

UNIVERSITY OF KWAZULU-NATAL

The Finance-Growth Nexus: Lessons from South Africa

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**A dissertation submitted in fulfilment of the requirements for the degree of
Master of Commerce (Economics)**

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2016

Ethical clearance no.: HSS/1673/015M

Declaration

I, **Moeketsi Angelus Mokhoele**, declare that:

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Acknowledgements

“I can do everything through Christ who strengthens me”

First, I wish to extend my special thanks to our Most High God for the gift of good health and wisdom during my academic life at the University of KwaZulu-Natal. Thanks, God for everything, You are indeed Almighty.

Second, I particularly want to thank my supervisor, Vanessa Tang for her guidance, support, and consistent encouragement to work hard as well as her constructive suggestions throughout the course of this study. I am indeed indebted to her. Thank you very much Vanessa. I highly appreciate your efforts, contributions and comments, which made my work a success in the end.

Third, my gratitude goes to the Department of Economics at UKZN whose staff members love their work and who were always willing to impart knowledge when consulted. Thank you for your willingness to assist me during my academic life with you. Above all, I benefited so much from seminar presentations in this department and the staff's academic publications.

Fourth, I thank my family for their endless support through prayer and financial assistance during my study period. I cannot forget my aunt and uncle, Mrs. Mabats'oeneng and Mr. Jane who raised me and encouraged me from primary school to pursue education to this level. Thanks a lot for caring for me all the way from my childhood until today. May God bless you endlessly; as He has always responded to our prayers positively, so let us thank Him for everything.

Finally, special thanks go to my classmates at the Department of Economics who encouraged and assisted me. I enjoyed the time we studied together, day and night. Guys, with you, I indeed understood very well that “lefu la noha ke ho tsamaea e le ngoe” - unity is power. May God bless you endlessly in your life endeavours.

Abstract

Recent studies (Allen and Ndikumana, 2000; Odhiambo, 2004; Gondo, 2009; and Sunde, 2011) on the relationship between finance and economic growth in the South African context have produced mixed findings. Given that there is no clear consensus on the finance-growth nexus, this study uses time series data and a set of financial proxies to determine whether there is indeed a causal relationship between finance and economic growth in South Africa for the time period 1965 to 2013. It finds evidence of a long run relationship between the variables through the application of the Johansen cointegration procedure. However, no short run relationship is found between economic growth and finance using three indicators of financial development, while such a relationship is established between growth and domestic credit to the private sector. Overall, the study's results show that causality is uni-directional. More specifically, the study supports a uni-directional causality going from the use of domestic credit to economic growth and also running from economic growth to financial depth in the use of broad money. However, it also shows that causality between the ratio of bank liquid liabilities and economic growth is two-way. The study recommends that policy makers should implement policies that enhance economic growth as such policies create conducive conditions for a vibrant and revitalised financial sector with fewer information asymmetries. Similarly, policies that aim to improve the performance of the financial sector should also be pursued as the findings show complementarity between financial development and economic growth in the long run.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Although financial development can theoretically significantly affect economic activity, the empirical literature remains equivocal as considerable disagreement persists in respect of the causality direction between financial development and economic growth. For instance, Odedokun (1996) found empirical evidence that finance leads to economic growth in Less Developed Countries (LDCs), while Boulila and Trabelsi (2004) found evidence of the economic growth-finance nexus in countries in the Middle East and North African (MENA) region. Ozturk (2007) as cited by Hamdi, Hakimi and Sbia (2013) established two-way causality for South Africa (SA) for the period 1970-2003 after confirming the existence of a long run relationship between finance and growth. In contrast, Adusei (2012) found evidence of one-way causality from finance to economic growth for SA. Odhiambo (2010) reported contradictory findings of unidirectional causality running from growth to finance for SA. Some scholars argue that these divergent views on the causality direction are due to the use of different indicators of finance and econometric techniques (Levine, 2003; Adu, Marbuah and Mensah, 2013). Odhiambo (2004) asserts that another source of divergence emanates from the fact that the measurement of indicators is also subject to imperfections as they are multifaceted and mostly qualitative in nature, whilst countries' institutional frameworks and financial structures differ substantially. Furthermore, the different methods, datasets and sample frameworks used lead to inconsistent findings (Masih, Al-Elg and Madani, 2009). According to De Gregorio and Guidotti (1995), apart from the controversy surrounding the measurement of financial deepening, interpreting the results also poses challenges mainly because the proxies for finance are normally in the form of say, a level of real interest rate or various monetary aggregates (such as narrow money (M1), broad money (M2) or broader money (M3)). The problem with these monetary aggregates is their consistent failure to measure the extent of financial intermediation. Another criticism advanced by Kapingura (2013) is that such aggregates fail to show exactly how capital is allocated by the financial system.

For instance, Ghirmay (2004) found evidence of finance-led growth for eight countries and bidirectional causality for six countries in a study of 13 sub-Saharan African (SSA) countries using a Vector-Autoregressive (VAR) framework. Allen and Ndikumana (2000) used cross-

sectional analysis in their case study of Southern African Development Community (SADC) countries and found that the finance-led growth hypothesis holds more in regressions of pooled data than in annual data. Debates on this topic are intensified by the lack of empirical evidence to test the theory on the causal link between financial sector development and economic growth (King and Levine, 1993; Levine, Loayza and Beck, 1999). King and Levine (1993), Levine, Loayza and Beck (2000) and Bell and Rosseau (2001) note that, finance growth theory makes a lucid prediction that there is a positive correlation between financial sector development and economic growth drawing on the writings of Joseph Schumpeter (1911).

According to Schumpeter (1911), financial institutions have the potential to spur technological innovation and growth through the identification and funding of productive investments. It is generally agreed that financial intermediary services include, among others, mobilization of savings, management of risk, monitoring of managers, and evaluation of projects as well as facilitation of transactions (King and Levine, 1993; Motelle and Sebutsoe, 2010). If financial intermediaries perform these services efficiently, more rapid economic growth accompanied by lower transaction and information costs of researching potential investments will result (Levine et al., 2000). Beck (2012) strongly asserts that the intermediary function of the financial system is the most critical since it ensures that societal savings are allocated to the best uses. In doing so, the financial system arguably plays an essential role by channelling funds from people who have saved surplus funds through spending less than their income to those who have insufficient funds because they wish to spend more than their income. This facilitates the movement of funds from people who lack productive investment opportunities to those with potential investment projects. It also contributes to higher production and efficiency within the overall economy. Moreover, the financial system not only reduces transaction costs but also solves the problems created by adverse selection and moral hazard (Mishkin and Eakins, 2006). Khan, Qayyum and Ghani (2006) argue that since economic growth in developing countries relies heavily on the proper allocation of credit, more advanced financial intermediation is important as it enables firms to raise large amounts of funds, ultimately leading to a higher level of economic development.

There is a growing literature that advocates for the vital role that the institutional framework plays in influencing economic performance (Rodrick and Wacziarg, 2005; Hasan, Wachtel and Zhou, 2009). These scholars emphasise that certain distinctive features of this framework promote well-functioning financial institutions and capital markets. Features of institutional

development identified in the literature that may promote economic growth include, among others, legalising the market economy, establishing property rights, liberalising political institutions and developing private sector institutions and capital markets (Hasan et al., 2009). Furthermore, Adu et al. (2013) assert that the level of freedom, rule of law and property rights to a certain extent determine the role of financial markets and intermediaries. Levine (1999) argues that the development of financial intermediaries relies heavily on the quality of institutions within a country, the existence of legal systems and the prevailing accounting standards simply because the nature of the activities carried out by financial intermediaries is mainly contractual and they provide information pertaining to corporations. Such information is essential for sound corporate governance and the identification of productive investments as well as easy interpretation and comparison of information across corporations. The financial decisions taken by corporations depend heavily on the legal framework coupled with the quality of legal enforcement by regulators.

La Porta et al. (2000) also assert that well-developed financial markets could be the aftermath of improved investor protection. This suggests that institutional development creates a conducive environment for the financial sector to thrive as both economic and political conditions improve in order to spur economic growth. Thus, a sound understanding is required of the interplay of the factors that are proposed to facilitate a well-functioning financial system to boost economic growth. This will assist policy makers to implement a package of reforms that suit their economy. It will also ensure that financial activities ultimately translate into positive economic performance. Demetriades and Hussein (1996) note that since economic policies are country-specific, their success depends on the effectiveness of the institutions that implement them.

Financial institutions can exert powerful influence on economic growth while a well-functioning financial sector has the potential to bridge the gap between the rich and the poor. On the other hand, a poorly functioning financial sector may lead to retarded growth, restricted economic opportunities and ultimately macroeconomic destabilisation (Kahsay, 2013). For instance, a system that channels funds only to the wealthy and politically connected prevents potentially deserving entrepreneurs from obtaining funds to improve economic growth. This could lead to a myriad of problems that negatively affect the development of financial markets, including among others, an inadequate regulatory framework, and a banking sector that fails to perform its intermediary function, and the

underdevelopment of capital markets as well as poor or no innovation in terms of financial instruments (Dahou, Omar and Pfister, 2009).

While there is seeming consensus that finance leads to growth, Levine (1997) notes that the role of finance is not discussed in the development economics discourse. He maintains that development economists dismiss the idea that finance is the key driver of economic growth. This notion has its origins in Robinson's (1952) theoretical work. Robert Lucas (1988) famously remarked that economists "badly overstress" the role of finance by asserting that it leads to economic growth. This is well documented in the finance-growth literature. The implication is that enterprises and economic development creates demand for financial products and services and where enterprises lead, finance follows or responds (Levine and Zervos, 1998; Kahsay, 2013). It is argued that an accumulation of factors of production coupled with technological progress is likely to drive economic growth (Campos and Dercon, 2014).

To summarise these debates, the voluminous literature on the role of finance in economic growth reveals many empirical contradictions. A knowledge gap thus exists in respect of the direction of causality. The question of the direction of causality between economic growth and financial development irrespective of the indices of financial development used remains unanswered. For instance, some scholars argue that the causality direction is sensitive to the proxy selected (Chukwu and Agu, 2009), and that finance leads to growth only in LDCs; in developed economies, economic growth causes financial development (Levine, Loayza and Beck, 1999). The other strand of the literature argues that causality may vary across time, region, and political institutions and is also affected by differences in policies and institutions' effectiveness in implementing them (Demetriades and Hussein, 1996). This topic therefore continues to attract research attention among both scholars and policy makers in order to lay the basis for sound policy-making.

1.2 Problem Statement

The performance of the financial sector is crucial for every economy and is believed to accelerate economic growth if it is well developed (Levine, 2005). This sector plays a vital role in ensuring smooth monetary policy transmission mechanisms that help to drive investment efforts that improve economic growth and promote poverty alleviation. The South African Treasury (2011: 1) notes that:

“The financial services sector touches the life of each and every South African. It enables economic growth, job creation, the building of vital infrastructure and sustainable development for South Africa and her people.”

The logic behind this statement has its origins in the microeconomic foundations of finance, which argue that through financial intermediary services people are able to conduct the daily economic transactions, which assist them to save and preserve their wealth in order to meet future expected consumption needs as postulated by Friedman’s permanent income hypothesis (David, 2006). At the macro level, the financial sector facilitates and enhances the growth of the economy, creating jobs and building much-needed infrastructure to sustain development (National Treasury, 2011). The lessons learnt from recent global financial crises underscore the significance of the financial sector’s performance in SA.

Furthermore, as Beck, Demirguc-Kunt, and Levine (2004) note, the development of the financial sector can help to reduce income inequality and poverty. However, although the South African financial sector is regarded as well developed (Kohler and Saville, 2011; Odhiambo, 2009) in terms of size and growth, it does not seem to translate into job creation and reduced income inequality in considering that SA still suffers from a high level of unemployment and inequality with a large share of household population without access to essential financial services.

In addition, Odhiambo (2009) has noted that the poverty alleviation process in SA is sluggish and potentially delays the country’s financial sector development. He further argues that the government’s efforts to eradicate extreme poverty have not been successful in reducing the skewed resources distribution and inequality. Karwowski (2015) further argues that the investment performance of South Africa has been below the threshold deemed reasonable for sustainable growth by the World Bank’s Commission on growth despite high interest rates during the 1990s and 2000s. According to Beck et al. (2007) they show that countries with high levels of financial development undergo faster reductions in their income inequality. And, Beck et al. (2007) posit a negative association between poverty and financial development. On the same note, Clarke et al. (2006) argues that with better developed financial markets, even the poor stand to benefit with access to finance. However, in SA, approximately 53% of adult population is not covered by financial services and do not have a bank account, thus excluding them from formal credit facilities (Kirsten, 2006). Furthermore,

according to Newman (2014), approximately 42% of South African residents have no access to formal financial services. In the face of these problems, the government has not provided direct financial services to those excluded but has rather promoted legislation such as the National Credit Bill, the Dedicated Bank Bill and the Cooperative Bank Bill in an attempt to extend access (Kirsten, 2006). However, this legislation has not yet achieved its targets. Hawkins (2004) argues that innovation, technological developments, globalisation and consumer needs as well as the interplay among these factors are among the reasons for this state of affairs. Nonetheless, the growth and success of the financial sector depends on its ability to make a positive contribution to sustainable job creation and poverty alleviation. Quite a significant number of studies have investigated the finance-growth relationship in SA, employing various econometric modelling techniques and sets of finance proxies. And all of them produced mixed findings in respect of the direction of causality. The studies include those conducted by Allen and Ndikumana (2000), Odhiambo (2004), Gondo (2009), Odhiambo (2010), Sunde (2011), Kapingura (2013), Akinboade and Kinfack (2015) and Nyasha and Odhiambo (2015). Allen and Ndikumana (2000) and Nyasha and Odhiambo (2015) found evidence of a positive link between finance and growth, while Odhiambo (2004, 2010) and Akinboade and Kinfack (2015) found evidence of one-way causality from economic growth to financial development. On the other hand, Gondo (2009) and Adusei (2012) found that financial development undermines economic growth. Finally, Sunde (2011), Odhiambo (2011) and Kapingura (2013) found bidirectional causality between growth and finance in SA.

The current study aims to study the relationship and determine the direction of causality between financial development and economic growth using more proxies of finance in order to obtain more conclusive results. Unlike previous time series studies in the South African context that focused on two or three variables, this study includes four proxies for finance versus real domestic product in combination with other explanatory variables deemed to be growth determinants such as trade openness, government spending, gross fixed capital formation, institutional quality and a financial reforms dummy to assess robustness. The selected proxies for finance are broad money stock, domestic credit to the private sector, bank liquid liabilities, and domestic credit provided by the private sector. These conventional indicators are all expressed in relation to GDP. These proxies have been used extensively in the literature but are not without criticism. The weakness highlighted in the literature is that they are highly correlated and as such, inclusion of two indicators in an equation may lead to

a multicollinearity problem (Adusei, 2013). Studies that have used four or more proxies in combination are well documented in the literature (Quartey and Prah, 2008; Abu-Bader and Abu-Qarn, 2008; Chukwu and Agu, 2009; Akinlo and Egbetunde, 2010). The institutional quality variable which accounts for the impact of freedom and democracy on financial development and economic growth following regime change in SA is considered in this study. The reason for inclusion emanates from the fact that the pace of transition is thought to bring about variation in the level of financial development across the country as democracy may have significant effects on both political and economic conditions. Studies that sought to test the significance of institutional quality include, among others, Rodrik and Wacziarg (2005), Haber (2008), Hasan et al. (2009), Huang (2010) and Kirch and Terra (2012). Last but not least Moyo et al. (2014) remarks that undertaking financial sector reforms is beneficial as it stimulates innovation within the financial sector whilst also promote efficiency leading to higher economic growth. The dummy variable is introduced to capture the impact of pertinent financial reforms in SA to promote economic growth (Adusei, 2012).

1.3 Research Objectives

The aims of the study are to:

- Explore the historical development of the South African financial sector.
- Review the theoretical and empirical literature on the link between financial development and economic growth.
- Empirically determine the relationship between financial development and economic growth in SA.

1.4 Contribution and relevance of the study

Studies such as Allen and Ndikumana (2000), Odhiambo (2004), Gondo (2009), Odhiambo (2010), Sunde (2011) and Kapingura (2013) investigated the finance-growth relationship in the South African context and produced mixed findings. Given the lack of consensus on this issue, this study uses extended time series data from 1965 to 2013 to determine whether there is indeed a cointegrated and causal relationship between financial development and economic growth in the context of SA.

1.5 Outline of the study

The study is organised as follows:

Chapter one introduces the debate on the finance-economic growth nexus from a broad perspective. This chapter also presents the problem statement, the research objectives and the contribution and relevance of the study. Chapter two presents an analysis of the South African financial sector, its historical development and its performance. The chapter also examines the policies that support the SA financial sector. Chapter three reviews the theoretical and empirical literature on finance and the use of different finance indicators and conditioning sets. Chapter four outlines the dataset and methodology employed for this study and explains the data estimation strategies adopted. Chapter five presents and interprets the study's empirical results. Finally, chapter six presents the findings, conclusions and policy recommendations.

CHAPTER TWO

AN OVERVIEW OF THE SOUTH AFRICAN FINANCIAL SECTOR

2.1 Introduction

This chapter reviews the history of the financial sector in relation to economic growth in SA. The aim is to consolidate the information relating to policies that had a noticeable impact on the development of the financial sector and the economic growth path associated with the changing policy landscape and the impact of the transition to democracy. Section 2.2 provides an analysis of the South African financial sector and section 2.3 concludes the analysis.

2.2 An Analysis of the South African financial sector

The history of the South African financial sector dates as far back as 1793. Since its inception, this sector has aimed to provide both short and long term financial assistance and credit (Odhiambo, 2004). Long-term credit was offered by the Bank Van Leening (also called Lombard Bank) which was set up in 1793 by the Dutch East India Company as a government monopoly (Wilson, 2012). It was designed to provide farmers with easy emergency loans but quickly collapsed due to the fact that farmers kept renewing their loans and seldom repaid. As a result, it also failed to provide discount facilities to the fast growing commercial community of Cape Town. Under British control, the Lombard Discount was revamped in 1818 to supply short-term credit to farmers and to augment the currency in circulation by issuing government notes (Goosen et al., 1999; Odhiambo, 2004). However, the quality of management continued to deteriorate and activities diminished. The first private bank, the Cape of Good Hope Bank was established in 1837 and was followed by a number of small single unit banks that were founded between 1837 and 1882 in response to economic developments and increased trade as the number of foreign investors rose (Wilson, 2012).

In late 1877, an imperial bank, Standard Bank of British South Africa Ltd started operations in Cape Town. Other imperial banks such as the Netherlands Bank of South Africa opened for business in 1888. These banks later established a network of branches throughout the country and this led to the demise of the single unit banks as they took charge of most private banks. In the same year, the Johannesburg Stock Exchange (JSE) was founded by Benjamin Wollan¹. In 1921, the South African Reserve Bank (SARB) was established as the Central Bank. Among others, the SARB's key responsibilities were to issue banknotes to the public

¹<http://www.sahistory.org.za/dated-event/johannesburg-stock-exchange-established>

as well as to convert banknotes to gold. These functions were previously performed by commercial banks but were later handed to the SARB due to inconsistent legislation in respect of the issuance of banknotes by commercial banks. The legislation compelled these banks to convert notes to gold whenever they were tendered at their respective branches. However, after World War I, the price of gold rose sharply in the UK, much higher than in SA, which resulted in the banks making more profit by converting bank notes to gold in SA and then selling the gold in the UK. A problem arose when the banks needed to purchase gold in the UK at a much higher price in order to back up their reserves for notes in order to meet their obligations. This led to trade losses. Today, the SARB regulates and supervises banks in SA to ensure sound banking and financial practices; it also assists in the maintenance and oversight of monetary policy and is also charged with formulating and implementing sound macroeconomic policy.

After mid-1960 and the early 1980s, the extensive use of direct monetary policy tools delimited the activities of private banks and the development of the securities markets. The SARB imposed credit ceilings and high liquidity asset requirements within the banking sector in order to reduce overspending and inhibit inflationary pressures (Gondo, 2009). This followed the implementation of the recommendations of the De Kock Commission set up in 1977 (Bhorat et al., 2014). The Commission was mandated to redefine how monetary policy should be conducted within the context of a market-orientated framework in order to promote financial liberalisation. Its recommendations favoured free market principles where the markets are left to operate freely without any state intervention. Amongst other things, it advocated for the removal of interest rate ceilings, mergers and acquisitions, and credit and liquid assets ratios, which would ensure that the amount of reserves banks hold with the SARB is reasonably low to enable commercial banks to make loans more accessible. Exchange controls were also relaxed on almost all current accounts (Stals, 1997).

This made it possible for South African residents to withdraw capital from the economy while foreigners were also allowed capital mobility in and out of the economy. The subsequent implementation of the free market principles advocated by the Commission created major challenges for banking institutions. One was the unexpected high number of mergers and acquisitions, which resulted in many building societies being transferred from mutual societies to banking institutions (Odhiambo, 2004). However, this also led to the gradual liberalization of SA's financial system as financial deepening occurred and financial flows and innovations gradually improved. In addition, the adoption of Black

Economic Empowerment (BEE) policies has altered the structure of financial markets in an effort to ensure that the large unbanked population, mainly Black South Africans has access to financial products and services. Relevant services include access to borrowing and savings vehicles, which they were denied by the apartheid regime. This was strengthened and facilitated by the promulgation of the National Credit Act in 2007, which ensures that credit is extended with fairness and transparency (SARB Annual Economic Report, 2007). Furthermore, the policy that restricted the entry of new foreign banks was reversed to allow them to operate in SA. The country has demonstrated improved product market regulation and it was recently ranked 48th in terms of market dominance, 36th in intensity of local competition and 14th in effective implementation of anti-monopoly policies (Schwab and Sala-i-Martin, 2014).

However, from 1984 to 1993, SA's growth rate was not only dampened by trade and financial sanctions, but by internal political opposition to the minority government (Du Plessis and Smit, 2006), coupled with political instability and inappropriate macroeconomic policy decisions. Inflation rose and investor uncertainty increased (Faulkner, Loewald and Makrellov, 2013). In the early 1990s, SA was reintegrated into an increasingly competitive global financial market. Financial market liberalization during the 1990s resulted in an upsurge in the number of foreign firms entering SA's banking, insurance, and broking sectors (Butterworth and Malherbe, 1999) and resulted in an increase in inflows. Financial sector reforms were first introduced in the country during the early 1980s (Aziakpono and Wilson, 2010; Newman, 2014). These led to the abolition of interest rate ceilings (Akinboade and Makina, 2006). According to Akinboade and Makina (2006), the formal financial sector comprises the institutional and market levels. The institutional level is composed of banking and non-banking financial intermediaries while the market level includes the stock market, bond market, the money market and the foreign exchange market. At institutional level, particularly the banking sector, the signs of liberalization include, among others, improvement in legal, regulatory, supervisory and judicial frameworks which seeks to ensure that the sector is not depressed while, on the other hand, banking soundness is restored as evidenced by its infrastructure and programmes that are designed to encourage new entrants (Nyasha and Odhiambo, 2015).

The stock market falls under the market level of the financial sector in SA and was developed by private entrepreneurs in search of innovative ways to raise funds for mining (Akinboade and Makina, 2006). It is controlled by the JSE. The stock market has also undergone legal,

regulatory, supervisory and judicial reforms aimed at modernising it. The JSE's deregulation of the entry requirements for new members was introduced to strengthen market outcomes and macroeconomic prudentiality. This involved financial liberalisation that affected prices and the market as well as the scope of its activities. In turn, it led to overall improvement of the South African financial system, thus showing signs of a positive contribution to economic growth. During the 1990s, the sector was responsible for a quarter of economic growth and the number of people it employed rose to 220 000. These achievements were recorded prior to the dawn of democracy in 1994, suggesting that the apartheid regime supported the financial sector to some extent even though the policies were not holistic. However, the sector continued to suffer from inward-looking policies that favoured and benefited minorities and therefore created inefficiencies (Kirsten, 2006). This resulted in a highly concentrated financial sector with limited competition. Kirsten (2006) argues that about 60% of the adult population were excluded from financial services. Furthermore, the little development that was achieved was hindered by countless obstacles, mainly due to the political dispensation that attracted trade sanctions and isolation. South Africa's foreign policy did not do much to attract foreign direct investment. Labour unrest from the early 1980s to the 1990s, increased uncertainty surrounding investment, structural constraints and poor macroeconomic policy management led the economy into high levels of inflation (Faulkner and Loewald, 2008). The transition to democracy is considered a noteworthy milestone in the economic history of SA because it ushered in policy reforms that had a substantial impact on economic growth and development. Post-apartheid government spending was directed towards the poor but avoided subsidies, which are not efficient.

The contribution made by the financial sector to economic growth cannot be overlooked. For instance, as noted earlier, during the 1990s, this sector accounted for a quarter of economic growth, equivalent to R95 billion. The democratic government introduced a series of economic policy reforms. According to Kirsten (2006), these reforms adopted an interventionist approach to ensure increased access and to reduce inefficiencies through the establishment of micro-finance and the development of financial institutions to liberalize the sector. The number of local banks rose by 17%, with the number of foreign banks increasing by 50% from 1994 to 1999.

The newly elected government adopted a policy document, the Reconstruction and Development Programme (RDP), in 1994. The policy aimed to improve people's quality of life by means of economic and social transformation achieved via government spending to

address the needs of the poor who suffered exclusion during the apartheid era. It focused on addressing basic needs through prudent fiscal policy via human resource development, the construction of a democratic state through tax reforms and reducing government debt in order to restore the fiscal health of the economy and robust growth. While much was achieved in terms of public finance reconstruction, limited results were achieved with regard to social transformation. For instance, the levels of growth achieved did not cater for feasible social investment. This led to the introduction of the Growth, Employment and Distribution (GEAR) strategy in 1996 to augment the RDP. The key objectives of GEAR were to cater for the basic needs of the poor, reduce poverty levels, and achieve high economic growth by means of lower inflation levels and a low budget deficit. It was posited that the achievement of these key objectives would lead to private sector led growth and investment which would subsequently lead to job creation. Constant adherence to macroeconomic stability policies created a conducive environment that resulted in growth in capital formation as well as growth activities in some sectors, including the financial sector.

In February 2000, the South African Reserve Bank used CPI as a monetary policy tool to target inflation. Inflation targeting is aimed at curbing the high levels of inflation and to ensure the SARB's credibility in pursuing macroeconomic stability (Faulkner, Loewald and Makrellov, 2013). Aron and Muellbauer (2007) argue that an inflation targeting policy benefited the economy and improved potential investment in as far as interest rates adjusted for tax are concerned in comparison with previous monetary policy regimes, namely, the liquid asset ratio-based system and cash reserves-based system which were recommended by the De Kock Commission. However, against the backdrop of the 2001 currency crisis, the South African Reserve Bank took a decision to tighten controls and as a result, the currency began to appreciate and the inflation rate further declined. The exchange rate policy was also altered to ensure that the SARB moved away from intervening in the foreign exchange market except when purchasing additional reserves to supplement foreign exchange reserves (Bhorat et al., 2014).

In 2006, SA adopted the Accelerated and Shared Growth Initiative of South Africa (ASGISA). One of the reasons for this new policy was recognition that jobless growth under GEAR had left SA plagued by poverty and unemployment. One of ASGISA's key goals was to ensure that poverty would be reduced by 2010, while unemployment should be halved by

2014. However, in 2012, the National Development Plan (NDP) was adopted as a new policy document to promote economic growth. Like its predecessors, while the NDP seems to have strong political support from the government, critics have identified its inherent limitations. According to Borat et al. (2014), the NDP documents government plans until 2030, but it lacks a systematic framework for implementation.

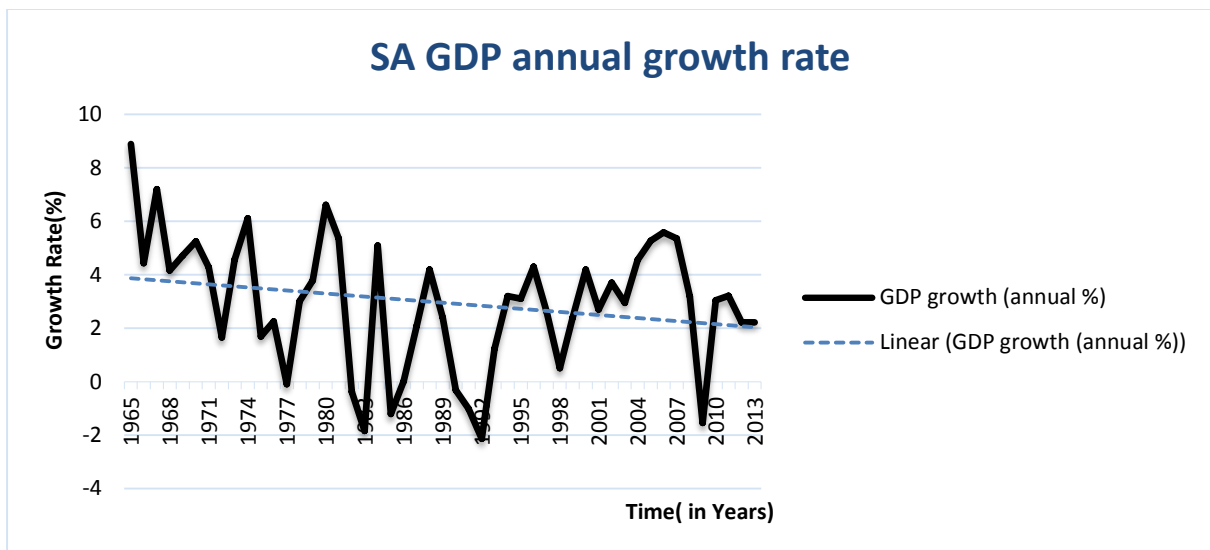
Post 1994, the South African economy is viewed as more stable with a well-developed financial sector. The banking sector is said to compare favourably with banks in industrialised countries. South Africa is ranked the top emerging economy in Africa and has a population of approximately of 53.16 million and GDP of \$366.1 (current dollars) billion as of 2013 (World Bank, 2015). It was ranked 43rd in the Ease of Doing Business Index in 2015, a decline by 6 percentage points from position 37 in 2014. This places SA in the upper middle-income classification in accordance with the World Bank list of economies as of January 2015. In terms of institutional freedom and democracy, SA ranks 75th out of a total of 178 free countries in the world and holds 5th position in Africa as a whole (African Economic Outlook, 2015). South Africa's GDP is triple that of the SADC countries combined (Sunde, 2011) and as such it is the largest economy in the region. South Africa is also a G-20 member country with a relatively large volume of trade with Southern African countries. This underscores the importance of a sound financial sector. The financial sector is composed of a diverse array of financial instruments and products. South Africa's financial sector has been accorded global recognition in terms of regulation and stability. Also the value of the country's financial sector's exceeds R6 trillion and this sector contributes 0.5% of the country's GDP (African Economic Outlook, 2015). It is ranked 3rd in terms of employment (3.9%) and contributes 15% of the corporate income tax bill. The SARB which was established in 1921 proactively plays the role of Central Bank by regulating and supervising the activities of other financial institutions such as commercial banks, life insurance companies, micro-lenders, unit trusts and the Post Office Savings Bank, thereby ensuring that their daily operations are in line with the interests of bank depositors as well as the entire economy. The number of institution rose from 30 to 32 between 2012 and 2013. Of these institutions, 10 are locally controlled banks, six are foreign controlled, and three are mutual banks, while 13 are South African branches of foreign banks (SARB Annual Economic Report, 2013). The presence of investment firms has also strengthened competition in the trading of different financial products and services. The key role of the SARB is to act as the monetary authority by ensuring the formulation and implementation of monetary policies

whilst defending the value of the Rand as well as controlling inflation (Akinboade and Makina, 2006; Akinboade and Kinfack, 2015).

Figures 2.2.1 and 2.2.2 below illustrate the evolution of the financial sector indicators from 1965-2013 and the annual growth rate in SA. The trends suggest a positive impact on economic growth. This is evidenced by the upward trend in domestic credit to the private sector and domestic credit supplied by the financial sector relative to GDP. The ratio of money stock relative to GDP maintained a slower pace of growth as compared to private sector credit and domestic credit to GDP. The highest growth rate recorded for the ratio of money stock to GDP is 4.39% in 2008 with the lowest at 3.92% in 1993. However, the ratio of liquid liabilities to GDP declined over the period with the lowest recorded figure of 3.02% in 2004 and the highest rate of 3.84% in 1975. The liquid liabilities to GDP ratio fell steadily whilst the broad money to GDP ratio started to rise from the year 2000 through 2008, after which it fell slightly until 2013. In contrast, the author's computation revealed that on average SA has achieved 4.8% annual growth in GDP with the highest reported rate of about 8.9% in 1965. The trends also indicate that trade volume fell sharply from 1965 through to 1968 with a slight increase between 1968 and 1971. However, this is offset by the massive decline, which occurred from 1983 to 1992. Economic growth fell dramatically to -0.09 % in 1977. On average, GDP grew by 0.63% during the period 1982-1992. This sluggish growth could have been the result of trade and economic sanctions, political turmoil, and a credit crunch, which decreased the prospects of foreign direct investment in SA during the apartheid era.

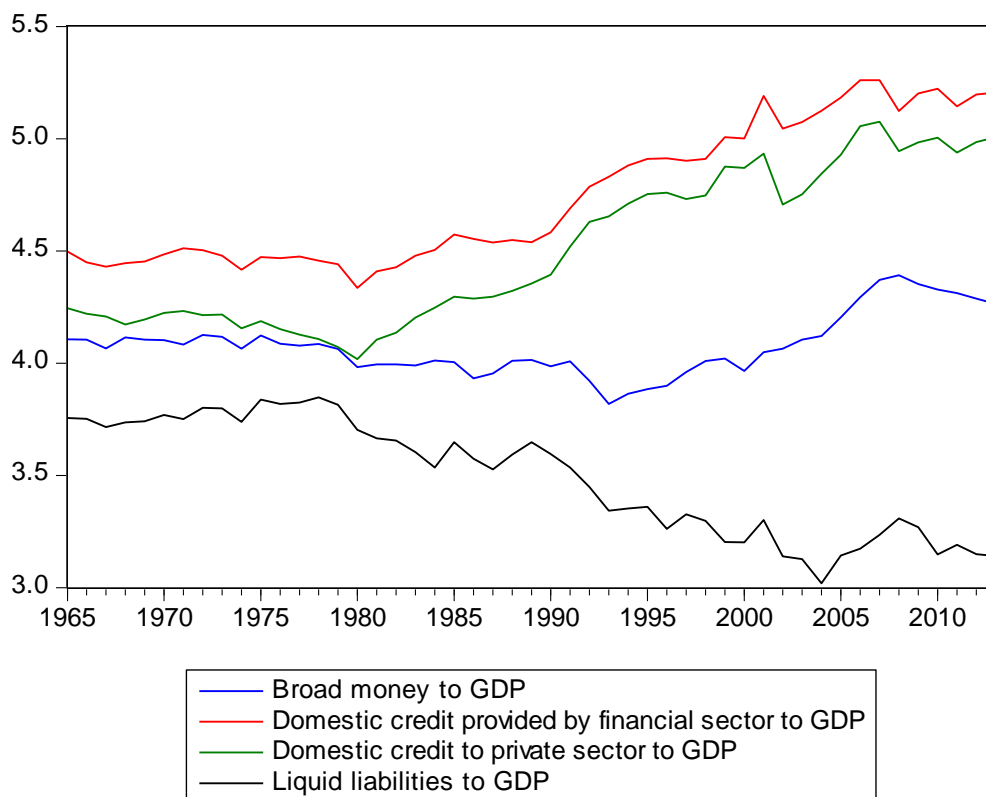
The economy also experienced episodes of negative growth in the following years in particular: 1982, 1983, 1985, 1990, 1991 and 1992. In 1992, the lowest figure of -2.1% was recorded. On the other hand, trade growth remained constant from 1983-1986, where after it rose by 11.4 % from 1986 to 1988 although it fell again for the years that followed (see figure 2.2.1). The growth trends show that in 2006 the country experienced its highest growth rate of 5.9% due to high trade performance. However, from 2007 and 2008, growth fell from 5.4% to 3.2 % and in 2009, SA saw negative growth when the rate fell to -1.5 %. This was possibly the aftermath of the global financial crisis which resulted in job losses of more a million (Faulkner, Loewald and Makrelov, 2013; National Treasury, 2011) despite the claim that SA was more resilient in the face of this crisis as its institutions managed to strengthen their capital positions (Kohler and Saville, 2011).

Figure 2.2.1: South Africa's annual growth rate for 1965-2013



Source: Author's computation from World Bank indicators (2013)

Figure 2.2.2: Evolution of selected financial development indicators for SA



Source: Author's own computation from World Bank Indicators (2013)

The growth of investment started at 3.2% and reached a maximum of 3.39% in 1976 after which it fell sharply until it reached the low rate of 2.72% in 2002. Government expenditure also grew and reached its highest level in 1993. Government spending exceeded investment for the period 1991-2005. Figure 2.2.2 shows that the indicators of financial development appear to be correlated over the sample period. For instance, the ratio of domestic credit to the private sector relative to GDP ($lnDp$) and the ratio of domestic credit provided by the financial sector relative to GDP ($lnCf$) are on an upward trend and are highly correlated although the ratio of credit provided by the financial sector is slightly below the ratio of domestic credit to the private sector as a percentage of GDP. Similarly, the ratios of domestic credit provided by the financial sector relative to GDP ($lnCf$) and broad money stock to GDP ($lnM2$) commence with the same trend but diverge from 1980 when the ratio of domestic credit provided by the financial sector relative to GDP ($lnCf$) begins to pick up and maintains an upward trend whilst the broad money stock ratio follows a downward trend until 1993 where after it begins to recover and maintains an average growth rate of 4.06% from 1993 to 2008, falling from 2008 to 2013. Furthermore, the ratio of bank liquid liabilities to GDP ($lnBl$) also shows a sharp decline from 1975 to 1993 and then begins to pick up from 1993 to 1999. However, in 1999, it fell sharply until 2004 when it was at its lowest level. The recovery occurs from 2005 to 2008 after which it gradually falls off until 2013. The reason, especially in 2008, is the global financial crisis, which had an adverse impact on global financial markets, and SA financial markets were not immune.

While National Treasury argues that the, “Financial sector successfully weathered the crisis” (National Treasury, 2011: pp. 4), the negative growth rate for 2009 indicates that the global financial crisis had a substantial impact on the South African economy. The trends also show that the growth rate increased slightly from 3% in 2010 to 3.2% in 2011. However, it fell to 2.1% for 2012 and 2013. In 2014, it fell further to 1.5% against an alarming 25.5% unemployment rate in the second quarter of 2014. According to the African Economic Outlook (2014), this persistent fall is due to the lifting of protective tariffs adopted during the apartheid era. An important aspect worth considering is the increasing government debt to GDP ratio that, according to the International Monetary Fund (IMF) (2014) grew from 27% to 46% of GDP from 2008 to 2014. This clearly indicates that even though SA has a well-functioning financial system, it still faces high levels of unemployment and income inequality, which cause many to live in dire circumstances. Moreover, according to Odhiambo (2009), an estimated 57% of South Africans, around 25.7 million people, are

living below the poverty line. It is against this backdrop that a sound financial sector does not necessarily signal sustained growth. According to Hawkins (2004), SA's financial system has proven to be stable, has high levels of innovation and is relatively competitive. However, when it comes to cost efficiencies and service provision to small enterprises and poor consumers, there is room for improvement. He asserts that the sector's performance should be linked to the regulatory regime to help improve its allocative efficiency and performance in light of mooted changes to the regulatory framework.

2.3 Conclusion

This chapter presented an historical overview of SA's financial sector and the policies adopted that might have contributed to economic growth. It showed that the South African financial sector has a long history of interactive policies and that the political transition brought about variations in the level of financial development during the two distinct historical eras. The policies adopted post-apartheid have made a positive contribution to economic growth due to both deregulation and regulation in the financial sector. While innovation, technological developments, globalisation and consumer needs are regarded as important factors that drive the South African banking industry, the financial sector's overall contribution has grown significantly since democracy although service provision to the poor has been less impressive (Hawkins, 2004). Given the importance of the role played by the financial sector in economic development, it is of critical importance to empirically determine the link between economic growth and financial development in SA in order to better inform policy makers of the reforms that are required to improve economic growth and development.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter reviews the theoretical and empirical literature on the link between financial development and economic growth. The theories and various schools of thought as well as the empirical literature are critically examined. This chapter is structured as follows: Section 3.2 provides the theoretical underpinning on the finance-growth relationship while section 3.3 reviews the empirical literature, subdivided into cross-country case studies and country-specific studies. Section 3.4 presents a comparison of the studies using time series analysis and those using cross-section analyses to investigate the finance-growth link. Section 3.5 concludes the chapter by providing a synoptic view of the finance-growth debate.

3.2 Theoretical Underpinning

The finance-growth nexus has attracted much attention even though it was not a subject of discussion among classical economists. It was brought into perspective more than a century ago by a historical anecdote of Walter Bagehot documented by Anderson (2009) and expounded in detail by Stolbov (2012). Bagehot related examples of how the development of the money market in England could lead to capital flows among countries in search of the highest rate of return given that in those days the British financial sector was one of the world's most developed. His work offers a vivid description of how financial intermediation processes link to economic growth through a loanable funds framework. He offered reasoning on how loanable funds encourage economic activity. The simple argument in this framework is that the funds are kept in banks unclaimed until someone with productive investment ideas emerges to utilize them. Some form of trade follows, resulting in prosperity as funds are allocated to the development of that trade that in turn leads to other developments associated with it as a result of profitability. In the final analysis, this will gradually trickle down to other sectors in the economy due to the multiplicative nature of the process. However, Stolbov (2012) notes that Bagehot's thinking was not taken into consideration by the classical school of thought.

The work of Joseph Schumpeter (1911), Goldsmith (1969), McKinnon (1973) and Shaw (1973) remains the cornerstone of the finance-growth nexus literature in explaining the important role played by the financial system in economic growth. Schumpeter argued that financial intermediaries provide services that promote economic growth and development.

The mechanism through which this process occurs is the screening and identification of productive investment projects worth funding. This is made easy by the introduction of financial intermediaries because they attempt to solve the traditional problem of the barter economy, which is normally referred to as the “double coincidence of wants” by facilitating the savings-investment process in a smooth and effective manner. This reduces both information search problems and transaction costs between savers (depositors) and investors in order to improve the liquidity of assets and to ensure that risk-averse savers have a greater sense of safety. It is argued that financial intermediaries are good at mobilising savings, distributing them, undertaking risk and liquidity assessments and providing a catalyst for trade by issuing credit and payment guarantees (Adusi, 2013). Furthermore, financial intermediaries offer easy risk sharing and pooling of resources as a result of the efficient allocation of resources (Akinboade and Makina, 2006).

Joseph Schumpeter’s view that sound financial intermediaries will spur technological innovation, which will then assist and facilitate the identification and funding of those with entrepreneurial acumen is strongly supported by the findings of King and Levine (1993). Shen and Lee (2006) add that a well-functioning financial sector offers a conducive environment for improved resources allocation, better monitoring with hardly any asymmetries of information, and economic growth. However, King and Levine (1993) also advocated for government intervention in financial systems through policies that induce society to engage in productivity enhancing ventures in order to have a causal effect on long-run growth.

King and Levine (1993) add that proper understanding of the evolution of finance is important in order to understand how financial systems should operate. This will clear the confusion resulting from the fact that financial growth is much affected by short-term fluctuations such as recessions and financial crises whilst financial development may also be impacted by nonfinancial variables such as changes in computers, telecommunications, the quality of institutions and non-financial sector policies. Levine (1997) places the issue of the correct indicators of finance in perspective. He argues that a lack of correct quantitative measures of financial structure, which can help to match the structure and function of financial systems has made it difficult to compare financial structures in the economy in relation to growth. This creates confusion about the use of measures of depth of the financial sector, which do not represent the effectiveness of financial development. Levine (2005) identifies five functions of financial systems but notes that it remains unclear how well the

systems perform these functions. However, he asserts that financial systems still do a better job in ameliorating the effects of information asymmetry, enforcing contracts and reducing transaction costs whilst creating incentives even though they cannot eliminate them. Furthermore, improvements in financial systems are regarded as a defining feature of advanced market economies which was not the case in the past (Akinboade and Kinfaek, 2015).

While there is a rich literature that supports the Schumpeterian view that without finance there is no growth, Levine (1997) makes the important point that in development economics discourse, the role of finance is not covered. Development economists have dismissed the notion that finance plays the role in economic growth that Schumpeter identifies in his writings. In particular, Robinson (1952) and other economists in the late 1980s such as Robert Lucas (1988) are well-known antagonists of the Schumpeterian view that finance causes growth. Lucas was responsible for the famous quote that “economists badly overstress” the role of finance by asserting that it leads to economic growth. He argues that financial development undermines economic growth. Antagonists of the theory of finance-led growth subscribe to the notion that, “Where enterprises lead finance follows”. This implies that economic development precedes output growth and is therefore responsible for creating demand for certain types of financial products and services. Therefore, finance simply responds positively to such demand, which emanates from nonfinancial sectors (Kahsay, 2013).

The gist of the argument is that factors of production such as land, labour and human capital, coupled with technological progress are likely to also drive growth (Campos and Dercon, 2014). The endogenous theory identifies finance as a key factor that drives technological progress. In the literature on the endogenous growth theory, various models have been developed to examine the channels through which financial development may affect per capita GDP growth and technological change backed by extensive datasets to document different aspects of financial development. Large volumes of econometrics evidence seem to argue for a causal and positive effect of finance on growth (Beck, 2013a; Campos and Dercon, 2014). Balamoune-Lutz (2008) argues that the direction of causality of finance-growth changes with the level of development. According to him, at low levels of development, finance leads to economic growth whilst at higher levels, the causal direction inverts itself, and growth in output becomes the key driver of financial development. Levine (2003) adds that economic growth tends to accelerate in countries with better-developed

financial systems as opposed to those with poor financial sectors. However, Coccoresse and Silipo (2015) strongly argue that excessive financial development and over-indebtedness might also negatively affect the rate of economic growth and have severe repercussions, as evidenced by the latest financial crisis (see Reinhart and Rogoff, 2009; and Rousseau and Wachtel, 2011).

The other strand of the literature pertains to the threshold effect of financial development on economic growth, which renders the link between finance and growth somewhat ambiguous (Bose and Cothren, 1996; Deidda and Fattouh, 2002). The main source of the threshold effect is the presence of cross-sectional variances because of the difference in the level of development in the financial sector or economic conditions across cross sections (Soedarmono, Hasan and Arsyad, 2015). On the other hand, the threshold effect also relates to the impact of increased financial development on economic growth before a certain threshold is reached. The literature suggests that the relationship between finance and growth is likely to be nonlinear (even non-monotonic) in the sense that the growth effects of finance may vary with alternative economic or financial conditions. In accordance with this argument, a threshold level of financial development exists that is associated with an increase in economic growth. Beyond this level of financial development, finance would not lead to growth (Bose and Cothren, 1996; Deidda and Fattouh, 2002, Rioja and Valev, 2004). Only if some threshold level of sophistication is reached would the benefits of a well-developed financial sector lead to higher economic growth. However, Ketteni et al. (2004) reject the argument that the finance-growth relationship is nonlinear because other variables which are growth determinants have been omitted.

3.3 Empirical Literature

3.3.1 Introduction

The debate on the relationship between financial development and economic growth is complex and unresolved. Empirical research on the causal link between financial development and economic growth has produced mixed results due to the fact that the relationship changes in line with the evolution of the economy. Four different schools of thought have emerged in relation to this nexus (Acaravci, Ozturk and Acaravci, 2009).

The first school of thought believes that financial development is the driving force behind the real sector of the economy, thus causing the economy to grow. This is popularly known as the supply-leading response. These scholars argue that if finance leads, causality between finance

and growth runs from financial development to economic growth. Prominent advocates of this hypothesis such as McKinnon (1973), Shaw (1973) and King and Levine (1993) assert that the quantity and composition of financial variables directly induce economic growth. It follows that increased savings of financial assets will lead to capital formation, which in turn spurs economic growth. The second school of thought is referred to as the demand-following response. Proponents of this approach posit that economic growth precedes financial development. Growth in the real sector leads to increased demand for financial services and this spurs the development of financial markets.

The third school of thought maintains that a “feedback” bi-directional causal relationship exists between financial development and economic growth. In other words, they believe that the two variables Granger cause each other. Furthermore, the direction of causality can come from either side because there is mutual causality between financial development and economic growth. As financial development slowly induces economic growth, reverse causality will occur in the sense that further growth will also deepen financial development.

The fourth school of thought presents a neutral hypothesis. According to Al-Yousif (2002: pp. 132) this view was originally advanced by Lucas (1988), who argued that the relationship between financial sector development and economic growth is not causal. In Lucas’s view, economists “badly overstressed” the effect of financial development on economic growth and there is, in fact, no relationship between these variables; the two are causally independent of each other. This implies that the growth of the financial sector and the growth of the economy may continue to increase without necessarily following each other in a particular pattern (Graff and Karmann, 2006). Odhiambo (2010) argues that the observed correlations between these variables means nothing except for historical peculiarities.

The various views on the relationship between financial development and economic growth reveal considerable differences of opinion. This may be attributed to the different datasets used (times series, cross section and panel data) as well as the different methodological analyses and samples selected by researchers.

3.3.2 Country-Specific Evidence

A growing number of studies have investigated the nexus between economic growth and financial development using country-specific cases. In the South African context, these

include Allen and Ndikumana (2000), Odhiambo (2004), Akinboade and Makina (2006), Gondo (2009), Odhiambo (2010), Sunde (2011), Kapingura (2013) and Nyasha and Odhiambobo (2015).

Allen and Ndikumana (2000) empirically studied the role of financial intermediation in improving economic growth with reference to SADC member states, including SA. Using cross-sectional analysis with proxies for finance against per capita GDP in the form of ratio of M3 to GDP, market capitalisation and total value traded shares, the findings of this study confirmed a positive significant link between financial development and economic growth. The authors argue that the hypothesis that finance leads to growth is more true in regressions of pooled data than annual data. Their justification for choosing to apply panel data econometrics lies in the power of the technique to account for unobservable country-specific effects.

Chang (2002) investigated the supply-leading versus demand-following hypothesis using a multivariate VAR framework for Mainland China and quarterly time series data spanning 1987Q1 to 1999Q4. The results from the co-integration test using the Johansen approach revealed the existence of one co-integrating vector between all the variables (GDP, the liquid ratio to GDP, and trade openness measured by the ratio of the sum of exports and imports to GDP) whilst in terms of causal direction, the results based on the multivariate error correction model indicate no causal link between financial development and economic growth. This implies that the results do not support both the demand-following and the supply-leading hypotheses for Mainland China.

Odhiambo (2004) examined whether financial development spurs economic growth in SA using annual time series data for the period 1960-2000. Using three proxies for finance, namely, currency ratio, broad money ratio to GDP and the ratio of bank claims on the private sector to GDP against per capita income as a proxy for economic growth, the study employed co-integration and error correction approaches. It found that economic growth drives financial development in the South African economy.

Akinboade and Makina's (2006) one of its kind study explored various indicators of financial development in SA to assess where the economy was heading. Their findings suggest that the economy might transit steadily to a cashless economy as narrow money was seemingly

becoming less significant in comparison to other proxies for money. This has implications for the economic security of the poor fraction of South Africans who rely heavily on daily cash transactions. They further highlighted that South African banks would be able to extend credit to the private sector towards mortgage. However, the level of investment showed a declining trend despite the introduction of new banks as well as new financial instruments. These new instruments had a negligible impact on the interest rate spread; however, the South African economy showed signs of good health as the ratio of shares traded on the JSE improved relative to the size of the economy.

Chukwu and Agu (2009) examined causality between financial deepening and economic growth for Nigeria using a multivariate VECM approach for the period 1971 to 2008. They employed four indicators of financial development, namely, credit to the private sector relative to GDP, ratio of bank liquid liabilities to GDP, ratio of broad money to GDP and loan deposit ratio. While economic growth is proxied by per capita income, the findings indicate one way causality from economic growth to financial development, showing that economic growth precedes financial development in Nigeria.

Majid (2007) analysed the dynamic relationship between financial development, inflation and economic growth in Thailand using quarterly time series data for the period 1998 to 2006. The study applied Pesaran et al.'s (1996) ARDL-Bounds to determine co-integration between share of investment, real GDP, and the inflation rate, ratio of gross fixed capital formation to GDP and ratio of total bank deposit to GDP. It identified the existence of both cointegration and bidirectional causality between finance and growth. In addition, the variance decompositions and impulse response revealed that changes in economic growth result mainly from its own innovations.

Masih, Al-Elg and Madani (2009) investigated the direction of causality between economic growth and financial development in Saudi Arabia using the error correction approach and variance decomposition employing the long run structural modelling framework developed by Pesaran and Shin (2002). The authors carried out the test using four proxies for finance, namely, real per capita GDP, bank deposit to nominal GDP, exports to GDP and bank deposit rate to CPI as a proxy for real interest rate. The findings show that causality runs from finance to growth (supply-leading). The authors argue that such a result is expected given that Saudi Arabia is a developing country that is in its early stages of development. However, they

strongly caution that the small sample used in their study could impact the interpretation of its findings. The findings conform with those of Goldsmith (1969) and De Gregor and Guidotti (1995) who assert that financial development occurs faster in the early stages of the development of an economy because during these stages the country's level of income is still low. The effect of financial development on economic growth is said to weaken as countries reach higher levels of development, possibly due to the measurement problem with respect to financial deepening as the effect of intermediaries is larger for less developed than more developed countries (Odeniran and Udejaja, 2010).

Abu-Bader and Abu-Qarn (2008) investigated the causal link between finance and economic growth in Egypt for the period 1960 to 2001 using a trivariate vector autoregressive framework. They employed four indicators of finance to test for causality between them and real GDP per capita. The indicators used include the ratio of money stock to GDP, ratio of bank credit to the private sector relative to GDP, ratio of M2 minus currency to GDP and finally the ratio of credit issued to non-financial private firms to total domestic credit. Using Granger causality via cointegration and the vector error correction approach, the findings of the study indicate evidence of two-way causality between financial development and economic growth.

Gondo (2009) examined how financial development impacted on SA's economic performance for the period 1970-1999 using a sample of 29 annual observations. The study, which employed time series techniques, differs from others in that it developed indices for political and economic polarisation as well as inflation tax as instruments to counteract the problem of simultaneity bias amongst the regressors. The findings of this study highlight that stock market liquidity and credit extended to the private sector by banking institutions complement each other and as a result, they both induce a positive impact on economic performance over time. Furthermore, an institutional framework and effective legal systems are highly recognised as good and necessary conduits for SA to achieve financial development whilst both the stock market and the banking sector need to be active in order to spur growth. This suggests that financial development does indeed drive economic growth.

Odhiambo (2010) used the ARDL-Bounds test approach developed by Pesaran et al. (2001) to examine the link between finance and growth using South African data for the period 1968 to 2006. The study used three financial development proxies, namely, broad money stock to GDP, ratio of private credit relative to GDP and ratio of liquid liabilities to GDP used against

per capita GDP, which is a growth variable proxy for robustness check. The findings suggest that economic growth is driven by growth in the real sector of the economy as opposed to the financial sector. The evidence also suggests that causality runs from growth to investment while investment resulting from economic growth also leads to the development of the financial sector.

Sunde (2011) investigated the finance-growth nexus in SA using a co-integration and error correction framework of analysis for the period 1975 to 2010. The author made use of only two indicators of financial development against real GDP growth as a proxy for economic growth, broad money stock to GDP and credit to the private sector as a share of GDP. He included other control variables such as the exchange rate, trade openness, real interest rate, population, inflation rate and a dummy for political instability. The study found evidence of two-way causality between financial sector development and economic growth in SA. The fact that it used only two proxies for financial development against a growth variable and six control variables casts doubt on the reliability of the results. Indeed, the author notes that, “to get a clear picture of the direction of causality, a detailed study needs to be carried out using many growth and financial sector indicators” (pg. 74). This clearly suggests that future research should consider the inclusion of more determinants of growth and finance.

Berkes, Arcand and Panizza (2012) investigated the threshold level above which finance would no longer support economic growth. Employing various techniques and datasets, they found that there is a threshold level at which too much finance can be detrimental to the economy; therefore, beyond that threshold, more finance is associated with negative growth rates. Their findings indicate that such a scenario occurs when the amount of credit to the private sector falls within the range of 80-100% of GDP.

Kapingura (2013) also carried out an empirical investigation on the link between financial development and economic growth in Africa by examining the structure of financial markets and financial intermediaries. Using annual data for the period 1960-2012, the study established two-way causality between stock market and economic growth whilst it also identified that economic growth Granger causes financial intermediaries.

The most recent study by Nyasha and Odhiambo (2015) analysed the impact of banks and stock markets on economic growth for the period 1980 to 2012 using two proxies, one for

bank-based development and the other for stock market development. They included other variables that act as controls such as share of investment to GDP, savings as a share of GDP and trade openness. The findings of the study that used the ARDL-Bounds testing approach indicate that there is a positive relationship between economic growth and strong evidence for bank-based financial development in SA. This implies that the South African financial sector is bank-dominated as opposed to stock market-dominated. The study also found no relationship between economic growth and market-based financial development whether in the short or the long run.

Craigwell, Downes and Howard (2001) empirically examined the long-run causal link between financial development and economic growth with respect to Barbados using a multivariate VAR approach with a sample of 25 observations (1974-1998). The variables chosen in this study were real per capita income relative to total population, ratio of commercial bank deposits relative to nominal GDP, the real interest rate and real gross capital formation relative to total population. The results indicate the presence of cointegration relationships among these four variables. They also show causality running from financial development to economic growth over the sample period. However, the results run counter to previous studies. The authors suggest that future research is called for using VAR approach with a larger sample to simultaneously capture the effects of financial development and economic growth in the short and long run.

Mohapi and Motelle (2007) used five proxies of financial development to investigate the causality direction between finance and growth for the period from 1980:4 to 2003:4 for the case of Lesotho. The indicators used were the ratio of broad money to GDP, the ratio of bank deposit liabilities to GDP, the ratio of domestic credit to GDP, the ratio of private sector credit to GDP and the ratio of private sector credit to domestic credit. While the results indicate no long run relationship between finance and economic growth in Lesotho, causality tests also revealed no existence of a finance-growth nexus in this country.

Thangavelu and Jiunn (2004) investigated the dynamic relationship between growth and financial development in Australia taking into consideration both bank-based and market-based structures. Using three proxies for finance against the growth variable for the period 1960 to 1990 they applied the VAR model. The study found that even though the impact varied according to the structure for both financial intermediaries and financial markets in terms of their role in the domestic economy, causality runs from economic growth to

financial intermediaries and there is also unidirectional causality from stock market to economic growth.

Wolde-Rufael (2009) reviewed the causal link between financial development and economic growth in Kenya using annual time series data for the period 1966 to 2005. The study employed a quadripartite vector framework of analysis and the modified Granger causality test developed by Toda and Yamamoto (1995). It used four conventionally accepted proxies of financial sector development and then included exports and imports variables to test for a finance-growth nexus. The proxies used were ratio of broad money to GDP, ratio of liquid liabilities to GDP, domestic bank credit to the private sector ratio to GDP and total credit provided by the bank sector to GDP. The results indicate that, of the four proxies chosen, three, namely, ratio of domestic credit supplied by the bank sector as a share of GDP, liquid liabilities to GDP and total domestic credit provided by the bank sector to GDP revealed bidirectional Granger causality against real GDP per capita. This suggests that, neither supply-leading nor demand-following hypotheses hold for Kenya. However, financial development and economic growth weakly cause each other although they are necessary for and complement each other. This implies that financial development promotes economic growth in Kenya and hence policies directed at the development of the financial sector could spur economic growth.

Hamdi, Hakimi and Sbia (2013) used a multivariate procedure within a vector error correction model to empirically examine the dynamic linkage between financial deepening, investment and economic growth in Tunisia using annual data for the period 1961-2010. The authors argue that using a multivariate technique can help to avoid the problems inherent in bivariate and trivariate frameworks and to produce consistent results. They used the following finance ratios: banking deposit liabilities to GDP, broader money to GDP, and private sector credit to GDP. The authors used the gross fixed capital formation to GDP ratio to account for the impact of investment activities on growth as the control variable. The empirical results of this study show that in the short-run finance does not lead to economic growth but in the long run, it does. Furthermore, in both the short and long run, investment leads to high economic growth and is hence regarded as the main engine of growth in Tunisia. The authors also carried out impulse response analysis, which they argue produces better results than the Engle and Granger (1987) approach.

Adu, Marbuah and Mensah (2013) examined the effects of financial development in the long run in Ghana. The eight alternative proxies of financial development were analysed by means of principal component analysis. Given the small sample size, in order to avoid correlation among them, they reduced the eight proxies to four and argue that they simultaneously retained almost 95% of the total variance in the data. The results highlight that the effect of financial development on growth is sensitive to the choice of proxy. The authors argue that the question of whether the financial sector is good or bad for growth depends entirely on the proxy for financial development selected by the researcher. In their study, private sector credit to GDP and total domestic credit were found to be beneficial for growth, while the ratio of broad money stock to GDP was not found to support economic growth.

3.3.3 Cross-Country Evidence

Odedokun (1996) sought to determine and analyse the effects of financial intermediation in relation to economic growth proxied by real GDP in 71 LDCs using annual data for various periods from the 1960s and 1980s. The findings indicate that in about 85% of the 71 countries sampled, financial intermediation stimulated economic growth. He asserts that while the growth-promoting effects of financial intermediation differ across regions or continents, they are more predominant in low-income countries than high-income, underdeveloped countries.

Demetriades and Hussein (1996) conducted causality tests between financial development and economic growth for 16 countries inclusive of SA using time series techniques. Economic growth was proxied by real GDP per capita while the indicators of financial development used are ratio of bank claims on the private sector relative to nominal GDP and the ratio of bank deposit liabilities as a share of nominal GDP. The findings of the study point to weak support for finance-led growth, and bidirectional as well as reverse causality. They argue that the results of the causality tests are very country-specific and that the patterns of causality vary across countries because of differences in the institutional characteristics and different experiences of financial development.

Allen and Ndikumana (2000) used cross-sectional techniques, thus combining both annual data and pooled data, to investigate the relationship between financial development and economic growth amongst the 11 SADC member countries. The findings of the study support the hypothesis of a positive relationship between real per capita GDP and financial development. They assert that relationship is even more pronounced when using cross-section

rather than annual data. The findings also suggest that the finance-growth nexus matters in the long-run. Their results indicate that while the other SADC countries were stagnating in their GDP growth path with rudimentary financial sectors and low levels of income, SA, Botswana and Mauritius were heading towards a steady, high-income state.

Ghirmay (2004) investigated the causal link between economic growth and the level of financial development in 13 sub-Saharan African countries using the VAR approach. The study revealed a long run relationship between growth and finance in 12 countries with eight providing evidence for the supply-leading hypothesis. Interestingly, SA was among the six countries that showed evidence of bidirectional causality between the level of economic growth and financial development. The author asserts that financial development drives economic growth in low-income countries and there is therefore a need to ensure that the financial system's efficiency is improved through appropriate regulatory and policy reforms to stimulate more rapid economic growth in African countries.

Ghardallou and Boudriga (2006) used a random effects panel regression model to test if the effects of democracy on financial development depended on the quality of institutions during the period 1984 to 2007. The sample was drawn from a total of 112 developed and developing countries. The findings reveal that democracy does indeed fast track financial development in countries with a sound institutional framework but retards it in those with poor or lacklustre institutions. This suggests that countries that are pursuing democracy need to reform their institutions first in order for democracy to have a sizeable impact on financial development. The institutional framework therefore remains central to the smooth functioning of financial systems. Well-established property rights, together with an efficient judicial system, foster investor confidence while reducing screening and monitoring costs. This would build investor confidence in the liquidity and solvency of financial institutions, thus leading to a stable system for the entire sector (National Treasury, 2011). In most African countries, institutional capacity tends to be lacking when it comes to property rights, cadastral systems and contractual enforcement. Therefore, it is suggested that to fully benefit from democracy, it is important to promote economic conditions that enable the financial sector to thrive.

Odhiambo's (2007) empirical study on SA, Kenya and Tanzania examined the direction of causality between financial development and economic growth. The study used three financial development ratios, the ratio of currency to the narrow definition of money, the ratio

of bank claims on the private sector relative to GDP and the ratio of broad money to GDP against real GDP per capita to argue that the direction of causality depends on the choice of proxy and varies across countries. It found that economic growth precedes financial sector growth in Kenya and SA whilst in Tanzania, financial sector development causes economic growth.

Takaendesa and Odhiambo (2007) examined the finance-growth nexus in Malawi and Zimbabwe, which are both SADC member states. They used annual time series data for 1975 to 2002 sourced from the IMF. Their study considered five financial development proxies against real GDP per capita, which is a proxy for economic growth. The proxies were ratio of money supply (M2) to nominal GDP, ratio of bank deposit liabilities to nominal GDP, ratio of bank credit to the private sector over nominal GDP, ratio of domestic credit to nominal GDP and the ratio of private sector credit to domestic credit. What is unique in this study is the application of a technique called Hsiao causality, which combines the Akaike final predictor error and Granger definition of causality in order to determine the optimal lag length for each of the variables. The empirical results highlight that causal direction is sensitive to the choice of the financial development indicator. However, for Malawi, there is evidence of bidirectional causality regardless of the proxies chosen whilst for Zimbabwe, the results show strong evidence of a supply-leading response rather than the demand-following hypothesis, which implies that causality runs from finance to growth in Zimbabwe.

Acaravci, Ozturk and Acaravci (2009) investigated causality between financial sector development and economic growth in the sub-Saharan Africa region using annual time series data for 1975-2005 in a balanced panel format. The study sample was 24 countries selected on the basis of available data on the variables of bank credit defined as a domestic credit provided by the banking sector as a percentage of GDP, private sector credit to GDP, broad money stock to GDP and per capita real GDP. The framework consisted of panel integration and panel GMM for causality testing. The results from the estimations reveal no long-run relationship between financial development and economic growth. In the short run, the credit ratios seem to explain changes in economic growth much better than the financial depth variable. There is also evidence to suggest that per capita GDP causes financial deepening. The policy implication is that sub-Saharan countries should adopt policies to expand credit systems through an appropriate regulatory framework to enhance economic growth.

Huang (2010) critically analysed the interrelationship between institutions, democratization and finance to investigate whether an improvement in political institutions impacts positively on financial development while controlling for economic growth, trade openness, and the black market premium as well as overall investment. The study was carried out on a panel of 90 developed and developing economies for the period 1960 to 1999 with five observations for each country. The sample of 33 countries had undergone democratic transition during the period 1960 to 2000. In order to assess the impact of political institutions on financial development, the polity indicator sourced from the Polity IV Database was used as a proxy. The study used three indicators of financial development, the ratio of liquid liabilities, private sector credit and commercial-central bank, which is defined as the ratio of the assets of commercial banks relative to the sum total of both commercial assets and central bank assets. The findings obtained via comparison of bias corrected LSDV and system GMM estimators indicate that improved institutions stimulate financial development in the short run in low-income countries.

Fowowe (2011) investigated the causal link between financial development and the level of economic growth in 17 sub-Saharan African countries for the period 1975-2005 using both time series and cross-sectional analysis. He used a panel co-integration and causality tests to address heterogeneity between countries due to different intercept and differing regression coefficients slopes across countries. The study used real per capita GDP to proxy economic growth and two indicators of financial development, the ratio of bank deposit liabilities relative to GDP and the ratio of credit provided by the financial sector to the private sector relative to GDP. The results show the existence of bidirectional causality regardless of the choice of proxy which suggests that for countries in the sub-Saharan African region, the financial and real sectors complement each other and hence should be pursued simultaneously.

Bittencourt (2012) investigated the role of financial development in enhancing economic growth in a panel of four Latin American countries chosen on the basis of their political transition during the 1980s and the severe macroeconomic conditions suffered in the early 1990s. The dataset covered the period from 1980 to 2007 for Brazil, Bolivia, Peru and Argentina. The results obtained from panel data analysis suggest that finance is of great importance to economic growth and that if good macroeconomic performance and institutional reforms are implemented simultaneously, the role played by financial development will be of great magnitude given its essential contribution to the generation of

economic activity, innovation and subsequently economic growth in the region. This study confirms that the Schumpeterian view that finance drives entrepreneurial activities that ultimately spur growth still holds.

Adusei (2013) investigated the finance growth hypothesis using a panel of 24 African countries for the period 1981 to 2010. Using two financial development indicators, the ratio of domestic credit to the private sector relative to GDP and the ratio of liquid liabilities to GDP, the application of GMM found evidence of bidirectional causality. The other control variables included openness, government spending, human capital and capital formation. All the control variables were expressed relative to GDP. While the paper used six lags in a sample of 29 observations, the author also established that the simultaneous inclusion of two proxies of finance in a model might lead to multicollinearity. The study found evidence of bidirectional causality between economic growth and financial development.

However, Balamoune-Lutz (2013) empirically investigated the finance-growth link using data from 18 sub-Saharan African countries for the period 1960-2001 using both co-integration and VAR frameworks and found mixed results. The study used two indicators of finance, the ratio of liquid liabilities as a share of GDP and the ratio of private credit by deposit money banks and other financial institutions as a share of GDP. It found bidirectional causality between economic growth and finance even for countries with a well-established financial sector such as SA. The author claims that the findings are supported by the use of impulse response analysis but fails to include such results in the paper.

Mhadhbi (2014) empirically examined the causal link between financial development and economic growth in 27 middle-income countries, including SA. Using a technique called bootstrap panel Granger causality for the period 1970 to 2012, the results support the demand-following hypothesis for only six countries while strong evidence of the supply-leading hypothesis was also established for three countries, including SA. It concludes that financial development drives economic growth in these three countries. However, the study identified 21 countries where financial development is not the main driver of growth.

3.4 Time series versus cross-sectional or panel analysis

The various studies reviewed used different analytical techniques to analyse the finance-growth nexus. The emphasis placed on the use of each technique is mainly embedded in the objectives of each study and salient features of the technique itself. The two popular techniques used in empirical literature are time series analysis and cross-sectional data

analysis. For this study, times series analysis is preferred as opposed to cross-section or panel analysis. Empirical studies on the finance-growth link have long been dominated by cross-country and panel studies as a result of the lack of sufficient time series data (Ang and McKibbin, 2007). However, these techniques are not without criticism. The problem with cross-country analysis is the consistent finding that finance is an important growth determinant, implying that finance has a causal effect on growth. When replicated under a time series framework that treats finance and growth as endogenous variables, the same studies produce mixed results on the causal link between the two variables. This is one of the problems cited in the literature on the use of cross-country studies. Coccorese and Silipo (2015) also argue that this approach suffers from variable omission, reverse causality and multi-collinearity, which obstruct the direct capture of finance's impact on economic growth.

According to Odedokun (1996), the use of cross-sectional techniques is not justified because the testing frameworks used in these studies are often ad hoc and therefore do not conform to the standard theory of economics. Demetriades and Hussein (1996) further argue that the theory that pertains to causality is rooted in time series analysis and it is thus difficult to infer causality other than a contemporaneous correlation between economic growth and financial development. The other issue that causes cross-sectional studies' estimates to be invalid is the assumption that institutions and other important features that determine economic growth are similar (homogenous) across different countries and that the marginal responses of economic growth to each index of financial intermediation are also constant; this assumption does not hold true.

According to Arestis, Demetriades and Luintel (2001), times series analysis is much better at addressing issues of causality and endogeneity while it does not suffer similar limitations with cross-country growth regress. They further argue that with time series analysis, useful insights pertaining to differences in relationships across countries come to light and that some useful details which could be hidden due to averaging out are also exhibited.

Finally, cross-sectional techniques do not reveal different patterns of causality amongst different countries. It is likely that in some countries, the real sector is leading while others lag behind in terms of the financial sector. In addition, the findings of cross-sectional studies are deemed unreliable due to the fact that cross-sectional techniques cannot account for the possibility of reverse causality between finance and growth (Ram, 1999; Papaioannou, 2007).

On the other hand, Masih, Al-Elg and Madani (2009) argue that although time series methods are considered an improvement on cross-sectional methods, their major weakness is the use of error correction or variance decomposition techniques, which are mainly based on the cointegrating vectors estimation, which lacks theoretical support.

3.5 Conclusion

This chapter reviewed the theoretical and empirical literature on the link between financial development and economic growth. While the theoretical literature clearly presents the mechanisms by means of which finance leads to economic growth, the debate on the nature and direction of the finance-growth nexus is empirically far from over. This debate has continued to attract research attention and many studies have been published in an attempt to shed light on this question. The diversity of economic models and econometric approaches as well as data differentials on financial development proxies underscore the controversy surrounding the accuracy of the proxies for financial development.

It is clear that this controversy is on-going due to the fact that each of the proxies used has its own weaknesses and as a result cannot accurately capture the impact of financial markets on economic growth. The conflicting views and varying conclusions on this topic arise from the proxies used and the estimation techniques applied.

The majority of studies point out that finance is essential for growth. Furthermore, despite the different conclusions of empirical work pertaining to individual country case studies, cross-country comparisons, time series studies and panel studies, all seem to suggest that a link exists between finance and economic growth. One point that seems to stand out from the rest in comparing cross-country studies or panel regressions with country-specific case studies is that, in the case of country-specific studies, two or three finance proxies have generally been used against a growth proxy. This is problematic because such specifications are biased in that other variables are omitted. In case of SA, all the studies published except the one by Akinboade and Makina (2006) hardly used more than three finance indicators, while no study provided evidence on the significant role played by institutional quality in financial development and economic growth.

CHAPTER FOUR

DATA AND METHODOLOGY

4.1 Introduction

This chapter discusses the modelling techniques and the datasets applied in order to address the study's empirical objectives. Section 4.2 describes the data and sources, while section 4.3 sets out the reasons for the choice of the variables and section 4.4 provides the model specification followed by the apriori expectations.

4.2 Data Description and sources

This study uses annual time series data sourced from the World Bank (WB) database for the period 1965 to 2013. The data series are on economic growth, financial proxies and other control variables. Data on the institutional quality variable(SA- polity scores) was obtained from the Polity IV Database.

Table 4.2.1: Variable Description

| Variable | Definition |
|-----------------------|---|
| Y_t | Real gross domestic product (at constant 2005 US\$) which is a proxy for economic growth |
| D_{pt} | Domestic credit to private sector as a per cent of GDP |
| M_{2t} | This is the ratio of broad money to GDP |
| B_{lt} | The ratio of bank liquid liabilities as a percentage of GDP |
| C_{ft} | The ratio of domestic credit provided by the financial sector to GDP |
| k_t | This is domestic investment proxied by ratio of gross fixed capital formation as a share of GDP |
| G_t | Government spending as a share of GDP, also known as general government final consumption expenditure (% of GDP). |
| T_{pt} | Trade openness is computed as a ratio of the sum of exports and imports of goods and services relative to GDP. It accounts for the effects of international trade. |
| Q_t | This is an institutional variable used to capture the effects of democracy on financial development and freedom of institutions within SA following the major regime change in 1994. This is a codified measure of scores such that $-10 \leq Q_t \leq 10$ whereby +10 implies strong democracy and a -10 implies strong autocracy. Autocracy is measured by negative versions of the indices as measured by the Polity 2 index. |
| R_t | A dummy variable is included to capture the impact of pertinent financial sector reforms. It assumes a value of 1 for the period from 1990 onwards which refers to the period beginning the period of reforms and 0 for the years before 1990 (1965-1979) which is the period before reforms. The justification for inclusion is because since the 1990s financial sector reforms have contributed to the development and efficiency of the banking system. |

4.3 Choice of the financial development proxies and control variables

It is difficult to empirically measure the financial sector's performance as different proxies are used in the literature and none is able to accurately capture all aspects of this sector's effect on economic growth. While the choice of the above proxies for the financial sector's performance is largely supported by empirical studies, the inclusion of other variables is challenged by the non-availability of data that matches the proposed coverage of the sample size. This constrained the choice of other proxies such as interest rates spread, stock market turnover, stock market capitalization and stock market traded value, which are used in other studies

Since the finance growth literature proposes many different indicators of financial development, the debate on which are superior is on-going. This is compounded by the complexity and diversity of the financial services these indicators seek to measure (Thangavelu and Jiunn, 2004; Campos, Karanasos and Tan, 2012). Four proxies were selected for this study; many studies have used four or more proxies (King and Levine, 1993; Takaendesa and Odhiambo, 2007; Jalil and Ma, 2008; Chukwu and Agu, 2009; Masih, Al-Elg and Madani, 2009; Wolde-Rufael, 2009; Akinlo and Egbetunde, 2010). The choice of these indicators was largely driven by the availability of a comprehensive dataset for the sample period, 1965 to 2013.

The empirical literature has also established that factors other than financial variables may influence economic growth. Hence, it is advisable to include some of these factors in order to avoid biased results due to simultaneity bias (Gujarati, 1995). To circumvent this problem the following variables are included as controls: trade openness, gross fixed capital formation, government expenditure, the institutional quality variable (proxied by the polity2 index) and a dummy for financial sector reforms. Institutional quality is included to measure the impact of democracy on economic growth due to the freedom of financial institutions while a dummy for financial reforms is included to capture the impact of pertinent reforms of the financial sector on economic growth. Economic growth is measured by annual real GDP following the work of Demetriades and Hussein (1996).

4.4 Model Specification

This study adopts the variant of the neoclassical growth model that was first utilized in King and Levine’s (1993) study, and later by Kilimani (2009) and later Sunde (2011) to assess the finance-growth nexus. This model takes the form of an aggregate production function

$$Q = F(K, L, A) \dots\dots\dots(1)$$

This can be written in a Cobb Douglas production function as follows

$$Q = AK^\beta L^{1-\beta} \dots\dots\dots(2)$$

Where Q is output, K is capital, L is labour and A is an index of technological progress. β is the degree of homogeneity. The above equation can be written in per capita terms as follows

$$q = Ak^\beta \dots\dots\dots(3)$$

Where q is interpreted as output per labour, k is capital per labour, A is technological progress, and a parameter β represents the degree of homogeneity.

Following the work of King and Levine (1993) that disaggregated growth into two parts, the rate of physical capital accumulation and other determinants of real per capita GDP, the argument is given as

$$Yg = \pi(GK) + CE \dots\dots\dots(4)$$

Where Yg is real per capita GDP; GK is the rate of growth of physical capital stock and CE refers to other variables that determine the real per capita GDP.

The current study diverges from King and Levine (1993) in that, while they used the model on cross-sectional analysis of 80 countries for the period 1960-1989, this study abandons the cross-sectional route because it is country-specific and uses the time series approach on data spanning 1965 to 2013. The other variance in this study is the inclusion of an institutional

quality variable to account for the impact of democracy on economic growth and financial development and the impact of financial reforms on economic growth. Thus, the growth model specified for this study will take the form

$$Y = \eta + \alpha f(i) + \delta Q + \lambda R + \beta X + \mu_t \dots\dots\dots(5)$$

Where Y is real GDP;

$f(i)$ represents the proxies for financial development (namely Domestic credit to private sector as a per cent of GDP, ratio of broad money to GDP, ratio of bank liquid liabilities as a percentage of GDP, ratio of domestic credit provided by the financial sector to GDP).

Q is the proxy for institutional quality; R is a financial sector reform dummy and X is a matrix of other variables other than financial proxies known as the conditioning/control variables. The ratios of gross fixed capital formation as a share of GDP, government spending as a share of GDP, also known as general government final consumption expenditure and trade openness as in total trade as a share of GDP. Amongst the conditioning variable capital stock embedded and proxied by the ratio of fixed capital formation relative to GDP following decomposition of equation (4) above.

$\eta, \alpha, \delta, \lambda$ and β are parameters and μ_t is the stochastic term.

The generic function of the model estimable for this study is:

$$Y = f(Dp, M2, Bl, Cf, K, Tp, G, Q, R) \dots\dots\dots(6)$$

All the variables are as explained in table 4.2.1 above. From the above equation, when log-linearized, the empirical model used takes the following form

$$\ln Y_t = \beta_0 + \beta_1 \ln Dp_t + \beta_2 \ln M2_t + \beta_3 \ln Bl_t + \beta_4 \ln Cf_t \dots\dots\dots(7) \\ + \beta_5 \ln K_t + \beta_6 \ln Tp_t + \beta_7 \ln G_t + \beta_8 Q_t + \beta_9 R_t + \varepsilon_t$$

The variables are as previously explained in table 4.2.1 and all of them are expressed in natural logarithm (ln) to maintain stationarity in variance (Chang, 2002; Masih, Al-Elg and Madani, 2009) except the institutional quality variable (Q) and a dummy variable for

financial reforms (R). ε_t is a random error term. β_0 is the constant term whilst $\beta_1 - \beta_9$ are the coefficients, and subscript t represents time in years.

4.5 Model Variables and Expectations

Real GDP (Y_t) is a proxy for economic growth, which is inflation adjusted and a dependent variable. Improvement of the financial sector is expected to have a positive impact on the growth of the economy. Real GDP has been used extensively in the finance growth literature (for example, Demetriades and Hussein, 1996; Kilimani, 2009; Sunde, 2011, Balamoune-Lutz, 2013; Kapingura, 2013; and Mandiefe, 2015). The key reason for using real GDP in this study is that it takes into account the effect of inflation (inflation adjusted).

$Dp_t > 0$: Domestic credit to the private sector as a percentage of GDP measures the proportion of credit that is extended to the private sector by financial corporations such as via loans, purchase of nonequity securities, and trade credits (Ismail and Masih, 2015) as opposed to the public sector or state-owned enterprises. It is believed that credit geared towards private sector activities will spur investment and grow the production base of the economy more than credit to the public sector since loans extended to the private sector are offered under stringent conditions, ensuring that funding is directed to the most viable projects. In contrast, loans to government/public projects may not be subject to serious scrutiny to ensure the quality of the investment (Mohapi and Motelle, 2007). This proxy has been used by Jalil and Ma (2008), Acaravci, Ozturk and Acaravci (2009), Wolde-Rufael (2009), Sunde (2011) and Ismail and Masih (2015).

$M2_t > 0$: The ratio of broad money to GDP is known as the monetization ratio. It is concerned with the financial depth or liquidity of the financial sector. In a growing financial sector, this ratio is expected to rise over time as the volume of financial services grows; hence, a larger ratio points to the growth of intermediary activities. There is a positive relationship between this ratio and economic growth. One weakness highlighted in the literature relating to this proxy, is that in practice funds may not always be channelled to entrepreneurs with viable investment projects or ventures. Thus, some scholars do not regard it as a good index of financial development. Such a situation limits firms' access to finance and as a result, constrains the allocation of capital to the private sector. This proxy has been used extensively

in the literature (see, for example, Odhiambo, 2004; Chukwu and Agu, 2009; Sunde, 2011; and Raphael and Gabriel, 2015).

$Bl_t > 0$: The ratio of bank liquid liabilities to GDP measures the size of financial intermediaries relative to the economy. The relationship between this indicator and economic growth is assumed to be positive. This proxy is used extensively in the literature (see for example, Huang, 2010; Odhiambo, 2010; Fowowe, 2011; and Adusei, 2013, to mention but a few).

$Cf_t > 0$: Domestic credit provided by the financial sector as a percentage of GDP measures the amount of credit channelled to non-bank activities in relation to GDP. For a growing economy, this ratio is expected to stay positive. This reflects that financial intermediaries are performing their function of mobilizing savings from savers for investors. Studies that have used this proxy include Quartey and Prah (2008) and Akinlo and Egbetunde (2010).

$G_t > 0$: If allocated efficiently, an increase in government expenditure is expected to raise the level of economic growth due to increased consumption of financial services. Akinboade and Kinfaek (2015) assert that low government expenditure maybe be attributed to a financial sector that is not fully developed. However, Tang (2006) argues that countries with higher government spending are bound to experience low economic growth.

$K_t > 0$: Gross fixed capital formation is a proxy for domestic investment, which is regarded as a determinant of economic growth. It is computed as gross fixed capital formation divided by GDP. This variable captures the mechanisms by which financial development leads to economic growth. From an investment perspective, if the financial sector is healthy, all the activities pertaining to investment will bolster the growth of the economy and hence the relationship with economic growth is expected to be positive.

$Tp_t > 0$: The literature suggests that trade openness is a determinant of economic growth; it is expected to increase if the financial sector is functioning well. According to Wolde-Rufael (2009), this is an important macroeconomic variable that correlates highly with economic performance. Kohler and Saville (2011) also assert that while the financial system generates sizeable economic benefits if it is well developed, trade and financial development are interdependent. Trade openness is computed as the share of total exports and imports relative to GDP.

Q_t : If the coefficient sign is positive and significant, the relationship with growth will be positive. This implies that the transition to democracy has supported financial development. In other words, freedom of institutions has positive effects on the development of the South African financial sector since the literature posits that sound institutions tend to provide a basic incentive structure that spurs investment and at the same time, lowers transaction costs (Letete, 2015). Pereira and Teles (2011) also assert that the longer the reign of a democratic regimes, the greater will be economic growth.

R_t : If the sign of a financial sector reform dummy is positive and significant, this implies that financial sector reforms have contributed positively to economic growth in SA.

The literature notes that there is much controversy surrounding the use of each of these indicators because there is no single, perfect indicator that is able to sufficiently capture all aspects of financial development in relation to economic growth. However, King and Levine (1993) argue that it is best not to rely on a single measure but on a sizable number of financial indicators to gauge financial deepening; hence the inclusion of more than one indicator in this study.

4.6 Method of analysis

This section explains the techniques used to analyse data in this study, including the stationarity test, lag length selection, cointegration, and vector error correction model and Granger-causality. They are explained in detail in the sub-sections below.

4.6.1 Test of stationarity

The standard use of time series data requires testing for stationarity as a precondition prior to the estimation of model. This is usually determined using unit root tests. Common test includes the Augmented Dickey Fuller (ADF), Phillips–Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) which this study uses to determine the order of integration of the variables.

4.6.2 Optimal Lag length selection

The standard use of time series data modelling requires that after stationary tests are conducted to ascertain the order of integration of the variables, the conventional model selection criteria must be employed to establish the optimal number of lags for the model before the actual co-integration test (Thangavelu and Jiunn, 2004; and Hamdi et al., 2013). The criterion that displays the lowest value is selected. Thus in this study following Akaike

information criteria, two lags are selected. Table 4.6.2.1 in appendix A reports the results on the selection of an optimal lag length for this study.

4.6.3 Cointegration

The main empirical research objective of this study is to determine the existence of cointegration in particular, the relationships among the variables. The Johansen multivariate procedure is thus applied to determine the number of cointegrating relations. Another advantage of the Johansen method is its ability to detect multiple co-integrating relationships as opposed to the Engle and Granger two-step approach. If the test suggests that a certain number of co-integrating vectors exist, this implies the presence of co-integration, which then requires a Vector Error correction model.

4.6.4 Vector Error Correction Model (VECM)

The rationale in using the Vector Error Correction model (VECM) is to connect the short run and long run causal link between the variables while an effort is also made to recover lost information due to differencing the data (Ang and McKibbin, 2007). The VECM seeks to indicate the speed of adjustment back to long run equilibrium after a short run shock without the loss of the long run information (Jalil and Ma, 2008). If the coefficient of the institutional quality index is found to be positive and significant, this implies that SA's transition from apartheid to democracy has had a positive impact on the country's level of economic growth. The same logic applies to the financial reforms dummy. A positive sign on this coefficient implies that financial reforms have a positive impact on the level of economic growth in SA. It is important for policy makers to know whether this occurs in the short run or the long run. A dynamic VECM framework represents the link between financial development and economic growth in SA as follows:

$$\begin{aligned} \Delta \ln y_t = & \beta_0 + \beta_1 \sum_{i=1}^p D \ln y_{t-1} + \beta_2 \sum_{i=1}^p D \ln M2_{t-1} + \beta_3 \sum_{i=1}^p D \ln DP_{t-1} + \beta_4 \sum_{i=1}^p D \ln Cf_{t-1} + \\ & \beta_5 \sum_{i=1}^p D \ln Bl_{t-1} + \beta_6 \sum_{i=1}^p D \ln K_{t-1} + \beta_7 \sum_{i=1}^p D \ln G_{t-1} + \beta_8 \sum_{i=1}^p D \ln TP_{t-1} + \beta_9 Q_{t-1} + \beta_{10} R_t + \beta_i Ecm_{t-1} + \mu_t \end{aligned} \quad (8)$$

$$\begin{aligned} \Delta \ln M2_t = & \beta_0 + \beta_1 \sum_{i=1}^p D \ln y_{t-1} + \beta_2 \sum_{i=1}^p D \ln M2_{t-1} + \beta_3 \sum_{i=1}^p D \ln DP_{t-1} + \beta_4 \sum_{i=1}^p D \ln Cf_{t-1} + \\ & \beta_5 \sum_{i=1}^p D \ln Bl_{t-1} + \beta_6 \sum_{i=1}^p D \ln K_{t-1} + \beta_7 \sum_{i=1}^p D \ln G_{t-1} + \beta_8 \sum_{i=1}^p D \ln TP_{t-1} + \beta_9 Q_{t-1} + \beta_{10} R_t + \beta_i Emc_{t-1} + \mu_t \end{aligned} \quad (9)$$

$$\begin{aligned} \Delta \ln Dp_t = & \beta_0 + \beta_1 \sum_{i=1}^p D \ln y_{t-1} + \beta_2 \sum_{i=1}^p D \ln M2_{t-1} + \beta_3 \sum_{i=1}^p D \ln Dp_{t-1} + \beta_4 \sum_{i=1}^p D \ln Cf_{t-1} + \\ & \beta_5 \sum_{i=1}^p D \ln Bl_{t-1} + \beta_6 \sum_{i=1}^p D \ln K_{t-1} + \beta_7 \sum_{i=1}^p D \ln G_{t-1} + \beta_8 \sum_{i=1}^p D \ln Tp_{t-1} + \beta_9 Q_{t-1} + \beta_{10} R_t + \beta_t Emc_{t-1} + \mu_t \end{aligned}$$

.....

(10)

$$\begin{aligned} \Delta \ln PY_t = & \beta_0 + \beta_1 \sum_{i=1}^p D \ln y_{t-1} + \beta_2 \sum_{i=1}^p D \ln M2_{t-1} + \beta_3 \sum_{i=1}^p D \ln Dp_{t-1} + \beta_4 \sum_{i=1}^p D \ln Cf_{t-1} + \\ & \beta_5 \sum_{i=1}^p D \ln Bl_{t-1} + \beta_6 \sum_{i=1}^p D \ln K_{t-1} + \beta_7 \sum_{i=1}^p D \ln G_{t-1} + \beta_8 \sum_{i=1}^p D \ln Tp_{t-1} + \beta_9 Q_{t-1} + \beta_{10} R_t + \beta_t Emc_{t-1} + \mu_t \end{aligned}$$

.....

(11)

$$\begin{aligned} \Delta \ln L_t = & \beta_0 + \beta_1 \sum_{i=1}^p D \ln y_{t-1} + \beta_2 \sum_{i=1}^p D \ln M2_{t-1} + \beta_3 \sum_{i=1}^p D \ln Dp_{t-1} + \beta_4 \sum_{i=1}^p D \ln Cf_{t-1} + \\ & \beta_5 \sum_{i=1}^p D \ln Bl_{t-1} + \beta_6 \sum_{i=1}^p D \ln K_{t-1} + \beta_7 \sum_{i=1}^p D \ln G_{t-1} + \beta_8 \sum_{i=1}^p D \ln Tp_{t-1} + \beta_9 Q_{t-1} + \beta_{10} R_t + \beta_t Emc_{t-1} + \mu_t \end{aligned}$$

.....

(12)

Where β_1 to β_8 are coefficients of financial indicators and control variables. β_9 and β_{10} are coefficients of institutional quality and financial sector reforms respectively. $m1ts$ are identically distributed random error terms with mean zero and variance σ^2 . β_t s are the Ecm (-1) coefficients which are the error correction terms of the lagged value of the residuals derived from the cointegrating regression of financial proxies on real GDP and other controls. The error correction terms or the adjustment parameter measure the speed at which the errors converge to equilibrium after being at disequilibria. The larger the value of this parameter, the faster the movement to equilibrium whereas the smaller its value, the slower the adjustment to the long run equilibrium. Theoretically, this adjustment parameter should be negative and significant to ensure convergence.

4.6.5 Granger Causality Test

Finally, to establish the direction of the causal link between the variables, pairwise Granger causality tests will be carried out between the financial development indicators and the real GDP.

To establish the direction of causal link between the variables, the following generic equation will be used

$$Yg_t = \sum_{i=1}^k \beta_i Yg_{t-i} + \sum_{i=1}^k \varphi_i FD_{t-i} + \varepsilon_t \dots\dots\dots(13)$$

$$FD_t = \sum_{i=1}^k \eta_i FD_{t-i} + \sum_{i=1}^k \alpha_i Yg_{t-i} + u_t \dots\dots\dots(14)$$

Where

Yg is real GDP, and FD represents a vector of financial proxies

ε_t and u_t are random error terms, and k is optimum lag length as Granger causality is quite sensitive to number of included lags. There are four possible outcomes expected from this test:

1. Yg Granger causes FD if $\sum \alpha \neq 0$ and FD granger causes Yg if $\sum \varphi \neq 0$
2. Bi-directional causality exists if both Yg and FD $\sum \alpha \neq 0$ and $\sum \varphi \neq 0$
3. One-way causality from Yg to FD if only $\sum \alpha \neq 0$ and $\sum \varphi = 0$
4. No causality if Yg and FD implies that both $\sum \alpha = 0$ and $\sum \varphi = 0$

CHAPTER FIVE

DATA, RESULTS AND ANALYSIS

5.1 Introduction

This chapter presents a discussion on the results estimated using the methods set out in the previous chapter. Section 5.2 presents a summary of the descriptive statistics and correlations. Section 5.3 discusses the unit root tests performed using ADF, PP and KPSS tests. Section 5.4 reports the results of the Johansen co-integration test, and section 5.5 presents the VECM results followed by the robustness checks on the VECM. Section 5.7 presents the multivariate OLS estimation results, while section 5.8 presents pairwise Granger causality tests to examine the causal relationships and to establish the direction of causality between each of the financial proxies and economic growth. Section 5.9 concludes the chapter analysis of results.

5.2 Summary of descriptive Statistics and Correlations

The summary statistics presented in table 5.2.1(a) in the appendices indicate that all the variables are evenly distributed across the sample, as both the mean and median for all variables do not exhibit greater dispersion from each other. Regarding the standard deviations results they are relatively low except for the institutional quality variable at an estimated 2.42%. Overall, over the sample period, the highest value of real GDP recorded is 26.5032 while the average is 25.88 for the period 1965-2013.

Table 5.2.1(b) in the appendices presents the correlations between different measures of financial development, control variables and real GDP as explained in the previous chapter. The table shows that there is high correlation between real GDP (lnY) and domestic credit to the private sector as a per cent of GDP, the ratio of domestic credit provided by the financial sector to GDP, the ratio of bank liquid liabilities as a percentage of GDP, and institutional quality.

There are positive correlations between the key measures of financial development and real gross domestic product as well as institutional quality as illustrated in Table 5.2.1 (see Appendix).

5.3 Stationarity

Prior to conducting the stationarity tests this study considers the trends in data as illustrated in Figure B1 (see appendix). The formal tests of stationarity conducted using Augmented Dickey Fuller (ADF), Phillips and Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shit (KPSS) are presented in table 5.3.1 below.

Table 5.3.1: Unit Root Test Results at levels

| Variable | ADF | | PP | | KPSS | |
|--|----------|--------------------|----------|---------------------|----------|--------------------|
| At levels | | | | | | |
| | Constant | Constant and trend | Constant | Intercept and trend | Constant | Constant and trend |
| Real GDP | -0.943 | -2.463 | -1.221 | -2.286 | 0.908 | 0.118 |
| Domestic credit to private sector to GDP | -0.012 | -2.313 | -0.037 | -2.357 | 0.828 | 0.158 |
| Ratio of broad money to GDP | -0.732 | -1.211 | -1.001 | -1.3733 | 0.283 | 0.2000 |
| Liquid liabilities to GDP | -0.645 | -2.713 | -0.645 | -2.660 | 0.853 | 0.113 |
| Ratio of domestic credit provided by the financial sector to GDP | -0.066 | -2.449 | 0.068 | -2.449 | 0.835 | 0.183 |
| Gross fixed capital formation as a share of GDP | -1.823 | -2.281 | -1.4912 | -1.642 | 0.552 | 0.123 |
| Trade openness | -0.797 | -1.644 | -0.969 | -1.690 | 0.339 | 0.199 |
| Government expenditure to GDP | -1.785 | -1.831 | -2.866 | -1.457 | 0.774 | 0.217 |
| Institutional quality | -0.8481 | -2.168 | -0.596 | -1.870 | 0.770 | 0.129 |

Using both ADF and PP, the failure to reject the null hypothesis of a unit root at 1% level, 5% level and 10% level of significance as indicated by the series means that such a series is not stationary. With the KPSS test the null hypothesis states that the series has no unit root (i.e., it is stationary). Under KPSS, the rejection of the null hypothesis implies that such a series has a unit root (or is non-stationary or I (1)).

The tests performed all included a constant and trend at a point in time so to improve the outcomes while avoiding the spurious regression estimates. The results from the ADF, PP and KPSS tests indicated that not all the variables are stationary at level at all levels of significance. This shows that the dataset has unit roots. The variables were then tested for stationary in the first differences. The tests results at first differences using three procedures are shown in table 5.3.2 below.

Table 5.3.2: Unit Root Test Results at First Differences

| Variable | ADF | | PP | | KPSS | | Order of Integration |
|---|----------------------|---------------------|-----------|---------------------|-----------|---------------------|----------------------|
| | At First Differences | | | | | | |
| | Intercept | Intercept and trend | Constant | Intercept and trend | Intercept | Intercept and trend | |
| Real GDP | -4.570*** | -4.563*** | -4.473* | -4.477*** | 0.223* | 0.183*** | I(1) |
| Domestic credit to private sector as a per cent of GDP | -6.319*** | -6.334*** | -6.306* | -6.316*** | 0.206* | 0.128*** | I(1) |
| Broad money to GDP | -5.670*** | -5.760*** | -5.653*** | -5.739*** | 0.221*** | 0.076*** | I(1) |
| Liquid liabilities to GDP | -7.823*** | -7.755*** | -7.823*** | -7.764*** | 0.081*** | 0.077*** | I(1) |
| Domestic credit provided by the financial sector to GDP | -8.085*** | -8.094*** | -8.087*** | -8.133*** | 0.224** | 0.131*** | I(1) |
| Gross fixed capital formation to GDP | -5.246*** | -5.191*** | -4.043*** | -3.976** | 0.124*** | 0.103*** | I(1) |
| Trade openness to GDP | -5.602*** | -5.708*** | -5.602*** | -5.695*** | 0.381** | 0.118** | I(1) |
| Government expenditure to GDP | -5.548*** | -5.562*** | -6.354*** | -8.587*** | 0.479*** | 0.500*** | I(1) |
| Institutional quality | -3.686*** | -3.646** | -3.633*** | -3.594** | 0.125*** | 0.108*** | I(1) |

Note: *, ** and *** indicates stationarity at 10%, 5% and 1% levels of significant, respectively.

The unit roots results indicate that the variables are stationary at first differences, implying that after differencing they maintain stationarity. By virtue of the fact that all the variables are integrated of the same order, I (1), co-integration tests using the Johansen procedure were

conducted; this involves using both trace and maximum eigenvalues tests to establish the number of co-integrating relations or the number of co-integrating ranks in order to verify if there is a long run relationship between the nonstationary variables.

5.4 Cointegration Test Results

The Johansen test of cointegration is used to detect the presence of a long run relationship between the variables. Table 5.4.1 below reports the output of cointegration from trace statistics and Maximum Eigenvalue, respectively.

Table 5.4.1: Johansen Cointegration Test Results

| Unrestricted Cointegration Rank Test (Trace) | | | | |
|--|------------|---------------------|---------------------|---------|
| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
| None * | 0.582859 | 104.2218 | 95.75366 | 0.0115 |
| At most 1 | 0.443738 | 63.12823 | 69.81889 | 0.1521 |
| At most 2 | 0.262877 | 35.56198 | 47.85613 | 0.4187 |
| At most 3 | 0.209585 | 21.22693 | 29.79707 | 0.3437 |
| At most 4 | 0.171050 | 10.17268 | 15.49471 | 0.2677 |
| At most 5 | 0.028432 | 1.355692 | 3.841466 | 0.2443 |
| Trace test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level ** MacKinnon-Haug-Michelis (1999) p-values | | | | |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | |
| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
| None * | 0.582859 | 41.09356 | 40.07757 | 0.0383 |
| At most 1 | 0.443738 | 27.56626 | 33.87687 | 0.2342 |
| At most 2 | 0.262877 | 14.33505 | 27.58434 | 0.7988 |
| At most 3 | 0.209585 | 11.05425 | 21.13162 | 0.6419 |
| At most 4 | 0.171050 | 8.816985 | 14.26460 | 0.3017 |
| At most 5 | 0.028432 | 1.355692 | 3.841466 | 0.2443 |

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
** MacKinnon-Haug-Michelis (1999) p-values

The Johansen cointegration tests results shown above are from two test statistics (the Trace Test and Maximum Eigenvalue). They both indicate that there is one cointegrating equation, which signifies the presence of a long-term relationship between the financial development proxies and economic growth. This also means that they share a common stochastic trend and will grow proportionally in the long run. This conclusion is drawn based on the results of the trace statistics and Maximum-eigenvalue test recorded in the above table. The presence of

cointegration therefore warrants the construction of a VECM to model the long run and short run relationship amongst the variables.

5.5 Vector Error Correction Model Results

The construction of the VCEM provides the mechanism through which the effects of financial development on economic growth are brought to light. Establishing that the variables are cointegrated using the Johansen test procedure led to the construction of a VECM that incorporates both short run and long run interdependence. As noted in the previous chapter, the error correction term that is also known as the adjustment parameter (speed of adjustment) seeks to measure the speed of convergence to the long run equilibrium state by identifying the short run dynamics of the relationships. The results of the VECM are reported in table 5.5.1 below.

Table 5.5.1 - VECM Results: Long Run and Short Run Estimates

| Dependent : $\Delta \ln Y$ | Coefficient | Std. Error | t-Statistic | Prob. |
|----------------------------|-------------|-----------------------|-------------|--------|
| <i>ECM</i> (-1) | -0.100858 | 0.003215 | -3.376969 | 0.0018 |
| ΔLNY (-1) | 0.306150 | 0.172476 | 1.775036 | 0.0846 |
| ΔLNM2 (-1) | 0.065618 | 0.108052 | 0.607286 | 0.5476 |
| ΔLNDP (-1) | 0.303570 | 0.117912 | 2.574548 | 0.0144 |
| ΔLNCF (-1) | -0.203323 | 0.132064 | -1.539580 | 0.1327 |
| ΔLNBL (-1) | -0.063466 | 0.085304 | -0.744003 | 0.4618 |
| ΔLNG (-1) | -0.344012 | 0.087143 | -3.947684 | 0.0004 |
| ΔLNK (-1) | -0.040266 | 0.046906 | -0.858437 | 0.3965 |
| ΔLNTP (-1) | -0.078816 | 0.064578 | -1.220482 | 0.2304 |
| ΔQ (-1) | 0.013520 | 0.008860 | 1.525870 | 0.1360 |
| <i>C</i> | 0.005921 | 0.009310 | 0.635976 | 0.5289 |
| <i>R</i> | 0.013117 | 0.009689 | 1.353780 | 0.1845 |
| R-squared | 0.576383 | Mean dependent var | 0.027334 | |
| Adjusted R-squared | 0.443246 | S.D. dependent var | 0.022763 | |
| S.E. of regression | 0.016985 | Akaike info criterion | -5.097110 | |
| Sum squared resid | 0.010097 | Schwarz criterion | -4.624732 | |
| Log likelihood | 131.7821 | Hannan-Quinn criter. | -4.919351 | |
| F-statistic | 4.329251 | Durbin-Watson stat | 1.859393 | |
| Prob(F-statistic) | 0.000429 | | | |

$$\Delta \ln y_t = 0.006 + 0.013R_t + 0.306\Delta \ln y_{t-1} + 0.066\Delta \ln M2_{t-1} + 0.304\Delta \ln DP_{t-1} - 0.203\Delta \ln CF_{t-1} - 0.063\Delta \ln BL_{t-1} - 0.344\Delta \ln g_{t-1} - 0.040\Delta \ln k_{t-1} - 0.079\Delta \ln TP_{t-1} + 0.013\Delta Q_{t-1} - 0.101ect_{t-1} \dots \dots \dots (15)$$

From table 5.5.1 above, both the long run and short run impact of financial development on economic growth are estimated. The lagged error correction term is negative and statistically significant at 5% level of confidence. This confirms that there is a long-term association between financial development and economic growth. According to the results of the VECM, the estimated adjustment parameter is -0.10858. This value means that the errors are corrected from long run disequilibrium in real GDP and financial development in each short run period for the model to recover its long run equilibrium at the rate of 10.858%. However, this value indicates a very slow pace of adjustment although the stability of the model is confirmed by the negative and significant coefficient of the adjustment parameter, which is consistent with economic theory. The other coefficients measure the short run effects of financial development and other determinants of growth such as trade openness, gross fixed capital formation and government consumption (spending) on economic growth.

The coefficient of $\Delta LNM2(-1)$ is a short run coefficient of the lagged ratio of broad money to GDP. It is positive and insignificant, implying that in the short run this ratio supports real GDP. The coefficient $D(LNDP(-1))$ indicates that the ratio of domestic credit to the private sector as a per cent of GDP lagged once has a positive sign and is statistically significant in the short run, holding other factors constant.

The last two financial development indicators, the log of the ratio of domestic credit provided by the financial sector to GDP ($\Delta LNCF(-1)$) lagged period and the ratio of bank liquid liabilities to GDP have coefficient signs that are negative. However, the former proxy's coefficient is significant while the latter's is statistically insignificant. This contradicts the a priori expectation even though it is just in the short run. The short run coefficients of all the other control variables such as domestic investment proxied by the ratio of gross fixed capital formation to GDP, government spending as a percentage of GDP and trade openness have negative and insignificant signs, except for government spending which is very significant. Institutional quality has a positive coefficient but is statistically insignificant in terms of the sign while the financial reforms dummy has a positive sign although it is insignificant. This implies that both institutional quality and financial sector reforms temporarily boost economic growth. R-squared of the VECM is 0.576383, which implies that only 57.6% of the

variation in the dependent variable (economic growth) is explained by the independent variables in the VECM estimates above.

5.5.1 Tests for Robustness

For the purpose of testing robustness, the study undertakes the following tests on the VECM: the Breusch-Godfrey test of serial correlation, Breussch Pagan Godfrey test for heteroscedasticity, test of normality and stability tests.

5.5.1.1 Serial Correlation test: Table 5.5.1.1 reports the results of serial correlation on the VECM.

Table 5.5.1.1 : Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|---------------|----------|---------------------|--------|
| F-statistic | 0.577901 | Prob. F(2,33) | 0.5667 |
| Obs*R-squared | 1.590438 | Prob. Chi-Square(2) | 0.4515 |

The above results indicate the absence of serial correlation given that the observed R-squared p-value is 0.4515. This value implies that 45.15% is more than 5% and the null hypothesis of serial correlation is therefore rejected.

5.5.1.2 Heteroscedasticity

Table 5.5.1.2 shows the results of heteroscedasticity on the VECM results using the Breusch Pagan Godfrey test.

Table 5.5.1.2 Heteroscedasticity Test: Breusch-Pagan-Godfrey

| | | | |
|---------------------|----------|----------------------|--------|
| F-statistic | 1.054572 | Prob. F(19,27) | 0.4408 |
| Obs*R-squared | 20.02116 | Prob. Chi-Square(19) | 0.3933 |
| Scaled explained SS | 11.78869 | Prob. Chi-Square(19) | 0.8945 |

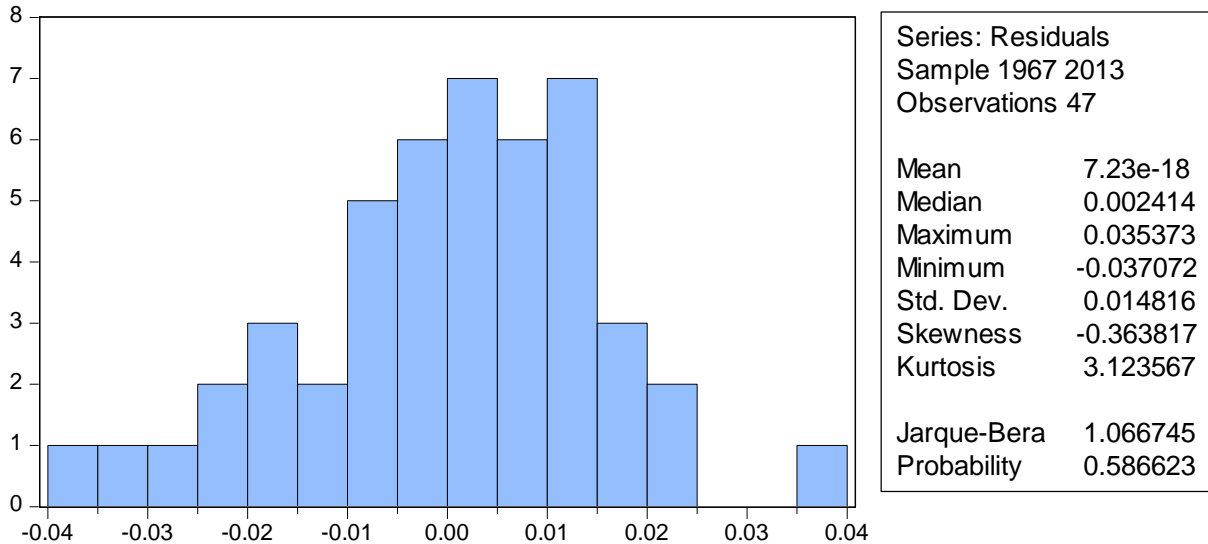
From the above table, the p-value of 0.3933 implies that 39.33% is more than 5%, and thus the model does not suffer from heteroscedasticity. The null hypothesis of heteroscedasticity is thus rejected.

5.5.1.3 Normality test

For this test, given the Jarque-Bera statistic of 1.066745 and the corresponding probability value of 0.586623 recorded in figure 5.5.1.3, which is greater than 5%, the null hypothesis of

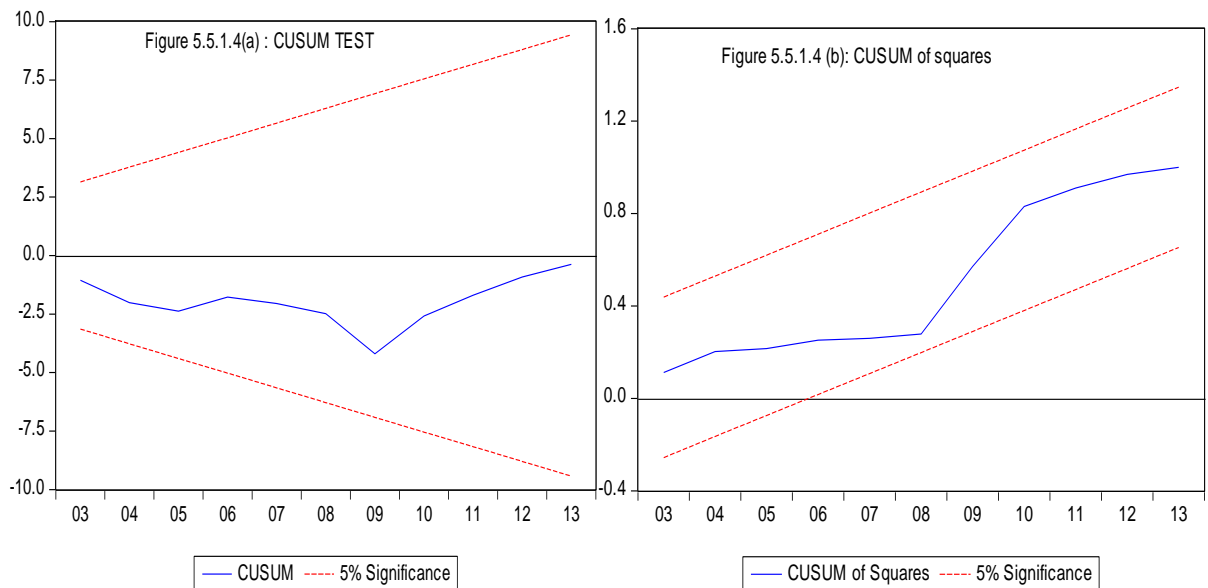
non-normality is rejected, and the conclusion reached is that the residuals are normally distributed.

Figure 5.5.1.3: Normality test



5.5.1.4 Stability of the VECM model

Here both the Cumulative Sum of Recursive Residual (CUSUM) test and CUSUM of squares are used to establish the stability of the model at 5% level of significance. Both are within 5% significance, which implies that the residual variance is stable. As shown in figures 5.5.1.4(a) and 5.5.1.4(b) below, this indicates that the model is rather stable.



5.6 Short Run Analysis

Table 5.6.1 in Appendix E reports the short run results between financial development and economic growth. The results indicate that in three indicators the null hypothesis of a short run relationship with real GDP (economic growth) is rejected at 5% level of significance. Only domestic credit to the private sector is shown to affect economic growth in the short run. Government expenditure to GDP also has a short run effect on economic growth. The overall conclusion is that, there is no short run relationship between finance and economic growth as the null hypothesis of no short run relationship between growth and financial development is not rejected. This is also supported by the t ratios, which are less than 1.96 in modulus as a rule of thumb.

5.7 Multivariate OLS Model

The estimated parameters of the model specified in equation purpose 7 are presented in table 5.7.1 below. The multivariate model estimated using the Ordinary Least Square estimation technique (OLS) reports the spurious results of the long run estimates owing to the confirmed long run relationship between the variables from Table 5.4.1.

Table 5.7.1 – Least Squares Estimates

| Dependent Variable: Real GDP Method: Least Squares | | | | |
|---|-------------|-----------------------|-------------|-----------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LNDP | -2.041779 | 0.539169 | -3.786902 | 0.0005 |
| LN2 | 1.373429 | 0.458577 | 2.994979 | 0.0047 |
| LNBL | 1.221642 | 0.333695 | 3.660955 | 0.0007 |
| LNCF | 2.451652 | 0.705748 | 3.473836 | 0.0012 |
| LNK | 0.292938 | 0.259977 | 1.126785 | 0.2665 |
| LNTP | -1.143805 | 0.344026 | -3.324768 | 0.0019 |
| LNG | 2.377372 | 0.464455 | 5.118624 | 0.0000 |
| Q | 0.106168 | 0.050339 | 2.109057 | 0.0412 |
| R | 0.390944 | 0.115333 | 3.389702 | 0.0016 |
| R-squared | 0.869145 | Mean dependent var | | 25.88401 |
| Adjusted R-squared | 0.842974 | S.D. dependent var | | 0.351536 |
| S.E. of regression | 0.139301 | Akaike info criterion | | -0.939949 |
| Sum squared resid | 0.776194 | Schwarz criterion | | -0.592472 |
| Log likelihood | 32.02875 | Hannan-Quinn criter. | | -0.808116 |
| Durbin-Watson stat | 1.270183 | | | |

Source: Estimates from Eviews programme.

The coefficients signs are positive, with the exception of the coefficients for domestic credit to the private sector as a per cent of GDP (lnDp) and openness to trade which are negative and statistically significant. The only case where this can hold practically would be in the event that credit is not channelled to productive agents or to individuals with entrepreneurial acumen who use it profitably in such a way that it would boost the economy. The coefficient associated with trade openness has a negative sign and the sign is statistically significant, which simply implies that trade openness does not support economic growth *ceteris paribus*. This does not conform to the standard expectations of economic theory. The reason why this may occur is that since trade is exogenous to economic growth, if it is not associated with growth, this is due to the fact that it may be affected by other factors such as geographical characteristics which are not correlated with economic growth, for example, land area.

All the other coefficients' signs are positive and statistically significant except investment (lnk). The coefficient signs of the financial indicators ratios, such as the ratio of broad money stock to GDP, ratio of bank liquid liabilities to GDP and ratio of domestic credit provided by the financial sector to GDP are positive and highly statistically significant. The implication is that improvement in each of these indicators is likely to have a positive impact on real GDP. Government spending is found to have a positive and significant impact on economic growth, which conforms to *a priori* expectations. This indicates that higher levels of government spending would lead to higher economic growth holding other factors constant.

Institutional quality's (Qt) coefficient has a positive and statistically significant sign. This is an expected outcome since economic theory asserts that when institutions are free and independent of political pressure, they become much more efficient in channelling more credit towards productive investment projects, which would have a significant and positive impact on economic growth and development. Economic theory also argues that weak institutions may lead to poor economic performance. The financial reforms dummy bears an expected coefficient sign that indicates that these reforms are growth enhancing and therefore boost growth. The coefficient sign appears positive and statistically significant as anticipated. The model seems to be well fitted with R^2 (R-square) value of 86.9%, which ensures large variation that explains economic growth as proxied by real GDP.

5.8 Granger Causality between financial development and economic growth

Table 5.8.1 below reports the results of Granger causality tests on the indicators of finance which proxy financial development against economic growth (real GDP). This is important in

determining the direction of causality between economic growth and financial development in South Africa.

Table 5.8.1: Pairwise Granger Causality Tests Results

| Null hypothesis | obs | F-statistics | Probability |
|---|-----|--------------|-------------|
| Ratio of broad money as a share of GDP does not Granger Cause real GDP | 47 | 0.36312 | 0.6977 |
| Real GDP does not Granger Cause the ratio of broad money as a share of GDP | | 8.52176 | 0.0008** |
| Ratio of bank liquid liabilities as a share of GDP does not Granger Cause real GDP | 47 | 3.66784 | 0.0340** |
| Real GDP does not Granger Cause the ratio of bank liquid liabilities as a share of GDP | | 5.15948 | 0.0099*** |
| Ratio of domestic credit provided by the financial sector as a share of GDP does not Granger Cause real GDP | 47 | 5.45288 | 0.0078*** |
| Real GDP does not Granger Cause the ratio of domestic credit provided by the financial sector as a share of GDP | | 1.10153 | 0.3418 |
| Domestic credit to private sector as a share of GDP does not Granger Cause real GDP | 47 | 2.48254 | 0.0957* |
| Real GDP does not Granger Cause Domestic credit to private sector as a share of GDP | | 1.60029 | 0.2139 |

* denotes rejection of null hypothesis at 10% level of significance, ** significance at 5% and *** significance at 1%

The key objective is to conduct the causality tests between economic growth as proxied by real GDP (lnY) and the financial development proxies (lnDP, lnM2, lnCF, lnBl). Since in this study, the control variables are also considered, the detailed results of causality between economic growth and the variables of gross fixed capital formation, government spending, institutional quality and financial sector reforms are reported in table 5.9.1 in appendix G. The conclusion on the direction of causality is decided based on the probability values (p-Values). If the P-value is 5% or less than 5%, the null hypothesis is rejected in each case and failure to reject the null hypothesis occurs if it is above 5%.

Following this analogy, firstly, starting from the first row in the table 5.8.1 above, the null hypothesis which posits that the ratio of broad money to real GDP does not Granger Cause real GDP is not rejected, while the null hypothesis that real GDP on the other hand does not Granger Cause the ratio of broad money to real GDP is rejected at 5% level. This implies that real GDP does cause the ratio of broad money to real GDP; hence, causality runs from economic growth to financial development. Secondly, from the second row in the same table, the null hypothesis that the ratio of bank liquid liabilities to real GDP does not Granger Cause real GDP is rejected. Similarly, the null hypothesis that real GDP does not Granger Cause the ratio of bank liquid liabilities to real GDP on the other side is also rejected at 5% level. These outcomes mean that causality between the two variables runs from either way. There is bidirectional causality between the ratio of bank liquid liabilities to real GDP and real GDP.

Thirdly, in the third row, the null hypothesis that the ratio of domestic credit provided by the financial sector to real GDP does not Granger Cause real GDP is not accepted, whilst the null hypothesis that real GDP does not Granger Cause the ratio of domestic credit provided by the financial sector to real GDP is also not rejected. This implies that causality runs from finance to economic growth (proxied by log of real GDP).

Finally, the Granger causality test results indicate that the ratio of domestic credit to private sector to GDP does not Granger Cause real GDP and that real GDP does not Granger Cause the ratio of domestic credit to private sector to GDP. This means that the causal relationship between these variables is independent and such variables do not Granger Cause each other. This is in line with Robinson (1952) and Lucas (1988) who argue that there is no causal

relationship between finance and growth and that finance only responds to developments in the real sector of the economy.

In considering the control variables, the causality results from trade openness, government expenditure, investment (gross fixed capital formation to real GDP) and the financial reforms dummy indicate that causality holds in two control variables. The results show that government spending (lnG) Granger Causes economic growth (real GDP) while on the other hand, there is one-way causality from institutional quality to real GDP. This implies that increasing government spending will boost economic growth while improvement in the quality of institutions seems to matter in raising the level of economic growth as evidenced by causality running from the institutional quality variable to real GDP. The study's overall conclusion on the direction of causality between economic growth and finance is that there is bidirectional causality. This suggests that South African policy makers should simultaneously pursue a policy of improving the real sector and the financial sector in order to achieve sustainable growth and stable financial sector development that is growth enhancing in the long run.

The more institutions are free from political interference and pressure, the more they stand a chance to improve the performance of their intermediary functions to promote investment and increased savings mobilisation. In terms of the other control variables, since the null hypothesis failed to be rejected, there is no evidence of any causal relationship between these variables and real GDP; hence, such variables are independent of one another or mutually exclusive.

5.9 Conclusion

The overall conclusion arising from the analysis of the study's results is that there is a long run relationship that exists in South Africa between economic growth and financial sector development. The Granger causality tests results also indicate that causality is bidirectional between economic growth and financial development. The implications for SA are that the growth of output and financial sector development should be pursued simultaneously. The results also suggest that improving the quality of institutions raises the level of economic growth. This is supported by the seemingly positive relationship between institutional quality and real economic growth, even though it is insignificant.

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATIONS

6.1 Conclusion

This study explored the historical development of financial development in SA and reviewed the link between economic growth and financial development for the period 1965-2013 in order to empirically determine the direction of causality between financial sector development and economic growth. It was motivated by the mixed results produced by previous studies on the finance-growth nexus as well as the use of different financial proxies and control variables such as institutional quality and financial reforms dummies. While the literature posits that weak institutions are also a cause of poor economic performance, few studies have considered this issue. This study uses annual time series data from 1965 to 2013 and include institutional quality to proxy the role and impact of institutions in the functioning of the financial sector. Overall, the results of this study indicate the presence of cointegration which warranted the estimation of a VECM. The model of this study indicates that the model is stable over time and that the disequilibrium positions are only transitory and could be restored in the long run. The diagnostics checks on the model such as serial correlations, heteroscedasticity, normality, and the F-test and stability test revealed that the model coefficients are stable over time. The empirical findings of this study reveal that the direction of causality between economic growth and financial development is twofold which implies that for South Africa, both the financial sector development and economic growth do complement each other. Overall, the findings of this study also support studies conducted by Sunde (2011), Odhiambo (2011), Kapingura (2013) and Akinboade and Kinfaek (2015).

6.2 Policy Recommendations

Based on the empirical findings of the Granger causality test, which reveals two-way causality between financial development and economic growth, the following policy recommendations are made:

Firstly, it is recommended that the policy-making authorities or government should formulate policies that help to strengthen efforts towards enhancing growth and simultaneously seek to improve the development of the financial sector. For instance, policies geared at revamping industrialisation can help to spur economic growth in the long term, which will translate to the deepening of financial development through innovation, a sound legal framework and supervision, ultimately leading to the mobilisation of funds for productive investment

projects. The authorities should strive to remove any impediments to efficient financial market operations in order to create a conducive environment in which the activities of financial intermediaries such as credit providers can flourish.

Secondly, a well developed financial sector should support the growth of the economy at a sustainable pace. To achieve this, the policy makers should ensure that low levels of inflation are achieved by constant review of inflation policy or by setting inflation target that will help to accelerate economic growth and ensure that such rate is commensurate with financial intermediation performance pace. This is theoretically in line with the view that there is a negative relationship between inflation and long term growth for the simple reason that high inflation episodes are associated with financial repression which turns to hinder the efficiency of financial intermediation. And furthermore, empirical research indicate that beyond a certain level of inflation, finance is associated with negative impact on economic growth (Berkes et al. 2012).

Thirdly, to promote a sustainable growth, policy making should aim at designing long term policies which ensure that SA financial institutions do reach out to the massive unbanked SA populace that is devoid of access to formal financial services. This will help to tap or unlock the potential growth avenue for the economy in easing financial constraints. The promotion of access to credit by the private sector remain a cornerstone as this can impact positively on savings and investment decisions and hence raise productivity and growth. This can help to unlock potential investments by the private sector. This can also expand financial services to a broader share of the population thus allowing new entrants access to finance to foster competition in the real sector (Beck, 2013b).

Fourthly, to promote economic growth, policy makers should strive to maintain low and manageable government debt levels as well as prudent monetary and fiscal policies to foster macroeconomic stability. It is therefore imperative that interaction of the these policies lead to growth enhancing financial systems.

Lastly, since the study's findings of this study reveal that both the real sector and the financial sector are critical and complement each other, it is proposed that to advance an inclusive growth agenda, strengthening legal institutions by, for example, ensuring that property rights are protected and contracts are enforced, is key in improving and deepening financial intermediation while enhancing growth prospects. This will therefore raise the level of economic growth in the long run. However, the creation of a stable macroeconomic

environment, and prudent supervision and regulations remain salient features essential to enhance market participation and competition. These conditions will help overcome information asymmetry, enabling more informed decision-making, which will ultimately accelerate economic growth in the long run. However, institutional quality also needs to be promoted in order to boost economic growth in the long term.

REFERENCES

Abu-Bader, S. and Abu-Qarn, A. S. (2008). Financial development and economic growth: The Egyptian experience. *Journal of Policy Modeling*, 30(5), 887-898.

Acaravci, S. K., Ozturk, I., and Acaravci, A. (2009). Financial development and economic growth: literature survey and empirical evidence from sub-Saharan African countries: *South African Journal of Economic and Management Sciences*, 12(1), pp.11-27.

Adu, G., Marbuah, G. and Mensah, J. T. (2013). Financial development and economic growth in Ghana: Does the measure of financial development matter?. *Review of Development Finance*, 3(4), pp. 192-203.

Adusei, M. (2012). Financial development and economic growth: Is Schumpeter right? *British Journal of Economics, Management & Trade*, 2(3), pp. 265-278.

Adusei, M. (2013). Finance-Growth Nexus in Africa: A Panel Generalized Method of Moments (GMM) Analysis. *Asian Economic and Financial Review*, 3(10): pp.1314-1324.

African Economic Outlook, (2014). Global Value Chains and Africa's Industrialisation. Organisation for Economic Co-operation and Development, United Nations Development Programme: African Development Bank.

African Economic Outlook (2015). Accessible from: http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/2015/PDF_Chapters/Overview_AEO2015_EN-web.pdf [Accessed on 18/8/2015].

Akinboade, O.A. and Kinack, E.C. (2015). Financial development, economic growth and millennium development goals in South Africa: is there a link?. *International Journal of Social Economics* ,42(5), pp.459-479.

Akinboade, O. and Makina, D. (2006). Financial sector development in South Africa, 1970-2002. *Journal for Studies in Economics and Econometrics*, 30(1): 101.

Akinlo, A.E. and Egbetunde, T. (2010). Financial Development and Economic Growth: The Experience of 10 Sub-Saharan African Countries Revisited. *The Review of Finance and Banking* 2(1), 17-28.

Allen, D. S. and Ndikumana, L. (2000). Financial intermediation and economic growth in Southern Africa. *Journal of African Economies* ,9(2): 132-160.

AL-Yousif, Y. K. (2002). Financial development and economic growth: another look at the evidence from developing countries. *Review of Financial Economics*, 11,pp. 131-150.

Anderson, R. G. (2009). Bagehot on the Financial Crises of 2008. *Economic Synopses*, 2009 (2009-01-23).

Ang, J.B. and McKibbin, W. J. (2007). Financial liberalisation, financial sector development and growth: Evidence from Malaysia. *Journal of Development Economics*,84, pp. 215-233.

Arestis, P.,Demetriades,P. O. and Luintel, K. B. (2001). Financial development and economic growth: the role of stock markets. *Journal of Money, Credit and Banking*, pp.16-41.

Aron, J. and Muellbauer, J. (2007). Review of monetary policy in South Africa since 1994. *Journal of African Economies*, 16(5), pp.705-744.

Aziakpono, M. J. and Wilson, M. K. (2010). Interest Rate Pass-Through and Monetary Policy Regimes in South Africa 12.

Baliamoune-Lutz, M. (2013). Financial Development and Income in African Countries. *Contemporary Economic Policy*,31(1),pp. 163-175.

Baliamoune-Lutz, M. (2008). Financial development and income in North Africa. *International Advances in Economic Research*, 14(4), pp. 422-432.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2007). Finance, inequality and the poor. *Journal of economic growth*, 12(1), pp.27-49.

Beck, T., Demirguc-Kunt, A. and Levine, R. (2004). Finance, inequality, and poverty: cross-country evidence, National Bureau of Economic Research.

Beck, T. (2012). Finance and growth—lessons from the literature and the recent crisis. Submission to the LSE Growth Commission, available at <http://tinyurl.com/d79hz9z>. [accessed on the 28/9/2015].

Beck, T. (2013a). Finance, growth and fragility: the role of government. *International Journal of Banking, Accounting and Finance*, 5(1-2), pp. 49-77.

Beck, T. (2013b). Finance for Development: A Research Agenda, *ESRC-DFID DEGRP Research report* [www.degrp.sqsp.com Accessed 25/6/2016].

Bell, C. and Rousseau, P.L. (2001). Post-independence India: A case of finance-led industrialization? *Journal of Development Economics* , 65(1), pp. 153-175.

Berkes, E. , Arcand, J.L. and Panizza, U.(2012). Too much finance? IMF Working Paper.

Bhorat, H., Hirsch, A., Kanbur, R. and Ncube, M. (2014). *Economic Policy in South Africa Past, Present, and Future* (No. 180150).

Bittencourt, M. (2012). Financial development and economic growth in Latin America: Is Schumpeter right? *Journal of Policy Modeling*, 34(3), pp.341-355.

Bose, N. and Cothren, R. (1996). Equilibrium loan contracts and endogenous growth in the presence of asymmetric information. *Journal of Monetary Economics*, 38(2), pp. 363-376.

Boulila, G. and Trabelsi, M. (2004). The causality issue in the finance and growth nexus: empirical evidence from Middle East and North African countries. *Review of Middle East Economics and Finance*, 2(2), 123-138.

Butterworth, B. and Malherbe, S. (1999). *The South African financial sector: background research for the Seattle round*. Working Paper.

Campos, F.N. and Dercon, S.(2014). Gaps, cracks and lacunae: The finance and growth nexus in low-income countries. Accessed from <http://www.voxeu.org/article/finance-and-growth-nexus-low-income-countries> (Accessed 6/27/2015).

Campos, N. F., Karanasos, M. G. and Tan, B. (2012). Two to tangle: Financial development, political instability and economic growth in Argentina. *Journal of Banking & Finance*, 36(1), pp. 290-304.

Chang, T. (2002). Financial development and economic growth in Mainland China: a note on testing demand-following or supply-leading hypothesis. *Applied Economics Letters*, 9(13), pp. 869-873.

Chukwu, J. O. and Agu, C. C. (2009). Multivariate causality between financial depth and economic growth in Nigeria. *African Review of Money Finance and Banking*, pp. 7-21.

Clarke, G.R., Xu, L.C. and Zou, H.F. (2006). Finance and income inequality: what do the data tell us?. *Southern economic journal*, pp.578-596.

Coccorese, P. and Silipo, D.B. (2015). Growth without finance, finance without growth. *Empirical Economics*, 49(1), pp. 279-304.

Craigwell, R., Downes, D., & Howard, M. (2001). The Finance-Growth Nexus: A Multivariate Var Analysis Of A Small Open Economy. *Savings and Development*, pp. 209-223.

Dahou, K., Omar, H. I. and Pfister, M. (2009). Deepening African financial markets for growth and investment. In *Ministerial and Expert Meeting of the NEPAD-OECD Africa Investment Initiative*. <http://www.oecd.org/investment/investmentfordevelopment/43966839.pdf> [accessed on the 28 November, 2015].

David, R. (2006) . *Advanced Macroeconomics*. 4th ed. McGraw-Hill Irwin.

Deidda, L. and B. Fattouh (2002). Non-linearity between finance and growth. *Economics Letters*, 74(3), pp. 339-345.

De Gregorio, J. and Guidotti, P.E. (1995). Financial development and economic growth. *World Development*, 23(3), pp.433-448.

Demetriades, P. O. and Hussein, K.A. (1996). Does financial development cause economic growth? Time-series evidence from 16 countries. *Journal of Development Economics* ,51(2): 387-411.

Du Plessis, S. and Smit, B. (2006). *Economic growth in South Africa since 1994*. University of Stellenbosch.

Faulkner, D. and Loewald, C. (2008). *Policy change and economic growth: a case study of South Africa*. International Bank for Reconstruction and Development/The World Bank.

Faulkner, D., Loewald, C. and Makrellov, K. (2013). Achieving higher growth and employment: Policy options for South Africa. *South African Reserve Bank Working Paper*, 13(03).

Fowowe, B. (2011). The finance-growth nexus in Sub-Saharan Africa: Panel cointegration and causality tests. *Journal of International Development*, 23(2), pp. 220-239.

Ghardallou, W. and Boudriga, A. (2006). Financial Development and Democracy: Does the Institutional Quality Matter?

Ghirmay, T. (2004). Financial Development and Economic Growth in Sub-Saharan African Countries: Evidence from Time Series Analysis. *African Development Review*, 16(3), pp. 415-432.

Goldsmith, R. (1969). Financial structure and economic development. *New Haven: Yale University Press*.

Gondo, J. (2009). Financial Development and Economic Growth: Evidence from South Africa: 1970-1999. In *annual Western Cape Economics Postgraduate student Conference*. Stellenbosch.

Goosen, W., Pampallis, A., Van Der Merwe, A. and Mdluli, L. (1999). *Banking in the New Millennium*. Juta and Company Ltd.

Graff, M. and Karmann, A. (2006). What determines the finance growth nexus? Empirical evidence for Threshold Models. *Journal of Economics*, 87(2), pp. 127-157.

Gujarati, D. N. (1995). *Basic Econometrics*. McGraw-Hill Inc., New York.

Hamdi, H., Hakimi, A. and Sbia, R. (2013). Multivariate Granger causality between financial development, investment and economic growth: Evidence from Tunisia. *Journal of Quantitative Economics*, 11(1&2):pp. 111-129.

Haber, S. (2008). The Finance-Growth Nexus: Theory, Evidence and Implications for Africa. In *Conference on African Finance for the 21st Century, Tunis, March* (pp. 4-5).

Hasan, I., Wachtel, P. and Zhou, M. (2009). Institutional development, financial deepening and economic growth: Evidence from China. *Journal of Banking & Finance*, 33(1), pp. 157-170.

Hawkins 1, P. (2004). South Africa's financial sector ten years on: performance since democracy. *Development Southern Africa*, 21(1), pp. 179-204.

Huang, Y. (2010). Political institutions and financial development: An empirical study. *World Development*, 38(12), pp. 1667-1677.

Ismail, M.A.M. and Masih, M. (2015). Causality between financial development and economic growth, and the Islamic finance imperative: A case study of Indonesia.

Jalil, A. and Ma, Y. (2008). Financial development and economic growth: time series evidence from Pakistan and China. *Journal of Economic Cooperation*, 29(2), pp. 29-68.

Kahsay, H.T. (2013). Financial Development and Economic Growth Nexus: Evidence from Ethiopia Johnson Approach to Co-Integration.

Kapingura, F.M. (2013). Finance and economic growth nexus: Complementarity and substitutability between the banking sector and financial markets in Africa, using South Africa as a case. *Journal of Economics and International Finance*, 5(7), pp. 273-286.

Karwowski, E. (2015). The Finance–Mining Nexus in South Africa: How Mining Companies Use the South African Equity Market to Speculate. *Journal of Southern African Studies*, 41(1), pp.9-28.

Ketteni, E., Mamuneas, T., Savvides, A. and Stengos, T. (2004). Financial Development and Economic Growth: Is the Finance-Growth Relationship Nonlinear? *Department of Economics, University of Cyprus manuscript*.

Khan, M. A., Qayyum, A. and Ghani, E. (2006). Trade Liberalisation, Financial Sector Reforms, and Growth [with Comments]. *The Pakistan Development Review*: 711-731.

Kilimani, N. (2009). The Link between Financial Development and Economic Growth in Uganda: A Causality Test. *A paper presented at the Centre for Study of African Economies (CSAE) Conference.*

King, R. G. and Levine, R. (1993). Finance, entrepreneurship and growth. *Journal of Monetary Economics*, 32(3),pp. 513-542.

Kirch, G. and Terra, P. R. S. (2012). Determinants of corporate debt maturity in South America: Do institutional quality and financial development matter? *Journal of Corporate Finance*, 18(4),pp. 980-993.

Kirsten, M. (2006). Policy initiatives to expand financial outreach in South Africa. In *World Bank–Brookings Institute conference Access to Finance: Building Inclusive Financial Systems, Washington, DC, May* (pp. 30-31).

Kohler, M. and Saville, A. (2011). Measuring the impact of trade finance on country trade flows: a South African perspective. *South African Journal of Economic and Management Sciences*, 14(4): 466-478.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58(1), pp. 3-27.

Letete, E.M. (2015). *Essays on institutions and economic development in Kenya* (Doctoral dissertation, University of Cape Town).

Levine, R. (2003). More on finance and growth: more finance, more growth? *Review-Federal Reserve Bank Of Saint Louis*, 85(4): pp.31-46.

Levine, R. (2005). Finance and growth: Theory and evidence. *Handbook of Economic Growth*, vol 1, pp.865-934.

Levine, R., Loayza, N., and Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46(1): pp. 31-77.

Levine, R. (1999). Law, finance and economic growth. *Journal of Financial Intermediation*, 8(1): 8-35.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*: PP.688-726.

Levine, R., Loayza, N. and Beck, T. (1999). *Financial intermediation and growth: causality and causes* (Vol. 310). World Bank Publications.

Levine, R. and S. Zervos (1998). Stock markets, banks, and economic growth. *American Economic Review*: PP. 537-558.

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics* ,22(1), pp. 3-42.

Majid, M. S. (2007). Does financial development and inflation spur economic growth in Thailand? *Chulalongkorn Journal of Economics*, 19(2),pp. 161-184.

Mandiefe, P. S. (2015). The impact of financial sector development on economic growth: analysis of the financial development gap between Cameroon and South Africa. Available at *SSRN 2616296*.

Masih, M., Al-Elg, A. and Madani, H. (2009). Causality between financial development and economic growth: an application of vector error correction and variance decomposition methods to Saudi Arabia. *Applied Economics*, 41(13):pp. 1691-1699.

McKinnon, R. I. (1973). *Money and capital in economic development*. Brookings Institution Press. Washington DC.

Mhadhbi, K. (2014). New Proxy of Financial Development and Economic Growth in Medium-Income Countries: A Bootstrap Panel Granger Causality Analysis. *American Journal of Applied Mathematics and Statistics*, 2(4), pp.185-192.

Mishkin, F. S. and Eakins, S. G. (2006). *Financial markets and institutions*. Pearson Education India.

Mohapi, P. L. and Motelle, S. I. (2007). The finance-growth nexus in Lesotho: Causality revelations from alternative proxies. *Journal for Studies in Economics and Econometrics*, 31(3), P. 43.

Motelle, S. and Sebutsoe, N. (2010). Is the free market unaided an antidote to financial exclusion? *AfricaGrowth Agenda*: 30-32.

Moyo, J., Nandwa, B., Council, D.E., Oduor, J. and Simpasa, A. (2014). Financial sector reforms, competition and banking system stability in Sub-Saharan Africa. *New Perspectives*.

National Treasury. (2011). A safer financial sector to serve South Africa better. *National Treasury Department*, Republic of South Africa.

Newman, S. (2014). Financialisation and the financial and economic crises: the case of South Africa (No. fstudy26). *Financialisation, Economy, Society & Sustainable Development (FESSUD) Project*.

Nyasha, S. and Odhiambo, N.M. (2015). The impact of Banks and Stock market Development on Economic Growth in South Africa: an ARDL-bounds Testing Approach. *Contemporary Economics*, 9(1), pp. 93-108.

Odedokun, M. O. (1996). Alternative econometric approaches for analysing the role of the financial sector in economic growth: Time-series evidence from LDCs. *Journal of Development Economics*, 50(1), pp. 119-146.

Odeniran, S.O. and Udejaja, E.A. (2010). Financial sector development and economic growth: empirical evidence from Nigeria. *Economic and Financial Review*, 48(3), pp.91-124.

Odhiambo, N.M. (2011). Financial intermediaries versus financial markets: A South African experience. *The International Business & Economics Research Journal*, 10(2), p.77.

Odhiambo, N. M. (2010). Finance-investment-growth nexus in South Africa: an ARDL-bounds testing procedure. *Economic Change and Restructuring*, 43(3), pp. 205-219.

Odhiambo, N. M. (2009). Finance-growth-poverty nexus in South Africa: a dynamic causality linkage. *The Journal of Socio-Economics*, 38(2), pp.320-325.

Odhiambo, N. M. (2007). Supply-leading versus demand-following hypothesis: Empirical evidence from three SSA countries. *African Development Review*, 19(2), pp.257-280.

Odhiambo, N. M. (2004). Is financial development still a spur to economic growth? A causal evidence from South Africa. *Savings and Development*, pp. 47-62.

Papaioannou, E. (2007). Finance and growth: a macroeconomic assessment of the evidence from a European angle.

Pereira, C. and Teles, V. (2011). Political institutions, economic growth, and democracy: The substitute effect. *Brookings Institution*. Retrieved from <http://www.brookings.edu/research/opinions/2011/01/19-political-institutions-pereira>.

Quartey, P. and Prah, F. (2008). Financial development and economic growth in Ghana: is there a causal link? *African Finance Journal*, 10(1),pp. 28-54.

Ram, R. (1999). Financial development and economic growth: additional evidence.164-174.

Raphael, A.I and Gabriel, A.A. (2015). Effect of Financial Sector Development on Manufacturing Output Growth in Nigeria (1986-2012): A Vector Auto Regression Approach. *Journal of Applied Economics and Business Research*, 5(1),pp.38-55.

Reinhart, C.M. and Rogoff, K. (2009). *This time is different: eight centuries of financial folly*. Princeton University Press.

Rioja, F. and Valey, N.(2004). Does one size fit all? A reexamination of the finance and growth relationship. *Journal of Development Economics*, 74 (2),pp. 429–447.

Robinson, J. (1952). *The Generalization of the General Theory, In the Rate of Interest and Other Essays*, London: MacMillan.

Rodrik, D. and Wacziarg, R. (2005). Do democratic transitions produce bad economic outcomes? *American Economic Review*: pp. 50-55.

Rousseau, P.L. and Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth?. *Economic Inquiry*, 49(1), pp.276-288.

Schwab, K. and Sala-i-Martin, X. (Eds.). (2014). *The global competitiveness report 2014-2015*. Geneva: World Economic Forum.

Schumpeter, J. A. (1911). *The theory of economic development*. Cambridge, MA: Harvard University Press.

Shaw, E. S. (1973). *Financial deepening in economic development*. New York: Oxford University Press.

Shen, C. and Lee, C. (2006). Same financial development yet different economic growth: why? *Journal of Money, Credit and Banking*, 38(7), pp. 1907-1944.

Soedarmono, W., Hasan, I. and Arsyad, N. (2015). Non-Linearity in the Finance-Growth Nexus: Evidence from Indonesia.

Stals, C.L. (1997). The effects of the changing financial environment on monetary policy in South Africa. Address by the Governor of the South African Reserve Bank, Dr C.L. Stals, at the Annual Dinner of the Pretoria Branch of the Economic Society of South Africa.

South African Reserve Bank Supervision Department Annual Report. (2007). Pretoria [Online] available on <http://www.reservebank.co.za/> [accessed 9th October 2015]

South African Reserve Bank Supervision Department Annual Report. (2013). Pretoria [Online] available on <http://www.reservebank.co.za/> [accessed 9th October 2015]

Stolbov, M. (2012). The finance-growth nexus revisited: From origins to a modern theoretical landscape (No. 2012-45). *Economics Discussion Papers*.

Sunde, T. (2011). Financial sector development and economic growth nexus in South Africa. *International Journal of Monetary Economics and Finance*, 5(1), pp. 64-75.

Takaendesha, P. and Odhiambo, N. M. (2007). Financial sector development and economic growth: An empirical analysis of two Southern African countries. *Studies in Economics and Econometrics*, 31(3), pp. 61-80.

Tang, D. (2006). The effect of financial development on economic growth: evidence from the APEC countries, 1981–2000. *Applied Economics*, 38(16), pp.1889-1904.

Thangavelu, S. M. and Jiunn, A. B. (2004). Financial development and economic growth in Australia: an empirical analysis. *Empirical Economics*, 29(2), pp. 247-260.

Wilson, J.S.G. (2012). *Banking policy and structure: A comparative analysis* (Vol. 34). Routledge.

Wolde-Rufael, Y. (2009). Re-examining the financial development and economic growth nexus in Kenya. *Economic Modelling*, 26(6), pp. 1140-1146.

World Bank. (2013). World Bank Development Indicators. [Online]. Available from:<http://data.worldbank.org/data-catalog/world-development-indicators/wdi-2013>. [Accessed 9th October 2014]

World Bank. (2015). Doing Business. [Online] Available from <http://www.doingbusiness.org/data/exploreeconomies/south-africa>. [Accessed 27th May 2015]

APPENDICES

A: Lag Order Selection and Summary Statistics

(i) **Table 4.6.2.1 : Lag Order Selection Criteria**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|----------|-----------|-----------|------------|------------|------------|
| 0 | 387.5933 | NA | 8.15e-19 | -16.11035 | -15.75607 | -15.97703 |
| 1 | 837.8571 | 708.9260 | 1.30e-25 | -31.82371 | -28.28087* | -30.49051* |
| 2 | 945.3305 | 128.0535* | 6.15e-26* | -32.95023* | -26.21885 | -30.41717 |

* indicates lag order selected by the criterion:
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

(ii) **Table 5.2.1(A): Summary of Descriptive Statistics**

| Statistics | LNy | LNm2 | LNBL | LNdp | LNCF | LNg | LNK | LNTP | Q | R |
|--------------|--------|----------|----------|---------|----------|---------|---------|-----------|---------|--------|
| Mean | 25.884 | 4.077246 | 3.492023 | 4.74543 | 4.505831 | 2.82021 | 3.03155 | -0.814485 | 6.10204 | 0.6938 |
| Median | 25.886 | 4.064878 | 3.535148 | 4.57271 | 4.354844 | 2.91012 | 3.00602 | -0.756895 | 4.00000 | 1.0000 |
| Maximum | 26.503 | 4.391976 | 3.846848 | 5.26092 | 5.075954 | 3.00851 | 3.39061 | -0.534559 | 9.00000 | 1.0000 |
| Minimum | 25.175 | 3.817712 | 3.018652 | 4.33536 | 4.018184 | 2.44026 | 2.71801 | -1.140495 | 4.00000 | 0.0000 |
| Std. Dev. | 0.3515 | 0.134945 | 0.256223 | 0.30966 | 0.342599 | 0.18379 | 0.19888 | 0.172647 | 2.41734 | 0.4656 |
| Jarque-Bera | 0.9950 | 3.549118 | 4.643746 | 5.76458 | 5.410476 | 7.29859 | 3.42079 | 3.450588 | 7.82582 | 9.1896 |
| Probability | 0.6080 | 0.169558 | 0.098090 | 0.05600 | 0.066854 | 0.02600 | 0.18079 | 0.178121 | 0.01998 | 0.0101 |
| Sum | 1268.3 | 199.7851 | 171.1091 | 232.526 | 220.7857 | 138.190 | 148.546 | -39.90977 | 299.000 | 34.000 |
| Sum Sq. Dev. | 5.9317 | 0.874088 | 3.151211 | 4.60287 | 5.633965 | 1.62142 | 1.89859 | 1.430733 | 280.489 | 10.408 |
| # of Obs | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |

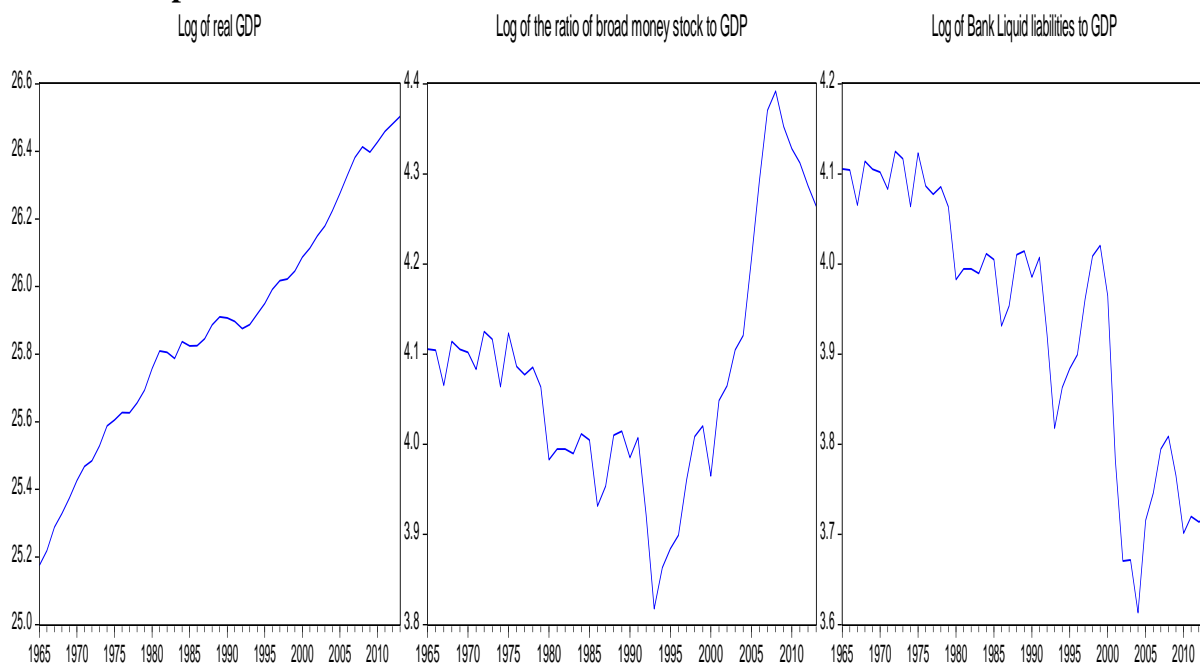
Source: Author's calculation from Eviews Software

Table 5.2.1(B) -Correlation Matrix for financial development indicators and economic growth

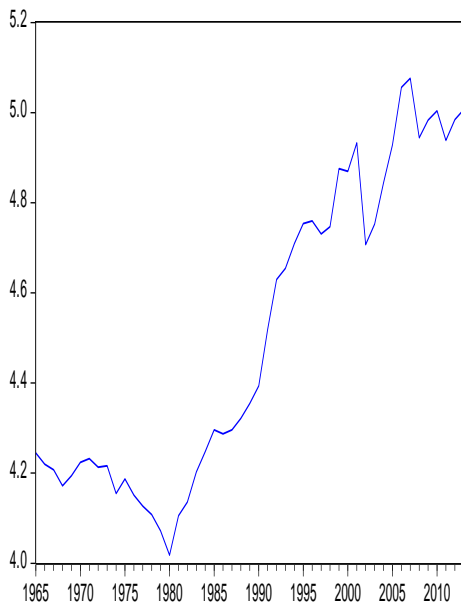
| | LN _Y | LN _{M2} | LN _{DP} | LN _{CF} | LN _{BL} | LN _G | LN _K | LN _{TTP} | Q | R |
|-------------------|-----------------|------------------|------------------|------------------|------------------|-----------------|-----------------|-------------------|--------|---------|
| LN _Y | 1 | 0.419 | 0.861 | 0.879 | -0.871 | 0.639 | -0.539 | 0.354 | 0.816 | 0.785 |
| LN _{M2} | 0.419 | 1 | 0.413 | 0.472 | -0.371 | 0.182 | 0.191 | 0.626 | 0.284 | -0.087 |
| LN _{DP} | 0.861 | 0.413 | 1 | 0.987 | -0.827 | 0.873 | -0.719 | 0.644 | 0.954 | 0.635 |
| LN _{CF} | 0.879 | 0.472 | 0 | 1 | -0.874 | 0.832 | -0.678 | 0.659 | 0.952 | 0.607 |
| LN _{BL} | -0.871 | -0.371 | -0.827 | -0.874 | 1 | -0.672 | 0.630 | -0.427 | -0.817 | -0.692 |
| LN _G | 0.639 | 0.1825 | 0.873 | 0.832 | -0.672 | 1 | -0.772 | 0.5458 | 0.831 | 0.545 |
| LN _K | -0.539 | 0.191 | -0.7192 | -0.678 | 0.630 | -0.772 | 1 | -0.246 | -0.726 | -0.641 |
| LN _{TTP} | 0.354 | 0.6265 | 0.644 | 0.659 | -0.427 | 0.545 | -0.246 | 1 | 0.663 | -0.0692 |
| Q | 0.816 | 0.284 | 0.954 | 0.952 | -0.817 | 0.8319 | -0.726 | 0.663 | 1 | 0.608 |
| R | 0.785 | -0.087 | 0.635 | 0.607 | -0.692 | 0.545 | -0.641 | -0.069 | 0.608 | 1 |

Source: Author's calculation from Eviews Software

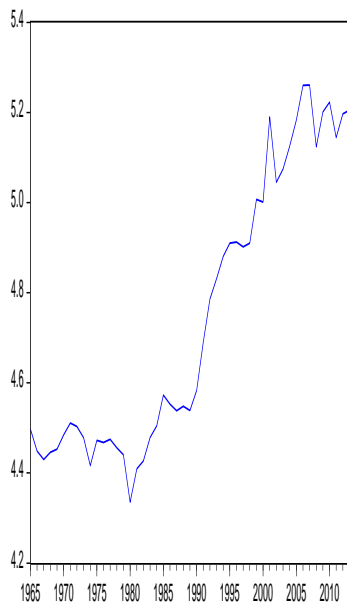
B 1: Visual plots of variables in level form



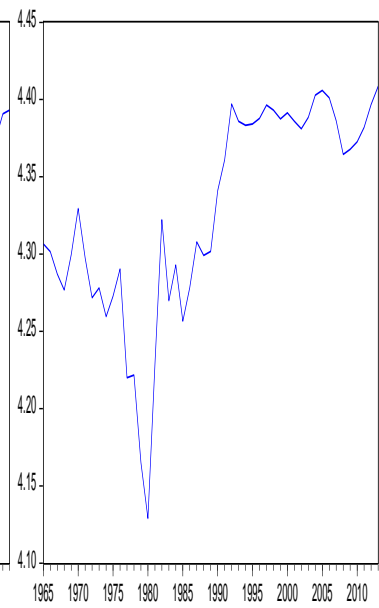
Log of domestic credit to private as a percent of GDP



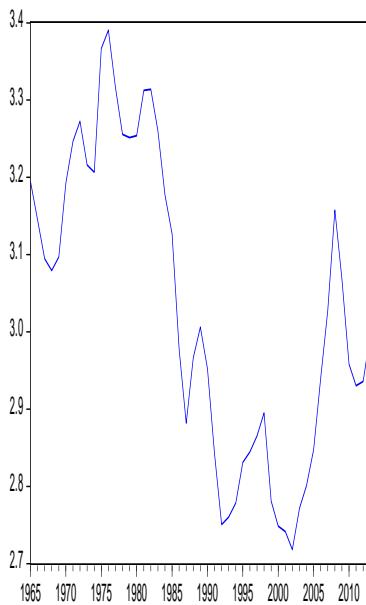
Log of credit provided by financial sector to GDP



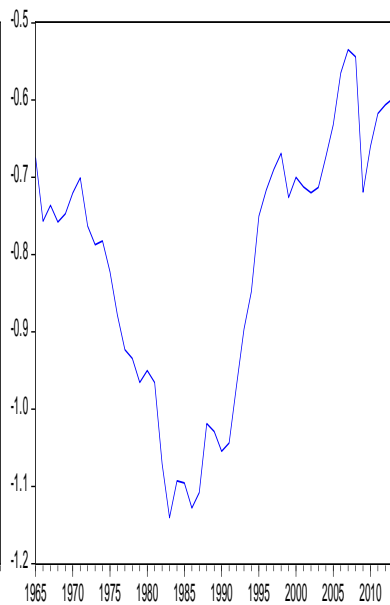
Log of Government spending to GDP



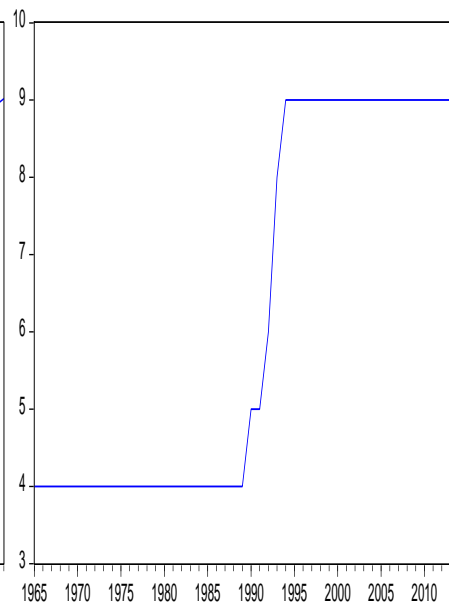
Log of Gross fixed capital formation to GDP



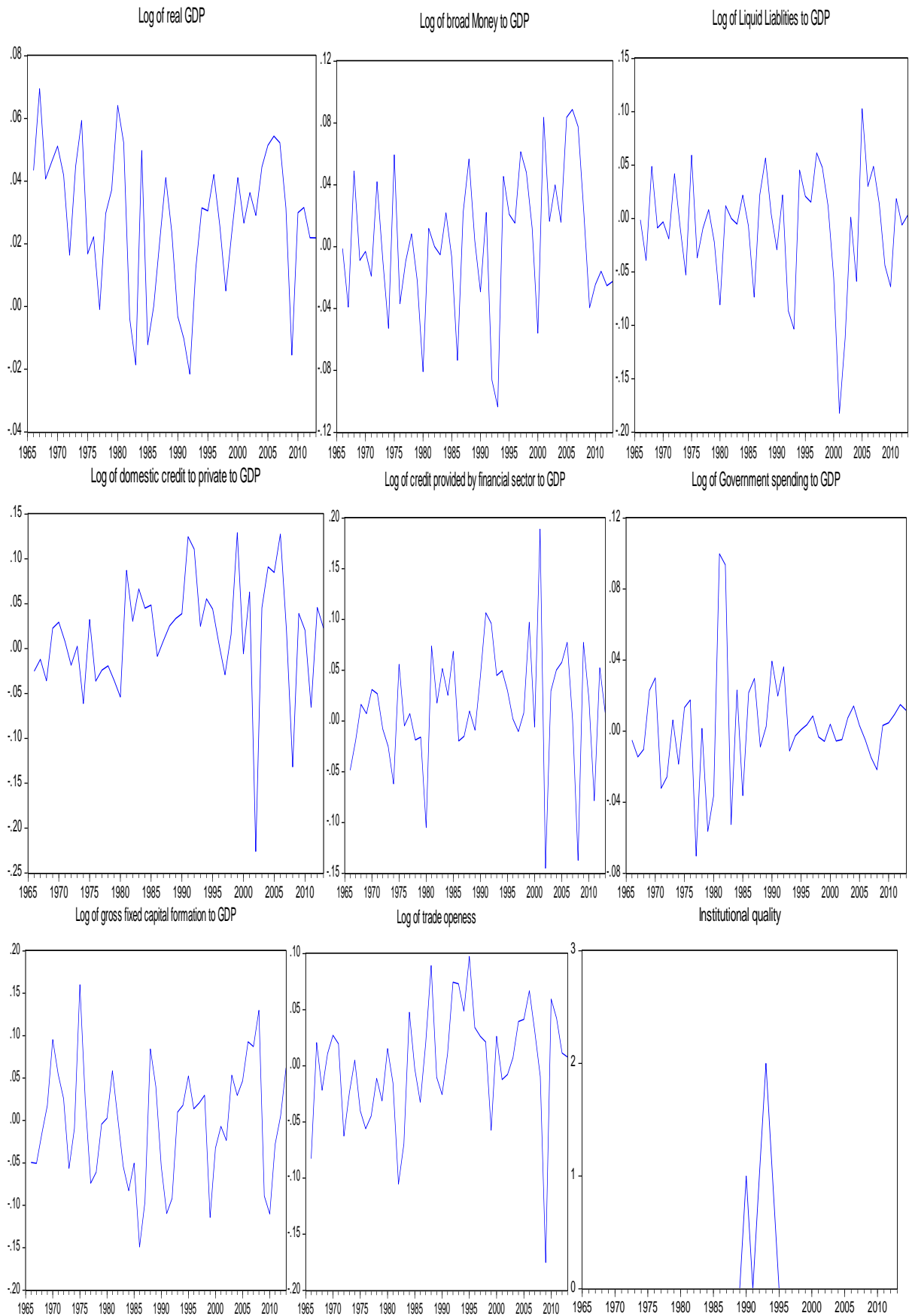
Log of Trade openness



institutional quality



B2: Visual variable plots at first differences



C: Table 5.4.1: Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None * | 0.582859 | 104.2218 | 95.75366 | 0.0115 |
| At most 1 | 0.443738 | 63.12823 | 69.81889 | 0.1521 |
| At most 2 | 0.262877 | 35.56198 | 47.85613 | 0.4187 |
| At most 3 | 0.209585 | 21.22693 | 29.79707 | 0.3437 |
| At most 4 | 0.171050 | 10.17268 | 15.49471 | 0.2677 |
| At most 5 | 0.028432 | 1.355692 | 3.841466 | 0.2443 |

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|------------------------|------------------------|---------|
| None * | 0.582859 | 41.09356 | 40.07757 | 0.0383 |
| At most 1 | 0.443738 | 27.56626 | 33.87687 | 0.2342 |
| At most 2 | 0.262877 | 14.33505 | 27.58434 | 0.7988 |
| At most 3 | 0.209585 | 11.05425 | 21.13162 | 0.6419 |
| At most 4 | 0.171050 | 8.816985 | 14.26460 | 0.3017 |
| At most 5 | 0.028432 | 1.355692 | 3.841466 | 0.2443 |

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

D: Table 5.5.1: VECM Tests Results

Dependent Variable: D(LNY)

Method: Least Squares

Date: 02/05/16 Time: 16:18

Sample (adjusted): 1967 2013

Included observations: 47 after adjustments

$$\begin{aligned}
 D(LNY) = & C(1)*(LNY(-1) - 5.52328112589*LN M2(-1) + 23.1535440294 \\
 & *LNDP(-1) - 19.0134619579*LNCF(-1) - 4.61456876416*LNBL(-1) - \\
 & 4.98849522939*LN G(-1) + 6.61009186242*LNK(-1) - 4.72720037019 \\
 & *LNTP(-1) - 0.117348622092*Q(-1) - 0.872393960776) + C(2)*D(LNY(-1)) \\
 & + C(3)*D(LNM2(-1)) + C(4)*D(LNDP(-1)) + C(5)*D(LNCF(-1)) + \\
 & C(6) \\
 & *D(LNBL(-1)) + C(7)*D(LN G(-1)) + C(8)*D(LNK(-1)) + C(9)*D(LNTP(-1)) \\
 & + C(10)*D(Q(-1)) + C(11) + C(12)*R
 \end{aligned}$$

| | Coefficient | Std. Error | t-Statistic | Prob. |
|-----------------------|-------------|-----------------------|-------------|-----------|
| ecm_{t-1} | -0.10858 | 0.003215 | -3.376969 | 0.0018 |
| $\Delta \ln Y_{t-1}$ | 0.306150 | 0.172476 | 1.775036 | 0.0846 |
| $\Delta \ln M2_{t-1}$ | 0.065618 | 0.108052 | 0.607286 | 0.5476 |
| $\Delta \ln Dp_{t-1}$ | 0.303570 | 0.117912 | 2.574548 | 0.0144 |
| $\Delta \ln Cf_{t-1}$ | -0.203323 | 0.132064 | -1.539580 | 0.1327 |
| $\Delta \ln Bl_{t-1}$ | -0.063466 | 0.085304 | -0.744003 | 0.4618 |
| $\Delta \ln G_{t-1}$ | -0.344012 | 0.087143 | -3.947684 | 0.0004 |
| $\Delta \ln K_{t-1}$ | -0.040266 | 0.046906 | -0.858437 | 0.3965 |
| $\Delta \ln Tp_{t-1}$ | -0.078816 | 0.064578 | -1.220482 | 0.2304 |
| ΔQ_{t-1} | 0.013520 | 0.008860 | 1.525870 | 0.1360 |
| C | 0.005921 | 0.009310 | 0.635976 | 0.5289 |
| R_t | 0.013117 | 0.009689 | 1.353780 | 0.1845 |
| R-squared | 0.576383 | Mean dependent var | | 0.027334 |
| Adjusted R-squared | 0.443246 | S.D. dependent var | | 0.022763 |
| S.E. of regression | 0.016985 | Akaike info criterion | | -5.097110 |
| Sum squared resid | 0.010097 | Schwarz criterion | | -4.624732 |
| Log likelihood | 131.7821 | Hannan-Quinn criter. | | -4.919351 |
| F-statistic | 4.329251 | Durbin-Watson stat | | 1.859393 |
| Prob(F-statistic) | 0.000429 | | | |

E: Table 5.6.1: Wald test for Short Run Analysis

| Variable | Normalised restrictions (=0) | Probability value | Decision |
|--|-------------------------------|-------------------|-------------------------------|
| Real gross domestic product | Null Hypothesis : C(2)=0 | 0.0846* | No short run relationship |
| Broad money as a share of GDP | Null Hypothesis: C(3)=0 | 0.5476 | No short run relationship |
| Domestic credit to private sector as a share of GDP | Null Hypothesis: C(4)=0 | 0.0144** | Short run relationship exists |
| Domestic credit provided by financial sector as a share of GDP | Null Hypothesis : C(5)=0 | 0.1327 | No short run relationship |
| Liquid liabilities as a share of GDP | Null Hypothesis C(6)=0 | 0.4618 | No short run relationship |
| Government spending as a share of GDP | Null Hypothesis : C(7)=0 | 0.0004* | Short run relationship exists |
| gross fixed capital formation as a share of GDP | Null Hypothesis : C(8)=0 | 0.3965 | No short relationship |
| Trade openness (total trade as a share of GDP) | Null Hypothesis : C(9)=0 | 0.2304 | No short run relationship |
| Institutional quality | Null Hypothesis: C(10)=0 | 0.1360 | No short run relationship |
| Financial sector reforms dummy | Null Hypothesis : C(12)=0 | 0.1845 | No short run relationship |

Source: Author's Computation

Note:* Denotes rejection of the null hypothesis at the *1% level, ** 5% and *** at 10% level of significance.

F: Table 5.8.1 Multivariate OLS Model Results

Dependent Variable: LNY
 Method: Least Squares
 Date: 02/05/16 Time: 15:57
 Sample: 1965 2013
 Included observations: 49

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|-----------|
| LNDP | -2.041779 | 0.539169 | -3.786902 | 0.0005 |
| LN2 | 1.373429 | 0.458577 | 2.994979 | 0.0047 |
| LNBL | 1.221642 | 0.333695 | 3.660955 | 0.0007 |
| LNCF | 2.451652 | 0.705748 | 3.473836 | 0.0012 |
| LNK | 0.292938 | 0.259977 | 1.126785 | 0.2665 |
| LNTP | -1.143805 | 0.344026 | -3.324768 | 0.0019 |
| LNG | 2.377372 | 0.464455 | 5.118624 | 0.0000 |
| Q | 0.106168 | 0.050339 | 2.109057 | 0.0412 |
| R | 0.390944 | 0.115333 | 3.389702 | 0.0016 |
| R-squared | 0.869145 | Mean dependent var | | 25.88401 |
| Adjusted R-squared | 0.842974 | S.D. dependent var | | 0.351536 |
| S.E. of regression | 0.139301 | Akaike info criterion | | -0.939949 |
| Sum squared resid | 0.776194 | Schwarz criterion | | -0.592472 |
| Log likelihood | 32.02875 | Hannan-Quinn criter. | | -0.808116 |
| Durbin-Watson stat | 1.270183 | | | |

G : Table 5.9.1 Causality Tests Results

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---------------------------------|-----|-------------|--------|
| LNМ2 does not Granger Cause LNY | 47 | 0.36312 | 0.6977 |
| LNY does not Granger Cause LNМ2 | | 8.52176 | 0.0008 |
| LNBL does not Granger Cause LNY | 47 | 3.66784 | 0.0340 |
| LNY does not Granger Cause LNBL | | 5.15948 | 0.0099 |
| LNCF does not Granger Cause LNY | 47 | 5.45288 | 0.0078 |
| LNY does not Granger Cause LNCF | | 1.10153 | 0.3418 |
| LNDP does not Granger Cause LNY | 47 | 2.48254 | 0.0957 |
| LNY does not Granger Cause LNDP | | 1.60029 | 0.2139 |
| LNG does not Granger Cause LNY | 47 | 5.60293 | 0.0070 |
| LNY does not Granger Cause LNG | | 1.94428 | 0.1558 |
| LNK does not Granger Cause LNY | 47 | 1.31876 | 0.2783 |
| LNY does not Granger Cause LNK | | 12.8015 | 5.E-05 |
| LNTP does not Granger Cause LNY | 47 | 2.14613 | 0.1296 |
| LNY does not Granger Cause LNTP | | 1.38050 | 0.2626 |
| Q does not Granger Cause LNY | 47 | 3.36124 | 0.0443 |
| LNY does not Granger Cause Q | | 2.32254 | 0.1105 |
| R does not Granger Cause LNY | 47 | 1.72264 | 0.1910 |
| LNY does not Granger Cause R | | 0.50566 | 0.6067 |

12 November 2015

Mr Moeketsi Angelus Mokhoele (214571964)
School of Accounting, Economics & Finance
Westville Campus

Dear Mr Mokhoele,

Protocol reference number: HSS/1673/015M

Project title: The Finance-Growth Nexus: Lessons from South Africa

Full Approval – No Risk / Exempt Application

In response to your application received on 11 November 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

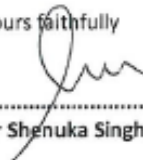
Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully



.....
Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Ms Vanessa Tang
Cc Academic Leader Research: Dr Harold Ngalawa
Cc School Administrator: Nondumiso Mfungeni

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