

The Impact of Commercial Banks Development on Economic Growth in Namibia

A Dissertation
presented to

The Development Finance Centre (DEFIC)

Graduate School of Business

University of Cape Town

In partial fulfilment
of the requirements for the
Master of Commerce in Development Finance Degree

by

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December 2017

Supervised by: Prof. Nicholas Biekpe

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ABSTRACT

This study sets out to investigate the impact of commercial banks development on economic growth in Namibia. Using quarterly data on GDP as well as various commercial banks development indicators, covering the period March 2005 to December 2016, the study employed the Auto-Regression Distributive Lag (ARDL) methodology in determining existence of the short-run and long-run relationships. Furthermore, the study employed the Granger causality test in determining the causal relationship between banking sector development and economic growth. From the ARDL results, the study concluded that there is existence of a positive short-run relationship between banking sector development and GDP growth, channelled through net interest income and funding liabilities of banks. The causality test indicated a bi-directional causality between economic growth and the banking sector development, entailing that development of the banking sector would enhance GDP growth and vice versa. The study thus concluded that, commercial banks development has an impact on economic growth in Namibia and recommends for reforms in the banking industry to ensure increased lending in order to support the economy.

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GLOSSARY OF TERMS

ADF:	Augmented Dickey Fuller Test
ARDL:	Auto-Regression Distributive Lag
ASEAN:	Association of South East Asian Nations
BON:	Bank of Namibia
D-SIB:	Domestic Systemic Important Banks
EU:	European Union
FSI:	Financial Soundness Indicators
GDP:	Gross Domestic Product
IMF:	International Monetary Fund
M2:	Broad Money Supply
NAD/ N\$:	Namibia Dollar
NPL:	Non-Performing Loans
OECD:	Organisation for Economic Co-operation and Development
OLS:	Ordinary Least Square
PP:	Phillips-Perron
SME:	Small and Medium Enterprises
US:	United States

ACKNOWLEDGEMENT

Firstly, I would like to express my profound gratitude to God, the Alpha and Omega, for giving me strength and protecting me from all troubles until I completed this project. Secondly, my appreciation goes out to my parents for giving life to me, guiding me through this journey since the first day and, most importantly, for believing in me (I dedicate this work to you). Thirdly, I would like to express my gratitude to my supervisor, professor Biekpe, for providing me with guidance on this project and ensuring that I produced quality work.

In addition, I would like to thank my best friend and confidant, Martha, for the support and for always being there for me even when the going got tough. A special thanks goes to my classmates and good friends for life, Mutale, Thulile, Laone, Michael and Zubair for the motivation and for undertaking this academic journey with me, it was truly a blessing meeting all of you. Finally, a special thanks goes out to my old friend Peyavali for invaluable support and for the guidance provided during the drafting of this paper.

1 CHAPTER ONE: INTRODUCTION

1.1 Research Area

It is well acknowledged in economics literature that deposit taking banking institutions play a major role in promoting economic development through channelling of funds from those with excess to those in need for investment purposes. However, for banks to be effective in fostering economic growth, it is important that they lend to the right sectors of the economy that are essential and can act as catalysts to stimulate growth. Furthermore, it is fundamental that banks effectively manage various risks that they are exposed to, in order to remain solvent in the long-run and be in a position to provide long term capital which is more essential for economic growth and development. In this regard, for an economy to grow, it should have a well-developed and stable banking system that is resilient to external shocks to effectively play the role of financial intermediation.

In Namibia, the common suppliers of funds for supporting domestic economic activities are commercial banks, development banks and micro-finance institutions. However, other financial institutions such as pension funds, unit trusts, insurance companies also play a role in providing funds for domestic investment purposes, in that they also create a platform for raising domestic savings. The role of non-banking financial institutions in providing funds for domestic investment is, however, limited given the fact that they are only required by law to invest at least 35 percent of their total assets in the domestic economy (International Monetary Fund, 2016). As such, most of these institutions have their investments off-shore, mainly invested with South African institutions. This has even placed a larger expectation on commercial banks in Namibia to provide domestic credit that can stimulate the growth of the economy.

While commercial banks in Namibia are expected to drive economic growth through providing credit to the important sectors of the economy, it is not clear whether or not banks are making a significant impact on the economy. As such, the Bank of Namibia (BON), which is the central bank entrusted with the function of supervising commercial banks in the country, has over the years raised concerns over the increasing household credit, that is mainly dominated by instalment credit, overdrafts and other loans and advances, which are mostly used to finance unproductive luxury imported vehicles (BON, 2014). This has necessitated the need for this

study to investigate the role that domestic banks play in terms of economic growth, also taking into account that very few similar studies have been conducted on Namibia.

1.2 Problem Statement

The facilitation of capital formulation for private investment purposes mainly require the availability of domestic savings and in some instances foreign assistance through aid and borrowings. Notwithstanding this assertion, Namibia was classified, in 2009, as an upper middle income country by the World Bank, which was an upgrade from the lower middle income category (Republic of Namibia, 2012). This classification entailed that the country, with now higher income per capita, will no longer qualify as a recipient of foreign aid from the World Bank. As such Namibia had to heavily depend on the domestic financial system to play the critical role of financial intermediation to provide funds for investment. This, has more than ever, increased the important role that commercial banks, as dominant institutions in the financial system in terms of credit extension, had to play in attracting funds from savers for on lending purposes.

Despite the important role that the banking sector has to play in the Namibian economy, the actual impact that the banking sector has on economic growth has not been thoroughly interrogated. As such, while the total loans and advances of the banking sector have increased by close to 400 percent over the past 10 years, and the sector has also been fairly stable and efficient (Bank of Namibia, 2016), the Namibian economy has only grown at an average rate of 4 percent over the same period (Trading Economics, 2017). This growth rate is below the targeted annual growth rate of 5 percent, which the government deems appropriate to achieve Vision 2030; a long-term national economic objective, in order to reduce the rate of unemployment and income inequality (Republic of Namibia, 2012). Furthermore, the economic growth rate has even declined further in recent years, with Namibia experiencing a technical recession in 2016 and 2017 (Trading Economics, 2017).

Moreover, while the government has specifically targeted savings and investments as two critical factors to attain the targeted economic growth rate of 5 percent, the banking sector through which these factors are mainly channelled has demonstrated several weaknesses. As such, the Namibian banking system is considered to be highly concentrated and lacking competition given the fact that more than 90 percent of the total sector's loans and advances

are concentrated within the big four banks (Republic of Namibia, 2011). In addition, considering that banks are profit-driven and would most likely finance activities that increase their profits with minimal consideration of its impact on the economy, one would wonder whether the commercial banks' credit has been channelled to the right sectors of the economy that can propel economic growth. Furthermore, despite the increasingly growing total assets of banks, 38 percent of the Namibian bankable population is reported to be excluded from the banking system as at 2012, with no access to banking products and services (FinMark Trust, 2012).

The problem highlighted above, therefore, necessitates the conduct of this study, which will contribute to the literature with regard to the actual impact that commercial banks development has on economic growth. In this regard, Calderon and Liu (2002) define financial sector development as enhancements in the quantity, quality and efficiency of financial products and services offered by intermediate institutions. Depending on the outcome of the research, this study will contribute to policy initiatives that can bring reform in the banking sector so that banks are given incentives to lend to the sectors of the economy that are productive in order to effectively promote economic growth of the country. In addition, the outcome of this study could further lead to an improvement in the provision of financial products and services to the unbanked population living in remote areas.

1.3 Purpose and Significance of the Research

Given the unique characteristics of the banking sector and the important role that banking institutions can play in the Namibian economy, the extent to which their activities have influenced economic growth has not been interrogated over the years. As such, there has been significant transformations in the banking sector such as the number of commercial banking institution that increased from only 4 at independence to 9 in 2016, with a number of new banks focusing on the aspect of financial inclusion. Despite these transformations, there has been only one credible research published on Namibia, to the author's knowledge, pertaining to the financial sector's influence on the general economy. In this regard, other studies conducted on related topics, that the author found were only academic thesis and were not published in any credible journals. These studies could, therefore, not be relied upon as credible source of information during this study.

Furthermore, with the introduction of new technology such as cell-phone banking and internet banking, existing banks and new entrants in the market have been able to improve their efficiency in terms of service delivery over the years and increase access to their product to clients without bank accounts and those with limited access to branches of banks. As such, with this technological advancements, the banks' total funding liabilities and total loans and advances have more than tripled over the past 10 years. The developments in the banking sector as outlined above thus necessitate an investigation in order to establish the impact that commercial banks have on economic growth. Depending on the findings, this study can be used to inform policy initiatives that can assist in further developing the banking sector and creating incentives for the banks to avail credit to the most productive sectors of the economy in order to stimulate economic growth.

1.4 Research Questions and Scope

In light of the discussions above, the main objective of this study is to analyse the relationship that exists between commercial banks' development; as the largest providers of domestic credit in the economy, and economic growth in Namibia during the period 2005:1 to 2016:4. Furthermore, the study will try to determine the direction of causality between commercial banks' development indicators and economic growth over the same period in order to establish whether commercial banks development results from the development in the real sector or whether expansion of the banking sector precedes economic growth. As such, this study will attempt to answer the following research questions:

1. Does commercial banks' development lead to economic growth?
2. What is the direction of causality between banking sector development and growth of the real sector, is it supply leading or is it demand following?

Hypothesis 1:

H_0 : There is no relationship between banking sector development and economic growth.

H_1 : There is a positive relationship between banking sector development and economic growth.

Hypothesis 2:

H_0 : There is no causal relationship between banking sector development and economic growth.

H_1 : There is causal relationship between banking sector development and economic growth.

1.5 Research Assumptions

The underlying assumption of this study is that, banking sector development, as characterised by its size and depth, efficiency and stability has a positive impact on economic growth. This assumption is based on the view that for an economy to expand, it would require funding and most of this funding would most likely come from the banking sector as it is the largest domestic lending sector in the economy. The second underlying assumption is that the direction of causality runs from the banking sector development to the real sector based on the argument that banking sector development is a necessity for economic growth.

1.6 Organization of the study

This study is divided into six (6) chapters. Following the introduction, Chapter two presents an overview of the literature reviewed, both theoretical and empirical, pertaining to this research topic as well as an overview of the Namibian banking sector. In this regard, the theoretical literature covered the review of the evolution of theories on banking sector/ financial sector development and economic growth, while the empirical literature presents the outcome of various studies conducted on the topic in different jurisdictions. Chapter three provides a description of the methodology employed in the study, as well as the data used, its source and description of the choice of variables considered in the model. While Chapter four presents the results and the detailed empirical analysis of the study on which the conclusion and recommendations is based, Chapter five presents the conclusions of the study as well as the policy implications. Finally, Chapter six presents the recommendations for future research.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides a summary of the literature that is available with regard to the role that financial sector development in general and the banking sector specifically play in influencing economic growth. In this regard, the chapter will begin by introducing the definition of banking sector development, before presenting the overview of the Namibia banking sector and the various theories underpinning the role of banks and credit in fostering economic growth. Furthermore, the section will present the review of empirical studies conducted on the subject in various countries, with specific focus on the variables examined, methodology employed and the outcome established. Finally, the section will conclude with the review of literature conducted on Namibia, thereby identifying gaps in literature and providing more justification for conducting this study in the Namibian context.

2.2 Defining Banking Sector Development

Traditionally, banking sector development indicators only focused on the size and depth of the banking system as opposed to access of banking services and products to the broader population, efficiency in the process of financial intermediation and stability and resilience of the banking system to negative shocks (World Bank, 2006). As such, these conventional measures of banking sector development only considered the ratio of broad money supply (M2) to GDP and the ratio of private credit to GDP, which have all been used in measuring the causal effects of financial development on economic growth (World Bank, 2006). However, most of the traditional measures ignored the bank's branch and Automated Teller Machine (ATM) network, average loans and deposits size, return on assets, net interest margin, capital adequacy ratio (CAR), non-performing loans (NPL) and liquid assets ratio, among others. These measures, therefore, define the size and depth, efficiency and stability of the banking sector.

For the purposes of this study, banking sector development is defined to mean an increase in the size and depth of the banking sector services, with improved efficiency and broader access to financial products and services that are extended by a stable banking system. This definition is aligned to the development indicators contained in the World Bank's Financial Sector Operations and Policy (World Bank, 2006).

2.3 Overview of the Namibia Banking Sector

As at December 2016, the banking sector in Namibia consisted of 9 fully-fledged commercial banks, one branch of a foreign banking institution and one representative office of a foreign banking institution. The banking sector is, however, dominated by the big four banks, that are considered to be Domestic Systematically Important Banks¹ (D-SIBs) (Bank of Namibia, 2014). The D-SIBs are made up of three South African banking subsidiaries and one local bank and share, amongst them, more than 90 percent of the market share in terms of deposits and total loans and advances. The big four banks have been in operation since before the country gained independence in 1990, while the other 5 banks currently in operation entered the market only after 2012 (Bank of Namibia, 2017). The Namibian banking sector is regulated by the central bank, the Bank of Namibia, with the objective to serve as the state principle instrument to control money supply as well as to ensure financial stability, price stability and economic growth, among other mandates (Bank of Namibia, 2016).

While the Namibian financial sector is said to be dominated by non-bank financial institutions, the commercial banks are relatively large as they accounted for around 70 percent of GDP in 2016 (International Monetary Fund, 2016). In terms of credit extension to the domestic economy, the total loans and advances of banks in Namibia amounted to N\$84.9 billion as at December 2016 (Bank of Namibia, 2016). Apart from commercial banks, the Namibian Financial System is also comprised of two development banking institutions, a number of unit trusts, pension funds and insurance companies. The two development banks are funded by government and are categorised per sector of lending, namely; agriculture and infrastructure. According to the Development Bank of Namibia (2016) and Agribank of Namibia (2015), the two institutions had a combined total loans and advances of just below N\$6 billion as at December 2015. On the other hand, pension funds and long-term insurance companies, which also provide a platform for private savings and investments, have most of their funds invested off-shore as they are only required by law to invest at least 35 percent of their total assets locally (International Monetary Fund, 2016). This further exerts pressure on the banking sector to finance economic activities within the domestic economy.

¹ D-SIB are banking institutions that are classified by the Bank of Namibia as significant in terms of size, complexity, substitutability and interconnectedness.

2.4 Theoretical Framework

It is imperative to note from the onset that over the years, researchers have had opposing views with regard to the role of banks credit extension in promoting economic growth. In this regard, while some hold the view that finance plays a critical role in fostering economic development, others believe that finance is an overstressed determinant of growth and as such economic growth precedes demand for finance. This section, therefore, presents the evolution of the theories underpinning financial development and economic growth theory over the years.

2.4.1 Walter Bagehot

In finance and economics, the role of finance in economic development is first attributed to the work of Walter Bagehot in 1873 titled “Lombard Street: A description of the money market”. Bagehot (1873) argues that if English traders using larger portion of borrowed funds in comparison to their own capital can borrow at low interest rates, they can sell their commodities at much lower prices than a trader using his own capital, and still be able to make higher returns on their own funds after paying for the interest on their loans. In the face of competition, these traders are able to reduce their prices further, and forego a relatively smaller profit, and can drive out the old-fashioned traders who trade in the market using their own capital. At lower prices, traders using borrowed capital are, thus, able to produce more and sell more of their products, therefore inducing economic growth. Bagehot thus established that “development in finance, such as the joint-stock company and limited liability enabled the industrial revolution in Britain by facilitating the mobilization of capital for large-scale investments” (Driffill, 2003, p. 363).

2.4.2 Schumpeterian Model of Economic Growth

Another pioneer of the theory on financial development and economic growth is Joseph Schumpeter who, in his work published in 1934, recognised the role of bank credit in promoting economic development (Schumpeter, 1934). Schumpeter argued that economic development cannot take place naturally but would require an entrepreneur to initiate innovation to replace the old technologies, which he termed as “creative destruction”. As such, for the entrepreneur to carry out his function and induce economic growth, he would require technical knowledge and banking credit to purchase goods that he will use to conduct experiments, therefore, leading to innovations and eventually growth. Schumpeter (1934) argued that economic growth and development would result because of new products and improvements in the old ones that

would come by because of innovation. Critical to Schumpeterian model is the role of bank credit used to finance research and development in order to come up with cost effective methods of production that eventually results in the increase of goods and services produced in the economy.

2.4.3 Neo-Classical Model of Growth

Neo-Classical Growth theory is based on the work of Solow (1956) and Swan (1956) which is an extension of the Harrod-Domar model, that was developed in 1946. According to Solow (1956), economic growth is a factor of labour, capital and technology. The theory entails that a temporary equilibrium can be achieved by varying the combination of labour, capital and technology in the economy, thereby ignoring any specific role that finance can play with regard to economic growth. Solow (1956) argued that economic growth is independent of the rate of saving and investment in the economy and that capital investments resulting from increased savings only lead to temporally growth as capital is subject to diminishing returns in a closed economy with fixed stock of labour and no technological progress. In this regard, Solow (1956) argued that only through technological progress can sustainable economic development be achieved.

2.4.4 Endogenous Growth Model

The Endogenous Growth Model consists of the body of literature that opposed the Neo-Classical Model of Growth. It entails that economic growth is determined by endogenous factors rather than by external forces. In this regard, the theory has two folds, one that considers economic growth to be significantly determined by investments in innovation, knowledge and human capital and the second one that focuses on externalities and positive spill over effects that can lead to economic growth. Central to this theory is the role that financial intermediation plays with regard to achieving economic growth. In this regard, several authors such as Levine (1997), Bencivenga and Smith (1991) and Saint-Paul (1992) have incorporated, in the Endogenous Growth Model, the role of the financial system in determining economic growth. Smith (1991) argument centers on the efficient financial intermediation that arises when liquidity risk is adequately managed to prompt savers to invest in productive investments that can induce economic growth. Saint-Paul (1992) argues that a well-developed and well-functioning stock market can promote economic growth through risk sharing by businesspersons. Similar to Saint-Paul (1992), Levine (1997) puts more emphasis on the

importance of stock markets in creating finance needed for investments purposes, especially in less liquid assets.

2.4.5 Financial Repression Hypothesis

The formalization of the theory of financial intermediation is attributed, by literature, to the work of McKinnon (1973) and Shaw (1973). In this regard, McKinnon and Shaw acknowledged the pivotal role that financial institutions play in fostering economic growth arguing that the variety in economic growth can be explained by the quantity and quality of service that financial institutions provide in the economy. McKinnon (1973) and Shaw (1973) argue that if an economy has an efficient financial system, then growth and development can be achieved through efficient allocation of capital. They further argue that, historically, most countries both developed and more especially developing, suppressed competition in their financial sectors through government interventions and regulations leading to low levels of growth. They believed this to be the case based on the notion that an uncompetitive financial sector leads to lower levels of savings and investments than the levels that could otherwise be achieved in a competitive market.

2.5 Empirical Literature

Empirical evidence that exist presents varying results with regard to the role of banking sector development on economic growth in different jurisdictions examined. In this regard, while some researchers established that financial development resulted in an increase in GDP growth of the economies of countries they examined, other researchers found that economic growth is the enabler for banking sector and financial sector development. In contrast, empirical evidence also exists, indicating that other researchers have failed to prove existence of any relationship between banking sector development and economic growth in countries they examined. Given the above, it could safely be concluded from the available literature that there is no clear-cut relationship between banking sector development and economic growth, but such would vary from country to country. A review of the various papers published on the topic is presented below.

2.5.1 Size and Depth of the Banking Sector

As the traditional measure of banking sector development, the size and depth of the banking system and financial sector at large are the widely used indicators employed in determining the

relationship between financial development and economic growth as well as in establishing the direction of this relationship. The indicators of size and depth of the financial sector include broad money supply (M2) to GDP, private credit to GDP, central bank assets to GDP, private credit to deposits, deposits to GDP etc. However, for the purposes of this study, only the two commonly used indicators of M2 to GDP and private credit to GDP will be considered.

2.5.1.1 Money Supply to GDP

A number of empirical studies have examined the relationship between money supply in the economy and economic growth with an objective to determine whether or not an increase in money supply, which measures monetization in the economy, has any impact on economic growth. One such study is by Tripathy and Pradhan (2014), who examined the relationship between the banking sector development and economic growth in India. In his study, Tripathy and Pradhan (2014) used the broad money supply as an indicator of the size of the financial system and financial intermediary development among others. Using the correlation matrix and the granger causality methodology, Tripathy and Pradhan (2014) established a positive bi-directional relationship between broad money supply and economic growth, implying that growth in GDP can cause an increase in the broad money supply and vice versa.

Unlike Tripathy and Pradhan (2014), Petkovski and Kjosevski (2014) adopted the quasi money supply as a measure of the size of the financial sector development, which they regarded as an adequate measure in developing nations given the predominant nature of the banking sector as well as owing to the lack of data on other financial assets. In this regard, Petkovski and Kjosevski (2014) employed the dynamic panel method to estimate the regression and determine the relationship between economic growth and quasi money supply. Similar to Pradhan and Tripathy (2014), Petkovski and Kjosevski (2014) also found the coefficient of the quasi money variable to be positive and statistically significant, therefore, implying that banking sector development promotes economic growth in the selected southern and south-eastern European countries and for period examined. These findings, thus, support the financial repression theory hypothesis that recognises the critical role of the financial system in the economy.

Odhiambo (2004) and Chucku and Agu (2009) are some of the other authors who used the broad money supply to GDP as a proxy for measuring the depth of the banking sector development in their quest to establish the impact of financial development on economic

growth. Odhiambo (2004) used granger causality test of the co-integration and error-correction model in analysing the direction of causality between economic growth and financial development for South Africa, given its effectiveness in both large and small samples. On the other hand, Chucku and Agu (2009) employed the method of Multivariate Vector Error Correction Model (VECM) to analyse the same for Nigeria. In this regard, both Odhiambo (2004) and Chucku and Agu (2009) established a one direction linkage between M2 and economic growth, running from economic growth to money supply. Contrary to the findings of Pradhan (2014) and Petkovski and Kjosevski (2014), the findings of Odhiambo (2004), Chucku and Agu (2009) suggest that economic growth causes the development of the financial sector, therefore, supporting the Neo-Classical Model of Growth, which does not recognise the role of finance towards economic growth.

2.5.1.2 Banks Credit

As discussed before, credit to the private sector is one of the most widely used measure of the size of the banking sector development as it captures the financial resources extended to the private sector by the banking institutions in the economy, through loans and other account receivables. Timsina (2014) examined the relationship between bank credit extended to the private sector and economic growth in Nepal. The study used the commonly used approach of Co-integration and Error Correction Model and established a long run positive relationship between bank credit extended to the private sector and economic growth in line with the financial repression theory. This finding is also supported by the work of Ogege and Shiro (2012), who examined the impact of depositing money in banks on economic growth in Nigeria using a similar methodology to the one employed by Timsina (2014), establishing a positive relationship between bank credit and economic growth.

Apergis, Fillipidis and Economidou (2007) conducted a panel integration and co-integration techniques for a dynamic heterogeneous panel of 15 OECD and 50 non-OECD countries over the period 1975-2000 in order to establish the causal linkages between financial deepening and economic growth. Because of the view expressed in the finance growth nexus that the significance of the financial development impact on economic growth depends on the level of the country's level of development and financial indicators' employed, the study assessed the impact of three different measure of financial development. Two of the three measures employed by the study are the bank credit, measured by bank credit extension to the private sector over GDP, and private sector credit measured by banks and financial institutions' credit

extension to the private sector over GDP. The Dynamic Ordinary Least Square showed that the estimated coefficients of both the bank credit and private credit are all positive and statistically significant in all group of countries, therefore, implying a positive and statistically significant relationship between financial development and economic growth. The results further indicate a bi-causal relationship between financial deepening and economic growth entailing that financial development caused economic growth while at the same time economic growth led to the deepening of the financial sector.

2.5.2 Efficiency of the Banking Sector

Sufian, Kamarudin and Nassir (2016) examined the determinants of efficiency in the Malaysian banking sector, taking into consideration the impact that origination of banks would have on efficiency. As a measure of efficiency, Sufian et al. considered six bank specific variables in the regression model, namely loan loss provision over total loans, non-interest income over total assets, non-interest expenses over total assets, total loans over total assets, log of total assets and book value of shareholders' equity as a fraction of total assets. The authors used the loan loss provision as a proxy measure for credit risk, non-interest income as a proxy measure for diversification in non-traditional activities, while the non-interest expense was used to provide data with regard to how the banks operating cost varies. Furthermore, the loans to total assets was used as a measure of liquidity risk, log of total assets as a proxy measure for size, and the book value of shareholders' equity to total assets as a measure of the relationship between the bank's efficiency and capitalization.

Sufian et al. (2016) established from the regression analysis that productive efficiency in the Malaysian banking sector is positively related to the size, non-interest income and capitalisation. In terms of efficiency being determined by size, Hauner (2005) explains that it could either relate to market power, where large banks are likely to pay less for their inputs or it could be because of economies of scale where fixed costs are spread over a higher volume of services or as a result of specialised labour force. Furthermore, according to Sufian et al. (2016), the positive relationship between capitalization and efficiency could be supported by the argument that well-capitalised banks face a lower cost of failing and hence they reduce their cost of funding. While the positive relationship between non-interest income and efficiency appears to suggest that Malaysian banks with a higher proportion of their income derived from non-interest sources are likely to report higher efficiency level, this co-efficient was however only found to be statistically significant at 10 percent confidence level.

Aurangzeb (2012) considered the banking sector's efficiency in assessing the contribution of the banks on economic growth in Pakistan. In this regard, Aurangzeb (2012) used the banking sectors' profit and interest earnings variables as a proxy measure for efficiency. The author employed the method of multiple regression analysis to test for the relationship between efficiency and economic growth and the Granger Causality Test to determine the direction of causality. In his findings, Aurengzeb (2012) established that profitability and interest earnings have a significant positive impact on economic growth of Pakistan. Furthermore, the causality test indicated a bi-directional relationship between profitability and economic growth and a unidirectional relationship between interest earnings and economic growth, running from interest earning to economic growth.

2.5.3 Stability of the Banking Sector

In 2001, following experts consultative meeting and the surveys from member countries, the International Monetary Fund (IMF) has endorsed a set of core and encouraged financial soundness indicators (FSI) which have been revised and refined over the years (IMF, 2015). The idea behind the development of the financial soundness indicators is, therefore, to provide an idea of the soundness or stability of the financial system as a whole, as well as that of the banking sector, given the significant role played by these sectors in an economy. The IMF has thus developed a total of 39 indicators that are divided into two groups, with 12 main or core set relating only to the banking sector, while the remaining set of 27 encouraged indicators pertains to some other banking sector indicators and also to households, financial markets, non-bank financial institution, non-financial corporations and property markets. From the 12 core FSIs for the banking sector, this study will investigate the three indicators that are commonly and widely used in measuring the banking sector stability in many jurisdictions, in order to establish the relationship between these measures and economic growth. The indicators are capital adequacy; asset quality and liquidity.

2.5.3.1 Capital Adequacy Ratio

Capital adequacy ratio measures the bank's capital as a percentage of the risk weighted credit exposure and is used to enhance the stability of individual banking institutions as well as the entire system by offsetting expected and unexpected losses. It is, therefore, expected that banks facing higher capital requirements are likely to reduce credit supply to the real sector as they

become more conservative and hold a significant portion of its equity and partly debt in capital reserves to off-set losses, which may slow down economic growth. This assertion is also supported by Joseph Ackermann, who in 2009 as the CEO of Deutsche Bank said “More equity might increase the stability of banks. At the same time, however, it would restrict their ability to provide loans to the rest of the economy. This reduces growth and has negative effects for all” (Admati, 2011). However, with higher capital requirements, banks and other financial intermediary institutions are expected to become more resilient to credit defaults and other losses as they are able to absorb significant losses, which makes them stable and able to provide credit to the economy in the long run, and which may also positively impact on economic growth. However, while this remains a possibility, most empirical evidence available lean more towards an inverse relationship between capital requirements and economic growth as presented below.

Martynova (2015) conducted a survey in a quest to establish the effect of bank capital requirements on economic growth by reviewing several studies that explored the relationship between bank capital and economic growth. Martynova (2015) established little evidence of direct effect, pointing out that research focuses rather on indirect effect such as the impact of banks capital on credit supply, bank asset risk and cost of bank capital which in turn can affect economic growth. He further pointed out that bank’s facing higher capital requirements are faced with three options, (1) cutting down on lending, (2) raising equity or (3) reducing asset risk. A study by Gross, Kok and Zochowski (2016) examined the impact of bank capital on economic activity using a Mixed-Cross Section Global Vector Autoregressive model for the 28 European Union (EU) economies and a sample of 42 significant listed European banking groups. The study established that raising the capital ratio requirements for banks can result in materially reduced economic activities in the EU countries.

The findings of Gross et al. (2016) are further supported by the study conducted by the Institute for International Finance (2011), which covers a different variety of regulatory reforms, including new capital, in the United States (US), Eurozone, Japan, United Kingdom and Switzerland. The study established that following the financial crisis of 2008/09, the regulatory reforms that led to, among others, increases in capital requirements led to US bank lending rates increasing by around 5 percentage points in 2011 to 2015, while GDP growth declined by around 3 percent compared to the no reform level. The view that higher capital requirements in banks will lead to reduced economic activities has, however, been dismissed by Admati (2011)

in his paper on the false trade-off between economic growth and bank capital. Admati (2011) argued that higher capital requirements do not force banks to stop lending but only encourage them to fund with relatively more equity. Despite Admati (2011) argument, there seems to be little empirical evidence that supports his assertion.

2.5.3.2 Asset Quality

The quality of loans and advances extended by the commercial banks is measured by the percentage of Non-Performing Loans (NPLs) to total loans. According to the International Monetary Fund (IMF) (2005, p. 4), “a loan is non-performing when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons such as a debtor filing for bankruptcy which leads to doubt that payments will be made in full”. As such, NPLs indicate the level of credit default incurred by the banks in carrying out their functions as credit providers. NPLs that are not recoverable such as loans that are not adequately secured by collateral are written off against the bank’s capital and thus impact on the bank’s profitability and stability. Banking institutions with high NPL ratios will be required to hold high provisions for loan losses or becoming unprofitable and unstable, eventually leading to their failure. As such, whether banks end up with high provisions for loan losses or failing, the end result would be a decline in credit provided to the private sector, which may negatively impact on economic growth. The empirical literature on the relationship between NPL and economic growth is, however, inconclusive as presented below.

Murumba (2013) assessed the relationship between Real GDP and NPL in Nigeria between the period 1995 to 2009. Using the Pearson Product-Moment Correlation Coefficient to analyse the time series data, the study established existence of a significant and positive relationship between real GDP growth and NPL in the Nigerian banking sector. The findings of Murumba (2013) is, however, contrary to popular belief that positive growth in real GDP will lead to a decline in NPL since people are actually better off in an environment of high GDP growth and are able to service their loans. This argument is supported by studies conducted by Jordan and Tucker (2013) on the extent to which economic output affects NPL in the Bahamas as well as a study by Morakinyo and Sibanda (2016) in which they assessed the long run determination of economic growth by NPL in Nigeria. While employing different methodologies, Jordan and Tucker (2013) using the Vector Error Correction model and Morakinyo and Sibanda (2016)

employing the endogenous growth model, both arrived to the conclusion that the relationship between growth in GDP and NPL is negative.

2.5.3.3 Liquidity

As per the European Central Bank report series (Nikolaou, 2009), liquidity can be defined in the context of funding liquidity as well as market liquidity. As such, funding liquidity is defined by the Basel committee of banking supervision as the ability of banks to meet their liabilities, unwind or settle their positions as they become due, while market liquidity is defined as the ability to trade an asset at short notice, at low cost and with little impact on its price (Nikolaou, 2009). As per the above definition, holding enough liquid assets at hand plays a key role in the stability of a banking institution as well as financial sector at large given the fact that liquidity risk has the potential to lead to failure of even solvent institutions, which may have an impact on economic growth. In this regard, this section provides a review of the empirical studies that has been conducted on the relationship between liquidity of the banking sector and economic growth in different jurisdictions.

Ojiegbe, Oladele and Makwe (2016) carried out a study to determine the effect of bank liquidity on economic growth in Nigeria. Using data from the central bank of Nigeria statistical bulletin covering the period between 1980 to 2013, Ojiegbe et al. (2016) employed the Ordinary Least Square (OLS) regression analysis and the econometrics co-integration test. From the OLS test, the study established a significant and positive relationship between total bank credit ratios and economic growth in Nigeria, implying that high liquidity in banks leads to increases in banks credit ratios and eventually in economic growth. This finding is also supported by a study conducted by Fidrmuc, Fungacova and Weill (2015) on the contribution of bank liquidity creation on economic growth in Russia. The authors used macroeconomics data and banking sector data between the period 2004 and 2011 employing the fixed effect model with benchmark regression. The results established a positive coefficient for liquidity creation measures, implying that liquidity creation role of banks is beneficial for economic growth.

2.5.4 Empirical Studies on Namibia

While a few number of empirical studies have been conducted on the relationship between the financial sector development and economic growth in Namibia, only one study on this topic has been published in a credible journal on Namibia, at least to the author's knowledge. As

such, all the other studies conducted on related topics were found to be academic thesis and were not published in any reliable journals. In the context, these studies were deemed unreliable for the purposes of this study. The only study considered credible in this regard is by Sunde (2013), who investigated the nature of the nexus between financial sector development and economic growth in Namibia. In his study, Sunde (2013) acknowledged that this study was the first of its kind as there was no any other study conducted on the topic in Namibia before.

In his study, Sunde employed the level of real GDP, level of real GDP per capita, and the ratio of investment to GDP as measures of economic growth. On the other hand, the study used the lending rates, the ratio of liquid assets to GDP and the ratio of private credit to GDP as measures of financial system development (Sunde, 2013). After conducting the unit root and co-integration tests, Sunde (2013) employed the method of Granger causality to establish the relationship between the financial sector indicators and economic growth indicators. The study established a bi-directional relationship between financial sector development and economic growth in Namibia, implying that development of the financial sector will lead to economic growth and vice versa. The author, however, cautioned that the results of this study should be interpreted with caution given the fact that a small sample size was used.

2.6 Conclusion

From the various studies reviewed, it could be established that there is uniformity in terms of the proxy used to measure economic growth, which is measured by GDP. However, there are various proxies used for measuring the banking sector development which include variables related to the depth and size of the banking sector, the efficiency of the banking sector as well as the stability of the banking sector. In terms of the methodology, most studies reviewed employed the Co-integration and Error Correction Model, with a few others making use of the multiple linear regression analysis to establish the relationship, while the granger causality test was used in determining the direction of this relationship. What could further be deduced from the review of the literature is that, the empirical literature is inconclusive with regard to the relationship between banking sector development and economic growth, irrespective of the level of development attained by the country, as this relationship has been found to be positive in some jurisdictions, negative in others and in some cases insignificant. Considering that only a single study on the topic has been conducted on Namibia so far, this study will thus be the second of its kind on Namibia.

3 CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology employed in the study in an effort to establish the impact that the banking sector has on economic growth in Namibia. In this regard, the section starts off by explaining the econometrics methodology used and presenting the model specifications, before it goes on to explain the data used, the period covered, its source and frequency. Furthermore, the section provides the sampling method considered, justification of variables used as well as the methods employed to analyse the data collected. The section closes off by highlighting the research validity and reliability as well as its limitations.

3.2 Research Approach and Strategy

According to McMillan and Schumacher (2001), research design is a plan for a study that sets out the activities to be undertaken, such as data collection procedures and sampling strategy in order to provide answers to the research questions. In this regard, the study makes use of a quantitative approach, thereby employing mathematical, statistical and numerical analysis of the data to establish the relationship among measured variables. The study is therefore of an explanatory nature, in the sense that it employs an econometrics model to analyse the relationship and cause factors among various bank specific variables and the macro-economic variable. This research approach allowed for the quantitative data collection for all the variables considered in the study in order to answer the research questions and achieve the research objectives.

3.3 Specification of the Model

The model is specified based on the empirical literature reviewed with regard to the relationship between banking sector development and economic growth in various jurisdictions. In this regard, the model is specified in a similar manner to the studies that also examined the long run relationship between banking sector development and economic growth such as Aurangzeb (2012), Petkovski and Kjosevski (2014), Ojiegbe et al. (2016) while making minor adjustments to suit the Namibian environment. This confirms that the specification of the model is well aligned to similar studies conducted in different jurisdictions.

The regression equation's general specification is presented below as follows:

$$GDP_t = \beta_0 + \beta_1 FND_t + \beta_2 CRE_t + \beta_3 NETINT_t + \beta_4 CAP_t + \beta_5 LIQ_t + \epsilon \quad (1)$$

Where:

GDP_t – Represents Gross Domestic Product at time t ;

FND_t – Represents Total Funding Related Liabilities held by Commercial Banks at time t ;

CRE_t – Denotes Total Credit Extended by Commercial Banks at time t ;

$NETINT_t$ – Denotes Net Interest Income/ Expenses of Commercial Banks at time t ;

CAP_t – Level of Capital held by Commercial Banks at time t ;

LIQ_t – Liquid Assets held by Commercial Banks at time t .

ϵ – Denotes the Error Term (which captures all the other variables that have an impact on GDP but were not included in the model).

3.4 Justification and Measurement of Variables

GDP

Real GDP growth was taken into account in the model to indicate the aggregate demand in the domestic economy. As the only macroeconomic variable considered in the model, GDP is presented as the dependent variable in order to capture the impact that banking sector development variables would have on economic growth. Similar studies conducted on the topic such as Kiprop, Kalio, Kibet and Kiprop (2015), Aurengzeb (2012), Ojiegbe et al. (2016) and many others have also used GDP growth as a proxy measure for economic growth, therefore, providing justification for its use in this study.

Total Funding Liabilities

Total funding liabilities is one of the proxy measures of size and depth of the banking sector development considered in the model to indicate the total funds at the bank's disposal to provide loans and advances to the economy. In this regard, total funding liabilities include total banks deposits and borrowings. An increase in the banks' total funding liabilities is, therefore, likely to have an indirect positive impact on the economy through an increase in the amount of credit that banks will provide to the economy leading to an increase in the demand for general goods and services. While similar studies such as Ojiegbe et al. (2016) and Aurengzeb (2012) have

only considered the deposit liabilities component, this study deemed it fit to use the total funding liabilities given the availability of the data and the fact that this measure provides a complete picture of how banks fund their asset growth.

Banks Credit

Banks credit extension to both the private and public sector is used as another proxy measure for size and depth of the banking sector in measuring the banking sector development. This variable is expected to have a positive direct impact on GDP growth because banks provide funding to various sectors of the economy that are essential for economic growth such as infrastructure projects, SMEs and agricultural projects, among others. As such, increases in loans and advances provided by banks would directly lead to an increase in GDP growth. The impact of bank credit on economic growth was also tested by Tripathy and Pradhan (2014), Aurangzeb (2012) and Ojiegbe et al. (2016) and all these studies established a positive relationship between banks credit and economic growth.

Capital

The model also considered the amount of capital held by banks as a proxy measure of banking sector development as it indicates the stability of the banking system. However, the relationship between the amount of capital held by banks and GDP growth is expected to be negative since banks facing higher capital requirements are likely to reduce credit supply which eventually reduces the demand for goods and services. The impact of banks' capital on GDP growth was also considered in similar studies such as Gross, Kok and Zochowski (2016) and Institute for International Finance (2011), therefore, establishing a negative relationship.

Net Interest Income/ Expenses

The net interest income/ expenditure indicates the banks' profitability and efficiency and also measures the banking sector development. This variable was considered on the basis that when banks are profitable they are likely to increase either the amount of credit extended to the economy or the duration of credit or both, thereby positively impacting GDP growth. This variable was also considered by Aurengzeb (2012) and was found to have a positive impact on GDP.

Liquid Assets

Finally, the model considered the amount of liquid assets held by commercial banks also as a proxy measure for stability in banking sector development. The expectation of the study is that banks holding high amounts of liquid assets are likely to provide long term credit, which is ideal for economic growth, since they are able to meet their funding obligations as they become due given their high stock of assets that easily convertible into cash. Impact of banks liquidity on economic growth was also conducted by Fidrmuc, Fungacova and Weill (2015), thereby establishing a positive relationship between banks liquidity and economic growth.

Given the economic justification of variables above, the overall expectation of the study is that growth of the banking sector will lead to growth in the real economy. This expectation is in line with the findings of Tripathy and Pradhan (2014) and Petkovski and Kjosevski (2014), among others, and supports the financial repression hypothesis theory that recognises the role of financial institutions in driving economic growth. Table 3.1 provides the definition of data and the expected relationship between each independent variable and GDP.

Table 3.1: Data Definitions

Variables	Descriptions	Apriori Expectation	Research Support
Dependent Variable			
Gross Domestic Product (GDP)	Real value of Gross Domestic Product expressed in N\$.	N/A	N/A
Independent Variables			
Total Funding related liabilities (FND)	Value of total deposits and borrowing available for credit extension by commercial banks, expressed in N\$.	+ (Positive)	Ogege and Shiro (2012)

Total Credit (CRE)	Value of gross loans and advances issued by commercial banks, expressed in N\$.	+ (Positive)	Apergis, Fillipidis and Economidou (2007); Timsina (2014).
Net Interest Income/ Expenses (NETINT)	Value of the net interest income or expenses of commercial banks expressed in N\$.	+ (Positive)	Aurangzeb (2012).
Capital (CAP)	Value of total qualifying capital held by commercial banks expressed in N\$.	- (Negative)	Gross, Kok and Zochowski (2016); Institute for International Finance (2011).
Liquid Assets (LIQ)	Value of liquid assets held by commercial banks expressed in N\$.	+ (Positive)	Fidrmuc, Fungacova and Weill (2015).

3.5 Data Collection, Frequency and Choice of Data

The study makes use of secondary time series data on GDP as well as on various other variables used as proxy measures for commercial banks development as presented in table 3.1 above. The data used in the study is quarterly, to avoid the problem of heteroscedasticity as well as the extent of the measurement error that is usually associated with high frequency data, and covers the period of March 2005 to December 2016, therefore presenting enough observations to conduct a meaningful regression analysis. The decision to base the data selection on the above-mentioned period was based on the availability of the quarterly data on GDP which was only available from the first quarter of 2005.

All the data used in the model was, therefore, sourced from the Namibian central bank. As such, the data on quarterly GDP was collected from the BON Research Department's database. The BON Research Department receives this data from the Namibian Statistics Agency, which is the institution primarily responsible for collecting and computing the GDP data in Namibia. On the other hand, the data on commercial bank's development indicators, namely total funding liabilities, credit extended to the private sector, net interest income/ expenses, capital adequacy

and liquid assets of banks was computed from the various aggregated industry returns published on the bank's website under the Banking Supervision Department. These aggregated industry returns include the Capital Adequacy return, Income Statement return, Liquid Assets return and the Balance Sheet return.

3.6 Sampling

The selected sample only includes the period from 2005:1 to 2016:4 taking into consideration that this is the period where the data was available on a quarterly basis. In terms of the number of banks included in the sample, the data covers all commercial banks authorised by BON, to conduct banking business in Namibia.

3.7 Data Analysis Methods

To investigate the relationship between financial development and economic growth, the study employed the autoregression distributive lag modelling (ARDL) approach as it was also used in a similar study by Kiprop et al. (2015). The choice of this model is justified by so many reasons as outlined by Pesaran and Shin (1999). Firstly, this approach enables for simultaneous estimation for both short-run and long-run coefficients. Secondly, all the variables enter the model as endogenous. Thirdly, there is no need to pre-test for the univariate characteristics of the series. Even though pre-testing is done, the model allows for estimation of series with mixture of order of integration either integrated of zero I(0) or first I(1) order, with the exception I(2). Fourthly, this technique addresses the problem of endogeneity in the model due to the fact that causal relationship between the regressand and regressors cannot be ascertained beforehand. Lastly, this technique is most suitable for small sample size as it has superior small sample properties in comparison with other methods. This approach is, therefore, suitable in analyzing the underlying relationship between economic growth and banking sector development, as its use in empirical research has increased recently.

For ease of interpretation, equation (1) can be expressed in natural logarithms and it can be presented as follows:

$$LNGDP_t = \beta_0 + \beta_1 LNFND_t + \beta_2 LNCRE_t + \beta_3 LNNETINT_t + \beta_4 LNCAP_t + \beta_5 LNLIQ_t + \epsilon \quad (2)$$

The process of estimating equation (2) requires some prior steps to be performed as discussed below.

3.7.1 Unit Root Tests

Upon collection of the data, the first step was to investigate the time series characteristics of the data in order to establish if the data set is integrated. In case of evidence suggesting presence of unit root the study will, similar to Aurangzeb (2012), employ the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Unit Root tests, to ensure that the data is stationary and ensure that the results can be relied upon. For the ADF and PP tests, the null hypothesis entails that there is presence of unit root in the series, while the alternative hypothesis entails that there is no evidence of unit root and the data is stationary in level or at first difference. This step is, thus, undertaken to ensure that none of the variables are integrated of order two or higher.

3.7.2 Bound Cointegration Test

The cointegration test is applied to ascertain whether or not there exists a long-run relationship among the variables (Gujarati, 2004). The test is for the null hypothesis which postulates that there is no cointegration, whilst the alternative hypothesis postulates that there is cointegration. The presence of cointegration suggests that both long-run and short-run coefficients can be estimated using an unrestricted error correction model (UECM) which can be expressed as follows:

$$\begin{aligned} \Delta LNGDP = & \alpha_0 + \lambda_1 LNGDP_{t-1} + \lambda_2 LNFND_{t-1} + \lambda_3 LNCRE_{t-1} + \lambda_4 LNNETINT_{t-1} + \\ & \lambda_5 LNCAP_{t-1} + \lambda_6 LNLIQ_{t-1} + \sum \gamma_1 \Delta LNGDP_{t-1} + \sum \gamma_2 \Delta LNFND_{t-1} + \sum \gamma_3 \Delta LNCRE_{t-1} + \\ & \sum \gamma_4 \Delta LNNETINT_{t-1} + \sum \gamma_5 \Delta LNCAP_{t-1} + \sum \gamma_6 \Delta LNLIQ_{t-1} + U_{1t} \dots\dots\dots \end{aligned} \quad (3)$$

Where; $\lambda_1 - \lambda_6$ are the estimated long-run coefficients and $\gamma_1 - \gamma_6$ are short-run coefficients. The tests follow an F-test statistic and is then used to detect the existence of a long-run relationship among the variables. This is done by comparing the calculated value to the critical values in order to make a decision about the hypothesis of cointegration. The null hypothesis of no co-integration is tested under the condition $H_0: \lambda_1 - \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0$, while the alternative hypothesis is tested under the condition $H_1: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq \lambda_6 \neq 0$. The decision about cointegration is arrived at by comparing the calculated F-test statistic with the two critical bounds, the lower and the upper bounds. For example, when the calculated value happens to be below the lower critical bound then the null hypothesis of no

cointegration cannot be rejected. However, should the calculated value happen to be above the upper critical bound then the null hypothesis of no cointegration can be rejected. In cases where the calculated F-value happens to fall between the two critical bounds then the test is inconclusive (Pesaran, Shin & Smith, 2001).

3.7.3 Estimating Short-Run Coefficients

After conducting the cointegration test and finding its existence then this suggests an estimation of an error correction model (ECM). This helps to determine the speed of adjustment at which the variables adjust to their long-run equilibrium value (Gujarati and Porter, 2010). The error correction model can be expressed in ARDL form and expressed as:

$$\Delta LNGDP_t = \gamma_0 + \sum_{i=1}^n \gamma_{1i} \Delta LNGDP_{t-1} + \sum_{i=1}^n \gamma_{2i} \Delta LNFND_{t-1} + \sum_{i=1}^n \gamma_{3i} LNCRE_{t-1} + \sum_{i=1}^n \gamma_{4i} \Delta LNNETINT_{t-1} + \sum_{i=1}^n \gamma_{5i} \Delta LNCAP_{t-1} + \sum_{i=1}^n \gamma_{6i} \Delta LNLIQ_{t-1} + \varphi ECM_{t-1} + \varepsilon_1 \dots \dots \dots (4)$$

Where:

ECM is a residual from the estimated cointegration equation 3, φ is the parameter which represents the speed of adjustments in the long run. Ideally, the coefficient of the ECM should have a negative sign, statistical significant and less than unity.

3.7.4 Granger-Causality Tests

The Granger causality test developed by Granger (1969) is widely used in econometric analysis and in this case it is used to determine any causal relationship between financial development and economic growth in Namibia. In particular, a simple pairwise Granger-causality is used in this study. This test yields three possibilities namely, unidirectional causality (causality from one variable to another and not the other way round). Secondly, there could be causality from both variables (bidirectional causality). Lastly, there is a possibility of no causal relationship among the variables.

3.8 Research Reliability and Validity

Since the study is making use of secondary data, all the data used in this study was obtained from a credible institution in Namibia, namely BON, which is responsible for the supervision of commercial bank activities in Namibia, among other responsibilities. BON collects data from commercial banks on a regular basis and at different time intervals for the purposes of effective banking supervision and this data is published on BON's website on an aggregated level.

Furthermore, BON Research Department receives data on GDP from the Namibia Statistics Agency, which is the primary custodian of GDP data. In light of the above, it could, therefore, be concluded that this study is conducted with reliable and valid data.

3.9 Limitations

The main limitation to the study is the fact that the list of banking sector variables that could have an impact on GDP growth is not exhaustive. Apart from the limited variables used to measure banking sector development, there are no further limitations to the study.

4 CHAPTER FOUR: RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the results and the detailed empirical analysis of the study on which the conclusion and recommendations were based. The section on empirical analysis is divided into nine sub-sections as follows. Section 4.2.1 presents the correlation coefficient test, section 4.2.2 presents the unit root test, section 4.2.3 presents the determination of the optimal lag length, section 4.2.4 presents the cointegration test, while section 4.2.5 and 4.2.6 presents the long term and short term ARDL regression results, respectively. Furthermore, section 4.2.7 presents the bivariate error correction models, section 4.2.8 presents the model diagnostic test and section 4.2.9 presents the pairwise granger causality test.

4.2 Empirical Analysis

4.2.1 Correlation Coefficient Test

In determining whether or not a linear relationship exists between the variables employed in the model, the study made use of the Pearson correlation coefficient test. The test was also conducted to determine the possible existence of multicollinearity within the variables, which if present, can lead to errors in the coefficient estimates of the multiple regression. In this regard, all coefficients between all variables as indicated in table 4.1 below were above 0.9, which indicates possible existence of multicollinearity given that they are close to 1. This outcome entails that, reliance cannot be placed on the estimation results of a multiple regression as multicollinearity could severely affect these results, hence the need to run a separate model for each banking sector development indicator.

Table 4.1: Pearson Correlation Coefficient Test

Variable	LNGDP	LNFND	LNCRE	LNNETINT	LNCAP	LNLIQ
LNGDP	1.000000	0.976556	0.977370	0.981389	0.972740	0.972134
LNFND	0.976556	1.000000	0.998207	0.992662	0.997044	0.995489
LNCRE	0.977370	0.998207	1.000000	0.994423	0.996691	0.991976
LNNETINT	0.981389	0.992662	0.994423	1.000000	0.989239	0.989219
LNCAP	0.972740	0.997044	0.996691	0.989239	1.000000	0.992204

LNLIQ	0.972134	0.995489	0.991976	0.989219	0.992204	1.000000
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4.2.2 Unit Root Test

While the ARDL technique does not require the data to be tested for unit root, it is important to conduct this test in order to make sure that the series are not integrated to an order higher than one. As such, using an ARDL technique with data series that is integrated to an order of more than one may lead to spurious results. Using the ADF and PP unit root tests, the results as presented in table 4.2 below indicate that all variables are stationary either in level or after first difference. This implies that the data is suitable to carry out an ARDL regression analysis and the null hypothesis of unit root can be rejected at 1 percent and 5 percent significance levels, respectively.

Table 4.2: Unit root tests: ADF and PP in differences

Variable	Model Specification	ADF		PP		Order of integration
		Levels	First difference	Levels	First difference	
LNGDP	Intercept and trend	-5.304**	-6.316**	-5.300**	-29.759**	0
	Intercept	-1.007	-6.365**	-0.932	-27.585**	1
LNFND	Intercept and trend	-3.803**	-9.087**	-3.734**	-10.151**	0
	Intercept	-0.978	-9.085**	-1.203	-9.803**	1
LNCRE	Intercept and trend	-2.823	-6.572**	-1.957	-6.909**	1
	Intercept	-0.594	-6.417**	-0.577	-7.004**	1
LNNETINT	Intercept and trend	-2.995	-7.004**	-2.995	-15.430**	1
	Intercept	0.261	-7.055**	1.388	-15.545**	1
LNCAP	Intercept and trend	-3.612**	-10.259**	-3.652**	-11.429**	0
	Intercept	-0.378	-10.370**	-0.224	-11.551**	1
LNLIQ	Intercept and trend	-5.134**	-7.609**	-5.160**	-13.349**	0
	Intercept	-0.414	-7.698**	-0.156	-13.599**	1

Note: ** means the rejection of the null hypothesis at 1% and 5%.

4.2.3 Determination of Optimal Lag Length

Upon establishing the univariate characteristics of the variables and subsequently the order of integration, the following step is undertaken to establish the optimal lag length for the model. This was determined using the lag length criterion such as Akaike Information Criterion (AIC),

Schwarz Bayesian Criterion (SC) and Hannan-Quinn Criterion (HQ). This study opted to follow the SC and HQ, the information criterion because of their powerfulness and consistency. The two criteria suggested a lag length of one as reported in table 4.3 below.

Table 4.3: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	402.5699	NA	3.93e-16	-18.44511	-18.19936	-18.35449
1	593.0014	318.8620	3.04e-19	-25.62797	-23.90773*	-24.99360*
2	625.3152	45.08903	3.98e-19	-25.45652	-22.26178	-24.27840
3	673.8072	54.13063*	2.93e-19*	-26.03754	-21.36832	-24.31568
4	714.9886	34.47746	4.23e-19	-26.27854*	-20.13482	-24.01292

* indicates lag order selected by the criterion

4.2.4 Bound Test Approach to Cointegration

The bound cointegration test was performed in order to ascertain whether or not there is a long-run relationship among the variables. Table 4.4 below reports the results of the test which show that the calculated F-statistic value of 5.33 is greater than the critical upper bound values of 4.15 at 1 percent significance level. This implies existence of a long run relationship between GDP and the variables used in the model, and as such, the null hypothesis of no cointegration can be rejected.

Table 4.4: Bounds test results

Test Statistic	Value	K
F-statistic	5.329185	5

Critical Value Bounds

Significance	I(0) Bound	I(1) Bound
10%	2.08	3
5%	2.39	3.38

2.5%	2.7	3.73
1%	3.06	4.15

Given existence of a long-run relationship between GDP and the regressors in the model, the study then goes further to estimate the long-run and the short-run ARDL Error Correction equation and the results are presented below in table 4.5 and table 4.6, respectively.

4.2.5 Long-run Estimates

Table 4.5 displays the long-run coefficients from the ARDL estimation. The results show that only the relationship between net interest income and economic growth was found to be positive and statistically significant in the long-run, with all the other explanatory variables found to be statistically insignificant. The positive relationship between net interest income and GDP growth is well in line with the theoretical expectations of this study, however, given the high correlation coefficients as depicted in table 4.1, which suggest possible existence of multicollinearity, the multiple regression results could not be relied upon, hence the need to run a separate model for each indicator.

Table 4.5: Estimated Long Run coefficients using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFDND	0.132987	0.263197	0.505275	0.6162
LNCRE	-0.132348	0.243153	-0.544298	0.5893
LNCAP	0.013198	0.141236	0.093443	0.9260
LNNETINT	0.344429	0.110141	3.127160	0.0033
LNLIQ	-0.019973	0.104336	-0.191432	0.8492
C	5.495557	1.002939	5.479455	0.0000

4.2.6 Short-run

Table 4.6 displays the short-run coefficients from the ARDL estimation. As it is the case with the long-run estimates, the only variable that was found to be statistically significant in the model is the net interest income, with a t-statistic of 3.099 which is above the value of 2, and further confirmed by the corresponding p-value of 0.0037, which is lower than the 1 percent

significance value. However, similar to the long run model, these results could not be relied upon in presence of multicollinearity, hence the need to run separate models for each commercial bank development indicators.

Table 4.6: Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LNGDP(-1))	0.002621	0.155429	0.016860	0.9866
D(LNFND)	0.398840	0.276694	1.441451	0.1579
D(LNCRE)	0.127311	0.400300	0.318039	0.7522
D(LNCAP)	0.000726	0.178407	0.004070	0.9968
D(LNNETINT)	0.350874	0.113216	3.099172	0.0037
D(LNLIQ)	-0.116331	0.101617	-1.144801	0.2596
ECT(-1)	-1.098665	0.220638	-4.979482	0.0000
C	-0.012439	0.015782	-0.788208	0.4356

$$R^2 = 0.599, DW = 1.98, Prob(F - statistic) = 0.000007$$

4.2.7 Bivariate Error Correction Models

The exercise of the ARDL conducted with the comprehensive model was repeated by regressing real gross domestic product with each banking sector development indicator. This was informed by the fact that table 4.1 showed a high correlation coefficient among the variables, which may have influenced the statistical significance of the regressors in the comprehensive model. The results are presented in table 4.7 to 4.11 below.

Table 4.7: Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LNGDP(-1))	0.367915	0.224005	1.642442	0.1097
D(LNCRE)	0.513224	0.442943	1.158667	0.2547
D(LNCRE(-1))	-0.020565	0.408616	-0.050328	0.9602
D(LNCRE(-2))	-1.175524	0.388923	-3.022510	0.0047
D(LNCRE(-3))	2.147860	0.461809	4.650970	0.0000
D(LNCRE(-4))	-1.190222	0.606240	-1.963286	0.0578

ECT01(-1)	-1.083296	0.284795	-3.803780	0.0006
C	-0.001302	0.026865	-0.048479	0.9616

$$R^2 = 0.636, DW = 2.02, Prob(F - statistic) = 0.000006$$

Table 4.7 above presents the results of the bivariate error correction regression between credit extension and economic growth. The results indicate that the relationship between commercial banks credit extension to the private sector and economic growth is statistically significant for the second, third and fourth lag periods at 10 percent significance value. The corresponding coefficients are, however, negative for the second lag, positive for the third lag and negative for the fourth lag, indicating an inconclusive outcome of the relationship between credit extension to the private sector and economic growth. However, since credit extension to the private sector was used as a proxy measure for the size and depth of the banking sector and its relationship was found to be inconclusive in this regard, another indicator of banking size and depth, namely funding liabilities, was employed in the quest to establish the impact of bank size and depth on economic growth.

Table 4.8 below, therefore, presents the bivariate error correction results of the relationship between funding liabilities of banks and economic growth. This relationship was found to be positive and statistically significant at 10 percent significance value, given the p-value of 0.0573. The coefficient of 0.47 entails that any 1 percent increase in the funding liabilities of banks will lead to 0.47 percent increment in economic growth. This finding is in line with the theory expectation of the study as well as with the findings of Ogege and Shiro (2012) and could be interpreted to mean that as the funding related liabilities of banks such as deposits and borrowings increase, banks are able to fund more activities in the real sector by increasing the amount of credit extended to that sector, thereby driving the production capacity of the economy and eventually leading to economic growth. This finding is, thus, an indication that advancement in the banks' size and depth contributes to the growth of the economy in Namibia, in line with the financial repression hypothesis.

Table 4.8: Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LNGDP(-1))	0.023112	0.183553	0.125917	0.9004

D(LNFND)	0.471177	0.240858	1.956241	0.0573
ECT05(-1)	-0.974779	0.236572	-4.120436	0.0002
C	-0.003331	0.009025	-0.369137	0.7139

$$R^2 = 0.440, DW = 1.98, Prob(F - statistic) = 0.000025$$

The bivariate regression results of the short-run relationship between capital held by commercial banks and economic growth is presented in table 4.9 below. Though positive, this relationship was found to be statistically insignificant entailing absence of any significant evidence that a relationship exists between banks capital and economic growth. As such, the finding is contradictory to the theoretical expectations of this study, while it also contradicts the findings of Gross, Kok and Zochowski (2016) and the Institute for International Finance (2011), which all established a negative relationship in this regard.

Table 4.9: Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LNGDP(-1))	0.207691	0.209575	0.991009	0.3275
D(LNCAP)	0.213340	0.218807	0.975015	0.3353
ECT02(-1)	-0.990589	0.270253	-3.665410	0.0007
C	0.002219	0.010069	0.220351	0.8267

$$R^2 = 0.374, DW = 1.97, Prob(F - statistic) = 0.000225$$

Another indicator of banking sector stability, namely liquid assets held by commercial banks was also found to have a statistically insignificant relationship with economic growth as presented in table 4.10 below. As it was the case with capital, this finding confirms the position that the stability of the banking system does not have any influence on the growth of the economy. Also, this finding contradicts the theory expectation of this study, as well as the findings of Fidrmuc, Fungacova and Weill (2015), who found a positive relationship.

Table 4.10: Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
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D(LNGDP(-1))	0.136436	0.197903	0.689409	0.4944
D(LNLIQ)	0.096210	0.090728	1.060418	0.2952
ECT04(-1)	-0.977308	0.252099	-3.876690	0.0004
C	0.006395	0.006702	0.954241	0.3456

$$R^2 = 0.394, DW = 2.031, Prob(F - statistic) = 0.000117$$

Table 4.11 below presents the findings of the bivariate regression between net interest income of banks and economic growth. Similar to the comprehensive ARDL model for both the long run and the short run, this relationship was found to be positive and statistically significant, as indicated by the p-value of 0.0013 which is below the 5 percent significance value. As such, the coefficient of 0.35 entails that any 1 percent increase in the net interest income of banks will lead to 0.35 percent growth in the economy. Thus, as banks become more profitable, they acquire more resources and are willing to invest more in the economy, eventually, influencing growth.

Table 4.11 Error correction model using the ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(LNGDP(-1))	0.060890	0.134449	0.452888	0.6530
D(LNNETINT)	0.346245	0.100475	3.446093	0.0013
ECT03(-1)	-1.144704	0.208349	-5.494174	0.0000
C	-0.000536	0.006007	-0.089188	0.9294

$$R^2 = 0.579, DW = 1.98, Prob(F - statistic) = 0.00000$$

In light of the high correlation coefficient observed in table 4.1, the results of the bivariate error correction models are adopted as the reliable findings of this study. The results of the bivariate error correction models, therefore, indicate that there is a positive short-run relationship between banking sector development indicators and economic growth in Namibia, and this impact on GDP growth is mainly realised through net interest income and banks' funding liabilities. This is an indication that the impact that the banking sector has on economic growth is channelled through the size and depth of the banking sector as well as through the sector's

efficiency. On the contrary, the banking sector’s stability as indicated by capital and liquid assets held by banks, does not have any influence on economic growth, as both these indicators were found to be statistically insignificant. The null hypothesis of no impact of commercial banks development on economic growth can therefore be rejected.

In terms of validity of the bivariate error correction models, table 4.7 to table 4.11, the Durbin-Watson value of all of these models show that there is no problem of serial or autocorrelation in the models, while their F-statistic test also confirms the overall significance of the models given that their F-value probabilities are less than the 1 percent levels of significance. All these indicators are, thus, positive and indicate reliability of the models as well as of the results.

4.2.8 Model Diagnostic Test

As per the classical assumption, a model should be normally distributed with a constant variance and a mean of zero in order to produce the best linear unbiased estimators (Gujarati, 2004). As such, the study conducted the model efficiency test and the results are presented below.

Table 4.12: Heteroscedasticity (White) Test

F-statistic	1.195559	Prob. F(7,37)	0.3294
Obs*R-squared	8.300859	Prob. Chi-Square(7)	0.3068
Scaled explained SS	4.250234	Prob. Chi-Square(7)	0.7505

Table 4.12 above presents the heteroscedasticity test, which was conducted in order to determine whether the model has a constant variance or not. The statistical hypothesis for conducting a heteroscedasticity test is formulated based on the statistic where the null hypothesis implies that the variances are constant (i.e., Homoscedasticity) while the alternative hypothesis implies that the variances are not constant (i.e., heteroscedasticity). The rejection rule states that the null hypothesis can be rejected should the probability value of observation R-square be less than 5 percent level of significance. As such, given that the probability of Chi-Square is 0.3068 which is greater than 0.05 level of significance, the null hypothesis cannot be rejected and concludes that the variances in the model are constant.

Table 4.13: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.146373	Prob. F(2,35)	0.8644
Obs*R-squared	0.373266	Prob. Chi-Square(2)	0.8297

Table 4.13 presents the results of the autocorrelation test which was conducted to determine the absence or presence of correlation in the error terms of the model. The hypotheses for testing for autocorrelation are, therefore, formulated in the following manner; the null hypothesis implies that there is no autocorrelation while the alternative hypothesis implies presence of autocorrelation among the error terms. The decision rule for the autocorrelation test, therefore, states that the null hypothesis should be rejected if the p-value for the observed R-square is less than the 5 percent significance value. In this regard, the observed R-square of 0.8297 is higher than the 5 percent level of significance, implying that the null hypothesis of no autocorrelation cannot be rejected.

Furthermore, the study conducted a model stability test using the Ramsey Reset test to determine the stability capacity of the model. The results of test are displayed in table 4.14 below.

Table 4.14: Ramsey RESET Test

	Value	df	Probability
t-statistic	0.197974	36	0.8442
F-statistic	0.039194	(1, 36)	0.8442

The hypothesis for the Ramsey Reset stability test is, therefore, formulated in the following manner. The null hypothesis claims that the model is stable while the alternative hypothesis claims that the model is not stable. The decision rule entails that the null hypothesis should not be rejected if the probability of the F-statistic is higher than the 5 percent significance level. In this regard, the F-statistic probability of 0.8442 is higher than the 5 percent significance value and concludes that the null hypothesis cannot be rejected, implying that the model is stable.

4.2.9 Pairwise Granger Causality Test Results

The study conducted the granger causality test in order to determine the direction of causality between GDP growth and the various banking sector development indicators considered in the model. The results of the Pairwise Granger Causality test are presented in table 4.15 below.

Table 4.15: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
D(LNFND) does not Granger Cause D(LNGDP)	44	0.18592	0.8311
D(LNGDP) does not Granger Cause D(LNFND)		6.30162	0.0043
D(LNCRE) does not Granger Cause D(LNGDP)	44	2.80524	0.0727
D(LNGDP) does not Granger Cause D(LNCRE)		0.49566	0.6130
D(LNNETINT) does not Granger Cause D(LNGDP)	44	5.70388	0.0067
D(LNGDP) does not Granger Cause D(LNNETINT)		0.36683	0.6953
D(LNCAP) does not Granger Cause D(LNGDP)	44	0.25576	0.7756
D(LNGDP) does not Granger Cause D(LNCAP)		1.09005	0.3462
D(LNLIQ) does not Granger Cause D(LNGDP)	44	0.16941	0.8448
D(LNGDP) does not Granger Cause D(LNLIQ)		3.54214	0.0386

After differencing the data to ensure that it was stationary and the results can be relied upon, table 4.15 presents the findings of causality test between economic growth and the other regressors considered in the model. In this regard, the results show a unidirectional causality at 5 percent significance value, running from economic growth to banks funding liabilities, as well as from economic growth to liquid assets held by commercial banks. Furthermore, in line with the findings of Aurangzeb (2012), the granger causality test established a unidirectional causality running from net interest income/expense to economic growth at 5 percent significance value, while credit extended to the private sectors by banks granger caused economic growth at 10 percent significance value, partially corresponding with the findings of Apergis, Fillipidis and Economidou (2007), which discovered a bi-direction causality between GDP growth and credit extension to the private sector.

Overall, the causality test results revealed a bi-directional causality between banking sector development and economic growth, albeit through different variables. As such, the causality test indicates that the size and depth of the banking sector and efficiency in the banking sector caused economic growth. On the other hand, economic growth caused stability in the banking sector as well as expansion in the size and depth of the banking sector, but through different variables. This finding entails that the null hypothesis of no causal relationship between GDP growth and banking sector development can be rejected, therefore, concluding that there is existence of bi-direction causality in line with the findings of Sunde (2013), Apergis, Fillipidis and Economidou (2007) etc. This finding supports the financial repression theory that recognises the essential role that financial institutions play in driving economic growth.

5 CHAPTER FIVE: RESEARCH CONCLUSIONS

5.1 Introduction

Following the regression outcomes and analysis of the results outlined in the preceding chapter, this chapter seeks to present the conclusion of the study.

5.2 Research Conclusion

This study set out to establish the impact that commercial banks' development has on economic growth in Namibia. The study employed the quantitative methodology of ARDL in order to establish the long-run and the short-run relationship between GDP growth and banking sector development as well as the Granger causality test in determining the direction of causality. To this effect, the study used quarterly GDP growth rate and quarterly data on banks various development indicators such as total credit extended by banks to the private sector, aggregate funding liabilities, covering the period of 2005:1 to 2016:4. Prior to the regression analysis being conducted, the data was tested for unit root using the ADF and PP unit root test to ensure that it was stationary and could yield reliable results.

In the context of Namibia, this study is the second of its kind and follows a study conducted by Sunde (2013) who investigated the nature of the nexus between financial sector development and economic growth in Namibia. While covering different periods and employing different variables and to a certain extent different methodologies, the findings of the studies are in line with the findings of Sunde (2013). In this regard, the study concluded that there is existence of a positive short-run relationship between banking sector development and economic growth. The positive short run relationship is exerted through funding liabilities and net interest income and entails that only the size and depth of the banking sector as well as the efficiency of the sector have an impact on economic growth. On the contrary, the stability of the banking sector was found not to have any influence on the growth of the economy.

Furthermore, the study concluded from the granger causality test that the relationship between economic growth and banking sector development in Namibia is bi-directional, entailing that economic growth will advance the banking sector development while at the same time development of the banking sector will promote the growth of the economy, albeit through different variables. As such, a unidirectional causality was established between GDP and

funding liabilities of banks as well as between GDP and liquid assets held by banks, with causality running from GDP to banking sector development, while credit extended by banks to the private sector and net interest income of banks caused the growth of the economy.

In light of the above, the study concludes that both the null hypothesis 1 of no relationship between commercial banks development and economic growth and the null hypothesis 2 of no causal relationship between commercial banks development and economic growth can be rejected. As such, the conclusion of the study is in support of the findings of prior empirical studies conducted on the subject matter by, among others, Sunde (2013), Aurengzeb (2012), Apergis, Fillipidis and Economidou (2007) and supports the endogenous growth model and financial repression hypothesis theories that acknowledge the role of financial institutions in driving economic growth.

5.3 Policy Implications

In light of the study conclusions, the government of Namibia, the BON as the regulator of the commercial banks in Namibia has a number of factors to consider in order to further drive economic growth in the country. Firstly, in light of the study establishing a link between banking sector development and economic growth, driven by the bank's interest income and funding liabilities, Namibian banks should consider increasing the absolute amounts of loans and advances to the real sector in order to foster economic growth. This can be achieved either through the central bank authorizing additional participants in the banking sector or through existing banks embarking on a campaign to secure more funding liabilities, such as deposits and borrowings, to enable them to extend more credit to the economy.

Secondly, considering an insignificant relationship between liquid assets held by commercial banks and economic growth, banks should not be required to hold too much assets in liquid assets as these assets are normally short term and not ideal for financing long term developmental projects. While the minimum liquid assets requirement set by the central bank at 10 percent liquid assets to total liabilities to the public, as per BON (2014), is not too stringent, commercial banks tend to keep a buffer above this requirement to ensure that they have enough liquidity to meet their funding obligations as they fall due. In this regard, the central bank should be careful against setting the liquid assets requirements too stringent going forward, especially in light of the more stringent liquidity requirements coming from Basel 3.

As such, requiring banks to hold higher liquid assets would mean that they would need to reduce their total loans and advances to the economy which are more ideal for financing economic growth as these are granted on a longer term as opposed to investments in liquid assets.

Thirdly, commercial banks should be incentivised to provide funding to sectors that can contribute to the growth of the economy as opposed to providing finance for unproductive activities. In this regard, commercial banks should increase funding to the SME sector since banks tend to be more risk averse and have put in place stringent requirements that most SMEs do not meet, such as collateral, high annual turnover, audited financial statements etc. Furthermore, given that the FinScope Consumer Survey Namibia, (2012) reported that 38 percent of the Namibian bankable population is reported to be excluded from the banking system as in 2012, with no access to banking products and services, commercial banks should aim to provide banking products services to those in remote areas. This could be achieved through expanding their branches or setting up mobile banks in remote areas, while their models should also be suitable to enable people excluded from the financial system to access banking products and services in order to contribute to the growth of the rural economies and eventually of the general economy.

6 CHAPTER SIX: RECOMMENDATIONS FOR FUTURE RESEARCH

Given limited research conducted on the subject matter in Namibia, this study creates opportunities for further research extension on the subject. In this regard, future researchers can consider extending this research in various ways as outlined below:

- a) Considering that BON might adopt Basel 3 regulatory requirements in the near future, future researches can be based on the impact that complying with Basel 3 capital and liquidity requirements will have on the banking sector's ability to support economic growth.
- b) This research could further be extended to investigate the role that commercial banks in Namibia have played with regard to financial inclusion since the country's independence in 1990, in order to recommend reforms that the government should implement to ensure access to financial services and products to the unbanked and promote an inclusive economic growth.
- c) Future researchers may also focus on investigating the efficiency of the Namibian banking sector given the fact that there are only few banks in the industry, with the big four usually accused of uncompetitive practices to keep the smaller ones out of the market.
- d) The commercial banks' corporate social responsibilities and the impact it has on the communities can also be investigated, given that banks are said to be the most profitable institutions in Namibia yet with minimal social impact on communities.

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APPENDICES

Figure 4.1: Normality (Jacque-Bera) Test

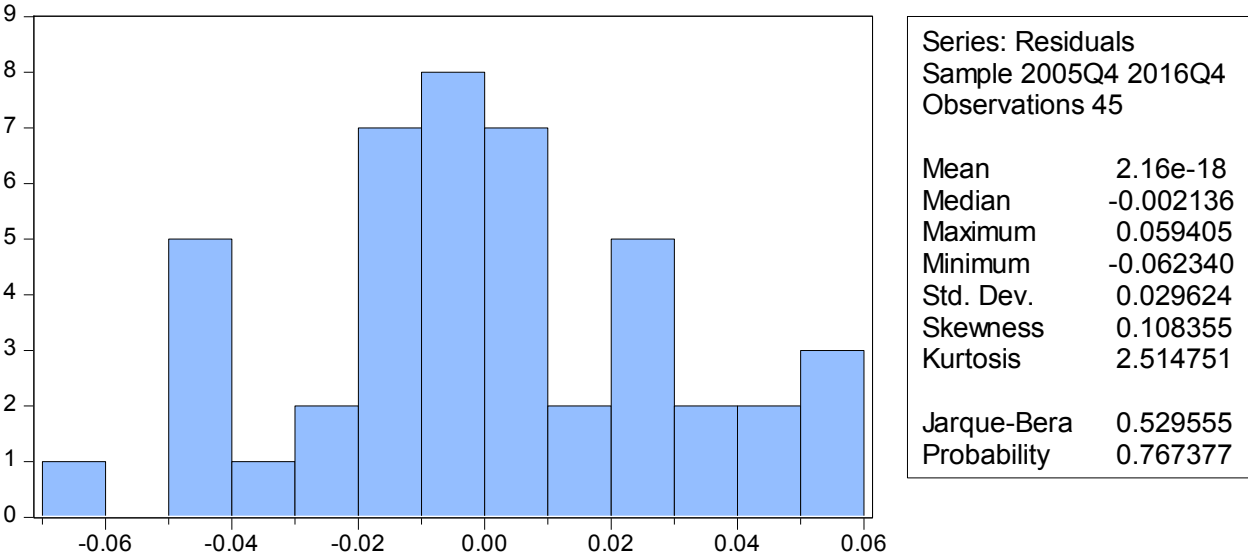


Figure 4.2: CUSUM Test for Stability

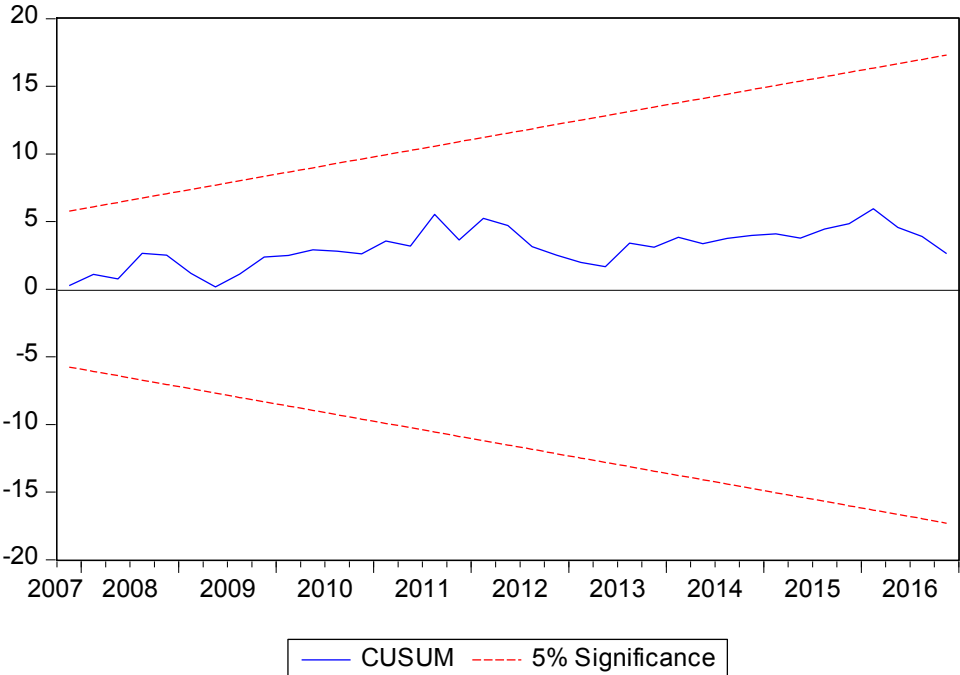


Figure 4.3: CUSUM Square Test for Stability

