back as Bagehot (1873) who claimed that the financial sector played a major part in the growth process in England by enabling the mobilisation of capital for immense works. It is this view that was reinforced by Schumpeter (1911), when he argued that finance leads economic growth and that financial institutions are necessary for a capitalistic economy's development.

In 1952, Robinson attempted to challenge Schumpeter's view by arguing that it is the development of the real sector, economic growth, which leads the development of the financial sector and that where there is economic growth, financial sector development follows (Robinson, 1952). Furthermore, according to Robinson (1952), finance does not cause economic growth but it is financial development that follows economic growth due to increased demand for financial services and products. Gurley and Shaw (1967), Goldsmith (1969) and Jung (1986) also lend support to this line of argument.

In 1966, Patrick attempted to reconcile the two conflicting theories by arguing that the direction of causality between financial development and economic growth changes over the course of development, a phenomenon commonly known as "the Patrick's Hypothesis". Thus, according to Patrick (1966), the supply-leading pattern dominates during the early stages of economic development while the demand-following pattern dominates at later stages.

### **4.3 Bank-Based Financial Development and Economic Growth: Empirical Evidence**

This section reviews empirical literature on bank-based financial development and economic growth. Section 4.3.1 discusses the empirical literature on the nature of the association between bank-based financial development and economic growth. Section 4.3.2 discusses the empirical literature consistent with the supply-leading response while Section 4.3.3 focuses on the demand-following response literature. Finally, empirical literature on the bidirectional causality response is reviewed in Section 4.3.4.

#### **4.3.1 Bank-Based Financial Development and Economic Growth: Nature of Association**

Extensive work has been done in an attempt to establish the nature of the relationship between bank-based financial development and economic growth, yet with little consensus to date.

Using the ratio of bank credit to private sector as a measure of bank-based financial development, De Gregorio and Guidotti (1995) examined the empirical relationship between economic growth and financial development in a large cross-country sample. Overall, they found that bank-based financial development is positively related to economic growth. However, its impact tends to vary across different countries; and in a panel data for Latin America, it was found to be negative.

Odedokun (1996a) analysed the effects of financial development on economic growth in 71 less-developed countries (LDCs), using annual data over varying periods, from the 1960s through to the 1980s. He found that financial development promotes economic growth in about 85% of these countries. However, a negative association between financial development and economic growth was revealed in at least 15% of the 71 countries he investigated.

Ahmed and Ansari (1998) investigated the relationship between financial sector development and economic growth in the three major South-Asian economies of India, Pakistan, and Sri Lanka, using pooled data, based on time-series and cross-sectional observations. Using M2/GDP, quasi-money/GDP and domestic credit to nominal GDP, as proxies for bank-based financial development, the results revealed that bank-based financial development has a positive impact on economic growth in these countries.

Allen and Ndikumana (2000) used various indicators of financial development to examine the role of financial intermediation in stimulating economic growth in Southern Africa. Using a reduced-form equation relating the growth rate of real per capita GDP to an indicator of financial development, and controlling for other factors that affect economic growth, they found evidence of a positive relationship between financial development and economic growth.

Güryay *et al.* (2007) analysed the relationship between financial development and economic growth in Northern Cyprus, using the Ordinary Least-Squares Estimation Method. The study indicates that financial development exerts a negligible positive effect on economic growth in the country studied.

Kargbo and Adamu (2009) examined the relationship between financial development and economic growth in Sierra Leone for the period 1970-2008. They used a method of principal components to construct a financial sector development index, used to proxy development in the financial sector. Using the ARDL approach; the results showed that financial development exerts a statistically significant positive effect on economic growth.

Hassan *et al.* (2011) examined the role of financial development on the economic growth process in low- and middle-income countries, using both panel regressions and variance decompositions. The results showed a positive relationship between financial development and economic growth in these developing countries.

Adu *et al.* (2013) investigated the long-run growth effects of financial development in Ghana. They found that the effect of financial development on economic growth is sensitive to the choice of proxy used. When credit to the private sector as a ratio to GDP and total domestic credit are used as proxies for financial development; a positive association between financial development and economic growth was confirmed. However, when considering broad money stock to GDP ratio, the relationship between financial development and economic growth was found to be negative.

Contrary to the conclusions reached in several recent studies that attest to the positive impact that bank-based financial development has on economic growth, Ram (1999) found that financial development does not promote economic growth. Based on his 95-country study, the predominant pattern was that of a negligible or weakly negative association between financial development and economic growth. Using measures of bank-based financial development to proxy financial development, Andersen and Tarp (2003) too found a weak association between financial development and economic



growth in their 74-country study. Table 4.1 provides a summary of the selected studies that show the nature of association between bank-based financial development and economic growth.

**Table 4.1: Studies Showing the Nature of Association between Bank-Based Financial Development and Economic Growth**

| <b>Author(s)</b>               | <b>Title</b>                                                                                                                         | <b>Region/Country</b>                  | <b>Variables</b>                                                                                                                                                                                                 | <b>Methodology</b>                                                                                                                               | <b>Positive/Negative Association</b>                   |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| De Gregorio and Guidotti, 1995 | Financial development and economic growth                                                                                            | A large number of countries            | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Credit</li> <li>– Investment</li> <li>– Human capital accumulation</li> <li>– Government spending</li> <li>– Political instability</li> </ul> | – Cross-sectional data                                                                                                                           | Positive association (in a large cross-country sample) |
| Odedokun, 1996a                | Alternative econometric approaches for analysing the role of the financial sector in economic growth: Time-series evidence from LDCs | LDCs - 71 developing countries         | <ul style="list-style-type: none"> <li>– Annual growth rate of the real GDP</li> <li>– Financial depth</li> <li>– Labour force growth</li> <li>– Investment/GDP ratio</li> <li>– Real export growth</li> </ul>   | <ul style="list-style-type: none"> <li>– Ordinary Least Squares (OLS) techniques</li> <li>– Generalized Least Squares (GLS) technique</li> </ul> | Positive association (in 85% of the 71 countries)      |
| Ahmed and Ansari, 1998         | Financial sector development and economic growth: The South-Asian experience                                                         | India, Pakistan and Sri Lanka          | <ul style="list-style-type: none"> <li>– Per capita real GDP</li> <li>– Per capita nominal GDP</li> <li>– M2/GDP</li> <li>– Quasi-money/GDP</li> <li>– Domestic credit to nominal GDP</li> </ul>                 | – Pooled data based on time-series and cross-sectional observations                                                                              | Positive association                                   |
| Allen and Ndikumana, 2000      | Financial intermediation and economic growth                                                                                         | 8 Southern Africa – Botswana, Lesotho, | <ul style="list-style-type: none"> <li>– Per capita GDP</li> <li>– Ratio of M3 to GDP</li> <li>– Market capitalisation</li> </ul>                                                                                | – Cross-sectional data analysis                                                                                                                  | Positive association                                   |

| Author(s)                   | Title                                                                    | Region/Country                                                  | Variables                                                                                                                                                                                                                                                                      | Methodology                                                                                                  | Positive/Negative Association            |
|-----------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------|
|                             | on Southern Africa                                                       | Mauritius, Malawi, Swaziland, South Africa, Zambia and Zimbabwe | <ul style="list-style-type: none"> <li>– Total value traded</li> <li>– Gross domestic investment</li> </ul>                                                                                                                                                                    |                                                                                                              |                                          |
| Güryay <i>et al.</i> , 2007 | Financial development and economic growth: Evidence from Northern Cyprus | Northern Cyprus                                                 | <ul style="list-style-type: none"> <li>– Annual growth rates of real GDP</li> <li>– Annual population growth</li> <li>– Annual growth of export</li> <li>– Ratio of domestic investments to GDP</li> <li>– Ratio of deposits to GDP</li> <li>– Ratio of loan to GDP</li> </ul> | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– Ordinary Least Squares techniques</li> </ul> | Positive association (though negligible) |
| Kargbo and Adamu, 2009      | Financial development and economic growth in Sierra Leone                | Sierra Leone                                                    | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Financial development index</li> <li>– Investment</li> <li>– Real deposit rate</li> </ul>                                                                                                                         | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– ARDL approach</li> </ul>                     | Positive association                     |
| Hassan <i>et al.</i> , 2011 | Financial development and economic growth: New evidence from panel data  | Low- and middle-income countries                                | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Domestic credit provided by the banking sector to GDP</li> <li>– Domestic credit to the private sector as a percentage of GDP</li> <li>– M3 to GDP</li> <li>– Gross domestic savings</li> </ul>             | <ul style="list-style-type: none"> <li>– Panel regressions</li> <li>– Variance decompositions</li> </ul>     | Positive association                     |

| Author(s)                      | Title                                                                                                 | Region/Country                 | Variables                                                                                                                                                                                                                                                                                                                                                                                        | Methodology                                                                                                             | Positive/Negative Association                                                                                                                    |
|--------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                       |                                | to GDP                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                         |                                                                                                                                                  |
| Adu <i>et al.</i> , 2013       | Financial development and economic growth in Ghana: Does the measure of financial development matter? | Ghana                          | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Credit to the private sector as ratio to GDP</li> <li>– Total domestic credit</li> <li>– Broad money stock to GDP ratio</li> <li>– Real gross fixed capital formation to GDP ratio</li> <li>– Real gross government expenditure</li> <li>– Trade openness</li> <li>– Inflation</li> <li>– Financial liberalisation dummy</li> </ul> | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– ARDL approach</li> </ul>                                | Positive association (when credit to the private sector as ratio to GDP and total domestic credit are used as proxies for financial development) |
| De Gregorio and Guidotti, 1995 | Financial development and economic growth                                                             | A large number of countries    | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Credit</li> <li>– Investment</li> <li>– Human capital accumulation</li> <li>– Government spending</li> <li>– Political instability</li> </ul>                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>– Cross-sectional data</li> </ul>                                                | Negative association (in Latin America)                                                                                                          |
| Odedokun, 1996a                | Alternative econometric approaches for analysing the role of the financial                            | LDCs - 71 developing countries | <ul style="list-style-type: none"> <li>– Annual growth rate of the real GDP</li> <li>– Financial depth</li> <li>– Labour force growth</li> </ul>                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>– OLS techniques</li> <li>– Generalized Least Squares (GLS) technique</li> </ul> | Negative association (in 15% of the 71 countries)                                                                                                |

| Author(s)                | Title                                                                                                 | Region/Country | Variables                                                                                                                                                                                                                                                                                                                                                                                 | Methodology                                                                              | Positive/Negative Association                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                          | sector in economic growth: Time-series evidence from LDCs                                             |                | <ul style="list-style-type: none"> <li>– Investment-GDP ratio</li> <li>– Real export growth</li> </ul>                                                                                                                                                                                                                                                                                    |                                                                                          |                                                                                                         |
| Adu <i>et al.</i> , 2013 | Financial development and economic growth in Ghana: Does the measure of financial development matter? | Ghana          | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Credit to the private sector as ratio to GDP</li> <li>– Total domestic credit --- Broad money stock to GDP ratio</li> <li>– Real gross fixed capital formation to GDP ratio</li> <li>– Real gross government expenditure</li> <li>– Trade openness</li> <li>– Inflation</li> <li>– Financial liberalisation dummy</li> </ul> | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– ARDL approach</li> </ul> | Negative association (when broad money stock to GDP ratio is used as proxies for financial development) |
| Ram, 1999                | Financial development and economic growth: additional evidence                                        | 95 countries   | <ul style="list-style-type: none"> <li>– GDP Growth</li> <li>– Financial development</li> <li>– Export growth</li> <li>– Investment as a share of GDP</li> </ul>                                                                                                                                                                                                                          | Individual/country group time-series                                                     | Weak association                                                                                        |
| Andersen and Tarp, 2003  | Financial Liberalisation, Financial Development and Economic growth                                   | 74 countries   | <ul style="list-style-type: none"> <li>– Private credit</li> <li>– GDP per capita</li> <li>– Commercial bank assets to commercial bank plus central bank assets</li> </ul>                                                                                                                                                                                                                | Cross-section                                                                            | Weak association                                                                                        |

| Author(s) | Title | Region/Country | Variables                                                                                                                                                                                          | Methodology | Positive/Negative Association |
|-----------|-------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------|
|           |       |                | <ul style="list-style-type: none"> <li>– Liquid liabilities</li> <li>– legal origin dummy</li> <li>– Education</li> <li>– Initial GDP per capita</li> <li>– Region</li> <li>– Education</li> </ul> |             |                               |

### **4.3.2 The Supply-Leading Response**

In general, the literature provides rich empirical evidence in support of a positive relationship between bank-based finance and economic growth; with the studies mainly differing in the data sets used, study countries and time periods, the estimation approaches and the variables used. Several empirical findings support the supply-leading hypothesis.

Jung (1986) investigated the finance-growth nexus using cross-sectional data for 56 countries, including 19 industrialised countries. The ratio of currency to M1 and ratio of M2 to nominal GNP (or GDP) were used as proxies for financial development. Strong evidence of finance-led growth was found. Jung concluded that the supply-leading pattern occurs more often than demand-following pattern in least developed countries (LDCs).

King and Levine (1993a) analysed the impact of bank-based financial development on economic growth. Using ratio of liquid liabilities of banks and non-bank financial institutions to GDP, ratio of bank credit to the sum of bank and central bank credit, ratio of private credit to domestic credit and ratio of private credit to GDP as bank-based financial development measures, the results indicate that the causal relationship runs from financial development to economic growth.

Odedokun (1996a) used time-series regression analysis for 71 developing countries and found that financial intermediation stimulates economic growth in 85% of the sample countries. The results further indicate that the impact of financial development is found to be higher in low income LDCs than in high income LDCs. In the same year, Odedokun (1996b) did a study on the financial policy and efficiency of resource utilisation in 81 developing countries, this time using pooled cross-sectional data. Evidence of supply-leading response was found.

Ahmed and Ansari (1998) investigated the finance-growth nexus for three major South-Asian economies of India, Pakistan, and Sri Lanka. Using M2 / nominal GDP, quasi-money / nominal GDP and domestic credit / nominal GDP as bank-based financial sector development proxies, results from causality analyses indicated that

financial sector development Granger-causes economic growth. This validated the supply-leading hypothesis.

Rousseau and Wachtel (1998) examined the relationship between the intensity of financial intermediation and economic performance in the United States, the United Kingdom, Canada, Norway, and Sweden during the 1870 - 1929 period. Granger-causality tests suggested a leading role for the intermediation variables in real sector activity, while feedback effects were largely insignificant.

Ghali (1999) empirically investigated the question of whether financial development leads to economic growth in Tunisia. Using ratio of bank deposit liabilities to nominal GDP and ratio of bank claims on the private sector to nominal GDP as proxies for financial development, the paper focused on the causal link between finance and economic growth in order to discriminate between several alternative theoretical hypotheses. The results suggested the existence of a stable long-run relationship between the development of the financial sector and the evolution of per capita real output that is consistent with the supply-leading hypothesis.

Beck *et al.* (2000) conducted a study on 63 countries during the period from 1960 to 1995, using cross-country regression and a dynamic panel estimator. Although the results for capital accumulation and saving ratio were not found to be robust, banks were found to exert a strong, causal impact on real GDP and total factor productivity growth.

Graff (2002) studied the causal links between financial activity and economic growth using cross-country data for 93 countries. Evidence of finance-led economic growth was found, although it was concluded that such a relationship was not stable. In the same year, Shan and Morris (2002) used the Toda & Yamamoto (1995) causality testing procedure to investigate the relationship between financial development and economic growth using quarterly data from 19 OECD countries and China. Using total credit and interest spread as indicators of financial development, they found evidence in support of the supply-leading hypothesis in one country.



Jalilian and Kirkpatrick (2002) investigated the link between financial development and economic growth in 42 countries (including 26 developing and 16 developed countries) using bank deposit money assets as a proxy for financial development. They utilised pooled panel data approach, with both a time-series and cross-section dimension within the simple OLS, Panel and Two-Stage Least Square frameworks. The results were consistent with the finance-led growth view.

In 2004, Chistopoulos and Tsionas conducted their study on 10 developing countries to examine the relationship between financial development and economic growth using the ratio of total bank deposits liabilities to nominal GDP as a measure of bank-based financial depth, while the ratio of investment to GDP and inflation rate were used as control variables. They concluded that there is fairly strong evidence in favour of the hypothesis that long-run causality runs from financial development to growth.

Majid (2008) empirically examined the finance-growth nexus during the post 1997 financial crisis in Malaysia, using time-series data. Using ratio of total bank deposits liabilities to nominal GDP to proximate financial development, Granger-causality tests revealed unidirectional causality, running from finance to growth, thus giving support to the finance-led hypothesis or the supply-leading view.

Odhiambo (2009a) examined the dynamic impact of interest rate reforms on economic growth in Zambia using the ratio of M2 to GDP and nominal deposit rate to proximate financial development. Based on the cointegration-based error-correction model, the study found that financial deepening Granger-causes economic growth irrespective of whether the causality is estimated in the short or long-run.

Akinlo and Egbetunde (2010) examined the long-run and causal relationship between financial development (proxied by the ratio of M2 to GDP) and economic growth for ten countries in sub-Saharan Africa. Using the vector error-correction model, the study found a long-run relationship between financial development and economic growth in the selected countries. The results further showed that financial development Granger causes economic growth in the Central African Republic, the

Congo Republic, Gabon and Nigeria. Table 4.2 provides a summary of the above studies consistent with the supply-leading hypothesis.

**Table 4.2: Studies in Favour of Unidirectional Causality from Bank-Based Financial Development to Economic Growth**

| Author(s)              | Title                                                             | Region/Country                            | Variables                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Methodology                | Direction of Causality                                                                            |
|------------------------|-------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------|
| Jung, 1986             | Financial Development and Economic Growth: International Evidence | 56 Countries (19 of which are industrial) | <ul style="list-style-type: none"> <li>– Per capita GNP or GDP</li> <li>– Ratio of currency to M1</li> <li>– Ratio of M2 to nominal GNP(or GDP)</li> </ul>                                                                                                                                                                                                                                                                                                          | – Cross-section            | Finance → Growth (supply-leading pattern occurs more often than demand-following pattern in LDCs) |
| King and Levine, 1993a | Finance and growth: Schumpeter might be right                     | 80 countries                              | <ul style="list-style-type: none"> <li>– Various growth indicators, including GDP, physical capital accumulation and investment</li> <li>– Ratio of liquid liabilities to GDP</li> <li>– Ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets</li> <li>– Ratio of claim on nonfinancial private sector to domestic credit</li> <li>– Ratio of claim on nonfinancial private sector to GDP</li> </ul> | – Cross-country analysis   | Finance → Growth                                                                                  |
| Odedokun, 1996a        | Alternative econometric                                           | LDCs: 71 countries                        | <ul style="list-style-type: none"> <li>– Real GDP annual growth rate</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                     | – OLS estimation technique | Finance → Growth (evidence of supply-                                                             |

| Author(s)              | Title                                                                                                        | Region/Country                             | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                                                                                                                                                            | Direction of Causality                                                                                                                                           |
|------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | approaches for analysing the role of the financial sector in economic growth: Time-series evidence from LDCs |                                            | <ul style="list-style-type: none"> <li>Financial depth, computed as ratio of the average of the nominal value of the stock of liquid liabilities to nominal annual GDP</li> <li>Labour force growth</li> <li>Investment/GDP ratio</li> <li>Real export growth</li> </ul>                     | <ul style="list-style-type: none"> <li>Modified version of the orthodox model framework and an entirely new model framework that recognises the external effects of the financial sector on the real sector</li> </ul> | leading response is found in 85% of the sample countries; the impact of financial development is found to be higher on low income LDCs than in high income LDCs) |
| Odedokun, 1996b        | Financial policy and efficiency of resource utilisation in developing countries                              | 81 countries                               | <ul style="list-style-type: none"> <li>Incremental output/capital ratio</li> <li>Annual growth of real GDP</li> <li>Liquid Liabilities</li> <li>Stock of development bank lending to the private sector</li> <li>Exchange rate</li> <li>Government expenditure</li> <li>Inflation</li> </ul> | <ul style="list-style-type: none"> <li>Pooled cross section</li> <li>Fixed-effect, and the variance component techniques</li> </ul>                                                                                    | Finance → Growth                                                                                                                                                 |
| Ahmed and Ansari, 1998 | Financial Sector Development and Economic Growth: The South-Asian Experience                                 | South-Asia: India, Pakistan, and Sri Lanka | <ul style="list-style-type: none"> <li>Real GDP</li> <li>Real GDP / per capita</li> <li>M2 / nominal GDP</li> <li>Quasi-money / nominal GDP</li> <li>Domestic credit /</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>Cross-sectionally heteroscedastic, time-wise autoregressive model</li> </ul>                                                                                                    | Financial → Growth                                                                                                                                               |

| Author(s)                  | Title                                                                                                     | Region/Country                                                          | Variables                                                                                                                                                                                                                                                      | Methodology                                                                                                         | Direction of Causality |
|----------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------|
|                            |                                                                                                           |                                                                         | <ul style="list-style-type: none"> <li>nominal GDP</li> <li>Labour force</li> <li>Investment / GDP</li> </ul>                                                                                                                                                  |                                                                                                                     |                        |
| Rousseau and Wachtel, 1998 | Financial intermediation and economic performance: Historical evidence from five industrialised countries | 5 countries (United States, United Kingdom, Canada, Norway, and Sweden) | <ul style="list-style-type: none"> <li>Real per capita output growth</li> <li>Ratio of financial institution assets to output</li> <li>Ratio of sum of financial institution assets, corporate stocks and corporate bonds to total financial assets</li> </ul> | <ul style="list-style-type: none"> <li>Granger-causality in a VAR</li> <li>Vector error-correction model</li> </ul> | Finance → Growth       |
| Ghali, 1999                | Financial development and economic growth: The Tunisian experience                                        | Tunisia                                                                 | <ul style="list-style-type: none"> <li>Growth rate of real per capita GDP</li> <li>Ratio of bank deposit liabilities to nominal GDP</li> <li>Ratio of bank claims on the private sector to nominal GDP</li> </ul>                                              | Annual time-series                                                                                                  | Finance → Growth       |
| Beck <i>et al.</i> , 2000  | Finance and the sources of growth                                                                         | 63 countries                                                            | <ul style="list-style-type: none"> <li>Legal origin indicators as instrument to extract exogenous component of financial intermediation</li> <li>Real output growth</li> <li>TFP growth</li> </ul>                                                             | Cross-section and panel                                                                                             | Finance → Growth       |

| Author(s)                      | Title                                                                                                                    | Region/Country                                                    | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                                                                                                                                 | Direction of Causality             |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
|                                |                                                                                                                          |                                                                   | <ul style="list-style-type: none"> <li>- Saving ratio</li> <li>- Physical capital accumulation</li> </ul>                                                                                                                                                                                    |                                                                                                                                                                                             |                                    |
| Graff, 2002                    | Causal links between financial activity and economic growth: Empirical evidence from a cross-country analysis, 1970-1990 | 93 countries                                                      | <ul style="list-style-type: none"> <li>- GDP per capita</li> <li>- No. of banks employee</li> <li>- FS/ GDP</li> <li>- FD</li> </ul>                                                                                                                                                         | - Pooled cross-section                                                                                                                                                                      | Finance → Growth (but unstable)    |
| Shan and Morris, 2002          | Does financial development 'Lead' economic growth                                                                        | 19 OECD countries and China                                       | <ul style="list-style-type: none"> <li>- GDP per capita</li> <li>- Total credit</li> <li>- Interest rate spread</li> <li>- Measures of financial development</li> <li>- Productivity</li> <li>- Investment</li> <li>- Trade openness</li> <li>- CPI</li> <li>- Stock market index</li> </ul> | - Individual country time-series                                                                                                                                                            | Finance → Growth (for one country) |
| Jalilian and Kirkpatrick, 2002 | Financial development and poverty reduction in developing countries                                                      | 42 countries (including 26 developing and 16 developed countries) | <ul style="list-style-type: none"> <li>- Bank Deposit Money Assets over GDP</li> <li>- Net Foreign Assets over GDP</li> <li>- Education</li> <li>- Trade regime</li> <li>- Inflation</li> </ul>                                                                                              | <ul style="list-style-type: none"> <li>- Pooled panel data approach with both a time-series and cross-section dimension</li> <li>- Simple OLS, Panel and Two-Stage Least Squares</li> </ul> | Finance → Growth                   |

| Author(s)                       | Title                                                                                             | Region/Country                                                                                                                 | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                                                                                                                                                               | Direction of Causality |
|---------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|                                 |                                                                                                   |                                                                                                                                | <ul style="list-style-type: none"> <li>– Trade share</li> <li>– Initial income</li> <li>– General public expenditure</li> </ul>                                                                                                                                                              |                                                                                                                                                                                                                           |                        |
| Christopoulos and Tsionas, 2004 | Financial development and economic growth: evidence from panel unit root and cointegration tests  | 10 developing countries (Colombia, Paraguay, Peru, Mexico, Ecuador, Honduras, Kenya, Thailand, Dominican Republic and Jamaica) | <ul style="list-style-type: none"> <li>– Real output - quantity of output expressed as an index number (1995 = 100)</li> <li>– Ratio of total bank deposits liabilities to nominal GDP</li> <li>– Share of gross fixed capital formation to nominal GDP</li> <li>– Inflation rate</li> </ul> | <ul style="list-style-type: none"> <li>– Panel unit root tests</li> <li>– Panel cointegration analysis</li> <li>– Dynamic panel data estimation for a panel-based vector error-correction model</li> <li>– OLS</li> </ul> | Finance → Growth       |
| Majid, 2008                     | Does financial development matter for economic growth in Malaysia? An ARDL bound testing approach | Malaysia                                                                                                                       | <ul style="list-style-type: none"> <li>– Real GDP growth</li> <li>– Ratio of total bank deposits liabilities to nominal GDP</li> <li>– Investment</li> <li>– Inflation</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>– Quarterly time-series data</li> <li>– ARDL Approach</li> <li>– Vector error-correction model</li> </ul>                                                                          | Finance → Growth       |
| Odhiambo, 2009a                 | Interest rate liberalisation and economic growth in Zambia: A dynamic linkage                     | Zambia                                                                                                                         | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– M2/GDP</li> <li>– Nominal deposit rate</li> <li>– Expected inflation</li> <li>– Savings</li> </ul>                                                                                                                   | <ul style="list-style-type: none"> <li>– Annual time-series data</li> <li>– Cointegration-based error-correction model</li> <li>– Trivariate causality model</li> </ul>                                                   | Finance → Growth       |

| <b>Author(s)</b>           | <b>Title</b>                                                                                            | <b>Region/Country</b>            | <b>Variables</b>                                                                                                                                                     | <b>Methodology</b>                                                  | <b>Direction of Causality</b>                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Akinlo and Egbetunde, 2010 | Financial development and economic growth: The experience of 10 Sub-Saharan African countries revisited | 10 Sub-Saharan African countries | <ul style="list-style-type: none"> <li>– Real GDP / per capita</li> <li>– M2 / GDP</li> <li>– Real per capita capital stock</li> <li>– Real interest rate</li> </ul> | – Multivariate cointegration analysis and error-correction modeling | Finance → Growth (Central African Republic, Congo Republic, Gabon, and Nigeria) |



### 4.3.3 The Demand-Following Response

A number of studies on the finance-growth nexus support the demand-following hypothesis. They conclude that it is economic growth that stimulates the development of the bank-based financial sector.

Shan *et al.* (2001) used a Granger-causality procedure to investigate the relationship between financial development and economic growth for nine OECD countries and China. Based on the time-series approach within a VAR framework, they found some evidence in support of the demand-following hypothesis in three of the 10 study countries.

In 2002, Shan and Morris (2002) used the Toda & Yamamoto (1995) causality testing procedure to investigate the relationship between financial development and economic growth, using quarterly data from 19 OECD countries and China. Using total credit and interest rate spread as indicators of financial development, they found evidence indicating that economic growth leads financial development for five of the countries.

Odhiambo (2004) investigated whether financial development was still a spur to economic growth in South Africa using ratio of M2 to GDP, currency ratio and ratio of bank claims on the private sector to nominal GDP as proxies of bank-based financial development. Based on the Granger-causality test, in the context of the Johansen-Juselius cointegration technique and vector error-correction model, the results rejected wholesale supply-leading hypothesis in South Africa. There was an overwhelming demand-following response irrespective of the financial development proxy used.

Using the ratio of M3 to nominal GDP, ratio of commercial bank assets to commercial bank assets plus central bank assets, and ratio of domestic credit to private sector to nominal GDP as proxies of financial development, Ang and McKibbin (2007) examined whether financial development leads to economic growth or vice versa in Malaysia. Contrary to the conventional findings, their results supported the demand-following hypothesis in the long-run.

The findings by Guryay *et al.* (2007) showed that there is a negligible positive effect of financial development on economic growth in Northern Cyprus. The Granger-causality test found that financial development does not cause economic growth; rather, the direction of causality was from economic growth to the development of financial intermediaries.

Odhiambo (2008a) examined the dynamic causal relationship between financial depth, as proxied by the ratio of M2 to GDP, and economic growth in Kenya within a trivariate causality setting. The results of this study revealed that there is a distinct unidirectional causal flow from economic growth to financial development in the study country.

In the same year, Odhiambo (2008b) examined the direction of causality between financial development and economic growth in Kenya using a dynamic Granger-causality model. The study used three proxies of financial development, namely, the ratio of M2 to GDP, currency ratio and domestic credit to the private sector. The empirical results revealed that, although the causality between financial development and economic growth in Kenya was sensitive to the choice of measure for financial development, on balance the demand-following response tended to predominate.

Odhiambo (2009b) investigated the direction of causality between financial development and economic growth in Kenya using the cointegration based error-correction mechanism. Using the ratio of M2 to GDP, currency ratio and ratio of bank claims on the private sector to nominal GDP as proxies of bank-based financial development, the study employed both bivariate and trivariate causality tests to examine the causal relationship between financial development and economic growth. The empirical results revealed distinct unidirectional causality from economic growth to financial development. This applied irrespective of whether the causality was estimated in a bivariate or trivariate setting.

Odhiambo (2009c) examined the dynamic causal relationship between financial development, economic growth and poverty reduction in South Africa using a trivariate causality model. Financial development was proxied by the ratio of M2 to GDP. Using cointegration and error-correction models, the empirical results of the

study showed that both financial development and economic growth Granger-cause poverty reduction in South Africa. The study also found that economic growth Granger-causes financial development and, therefore, leads in the process of poverty reduction in South Africa. This applies irrespective of whether the causality test is conducted in the short or long run.

Akinlo and Egbetunde (2010) examined the long run causal relationship between financial development, proxied by the ratio of M2 to GDP, and economic growth for ten sub-Saharan African countries. Using the vector error-correction model, the study found a long-run relationship between financial development and economic growth in the selected sub-Saharan African countries. The results further showed that economic growth Granger causes financial development in Zambia. Table 4.3 shows a summary of the studies consistent with the demand-following hypothesis.

**Table 4.3: Studies in Favour of Unidirectional Causality from Economic Growth to Bank-Based Financial Development**

| Author(s)                 | Title                                                                                         | Region/Country              | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                   | Direction of Causality                 |
|---------------------------|-----------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------|
| Shan <i>et al.</i> , 2001 | Financial development and economic growth: An egg and chicken problem?                        | 9 OECD countries and China  | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Bank credit to GDP</li> <li>– Total factor productivity</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Investment ratio</li> <li>– Stock market prices</li> </ul>                                               | – Individual country time-series                                              | Growth → Finance (for three countries) |
| Shan and Morris, 2002     | Does financial development 'Lead' economic growth                                             | 19 OECD countries and China | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Total credit</li> <li>– Interest rate spread</li> <li>– Measures of financial development</li> <li>– Productivity</li> <li>– Investment</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Stock market index</li> </ul> | – Individual country time-series                                              | Growth → Finance (for 5 countries)     |
| Odhiambo, 2004            | Is financial development still a spur to economic growth? A causal evidence from South Africa | South Africa                | <ul style="list-style-type: none"> <li>– Real per-capita income</li> <li>– M2/GDP</li> <li>– Currency ratio</li> <li>– Ratio of bank claims on the private sector to nominal GDP</li> </ul>                                                                                                  | – Johansen-Juselius cointegration technique and vector error-correction model | Growth → Finance                       |
| Ang and McKibbin, 2007    | Financial liberalisation, financial sector                                                    | Malaysia                    | <ul style="list-style-type: none"> <li>– Per capita real GDP</li> <li>– Ratio of M3 to nominal GDP</li> <li>Ratio of</li> </ul>                                                                                                                                                              | – Trivariate VAR models                                                       | Growth → Finance                       |

| Author(s)                   | Title                                                                           | Region/Country  | Variables                                                                                                                                                                                                                                                                      | Methodology                                                                                                                         | Direction of Causality |
|-----------------------------|---------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|                             | development and growth: Evidence from Malaysia                                  |                 | <ul style="list-style-type: none"> <li>commercial bank assets to commercial bank assets plus central bank assets</li> <li>Ratio of domestic credit to private sectors to nominal GDP</li> <li>Saving</li> <li>Investment</li> <li>Trade</li> <li>Real interest rate</li> </ul> |                                                                                                                                     |                        |
| Güryay <i>et al.</i> , 2007 | Financial development and economic growth: Evidence from Northern Cyprus        | Northern Cyprus | <ul style="list-style-type: none"> <li>Annual growth rates of real GDP</li> <li>Annual population growth</li> <li>Annual growth of export</li> <li>Ratio of domestic investments to GDP</li> <li>Ratio of deposits to GDP</li> <li>Ratio of loan to GDP</li> </ul>             | <ul style="list-style-type: none"> <li>Time series</li> <li>Ordinary Least Squares techniques</li> </ul>                            | Growth → Finance       |
| Odhiambo, 2008a             | Financial depth, savings and economic growth in Kenya: A dynamic causal linkage | Kenya           | <ul style="list-style-type: none"> <li>Per capita income</li> <li>M2/GDP</li> <li>Savings</li> </ul>                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Cointegration and error-correction techniques</li> <li>Trivariate causality model</li> </ul> | Growth → Finance       |
| Odhiambo,                   | Financial                                                                       | Kenya           | <ul style="list-style-type: none"> <li>Real GDP per capita</li> </ul>                                                                                                                                                                                                          | Dynamic Granger-                                                                                                                    | Growth → Finance       |

| Author(s)                  | Title                                                                                                   | Region/Country                   | Variables                                                                                                                                                                                                   | Methodology                                                                                                                                                                       | Direction of Causality        |
|----------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 2008b                      | development in Kenya: A dynamic test of the finance-led growth hypothesis                               |                                  | <ul style="list-style-type: none"> <li>– M2/GDP</li> <li>– Currency ratio</li> <li>– Domestic credit to the private sector</li> </ul>                                                                       | causality model                                                                                                                                                                   |                               |
| Odhiambo, 2009b            | Finance-growth nexus and inflation dynamics in Kenya: An empirical investigation                        | Kenya                            | <ul style="list-style-type: none"> <li>– Per capita income</li> <li>– M2/GDP</li> <li>– Currency ratio</li> <li>– Ratio of bank claims on the private sector to nominal GDP</li> <li>– Inflation</li> </ul> | <ul style="list-style-type: none"> <li>– Annual time-series data</li> <li>– Cointegration and error-correction model within bivariate and trivariate causality systems</li> </ul> | Growth → Finance              |
| Odhiambo, 2009c            | Finance-growth-poverty nexus in South Africa: A dynamic causality linkage                               | South Africa                     | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– M2/GDP</li> <li>– Poverty level proxied by per capita consumption</li> </ul>                                                        | <ul style="list-style-type: none"> <li>– Annual time-series data</li> <li>– Trivariate causality model</li> <li>– Cointegration and error-correction models</li> </ul>            | Growth → Finance              |
| Akinlo and Egbetunde, 2010 | Financial development and economic growth: The experience of 10 Sub-Saharan African countries revisited | 10 Sub-Saharan African countries | <ul style="list-style-type: none"> <li>– Real GDP / per capita</li> <li>– M2 / GDP</li> <li>– Real per capita capital stock</li> <li>– Real interest rate</li> </ul>                                        | <ul style="list-style-type: none"> <li>– Multivariate cointegration analysis and error-correction modelling</li> </ul>                                                            | Growth → Finance (for Zambia) |

#### 4.3.4 The Bidirectional Causality/Feedback Response

In spite of the arguments supporting the supply-leading and demand-following responses, the empirical results from a number of studies have provided evidence that financial development and economic growth can Granger-cause each other. Some empirical studies have also supported the assertion that growth has a feedback effect on financial intermediaries by creating incentives for financial development.

Wood (1993) investigated the causal relationship between financial development and economic growth in Barbados using a ratio of M2 to GDP as a proxy for financial development. The results were in favour of the feedback response, where financial development and economic growth mutually cause each other.

Berthelemy and Varoudakis (1996) tested the existence of a poverty trap linked to the development of the banking sector in 95 countries using multiple endogenous growth equilibria. Ratio of money plus quasi-money to GDP was used as proxy for banking sector development. Their study lent support to the feedback hypothesis.

Akinboade (1998) tested for causality between financial development and economic growth in Botswana using annual time-series data. Using ratio of bank claims on the private sector to nominal non-mineral GDP and ratio of bank deposit liabilities to nominal non-mineral GDP as proxies of financial development, the results showed that financial development and economic growth in Botswana were mutually causal.

Luintel and Khan (1999) employed a multivariate vector autoregression framework to examine the relationship between bank-based financial development, proxied by ratio of total deposit liabilities of deposit banks to one period lagged GDP, and economic growth, using a sample of ten less developed countries. The results showed bidirectional causality between financial development and growth.

Shan *et al.* (2001) used a Granger-causality procedure to investigate the relationship between financial development and economic growth for nine OECD countries and China based on the time-series approach within a VAR framework. They found evidence of bidirectional causality for five countries.

Sinha and Macri (2001) also looked at the relationship between financial development and economic growth by using time-series data for eight Asian countries. Financial development was proxied by M1, M2, M1 growth, M2 growth and the growth rate of domestic credit as a ratio of GDP. The multivariate causality tests showed a two-way causal relationship between the economic growth and the financial variables for most of the countries.

Shan and Morris (2002) used the Toda & Yamamoto (1995) causality testing procedure to investigate the relationship between financial development and economic growth, using quarterly data from 19 OECD countries and China. Using total credit and interest spread as indicators of financial development, they found evidence supporting bidirectional causality in four countries.

Fase and Abma (2003) used individual country time-series data to study the relationship between financial environment and economic growth in eight Asian countries. The results were in support of the feedback response hypothesis.

Calderon and Liu (2003) employed the Geweke decomposition test on pooled data of 109 developing and industrial countries from 1960 to 1994 to examine the direction of causality between financial development and economic growth. They used the ratio of M2 to GDP and ratio of private sector credit to GDP as proxies of financial development. The results revealed the existence of bidirectional causality between financial development and economic growth

Shan and Jianhong (2006) used a Vector Autoregression (VAR) approach to examine the impact of financial development – proxied by total credit – on economic growth in China. Variance decomposition and impulse response function analysis was applied to examine interrelationships between variables in the VAR system. Besides finding that financial development comes as the second force – after the contribution from labour input – in leading economic growth in China, the study has supported the view in the literature that financial development and economic growth exhibit two-way causality.



Abu-Bader and Abu-Qarn (2008a) examined the causal relationship between financial development and economic growth in Egypt during the period, 1960 - 2001 within a trivariate vector autoregressive (VAR) framework. Using four different measures of bank-based financial development, the results strongly supported the view that financial development and economic growth are mutually causal.

Akinlo and Egbetunde (2010) examined the long-run and causal relationship between financial development – proxied by the ratio of M2 to GDP – and economic growth for ten countries in sub-Saharan Africa. Using the vector error-correction model, the study found a long-run relationship between financial development and economic growth in the selected sub-Saharan African countries. The results further revealed the existence of a bidirectional relationship between financial development and economic growth in Kenya, Chad, South Africa, Sierra Leone and Swaziland. Table 4.4 provides a summary of studies consistent with the bidirectional causality view.

**Table 4.4: Studies in Favour of Bidirectional Causality Between Bank-Based Financial Development and Economic Growth**

| Author(s)                       | Title                                                                       | Region/Country | Variables                                                                                                                                                                                                                                                                                                                 | Methodology                                                                                                    | Direction of Causality |
|---------------------------------|-----------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------|
| Wood, 1993                      | Financial development and economic growth in Barbados: Causal evidence      | Barbados       | <ul style="list-style-type: none"> <li>– Real GDP growth</li> <li>– Ratio of M2 to GDP</li> </ul>                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>– Lag-length parameterisation of the individual time-series.</li> </ul> | Finance ↔ Growth       |
| Berthelemy and Varoudakis, 1996 | Economic growth, convergence clubs, and the role of financial development   | 95 countries   | <ul style="list-style-type: none"> <li>– Real per capita GDP</li> <li>– Ratio of money plus quasi-money to GDP.</li> <li>– Secondary school enrolment rate</li> <li>– Trade openness</li> <li>– Government consumption expenditures</li> <li>– Political instability indicator</li> <li>– Oil production dummy</li> </ul> | <ul style="list-style-type: none"> <li>– Multiple endogenous growth equilibria</li> </ul>                      | Finance ↔ Growth       |
| Akinboade, 1998                 | Financial development and economic growth in Botswana, a test for causality | Botswana       | <ul style="list-style-type: none"> <li>– Real non-mineral GDP per capita</li> <li>– Ratio of bank claims on the private sector to nominal non-mineral GDP</li> <li>– Ratio of bank deposit liabilities to nominal non-mineral GDP</li> </ul>                                                                              | <ul style="list-style-type: none"> <li>– Annual time-series</li> </ul>                                         | Finance ↔ Growth       |
| Luintel and                     | Quantitative                                                                | 10 developing  | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> </ul>                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>– Multivariate time-series</li> </ul>                                   | Finance ↔ Growth       |

| Author(s)                 | Title                                                                         | Region/Country             | Variables                                                                                                                                                                                                                                                                            | Methodology                | Direction of Causality                |
|---------------------------|-------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------|
| Khan, 1999                | reassessment of finance-growth nexus: Evidence from multivariate VAR          | countries                  | – Ratio of total deposit liabilities of deposit banks to one period lagged GDP                                                                                                                                                                                                       | – VAR framework            |                                       |
| Shan <i>et al.</i> , 2001 | Financial development and economic growth: An egg and chicken problem?        | 9 OECD countries and China | – Real GDP per capita<br>– Bank credit to GDP<br>– Total factor productivity<br>– Trade openness<br>– CPI<br>– Investment ratio<br>– Stock market prices                                                                                                                             | – Individual time-series   | Finance ↔ Growth (for five countries) |
| Sinha and Macri, 2001     | Financial development and economic growth: The case for eight Asian countries | 8 Asian countries          | – Growth rate of real per capita income<br>– M1<br>– M2<br>– M1 growth<br>– M2 growth<br>– Growth rate of domestic credit as a ratio of GDP<br>– Growth rate of real GDP<br>– Growth rate of real investment<br>– Growth rate of population<br>– Growth rate of real domestic credit | – Individual time-series   | Finance ↔ Growth                      |
| Shan and                  | Does financial                                                                | 19 OECD                    | – GDP per capita                                                                                                                                                                                                                                                                     | – Individual country time- | Finance ↔ Growth                      |

| Author(s)              | Title                                                                        | Region/Country                          | Variables                                                                                                                                                                                                                                                                                                                    | Methodology                              | Direction of Causality |
|------------------------|------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------|
| Morris, 2002           | development<br>'Lead' economic growth                                        | countries and China                     | <ul style="list-style-type: none"> <li>– Total credit</li> <li>– Interest rate spread</li> <li>– Measures of financial development</li> <li>– Productivity</li> <li>– Investment</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Stock market index</li> </ul>                                                           | series                                   | (for 4 countries)      |
| Fase and Abma, 2003    | Financial environment and economic growth in selected Asian countries        | 8 Asian countries                       | <ul style="list-style-type: none"> <li>– Bank balance sheet totals</li> <li>– Real GDP growth</li> <li>– Growth of real GDP-1</li> <li>– Growth of real GDP-2,</li> <li>– Growth of lagged financial development measure</li> </ul>                                                                                          | Individual country time-series           | Finance ↔ Growth       |
| Calderon and Liu, 2003 | The direction of causality between financial development and economic growth | 109 developing and industrial countries | <ul style="list-style-type: none"> <li>– Real GDP per capita growth rate</li> <li>– M2/GDP</li> <li>– Private sector credit /GDP</li> <li>– Initial human capital</li> <li>– Initial income level</li> <li>– Measure of government size</li> <li>– Black market exchange rate premium</li> <li>– Regional dummies</li> </ul> | Geweke decomposition test on pooled data | Finance ↔ Growth       |

| Author(s)                     | Title                                                                                                   | Region/Country                   | Variables                                                                                                                                                                                                                                                                                                                 | Methodology                                                                                                                                                                           | Direction of Causality                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Shan and Jianhong, 2006       | Does financial development 'lead' economic growth? The case of China                                    | China                            | <ul style="list-style-type: none"> <li>– Real GDP growth rate</li> <li>– Total credit</li> <li>– Investment</li> <li>– Trade openness</li> <li>– Labour force</li> </ul>                                                                                                                                                  | <ul style="list-style-type: none"> <li>– Annual time-series data</li> <li>– Vector Autoregression approach</li> <li>– Variance decomposition and impulse response function</li> </ul> | Finance ↔ Growth                                                             |
| Abu-Bader and Abu-Qarn, 2008a | Financial development and economic growth: The Egyptian experience                                      | Egypt                            | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Ratio of M2 to nominal GDP</li> <li>– Ratio of M2 minus currency to GDP</li> <li>– Ratio of bank credit to the private sector to nominal GDP</li> <li>– Ratio of credit issued to non-financial private firms to total domestic credit</li> </ul> | <ul style="list-style-type: none"> <li>– Cointegration and vector error-correction methodology</li> <li>– Trivariate vector autoregressive framework</li> </ul>                       | Finance ↔ Growth                                                             |
| Akinlo and Egbetunde, 2010    | Financial development and economic growth: The experience of 10 Sub-Saharan African countries revisited | 10 Sub-Saharan African countries | <ul style="list-style-type: none"> <li>– Real GDP / per capita</li> <li>– M2 / GDP</li> <li>– Real per capita capital stock</li> <li>– Real interest rate</li> </ul>                                                                                                                                                      | <ul style="list-style-type: none"> <li>– Multivariate cointegration analysis and error-correction modelling</li> </ul>                                                                | Finance ↔ Growth (for Chad, South Africa, Kenya, Sierra Leone and Swaziland) |

## **4.4 Market-Based Financial Development and Economic Growth: Empirical Evidence**

In this section, the empirical literature on the relationship between market-based financial development and economic growth is discussed. Section 4.4.1 focuses on whether there exists a positive or a negative association between the two. Section 4.4.2 discusses the empirical literature that is consistent with the supply-leading response, while Section 4.4.3 looks at literature on the demand-following response. Finally, the empirical literature in support of the bidirectional causality view is reviewed in Section 4.4.4.

### **4.4.1 Market-Based Financial Development and Economic Growth: Nature of Association**

Although the empirical literature on market-based financial development and economic growth is still at a nascent stage as compared to that of its bank-based counterpart, overall, the literature provides broad empirical evidence of a positive relationship between market-based finance and economic growth. However, the studies largely differ in the data sets used, study countries and time periods, as also the methodologies and variables selected.

Levine and Zervos (1996) examined whether there is a strong empirical association between stock market development and long-run economic growth in 41 countries, using stock market capitalisation, total value traded and turnover ratio as proxies for stock market development. Cross-country growth regressions suggested that stock market development is positively and robustly associated with long-run economic growth. Similarly, Caporale *et al.* (2003) re-examined the relationship between stock market development and economic growth in four developing countries – Chile, Korea, Malaysia and the Philippines. Using market capitalisation ratio and total value traded as proxies of stock market development, they found evidence of a strong positive association between stock market development and economic growth in their sample countries.

In 2005, Bekaert *et al.* (2005) investigated whether financial liberalisation does spur economic growth for a large number of countries. Turnover was one of the proxies

used for financial liberalisation. A positive association between financial liberalisation and economic growth was found. Hence they concluded that equity market liberalisation, on average, leads to a 1% increase in annual real economic growth – and that the largest growth response occurs in countries with high-quality institutions.

Adjasi and Biekpe (2006) studied the impact of stock market development on economic growth in 14 African countries in a dynamic panel data modeling setting. Their results largely showed a positive relationship between stock market development and economic growth. Moreover further analyses, based on the level of economic development and stock market capitalisation revealed that the positive impact of stock market on economic growth is significant for upper middle income economies.

Nurudeen (2009) investigated whether stock market development leads to increased economic growth in Nigeria, by employing the error-correction approach. The econometric results indicated that stock market development as measured by market capitalisation increases economic growth. Similarly, Akinlo and Akinlo (2009) examined the long-run relationship between stock market development and economic growth for seven sub-Saharan African countries using the ARDL bounds test. The results reveal that stock market development has a significant positive long-run impact on economic growth.

Ujunwa and Salami (2010) also examined the impact of stock market development on long-run economic growth in Nigeria using the Ordinary Least Squares regression. Total market capitalisation, total value of shares traded and turnover ratio were used as proxies for stock market development. The regression result showed that stock market size and turnover ratios have a positive impact on economic growth in Nigeria. Bernard and Austin (2011), on the other hand, investigated the role of stock market development on economic growth in Nigeria, using time-series data from 1994 to 2008, within Ordinary Least Squares framework. Stock market capitalisation ratio was used as a proxy for market size, while value traded ratio and turnover ratio were used as proxies for market liquidity. The results show that stock market development and economic growth are positively associated when turnover ratio is used as proxy for stock market development.

Although the literature generally provides broad empirical evidence of a positive relationship between market-based finance and economic growth, there is also empirical evidence to the contrary, though not much. Such empirical evidence includes that put forward by Ujunwa and Salami (2010) and Bernard and Austin (2011). When the former examined the impact of stock market development on long-run economic growth in Nigeria, they found a positive association when stock market development was proxied by stock market size and turnover ratios. However they also found evidence of negative association between stock market development and economic growth in Nigeria when stock market liquidity was used as a proxy for stock market development. In the same vein, Bernard and Austin (2011) found a negative association between stock market development and economic growth in Nigeria, using stock market capitalisation and total value traded as proxies for stock market development. Table 4.5 summarises the selected studies that show the nature of association between market-based financial development and economic growth.



**Table 4.5: Studies Showing the Nature of Association between Market-Based Financial Development and Economic Growth**

| Author(s)                     | Title                                                                                | Region/Country                                                         | Variables                                                                                                                                                                                                       | Methodology                                                                                          | Positive/Negative Association |
|-------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------|
| Levine and Zervos, 1996       | Stock market development and long-run growth                                         | 41 countries                                                           | <ul style="list-style-type: none"> <li>– Market capitalisation</li> <li>– Total value of trades</li> <li>– Turnover ratio</li> <li>– Initial education</li> </ul>                                               | – Cross-country regressions                                                                          | Positive association          |
| Caporale <i>et al.</i> , 2003 | Endogenous growth models and stock market development: Evidence from four countries  | Four developing countries (Chile, Korea, Malaysia and the Philippines) | <ul style="list-style-type: none"> <li>– GDP in levels</li> <li>– Market capitalisation ratio</li> <li>– Value traded ratio</li> <li>– Level of investment</li> <li>– Investment productivity</li> </ul>        | – Quarterly time-series non-causality trivariate test                                                | Positive association          |
| Bekaert <i>et al.</i> 2005    | Does financial liberalisation spur growth?                                           | A large number of countries                                            | <ul style="list-style-type: none"> <li>– real per capita GDP</li> <li>– Turnover and 25 other variables</li> </ul>                                                                                              |                                                                                                      | Positive association          |
| Adjasi and Biekpe, 2006       | Stock market development and economic Growth: the case of selected African countries | 14 African countries                                                   | <ul style="list-style-type: none"> <li>– GDP</li> <li>– Market capitalisation to GDP</li> <li>– Total value of shares traded to GDP</li> <li>– Turnover ratio</li> <li>– Investment</li> <li>– Trade</li> </ul> | Dynamic panel data modelling                                                                         | Positive association          |
| Nurudeen, 2009                | Does stock market development raise economic growth? evidence from                   | Nigeria                                                                | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Market capitalisation</li> <li>– Market turnover</li> <li>– Openness</li> </ul>                                                                    | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– Error-correction approach</li> </ul> | Positive association          |

| Author(s)                | Title                                                                                          | Region/Country                        | Variables                                                                                                                                                                                        | Methodology                                          | Positive/Negative Association                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                          | Nigeria                                                                                        |                                       | – Minimum rediscount rate                                                                                                                                                                        |                                                      |                                                                                                          |
| Akinlo and Akinlo, 2009  | Stock market development and economic growth: Evidence from seven sub-Sahara African countries | Seven countries in sub-Saharan Africa | – Per capita nominal GDP<br>– Value traded ratio<br>– Market capitalisation ratio<br>– Discount rate<br>– Openness ratio                                                                         | ARDL bounds test                                     | Positive association                                                                                     |
| Ujunwa and Salami, 2010  | Stock market development and economic growth: Evidence from Nigeria                            | Nigeria                               | – GDP per capita<br>– Total market capitalisation<br>– Total value of shares traded<br>– Turnover ratio<br>– Inflation rate<br>– Gross capital formation<br>– Government consumption expenditure | – Time-series<br>– Ordinary Least Squares techniques | Positive association (when stock market development is proxied by stock market size and turnover ratios) |
| Bernard and Austin, 2011 | The role of stock market development on economic growth in Nigeria: A time-series analysis     | Nigeria                               | – Real GDP<br>– Stock market capitalisation<br>– Value traded ratio<br>– Turnover ratio                                                                                                          | – Time-series<br>– Ordinary Least Squares techniques | Positive association (when stock market development is proxied by turnover ratio)                        |
| Ujunwa and Salami, 2010  | Stock market development and economic growth:                                                  | Nigeria                               | – GDP per capita<br>– Total market capitalisation<br>– Total value                                                                                                                               | – Time-series<br>– Ordinary Least Squares techniques | Negative association (when stock market                                                                  |

| Author(s)                | Title                                                                                      | Region/Country | Variables                                                                                                                                                                                               | Methodology                                                                                                  | Positive/Negative Association                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|                          | Evidence from Nigeria                                                                      |                | <ul style="list-style-type: none"> <li>of shares traded</li> <li>– Turnover ratio</li> <li>– Inflation rate</li> <li>– Gross capital formation</li> <li>– Government consumption expenditure</li> </ul> |                                                                                                              | development is proxied by total value of shares traded)                                                          |
| Bernard and Austin, 2011 | The role of stock market development on economic growth in Nigeria: A time-series analysis | Nigeria        | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Stock market capitalisation</li> <li>– Value traded ratio</li> <li>– Turnover ratio</li> </ul>                                             | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– Ordinary Least Squares techniques</li> </ul> | Negative association (when stock market development is proxied by market capitalization and value traded ratios) |

#### **4.4.2 The Supply-Leading Response**

Several empirical findings support the supply-leading hypothesis. Arestis and Demetriades (1997) took a fresh look at the empirical evidence on the relationship between financial development and economic growth, for South Korea, Germany and the USA, with a view to identifying outstanding issues and offering some suggestions about how these may be addressed in the future. Using stock market capitalisation ratio and a stock market index, they found strong evidence of unidirectional causality running from market-based finance to economic development in Germany.

In 2002, Shan and Morris (2002) used Toda & Yamamoto (1995) causality testing to test the relationship between financial development and economic growth, using quarterly data from 19 OECD countries and China. Using stock market index as a proxy for financial development, they found evidence in support of the supply-leading hypothesis for one country only.

Two years later, Beck and Levine (2004) investigated the impact of stock markets and banks on economic growth, using a panel data set for the period, 1976 - 98 for 40 countries. Using turnover ratio, value traded and market capitalisation as proxies for stock market development, on balance, they found that stock markets positively influence economic growth and that the direction of causality runs from market-based financial development to economic growth.

Choong *et al.* (2005) investigated the relationship between market-based financial development and economic growth in Malaysia. Using the bounds test approach, the study found that both stock market and economic growth are co-integrated in the long run with a significant, positive effect in Malaysia. A Granger-causality test within a vector error-correction model further revealed that stock market development Granger-causes economic growth.

Arestis *et al.* (2005) investigated the link between financial structure and economic growth using time-series methods. Using market capitalisation as one of the proxies for financial development, they found evidence of finance-led growth.

Adjasi and Biekpe (2006) investigated the impact of stock market development on economic growth in 14 African countries using a method of dynamic panel data modelling. The results show a positive relationship between stock market development and economic growth. Using market capitalisation, total value of shares traded and turnover ratio as proxies for stock market development, the study found evidence of causation flowing from stock market development to economic growth in upper middle income countries.

Deb and Mukherjee (2008) examined the causal relationship between stock market development and economic growth for the Indian economy. By applying the long-run Granger non-causality test proposed by Toda and Yamamoto (1995), they tested the causal relationships between the real GDP growth rate and three stock market development proxies. Their results are in line with the supply-leading hypothesis as strong causal flow from the stock market development to economic growth was found.

Akinlo and Akinlo (2009) investigated the long-run relationship between stock market development and economic growth in seven sub-Saharan African countries. Using the autoregressive distributed lag (ARDL) bounds test, they found that stock market development has a significant positive long-run impact on economic growth. Further, they found evidence in support of the supply-leading hypothesis in the case of Egypt and South Africa.

In the same year, Osuala *et al.* (2013) examined the existence of a causal relationship between stock market performance and economic growth in Nigeria. They found unidirectional causal flow from stock market development (as measured by total number of deals ratio) to economic growth. In 2014, Bayar *et al.* (2014) examined the relationship between stock market development and economic growth in Turkey during the period, 1999 - 2013. They also found evidence of unidirectional causality from market-based financial development to economic growth. Table 4.6 summarises the studies supporting the supply-leading hypothesis.

**Table 4.6: Studies in Favour of Unidirectional Causality from Market-Based Financial Development to Economic Growth**

| Author(s)                     | Title                                                             | Region/Country              | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                                                                       | Direction of Causality           |
|-------------------------------|-------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Arestis and Demetriades, 1997 | Financial development and economic growth: Assessing the evidence | South Korea, Germany, USA   | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Stock market capitalisation ratio</li> <li>– Index of stock market volatility</li> <li>– Ratio of M2 to nominal GDP</li> <li>– Ratio of domestic bank credit to nominal GDP</li> </ul>                               | Johansen Cointegration Analysis                                                                                                   | Finance → Growth (in Germany)    |
| Shan and Morris, 2002         | Does financial development 'Lead' economic growth?                | 19 OECD countries and China | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Total credit</li> <li>– Interest rate spread</li> <li>– Measures of financial development</li> <li>– Productivity</li> <li>– Investment</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Stock market index</li> </ul> | Individual country time-series                                                                                                    | Finance → Growth for one country |
| Beck and Levine, 2004         | Stock markets, banks, and growth: Panel evidence                  | 40 countries                | <ul style="list-style-type: none"> <li>– Turnover ratio</li> <li>– Value traded</li> <li>– Market capitalisation</li> <li>– Bank credit / GDP</li> <li>– Initial real GDP</li> <li>– Black market premium</li> </ul>                                                                         | <ul style="list-style-type: none"> <li>– Panel data analysis</li> <li>– Generalised-Method-of-Moments (GMM) estimators</li> </ul> | Finance → Growth                 |

| Author(s)                    | Title                                                                                  | Region/Country                                                                              | Variables                                                                                                                                                                                                                      | Methodology                                                                                                                                                                   | Direction of Causality                           |
|------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|                              |                                                                                        |                                                                                             | <ul style="list-style-type: none"> <li>– Share of exports and imports to GDP</li> <li>– Inflation rate</li> <li>– Ratio of government expenditures to GDP</li> </ul>                                                           |                                                                                                                                                                               |                                                  |
| Choong <i>et al.</i> , 2005  | Financial development and economic growth in Malaysia: The perspective of stock market | Malaysia                                                                                    | <ul style="list-style-type: none"> <li>– Per capita nominal GDP</li> <li>– Ratio of total market value to nominal GDP</li> <li>– Stock market turnover ratio</li> <li>– Discount rate and</li> <li>– Openness ratio</li> </ul> | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– Bounds test approach</li> <li>– Granger-causality test within vector error-correction model (VECM)</li> </ul> | Finance → Growth                                 |
| Arestis <i>et al.</i> , 2005 | Financial structure and economic growth                                                | Developing countries (Greece, India, South Korea, the Philippines, South Africa and Taiwan) | <ul style="list-style-type: none"> <li>– Real GDP</li> <li>– Bank lending</li> <li>– Market capitalisation</li> <li>– Real gross fixed investment</li> <li>– Population</li> </ul>                                             | <ul style="list-style-type: none"> <li>– Time-series data and methods</li> <li>– Dynamic heterogeneous panel approach</li> </ul>                                              | Finance → Growth                                 |
| Adjasi and Biekpe, 2006      | Stock market development and economic Growth: The case of selected African countries   | 14 African countries                                                                        | <ul style="list-style-type: none"> <li>– GDP</li> <li>– Market capitalisation to GDP</li> <li>– Total value of shares traded to GDP</li> <li>– Turnover ratio</li> <li>– Investment</li> <li>– Trade</li> </ul>                | Dynamic panel data modelling                                                                                                                                                  | Finance → Growth (upper middle income economies) |
| Deb and                      | Does stock market                                                                      | Indian                                                                                      | <ul style="list-style-type: none"> <li>– Real GDP growth rate</li> </ul>                                                                                                                                                       | Quarterly time-series                                                                                                                                                         | Finance → Growth                                 |

| Author(s)                   | Title                                                                                                        | Region/Country                        | Variables                                                                                                                                                                                          | Methodology                                                                                             | Direction of Causality                                                                |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Mukherjee, 2008             | development cause economic growth? A time-series analysis for Indian economy                                 |                                       | <ul style="list-style-type: none"> <li>– Market capitalisation ratio</li> <li>– Value traded ratio</li> <li>– Stock market volatility</li> </ul>                                                   | – Granger non-causality test                                                                            |                                                                                       |
| Akinlo and Akinlo, 2009     | Stock market development and economic growth: Evidence from seven sub-Sahara African countries               | Seven countries in sub-Saharan Africa | <ul style="list-style-type: none"> <li>– Per capita nominal GDP</li> <li>– Value traded ratio</li> <li>– Market capitalisation ratio</li> <li>– Discount rate</li> <li>– Openness ratio</li> </ul> | ARDL bounds test                                                                                        | Finance → Growth (in Egypt and South Africa)                                          |
| Osuala <i>et al.</i> , 2013 | Does stock market development promote economic growth in emerging markets? A causality evidence from Nigeria | Nigeria                               | <ul style="list-style-type: none"> <li>– GDP</li> <li>– Market capitalisation ratio</li> <li>– Turnover ratio</li> <li>– Total number of deals ratio</li> </ul>                                    | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– ARDL bounds testing approach</li> </ul> | Finance → Growth (causality only from total number of deals ratio to economic growth) |
| Bayar <i>et al.</i> , 2014  | Effects of stock market development on economic growth: Evidence from Turkey                                 | Turkey                                | <ul style="list-style-type: none"> <li>– Real GDP growth rate</li> <li>– Market capitalisation</li> <li>– Total value of stocks traded</li> <li>– Turnover ratio of stocks traded</li> </ul>       | – Johansen-Juselius cointegration test                                                                  | Finance → Growth                                                                      |



#### **4.4.3 The Demand-Following Response**

A few studies on the market-based-finance-growth nexus support the demand-following hypothesis. They conclude that it is economic growth that stimulates the development of the market-based financial sector. For example, Shan *et al.* (2001) used a Granger-causality procedure, based on the time-series approach within a VAR framework, to investigate the relationship between financial development and economic growth for nine OECD countries and China. Using the stock market index as one of the proxies for financial development, they found evidence in favour of the demand-following hypothesis for three countries. Shan and Morris (2002) also investigated the relationship between financial development and economic growth, using quarterly data from 19 OECD countries and China. Using stock market index as one of the indicators of financial development, they found evidence of economic growth 'leading' financial development for five of the countries.

Akinlo and Akinlo (2009) investigated the long-run relationship between stock market development and economic growth in seven sub-Saharan African countries, using the autoregressive distributed lag (ARDL) bounds test approach. They found that stock market development has a significant positive long-run impact on economic growth. Further, they found evidence in support of the demand-following hypothesis in the case of Nigeria.

Athanasios and Antonios (2012) investigated the causal relationship between stock market development and economic growth for Greece from 1978 to 2007, using a Vector Error-correction Model. The results of their Granger-causality tests indicated unidirectional causality from economic growth to stock market development. Table 4.7 provides a summary of studies that are consistent with the demand-following hypothesis.

**Table 4.7: Studies in Favour of Unidirectional Causality from Economic Growth to Market-Based Financial Development**

| Author(s)                     | Title                                                                                          | Region/Country                        | Variables                                                                                                                                                                                                                                                                                    | Methodology                                                                                                      | Direction of Causality                                       |
|-------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Shan <i>et al.</i> , 2001     | Financial development and economic growth: An egg-and chicken problem?                         | 9 OECD countries and China            | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Bank credit to GDP</li> <li>– Total factor productivity</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Investment ratio</li> <li>– Stock market prices</li> </ul>                                               | Individual time-series                                                                                           | Growth → Finance (for three countries)                       |
| Shan and Morris, 2002         | Does financial development 'Lead' economic growth                                              | 19 OECD countries and China           | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Total credit</li> <li>– Interest rate spread</li> <li>– Measures of financial development</li> <li>– Productivity</li> <li>– Investment</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Stock market index</li> </ul> | Individual country time-series                                                                                   | Growth → Finance (for 5 countries)                           |
| Akinlo and Akinlo, 2009       | Stock market development and economic growth: Evidence from seven sub-Sahara African countries | Seven countries in sub-Saharan Africa | <ul style="list-style-type: none"> <li>– Per capita nominal GDP</li> <li>– Value traded ratio</li> <li>– Market capitalisation ratio</li> <li>– Discount rate</li> <li>– Openness ratio</li> </ul>                                                                                           | ARDL bounds test                                                                                                 | Growth → Finance (Evidence of growth-led finance in Nigeria) |
| Athanasios and Antonios, 2012 | Stock market development and economic growth: An empirical analysis                            | Greece                                | <ul style="list-style-type: none"> <li>– GDP</li> <li>– Stock market index</li> <li>– Interest rate</li> </ul>                                                                                                                                                                               | <ul style="list-style-type: none"> <li>– Time-series</li> <li>– Vector Error-correction Model (VECM).</li> </ul> | Growth → Finance                                             |

#### 4.4.4 The Bidirectional Causality/Feedback Response

Despite the arguments in favour of the supply-leading and the demand-following responses, the empirical results from other studies have shown that market-based financial development and economic growth can Granger-cause one another. Some empirical studies have also supported the assertion that growth has a feedback effect on stock markets by creating the incentives for financial development.

Arestis and Demetriades (1997) examined the empirical evidence on the relationship between financial development and economic growth, for South Korea, Germany and the USA, with a view to identifying outstanding issues and offering some suggestions about how these may be addressed in the future. Using stock market capitalisation ratio and an index of stock market, they found strong evidence of bidirectional causality between market-based finance and economic development in the United States of America.

Shan *et al.* (2001) used a Granger-causality procedure to investigate the relationship between financial development and economic growth for nine OECD countries and China based on the time-series approach within a VAR framework. Using stock market index as one of the proxies for financial development, they found evidence in favour of bidirectional causality in five countries.

Shan and Morris (2002) also investigated the relationship between financial development and economic growth, using quarterly data from 19 OECD countries and China. Using stock market index as one of the indicators of financial development, they found evidence of bidirectional causality in four of the countries.

Hondroyannis *et al.* (2005) assessed the relationship between banking system and stock market development and economic performance in Greece over the period, 1986 - 1999. The empirical results, based on VAR models, suggest that there exists bidirectional causality between stock market development and growth in the long run.

Deb and Mukherjee (2008) examined the causal relationship between stock market development and economic growth for the Indian economy. Using real market

capitalisation ratio as a proxy for stock market development, once again the results indicated bidirectional causal flow.

Akinlo and Akinlo (2009) examined the long-run relationship between stock market development and economic growth in seven sub-Saharan African countries using the autoregressive distributed lag (ARDL) bounds test approach. They found that stock market development has a significant positive long-run impact on economic growth. Further, they also found evidence in support of bidirectional causality between stock market development and economic growth in the case of Cote d'Ivoire, Kenya, Morocco and Zimbabwe.

Masoud and Hardaker (2012) examined the impact of financial development on economic growth in 42 emerging market countries and found evidence in support of bidirectional causality between stock market development and economic growth. Carp (2012) analysed the dynamics of the stock market in Central and Eastern Europe on economic growth. Among other results, Carp found evidence of bidirectional causality between GDP growth rates and turnover ratio. In a similar vein, Cheng (2012) investigated the influence of financial institutions on economic growth in Taiwan using quarterly data from 1973 to 2007. He too found evidence of long-run bidirectional causal relations between the financial system and economic growth.

Marques *et al.* (2013) tested the relationship between stock market and economic growth for Portugal using time-series data from 1993 to 2011. They found evidence of bidirectional Granger-causality between the stock market and economic growth. Table 4.8 provides a summary of studies consistent with the bidirectional causality view.

**Table 4.8: Studies in Favour of Bidirectional Causality between Market-Based Financial Development and Economic Growth**

| Author(s)                     | Title                                                                  | Region/Country              | Variables                                                                                                                                                                                                                                                      | Methodology                     | Direction of Causality              |
|-------------------------------|------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------|
| Arestis and Demetriades, 1997 | Financial development and economic growth: Assessing the evidence      | South Korea, Germany, USA   | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Stock market capitalisation ratio</li> <li>– Index of stock market volatility</li> <li>– Ratio of M2 to nominal GDP</li> <li>– Ratio of domestic bank credit to nominal GDP</li> </ul> | Johansen cointegration analysis | Finance ↔ Growth (USA)              |
| Shan <i>et al.</i> , 2001     | Financial development and economic growth: An egg and chicken problem? | 9 OECD countries and China  | <ul style="list-style-type: none"> <li>– Real GDP per capita</li> <li>– Bank credit to GDP</li> <li>– Total factor productivity</li> <li>– Trade openness</li> <li>– CPI</li> <li>– Investment ratio</li> <li>– Stock market prices</li> </ul>                 | Individual time-series          | Finance ↔ Growth for five countries |
| Shan and Morris, 2002         | Does financial development 'Lead' economic growth                      | 19 OECD countries and China | <ul style="list-style-type: none"> <li>– GDP per capita</li> <li>– Total credit</li> <li>– Interest rate spread</li> <li>– Measures of financial development</li> <li>– Productivity</li> <li>– Investment</li> <li>– Trade openness</li> </ul>                | Individual country time-series  | Finance ↔ Growth for 4 countries    |

| Author(s)                          | Title                                                                                                   | Region/Country                        | Variables                                                                                                                                                                                                                                          | Methodology                                                                                                     | Direction of Causality                                                          |
|------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                    |                                                                                                         |                                       | <ul style="list-style-type: none"> <li>– CPI</li> <li>– Stock market index</li> </ul>                                                                                                                                                              |                                                                                                                 |                                                                                 |
| Hondroyiannis <i>et al.</i> , 2005 | Financial markets and economic growth in Greece, 1986–1999                                              | Greece                                | <ul style="list-style-type: none"> <li>– Total real output</li> <li>– Total stock market capitalisation</li> <li>– Total bank credit to the private sector</li> </ul>                                                                              | Time-series                                                                                                     | Finance ↔ Growth                                                                |
| Deb and Mukherjee, 2008            | Does stock market development cause economic growth? A time-series analysis for Indian economy          | India                                 | <ul style="list-style-type: none"> <li>– Real GDP growth rate</li> <li>– Market capitalisation ratio</li> <li>– Value traded ratio</li> <li>– Stock market volatility</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>– Quarterly time-series</li> <li>– Granger non-causality test</li> </ul> | Finance ↔ Growth (between real market capitalisation ratio and economic growth) |
| Akinlo and Akinlo, 2009            | Stock market development and economic growth: Evidence from seven sub-Sahara African countries          | Seven countries in sub-Saharan Africa | <ul style="list-style-type: none"> <li>– Per capita nominal GDP</li> <li>– Value traded ratio</li> <li>– Market capitalisation ratio</li> <li>– Discount rate</li> <li>– Openness ratio</li> </ul>                                                 | ARDL bounds test                                                                                                | Finance ↔ Growth (in Cote D'Ivoire, Kenya, Morocco and Zimbabwe)                |
| Masoud and Hardaker, 2012          | The impact of financial development on economic growth: Empirical analysis of emerging market countries | 42 emerging market countries          | <ul style="list-style-type: none"> <li>– Real per capita GDP growth</li> <li>– Market capitalisation</li> <li>– Value traded</li> <li>– Turnover ratio</li> <li>– Ratio of total bank assets to GDP</li> <li>– Credit to private sector</li> </ul> | Endogenous growth model.                                                                                        | Finance ↔ Growth                                                                |

| Author(s)                    | Title                                                                                                                      | Region/Country | Variables                                                                                                                                                                                                | Methodology                                                                                        | Direction of Causality |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------|
|                              |                                                                                                                            |                | <ul style="list-style-type: none"> <li>Population growth rate</li> <li>Secondary school enrolment</li> <li>Investment ratio</li> </ul>                                                                   |                                                                                                    |                        |
| Carp, 2012                   | Can Stock Market Development Boost Economic Growth? Empirical Evidence from Emerging Markets in Central and Eastern Europe | Romania        | <ul style="list-style-type: none"> <li>GDP growth rate</li> <li>Market capitalisation</li> <li>Turnover ratio</li> <li>Stock value traded</li> <li>Real investment</li> </ul>                            | Time-series                                                                                        | Finance ↔ Growth       |
| Cheng, 2012                  | Substitution or complementary effects between banking and stock markets: Evidence from financial openness in Taiwan        | Taiwan         | <ul style="list-style-type: none"> <li>Real GDP</li> <li>Turnover</li> <li>Volatility</li> <li>Ratio of liquid liabilities of the financial intermediaries to market value of domestic shares</li> </ul> | <ul style="list-style-type: none"> <li>Time-series</li> <li>Vector autoregressive model</li> </ul> | Finance ↔ Growth       |
| Marques <i>et al.</i> , 2013 | Does the stock market cause economic growth? Portuguese evidence of economic regime change                                 | Portugal       | <ul style="list-style-type: none"> <li>Real GDP</li> <li>Stock market capitalisation ratio</li> <li>Total domestic credit ratio</li> <li>Investment ratio</li> <li>Consumer price index</li> </ul>       | Time-series                                                                                        | Finance ↔ Growth       |

## **4.5 Conclusion**

In this chapter, the theoretical literature on financial development and economic growth as well as empirical literature on bank-based and market based financial development and economic growth has been discussed. A brief review of the economic growth theories was also provided. Based on the issues discussed in this chapter, it can be concluded that the relationship between financial development and economic growth is not clear cut, hence the argument that financial development unambiguously leads to economic growth can only be taken with a pinch of salt. Existing evidence indicates that the relationship between bank-based financial development and economic growth and between market-based financial development and economic growth varies depending on the proxy used to measure the level of bank- and market-based financial development; the level of development of the sample countries; data sets and methodology used and also the use of control variables, among other things.



## **CHAPTER 5**

### **ESTIMATION TECHNIQUES AND EMPIRICAL MODEL SPECIFICATION**

#### **5.1 Introduction**

This chapter discusses the estimation techniques used in the study, as well as the theoretical and empirical model specifications. The chapter is divided into five sections. In Section 5.2 the empirical models used in the study as well as the theories underpinning the models are presented. In Section 5.3 the techniques used to estimate the models presented in Section 5.2 are given. Section 5.4 discusses data sources and definitions of variables used in the study, while Section 5.5 concludes the chapter.

#### **5.2 Empirical Model Specification**

The dynamic impact of bank-based and market-based financial development on economic growth is re-examined using the autoregressive distributed lag bounds testing approach to cointegration analysis. Various measures have been used in the literature to proxy for the “level of financial development,” ranging from monetary aggregates, to the ratio of the size of the banking system to GDP (Andersen and Tarp, 2003; Adu *et al.*, 2013; among others). Several measures have also been used in literature as proxies for economic growth. These range from, growth rates to nominal values to per capita values of gross domestic product. Section 5.2.1 outlines the theoretical underpinnings of the general empirical model while Section 5.2.2 presents the general empirical model (Model 1). Section 5.2.3 presents the causality model (Model 2).

##### **5.2.1 Theoretical and Empirical Underpinnings of Model 1**

In this study, annual growth rate of real GDP is used as a proxy for economic growth “Growth” (GRO). This proxy has been used extensively in literature (see, among others, Wood, 1993; Odedokun, 1996a; Shan and Jianhong, 2006; and Majid, 2008).

Financial development, on the other hand, is proxied by bank-based and market-based financial indicators. Bank-based financial development is proxied by a bank-based financial development index (BFD) which is constructed from three bank-based financial development variables – namely M2 to nominal GDP (M2), M3 to nominal GDP (M3), and domestic credit to private sector divided by nominal GDP (C). Market-based financial development on the other hand, is proxied by a market-based financial development index (MFD) which is constructed from three market-based financial development variables – namely, stock market capitalisation (CAP), total value of stocks traded (TV) and turnover ratio (TOR).

In modern literature, bank-based financial development is proxied by various indicators. However, for this study, the first variable used is the ratio of M2 to GDP. This indicator shows the overall size of the financial intermediary in a country (see Levine, 1993a; Levine, 1997; Calderon and Liu, 2003; Khan and Senhadji, 2000). A higher ratio of M2 to GDP shows a larger financial sector and consequently, a larger financial intermediation. The opposite is also true.

The second variable of bank-based financial development used to capture the extent of intermediation in the countries of interest is the ratio M3 to GDP. This variable reflects the change in liquidity of the banking sector in relation to time (Ghali 1999). An increase in M3 to GDP can be taken as progress in an economy's financial sector.

However, according to Ang and McKibbin (2007), the traditionally easily available monetary aggregates such as M2 or M3 as a ratio of nominal GDP, although widely used in measuring financial deepening, taken alone they are not very good proxies for financial development. This is because they reflect the extent of transaction services provided by a financial system but not its ability to channel funds from depositors to investment. Using M2 and M3 can be rendered as inadequate measures of financial development according to Ang and McKibbin (2007) because of the availability of foreign funds in the financial system. Although the ratios of M2 to nominal GDP (M2)

and M3 to nominal GDP (M3) have been used as some of the proxies of bank-based financial development in this study, an additional proxy has been used as well.

Private bank credit to private sector is often claimed to be a more superior measure of financial development. Since the private sector is able to utilise funds in a more efficient and productive manner as compared to the public sector, the exclusion of credit to public sector better reflects the extent of efficient resource allocation (Ang and McKibbin, 2007). As such, the third bank-based financial development variable used in the creation of the bank-based financial development indicator is credit provided to the private sector by financial intermediaries expressed as a percentage of GDP (C).

According to Ang and McKibbin (2007), these variables are highly correlated in most cases, yet there is no uniform argument as to which proxies are most appropriate for measuring financial development. This justifies the need for constructing an index as a single measure that represents the overall development in the bank-based financial sector by taking the relevant financial proxies into account.

Thus, this study utilises M2 to nominal GDP (M2), M3 to nominal GDP (M3) and domestic credit to private sectors divided by nominal GDP (C) as the proxies for bank-based financial development. Consequently, in order to produce an assessment of the overall level of "bank development" in each country, an index of bank-based financial development that averages together the information contained in the three individual indicators is produced. Following Demirguc-Kunt and Levine (1996), an index of bank-based financial development (BFD) is constructed using these three variables.

To compute a conglomerate index of bank-based financial development, the means-removed values of the three indicators of bank development are averaged, in a two-step procedure. First, for each country  $i$ , the means-removed values of M2 to nominal GDP (M2), M3 to nominal GDP (M3) and domestic credit to private sectors to nominal GDP (C) are computed. The means-removed value of variable  $X$  for country  $i$  is defined as

$X(i)_m = [X(i) - \text{mean}(X)] / [\text{ABS}(\text{mean}(X))]$ , where  $\text{ABS}(z)$  refers to the absolute value of  $z$ . For  $\text{mean}(X)$ , the average value of  $X$  across all countries over the 1980-2012 period was used. Second, a simple average of the means-removed M2 to nominal GDP, M3 to nominal GDP and domestic credit to private sectors to nominal GDP, is taken to obtain an overall index of bank-based financial development (BFD).

Market-based financial development is proxied by a market-based financial development index (MFD) which is constructed from three market-based financial development variables – namely, stock market capitalisation (CAP), total value of stocks traded (TV) and turnover ratio (TOR).

As with the dilemma encountered when choosing indicators for bank-based financial development, there is no best indicator for market-based financial development. However, the most commonly used ones are the three given above. Although many stock market development indicators are significantly correlated in an intuitively plausible fashion, the individual indicators produce different country rankings. Thus, to produce an assessment of the overall level of "stock market development" across countries, an index that averages together the information contained in the individual indicators is developed.

The first indicator of market-based financial development used in this study is market capitalisation ratio, calculated as the value of listed shares divided by GDP (CAP). Analysts frequently use this ratio as a measure of stock market size. In terms of economic significance, the assumption behind market capitalisation is that market size is positively correlated with the ability to mobilise capital and diversify risk.

The second indicator of market-based financial development utilised is the total value traded as a ratio of GDP, calculated as total shares traded on the stock market exchange divided by GDP (TV). The total value traded ratio measures the organised trading of equities as a share of national output. As a result, it is expected to positively

reflect liquidity in an economy. Together, market capitalisation and total value traded gives a picture of the stock-market size and liquidity.

The third indicator of market-based financial development used in this study, which also happens to be the second measure of liquidity, is the turnover ratio (TOR) which is equal to the value of total shares traded divided by market capitalisation. High turnover often reflects low transactions costs. Turnover complements total value of stocks traded/GDP as well. However, total value traded /GDP captures trading in relation to the size of the economy, while turnover measures trading relative to the stock market size. As such, a small but liquid market will have a small total value traded/GDP ratio and a high turnover ratio.

Thus, incorporating information on market capitalisation, total value traded/GDP and turnover provides a more comprehensive picture of market-based financial development than the information provided by any single indicator. Therefore, a conglomerate index of market-based financial development (MFD) is computed using the same procedure for constructing a conglomerate index of bank-based financial development (BFD) discussed above. Bank-based and market-based financial development are expected to exert a positive impact on economic growth, hence their coefficients are expected to be positive.

In addition to the real GDP growth rate (GRO) and the financial development indicators (BFD and MFD), three other variables have been introduced in the model. These additional variables comprise share of investment in GDP, share of savings in GDP and also trade openness. These three variables have been included in the above model to fully specify the model. According to growth theory, the three additional variables exert a positive impact on economic growth – hence their coefficients are also expected to be positive.

Investment in this study is calculated as gross fixed capital formation as a share of GDP (INV). According to Abu-Bader and Abu-Qarn (2008b), this variable is considered to be

one of the few economic variables with a robust correlation to economic growth, regardless of the information set. According to economic growth literature, investment is supposed to lead to economic growth – hence its coefficient is expected to be positive.

The second control variable used is savings, calculated as savings as a share of GDP. The choice of savings ratio as an additional variable has to a large extent been influenced by the theoretical links between savings and economic growth and between savings and financial development. Traditional theories such as those suggested by Solow (1956), Romer (1986) and Lucas (1988) have emphasised the role of savings in economic growth. Solow (1956), for example, argues that an increase in savings generates higher growth in the short run during the transition between steady states (also see Odhiambo, 2008a). According to endogenous growth models developed by Romer (1986) and Lucas (1988), permanent increase in growth can be determined by higher savings and capital accumulation. According to Odhiambo (2008a), the theoretical link between financial development and savings is largely influenced by the work done by McKinnon (1973) and Shaw (1973), which emphasised that a well-developed financial sector is expected to boost savings through increased efficiency in intermediation. A deeper financial system should be capable of providing alternative savings instruments that more adequately match individual preferences, risk-averseness and income profile (Schmidt-Hebbel and Servén, 2002). Following the above argument, savings as a share of GDP (SAV) has been chosen as one of the variables and its coefficient is expected to be positive.

The third control variable utilised is trade openness (TOP). The positive relationship between trade and economic growth is well documented in the literature. Recent literature shows that trade openness, finance and growth are related (Ang and McKibbin, 2007). Financial development results in higher levels of exports and trade balance of manufactured goods which consequently lead to higher economic development. This variable has been included in order to capture the role of trade liberalisation on economic growth. The degree of openness is found by adding imports

and exports as a percentage of GDP and in this case, its coefficient is expected to be positive and statistically significant.

From the given justification, it is clear that investment, savings and trade openness are vital in promoting both financial development and economic growth.

### 5.2.2 Model 1: The General Empirical Model

The empirical model used in this study to test the impact of financial development, both bank-based and market-based, on economic growth is based on Ram (1999), Christopoulos and Tsionas (2004), Majid (2008), and Kargbo and Adamu (2009), with the general model specified as follows:

$$GRO_t = \alpha_0 + \alpha_1 BFD_t + \alpha_2 MFD_t + \alpha_3 INV_t + \alpha_4 SAV_t + \alpha_5 TOP_t + \varepsilon_t \dots \dots \dots (5.1)$$

Where GRO is annual growth rate of real gross domestic product (a proxy for economic growth), BFD is an index of bank-based financial development (a proxy for bank-based financial development); MFD is an index of market-based financial development (a proxy for market-based financial development); INV is share of investment in GDP; SAV is share of savings in GDP; TOP is trade openness;  $\alpha_0$  is a constant;  $\alpha_1$ - $\alpha_5$  are respective coefficients; and  $\varepsilon_t$  is the error term.

Specification of the model above is done per each of the following countries: South Africa, Brazil, Kenya, the USA, the UK and Australia.

### 5.2.3 Model 2: Granger-causality Model

The dynamic causal relationship between bank-based financial development and economic growth and between market-based financial development and economic growth is tested within a trivariate Granger-causality framework. Model 2 is, therefore, split into two models – Model 2a and Model 2b – where the former tests the causality

between bank-based financial development and economic growth and the latter the causality between market-based financial development and economic growth.

The causality model used in this study originates from Granger's definition of causality which is based on the notion that the future cannot cause the past but the past can cause the future. The Granger's definition is that  $X$  causes  $Y$ , given  $Z_t$ , if  $Y_{t+1}$  can be predicted better using past values of  $X$  ( $X_s, S \leq t$ ) than by not using it – where  $Z_t$  is the universe of information up to and including period ( $t$ ). That is, comparing the forecasting ability of  $Z_t$  with and without  $X$ : if past values of  $X$  contribute to forecasting  $Y_{t+1}$ , significantly, then  $X$  is said to Granger-cause  $Y$ . Causality from  $Y$  to  $X$  can be defined in the same way.

Using the bank-based financial development (BFD) and economic growth (GRO) variables, it can be stated that: If 'BFD causes GRO', then changes in BFD should precede changes in GRO. In other words, for BFD to Granger cause GRO, two conditions must be met. First, BFD should help predict GRO, i.e. in a regression of GRO against past values of BFD and GRO as independent variables, BFD should contribute significantly to the explanatory power of the regression. Secondly, GRO should not help to predict BFD. If BFD helps to predict GRO and GRO helps to predict BFD, then it is more likely that one or more variables are in fact, causing both BFD and GRO. The same notion applies to market-based financial development (MFB) and economic growth (GRO).

In this study, the Granger-causality test is used to examine the causal relationship between: (a) bank-based financial development and economic growth; and (b) market-based financial development and economic growth – in each of the six countries. Given the flaws of bivariate causality framework, the current study uses a trivariate causality test to examine this linkage. According to Pradhan (2011), Odhiambo, (2011) and Loizides and Vamvoukas (2005), it is possible that the causal link between bank development and economic growth and between stock market development and economic growth could result from the omission of a vital variable in the causality



model. To address this shortfall, a trivariate causality model is used to examine the causal relationship between bank-based financial development (BFD) and economic growth (GRO); and between market-based financial development (MFD) and economic growth (GRO). Savings (SAV) is the intermitting variable in the trivariate models. Model 2a is a trivariate Granger-causality model consisting of GRO, BFD and SAV while Model 2b is a trivariate Granger-causality model consisting of GRO, MFD and SAV.

The choice of having savings as an intermitting variable is based on the theoretical links between savings and economic growth and between savings and financial development. Traditional theories emphasise the role of savings in the economic growth process (see Solow, 1956; Romer, 1986; Lucas, 1988). On the one hand, Solow (1956), in his exogenous growth model, argues that an increase in savings leads to higher growth in the short run during the transition between steady states (see Odhiambo, 2008a). On the other hand, according to endogenous growth models developed by Romer (1986) and Lucas (1988), a permanent increase in growth can be determined by higher savings and capital accumulation. The theoretical link between financial development and savings is also, to a large extent, influenced by the work done by McKinnon (1973) and Shaw (1973), which emphasised that a well-developed financial sector is expected to increase savings through efficiency improvement during the intermediation process (see also Odhiambo, 2008). Thus, a deeper financial system should be able to provide alternative savings instruments that sufficiently match individual preferences, risk appetite and income profile (Schmidt-Hebbel and Servén, 2002). Based on this argument, savings as a share of GDP (SAV) is chosen to be the intermitting variable.

### **5.3 Estimation Techniques**

In this section, the techniques used to estimate the dynamic relationship between financial development, both bank-based and market-based, and economic growth in the selected countries are specified. The dynamic specification associated with Error-Correction Modelling (ECM) is used throughout the study. By using this type of

modelling the study is able to establish both the short-run and long-run relationships between bank-based financial development and economic growth on one hand and that between market-based financial development and economic growth on the other, in the selected countries. Throughout this study, the autoregressive distributed lag bounds testing procedure is used for cointegration testing, impact analysis and Granger-causality testing; and all the associated estimations are computed using Microfit 5.01 software. However, before variables are subjected to cointegration tests, the order of integration must be ascertained. For this purpose, the study utilises the Dickey-Fuller generalised least square (DF-GLS), the Phillips-Perron (PP) and the Perron (1997) (PPURoot) tests.

### **5.3.1 Unit Root Tests**

The purpose of conducting unit root test in this study is to establish the order of integration of the series. Although the ARDL does not require pre-testing of variables to be done, the unit root test provides guidance as to whether ARDL is applicable, as it is only applicable for the analysis of variables that are integrated of order not more than one. Some of the unit root tests commonly used in econometric analysis include the conventional Dickey-Fuller (DF), the Augmented Dickey-Fuller (ADF), the Sargan – Bhargava – Durbin – Watson (SBDW), the Phillips-Perron (PP), the Dickey-Fuller (DF-GLS), the Zivot-Andrews (ZAURoot) and the Perron (PPURoot).

To examine the stationarity in the series, the study uses three tests, namely Dickey-Fuller generalised least square (DF-GLS), the Phillips-Perron (PP) and the Perron (1997) unit root (PPURoot) tests. These tests are discussed in detail below.

#### **5.3.1.1 Dickey-Fuller Generalised Least Square (DF-GLS)**

The Dickey-Fuller Generalised Least Square (DF-GLS), proposed by Elliot *et al* (1996), is an adapted version of the conventional Augmented Dickey-Fuller (ADF) t-test. It involves de-trending the variable before running the ADF test regression. The DF-GLS test has a better overall performance than the ADF tests, in terms of sample size and

power in the presence of an unknown mean or trend; and has been used in most recent studies.

The DF-GLS applies a generalised least squares de-trending to the variables by first regressing the equation in the following form:

$$y_t^d = y_t - \beta' z_t \dots\dots\dots (5.2)$$

For de-trending,  $z_t = (1, t)'$  and  $\beta_0, \beta_1$  are calculated as regressing

$$[y_1, (1-\alpha L)y_2, \dots, (1-\alpha L)y_T] \dots\dots\dots (5.3)$$

onto

$$[z_1, (1-\alpha L)z_2, \dots, (1-\alpha L)z_T] \dots\dots\dots (5.4)$$

where  $\alpha = 1 + c/T$  and  $L$  is the lag operator. According to Stock (1994), the values of  $c$  are chosen such that the test attains the power envelope against stationary alternatives at 50% power. The ADF regression is then estimated using the  $y_t^d$  series to test the null hypothesis that  $\rho = 0$ .

$$\Delta y_t^d = \alpha + \gamma t + \rho y_{t-1}^d + \sum_{i=1}^m \delta_i \Delta y_{t-i}^d + \varepsilon_t \dots\dots\dots (5.5)$$

Where  $m$  is the maximum lag.

### 5.3.1.2 Phillips-Perron (PP)

Perron (1990) identified two models, which deal with series containing varying mean, which are the additive outlier model and the innovational outlier model. The additive outlier models assume that the effect of a break is instantaneous on the series, whether they are stationary or not. For this type of model, Perron suggested two-step procedures to test for the unit root in the series. The first step involves regressing series  $X_t$  on the constant and a dummy variable:

$$X_t = \mu + \phi DU_t + \varepsilon_t \dots \dots \dots (5.6)$$

Where  $DU_t$  is the post-break intercept dummy such that  $DU_t = 1$  if  $t > T_B$  and 0 otherwise, and  $T_B$  is the time of the break. The second step involves analysis of the error term after taking care of the effect of the break. The residuals obtained from the equation above are run on the equation of the form:

$$\Delta \xi_t = \beta \xi_{t-1} + \sum_{i=0}^k \lambda_i \Delta \xi_{t-1} + \sum_{i=0}^k d_i D(TB)_{t-i} + \mu_t \dots \dots \dots (5.7)$$

Where  $D(TB)_t$  is a one-time break dummy such that  $D(TB)_t = 1$  if  $t = TB+1$  and 0 otherwise. As noted by Perron and Vogelsang (1992), variable  $D(TB)_t$  is there to remove the dependence of the Dickey-Fuller test statistic on noise parameters of lagged values of  $\Delta \xi_t$  which are inserted in the model to cater for autocorrelation problem in the error term  $\mu_t$ . Testing for stationarity of the variable  $X_t$  in question under the null of:

$H_0: \beta=0$ , against the alternative

$H_1: \beta < 0$ , is done using equation (5.7) above.

Rejecting the null hypothesis would be synonymous to saying the series  $X_t$  is stationary using the appropriate critical values.

The innovational outlier model on the other hand, assumes that the effect of the break on the series is gradual and smooth rather than sudden. The test of unit root on the series  $X_t$  can be achieved by running the following equation:

$$\Delta X_t = \beta X_{t-1} + \sum_{i=1}^k \lambda_i \Delta X_{t-i} + \phi DU_t + dD(TB)_t + \mu_t \dots\dots\dots (5.8)$$

Where  $DU_t$  and  $D(TB)_t$  are defined as above. Unit root test would be run using the null hypothesis and alternative as above.

When the break is in both the intercept and the slope of trend functions, Perron (1990) suggested running the following equation:

$$\Delta X_t = \mu + \phi T + \beta X_{t-1} + \sum_{i=1}^k \lambda_i \Delta X_{t-i} + \phi DU_t + \gamma DT_t + dD(TB) + \mu_t \dots\dots\dots (5.9)$$

### 5.3.1.3 Perron (1997) Unit Root Test (PPURoot)

To cater for possible structural breaks within the data set, and to address the bias that reduces the ability to reject a false unit root null hypothesis, the Perron (1997) test (PPURoot) was utilised. In this unit root test, structural breaks in both the slope and intercept are accounted for. The PPURoot test assumes the presence of a break in the series and that the breakpoint is endogenously determined.

According to Perron (1990), in time-series data, structural breaks as a result of a shock occur either instantly or gradually. Instantaneous change to the new trend function is modelled in the Additive Outlier model while the gradual change is modelled in the

Innovational Outlier model (see Perron, 1990, 1997). Since this study is macro in scope, it is therefore reasonable to adopt the Innovational Outlier model, since policy reforms at macro level do not cause the target variable to respond promptly to the policy actions.

Following Perron (1997), the Innovational Outlier model for testing stationarity under the presence of a structural break can be presented as:

$$x_t = \alpha_0 + \alpha_1 DU_t + d(DTB)_t + \gamma DT_t + \beta t + \rho x_{t-1} + \sum_{i=1}^{\rho} \phi_i \Delta x_{t-1} + e_t \dots \dots (5.10)$$

Where the intercept dummy  $DU_t$  represents a change in the level;  $DU_t = 1$  if  $(t > TB)$  and zero otherwise; the slope dummy  $DT_t$  represents a change in the slope of the trend function; the crash dummy  $(DTB) = 1$  if  $t = TB + 1$ , and zero otherwise; and  $TB$  is the break date. The above model has a unit root with a break under the null hypothesis, as the dummy variables are incorporated in the regression under the null. The alternative hypothesis is a broken trend stationary process.

### 5.3.2 Cointegration Test: Autoregressive Distributed Lag (ARDL) Bounds Testing Approach

After testing the variables for stationarity, the next step is to test whether the variables are cointegrated. This study utilises the newly proposed autoregressive distributed lag bounds testing approach originally introduced by Pesaran and Shin (1999), and later extended by Pesaran *et al.* (2001) to examine the cointegration relationship between bank-based and market-based financial development and economic growth. The choice of this test is based on numerous advantages it has over previous cointegration tests, such as the residual-based technique by Engle and Granger (1987), and the Full-Maximum Likelihood (FML) test based on Johansen (1988; 1991), and Johansen and Juselius (1990).

Firstly, unlike other conventional approaches to cointegration, the ARDL bounds testing approach does not impose the restrictive assumption that all the variables under study must be integrated of the same order. Thus, the ARDL approach can be applied to test the existence of a relationship between variables irrespective of whether the underlying regressors are integrated of order one  $[I(1)]$  or order zero  $[I(0)]$ . Secondly, while conventional cointegration methods estimate the long-run relationship within a context of a system of equations, the ARDL method employs only a single reduced form equation (Pesaran and Shin, 1999). Thirdly, the ARDL approach generally provides estimates of the long-run model that are unbiased and t-statistics that are valid even when some of the regressors are endogenous (Odhiambo, 2008a). Fourthly, while other cointegration techniques are sensitive to the size of the sample, the ARDL test is suitable even when the sample size is small. Thus, the ARDL approach has superior small sample properties in comparison to the Johansen and Juselius (1990) cointegration test (Pesaran and Shin, 1999). Hence, the approach is considered to be suitable for the analysis of the underlying relationship. This approach has also been increasingly used in empirical research in recent years.

Following Pesaran *et al.* (2001), the ARDL representation of Model 1 (equation 5.1) is shown as equation 5.11:

#### ARDL Representation of Model 1

$$\begin{aligned} \Delta GRO_t = & \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta GRO_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta BFD_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta MFD_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta INV_{t-i} \\ & + \sum_{i=0}^n \alpha_{5i} \Delta SAV_{t-i} + \sum_{i=0}^n \alpha_{6i} \Delta TOP_{t-i} + \sigma_1 GRO_{t-1} + \sigma_2 BFD_{t-1} + \sigma_3 MFD_{t-1} \\ & + \sigma_4 INV_{t-1} + \sigma_5 SAV_{t-1} + \sigma_6 TOP_{t-1} + \mu_{1t} \dots \dots \dots (5.11) \end{aligned}$$

where GRO is the annual growth rate of the real gross domestic product (a proxy for economic growth); BFD is an index of bank-based financial development (a proxy for

bank-based financial development); MFD is an index of market-based financial development (a proxy for market-based financial development); INV is share of investment in GDP; SAV is share of savings in GDP; TOP is trade openness;  $\alpha_0$  is a constant;  $\alpha_1$ - $\alpha_5$  and  $\sigma_1$ - $\sigma_6$  are respective coefficients;  $u_t$  is the white noise error term;  $\Delta$  is the difference operator; and  $n$  is the lag length.

The general model above is estimated for each of the six countries.

In the first stage, the null hypothesis of no cointegration relationship:

$$H_0: \sigma_1 = \sigma_2 = \sigma_3 = \sigma_4 = \sigma_5 = \sigma_6 = 0$$

is tested against the alternative hypothesis of the existence of a cointegration relationship:

$$H_1: \sigma_1 \neq \sigma_2 \neq \sigma_3 \neq \sigma_4 \neq \sigma_5 \neq \sigma_6 \neq 0$$

The second stage is to consider the F-statistic. The bounds testing procedure is based on the joint F-statistic whose asymptotic distribution is non-standard. The interpretation of the cointegration results in this case is based on two sets of critical values whose tests are reported by Pesaran and Pesaran (1997) and Pesaran *et al.* (2001). The first set of critical values assumes that all the variables included in the ARDL model are integrated of order zero  $I(0)$ , while the second set assumes that the variables are integrated of order one  $I(1)$ . When the computed test statistic exceeds the upper critical bounds value, then the null hypothesis is rejected. When the F-statistic is lower than the lower bounds value, then the null hypothesis of no cointegration cannot be rejected while the cointegration test becomes inconclusive when the F-statistic falls within the bounds.

The ARDL method estimates  $(P + 1)^k$  number of regressions to obtain the optimal lags for each variable.  $P$  is the maximum number of lags to be used and  $k$  is the number of



variables in the equation (Kargbo and Adamu, 2009). The model is selected based on the Schwartz-Bayesian Criterion (SBC) or Akaike Information Criterion (AIC). The SBC uses the smallest possible lag length and is therefore described as the parsimonious model. The AIC chooses the maximum relevant lag length.

### **Error-correction Model**

After ascertaining the cointegration relationship, the long run and error-correction estimates of the ARDL model are obtained. The error-correction representation of the series can be specified as follows:

$$\begin{aligned} \Delta GRO_t = & \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta GRO_{t-i} + \sum_{i=0}^n \alpha_{2i} \Delta BFD_{t-i} + \sum_{i=0}^n \alpha_{3i} \Delta MFD_{t-i} + \sum_{i=0}^n \alpha_{4i} \Delta INV_{t-i} \\ & + \sum_{i=0}^n \alpha_{5i} \Delta SAV_{t-i} + \sum_{i=0}^n \alpha_{6i} \Delta TOP_{t-i} + \xi_1 ECM_{t-1} \\ & + \mu_t \dots \dots \dots (5.12) \end{aligned}$$

where GRO is annual growth rate of real gross domestic product (a proxy for economic growth), BFD is an index of bank-based financial development (a proxy for bank-based financial development); MFD is an index of market-based financial development (a proxy for market-based financial development); INV is share of investment in GDP; SAV is share of savings in GDP; TOP is trade openness;  $\alpha_0$  is a constant;  $\alpha_1$ - $\alpha_6$  and  $\xi$  are respective coefficients;  $ECM_{t-1}$  is the error-correction term lagged once;  $u_t$  is residual;  $\Delta$  is the difference operator; and n is the lag length.

The coefficient of the lagged error-correction term ( $\xi$ ), which is also the speed of adjustment parameter, is expected to be negative and statistically significant to further confirm the existence of a cointegration relationship.

This error-correction model is run for each of the six countries with an established cointegration relationship.

### 5.3.3 Model 2: Trivariate Granger-Causality Test

Following Ang and McKibbin (2007), Narayan and Smyth (2008) and Odhiambo (2009a), trivariate causality models for this study are expressed as follows:

#### Model 2a - Bank-based financial development and economic growth

$$\Delta GRO_t = a_0 + \sum_{i=1}^n a_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n a_{2i} \Delta BFD_{t-i} + \sum_{i=1}^n a_{3i} \Delta SAV_{t-i} + \alpha_4 ECM_{t-1} + \mu_{1t} \dots \dots \dots (5.13)$$

$$\Delta BFD_t = \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n \beta_{2i} \Delta BFD_{t-i} + \sum_{i=1}^n \beta_{3i} \Delta SAV_{t-i} + \beta_4 ECM_{t-1} + \mu_{2t} \dots \dots \dots (5.14)$$

$$\Delta SAV_t = \theta_0 + \sum_{i=1}^n \theta_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n \theta_{2i} \Delta BFD_{t-i} + \sum_{i=1}^n \theta_{3i} \Delta SAV_{t-i} + \theta_4 ECM_{t-1} + \mu_{3t} \dots \dots \dots (5.15)$$

#### Model 2b – Market-based financial development and economic growth

$$\Delta GRO_t = \delta_0 + \sum_{i=1}^n \delta_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta MFD_{t-i} + \sum_{i=1}^n \delta_{3i} \Delta SAV_{t-i} + \delta_4 ECM_{t-1} + \varepsilon_{1t} \dots \dots \dots (5.16)$$

$$\Delta MFD_t = \gamma_0 + \sum_{i=1}^n \gamma_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n \gamma_{2i} \Delta MFD_{t-i} + \sum_{i=1}^n \gamma_{3i} \Delta SAV_{t-i} + \gamma_4 ECM_{t-1} + \varepsilon_{2t} \dots \dots \dots (5.17)$$

$$\Delta SAV_t = \Phi_0 + \sum_{i=1}^n \Phi_{1i} \Delta GRO_{t-i} + \sum_{i=1}^n \Phi_{2i} \Delta MFD_{t-i} + \sum_{i=1}^n \Phi_{3i} \Delta SAV_{t-i} + \Phi_4 ECM_{t-1} + \varepsilon_{3t} \dots \dots \dots (5.18)$$

where GRO is annual growth rate of real gross domestic product (a proxy for economic growth), BFD is an index of bank-based financial development (a proxy for bank-based financial development); MFD is an index of market-based financial development (a proxy for market-based financial development); SAV is share of savings in GDP;  $\alpha_0, \beta_0, \theta_0, \delta_0, \gamma_0$  and  $\Phi_0$  are constants;  $\alpha_1$ - $\alpha_4, \beta_1$ - $\beta_4, \theta_1$ - $\theta_4, \delta_1$ - $\delta_4, \gamma_1$ - $\gamma_4$  and  $\Phi_1$ - $\Phi_4$  are respective coefficients;  $ECM_{t-1}$  is the error-correction term lagged once;  $u_{1t} - u_{3t}$  and  $\varepsilon_{1t} - \varepsilon_{3t}$  are residuals;  $\Delta$  is the difference operator; and  $n$  is the lag length.

The above Granger-causality models (equations 5.13 – 5.18) are run on all six countries.

Although the existence of a long-run relationship between [BFD, GRO] and [MFD, GRO] suggests that there must be causality in at least one direction, it does not indicate the direction of causality between the variables. Instead, it is the F-statistic and the lagged error-correction term that determines the direction of the causality. While the F statistic on the explanatory variables represents the short-run causal effect, the t statistic on the coefficient of the lagged error-correction term represents the long-run causal relationship (Narayan and Smyth, 2006; Odhiambo, 2009a). It should, however, be

noted that although an error-correction term has been included in all the equations of the model, only equations where the null hypothesis of no cointegration is rejected will be estimated with an error-correction term (Narayan and Smyth, 2006).

There are a priori four possibilities concerning the causal relationship between financial development and economic growth (Graff, 1999). The first possibility is that financial development and economic growth are not causally related. Neither of the two has significant effects on the other, and the empirically observed relationship between the two variables is merely the result of a historical peculiarity. Thus, although economies grow as the financial sector grows, the two sectors follow their own logic where the real sector is governed by the real factors and the financial sector is ingrained in the history of financial institutions (Graff, 1999).

The second possibility, according to Graff (1999) is that financial development follows economic development. In other words, economic growth causes financial institutions to change and develop, and financial as well as credit markets to grow. Financial development in this case is considered as demand-driven. This implies that as the growing scale of economic activities requires more and more capital (liquid and fixed), institutional raising and pooling of funds for industry are substituted for individual fortunes to start up enterprises, and for retained profits for further economic expansion (Graff, 1999).

In the third possibility, financial development is considered as a determinant of economic growth. In this case, causality runs from financial development to real sector development. This hypothesis can be dichotomised into two. First, financial development can be considered as a precondition for economic growth. Here, inadequate financial systems are considered as major impediments to economic growth. This is the view that is held by most economists. The second view is that financial development actively promotes economic growth. This view attaches the highest importance to financial development. The fourth possibility, however, attaches

equal importance to the real sector and the financial sector; and considers financial development and economic growth to be mutually causal.

## **5.4 Data Source and Definition of Variables**

### **5.4.1 Data Source**

This study utilises annual time-series data, covering the period 1980 to 2012. The primary data source for this study is the World Bank DataBank (World Bank, 2014). From this source, the following series from 1980 to 2012 for all the study countries were obtained: annual growth rate of real gross domestic product; ratio of M2 to GDP; ratio of M3 to GDP; credit provided to the private sector by financial intermediaries expressed as a percentage of GDP; gross fixed capital formation as a percentage of GDP; domestic savings as a percentage of GDP; exports as a percentage of GDP; and imports as a percentage of GDP. From the same source, stock market capitalisation, total value of stocks traded and turnover ratio for all the study countries were obtained for the period 1987 to 2012. For all the study countries, data for the three later series for the period 1980 to 1986 were obtained from Emerging Stock Markets Factbook 1991, (International Finance Corporation, 1991) and from the study countries' stock exchange publications.

### **5.4.2 Definition of Variables**

The quantitative measurement of both financial development and economic growth variables are bound to be imperfect since these developments are multidimensional and qualitative. In particular, the measurement of financial development seems more controversial because countries differ considerably in both their institutional and financial structures.

The selection of variables to proxy the level of financial development in an economy; as well as determining ways to measure the degree and efficiency of financial

intermediation are the major challenges in an empirical study of this nature. The diversity of financial services catered for in the financial systems makes it difficult to construct financial development indicators (Ang and McKibbin, 2007). Moreover, there is a wide range of agents and institutions involved in the financial intermediation activities. Despite all efforts made by researchers to refine and improve the existing measures, the financial proxies used are still far from satisfactory (Ang and McKibbin, 2007).

Economic growth in this study is proxied by the annual growth rate of the real gross domestic product (GRO). Financial development, on the other hand, is proxied by bank-based and market-based financial development indices. Bank-based financial development is proxied by a bank-based financial development index (BFD) which is constructed from three bank-based financial development variables – namely M2 to nominal GDP (M2), M3 to nominal GDP (M3), and domestic credit to private sectors, divided by nominal GDP (C) – using the mean-removed average method, following Demirguc-Kunt and Levine (1996). Market-based financial development is proxied by a market-based financial development index (MFD) which is constructed from three market-based financial development variables – namely, stock market capitalisation (CAP), total value of stocks traded (TV) and turnover over ratio (TOR) – employing the same method used to construct the bank-based financial development index.

In addition to the annual growth rate of real GDP and the financial development indicators, three other variables have been introduced in Model 1. These additional variables are investment, savings, and trade openness. One control variable – savings ratio – was introduced in Model 2.

The description of the variables that are used in the study is summarised below.

**GRO** - Annual growth rate of real gross domestic product (a proxy for economic growth)

- BFD** - An index of bank-based financial development (a proxy for bank-based financial development)
- MFD** - An index of market-based financial development (a proxy for market-based financial development),
- INV** - Share of investment in GDP (a proxy for investment)
- SAV** - Savings ratio – Share of savings in GDP (a proxy for savings)
- TOP** - Trade openness

## **5.5 Conclusion**

This chapter has discussed the estimation techniques used in the study, as well as the theoretical and empirical model specifications. The empirical models used in the study, as well as the theories underpinning the models, were presented. The techniques used to estimate the models presented in section two of this chapter were also discussed. Discussed as well in this chapter were data sources and definitions of variables used in the study.

## **CHAPTER 6**

### **ECONOMETRIC ANALYSIS AND EMPIRICAL FINDINGS**

#### **6.1 Introduction**

This chapter presents the econometric analysis and the empirical findings from the study of the six selected countries, using the models and the methodology discussed in the previous chapter. The study employs the ARDL bounds testing approach and ECM-based Granger-causality model to examine the relationship between financial development and economic growth. To this end, two models have been used, Model 1 and Model 2. Model 1 examines the impact of both bank-based and market-based financial development on economic growth. In this model, economic growth (GRO) is regressed on five variables, namely: bank-based financial development (BFD); market-based financial development (MFD); investment (INV); savings (SAV); and trade openness (TOP).

Model 2 examines the Granger-causality between financial development and economic growth within a trivariate setting and has been further sub-divided into two models, Model 2a and Model 2b. Model 2a tests the causality between bank-based financial development and economic growth, while Model 2b tests the causality between market-based financial development and economic growth. In both models (2a and 2b), savings ratio (SAV) has been included as a third variable in order to address the problem of omission-of-variable-bias.

The chapter is divided into five sections. Section 6.2 presents the econometric analysis and the empirical findings of the three developing countries, starting with South Africa, followed by Brazil, and then Kenya. Section 6.3 presents the econometric analysis and the empirical findings from the study of the three developed countries, starting with the United States of America, followed by the United Kingdom, then Australia. Section 6.4



gives a summary of the results of the investigation of all the study countries, while Section 6.5 concludes the chapter.

## **6.2 Empirical Findings and Analysis for Developing Countries**

### **6.2.1 Unit Root Tests for Variables in Model 1 and Model 2 (Developing Countries)**

Before any analysis is made, the variables for South Africa, Brazil and Kenya are first tested for stationarity using Dickey-Fuller generalised least square (DF-GLS) Phillips-Perron (PP) and Perron (1997) (PPURoot) unit root tests. The detailed results of stationarity tests for all the variables are presented in Table 6.1.

**Table 6.1: Stationarity Tests of all Variables (Developing Countries)**

| <b>Dickey-Fuller Generalised Least Square (DF-GLS)</b> |                                                |            |                                                          |            |                                                |            |                                                          |            |                                                |            |                                                          |            |
|--------------------------------------------------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|
| <b>South Africa</b>                                    |                                                |            |                                                          |            | <b>Brazil</b>                                  |            |                                                          |            | <b>Kenya</b>                                   |            |                                                          |            |
| <b>Variable</b>                                        | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            |
|                                                        | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend |
| GRO                                                    | -3.253***                                      | -3.927***  | —                                                        | —          | -4.197***                                      | -5.013***  | —                                                        | —          | -3.060***                                      | -3.283**   | —                                                        | —          |
| BFD                                                    | -1.708                                         | -2.500     | -5.650***                                                | -5.799***  | -1.897                                         | -2.169     | -6.690***                                                | -6.742***  | -2.190**                                       | -2.764     | -6.714***                                                | -7.327***  |
| MFD                                                    | -0.863                                         | -2.503     | -6.699***                                                | -6.825***  | -0.926                                         | -3.194**   | -7.387***                                                | -7.419***  | -1.257                                         | -2.916*    | -6.259***                                                | -6.284***  |
| INV                                                    | -1.139                                         | -2.235     | -3.042***                                                | -3.933***  | -1.978**                                       | -2.264     | -5.105***                                                | -4.164***  | -2.634**                                       | -2.668     | -5.454***                                                | -5.516***  |
| SAV                                                    | -1.177                                         | -2.260     | -5.052***                                                | -6.181***  | -3.061***                                      | -3.101*    | —                                                        | —          | -3.227***                                      | -3.498**   | —                                                        | —          |
| TOP                                                    | -1.503                                         | -2.034     | -5.366***                                                | -5.783***  | -1.176                                         | -2.133     | -5.004***                                                | -5.115***  | -1.846*                                        | -2.379     | -5.684***                                                | -5.957***  |

| <b>Phillips-Perron (PP)</b> |                                                |            |                                                          |            |                                                |            |                                                          |            |                                                |            |                                                          |            |
|-----------------------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|
| <b>South Africa</b>         |                                                |            |                                                          |            | <b>Brazil</b>                                  |            |                                                          |            | <b>Kenya</b>                                   |            |                                                          |            |
| <b>Variable</b>             | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            |
|                             | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend |
| GRO                         | -4.155***                                      | -4.531***  | —                                                        | —          | -5.697***                                      | -5.851***  | —                                                        | —          | -3.310**                                       | -3.331*    | —                                                        | —          |
| BFD                         | -1.756                                         | -2.168     | -5.909***                                                | -5.902***  | -2.907*                                        | -2.670     | -7.179***                                                | -7.094***  | -2.769*                                        | -2.819     | -7.795***                                                | -7.747***  |
| MFD                         | -1.267                                         | -2.481     | -6.620***                                                | -6.661***  | -1.115                                         | -3.178     | -7.367***                                                | -7.237***  | -1.466                                         | -2.845     | -6.280***                                                | -6.162***  |
| INV                         | -1.918                                         | -1.325     | -3.475**                                                 | -3.828**   | -2.495                                         | -2.245     | -5.152***                                                | -5.514***  | -2.547                                         | -2.572     | -7.571***                                                | -8.456***  |
| SAV                         | -2.474                                         | -2.315     | -6.216***                                                | -7.113***  | -3.030**                                       | -2.982     | -8.611***                                                | -8.439***  | -3.098**                                       | -3.323*    | —                                                        | —          |
| TOP                         | -2.118                                         | -2.847     | -5.714***                                                | -5.754***  | -1.209                                         | -2.412     | -4.968***                                                | -4.948***  | -2.054                                         | -2.468     | -5.760***                                                | -6.423***  |

# Perron, 1997 (PPURoot)

| South Africa |                                         |            |                                                   |            | Brazil                                  |            |                                                   |            | Kenya                                   |            |                                                   |            |
|--------------|-----------------------------------------|------------|---------------------------------------------------|------------|-----------------------------------------|------------|---------------------------------------------------|------------|-----------------------------------------|------------|---------------------------------------------------|------------|
| Variable     | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            |
|              | Without Trend                           | With Trend | Without Trend                                     | With Trend | Without Trend                           | With Trend | Without Trend                                     | With Trend | Without Trend                           | With Trend | Without Trend                                     | With Trend |
| GRO          | -3.024                                  | -4.932     | -6.653***                                         | -6.931***  | -4.822                                  | -4.540     | -6.952***                                         | -6.775***  | -4.311                                  | -4.500     | -6.183***                                         | -6.593***  |
| BFD          | -2.472                                  | -3.414     | -8.573***                                         | -8.532***  | -3.671                                  | -3.353     | -6.541***                                         | -6.461***  | -4.842                                  | -5.136     | -8.585***                                         | -8.481***  |
| MFD          | -2.725                                  | -4.933     | -7.767***                                         | -7.896***  | -3.494                                  | -3.436     | -7.604***                                         | -7.849***  | -4.049                                  | -4.411     | -7.213***                                         | -6.893***  |
| INV          | -2.412                                  | -3.182     | -5.866**                                          | -5.714**   | -3.455                                  | -3.252     | -6.695***                                         | -7.800***  | -4.324                                  | -5.129     | -6.015***                                         | -6.392***  |
| SAV          | -4.453                                  | -4.091     | -7.522***                                         | -9.567***  | -4.913                                  | -4.736     | -6.725***                                         | -6.963***  | -4.353                                  | -4.893     | -8.838***                                         | -8.770***  |
| TOP          | -3.813                                  | -3.702     | -5.868**                                          | -5.743**   | -4.040                                  | -3.690     | -6.400***                                         | -6.657***  | -3.654                                  | -3.769     | -7.143***                                         | -7.063***  |

Note: \*, \*\* and \*\*\* denotes stationarity at 10%, 5% and 1% significance levels respectively.

Overall the above results show that no variable is conclusively stationary in levels. The stationarity of the variables is mixed, depending on the stationarity testing method used and on whether a trend was included or not. Although the ARDL does not require pre-testing of variables, the unit root test provides guidance as to whether ARDL is applicable, as it is only applicable for the analysis of variables that are integrated of order not more than one. In this instance, the variables are found to be integrated of order 0  $I(0)$  or order 1  $I(1)$ , therefore, an ARDL bounds testing procedure can be performed.

Having established that the variables for South Africa, Brazil and Kenya are integrated of order zero or one, the next procedure is to test the possibility of cointegration among the variables used, using the ARDL bounds testing procedure.

#### **6.2.2 Empirical Analysis of Model 1: ARDL Bounds Test (Developing Countries)**

The results of the ARDL bounds test for cointegration are reported in Table 6.2. The calculated F-statistics for South Africa, Brazil and Kenya are 4.86, 4.13 and 3.37, respectively. The calculated F-statistics are higher than the critical values reported by Pesaran *et al.* (2001) in Table CI(iii) Case III. The results, therefore, show that the variables used in Model 1 are cointegrated in all three countries.

**Table 6.2: Model 1: Bounds F-test for Cointegration (Developing Countries)**

| Country                                                           | Dependent Variable |      | Function                      |      | F-statistic | Cointegration Status |
|-------------------------------------------------------------------|--------------------|------|-------------------------------|------|-------------|----------------------|
| South Africa                                                      | GRO                |      | F(GRO BFD, MFD, INV, SAV,TOP) |      | 4.859***    | Cointegrated         |
| Brazil                                                            | GRO                |      | F(GRO BFD, MFD, INV, SAV,TOP) |      | 4.127**     | Cointegrated         |
| Kenya                                                             | GRO                |      | F(GRO BFD, MFD, INV, SAV,TOP) |      | 3.365*      | Cointegrated         |
| Asymptotic Critical Values                                        |                    |      |                               |      |             |                      |
| Pesaran <i>et al.</i> (2001),<br>p.300, Table CI(iii)<br>Case III | 1%                 |      | 5%                            |      | 10%         |                      |
|                                                                   | I(0)               | I(1) | I(0)                          | I(1) | I(0)        | I(1)                 |
|                                                                   | 3.41               | 4.68 | 2.62                          | 3.79 | 2.26        | 3.35                 |

Note: \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels respectively

With GRO and BFD, MFD, INV, SAV and TOP all co-integrated, Model 1 can be estimated using the ARDL approach. The first step in this analysis is to determine the optimal lag length for Model 1 in the study countries, using the Akaike Information Criterion (AIC) or the Bayesian Information Criterion (BIC). The optimal lag length selected based on SIC is ARDL(1,1,0,1,0,1); ARDL(1,1,1,1,0,0) and ARDL(1,0,0,0,0,0) for South Africa, Brazil and Kenya, respectively. The SIC-based models were preferred because they were more parsimonious than AIC-based models. The long-run and short-run results of the selected models are reported in Table 6.3.

**Table 6.3: Estimation of Long-Run and Short-Run Coefficients (Developing Countries)**

| South Africa - Panel A: Long-Run Results  |              |                            |               |             | Dependent variable is GRO  |  |  |  |  |
|-------------------------------------------|--------------|----------------------------|---------------|-------------|----------------------------|--|--|--|--|
| Regressor                                 | Co-efficient | Standard Error             | T-Ratio       | Probability |                            |  |  |  |  |
| C                                         | -7.27***     | 1.79                       | -4.06         | 0.001       |                            |  |  |  |  |
| BFD                                       | 0.12***      | 0.04                       | 3.30          | 0.003       |                            |  |  |  |  |
| MFD                                       | 0.01         | 0.01                       | 0.73          | 0.474       |                            |  |  |  |  |
| INV                                       | -0.16**      | 0.07                       | -2.17         | 0.041       |                            |  |  |  |  |
| SAV                                       | 0.46***      | 0.10                       | 4.83          | 0.000       |                            |  |  |  |  |
| TOP                                       | -0.09        | 0.06                       | -1.16         | 0.122       |                            |  |  |  |  |
| South Africa - Panel B: Short-Run Results |              |                            |               |             | Dependent variable is ΔGRO |  |  |  |  |
| Regressor                                 | Co-efficient | Standard Error             | T-Ratio       | Probability |                            |  |  |  |  |
| ΔBFD                                      | 0.05**       | 0.02                       | 2.23          | 0.035       |                            |  |  |  |  |
| ΔMFD                                      | 0.01         | 0.02                       | 0.73          | 0.472       |                            |  |  |  |  |
| ΔINV                                      | 0.74**       | 0.29                       | 2.56          | 0.017       |                            |  |  |  |  |
| ΔSAV                                      | 0.66***      | 0.13                       | 5.16          | 0.000       |                            |  |  |  |  |
| ΔTOP                                      | 0.06         | 0.07                       | 0.95          | 0.353       |                            |  |  |  |  |
| Ecm (-1)                                  | -0.73***     | 0.15                       | -4.76         | 0.000       |                            |  |  |  |  |
| R-Squared                                 | 0.862        | R-Bar-Squared              | 0.805         |             |                            |  |  |  |  |
| SE of Regression                          | 1.220        | F-Stat F(6,24)             | 22.815[0.000] |             |                            |  |  |  |  |
| Residual Sum of Squares                   | 32.768       | DW statistic               | 1.905         |             |                            |  |  |  |  |
| Akaike Info. Criterion                    | -55.785      | Schwarz Bayesian Criterion | -63.114       |             |                            |  |  |  |  |
| Brazil- Panel A: Long-Run Results         |              |                            |               |             | Dependent variable is GRO  |  |  |  |  |
| Regressor                                 | Co-efficient | Standard Error             | T-Ratio       | Probability |                            |  |  |  |  |
| C                                         | 15.86***     | 4.98                       | 3.18          | 0.004       |                            |  |  |  |  |
| BFD                                       | 0.56         | 0.00                       | 0.31          | 0.763       |                            |  |  |  |  |
| MFD                                       | 0.01         | 0.02                       | 0.50          | 0.626       |                            |  |  |  |  |
| INV                                       | -0.81***     | 0.22                       | -3.64         | 0.001       |                            |  |  |  |  |
| SAV                                       | 0.26**       | 0.12                       | 2.19          | 0.039       |                            |  |  |  |  |
| TOP                                       | -0.14        | 0.10                       | -1.42         | 0.169       |                            |  |  |  |  |
|                                           |              |                            |               |             |                            |  |  |  |  |

| Brazil- Panel B: Short-Run Results |              |                            |         |             | Dependent variable is ΔGRO |  |
|------------------------------------|--------------|----------------------------|---------|-------------|----------------------------|--|
| Regressor                          | Co-efficient | Standard Error             | T-Ratio | Probability |                            |  |
| ΔBFD                               | -0.01*       | 0.00                       | -1.99   | 0.058       |                            |  |
| ΔMFD                               | -0.03        | 0.05                       | -0.60   | 0.556       |                            |  |
| ΔINV                               | 0.48*        | 0.27                       | 1.79    | 0.086       |                            |  |
| ΔSAV                               | 0.31**       | 0.15                       | 2.08    | 0.048       |                            |  |
| ΔTOP                               | -0.18        | 0.12                       | -1.41   | 0.171       |                            |  |
| ecm(-1)                            | -0.69***     | 0.13                       | -6.76   | 0.000       |                            |  |
| R-Squared                          | 0.829        | R-Bar-Squared              | 0.760   |             |                            |  |
| SE of Regression                   | 2.279        | F-Stat F(6,24)             | 17.837  | [0.000]     |                            |  |
| Residual Sum of Squares            | 114.217      | DW statistic               | 1.787   |             |                            |  |
| Akaike Info. Criterion             | -75.764      | Schwarz Bayesian Criterion | -83.093 |             |                            |  |

| Kenya - Panel A: Long-Run Results |              |                |         |             | Dependent variable is GRO |  |
|-----------------------------------|--------------|----------------|---------|-------------|---------------------------|--|
| Regressor                         | Co-efficient | Standard Error | T-Ratio | Probability |                           |  |
| C                                 | -4.06        | 4.73           | -0.86   | 0.399       |                           |  |
| BFD                               | -0.08        | 0.10           | -0.81   | 0.429       |                           |  |
| MFD                               | 0.21**       | 0.09           | 2.42    | 0.023       |                           |  |
| INV                               | 0.82***      | 0.26           | 3.12    | 0.005       |                           |  |
| SAV                               | 0.08         | 0.09           | 0.83    | 0.414       |                           |  |
| TOP                               | -0.14        | 0.09           | -1.58   | 0.127       |                           |  |
|                                   |              |                |         |             |                           |  |

| Kenya - Panel B: Short-Run Results |              |                            |         |             | Dependent variable is ΔGRO |  |
|------------------------------------|--------------|----------------------------|---------|-------------|----------------------------|--|
| Regressor                          | Co-efficient | Standard Error             | T-Ratio | Probability |                            |  |
| ΔBFD                               | -0.07        | 0.08                       | -0.80   | 0.432       |                            |  |
| ΔMFD                               | 0.17**       | 0.07                       | 2.56    | 0.017       |                            |  |
| ΔINV                               | 0.66**       | 0.25                       | 2.63    | 0.015       |                            |  |
| ΔSAV                               | 0.06         | 0.07                       | 0.90    | 0.379       |                            |  |
| ΔTOP                               | -0.11        | 0.07                       | -1.59   | 0.126       |                            |  |
| ecm(-1)                            | -0.80***     | 0.18                       | -4.34   | 0.000       |                            |  |
| R-Squared                          | 0.731        | R-Bar-Squared              | 0.701   |             |                            |  |
| SE of Regression                   | 1.741        | F-Stat F(6,24)             | 4.237   | [.005]      |                            |  |
| Residual Sum of Squares            | 39.359       | DW statistic               | 1.873   |             |                            |  |
| Akaike Info. Criterion             | -57.641      | Schwarz Bayesian Criterion | -65.348 |             |                            |  |

Notes: \*, \*\* and \*\*\* denotes stationarity at 10%, 5% and 1% significance levels respectively;  $\Delta$ =first difference operator.

$\Delta$ GRO=GRO-GRO(-1);  $\Delta$ BFD=BFD-BFD(-1);  $\Delta$ MFD=MFD-MFD(-1);  $\Delta$ INV=INV-INV(-1);  $\Delta$ SAV=SAV-SAV(-1);  $\Delta$ TOP=TOP-TOP(-1) (see also Pesaran and Pesaran, 2009:311).

The long-run regression results show that the coefficient of bank-based financial development is positive and statistically significant as expected only in South Africa. This implies that, in the long run, bank-based financial development has a positive impact on economic growth in South Africa. Moreover, an increase in the bank-based financial development levels leads to an increase in the economic growth of South Africa. However, for Brazil and Kenya, the coefficient of bank-based financial development is statistically insignificant. Although contrary to the expectations of this study, these results are similar to those found by other researchers on the same subject (see, among others, Andersen and Tarp, 2003). The results further show that the coefficient of market-based financial development is positive and statistically significant only for Kenya. This suggests that in Kenya, market-based financial development has a positive impact on economic growth in the long run. However, the same coefficient is statistically insignificant for South Africa and Brazil. These results are consistent with the findings of Andersen and Tarp (2003) and Masoud and Hardaker (2012), among others.

Other long-run results show that for South Africa and Brazil, the coefficient of savings ratio (SAV) is positive and statistically significant, implying that saving ratio has a positive impact on economic growth in these two countries. However, the coefficient of investment is negative and statistically significant. Despite these findings being contrary to the expectations of this study, they are consistent with other studies (see Li, 1998; UNCTAD, 1999). For Kenya, the coefficient of investment is positive and statistically significant, suggesting that investment impacts positively on economic growth. However the coefficient of savings ratio is insignificant. The coefficient of trade openness (TOP) in all the three countries is statistically insignificant. These findings, though contrary to the expectations of the current study, are consistent with the results obtained in some of the previous studies (see Odedokun, 1996a; Güryay *et al.*, 2007).



The short-run results show that the coefficient of bank-based financial development is positive and statistically significant, as expected, in South Africa. This implies that an increase in the bank-based financial development levels leads to an increase in economic growth in the South African economy, in the short run. For Brazil, the coefficient of bank-based financial development is negative and statistically significant. Though contrary to this study's expectations, these short-run results for Brazil are consistent with those of previous studies (see, among others, Adu *et al.*, 2013). However, for Kenya the coefficient of bank-based financial development is insignificant, and consistent with results of Andersen and Tarp (2003). The short-run results also show that while the coefficient of market-based financial development is positive and statistically significant in Kenya, it is statistically insignificant in South Africa and Brazil. Though these results were unexpected for South Africa and Brazil, they are similar to those found by Masoud and Hardaker (2012).

Other short-run results show that in South Africa, Brazil and Kenya, the coefficient of investment is both positive and statistically significant; implying that investment has a positive impact on economic growth in these three countries in the short run. The results also show that the coefficient of saving ratio is positive and statistically significant in South Africa and Brazil but insignificant in Kenya. However, the coefficient of trade openness is statistically insignificant across the three countries.

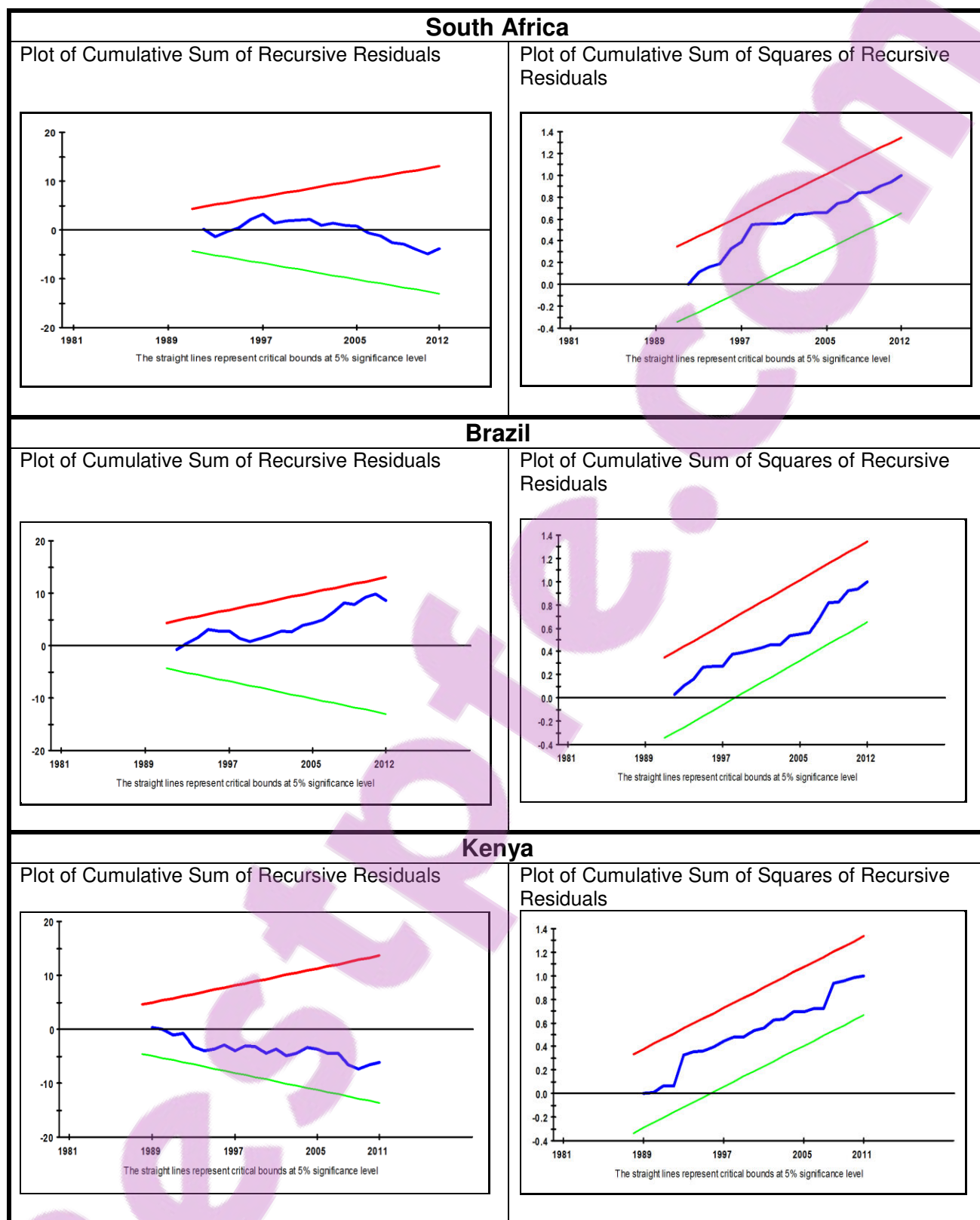
The regression for the underlying ARDL model for each country fits well, as indicated by an R-squared of 86.2%, 82.9% and 73.1% for South Africa, Brazil and Kenya respectively. On the diagnostic tests, the results displayed in Table 6.4 show that, in all these three countries, the models pass all the diagnostic tests performed for serial correlation, functional form, normality and heteroscedasticity.

**Table 6.4: ARDL – VECM Diagnostic Tests (Developing Countries)**

| <b>LM Test Statistic</b>     | <b>Results</b>      |               |              |
|------------------------------|---------------------|---------------|--------------|
|                              | <b>South Africa</b> | <b>Brazil</b> | <b>Kenya</b> |
| Serial Correlation: CHSQ(1)  | 0.165[0.799]        | 0.439[0.508]  | 2.007[0.157] |
| Functional Form: CHSQ(1)     | 0.572[0.449]        | 0.189[0.665]  | 0.051[0.821] |
| Normality: CHSQ (2)          | 0.279[0.870]        | 1.131[0.568]  | 0.100[0.951] |
| Heteroscedasticity: CHSQ (1) | 1.364[0.243]        | 0.218[0.640]  | 0.496[0.481] |

Figure 6.1 shows a plot of cumulative sum of recursive residual (CUSUM) and cumulative sum of squares of recursive residual (CUSUMQ) of Model 1 respectively for the three developing countries. The reported CUSUM and CUSUMQ show that the model is stable and confirms the stability of the long-run coefficients of regressors.

**Figure 6.1: Plot of CUSUM and CUSUMQ of Model 1 (Developing Countries)**



### **6.2.3 Empirical Analysis of Model 2: ECM-Based Granger-Causality (Developing Countries)**

#### **6.2.3.1 ARDL Bounds Test**

Before establishing the direction of causality between variables, a bounds F-test for cointegration is performed to confirm the existence of a cointegration relationship between the variables of interest. Table 6.5 shows the results of the bounds F-test for Models 2a and 2b for the developing countries.

**Table 6.5: Bounds F-test for Cointegration (Developing Countries)**

| South Africa                                                                               |                  |             |                      |                                                                                              |                 |             |                      |
|--------------------------------------------------------------------------------------------|------------------|-------------|----------------------|----------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                         | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                           | Function        | F-statistic | Cointegration Status |
| GRO                                                                                        | F(GRO BFD, SAV)  | 5.084***    | Cointegrated         | GRO                                                                                          | F(GRO MFD, SAV) | 8.854***    | Cointegrated         |
| BFD                                                                                        | F(BFD  GRO, SAV) | 1.663       | Not cointegrated     | MFD                                                                                          | F(MFD GRO, SAV) | 3.097       | Not cointegrated     |
| SAV                                                                                        | F(SAV  GRO, BFD) | 6.534***    | Cointegrated         | SAV                                                                                          | F(SAV GRO, MFD) | 6.927***    | Cointegrated         |
| Brazil                                                                                     |                  |             |                      |                                                                                              |                 |             |                      |
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                         | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                           | Function        | F-statistic | Cointegration Status |
| GRO                                                                                        | F(GRO BFD, SAV)  | 4.743**     | Cointegrated         | GRO                                                                                          | F(GRO MFD, SAV) | 8.009***    | Cointegrated         |
| BFD                                                                                        | F(BFD  GRO, SAV) | 4.559**     | Cointegrated         | MFD                                                                                          | F(MFD GRO, SAV) | 1.101       | Not cointegrated     |
| SAV                                                                                        | F(SAV  GRO, BFD) | 3.035       | Not cointegrated     | SAV                                                                                          | F(SAV GRO, MFD) | 2.148       | Not cointegrated     |

| Kenya                                                                                             |                  |             |                      |                                                                                                     |                 |             |                      |
|---------------------------------------------------------------------------------------------------|------------------|-------------|----------------------|-----------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| <b>Model 2a</b> – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | <b>Model 2b</b> – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                                | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                                  | Function        | F-statistic | Cointegration Status |
| GRO                                                                                               | F(GRO BFD, SAV)  | 2.852       | Not cointegrated     | GRO                                                                                                 | F(GRO MFD, SAV) | 3.146       | Not cointegrated     |
| BFD                                                                                               | F(BFD  GRO, SAV) | 1.948       | Not cointegrated     | MFD                                                                                                 | F(MFD GRO, SAV) | 1.157       | Not cointegrated     |
| SAV                                                                                               | F(SAV  GRO, BFD) | 5.663***    | Cointegrated         | SAV                                                                                                 | F(SAV GRO, MFD) | 4.080*      | Cointegrated         |
| Asymptotic Critical Values                                                                        |                  |             |                      |                                                                                                     |                 |             |                      |
| Pesaran <i>et al.</i> (2001),<br>p.300 Table CI(iii)<br>Case III                                  | 1%               |             | 5%                   |                                                                                                     | 10%             |             |                      |
|                                                                                                   | I(0)             | I(1)        | I(0)                 | I(1)                                                                                                | I(0)            | I(1)        |                      |
|                                                                                                   | 4.29             | 5.61        | 3.23                 | 4.35                                                                                                | 2.72            | 3.77        |                      |

Note: \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% level respectively

The results reported in Table 6.5 (Model 2a) show that the cointegration relationship between bank-based financial development, savings and economic growth is sensitive to the choice of the dependent variable used. For South Africa, the variables are co-integrated only when economic growth (GRO) and savings ratio (SAV) are taken as dependent variables. For Brazil, the variables are co-integrated only when economic growth (GRO) and bank-based financial development (BFD) are taken as dependent variables. In Kenya, cointegration exists only when savings ratio (SAV) is the dependent variable. This is confirmed by the corresponding F-statistics in the respective functions which have been found to be statistically significant. As with the cointegration between bank-based financial development, savings and economic growth, the cointegration relationship between market-based financial development, savings and economic growth is also sensitive to the choice of the dependent variable used. As reported in Table 6.5 (Model 2b), cointegration tends to exist in the savings function in Kenya, in the economic growth function in Brazil, and in the economic growth and savings functions in South Africa. These results have been confirmed by corresponding F-statistics in the respective functions, which are statistically significant.

#### **6.2.3.2 Analysis of ECM-Based Causality Model (Developing Countries)**

Having found that there is cointegration in the variables of interest, the next step is to test for the causality between the variables used by incorporating the lagged error-correction term into the regression equations.

Although cointegration indicates the presence of Granger-causality, at least in one direction, it does not indicate the direction of causality between variables (see Granger, 1988; Ghosh, 2002; Leng, 2002; Narayan and Smyth, 2008; Abu-Bader and Abu-Qarn, 2008a; Odhiambo, 2009a). The direction of the long-run Granger-causality can only be detected through the error-correction model (ECM) derived from the long-run cointegrating vectors (see Granger, 1988; Narayan and Smyth, 2008; Odhiambo, 2009a). In addition to indicating the direction of causality among variables, the ECM enables the researcher to distinguish between the short-run and the long-run Granger-

causality. Following Narayan and Smyth (2008) and Odhiambo (2009a), the causality in this instance is examined through the significance of the coefficient of the lagged error-correction term and significance of the explanatory variables using the F-statistics. The F-statistics of the explanatory variables in each of the three equations in Models 2a and 2b indicate the short-run causal effects, whereas the long-run causal relationship is implied through the significance of the t-test of the lagged error-correction terms. The results of the causality test for the two models within the Error-Correction Mechanism are reported in Table 6.6.



**Table 6.6: Results of Granger-Causality Tests (Developing Countries)**

| South Africa                                                                                      |                            |                   |                    |                               |                                                                                                     |                            |                     |                   |                               |
|---------------------------------------------------------------------------------------------------|----------------------------|-------------------|--------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------|---------------------|-------------------|-------------------------------|
| <b>Model 2a</b> – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                            |                   |                    |                               | <b>Model 2b</b> – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                            |                     |                   |                               |
| Dependent Variable                                                                                | F-statistics [probability] |                   |                    | $ECT_{t-1}$<br>[t-statistics] | Dependent Variable                                                                                  | F-statistics [probability] |                     |                   | $ECT_{t-1}$<br>[t-statistics] |
|                                                                                                   | $\Delta GRO_t$             | $\Delta BFD_t$    | $\Delta SAV_t$     |                               |                                                                                                     | $\Delta GRO_t$             | $\Delta MFD_t$      | $\Delta SAV_t$    |                               |
| $\Delta GRO_t$                                                                                    | -                          | 2.056<br>[0.164]  | 5.423**<br>[0.028] | -0.739***<br>[-3.609]         | $\Delta GRO_t$                                                                                      | -                          | 2.316<br>[0.140]    | 3.346*<br>[0.079] | -0.817***<br>[-3.737]         |
| $\Delta BFD_t$                                                                                    | 1.698<br>[0.204]           | -                 | 2.528<br>[0.124]   | -                             | $\Delta MFD_t$                                                                                      | 3.004*<br>[0.098]          | -                   | 0.963<br>[0.338]  | -                             |
| $\Delta SAV_t$                                                                                    | 0.044<br>[0.835]           | 3.461*<br>[0.075] | -                  | -0.167 *<br>[-1.842]          | $\Delta SAV_t$                                                                                      | 3.162*<br>[0.072]          | 7.150***<br>[0.000] | -                 | -0.826***<br>[-4.288]         |

| Brazil                                                                                     |                            |                    |                  |                               |                                                                                              |                            |                    |                     |                               |
|--------------------------------------------------------------------------------------------|----------------------------|--------------------|------------------|-------------------------------|----------------------------------------------------------------------------------------------|----------------------------|--------------------|---------------------|-------------------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                            |                    |                  |                               | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                            |                    |                     |                               |
| Dependent Variable                                                                         | F-statistics [probability] |                    |                  | $ECT_{t-1}$<br>[t-statistics] | Dependent Variable                                                                           | F-statistics [probability] |                    |                     | $ECT_{t-1}$<br>[t-statistics] |
|                                                                                            | $\Delta GRO_t$             | $\Delta BFD_t$     | $\Delta SAV_t$   |                               |                                                                                              | $\Delta GRO_t$             | $\Delta MFD_t$     | $\Delta SAV_t$      |                               |
| $\Delta GRO_t$                                                                             | -                          | 5.653**<br>[0.025] | 2.014<br>[0.168] | -0.7485***<br>[-4.521]        | $\Delta GRO_t$                                                                               | -                          | 0.849<br>[0.365]   | 7.102**<br>[0.001]  | - 0.603***<br>[-5.300]        |
| $\Delta BFD_t$                                                                             | 3.228*<br>[0.084]          | -                  | 0.728<br>[0.401] | -0.560**<br>[-2.392]          | $\Delta MFD_t$                                                                               | 8.240***<br>[0.000]        | -                  | 7.910***<br>[0.000] | -                             |
| $\Delta SAV_t$                                                                             | 0.661<br>[0.423]           | 5.598**<br>[0.025] | -                | -                             | $\Delta SAV_t$                                                                               | 0.1445<br>[0.707]          | 4.750**<br>[0.038] | -                   | -                             |

| Kenya                                                                                      |                            |                   |                   |                       |                                                                                              |                            |                    |                     |                       |
|--------------------------------------------------------------------------------------------|----------------------------|-------------------|-------------------|-----------------------|----------------------------------------------------------------------------------------------|----------------------------|--------------------|---------------------|-----------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                            |                   |                   |                       | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                            |                    |                     |                       |
| Dependent Variable                                                                         | F-statistics [probability] |                   |                   | ECTt-1 [t-statistics] | Dependent Variable                                                                           | F-statistics [probability] |                    |                     | ECTt-1 [t-statistics] |
|                                                                                            | $\Delta GRO_t$             | $\Delta BFD_t$    | $\Delta SAV_t$    |                       |                                                                                              | $\Delta GRO_t$             | $\Delta MFD_t$     | $\Delta SAV_t$      |                       |
| $\Delta GRO_t$                                                                             | -                          | 0.0432<br>[0.837] | 0.361<br>[0.553]  | -                     | $\Delta GRO_t$                                                                               | -                          | 4.578**<br>[0.043] | 6.700***<br>[0.010] | -                     |
| $\Delta BFD_t$                                                                             | 0.188<br>[0.668]           | -                 | 3.284*<br>[0.082] | -                     | $\Delta MFD_t$                                                                               | 3.623*<br>[0.068]          | -                  | 8.708***<br>[0.000] | -                     |
| $\Delta SAV_t$                                                                             | 0.230<br>[0.636]           | 3.189*<br>[0.086] | -                 | -0.694***<br>[-4.362] | $\Delta SAV_t$                                                                               | 3.860*<br>[0.065]          | 2.856<br>[0.103]   | -                   | -0.554***<br>[-3.314] |

Note: \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels respectively

The empirical results reported in Table 6.6 (Model 2a) for bank-based financial development, savings and economic growth reveal that in South Africa and Kenya, there is no short-run or long-run Granger-causality between bank-based financial development and economic growth. This is confirmed by F-statistics of  $\Delta\text{BFD}$  in the economic growth function and that of  $\Delta\text{GRO}$  in the bank-based financial development function, which are both statistically insignificant. However, in Brazil there is bidirectional Granger-causality between bank-based financial development and economic growth. This applies in both the short and the long run. The short-run bidirectional causal flow is supported by the F-statistics of  $\Delta\text{BFD}$  and  $\Delta\text{GRO}$  in the corresponding functions, which are statistically significant. The long-run causal flow, on the other hand, is supported by the coefficients of the error-correction terms in the economic growth and the bank-based financial development functions, which are negative and statistically significant, as expected.

Other results reported in Model 2a, for the developing countries, reveal that in South Africa: (i) there is distinct short-run and long-run unidirectional causality from savings to economic growth and (ii) there is distinct short-run and long-run unidirectional causality from bank-based financial development to savings. In Brazil (i) there is no causality between savings and economic growth and (ii) there is distinct short-run unidirectional causality from bank-based financial development to savings. In Kenya (i) there is no causality between savings and economic growth; (ii) there is long-run unidirectional causality from bank-based financial development to savings; and (iii) there is short-run bidirectional causality between bank-based financial development and savings.

The empirical results reported in Table 6.6 (Model 2b) for market-based financial development, savings and economic growth, show that in South Africa and Brazil, there is a distinct short-run unidirectional causal flow from economic growth to market-based financial development. This finding is confirmed by the F-statistics of  $\Delta\text{GRO}$  in the market-based financial development functions of the two countries, which are found to be statistically significant. The empirical results further reveal that in Kenya, there is

short-run bidirectional causality between market-based financial development and economic growth.

Other results reported in Model 2b for the developing countries reveal that in South Africa there is: (i) short-run and long-run bidirectional causality between savings and economic growth; and (ii) short-run and long-run unidirectional causality from market-based financial development to savings. In Brazil there is: (i) distinct short-run and long-run unidirectional causality from savings to economic growth and (ii) short-run bidirectional causality between market-based financial development and savings. Finally, in Kenya there is: (i) short-run bidirectional causality between savings and economic growth; (ii) long-run unidirectional causality from economic growth to savings; and (iii) distinct short-run unidirectional causality from savings to market-based financial development.

Overall, the results reported in Models 2a and 2b imply that: (i) in South Africa, it is the real sector that drives stock market development; (ii) in Brazil, banking sector development and the real sector drive each other, but it is the real sector that propels stock market development; and (iii) in Kenya, the stock market and the real sector drive each other.

### **6.3 Empirical Findings and Analysis for Developed Countries**

#### **6.3.1 Unit Root Tests for Variables in Model 1 and Model 2 (Developed Countries)**

Just as in the case of the developing countries, before any analysis is made, the variables for the United States of America (USA), the United Kingdom (UK) and Australia are first tested for stationarity, using Dickey-Fuller generalised least square (DF-GLS) Phillips-Perron (PP) and Perron (1997) (PPURoot) unit root tests. The detailed results of stationarity tests for all the variables are presented in Table 6.7.

**Table 6.7: Stationarity Tests of all Variables (Developed Countries)**

| <b>Dickey-Fuller Generalised Least Square (DF-GLS)</b> |                                                |            |                                                          |            |                                                |            |                                                          |            |                                                |            |                                                          |            |
|--------------------------------------------------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|------------------------------------------------|------------|----------------------------------------------------------|------------|
| <b>USA</b>                                             |                                                |            |                                                          |            | <b>UK</b>                                      |            |                                                          |            | <b>Australia</b>                               |            |                                                          |            |
| <b>Variable</b>                                        | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            |
|                                                        | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend |
| GRO                                                    | -3.401***                                      | -3.937***  | —                                                        | —          | -2.354**                                       | -2.865     | -5.529***                                                | -5.709***  | -4.959***                                      | -4.963***  | —                                                        | —          |
| BFD                                                    | 0.024                                          | -2.641     | -2.772***                                                | -7.684***  | -0.409                                         | -1.909     | -3.944***                                                | -3.901***  | 0.485                                          | -2.502     | -5.829***                                                | -6.469***  |
| MFD                                                    | -1.244                                         | -2.927*    | -4.219***                                                | -4.368***  | -1.585                                         | -2.749     | -6.341***                                                | -6.464***  | -1.056                                         | -2.769     | -6.170***                                                | -6.552***  |
| INV                                                    | -2.415**                                       | -2.980*    | -4.166***                                                | -4.184***  | -2.269**                                       | -3.931***  | -3.115***                                                | -3.386**   | -1.947                                         | -1.965     | -3.835***                                                | -4.674***  |
| SAV                                                    | -1.018                                         | -2.563     | -4.453***                                                | -5.020***  | -0.796                                         | -2.282     | -4.615***                                                | -4.879***  | -1.423                                         | -1.418     | -4.629***                                                | -5.255***  |
| TOP                                                    | 0.153                                          | -2.854     | -6.009***                                                | -6.667***  | -0.901                                         | -2.504     | -5.678***                                                | -6.260***  | -0.824                                         | -3.097*    | -5.984***                                                | -6.003***  |
| <b>Phillips-Perron (PP)</b>                            |                                                |            |                                                          |            |                                                |            |                                                          |            |                                                |            |                                                          |            |
| <b>USA</b>                                             |                                                |            |                                                          |            | <b>UK</b>                                      |            |                                                          |            | <b>Australia</b>                               |            |                                                          |            |
| <b>Variable</b>                                        | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            | <b>Stationarity of all Variables in Levels</b> |            | <b>Stationarity of all variables in First Difference</b> |            |
|                                                        | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend | Without Trend                                  | With Trend | Without Trend                                            | With Trend |
| GRO                                                    | -4.022***                                      | -4.281***  | —                                                        | —          | -3.226**                                       | -3.122     | -5.797***                                                | -7.056***  | -5.173***                                      | -5.034***  | —                                                        | —          |
| BFD                                                    | -0.588                                         | -2.359     | -7.627***                                                | -7.502***  | -0.932                                         | -2.742     | -6.597***                                                | -6.484***  | 0.571                                          | -2.672     | -6.952***                                                | -7.958***  |
| MFD                                                    | -1.593                                         | -2.255     | -4.044***                                                | -4.032**   | -1.891                                         | -2.564     | -6.329***                                                | -6.371***  | -1.285                                         | -2.685     | -6.479***                                                | -6.460***  |
| INV                                                    | -0.900                                         | -1.201     | -3.475**                                                 | -3.303**   | -1.617                                         | -2.322     | -3.673***                                                | -3.856**   | -1.934                                         | -1.874     | -5.067***                                                | -8.661***  |
| SAV                                                    | -1.440                                         | -2.055     | -5.197***                                                | -5.097***  | -1.333                                         | -2.311     | -4.695***                                                | -4.634***  | -1.786                                         | -0.946     | -4.448***                                                | -6.297***  |
| TOP                                                    | 1.225                                          | -3.045     | -6.557***                                                | -7.580***  | -0.587                                         | -2.437     | -6.456***                                                | -9.179***  | -0.624                                         | -3.257*    | -7.439***                                                | -7.167***  |

# Perron, 1997 (PPURoot)

| USA      |                                         |            |                                                   |            | UK                                      |            |                                                   |            | Australia                               |            |                                                   |            |
|----------|-----------------------------------------|------------|---------------------------------------------------|------------|-----------------------------------------|------------|---------------------------------------------------|------------|-----------------------------------------|------------|---------------------------------------------------|------------|
| Variable | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            | Stationarity of all Variables in Levels |            | Stationarity of all variables in First Difference |            |
|          | Without Trend                           | With Trend | Without Trend                                     | With Trend | Without Trend                           | With Trend | Without Trend                                     | With Trend | Without Trend                           | With Trend | Without Trend                                     | With Trend |
| GRO      | -4.665                                  | -4.870     | -7.412***                                         | -8.934***  | -3.993                                  | -3.936     | -5.700**                                          | -6.006**   | -4.186                                  | -4.247     | -8.019***                                         | -8.223***  |
| BFD      | -3.683                                  | -3.804     | -9.127***                                         | -8.969***  | -3.731                                  | -4.328     | -6.214***                                         | -6.335***  | -5.983                                  | -5.035     | -6.998***                                         | -7.307***  |
| MFD      | -2.404                                  | -3.780     | -5.345**                                          | -5.936**   | -4.594                                  | -4.616     | -6.505***                                         | -6.742***  | -3.994                                  | -4.171     | -6.700***                                         | -7.024***  |
| INV      | -4.468                                  | -4.150     | -5.271**                                          | -5.682**   | -4.033                                  | -4.168     | -5.656**                                          | -6.014**   | -4.839                                  | -5.012     | -5.542**                                          | -5.771**   |
| SAV      | -3.684                                  | -3.664     | -6.752***                                         | -6.742***  | -3.335                                  | -2.813     | -5.526**                                          | -5.616**   | -4.102                                  | -4.032     | -6.036***                                         | -5.958**   |
| TOP      | -4.075                                  | -4.436     | -6.493***                                         | -6.476***  | -3.374                                  | -3.362     | -6.555***                                         | -6.351***  | -4.284                                  | -4.131     | -6.652***                                         | -6.548***  |

Note: \*, \*\* and \*\*\* denotes stationarity at 10%, 5% and 1% significance levels respectively.

Overall, the above results show that no variable is conclusively stationary in levels. The stationarity of the variables is mixed, depending on the stationarity testing method used and whether a trend has been included or not. Although the ARDL does not require pre-testing of variables, the unit root test provides guidance as to whether ARDL is applicable, as it is only applicable for the analysis of variables that are integrated of order not more than one. In this instance, the variables are found to be integrated of either order 0  $I(0)$  or order 1  $I(1)$ , therefore, ARDL bounds testing procedure can be performed.

Having established that the variables for the USA, the UK and Australia are integrated of either order zero or one, the next step is to test the possibility of cointegration among the variables used, using the ARDL bounds testing procedure.

### **6.3.2 Empirical Analysis of Model 1: ARDL Bounds Test (Developed Countries)**

The results of the ARDL bounds test for cointegration are reported in Table 6.8. The calculated F-statistics for the USA, the UK and Australia are 5.49, 4.78 and 5.76, respectively. The calculated F-statistics are higher than the critical values reported by Pesaran *et al.* (2001) in Table CI(iii) Case III. The results, therefore, show that the variables used in Model 1 are co-integrated in all three countries.



**Table 6.8: Model 1: Bounds F-test for Cointegration (Developed Countries)**

| Country                                              | Dependent Variable |      | Function                       |      | F-statistic | Cointegration Status |
|------------------------------------------------------|--------------------|------|--------------------------------|------|-------------|----------------------|
| USA                                                  | GRO                |      | F(GRO BFD, MFD, INV, SAV, TOP) |      | 5.486***    | Cointegrated         |
| UK                                                   | GRO                |      | F(GRO BFD, MFD, INV, SAV, TOP) |      | 4.783***    | Cointegrated         |
| Australia                                            | GRO                |      | F(GRO BFD, MFD, INV, SAV, TOP) |      | 5.760***    | Cointegrated         |
| Asymptotic Critical Values                           |                    |      |                                |      |             |                      |
| Pesaran et al. (2001), p.300, Table CI(iii) Case III | 1%                 |      | 5%                             |      | 10%         |                      |
|                                                      | I(0)               | I(1) | I(0)                           | I(1) | I(0)        | I(1)                 |
|                                                      | 3.41               | 4.68 | 2.62                           | 3.79 | 2.26        | 3.35                 |

Note: \*\*\* denotes statistical significance at 1% level

Having found that GRO and BFD, MFD, INV, SAV and TOP are cointegrated, Model 1 is estimated using the ARDL approach. The first step in this analysis is to determine the optimal lag length for Model 1, in the study countries, using the Akaike information criterion (AIC) or the Bayesian information criterion (BIC). The optimal lag length selected is based on SIC and is ARDL(1,0,0,1,0,1), ARDL(1,0,0,1,1,0) and ARDL(1,1,0,1,0,0) for the USA, the UK and Australia, respectively. The SIC-based models were preferred because they were more parsimonious than AIC-based models. The long-run and short-run results of the selected models are reported in Table 6.9.

**Table 6.9: Estimation of Long-Run and Short-Run Coefficients (Developed Countries)**

| <b>USA - Panel A: Long-Run Results</b> Dependent variable is GRO           |              |                            |               |             |
|----------------------------------------------------------------------------|--------------|----------------------------|---------------|-------------|
| Regressor                                                                  | Co-efficient | Standard Error             | T-Ratio       | Probability |
| C                                                                          | 10.51**      | 4.31                       | 2.44          | 0.023       |
| BFD                                                                        | 0.08*        | 0.04                       | 1.96          | 0.062       |
| MFD                                                                        | 0.01**       | 0.01                       | 2.36          | 0.028       |
| INV                                                                        | -0.37        | 0.25                       | -1.51         | 0.145       |
| SAV                                                                        | 0.31*        | 0.18                       | 1.73          | 0.098       |
| TOP                                                                        | -0.65**      | 0.16                       | -3.95         | 0.023       |
| <b>USA - Panel B: Short-Run Results</b> Dependent variable is $\Delta$ GRO |              |                            |               |             |
| Regressor                                                                  | Co-efficient | Standard Error             | T-Ratio       | Probability |
| $\Delta$ BFD                                                               | 0.10*        | 0.05                       | 1.97          | 0.061       |
| $\Delta$ MFD                                                               | 0.02**       | 0.01                       | 2.37          | 0.026       |
| $\Delta$ INV                                                               | 0.79***      | 0.46                       | 3.94          | 0.001       |
| $\Delta$ SAV                                                               | 0.37*        | 0.21                       | 1.75          | 0.093       |
| $\Delta$ TOP                                                               | -0.16        | 0.16                       | -1.00         | 0.329       |
| Ecm (-1)                                                                   | -0.58***     | 0.25                       | -4.85         | 0.000       |
| R-Squared                                                                  | 0.888        | R-Bar-Squared              | 0.847         |             |
| SE of Regression                                                           | 0.938        | F-Stat F(6,24)             | 28.989[0.000] |             |
| Residual Sum of Squares                                                    | 19.339       | DW statistic               | 2.174         |             |
| Akaike Info. Criterion                                                     | -45.673      | Schwarz Bayesian Criterion | -52.126       |             |
| <b>UK - Panel A: Long-Run Results</b> Dependent variable is GRO            |              |                            |               |             |
| Regressor                                                                  | Co-efficient | Standard Error             | T-Ratio       | Probability |
| C                                                                          | 24.43**      | 10.24                      | 2.39          | 0.026       |
| BFD                                                                        | -0.06***     | 0.02                       | -2.86         | 0.009       |
| MFD                                                                        | 0.02**       | 0.01                       | 2.36          | 0.027       |
| INV                                                                        | -0.40        | 0.32                       | -1.22         | 0.234       |
| SAV                                                                        | -0.50*       | 0.25                       | -1.94         | 0.064       |
| TOP                                                                        | -0.09        | 0.11                       | -0.79         | 0.435       |

| <b>UK - Panel B: Short-Run Results</b> Dependent variable is $\Delta$ GRO        |              |                            |         |             |
|----------------------------------------------------------------------------------|--------------|----------------------------|---------|-------------|
| Regressor                                                                        | Co-efficient | Standard Error             | T-Ratio | Probability |
| $\Delta$ BFD                                                                     | -0.05***     | 0.02                       | -2.84   | 0.009       |
| $\Delta$ MFD                                                                     | 0.02**       | 0.01                       | 2.26    | 0.032       |
| $\Delta$ INV                                                                     | 0.96***      | 0.31                       | 3.77    | 0.001       |
| $\Delta$ SAV                                                                     | 0.09         | 0.23                       | 0.37    | 0.713       |
| $\Delta$ TOP                                                                     | -0.07        | 0.08                       | -0.83   | 0.415       |
| ecm(-1)                                                                          | -0.80***     | 0.12                       | -6.69   | 0.000       |
| R-Squared                                                                        | 0.812        | R-Bar-Squared              | 0.746   |             |
| SE of Regression                                                                 | 1.023        | F-Stat F(6,24)             | 16.541  | [0.000]     |
| Residual Sum of Squares                                                          | 24.073       | DW statistic               | 1.946   |             |
| Akaike Info. Criterion                                                           | -49.852      | Schwarz Bayesian Criterion | -56.448 |             |
| <b>Australia - Panel A: Long-Run Results</b> Dependent variable is GRO           |              |                            |         |             |
| Regressor                                                                        | Co-efficient | Standard Error             | T-Ratio | Probability |
| C                                                                                | 9.14         | 10.18                      | 0.90    | 0.380       |
| BFD                                                                              | -0.11**      | 0.04                       | -2.66   | 0.014       |
| MFD                                                                              | 0.02         | 0.02                       | 1.03    | 0.316       |
| INV                                                                              | -0.60        | 0.43                       | -1.40   | 0.178       |
| SAV                                                                              | 0.49*        | 0.28                       | 1.75    | 0.096       |
| TOP                                                                              | -0.02        | 1.17                       | -0.13   | 0.897       |
| <b>Australia - Panel B: Short-Run Results</b> Dependent variable is $\Delta$ GRO |              |                            |         |             |
| Regressor                                                                        | Co-efficient | Standard Error             | T-Ratio | Probability |
| $\Delta$ BFD                                                                     | 0.14**       | 0.06                       | 2.44    | 0.023       |
| $\Delta$ MFD                                                                     | 0.02         | 0.02                       | 1.12    | 0.277       |
| $\Delta$ INV                                                                     | 0.24         | 0.37                       | 0.65    | 0.523       |
| $\Delta$ SAV                                                                     | 0.48**       | 0.22                       | 2.13    | 0.045       |
| $\Delta$ TOP                                                                     | -0.02        | 0.16                       | -0.13   | 0.895       |
| ecm(-1)                                                                          | -0.97***     | 0.18                       | -5.33   | 0.000       |
| R-Squared                                                                        | 0.815        | R-Bar-Squared              | 0.731   |             |
| SE of Regression                                                                 | 1.160        | F-Stat F(6,24)             | 12.550  | [0.000]     |
| Residual Sum of Squares                                                          | 26.923       | DW statistic               | 1.816   |             |
| Akaike Info. Criterion                                                           | -50.945      | Schwarz Bayesian Criterion | -57.951 |             |

Notes: \*, \*\* and \*\*\* denotes stationarity at 10%, 5% and 1% significance levels respectively;  $\Delta$ =first difference operator.

$\Delta$ GRO=GRO-GRO(-1);  $\Delta$ BFD=BFD-BFD(-1);  $\Delta$ MFD=MFD-MFD(-1);  $\Delta$ INV=INV-INV(-1);  $\Delta$ SAV=SAV-SAV(-1);  $\Delta$ TOP=TOP-TOP(-1) (see also Pesaran and Pesaran, 2009:311).

The long-run regression results show that for the USA, the coefficient of bank-based financial development is positive and statistically significant, implying that in the USA,

bank-based financial development has a positive impact on economic growth, in the long run. Thus, an increase in the level of bank-based financial development in the USA leads to an increase in economic growth. However, for the UK and Australia, this coefficient is negative and statistically significant. Although the bank-based financial development coefficient for the UK and Australia has an unexpected sign, it is not unique to this study alone. Several other studies have shown evidence of negative association between the two (see also Guidotti, 1995; Adu *et al.*, 2013). The results displayed in Table 6.9 further show that the coefficient of market-based financial development is positive and statistically significant in the USA and the UK but it is insignificant in Australia. This implies that, market-based financial development has a positive impact on economic growth in the USA and the UK in the long run.

Other long-run results show that the coefficient of savings is positive and statistically significant in the USA and Australia, suggesting that the saving ratio has a positive impact on economic growth in these countries. However, the coefficient of savings is negative and statistically significant for the UK. The results also reveal that while the coefficient of trade openness is statistically insignificant in the UK and Australia, it is negative and statistically significant in the USA. These findings, though contrary to the expectations of the current study, are consistent with the results obtained in some of the previous studies (see, among others, Odedokun, 1996a; Gryay *et al.*, 2007). The coefficient of investment was found to be statistically insignificant in all the countries.

The short-run results show that the coefficient of bank-based financial development is positive and statistically significant in the USA and Australia. This implies that in these two countries, bank-based financial development has a positive impact on economic growth, in the short run. However, for the UK, the coefficient is negative and statistically significant. The short-run results also reveal that the coefficient of market-based financial development is positive and statistically significant for the USA and the UK. These results suggest that an increase in market-based financial development leads to increased economic growth in these countries, in the short run. However, the coefficient is negative and statistically significant in the case of Australia. The short-run

relationships between bank-based financial development and economic growth in the UK; and between market-based financial development and economic growth in Australia, though they were unexpected in this study, they are consistent with some of the previous studies on the same subject (see also De Gregorio and Guidotti, 1995; Adu *et al.*, 2013; Ujunwa and Salami, 2010; Bernard and Austin, 2011).

Other short-run results show that while the coefficient of investment is positive and statistically significant in the USA and the UK, it is insignificant in Australia. This implies that investment is positively associated with economic growth in the USA and the UK in the short run. The coefficient of the savings ratio is positive and significant in the USA and Australia, but insignificant in the UK, suggesting that savings have a positive impact on economic growth in the USA and Australia. The coefficient of trade openness is statistically insignificant in all the countries.

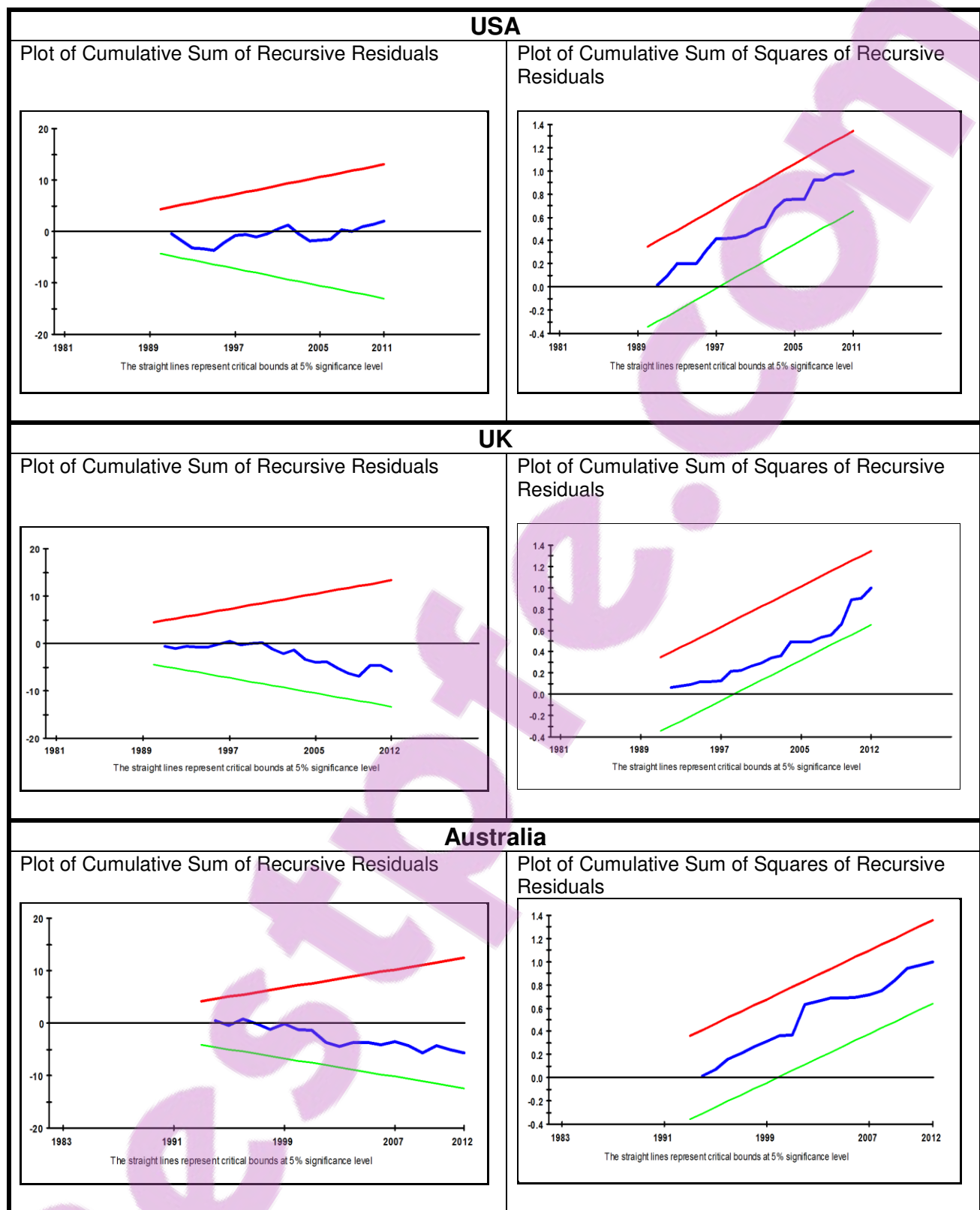
The regression for the underlying ARDL model for each country fits well, as indicated by an R-squared of 88.8%, 81.2% and 81.5% for the USA, the UK and Australia, respectively. On the diagnostic tests performed for serial correlation, functional form, normality and heteroscedasticity, the results displayed in Table 6.10 show that, for the USA and Australia, the model passed all tests except normality, while for the UK the model passed all except for functional form. However, an inspection of the CUSUM and the CUSUMSQ graphs (Figure 6.2) shows that there is stability and that there is no systematic change identified in the coefficients at 5% significant level over the study period.

**Table 6.10: ARDL – VECM Diagnostic Tests (Developed Countries)**

| <b>LM Test Statistic</b>     | <b>Results</b> |              |                  |
|------------------------------|----------------|--------------|------------------|
|                              | <b>USA</b>     | <b>UK</b>    | <b>Australia</b> |
| Serial Correlation: CHSQ(1)  | 0.663[0.416]   | 0.002[0.965] | 0.560[0.454]     |
| Functional Form: CHSQ(1)     | 0.256[0.613]   | 5.398[0.037] | 0.967[0.326]     |
| Normality: CHSQ (2)          | 4.654[0.098]   | 1.656[0.437] | 4.240[0.086]     |
| Heteroscedasticity: CHSQ (1) | 1.812[0.178]   | 0.208[0.648] | 2.488[0.115]     |

Figure 6.2 shows plots of cumulative sum of recursive residual (CUSUM) and cumulative sum of squares of recursive residual (CUSUMQ) of Model 1 respectively for each of the three developed countries. Both the CUSUM and CUSUMQ are within the boundaries. This shows that the long-run coefficients of the regressors are stable.

**Figure 6.2: Plot of CUSUM and CUSUMQ of Model 1 (Developed Countries)**



### **6.3.3 Empirical Analysis of Model 2: ECM-Based Granger-Causality (Developed Countries)**

#### **6.3.3.1 ARDL Bounds Test**

Before establishing the direction of causality between variables, a bounds F-test for cointegration is done to ascertain the existence of a cointegration relationship between the variables of interest. Table 6.11 reports the results of the bounds F-test for Models 2a and 2b for the developed countries.



**Table 6.11: Bounds F-test for Cointegration (Developed Countries)**

| USA                                                                                        |                  |             |                      |                                                                                              |                 |             |                      |
|--------------------------------------------------------------------------------------------|------------------|-------------|----------------------|----------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                         | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                           | Function        | F-statistic | Cointegration Status |
| GRO                                                                                        | F(GRO BFD, SAV)  | 6.785***    | Cointegrated         | GRO                                                                                          | F(GRO MFD, SAV) | 2.251       | Not cointegrated     |
| BFD                                                                                        | F(BFD  GRO, SAV) | 0.705       | Not cointegrated     | MFD                                                                                          | F(MFD GRO, SAV) | 1.895       | Not cointegrated     |
| SAV                                                                                        | F(SAV  GRO, BFD) | 4.532**     | Cointegrated         | SAV                                                                                          | F(SAV GRO, MFD) | 6.520***    | Cointegrated         |
| UK                                                                                         |                  |             |                      |                                                                                              |                 |             |                      |
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                         | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                           | Function        | F-statistic | Cointegration Status |
| GRO                                                                                        | F(GRO BFD, SAV)  | 3.902*      | Cointegrated         | GDP                                                                                          | F(GRO MFD, SAV) | 5.228***    | Cointegrated         |
| BFD                                                                                        | F(BFD  GRO, SAV) | 2.511       | Not cointegrated     | MFD                                                                                          | F(MFD GRO, SAV) | 1.676       | Not cointegrated     |
| SAV                                                                                        | F(SAV  GRO, BFD) | 6.975***    | Cointegrated         | SAV                                                                                          | F(SAV GRO, MFD) | 4.276*      | Cointegrated         |

| Australia                                                                                  |                  |             |                      |                                                                                              |                 |             |                      |
|--------------------------------------------------------------------------------------------|------------------|-------------|----------------------|----------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                  |             |                      | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                 |             |                      |
| Dependent Variable                                                                         | Function         | F-statistic | Cointegration Status | Dependent Variable                                                                           | Function        | F-statistic | Cointegration Status |
| GRO                                                                                        | F(GRO BFD, SAV)  | 4.694**     | Cointegrated         | GGRO                                                                                         | F(GRO MFD, SAV) | 5.604**     | Cointegrated         |
| BFD                                                                                        | F(BFD  GRO, SAV) | 0.374       | Not cointegrated     | MFD                                                                                          | F(MFD GRO, SAV) | 2.453       | Not cointegrated     |
| SAV                                                                                        | F(SAV  GRO, BFD) | 3.973*      | Cointegrated         | SAV                                                                                          | F(SAV GRO, MFD) | 3.920*      | Cointegrated         |
| Asymptotic Critical Values                                                                 |                  |             |                      |                                                                                              |                 |             |                      |
| Pesaran <i>et al.</i> (2001),<br>p.300 Table CI(iii)<br>Case III                           | 1%               |             | 5%                   |                                                                                              | 10%             |             |                      |
|                                                                                            | I(0)             | I(1)        | I(0)                 | I(1)                                                                                         | I(0)            | I(1)        |                      |
|                                                                                            | 4.29             | 5.61        | 3.23                 | 4.35                                                                                         | 2.72            | 3.77        |                      |

Note: \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% level respectively

The results reported in Table 6.11 show that the cointegration relationship of the variables of interest is sensitive to the choice of the dependent variable used. However, the results indicate that cointegration between bank-based financial development, savings and economic growth has been accepted. This is confirmed by the F-statistics in economic growth and savings ratio functions of the three countries. The cointegration between market-based financial development, savings and economic growth has also been accepted, as confirmed by the F-statistics in the savings ratio function for the USA and both the economic growth and savings functions for the UK and Australia, which are statistically significant.

#### **6.3.3.2 Analysis of ECM-Based Causality Model (Developed Countries)**

Having found that there is cointegration in the variables of interest, the next step is to test for the causality between the variables used by incorporating the lagged error-correction term into the regression equations. The results of the causality test within the error-correction mechanism for the USA, the UK and Australia are reported in Table 6.12.

**Table 6.12: Results of Granger-Causality Tests for the Developed Countries**

| USA                                                                                               |                           |                     |                     |                               |                                                                                                     |                           |                   |                     |                               |
|---------------------------------------------------------------------------------------------------|---------------------------|---------------------|---------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------|-------------------|---------------------|-------------------------------|
| <b>Model 2a</b> – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                           |                     |                     |                               | <b>Model 2b</b> – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                           |                   |                     |                               |
| Dependent Variable                                                                                | F-statistic [probability] |                     |                     | $ECT_{t-1}$<br>[t-statistics] | Dependent Variable                                                                                  | F-statistic [probability] |                   |                     | $ECT_{t-1}$<br>[t-statistics] |
|                                                                                                   | $\Delta GRO_t$            | $\Delta BFD_t$      | $\Delta SAV_t$      |                               |                                                                                                     | $\Delta GRO_t$            | $\Delta MFD_t$    | $\Delta SAV_t$      |                               |
| $\Delta GRO_t$                                                                                    | -                         | 0.379<br>[0.544]    | 6.053***<br>[0.005] | - 0.797***<br>[-3.873]        | $\Delta GRO_t$                                                                                      | -                         | 3.829*<br>[0.061] | 6.149***<br>[0.008] | -                             |
| $\Delta BFD_t$                                                                                    | 0.114<br>[0.739]          | -                   | 6.090***<br>[0.004] | -                             | $\Delta MFD_t$                                                                                      | 0.157<br>[0.696]          | -                 | 6.402***<br>[0.009] | -                             |
| $\Delta SAV_t$                                                                                    | 4.446**<br>[0.045]        | 7.460***<br>[0.000] | -                   | -0.982 ***<br>[-4.309]        | $\Delta SAV_t$                                                                                      | 7.547***<br>[0.000]       | 1.645<br>[0.211]  | -                   | -0.787***<br>[-5.081]         |

**UK**

**Model 2a** – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO)

| Dependent Variable | F-statistic [probability] |                   |                  | $ECT_{t-1}$<br>[t-statistics] |
|--------------------|---------------------------|-------------------|------------------|-------------------------------|
|                    | $\Delta GRO_t$            | $\Delta BFD_t$    | $\Delta SAV_t$   |                               |
| $\Delta GRO_t$     | -                         | 3.918*<br>[0.058] | 0.122<br>[0.730] | -0.283**<br>[-2.103]          |
| $\Delta BFD_t$     | 1.897<br>[0.180]          | -                 | 2.868<br>[0.102] | -                             |
| $\Delta SAV_t$     | 3.863*<br>[0.060]         | 0.057<br>[0.814]  | -                | -0.632**<br>[-2.518]          |

**Model 2b** – Market-based financial development (MFD), savings (SAV) and economic growth (GRO)

| Dependent Variable | F-statistic [probability] |                     |                    | $ECT_{t-1}$<br>[t-statistics] |
|--------------------|---------------------------|---------------------|--------------------|-------------------------------|
|                    | $\Delta GRO_t$            | $\Delta MFD_t$      | $\Delta SAV_t$     |                               |
| $\Delta GRO_t$     | -                         | 2.159<br>[0.154]    | 5.152**<br>[0.027] | -0.979***<br>[-5.350]         |
| $\Delta MFD_t$     | 0.002<br>[0.963]          | -                   | 4.119**<br>[0.042] | -                             |
| $\Delta SAV_t$     | 2.030<br>[0.166]          | 7.199***<br>[0.000] | -                  | -0.7003**<br>[-3.761]         |

| Australia                                                                                  |                           |                     |                  |                        |                                                                                              |                           |                     |                     |                        |
|--------------------------------------------------------------------------------------------|---------------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------|---------------------------|---------------------|---------------------|------------------------|
| Model 2a – Bank-based financial development (BFD), savings (SAV) and economic growth (GRO) |                           |                     |                  |                        | Model 2b – Market-based financial development (MFD), savings (SAV) and economic growth (GRO) |                           |                     |                     |                        |
| Dependent Variable                                                                         | F-statistic [probability] |                     |                  | ECTt-1 [t-statistics]  | Dependent Variable                                                                           | F-statistic [probability] |                     |                     | ECTt-1 [t-statistics]  |
|                                                                                            | $\Delta GRO_t$            | $\Delta BFD_t$      | $\Delta SAV_t$   |                        |                                                                                              | $\Delta GRO_t$            | $\Delta MFD_t$      | $\Delta SAV_t$      |                        |
| $\Delta GRO_t$                                                                             | -                         | 7.291***<br>[0.001] | 2.629<br>[0.117] | -0.6509***<br>[-4.310] | $\Delta GRO_t$                                                                               | -                         | 0.327<br>[0.573]    | 6.162***<br>[0.003] | -0.597***<br>[-4.002]  |
| $\Delta BFD_t$                                                                             | 3.145*<br>[0.088]         | -                   | 1.052<br>[0.314] | -                      | $\Delta MFD_t$                                                                               | 0.104<br>[0.749]          | -                   | 0.516<br>[0.479]    | -                      |
| $\Delta SAV_t$                                                                             | 0.406<br>[0.529]          | 7.018***<br>[0.004] | -                | -0.885***<br>[-3.951]  | $\Delta SAV_t$                                                                               | 0.836<br>[0.369]          | 7.943***<br>[0.000] | -                   | -0.452 ***<br>[-4.698] |

Note: \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels respectively

The empirical results displayed in Table 6.12 (Model 2a) reveal that for the USA, there is no Granger-causality between bank-based financial development and economic growth, irrespective of whether the causality is estimated in the short or long run. This is confirmed by the corresponding F-statistics in the economic growth and bank-based financial development functions, which are found to be statistically insignificant. For the UK, there is short-run and long-run unidirectional causality from bank-based financial development to economic growth. This is confirmed by the F-statistic of  $\Delta$ BFD in the economic growth function and the coefficient of the error-correction term in the same function, which are both statistically significant. The empirical results further reveal the existence of short-run bidirectional causality between bank-based financial development and economic growth in Australia. However, for Australia there is long-run unidirectional causality from bank-based financial development to economic growth.

Other results reported in Model 2a reveal that in the USA there is: (i) short-run and long-run bidirectional causality between savings and economic growth; (ii) short-run bidirectional causality between bank-based financial development and saving; and (iii) long-run unidirectional causality from bank-based financial development to savings. In the UK, however, there is: (i) distinct short-run and long-run unidirectional causality from economic growth to saving and (ii) no causality between bank-based financial development and savings. Finally, in Australia there is: (i) no causality between savings and economic growth and (ii) distinct short-run and long-run unidirectional causality from bank-based financial development to savings.

The empirical results reported in Table 6.12 (Model 2b) show that there is no Granger-causality between market-based financial development and economic growth in the UK and Australia. However, there is distinct short-run unidirectional causality from market-based financial development to economic growth in the USA.

Other results reported in Model 2b reveal that in the USA there is: (i) short-run bidirectional causality between savings and economic growth; (ii) long-run unidirectional causality from economic growth to savings and (iii) distinct short-run unidirectional causality from savings to market-based financial development. In the

UK there is: (i) distinct short-run and long-run unidirectional causality from savings to economic growth; (ii) short-run bidirectional causality between market-based financial development and savings; and (iii) long-run unidirectional causality from market-based financial development to savings. Finally, in Australia there is distinct: (i) short-run and long-run unidirectional causality from savings to economic growth; and (ii) short-run and long-run unidirectional causality from market-based financial development to savings.

Overall, empirical results reported in Models 2a and 2b imply that: (i) in the USA, it is the stock market that drives the real sector; (ii) in the UK, it is the banking sector that drives the real sector; and (iii) in Australia, the banking sector and the real sector drive each other in the short run but it is the banking sector that propels the real sector in the long run.

#### **6.4 Summary of Results (All Study Countries)**

In this section, the results discussed in the previous sections are summarised in two tables, Table 6.13 and Table 6.14. Table 6.13 summarises the results of the impact of bank-based and market-based financial development on economic growth (Model 1), while Table 6.14 summarises the results of the Granger-causality tests (Model 2). These tables are reported below.



**Table 6.13: Summary of Model 1 Results (All Study Countries)**

|                             | Impact of BFD on GRO |          |                 |          |           |          | Impact of MFD on GRO |          |                 |          |           |          |
|-----------------------------|----------------------|----------|-----------------|----------|-----------|----------|----------------------|----------|-----------------|----------|-----------|----------|
|                             | Positive Impact      |          | Negative Impact |          | No impact |          | Positive Impact      |          | Negative Impact |          | No impact |          |
|                             | Short Run            | Long Run | Short Run       | Long Run | Short Run | Long Run | Short Run            | Long Run | Short Run       | Long Run | Short Run | Long Run |
| <b>Developing Countries</b> |                      |          |                 |          |           |          |                      |          |                 |          |           |          |
| South Africa                | ✓                    | ✓        |                 |          |           |          |                      |          |                 |          | ✓         | ✓        |
| Brazil                      |                      |          | ✓               |          |           | ✓        |                      |          |                 |          | ✓         | ✓        |
| Kenya                       |                      |          |                 |          | ✓         | ✓        | ✓                    | ✓        |                 |          |           |          |
| <b>Developed Countries</b>  |                      |          |                 |          |           |          |                      |          |                 |          |           |          |
| USA                         | ✓                    | ✓        |                 |          |           |          | ✓                    | ✓        |                 |          |           |          |
| UK                          |                      |          | ✓               | ✓        |           |          | ✓                    | ✓        |                 |          |           |          |
| Australia                   | ✓                    |          |                 | ✓        |           |          |                      |          |                 |          | ✓         | ✓        |

Notes: GRO=economic growth; BFD=bank-based financial development; MFD=market-based financial development; and ✓ indicates presence of a corresponding impact

**Table 6.14: Summary of Models 2a and 2b Results (All Study Countries)**

|                             | Model 2a (BFD & GRO)   |              | Model 2b (MFD & GRO)   |              |
|-----------------------------|------------------------|--------------|------------------------|--------------|
|                             | Direction of Causality |              | Direction of Causality |              |
|                             | Short Run              | Long Run     | Short Run              | Long Run     |
| <b>Developing Countries</b> |                        |              |                        |              |
| South Africa                | No causality           | No causality | GRO → MFD              | No causality |
| Brazil                      | BFD ↔ GRO              | BFD ↔ GRO    | GRO → MFD              | No causality |
| Kenya                       | No causality           | No causality | MFD ↔ GRO              | No causality |
| <b>Developed Countries</b>  |                        |              |                        |              |
| USA                         | No causality           | No causality | MFD → GRO              | No causality |
| UK                          | BFD → GRO              | BFD → GRO    | No causality           | No causality |
| Australia                   | BFD ↔ GRO              | BFD → GRO    | No causality           | No causality |

Notes: GRO=economic growth; BFD=bank-based financial development; MFD=market-based financial development; and → indicates direction of causality

As shown in Table 6.13, bank-based financial development has a positive impact on economic growth in South Africa and the USA but has a negative impact on economic growth in the UK. However, the variable has no impact on economic growth in Kenya. The results also show that market-based financial development has a positive impact on economic growth in Kenya, the USA and the UK but has no impact on economic growth in South Africa, Brazil and Australia.

Based on the results of this study, the nature of the finance-growth links vis-a-vis a country's level of development are not clear cut. Some of the links are contrary to the expectations of the study, although they are still consistent with the results of other previous studies on the same subject. Market-based financial development was expected to have a positive and statistically significant impact on economic growth in countries with market-based financial systems (South Africa, Brazil, USA, UK and Australia). On the other hand, the results for Kenya, a country with a bank-based financial system, have shown that the impact of bank-based financial development on economic growth is insignificant while that of market-based financial development is significant and positive. Thus, from this study, it can be concluded that the nature of the finance-growth link in an economy cannot be predetermined based on the level of development of that economy. Economies are unique and country-specific research is of paramount importance in determining the impact of financial development on economic growth and the causal relationship between the two in a specific country.

As summarised in Table 6.14 (Model 2a) bank-based financial development Granger-causes economic growth in one country, the UK; bank-based financial development and economic growth Granger-cause each other in one country, Brazil, while bank-based financial development and economic growth are not causally related in three countries, South Africa, Kenya and the USA. The results of Model 2b show that market-based financial development Granger-causes economic growth in one country, the USA while economic growth Granger-causes market-based financial development in two countries, South Africa and Brazil. Model 2b results also indicate that market-based financial development and economic growth

Granger-cause each other in one country, Kenya but they are not causally related in two countries, Australia and the UK.

## 6.5 Conclusion

This chapter has empirically examined: (i) the impact of financial development, both bank-based and market-based, on economic growth; (ii) the causal relationship between bank-based financial development and economic growth and (iii) the causal relationship between market-based financial development and economic growth – in six countries during the period 1980 to 2012. The six countries include three developing countries, namely, South Africa, Brazil and Kenya and three developed countries, namely the USA, the UK and Australia. Two models have been used in this analysis, namely Model 1 and Model 2. In Model 1, the impact of bank-based and market-based financial development on economic growth has been examined. In Model 2, the Granger-causality between financial development and economic growth has been tested within a trivariate setting, and the model has been further sub-divided into two models, Model 2a and Model 2b. Model 2a has tested the causal relationship between bank-based financial development and economic growth while Model 2b has tested the causal relationship between market-based financial development and economic growth. In both models (2a and 2b), savings ratio (SAV) has been included as a third variable in order to address the problem of omission-of-variable-bias. An ARDL approach has been used for both Models 1 and 2. The results have been found to vary from country to country and over time. The results also tend to vary depending on the proxy used to measure the level of financial development. Based on Model 1's results, bank-based financial development has been found to have a positive impact on economic growth in two countries (South Africa, USA), and a negative impact on economic growth in one country (UK). No impact of bank-based financial development on economic growth has been found in one country (Kenya). The results of Model 1 also show that market-based financial development has a positive impact on economic growth in three countries (Kenya, USA, UK). However, market-based financial development has been found to have no impact on economic growth in the remaining three countries (South Africa, Brazil, Australia). Results of Model 2a show that while bank-based financial development Granger-causes economic growth in the UK, in Brazil the two Granger-cause each

other. However, contrary to the expectations of this study, no causality between bank-based financial development and economic growth has been found to prevail in the remaining three countries (South Africa, Kenya, USA). The results of Model 2b indicate that market-based financial development leads economic growth in the USA, while economic growth leads market-based financial development in South Africa and Brazil. However, bidirectional causality has been found to be predominant in Kenya. In Australia and the UK, no causality between market-based financial development and economic growth has been detected.

## **CHAPTER 7**

### **CONCLUSION AND POLICY IMPLICATIONS**

#### **7.1 Introduction**

This chapter concludes the study, offers policy implications based on the results obtained in the earlier chapters and indicates areas for further research. Section 7.2 presents a brief summary of the study. Section 7.3 discusses in brief, the main findings of the study, while Section 7.4 presents conclusions and policy implications of the study. Section 7.5 highlights the limitations of the study and identifies areas for further research.

#### **7.2 Summary of the Study**

In this study, the theoretical and empirical underpinnings of the finance–growth nexus have been explored. The relevance of bank-based and market-based financial development in propelling economic growth in the study countries, as well as the challenges, paradoxes and controversies that have emerged in the literature since the Schumpeter era, in the early 20<sup>th</sup> Century, have therefore been investigated.

In seeking to fulfill this broad objective, four specific objectives have been pursued; and these are: (i) to empirically test the impact of bank-based-financial development on economic growth in the study countries; (ii) to empirically test the impact of market-based-financial development on economic growth in the study countries; (iii) to examine the causal relationship between bank-based financial development and economic growth in the selected developing and developed countries; and (iv) to test the causal relationship between market-based financial development and economic growth in the selected developing and developed countries.

The study has used specific individual countries' experiences (case studies) to examine further the general impact and the causal impact of both bank-based and market-based financial development on economic growth. The countries that have been incorporated in this study are: Kenya, Brazil, South Africa, Australia, the United Kingdom and the United States of America. The justification for the choice of these

countries is based on their different groupings representing (i) three countries from the developing country group (Kenya, Brazil and South Africa) and three countries from the developed country group (Australia, UK and USA); (ii) five countries with market-based financial systems (Brazil, South Africa, Australia, UK and USA) and one country with a bank-based financial system (Kenya); and (iii) countries with readily available data.

In this study, two models have been used to empirically investigate the impact of bank-based and market-based financial development on economic growth. The first model (Model 1) is the finance-growth impact model based on Ram (1999), Christopoulos and Tsionas (2004), Majid (2008), and Kargbo and Adamu (2009). This model examines the impact of both bank-based and market-based financial development on economic growth. In this model, economic growth (GRO) is regressed on five variables, which are bank-based financial development (BFD); market-based financial development (MFD); investment (INV); savings (SAV) and finally, trade openness (TOP). The second model (Model 2) is the Granger-causality model which examines the Granger-causality between financial development and economic growth within a trivariate setting. This model has been further sub-divided into Model 2a, which tests the causality between bank-based financial development and economic growth and Model 2b, which tests the causality between market-based financial development and economic growth. In both models (2a and 2b), savings ratio (SAV) has been included as a control variable in order to address the problem of omission-of-variable-bias.

In order to examine the dynamic linkages between both bank- and market-based financial development and economic growth, a number of econometric techniques have been employed. The Dickey-Fuller Generalised Least Square (DF-GLS), the Phillips-Perron (PP) and the Perron (1997) (PPURoot) tests all gauged the stationarity of the variables employed in this study. The autoregressive distributed lag bounds testing approach has been used to test the existence of cointegration in the models used, for each study country. Throughout this study, an ARDL approach has been utilised because of its favourable characteristics. Finally, the ECM-based

Granger-causality test has been used to examine the causal relationship between financial development – both bank-based and market-based – and economic growth.

### **7.3 Summary of Empirical Findings**

The overall empirical findings of this study reveal that:

- 1 The impact of bank-based financial development on economic growth is not obvious in the study countries. The results of the study have provided evidence of positive, negative and no relationship between bank-based financial development and economic growth. On the one hand, in South Africa and the USA, there exists a positive relationship between the two, irrespective of whether it is in the short run or long run. These results are consistent with Odedokun, (1996a), Ahmed and Ansari (1998), Kargbo and Adamu (2009) and Hassan *et al.* (2011), among others. However in the UK and Australia, there exists a negative relationship between bank-based financial development and economic growth: in the UK the relationship applies both in the short run and long-run, while it only applies in the long run for Australia. The negative association was also echoed by De Gregorio and Guidotti (1995) and Adu *et al.* (2013), among others. However, in the short run, the relationship is positive for Australia. In Kenya, no relationship exists both in the short run and in the long run, while in Brazil no relationship exists only in the long run but is negative in the short run. Although not too common, the Kenyan results and the Brazilian long-run results compare favourably with a handful of other previous studies (see Ram, 1999; Andersen and Tarp, 2003) among others.
- 2 As in the case of bank-based financial development and economic growth, the impact of market-based financial development on economic growth is similarly not obvious in the study countries. In Kenya, the UK and the USA, there exists a positive relationship between market-based financial development and economic growth, while the relationship is non-existent in Brazil, South Africa and Australia. These results apply irrespective of whether the impact has been estimated in the short run or in the long run. These findings conform to the existing empirical literature on the subject (see also Levine and Zervos, 1996;

Bekaert *et al.* 2005; Akinlo and Akinlo, 2009; Ujunwa and Salami, 2010; Bernard and Austin, 2011; among others).

- 3 There is no distinct pattern differentiating developing countries from the developed countries in relation to the long-run relationship between bank-based financial development and economic growth and between market-based financial development and economic growth. However, in developing countries, there is either a positive relationship or no long-run relationship, while in some developed countries, the relationship is negative in some instances – for example, in Australia and the UK, the long-run relationship between bank-based financial development and economic growth is negative.
- 4 The empirical results regarding the direction of causality between financial development and economic growth indicate that the causal relationship between these two variables varies from country to country and over time. The results also tend to vary depending on the proxy used to measure the level of financial development – whether it is bank-based or market-based.
- 5 The results of the causality test between bank-based financial development and economic growth show evidence in support of finance-led growth in the short and long-run in the case of the UK but only in the long run in the case of Australia (see also Christopoulos and Tsionas, 2004; Majid, 2008; Odhiambo, 2009a). Evidence supporting bidirectional causality was found in both the short run and the long run in Brazil – and only in the short-run in Australia (see, among other, Sinha and Macri, 2001; Shan and Jianhong, 2006; Abu-Bader and Abu-Qarn, 2008a). However, a neutrality view was supported in the cases of South Africa, Kenya and the USA. These results are consistent with those obtained by Shan *et al.* (2001) and Shan and Morris (2002), among others.
- 6 The results of the Granger-causality test between market-based financial development and economic growth largely support the neutrality view in the long run in all the countries, as also in the short-run for Australia and the UK. The growth-led finance view is supported in the short run for South Africa and Brazil



(see also Athanasios and Antonios, 2012; Shan and Morris, 2002), while the finance-led growth hypothesis is supported in the USA, in the short run. Evidence consistent with the bidirectional view is found only in Kenya, in the short run (Cheng, 2012; Marques *et al.*, 2013).

- 7 Based on the results of the causality model, the hypothesis that the relationship between bank-based financial development and economic growth in the study countries follows a distinct supply-leading response can be accepted only in two countries (the UK, both in the short and long run and Australia, only in the long run). On the other hand, the hypothesis that the relationship between market-based financial development and economic growth in the study countries follows a distinct supply-leading response can be accepted in the case of the USA only. In cases where there is causation between bank-based financial development and economic growth, the common causal flow was found to be supply leading and bidirectional. However, for market-based financial development and economic growth, the dominant causal flow is consistent with the demand following hypothesis.

#### **7.4 Conclusions and Policy Implications**

Although the recommendations emanating from this study may be taken with caution due to a limited data set, the following conclusions and recommendations can be reached, based on the findings of the study.

- 1 The study suggests that the impact of bank-based financial development on economic growth is not the same in all the study countries. It has been found to be positive in South Africa and the USA, negative in Brazil, Australia and the UK – and insignificant in Kenya. Therefore, policies and regulatory environment conducive for banking sector development are recommended in South Africa, the USA and Australia, as it has been empirically proven by the results of this study that in these countries, banking sector has a positive impact on economic growth.

- 2 The study also suggests that the impact of market-based financial development on economic growth is not distinctly similar in all the study countries. It has been found to be positive in Kenya, the UK and the USA, and non-existent in Brazil, South Africa and Australia. Thus, in Kenya, the UK and the USA, pro-stock market policies are recommended since stock market development in these countries translates to economic growth.
- 3 On the causality between bank-based financial development and economic growth, the results were indistinct. The causal relationship was found to vary largely across countries and over time. It would, therefore, be inconsistent to assume an overall acceptance of the view that 'bank-based financial development leads economic growth' just as there can be no overall acceptance of the view that 'bank-based financial development follows economic growth' in the study countries. In general, bank-based financial development seems to Granger-cause economic growth unambiguously in the UK and only in the long run in Australia. However, there is a feedback loop in the case of Brazil and also in Australia, but only in the short-run for the latter. In Kenya, South Africa and the USA, the results support the neutrality hypothesis.
- 4 The results of the causality tests conducted indicate that for the UK, bank-based financial sector development leads economic growth. Thus, for this economy, the study therefore recommends policy makers to consider banking sector enhancing policies in order to stimulate the real sector. However, Brazil and Australia will benefit from both growth-enhancing and banking sector-enhancing policies since the real sector and the banking sector drive each other.
- 5 As with the causal relationship between bank-based financial development and economic growth, study results indicate that causality between market-based financial development and economic growth is also inconsistent in the study countries. The causal relationship was found to vary largely across countries and over time. There can, therefore, be no general acceptance of the view that 'market-based financial development leads economic growth' just as there can be no general acceptance of the view that 'market-based financial development

follows economic growth' in the study countries. Generally, market-based financial development seems to Granger-cause economic growth unambiguously only in the USA in the short-run. Evidence of the feedback loop was found in the case of Kenya, while the demand-following hypothesis found support only in South Africa and Brazil. However, the neutrality view was supported in Australia and the UK.

- 6 The results show that for the USA, market-based financial sector development drives growth of the real sector. Thus, in this country, pro-market-based financial sector development policies are recommended in order to further stimulate the real sector. In South Africa and Brazil, it is the real sector that stimulates the development of the market-based financial sector. This indicates that for these two countries, it is the growth of the real sector that promotes higher participation in the stock markets, thereby facilitating the creation and expansion of financial markets. The study, therefore, recommends that for South Africa and Brazil, policies that promote the development of the real sector of the economy should be put in place in order to further stimulate the financial markets. However, in Kenya policy makers are recommended to draft balanced policies that favour stock market development on the one hand and economic growth on the other.

### **7.5 Limitations of the Study and Areas for Further Research**

Despite the efforts to make this study analytically defensible, it suffers from a few limitations, as is the case with many other scientific research studies.

First, the study may suffer from the problem of insufficient data. The choice of annual data from 1980 to 2012 for empirical investigation was dictated by the availability of macroeconomic data. Unfortunately, stock market data is not readily available in many countries, especially the developing ones. Although the use of an ARDL approach might have lessened the problem of data insufficiency, it may also be argued that a longer research period could affect the results. Moreover, the use of annual data in this study could have reduced the precision of the parameter estimates. In studies of this nature, quarterly data are more desirable. However,

given that quarterly data for most of the variables in the study countries were not readily available, annual data had to be resorted to. It will, therefore, be interesting to compare the results of future research studies employing more data points and/or quarterly data.

Second, Model 1 may have been under-specified, a constraint which is related to data limitation. Model 1 had only 5 independent variables. There are other variables that could have been included in the estimation of the model, including macroeconomic uncertainty and institutions. However, this was not possible because of the availability of a few data points. Nevertheless, the variables incorporated in Model 1 gave an adequate picture of the nature of the impact financial development (bank-based and market-based) has on economic growth in the study countries. As such, it would be recommended that future studies consider other relevant variables that have not been included in this study and that they observe whether the results will differ fundamentally from those obtained for this study.

Third, in this study financial development was measured by a bank-based financial development index constructed from three proxies for bank-based financial development; and a market-based financial development index constructed from three proxies for market-based financial development. Although the financial development indices are more powerful than individual financial development proxies, future studies in this area may benefit from the utilisation of other proxies of financial development. Future studies may also benefit from the utilisation of financial development indices constructed from proxies different from the ones used to construct the indices used in this study.

Although these limitations could have affected the empirical results and evidence given in this study, it is assumed that their effects are minimal and that they have not significantly influenced the theoretical and empirical findings of this study.

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