Financial Sector Development and Poverty Reduction in Namibia

A Dissertation

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by

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Abstract

Among other challenges, it can be argued that poverty remains the greatest challenge facing the developing countries, particularly for Sub-Saharan countries. A significant proportion of people in the developing world are severely affected by poverty. In 2013 it was estimated that 787 million of the world population lived in severe poverty (World Bank, 2016). Moreover, Sub-Saharan Africa accounts for half of the population who are severely affected by poverty. Using Namibia as a case study and data sets from 1991 to 2017, this research investigates how financial development impacts on poverty reduction in the country. The study employed the Johansen Cointegration Procedure and Vector Error Correction Model to test the data. The data was obtained from the World Development Indicators and the Namibia Central Bank. The main findings suggest that financial development is important for poverty reduction in the Namibian context, and has a positive and significant effect on poverty reduction. Further, there was a unidirectional causality between financial development and poverty. The Johansen cointegration results reported three cointegration equations amongst the variables, confirming a long-run cointegration relationship between financial sector development and poverty reduction. Interestingly, the per capita GDP is negatively associated with the poverty measure. The study recommends the government to focus on policies that stimulate credit to the private sector. In terms of trade openness, policies should aim at improving and strengthening fair bilateral and multilateral trade, as well as promoting regional trade in order to grow trade volumes.

Keywords: financial development, poverty, savings, Namibia

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GLOSSARY OF TERMS

ADF	Augmented Dickey-Fuller
ARDL	Autoregressive Distributed Lag
BoN	Bank of Namibia
CUSUM	Cumulative sum
CUSUMSQ	Cumulative sum of squares
ECM	Error Correction Model
GDP	Gross domestic product
NHIES	Namibia Household Income and Expenditure Survey
NPC	National Planning Commission
NAMFISA	Namibian Financial Institutions Supervisory Authority
NBFI	Non-Banking Financial Institutions
NSX	Namibian Stock Exchange
VAR	Vector Autoregression Model
VECM	Vector Error Correction Model
UNDP	United Nations Development Programme
SADC	Southern African Development Community
SACU	Southern African Customs Union

Chapter One

Introduction

1.1 Background of the study

Research in the studies of the theory on growth and poverty suggests that financial development has beneficial effects for the poor. For example, Levine (2004) shows that several economic benefits of a well-functioning financial sector are, namely: mobilising and pooling savings, allocating capital and producing information, managing risk, enabling diversification, facilitating trading and exerting corporate governance. Although Levine establishes such economic benefits, the general scholarship on the mechanism through which financial development affects the poor has remained largely contested. As such, there is still no general consensus concluding that financial sector development trickles down to the poor in terms of poverty reduction in developing countries (Odhiambo, 2009). This lack of consensus is because earlier studies that have attempted to investigate the relationship between financial development and poverty, have used data from both developed and developing countries, making the analysis wide-ranging. Thus, in such instances there are very few scholars that have tried to examine the finance-poverty relationship (Honohan, 2004; Dollar and Kraay, 2002; Beck et al., 2007; Quartey, 2005; Odhiambo, 2009).

Moreover, economists hold different views on the theoretical link between financial development and poverty. Most studies argue that financial development may impact poverty indirectly through enhancing economic growth (Levine, 1997; Jalilian and Kirkpatrick, 2005; Honohan, 2003). This hypothesis is known as the "trickle-down" approach. The trickle-down hypothesis is the view that an expansion in financial development helps stimulate growth, which in turn reduces poverty. A common element of these studies is that they suffer from omission of variables that capture the effect of financial institutions. However, it is possible that advances in economic development may reduce poverty by means of nonfinancial development such as technological improvements, growth in institutions' policies, and strong political stability in development countries. The second view is that financial development may directly improve the well-being of the poor population and enable them to access financial facilities. The 'conduit effect' introduced by McKinnon (1973) could play a role because banks

may offer an opportunity for the poor population to demand financial resources such as savings deposits. According to the McKinnon theory, a financial system plays a key role in reallocation of resources to the utmost productive investments, hence act as intermediary between borrowers and lenders.

Few scholars have studied the direct relationship between financial sector development and poverty reduction (Clarke, Xu and Zou, 2006; Jalilian and Kirkpatrick, 2005; Ho and Odhiambo, 2011); Jeanneney and Kpodar, 2011). These scholars support the view that the financial sector helps reduce poverty effectively through provision of financial services. Those in support of the direct effect through formal financial services, claim that financial development has improved the well-being of the poor in many ways. For example, the World Bank (2001) and Jalilian and Kirkpatrick (2005) claimed that a well-functioning financial system has helped the poor in addressing the causes of market failures (i.e. high transaction costs and interest rates), improving and widening of financial services. This study, therefore, aims to explore the impact of both indirect and direct aspects of financial development on poverty reduction in Namibia. In addition, this study aims to determine whether financial development have negative and positive effects on reducing poverty. To this end, methodologically, the study utilised annual time series data of Namibia covering a period spanning from 1991 to 2017.

1.2 Problem statement

Economic growth is regarded as a vital element for poverty reduction**.** The World Bank (2001**)** defines poverty as the lack of ability to command resources. Poverty is a broader term that relates to lack of resources which is not only limited to material or income insufficiency.

The other dimension of poverty includes lack of access to resources such as land, information, education, health, and other aspects of living standards which affect the well-being of those affected. Thus, poverty is a multi-dimensional concept. For example, the poor lack basic resources such as adequate food, shelter, education, and are exposed to economic shocks such as health and financial services (for example, credit and insurance). A significant proportion of people in the developing world are severely affected by poverty. According to the World Bank (2016), it was estimated that 787 million of the world populace in 2013 lived in severe poverty. Furthermore, half of the poor population affected severely by poverty are from Sub-Saharan Africa.

Measuring poverty in Namibia has been consistent since 1990. To date there have been four surveys carried out (1993/1994, 2003/2004, 2009/2010), and the most recent one (2015/2016), the Namibia Household Income and Expenditure Survey (NHIES). These are periodic household-based surveys conducted every five years to collect data on household income and expenditure patterns. The findings of the surveys indicate that the incidence of poverty has significantly declined by 10.7 % points, representing a decline from 28.7% in 1993/1994 to 18.0% in 2015/2016 (Namibia Statistics Agency, 2012; NHIES, 2016) Moreover, people living in rural areas (25.1%) are poorer than those in urban area (8.6%) households, and poverty levels are higher among women (19.2%) than men (15.8%). Correspondingly, informal urban residents are poorer than residents of formal suburban backgrounds. Even though, poverty has declined remarkably, Namibia is experiencing high levels of income inequality estimated at 56%. Namibia is regarded as one of the most unequal countries in the world. Thus, fighting poverty remains a constant challenge.

Eradicating poverty has been one of the main focuses on the Namibian government's agenda. For example, to address the country's development challenges, five development plans, titled *National Development Plans (NDPs*), have been launched since Independence. These plans are tools to direct and coordinate development efforts towards a common goal, which is uplifting the standards of living of the Namibia people (National Planning Commission, 2017). These NDPs are short to medium national plans that the country aims to accomplish by developing strategies and outlining tasks and schedules.

Other than the NDPs, in 2014 the government established a new line ministry solely dedicated to poverty eradication called the Ministry of Poverty Eradication and Social Welfare. Moreover, in 2016 the government introduced the Harambe Prosperity Plan with a timeline of 2016 till 2020. This plan aims to fight extreme poverty and address inequality. In so doing, among other activities, the ministry has set up a food bank, which distributes food packages to the poor on a monthly basis. In addition, the Namibian government has increased its public social investments as a means of improving social protection through allocation of old pension for those above 60 years old, and child grants (for children of unemployed parents, single spouses, and orphans) as well to people affected by either disability and those living with HIV/AIDS. Despite these efforts, a significant proportion of the Namibian population remains poor and vulnerable. Against this background, the study aims to investigate why all efforts by the government and advances in the financial development have not been able to reduce poverty effectively, given the small Namibian population of under 3 million people. Furthermore, the

study intends to find out if and how financial sector deepening can help improve the well-being of the poor through poverty reduction efforts.

1.3 Research question

What are the key factors that determine financial development in Namibia?

1.4 Research objectives

This study aims to review the Namibia financial sector and investigate its effectiveness in reducing poverty, and in addition, to understand how advances in financial development can help improve the well-being of the poor.

1.4.1 Specific objectives

1) Determine the relationship between financial sector developments on poverty reduction in Namibia.
2) Determine the effects of financial sector development on poverty reduction in Namibia.

1.4.2 Hypothesis

This study seeks to test the following hypothesis:

1. H_0: $\mu = 0$, financial development is positively related to poverty reduction

2.H_A: $\mu \neq 0$, financial development is not positively related to poverty reduction

1.5 Research significance

The findings of the study are aimed to provide understanding of the importance of a well-functioning financial sector in reducing poverty. The study's results could give insight into how access to financial services for the poor may better the well-being and standard of living. Knowing what services are available and how to access such services is key for continued growth and development of a society. The government and other stakeholders could use the empirical findings of this study to improve the implementation of existing policies and draft appropriate policies to grow the financial sector and implement adequate poverty reduction strategies.

Further, the study is useful to the regulatory bodies in the financial sector. Such bodies could utilise the study's findings to influence financial institutions to conduct appropriate product pricing to benefit the poor and as a consequence, improve their livelihoods and overall well-

being. As there are limited studies on this particular topic conducted on the Namibian economy, this study is significant as it aims to contribute to existing literature at the intersection of financial development, poverty, and Namibia, while providing new insights on how financial development can impact on poverty reduction.

1.6 Organisation of the research

This dissertation consists of five chapters. Background on financial development and poverty drawing from scholarship in these areas is discussed in Chapter One. Chapter Two gives an overview of the Namibia financial sector and reviews both the theoretical and empirical arguments of financial development and its effects on poverty. The study methodology and the econometric issues relating to data testing are presented in Chapter Three, while Chapter Four elucidates analyses of the results of the economic estimations. Chapter Five discusses the summary and conclusion, and provides possible policy implications.

Chapter Two

Literature Review

2.1 Introduction

This chapter provides both theoretical and empirical evidence of theories relevant to financial sector development and its effect on poverty, such as the ”McKinnon Conduit effect” and the trickle-down theories. The determinants of financial development and poverty will be outlined and discussed. In addition, the chapter looks into the development of the Namibia financial sector. The sections are set out as follows: section 2.2 discusses the overview of the Namibian financial sector, section 2.3 structure, and developments of the Namibian financial sectors, section 2.4 provides theoretical overview of financial development and poverty. Section 2.5 engages with empirical evidence from these studies. Finally, section 2.6 concludes the chapter.

2.2 The Namibian financial sector an overview

Namibia has experienced exceptional growth over the years in the financial sector. The effects of financial development, particularly financial intermediation’s contribution to GDP in 2000, grew by 1.6% (from 2.0% in 1990 to 3.6%), and additionally to 4.3% in 2010 (Ministry of Finance, 2014). The non-banking sector, the insurance industry, the banking sector and particularly the pension fund industry, have increased in registered entities in the country. These developments are accompanied by financial innovations such as agency banking and mobile banking services, as well as an increase in the number of Automated Teller Machines (ATMs). Overall, advances in technology, particularly the boom in the use of mobile phones, have been instrumental in solving problems of distance and access to financial transactions in Namibia, as well as in many African countries (Otchere et al., 2017).

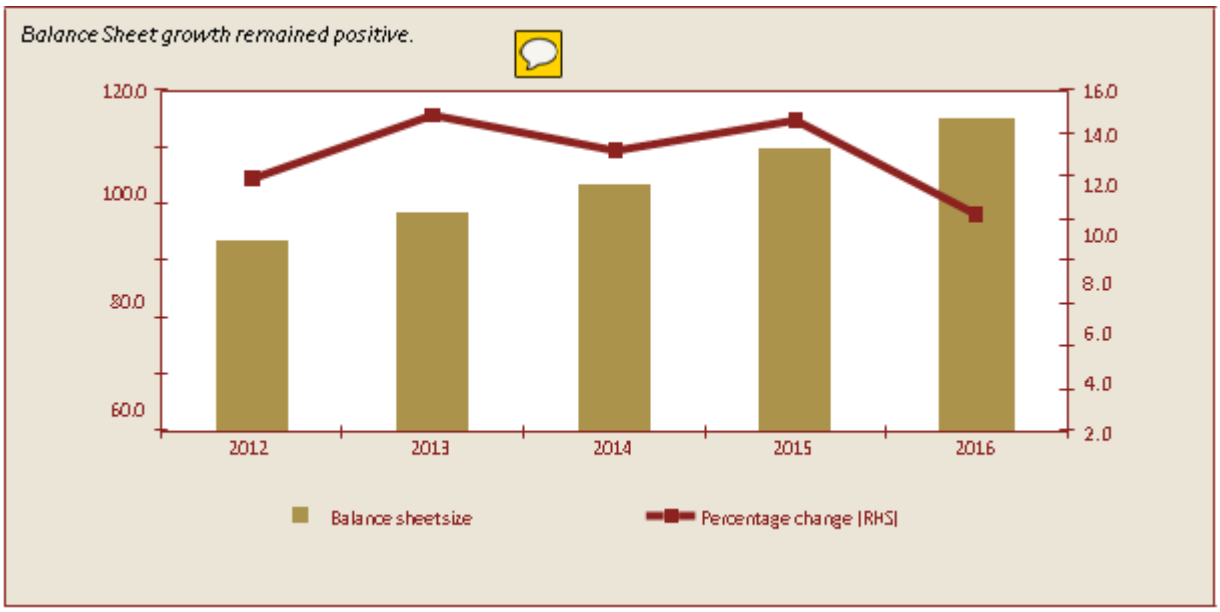
Namibia has fairly well developed, diversified, and sophisticated financial systems compared with other Sub-Saharan African countries. The Namibian financial system is made up of the banking and non-banking sectors which are supervised and regulated by two separate legal bodies. The banking sector comprises the central bank, eight commercial banks , two micro finance institutions, an enterprise bank, a representative office of the foreign banking institution, a few development finance institutions and public finance institutions (Bank of Namibia, 2016).The non-banking sector, overseen by a regulator, the Namibia Financial Institutions Supervisory Authority (NAMFISA), consists of pension fund institutions, both

short- and long-term insurance companies, friendly societies, medical aid funds, capital markets, collective investment schemes, investment managers, stockbrokers, and special purpose vehicles. The Namibian financial sector is largely dominated by South African origin companies. For example, three out of the four largest commercial banks controlling 90%% of total assets are South African subsidiaries. These close ties with South African financial institutions have benefited Namibian institutions, but also brought some risks (IMF, 2007). Consequently, Namibian financial institutions are able to diversify their risks in offshore investment with these strong ties in the South Africa financial markets while at the same time helping to mitigate some of the weaknesses in limited domestic skills, supervision and regulations.

2.2.1 The Banking Sector developments

Namibia's banking industry has seen little growth since independence in 1990 with seven banks currently operating in the country. The Financial sector consists of eight commercial banks, one branch of Ebank and one microfinance bank. Commercial banks dominate the banking sector and there are eight licensed commercial banks (namely: First National Bank Namibia Limited, Standard Bank Namibia Limited, Nedbank Namibia Limited, Bank Windhoek Limited, Trustco Bank Namibia Limited, Letshego Bank Namibia Limited, Banco Atlantico (branch of foreign banking institution), Bank BIC Namibia Limited and the EBank) which collectively hold 98.0% of the total banking assets (Ministry of Finance, 2014; Bank of Namibia, 2016). Interestingly, of eight main commercial banks, Bank Windhoek Limited is the only Namibian bank, whereas the rest are of foreign origins. The remaining share of 2.0% total assets of the banking assets is capitalised by the specialised banking institutions (such as the Agricultural Bank and Development Bank). As reported in the Bank of Namibia annual report of 2016, the balance sheet growth remained positive with an increased total of up to N$110.1 billion as at 31 December 2016. The growth in banking sector assets was chiefly attributed to an increase of 8.9% in net loans and advances, and of 13.6% in short-term negotiable securities. The retail banks offer a range of banking services to businesses, corporates and individuals.

Figure 1: Banking sector performance chart



Source: Bank of Namibia Annual report, 2016

Furthermore, there are several public financial institutions supporting development goals. Both the Development Bank of Namibia and the Agricultural Banks are devoted to financing projects aimed at improving development needs in the country. In terms of financing for priority public investments, the challenge is the short-term nature of liquidity to meet long-term financing needs, which creates a maturity mismatch (AfDB, OECD, UNDP, 2017). Unfortunately, development finance institutions rely heavily on the Namibian government for funding, somewhat because of caps related to on-lending rates and other mandate restrictions.

2.2.2 The non-banking financial sector developments

The Namibian Financial Institutions Supervisory Authority (NAMFISA) regulates the non-banks and credit provision to consumers. According to the NAMFISA 2016 annual report, there were a total of 496 entities of the Non-Banking Financial Institutions (NBFI). The accounted active institutions are 17 long-term and 15 short-term insurance companies, nine medical aid funds, 97 Pension funds, three friendly societies, 19 special purpose vehicles, 13 investment managers, 280 micro lenders, one stock exchange and four stockbrokers. Approximately over 49% of NBFIs assets are invested in local financial markets on the Namibia Stock Exchange. The Namibian non-banking sector plays a significant role in the intermediation and mobilising of savings and risk transfer of corporation and individuals.

2.2.3 Developments in the Capital Market

The Namibian Stock Exchange (NSX) was established in 1992 and market capitalisation on listed shares has grown significantly over the period. The local index market capitalisation for 2015 was N$29.4 billion, even though both the insurers and pension funds invested total assets of N$177 billion. According to the FinMark Trust (2012) for the period 2010/2011 the overall market capitalisation of the NSX approximately N$1,178 billion whilst the local market capitalisation was around N$1, 8 billion. The NSX comprises mutually the South African and primary-listed Namibian companies listed on securities exchanges in both countries. Since the inception of the exchange, more than 75 companies have been listed on the Development Capital Board, Exchange Traded Funds, and on the main board. However, this number of listed companies has been reduced to 42 as a result of liquidations, through takeovers and transfer to other exchanges (Namibia Stock Exchange, 2016). In terms of size, the NSX is generally small and levels of liquidity are low. This is merely attributed relatively to very few trading instruments available on the Namibian capital market. The buy-and-hold strategy as per regulation has affected the size of trade volumes and expected to further continue to affect the liquidity of the local Index (Namfisa, 2016). Consequently, the index has reported a decline of 23.5% decline in volumes traded, despite the fact that there was 0.4% increase of the liquidity in the local index of 1.7% in 2015 from 1.3% in 2014. This shows how relatively small and shallow the Namibian capital market is.

The fixed income market is comparatively well developed and provides securities such as preference shares, corporate bonds, and government bonds. Predominantly, the Namibia government securities account for larger share of the long-term debt market, with approximately 67% of outstanding long-term debt. Total debt securities outstanding increased by N$18.6 billion (60.5%) during 2015 to N$49.4 billion. These outstanding debt securities include the central government, State-Owned Enterprises, banking institutions and corporate debts. Government debt constituted 92.8% of total debt, or 31.1% of GDP in 2016. The Government issued three new bonds, with maturities ranging from five to thirty years respectively (NAMFISA, 2016).

2.2.3 Developments in the Capital Market

Financial sector development is vital for attaining economic growth and sustainable development. It is extensively documented that financial sector growth promotes economic activities such as capital accumulation, innovation in a range of financial services, financial resources mobilisation, financial intermediation, and attracting foreign direct investments. Moreover, financial development theories and evidence suggest that expansion in the financial sector reduces income inequality and poverty mostly for the poor (Claessens, 2006; Claessens and Perotti, 2007; Beck et al., 2007; Demirgűç-Kunt and Levine, 2004). Furthermore, expansion in the financial sector can play a vital role in strengthening the capacity of individuals and households to participate in the economy either indirectly or directly. In addition, economic growth enables the poor population to access basic socio-economic services like education and health, thereby reducing instability and vulnerability in their lives. However, not all authors have somewhat the same view on the benefits that come with the development in the financial sector; several other studies found that financial sector development promotes income inequality (Roine et al., 2009; Gimet and Lagoarde-Segot, 2011). These scholars argue that the rich are benefiting more than the poor from economic growth, because the rich can afford to pay for financial services costs, thus having an advantage in forming business opportunities, creating wealth and investments as they have the capacity to meet the collateral requirements better than the poor consumers.

2.3 Theoretical Overview

Financial development has been widely recognised to induce poverty in two ways: first, indirectly through its impact on economic growth, also known as the Trickle-down theory; and second, directly by broadening financial services, referred to as "McKinnon Conduit effect" (Kirkpatrick, 2005). For example, in the first way, financial development has proven to have enhanced economic growth and accordingly, growth trickle-down to the poor by indirectly improving the livelihood of the poor and thereby reducing poverty**.** The trickle-down theory and literature argue that a higher economic growth broaden several economic opportunities such as employment and job creation which enable the poor to earn income through formal labour practices. As such, talent, skills, and creativity in exchange for wages is one of the weapons that the poor can use to their advantage to earn income and fight poverty. The trickle-down theory is of the belief that as the economy grows, more enterprises are established and in turn employment and jobs are created. Modern economic theory suggests that as bigger businesses flourish, their profits will trickle down in some form to the smaller enterprises and the general population (Radke, 2002). This account of economic development has received

much attention. The trickle-down theory has been extensively researched by the World Bank, 1995; Ravallion and Datt, 2002; Dollar and Kraay, 2002; Jalilian and Kirkpatrick, 2005 to mention a few). It is also suggested that as businesses flourish, this could lead to high income tax incomes, affording the government to increase spending on social services, such as education and health, which in turn improve the lives of the poor (Perroti,1993). A number of other studies oppose the view of the trickle-down and its indirect effect of enhancing economic growth and broadening of economic opportunities for the poor, advocating that only the rich reap economic benefits at the early stage of financial development, thus promoting unequal income generation concerns.

2.3.2 The direct channel of access to financial services

Unlike the trickle-down theory, the "McKinnon Conduit effect" theory suggests that the poor benefit from formal financial intermediation through access to credit and savings (McKinnon, 1973; Shaw (1973). The proponents of the "McKinnon Conduit effect" advocate that as money efficiently flows in the economy, it allows for the poor to access savings or credit opportunities through formal financial institutions. From this perspective, these benefits of an efficient financial sector could effectively mobilise savings opportunities for all and allow for money to flow into the financial sector. Financial intermediaries could then effectively permit people to finance their economic activities and therefore look after their well-being. As such, financial development helps the poor to accumulate capital and savings opportunities that enable them to invest in productive projects. Through accumulated savings opportunities, the poor can set up small businesses that could generate profitable income and reduce poverty. Moreover, the poor could accrue savings, whereby they could generate real rates of return, and use returns to build wealth and assets (Sehrawat and Giri, 2016).

In practice, however, earlier work on financial development suggests that financial institutions are at times hesitant to extend credit to the poor population due to lack of asymmetric information from the side of the borrowers. In such cases, lenders avoid making loans easily available to borrowers as they cannot differentiate between good and bad borrowers. Banerjee and Newman (1993) claim that financial imperfection (such as lack of credit information and high transaction costs) in the financial markets put the poor at a disadvantage as they lack credit records and collateral to secure loans. At times the lack of borrowers' credit information on the part of financial institutions tends to create moral hazards and adverse selections. Indeed, in the presence of perfect market, borrowing would enable the poor to invest in human and capital

development needs which, in turn, smooth consumption needs and reduce their vulnerability against external shocks.

Some scholars and practitioners rationalise that, because of unequal distribution of information (asymmetric information) in the financial sector, only the rich get access to finance (either savings or credit) because of the availability of their financial track record, which the poor fail to demonstrate. This lack of documented financial track records that financial institutions demand affects the poor negatively, as they are unable to get credit from formal financial institutions due to credit market imperfections (Beck et al., 2000). Ultimately, these credit market imperfections lead to the unsatisfactory distribution in income and wealth.

2.4 Empirical Evidence

The review on the literature on the role of financial development and its influence on economic growth and poverty has been documented in many ways. Most of the earlier studies have tested sampling data from cross-countries by grouping both developed and developing countries in a single study, while several others have focused on either developing countries and/or country-specific (individual country) case studies. Unfortunately, from the empirical studies literature review there is no general consensus on whether financial development helps reduce poverty in developing countries (Odhiambo, 2010) or in Africa in particular (Kagochi, 2013). Moreover, there is limited research on individual African countries, let alone on Namibia in particular. Of the few studies that focus on studying financial development in Africa, the literature keeps repeating the same mistake of grouping different African countries together, even though African countries' financial systems are diverse in terms of monetary policies, market penetration, and institutional arrangements, which makes nuanced generalisation difficult without homogenising distinct entities.

Financial development could have a positive impact indirectly on poverty through economic growth. A number of scholars have attempted to unpack the indirect effects of financial development on poverty reduction (Honohan, 2004; Levine, 2005; Jalilian and Kirkpatrick, 2005). For example, Levine (2005) identified that economic growth has resulted in effectively mobilising savings, allocating capital, and producing information, as well as managing risk, enabling diversification, facilitating trading and exerting corporate governance through enhanced financial systems. Levine argues that a robust and well-developed financial system helps facilitate surplus funds from savers to borrowers of funds. Jalilian and Kirkpatrick (2005), using data of 42 countries (developed and developing countries), found that up to a certain

threshold, financial development reduces poverty through the growth effect. However, Honohan (2004) found that the effect of financial development on headcount poverty was negatively correlated. Accordingly, the Honohan emphasis that banking depth (as a measure of financial growth) alone is not a sufficient indicator for financial development. Thus, the finding of his study does not support the argument that financial development accelerates economic growth which indirectly reduces poverty, even though it accounts for the mean of income and inequality.

Dollar and Kraay (2002) undertook an empirical study where they conducted a panel analysis on individual cases (and from cross-country) to investigate the effect of growth through globalisation on inequality and poverty. This study covers a panel of 80 developing countries for over forty years. The authors aimed to investigate whether growth-enhancing strategies have any impact on the livelihood of the poor with a particular focus on income distribution. The study measures two key aspects: (i) the relationship between economic growth and increased participation in globalisation among countries that participate more in globalisation, and (ii) the impact of trade on poor countries. The results provided evidence that globalisation leads to quicker economic growth and reduces poverty in poor countries. In addition, Dollar and Kraay (2002) studied the effect of trade openness on poverty reduction. An interesting outcome from the study was that changes in trade volumes were positively associated with changes in growth rates.

In this study, the author uses development finance indicators to examine the effect of income growth on the welfare of the poor. This study concluded that countries with open-trade governments have experienced faster growth and poverty reduction. Furthermore, a study by Beck et al., (2007) used growth of the income share of the lowest quintile and the growth of the Gini coefficient to assess the relationship between finance, inequality and the poor. Their findings reveal that a 60% increase in financial development on aggregate economic growth reduces income inequality. Consistently, these findings support the significance of a robust financial system for the poor. In an African country study, Fowowe and Abidoye (2013) found that low inflation and trade openness were statistically significant in reducing inequality and poverty, but not financial development measures. Their study uses private credit and broad money (M2) and other macroeconomic (namely: trade openness and inflation) to investigate the impact of financial development on poverty and inequality. Fowowe and Abidoye suggest that improvement in African financial systems can be an effective way to widen financial services to poor households and Small and Medium Enterprises (SME).

In an attempt to explain the growth-enhancing effect of financial development, Allen and Ndikumana (1998) studied the impact of financial development on economic growth in the Southern African Development Community (SADC). The findings suggest a positive correlation between financial development and real capita GDP growth when measured by liquid liabilities of financial institutions. However, when other measures were used, such as credit by banks and credit to the private sector, the results were inconclusive. Using the cointegration framework, Sunde (2014) studied Namibian macroeconomic variables to study the relationship between financial development and economic growth. The study uses proxies such as real GDP and GDP per capita (as measures of economic growth) and the level of credit to private sector and M2 as measures of financial development. The findings of the cointegration model established that economic growth determines the direction of financial development in Namibia. That is, the growth in the financial sector in Namibia moves in accordance to rate of economic growth.

In the Namibia case, the fact remains that there are few micro finance institutions dedicated to provide financial services to the poor, and, moreover, the financial sector is dominated by commercial banks,in which by their mandate, their services are not well-suited to the poor. Subsequently, Uddin et al. (2014) use data over the period 1975 to 2011 for Bangladesh to detect the any causality among financial development, economic growth and poverty. They reported that economic growth is weakly accelerated by financial development and poverty. On the other hand, financial development helps reduce poverty, but not in a linear fashion.

Evidence also emerged that financial development may directly and positively impact the lives of poor. Amongst the established forms in which financial development reduces poverty is by an effective financial system in such a method that could keep financial capital flowing efficiently. Quartey (2005), using Granger-causality procedure to test domestic savings to private as a % age of GDP and per capita consumption data from 1970 to 2002, examines the link between financial development, savings mobilisation and poverty in Ghana. The study uses Granger-causality procedure to test domestic savings to private as a % age of GDP and per capita consumption data from 1970 to 2002. Evidence from this study shows that financial development could not mobilise savings effectively in Ghana, although it was instrumental in reducing poverty. Jeanneney and Kpodar (2011), in a sample of developing countries spanning from 1996 to 2000, found that the banking system benefits the poor through increased banking facilities. Thus, the poor could increase their income and create investment by accessing credit

and, as result, well-functioning financial services. They further suggested that the benefits of financial development outweigh costs.

In contrast, the work of some scholars finds that there is a unidirectional relationship between financial development and poverty in some cases. Odhiambo (2010) uses a cointegration and error-correction model in Kenya study to examine the relationship between financial development from 1968 to 2006. The study, in an attempt to correct a problem of bias in the omission of variables, incorporates a third variable (savings rates) based on a bivariate causality framework. Odhiambo found the association between financial development and savings and, poverty statistically significant in Kenya. Furthermore, the results indicate that there is a unidirectional relationship flowing from financial development to both poverty and savings in Kenya and not the other way around. This means that the development in the financial sector in Kenya benefits poor at a faster rate than the rest of the population. Likewise, Perez-Moremo (2011) finds a unidirectional relationship running from financial development and poverty in a study covering 35 developing countries. Moreover, their results of the Granger-causality test show financial development in not only pro-growth action, but also pro-poor in developing countries. In addition, Sehrawat and Giri (2016b) recognise the positive effect of financial development on poverty reduction in South-Asian and South-East Asian developing countries. Their study shows that the benefits of financial development (particularly financial services broadening and inclusion) trickle down to the poor in a unidirectional way. These findings are consistent with the theory of financial development that support the view that access to financial services and inclusion improves the well-being of the poor by enabling the poor to accumulate savings. Therefore, financial depth reduces transaction costs enabling the poor to build wealth in the long-run. In a similar study Sehrawat and Giri (2016a) conducted a finance -poverty study in India to examine whether the direction of causality from 1970 to 2012. Data are tested using the Auto Regressive Distributed Lag (ARDL) bounds testing approach to co-integration and error-correction mechanism examine both the short-run and long-run relationship respectively. The model results exhibit a positive step from financial development to poverty reduction is unidirectional. A bidirectional relationship has been also established: as mentioned before, the relationship between financial development and growth is inconclusive.

On the contrary, Ho and Odhiambo (2011) show that the relationship between financial development and poverty is two-directional. Using data on the Chinese economy from 1978 till 2008, Ho and Odhiambo (2011) test the effect of the ratio of broad money stock to gross domestic product (M2/GDP) and the ratio of bank claims on the private sector to GDP

(DCP/GDP) on poverty reduction in China. The results of this study found that in the short run, a bidirectional causality exists, while in the long run a unidirectional causality prevails between financial development and poverty reduction. Interestingly, one can conclude that the exploratory power of the proxy under consideration to measure the level of financial development has a strong effect on the relationship between financial development and poverty reduction. Using a sample of 60 developing countries from 1985 to 2008, Rashid and Intartaglia (2017) examined the correlation between financial development and poverty reduction. They found that the correlation between financial development and poverty was positive and statistically significant. On other hand, when poverty is measured in relative terms, the study does not find any pro-poor correlation between financial development and poverty. More so, the indirect effect (GDP per capita) the study showed that financial development promotes poverty reduction, in instances when either economic growth is high or/and under sound institutional arrangements.

Apart from that, there is literature documenting the importance of financial development on reducing poverty through financial access and inclusion. Andongo and Deen-Swarray (2006) analysed the effect of improved financial services on poverty alleviation strategies among the rural poor in Namibia using household data for the 2003/2004 period. Their study applied the Ordinary Least Square model to test financial access usage data using the food consumption ratio to measure as a proxy for poverty. A negative correlation was found that is associated with a higher probability of households' heads that have no access to financial services particularly those in poor regions. The authors concluded that access to financial services usage is not a viable strategy to alleviate poverty, rather a tool to reduce poverty for the extreme poor in Namibia**.**

Similarly, Simatele (2015) utilised the 2102 South African household survey data to examine the impact of improved access to finance services on income poverty. This study includes demographic variables, household income variables and financial access to assess the impact on finance on the livelihood of the poor. Simatele found that formal financial services reduce poverty, particularly in female-headed households. He further found that financial access promotes poverty reduction and services such as savings and payment, thereby suggesting provision of affordable services by policy makers.

2.5 Conclusion

This chapter reviewed the theories of financial development and their impact on poverty reduction. The theories predict that the financial sector development is significant by influencing the income of the poor as income allows people to sustain themselves. Existing economic theories show that financial development has the potential to reduce poverty particularly amongst the poor in developing countries. The "McKinnon Conduit effect" hypothesis further shows the direct effect of financial development on the livelihood of the poor through widening formal financial services. More so, the advocates of the trickle-down hypothesis base their arguments on the belief that financial development has an indirect effect which reduces poverty in the poor populations via strengthening economic growth. It is also assumed that in the presence of imperfect financial market, financial development is detrimental to the poor as this creates unequal distribution in income and wealth. Findings indicate that financial imperfection (such as lack of credit information and high transaction costs) in the financial markets places the poor at a disadvantage as they lack credit records and collateral to secure loans (Banerjee and Newman, 1993).

Furthermore, assessments of the literature of the role of financial development and its influence on economic growth and poverty indicates that the field has been documented in many ways from the examination period, macroeconomic variables utilised, and the econometric testing models. Earlier studies on financial development used sampling data from cross-countries by grouping both developed and developing countries in one study. Grouping different countries together in the studies that examine financial development and poverty reduction wrongly assume them to be homogeneous entities. The case is that countries' financial systems are diverse in terms of monetary policies, market penetration, and institutional arrangements which make generalisation difficult. Unfortunately, from the empirical analyses there is no general deduction whether financial development effectively reduces poverty in developing countries (Odhiambo, 2010) and particularly in Africa (Kagochi, 2013). Additionally, there is little research on African countries, and none particularly on Namibia addressing financial development and poverty.

Chapter Three

Methodology

3.1 Introduction

This dissertation adopts a quantitative technique to analyse the theoretical framework of financial development, growth, and poverty in Namibia, as discussed in Chapter Two. The study uses time-series data spanning the period from 1991 to 2017, to explore a causal relationship among the variables by employing the Autoregressive Distributed Lag (ARDL) bounds testing technique. A Granger-causality procedure is followed to determine the direction among the variables. In addition, the study employs the Johansen cointegration procedure (Johansen and Juselius, 1990; Johansen, 1991) in order to establish whether a long-run relationship exist. As the case with time-series data, a unit root test is carried to test the order of integration, and verify stationarity of the variables as non-stationary data can lead to unreliable and biased findings of the relationships amongst the variables. The Augmented Dickey-Fuller (1988) test is utilised to verify the stationarity among variables, this tool is considered to be a reliable model commonly used for testing unit roots.

3.2 Data

The data used for this study covers a period of 27 years, from 1991 through to 2017. The data is obtained from the Bank of Namibia (country's central bank), and World Development Indicators database for which data is available and complete. The selected macroeconomic variables under examination are: domestic credit to private sector as a share of GDP, gross domestic savings as a%age of GDP, per capita consumption, per capita GDP, government consumption, trade openness, was collected from the World development indicators database while consumer price index (inflation rate) data was obtained from the Bank of Namibia.

Table 1: Variables Sources

Variable	Notation	Data source
Poverty (Per capita consumption)	InPov	WDI
Domestic credit to private sector as a share of GDP (%)	Incredit	WDI
Gross domestic savings (% of GDP)	InSav	WDI
Per capita GDP	Inpgdp	WDI
Consumer price index	Ininf	Bank of Namibia
Government consumption	Ingov	WDI
Trade openness	Intrade	WDI

Note:(1) WDI- World Development Indicators; (2) per capita consumption is Per capita consumption- all value of all goods and services purchased by household divided by total population.

3.3 Variables definition

In this section, different variables are described and gives an explanation of how they influence poverty reduction. It provides the interrelated information from the previous empirical findings on the study and give a prediction of variables effects on the current study.

3.3.1 Poverty

When it comes to measuring poverty for developing countries there several proxies used in many studies. The most popular indicator of poverty is the measure of absolute poverty. This measures the number of populations living in poverty or those unable to reach a minimum standard of living in order to meet basic consumption needs. Poverty gap is another measure commonly used. This method shows how far (in terms of distance) a population lies from the poverty line indicated by a decrease or increase in the income levels. Thus, this study uses per capita consumption as a poverty indicator. This measure is more reliable than income as most poor people do not really earn an income. This measure has been used frequently in the literature by research authors (Quartey, 2005; Odhiambo, 2009; Ho Odhiambo, 2011; Giri, 2016).

3.3.2 Financial sector development

Financial sector development can improve the chances of the poor to obtain finance. This enables them to improve their living standards, thereby reducing poverty. Two proxy variables

are used: (a) Domestic credit to private sector as a share of GDP, is used as a comprehensive indicator of financial development (Levine et al., 2000; Beck et al., 2004; Honohan, 2004; Ho and Odhiambo, 2011; Giri, 2016). The second proxy (b) Gross domestic savings as a%age of gross domestic product, is savings of household sector, public and private corporate sector less consumption expenditure. This indicator measures the level of financial resources available for investment in capital assets.

3.3.3 Control variables

Few control variables are to be used in addition to financial development and poverty indicators.

3.3.4 Consumer price index

Inflation as a proxy because high inflation rate is considered to affect the low-income households negatively and the public at large. Empirical evidence shows that a high level of inflation distorts economic activities, reduces investments in productive assets, and thus reduces economic growth and increase poverty (Allen and Ndikumana, 1998). As inflation rises, consumption goods prices rise too, and as is known, the poor spend most of their income on consumption needs. This macroeconomic variable has been tested by studies (Allen and Ndikumana, 1998; Dollar and Kraay, 2002; Quartey, 2005; Kicgodi, 2013; Sherwata and Giri (2016). In this regard high inflation rates are bad for the poor as this are constrained in accessing financial instruments making it difficult to hedge inflation. On the other hand, low inflation is good for investors, thus it is positively correlated with accumulation (Mundell, 1965). That is, low inflation encourages savings, reduces the lending rates, and attracts foreign direct investment that results in higher investment and economic growth. Inflation rates are high in Namibia mainly due to high food and transport prices, as most consumer goods are imported into the country. The Bank of Namibia is trying to stabilise rising inflation rates by keeping the repo-rate unchanged consistently. This study predicts inflation to be negatively coefficient, hence high inflation is known to slow down financial development, increase volatility, reduces real returns on investments and savings, thereby hindering economic growth.

3.3.5 Trade openness

Measures the amount of exports and imports as share of gross domestic product (GDP). Namibia's trade is narrowly concentrated, mainly little trade within the SADC/SACU and heavy reliance on international trade with European countries (for minerals). Export trade is dominated by minerals (diamonds and uranium) and primary products such as fish, livestock (live animals and animal products) and grapes. In terms of import relations, South Africa is Namibia's main trade partner, mainly in the provision of automobiles, fuel, and food. Integration into the regional and global economy is a critical prerequisite to spurring investment, growth, and employment (African Development Bank, 2014). In their study, Sherwat and Giri (2016a) found that trade openness was positively related to financial development, which in a way helped to reduce poverty in South Asian countries. A country's openness to trade is also regarded as an important element of economic growth. Research by Dollar and Kraay (2002) found sufficient evidence that openness to trade regimes led to quicker growth and poverty reduction in poor countries, while a Kenyan study (Kicgodi, 2013) showed that trade openness was not effective in enhancing economic growth. For this study, we expect the sign of openness to trade to be positive and it is assumed that more trade will lead to high level of economic growth rates.

3.3.6 Economic growth rate

Per capita real GDP is utilised to measure the indirect effect of financial development on poverty. Mounting empirical evidence shows that financial development increases the growth rate, thus boosting income of the poor, particularly in developing countries (Honohan, 2004; Jalilian and Kirkpatrick, 2005; Beck et al., 2007, Jeanneney and Kpodar, 2011; Sehrawat and Giri, 2016). This variable is utilised mainly to justify the effect of economic growth on poverty while considering the adverse effects of financial instability.

3.3.7 Government consumption expenditure

Refers to government spending in investments for the country's future development for public consumption such as in infrastructure development, agriculture, social welfare, education, and health programmes. Fan (2008) found that government spending on anti-poverty programmes was not significant in reducing poverty due to misappropriation of funds and ineffective targeting. This type of government expenditure imposes a negative externality on the poor and private productivity, through misallocation in resources. This study predicts a negative association between government consumption expenditure and poverty reduction measures.

3.4 Model specification

We follow the methodology used by Quartey (2005) and Ho and Odhiambo (2011) to investigate the effect of financial development on poverty, using Namibia as the case study. The main objective is to establish whether any relationship between financial development and poverty exists for the period of 1991 to 2017. The relationship can be determined as follows:

$$POV_i = \delta_1 FD_i + \delta_2 X_i + \varepsilon_i \quad (1)$$

Where the subscripts POV_i represents poverty, FD_i denotes financial development, X_i are control variables (inflation, real capita GDP, government consumption, trade openness) and ε_i the error term.

Variables are used in natural logarithm to estimate the significance of financial development on poverty reduction. The relationship amongst the variables can be modelled as follows:

$$POV_t = \beta_0 + \beta_1 \ln(FD_t) + \beta_2 \ln(pgdp_t) + \beta_3 \ln(inf_t) + \beta_4 \ln(gov_t) + \beta_5 \ln(trade_t) + \varepsilon_t \quad (2)$$

Where *t* describes the time period, POV refers to poverty (measured by per capita consumption), FD defines financial development, *pgdp* refers to economic growth, *inf* refers to the inflation rate, *gov* refers to government consumption expenditure, *trad*e refers to trade openness. Jalilian and Kirkpatrick (2001) argues that developing countries are more concerned about the "McKinnon Conduit effect" (direct channel) of financial development on poverty rather than the indirect channel (Trickle-down effect). Thus, this study includes per capita GDP

variable to capture the indirect effect. As indicated in the theoretical review in Chapter Two, the association between financial development and poverty will be analysed using three proxies: *credit and savings* as financial development proxies, and *pov for* poverty.

$$\ln Pov_t = \alpha_0 + \alpha_1 \ln(credit_t) + In(sav_t) + \alpha_2 \ln(inf_t) + \alpha_3 \ln(pgdp_t) + \alpha_4 \ln(gov_t) + \alpha_5 \ln(trade_t) + \mu_t \quad (3)$$

3.5 Estimation and testing methods

3.5.1 Stationarity test

One of the requirements necessary when time series data is utilised is to transform data into stationary prior to modelling. A unit root test is carried out in order to verify stationarity of the variables or otherwise non-stationary data can lead to unreliable and biased findings of the relationships between the variables. Several scholars have shown that the use of non-stationary data often produces spurious correlation and false interpretation such as extremely significant t-statistics and very high R^2 of 1 (Granger and Newbold, 1974). The Augmented Dickey-Fuller (1988, 1979) tests is used to test stationarity of data, the equation is written as follows:

$$\Delta Y_t = \propto + \delta Y_{t-1} + \beta \Delta Y_{t-1} \varepsilon_t \quad (4)$$

Where, Δ represents the change in variables, t is the time period, ε is the stationary random error. The null hypothesis is that the time series data have a unit root of implying that the data are non-stationary dataH_1: $\delta < 0$. In such instances, the null hypothesis is to be rejected if δ_1 = is less than zero.

3.5.2 Cointegration test

Economic theories advocate that there could be a long-run relationship amongst two or more economic indicators that could derive over short periods. This relationship between financial indicators is known as cointegration. That is, when two or more indicators each have a unit root when there is a set of I (1) variables can be modelled with linear combinations that are I (0). The theory of cointegration was developed by Engle and Granger (1987) based on the work of Granger and Newbold (1974) on spurious regression. The cointegration test was developed to analyse long-run relationship amongst a set of variables as well as to address the issue of spurious regression. This study uses the Johansen cointegration procedure (Johansen and

Juselius, 1990; Johansen, 1991) to examine whether a long-run relationship exists amongst the series. This method is chosen for its ability to detect multiple cointegration vectors, avoid the issue of carrying errors from one step to the next, and choosing some dependent variables.

Johansen developed a methodology based on the vector autoregression (VAR). This takes an order *p* written as:

$$Y_t = \mu + A_1 Y_{t-1} + \ldots\ldots + A_p Y_{T-P} + \varepsilon_t \quad (5)$$

Where *t* **y** is a *n*x1 vector of series when integrated of order one, this is frequently represented as I (1), and ε_t is a *n*x1 vector of innovations. The VAR equation can re-model as:

$$\Delta Y_t = \mu + \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-1} + \varepsilon_t \quad (6)$$

where ,

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

The Johansen cointegration procedure is evaluated based on two statistics, the trace and max-eigen statistics, to determine whether there is cointegration or not among the variables. The test and estimation make it possible to run multiple variables of the cointegration vectors. Both test statistics examine the null hypothesis of no cointegration in contradiction of the alternative of cointegration. The main difference in both the trace and max-eigen statistics lies in their respective alternative hypotheses. Under the trace statistics test, we fail to reject the null hypothesis that is when the number of cointegration equations less than or equal to the rank (r) against the alternative hypothesis that the number of cointegration is more than r. The max-eigen statistics for the null based on the number of cointegration equations r against the alternative hypothesis that the number of cointegration equations is equal to r+1.

3.5.3 Long- and short-run estimation - Vector Autoregression model

The study will run vector autoregression model (VAR) based on whether there are cointegration equations in the Johansen cointegration model to determine a short- and a long-run relationship. VAR model is suitable for multivariate time series and simply does not have strong restrictions on variables. It is used to test for joint behaviour of variables which are treated as endogenous from theory. The difference of the VAR model is the Vector error correction model (VECM)

which enables the VAR model to examine when the variables are cointegrated. The VECM model makes provision to correct the errors of the short-run causality in the long-run by incorporating an error correction term as an explanatory variable in the long-run model (Johansen, 1990, 1991).

The Error Correction Mechanism (ECM) of the modified ARDL bounds testing technique is used to investigate the short-run dynamic relationships. All this will be done by using the VAR applying the VECM. The optimal lag length is estimated by using the VAR on level series of financial development, inflation rates, per capita GDP, government consumption expenditure, and trade openness on lagged values as control variables of poverty measure. The VECM is denoted as follows:

$$\Delta(\ln Pov_t) = \beta_0 + \sum_{i=1}^{n} \Delta(\ln Pov_{t-1}) + \sum_{i=1}^{p} \Delta(\ln FD_{t-1}) + \sum_{i=1}^{r} \Delta(\ln inf_{t-1}) + \sum_{i=1}^{s} \Delta(\ln pgdp_{t-1}) + \sum_{i=1}^{T} \Delta(\ln gov_{t-1}) + \sum_{i=1}^{u} \Delta(\ln trade_{t-1}) + ECT_{t-1} \quad (7)$$

All models are defined by replacing per capita consumption (for InPov**),** (domestic credit to private sector as a share of GDP, domestic savings as a share of GDP) for InFD. The above equation will be used to estimate the short-run relation through the VECM from the VAR estimation method, while the long-run relationship is estimated by employing the VAR/VECM equation modelled as:

$$ECT_{t-1} = Y_{t-1} - \beta_0 - \beta_1 X_{t-1} \quad (8)$$

The error correction model equation states that change in poverty (per capita consumption) depends on ΔIncredit, ΔInsav, ΔIninf, Δ Inpgdp, ΔIngov, ΔIntrade, as well as the equilibrium error term of the previous period (ΔECM_{t-1}).

The diagnostic test will be conducted to validate the model and check for any mis-specifications. Therefore, the serial correlation, normality, heteroscedasticity and stability test will be performed.

3.6 Causality test

A Granger-causality procedure is followed to determine the direction amongst the finance and poverty variables. Granger (1969) developed causation method as a statistical hypothesis test used to determine the direction of economic series over a certain period. The Granger method uses economic data sets to determine whether an association exists amongst series. This study examines the causality between (a) two proxies of financial development (domestic credit to private sector as a share of GDP, domestic savings as a share of GDP, and poverty reduction (measured by per capita consumption). The Granger-causality model can be expressed as follows (Narayan and Smyth, 2008; Ho and Odhiambo, 2011):

$$\Delta \ln Pov_t = ó_0 + \sum_{i=1}^{n} ó_{1i\Delta \ln Pov_{t-1}} + \sum_{i=0}^{n} ó_{2i \ln FD_{t-1}} + ECM_{t-1} + \mu_t \quad (9)$$

$$\Delta \ln FD_t = \lambda_0 + \sum_{i=1}^{n} \lambda_{1i\,\Delta \ln FD_{t-1}} + \sum_{i=0}^{n} \lambda_{2i\,\Delta \ln Pov_{t-1}} + ECM_{t-1} + \mu_t \quad (10)$$

3.7 Summary

This chapter briefly outlines the layout on how data was collected, organised, and tested in order to analyse and present the findings on the research topic. The chapter explains the methods used to carry research analysis and findings. It comprises of the research design, target sample, selected macroeconomic variables, estimation and testing methods, and the justifications for using the research design. This dissertation utilises three dependent variables for financial development and poverty which are: domestic credit to private sector as a share of GDP, domestic savings as a percentage of Gross Domestic Product, and per capita consumption. The independent variables are inflation, trade openness, per capita real GDP, government consumption expenditure. In addition, the chapter discussed the data sampling methods, data validation, and data presentation utilised for this study.

Chapter Four

Discussion and Findings

4.1 Introduction

This section of the research covers the results generated from empirical models and discusses the findings thereof. In addition, it comprises several analytical frameworks discussed in Chapter Three. The analytical frameworks are: the descriptive statistics, correlation analysis, unit root test, cointegration and causality test as well the long- and short-run analytics.

4.2 Descriptive statistics

Table 4 depicts the mean, standard deviation, skewness and kurtosis output for the eight variables from 1991 to 2017. Knowing the average values of variables under examination, it is noted that per capita GDP, per capita consumption (pov), trade and inflation rate record the highest mean. Gross domestic savings (sav) has the lowest mean. In terms of sensitivity, as indicated by standard deviation, again both the poverty and inflation rate show the highest sensitivity to the mean. This indicates the macroeconomic sensitivity, which implies an unstable economic situation for the country.

On the skewness and Kurtosis, the table shows that most variables mirror a normal skewness a normal distribution. Skewness measures the degree of asymmetry of the distribution of the series around the mean. Most of the variables have a zero skewness, except for government consumption (gov), credit and savings (sav) which mirror a long-left tail as shown by negative score ranging between -0.1372 and -1.6443 respectively. Thus, a negative sign for gov, credit and sav will mean negative impact or deepening in financial sector development. With regard to Kurtosis, the accepted benchmark value is three for normal distribution series data. Kurtosis measures the flatness or peakness of the distribution of variables. In this case, most variables mirror a mesokurtic distribution. Meaning the data are normally distributed around the mean, with a Kurtosis below 3% score, ranging between 1.6402 and 2.9591, except for trade and credit which are leptokurtic, portraying a peaked curve, as indicated by higher values of 3.6372 and 6.4149, meaning that both trade and credit has a long-right tail or are positively skewed. Accordingly, the higher the values, the more distinct the peak is, therefore the more volatile the presence of outliers in the data. The Jarque-Bera output shows that seven of the variables are statistically insignificant, expect for credit, whose probability is highly statistically significant.

Table 4: Summary of the descriptive statistics

	credit	sav	pov	inf	pgdp	gov	trade
Mean	43.89438	13.14768	21685.91	79.36426	33192.33	23.89071	97.16051
Medium	46.15722	13.32240	19146.87	75.87643	32172.32	24.51114	94.41564
Maximum	52.49138	24.36052	36634.95	127.1890	44811.15	26.53684	125.4776
Minimum	19.23133	0.895704	14878.55	54.45921	26260.70	19.28449	80.76203
Std.Dev.	7.136855	5.490509	6477.165	20.97511	6637.436	2.002892	10.73974
Skewness	-1.644301	-0.137182	0.893933	0.736858	0.429684	-0.907079	0.843279
Kurtosis	6.414875	2.885003	2.571153	2.486947	1.640247	2.959157	3.637214
Jarque_bera	25.28580	0.099562	3.802924	2.739447	2.910873	3.704444	3.656839
Probability	0.000003	0.951438	0.149350	0.254177	0.233298	0.156888	0.160667
Sum	1185.148	354.9874	585519.7	2142.835	896192.9	645.0492	2623.334
Sum Sq.Dev	1324.302	783.7879	1.09E+09	11438.83	1.1E+09	104.3010	2998.894
Observations	27	27	27	27	27	27	27

Note: *credit= domestic credit to private sector as a share of GDP (%); Sav= Gross domestic savings (% of GDP); Pov= Per capita consumption; pgdp= Per capita GDP; inf= Consumer price index; gov= Government consumption; trade= Trade openness. Source: Author's estimate from research data*

4.3 Correlation analysis

The results of the correlation matrix for all the variables are reported in Table 5 below. Correlation measures the strength/linear relationship between two variables; highly correlated variables could lead to invalid parameters estimates and thus cannot be used for inference. Accordingly, correlation values of 0.7 and above are considered strong and highly linearly related, while a score between 0.35 and 0.7 is considered fair, and below 0.35 weak. A negative value indicates an inverse association and a positive value depicts a direct association.

Table 5: Correlation matrix results

	lnpov	*lncredit*	*lnsav*	*lninf*	*lnpgdp*	*lngov*	*lntrade*
lnpov	1.0000						
lncredit	0.4374	1.0000					
	0.0225	….					
lnSav	-0.7890	-0.2455	1.0000				
	0.0000	0.2172	….				
lninf	0.8058	0.5579	-0.6896	1.0000			
	0.0000	0.0025	0.0001	…..			
lnpgdp	0.9333	0.2472	-0.5894	0.7639	1.0000		
	0.0000	0.0003	0.0012	0.0000	…..		
lngov	0.2390	-0.2472	-0.3738	0.3430	0.0539	1.0000	
	0.2299	0.2139	0.0548	0.0799	0.7893	……	
lntrade	0.4720	0.2270	0.4271	0.2945	0.4476	0.3435	1.0000
	0.0129	0.2548	0.0263	0.1359	0.0192	0.0793	……

Note: *credit= domestic credit to private sector as a share of GDP (%); Sav= Gross domestic savings (% of GDP); Pov= Per capita consumption; pgdp= Per capita GDP; inf= Consumer price index; gov= Government consumption; trade= Trade openness; Source: Author's estimate from research data*

As depicted in the table above, lnsav is negatively correlated to poverty (lnpov), while inflation (lninf) and per capita GDP (lnpgdp) are positively highly correlated to the poverty measure. There was high correlation of *pgdp (*per capita GDP) of 0.9333 and 0.7639 to poverty and inflation. This indicates a multicollinearity problem, which could lead to insignificant figures and unstable findings. Therefore, in such instance *pgdp issue* will be dealt separately in the following regression models. The rest of the variables exhibit low correlations, where both negative and positive correlation are detected. Overall, the p-values of most variables are statistically significant and fit to be used to assess the rest of the regression models.

4.4 Unit root test results

Time series data in this study is estimated for stationarity before running any regression such as the causality test and others. Stationarity is an essential requirement in time-series analysis. If the data is not stationary, no forecasting can be made from such regression and therefore the outcome of the series will give spurious regression. The disadvantage of a spurious regression

is that the results cannot be used for hypothesis testing, deemed impractical. The order of stationarity of the series is tested using the ADF unit root test. The results of the unit root test are reported in table 6.

Table 6: Results of the stationarity test

	t-stat I	**t-stat I**	**CV at 1%**		**CV at 5 %**		**CV at 10 %**	
Series	**0**	**1**	**I (0)**	**I(1)**	**I(0)**	**I (1)**	**I(0)**	**I(1)**
			-3.711457	-3.724070	-2.981038	-2.986225	-2.629906	-2.632604
lncredit	-8.387050		reject	reject	reject	reject	reject	reject
Insav	-2.426288	-5.781506	FTR	reject	FTR	reject	FTR	reject
Inpov	-0.010104	-4.559036	FTR	reject	FTR	reject	FTR	reject
ininf	-0.595157	-4.893491	FTR	reject	FTR	reject	FTR	reject
inpgdp	-0.264505	-3.627824	FTR	reject	FTR	reject	FTR	reject
Ingov	-2.115582	-6.400627	FTR	reject	FTR	reject	FTR	reject
Intrade	-2.925128	-3.470344	FTR	FTR	FTR	reject	FTR	reject

Note: *credit= domestic credit to private sector as a share of GDP (%); Sav= Gross domestic savings (% of GDP); Pov= Per capita consumption; pgdp= Per capita GDP; inf= Consumer price index; gov= Government consumption; trade= Trade openness; Source: Author's estimate from research data*

The study uses the 5 % significance level as a benchmark compared to both the 1% and 10 % significance level respectively. The variables were initially lagged based on an automatic selection of a maximum 6 lags as per the ADF test procedure. *Credit* is the only variable reported to be stationary at level I (0). The rest of the variables become stationary after first difference at level I (1). Having confirmed that all series are stationary, that is the series have a constant mean, variance and covariance and time variant. This validates testing for cointegration and causality.

4.5 Cointegration test

4.5.1 Johansen Cointegration test

As noted in section 4.4, the unit root test confirmed the variables were only integrated in order of I (1) after the 1st difference and not at level. Therefore, it was essential to test for the long-run relationship of the series under examination. The Johansen Cointegration test was used to

determine the existence of cointegration among these variables. The results of the cointegration test are reported in Table 7.

Table 7: Cointegration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.946648	197.2431	125.6154	0.0000
At most 1*	0.852812	123.9720	95.75366	0.0002
At most 2*	0.715783	76.07101	69.81889	0.0145
At most 3	0.569187	44.62058	47.85613	0.0976
At most 4	0.419804	23.56855	29.79707	0.2193
At most 5	0.324393	9.958801	15.49471	0.2839
At most 6	0.006190	0.155220	3.841466	0.6936

Trace test indicates 3 cointegration eqn(s) at 0.05 level

* denotes rejection of the hypothesis at the 0.05 level;

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.946648	73.27102	46.23142	0.000
At most 1*	0.852812	47.90103	40.07757	0.0054
At most 2	0.715783	31.45043	33.87687	0.0948
At most 3	0.569187	21.05202	27.58434	0.2731
At most 4	0.419804	13.60975	21.13162	0.3979
At most 5	0.324393	9.803581	14.26460	0.2251
At most 6	0.006190	0.155220	3.841466	0.6936

Max-eigenvalue test indicates 2 cointegration eqn(s) at 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

The results of the Johansen cointegration test in the table confirm a long-run association among the variables. We, therefore, reject the null hypothesis that there is no cointegration. Both the trace and max-eigen statistics test found 3 and 2 cointegration equations among the variables at 5% significance level. Thus, the results indicate a firm long-run relationship between financial development and poverty in Namibia. This implies that the variables under study will tend to move together in the long run. It is anticipated that in run credit, savings, per capita GDP and government consumption to have a positive impact on poverty reduction, while inflation could have a negative impact on poverty. Having detected the long-run relationship, it is necessary to conduct the vector error correction model (VECM) in order to correct the error between the short run and long run.

4.6 Vector Error Correction Model

Having determined the long-run relationship, the next step is to conduct the VECM. Before conducting the VECM model, the optimal lag length for the model had to be determined. Estimating the correct number of lengths is important as over-estimating the lags could lead to errors with high means and under-estimating the number of lags can lead to auto correlated errors or unfit regression outcomes. The optimal lag length was determined as two, based on comparing the results of the Akaike information criterion, Schwarz information and Hannan-Quin information criteria. The results of the optimal lag length criteria are reported in Table A of the Appendix.

The VECM represents both the results of the short- and long-run estimates as shown in Tables 8 and 9.

4.6.1 Long-run estimate results

Presented in Table 8 below are the results of the long-run relationship based on the VECM. All financial development variables indicate a negative relationship with the poverty indicator. The coefficients of domestic credit to private sector was negative and significant. However, the result of the domestic savings as a percentage of GDP was positive and not statistically significant. Increase in savings by one percent could reduce poverty (measured by per capita consumption) by 0.4755%. This indicates that people delay consumption spending in anticipating better future returns on savings deposit.

Table 8: VECM results: long-run relationship estimates

Dependent Variable -D(INPoverty)			
Variable	**Coefficient**	**Std Error**	**t-Statistics**
CONSTANT	-1.109322		
D(INCREDIT(-1))	-0.009703***	0.00193	-5.03627
D(SAV(-1))	0.004755***	0.00055	8.61790
D(ININF(-1))	-0.006378***	0.00105	-6.07981
D(INPGDP(-1))	-0.047088***	0.00166	-28.3723
D(INGOV(-1))	-0.013160***	0.00200	-6.58789
D(INTRADE(-1))	0.001682	0.00148	1.13700

Note: *credit= domestic credit to private sector as a share of GDP (%); Sav= Gross domestic savings (% of GDP); Pov= Per capita consumption; pgdp= Per capita GDP; inf= Consumer price index; gov= Government consumption; trade= Trade openness; Source: *** indicates significance at 1 %. Author's estimates from research data*

As anticipated, the coefficient of inflation was negative and insignificant. Evidence shows that, high level of inflation distorts economic activities, reduces investments in productive assets and thus reduces economic growth and increase poverty (Allen and Ndikumana, 1998). Inflation erodes the purchasing power of the population, thus reducing consumption and consumer spending due to high product prices. Furthermore, the coefficients of both per capita GDP (*inpgdp*) and government consumption expenditure (*ingov*) was negative and insignificant. This implies that a 1 % increase in both *inpgdp* and *ingov* will lead to a rise in poverty. On the other hand, the trade openness *(intrade*) coefficient was positive and statistically significant, implying that a 1 percent increase in trade openness could reduce poverty by 0.1682 percent. Thus, a long-run relationship has been established between trade openness and poverty.

4.6.2 Short-run relationship

The short-run relationship results were also obtained using the VECM in Eviews. This are shown in their differenced status (indicated by the letter D), while evidence of a long-run relationship was detected from the cointegration results reported in table 8.

Table 9: Short-run relationship estimates

Dependent variable- D(INpoverty)				
Variable	**Coefficient**	**Std Error**	**t-Statistics**	**Prob.**
Error Correction term(t-1)	-1.634360***	0.307578	-5.313636	0.0001
D(INPOV(-1))	1.149759***	0.299941	3.833288	0.0015
D(INCREDIT(-1))	0.023460***	0.007813	3.002655	0.0084
D(INSAV(-1))	0.010484***	0.001941	5.400979	0.0001
D(ININF(-1))	-0.015741**	0.005607	-2.807627	0.0126
D(INPGDP(-1))	-0.023229	0.021740	-1.068511	0.3011
D(INGOV(-1))	-0.004756	0.007917	-0.600643	0.5565
D(INTRADE(-1))	0.019120**	0.007376	2.592093	0.0197
CONSTANT	0.000750	0.000605	1.239742	0.2329
R-squared	0.815756	Durbin-Watson stat		2.263950
Adj.R-squared	0.723635			
S.E of regression	0.002045			
Sum sq. resids	6.69E-05			
Log likelihood	124.9081			
F-statistic	8.855196			
Prob(F-statistic)	0.000128			

Note: *credit= domestic credit to private sector as a share of GDP (%); Sav= Gross domestic savings (% of GDP); Pov= Per capita consumption; pgdp= Per capita GDP; inf= Consumer price index; gov= Government consumption; trade= Trade openness; Source: ** and *** indicates significance at 5% and 10% level respectively. Author's estimates from research data*

The results of the short-run relationship indicate that coefficient of variables is negative and significant. The coefficient of 1.6344 suggests that a departure from the long-run equilibrium is corrected each period at a rate of 163.44%. The short-run findings indicate that the lag of poverty had a positive and significant impact on itself. That is, high per capita consumption today leads to increase per capita consumption in the future, implying good well-being. Both financial development indicators exhibit a positive and significant relationship with poverty in the short-run. Domestic credit to private sector coefficient is positively affected by poverty, which is beneficial for the poor. This implies that accessing credit could increase income and wealth creation, but is not significant to per capita consumption (poverty reduction) in the sense

of the poor borrowing in order to smooth consumption (Ndikumana, 1998; Jeanneney and Kpodar, 2011)

Savings were positively associated with the poverty measure. This indicates that a 1% increase in savings reduces poverty by 1.0484%. This is consistent with the findings (Sehrawat and Giri, 2016) which suggest that the poor could earn real returns when they accumulate savings. The returns on savings can be used to create wealth and assets, hence improve welfare of the poor. Moreover, the coefficients of both inflation (INinf) and government consumption expenditure were negative and insignificant. This is anticipated, as high inflation and high government expenditure negatively impact on poverty reduction, hence the lives of the poor.

On the economic growth indicator, the lag of per capita GDP was negative and insignificant. Per capita GDP (*inpgdp*) found to impact negatively on poverty. When, *inpgdp* increases by one percent, poverty increases by 2.3229 %, thus reducing consumer consumption. Thus, a negative economic growth is not good for welfare of the poor.

The relationship between trade openness (INtrade) and poverty is both positive and significant. This is good for any economy, as high trade as percentage age of GDP implies increased incomes and therefore higher consumption by the population. A percentage increase in trade openness would lead to 1.9120% in poverty reduction. This is consistent with the study by Dollar and Kraay (2002), who supported that high trade openness and volumes influence positively on the growth of developing countries, hence the lives of the poor.

Overall, the variables show a good score of the r-squared and adjusted r-squared. The r-squared of over 60% is considered a good fit. From the results in Table 9 above the r-squared score of 0.8157% is statistically significant. Durbin-Watson (2.263950) and p-value (0.000128) scores both confirm the model to be statistically significant.

4.7 Granger causality test

The results of the Granger causality test between poverty (pov) and the two financial development indicators: credit and savings (sav) are reported in Table 7. The variables are in the natural logarithm. The findings below show that savings does Granger-cause poverty, but not credit. Similarly, we rather accept the null hypothesis as the probability value is statistically significant.

Table 9: Granger causality results

Dependent variable: D(INPOV)			
Excluded	Chi-sq	df	Prob.
D(INCREDIT)	0.005308	1	0.9419
D(INSAV)	1.881022	1	0.1702
AII	1.882546	2	0.3901
Dependent variable: D(INSAV)			
D(INPOV)	2.945615	1	0.0861**
D(INSAV)	12.25255	1	0.0005**
AII	13.73465	2	0.0010**
Dependent variable:D(CREDIT)			
D(INPOV)	3.118428	1	0.0774**
D(INCREDIT)	0.712813	1	0.3985***
AII	3.227309	2	0.1992

***** and *** indicates significance at 5% and 10% level respectively.*** *Source: Author's estimate from research data*

Further, there was a unidirectional causality between savings and poverty (measured by per capita consumption). The causal flow from savings to credit was reported to be statistically significant, as supported by F-statistics and probability values. Thus, the findings suggest that financial development does Granger-cause poverty in Namibia.

4.8 Diagnostic test results

The serial correlation, normality, heteroscedasticity and stability tests were conducted. The results indicated that there is no serial correlation in the model. Therefore, we cannot reject the null hypothesis at 5 percent significance level with the probability value of 0.1061. Also, the residuals are normally distributed, as indicated by the p-value of 0.719571, which is not desirable. The cumulative sum (CUSUM) procedure was performed to determine the stability of the long-run regression. As the results reported, the model was found to be dynamically stable. The blue trend line lies between the red boundaries (see Table A1-A5 in Appendix). This is consistent with Bahmani-Oskooee and Ratha's (2004) findings that suggest that if the statistics lies within the 5 percent significance level, we cannot reject the null hypothesis. Further, we reject the null hypothesis at the probability value of 0.3382, as there is no heteroscedasticity problems, the model is suitable and desirable.

Chapter Five

Conclusion and Recommendations

5.1 Introduction

This chapter provides a summary of the study, study conclusions, policy recommendations, and suggestions for areas of further research. The study summarises the debates on the theories of financial development and poverty. The conclusion outlines the analyses and findings established from testing the empirical models. Finally, the chapter underscores key policy recommendations and provides suggestions for areas of further research.

5.2 Summary and conclusions of the study

The main purpose was to study the relationship between financial development and poverty in Namibia from 1991 to 2017. In so doing, it explored existing debates on the relationship between financial development and poverty reduction, with particular focus on the" Trickle-down theory" and "McKinnon Conduit effect" theories. The study utilised the E-views 10 software system to analyse the relationship amongst the variables based on the Johansen cointegration and VECM. The overall objective of the study was to determine whether financial development is beneficial for poverty reduction. The study also looked at both the theoretical and empirical aspects of financial development and poverty.

The theoretical literature of the relationship between financial development and economic growth, and its impact on poverty reduction suggests "Trickle-down theory" and "McKinnon conduit effect" theories to underscore these dynamics. The first theory argues that financial development positively enhances economic growth. Accordingly, the "trickle-down" theory indicates that improvement in the financial sectors and wider economic growth is beneficial to reducing poverty (Todaro, 1997). The McKinnon Conduit effect focuses on the role of financial development, in the sense of formal financial intermediation through access to financial services, on poverty reduction. Research shows that financial development plays a key role in many ways: it improves allocation of capital, mobilises savings, better identifies investment opportunities, improves liquidity in unproductive assets, reduces transaction and information costs, and improves risk-takings (Asian Development Bank, 2009).

The results of the empirical models conducted suggest that financial development is important for poverty reduction in the Namibian context. The Johansen cointegration results reported three cointegration equations amongst the variables, confirming a long-run relationship. The

long-run estimates obtained suggest that domestic credit as percentage of GDP and domestic savings as percentage of GDP has a positive impact on poverty reduction. As anticipated, inflation and government consumption expenditure were negative and insignificant. The economic growth indicator was negative and insignificant, implying that a negative economic growth induces poverty. Thus, an indirect relationship between financial development and poverty was not established.

The findings of VECM shows that financial development was significant to reducing poverty. Financial development indicators supported the direct channel effect, whose coefficients were significant. Credit to private sector was positive but not significant in the short-run, but negative in the long-run. This short-run positive effect suggests that credit can reduce poverty. Domestic savings as a percentage of GDP was positively associated to poverty in both the long- and short-run. This implies that an increase in savings could lead to a decrease in poverty. Inflation rate was bad to poverty reduction. Both the results of the long and short run inflation were negatively related to poverty. These findings are consistent with the findings from empirical evidence of other cases discussed in Chapter Two, which suggests that high inflation rates erode consumption and consumer spending. In the instance of trade openness, the result suggests that high trade volumes are important for poverty reduction. Overall, the Granger causality test, established that financial development does granger cause poverty reduction in Namibia.

5.3 Policy recommendations

This study's main focus was determining the effects of financial sector development on poverty reduction**.** The findings showed that financial development does not Granger-cause poverty. Therefore, the study recommends the government to focus on policies that stimulate credit to the private sector, because the findings show that credit to private as a measure of the size of financial sector development was significant and negative. In practice, the study suggests that the government, through both the country's financial regulator (NAMFISA) and Central Bank, could ensure that borrowing rates are favourable for consumers to encourage borrowing.

The empirical analysis discovered that domestic savings and trade openness variables were significant. Thus, the study recommends the following: (a) in terms of domestic savings, financial institutions particularly banking institutions should extensively extend their services to the poor and those particularly into rural areas. Furthermore, they should tailor financial products to suit different consumer needs. (b) For trade openness, policies should target improving and strengthening fair bilateral and multilateral trade, both export and import. The

government should foster policies that will promote regional trade within the SADC region and Africa at large.

Inflation rate was found to have negative and insignificant coefficient. High inflation rates have a negative impact on poverty, therefore are not desirable. Thus, the government should continue to control inflation rates to ensure sustainable development in the financial sector.

5.4 Areas for further research

This study examined the relationship between financial development and poverty reduction focusing on the direct effects. Findings from this study recommend that the McKinnon Conduit effect or savings channel could be the suitable tool to reduce poverty. A further study could look in the indirect effects (Trickle-down effect) of financial development on poverty by incorporating one or two economic growth indicators as independent variables. Further, another study can consider using other macroeconomic variables to model and examine the indirect effects of financial development on poverty through economic growth. A similar study could be extended to examine two countries in the same trading blocks, such South African Community Development or even the Sub-Saharan African region.

Although Namibia's financial sector is regarded as sophisticated compared to other Sub-Saharan countries, the findings show that credit to private sector variable was not significant. Thus, further research could look into the institutional quality of the country's financial institutions in effectively mobilising credit to the private sector and the consequent impact on reducing poverty.

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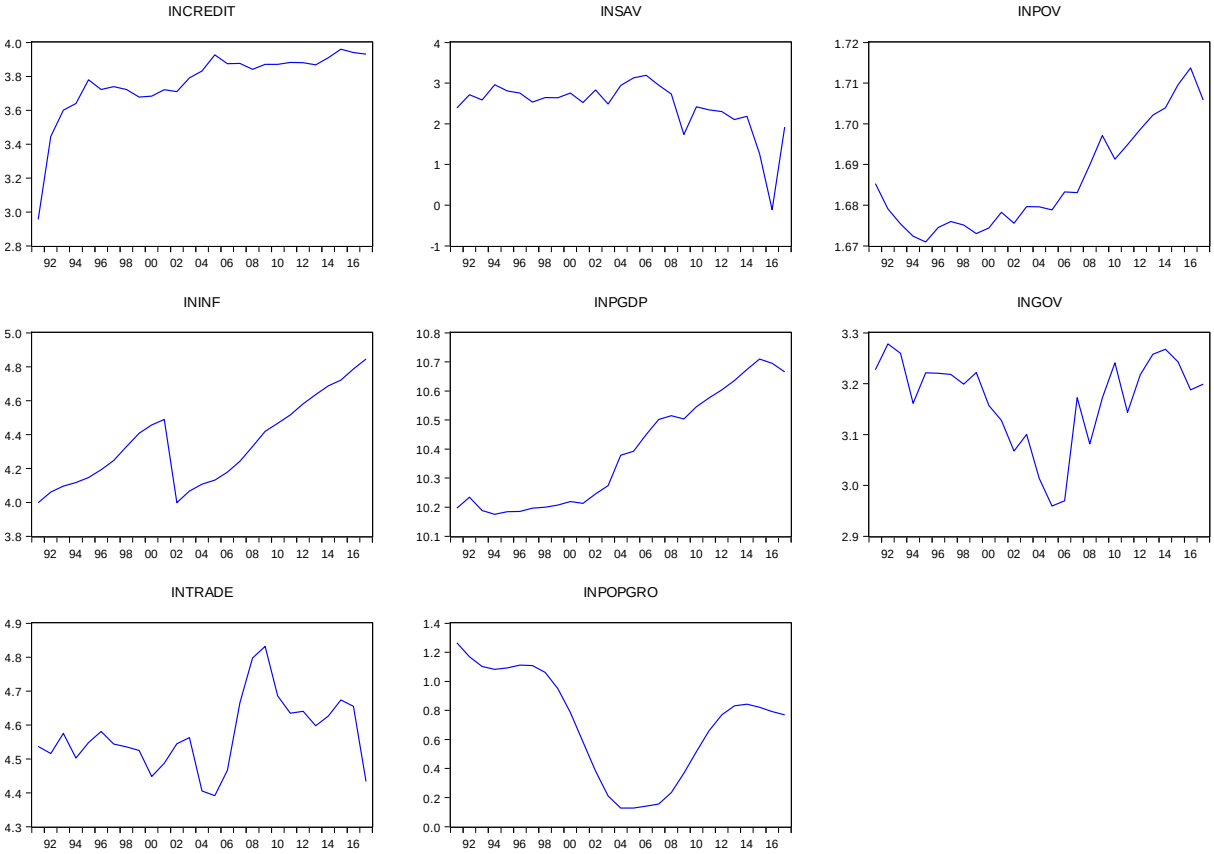
Appendix 1

Unit root test: stationary test in level I (0)



Appendix 2

Table A1: Serial correlation output

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

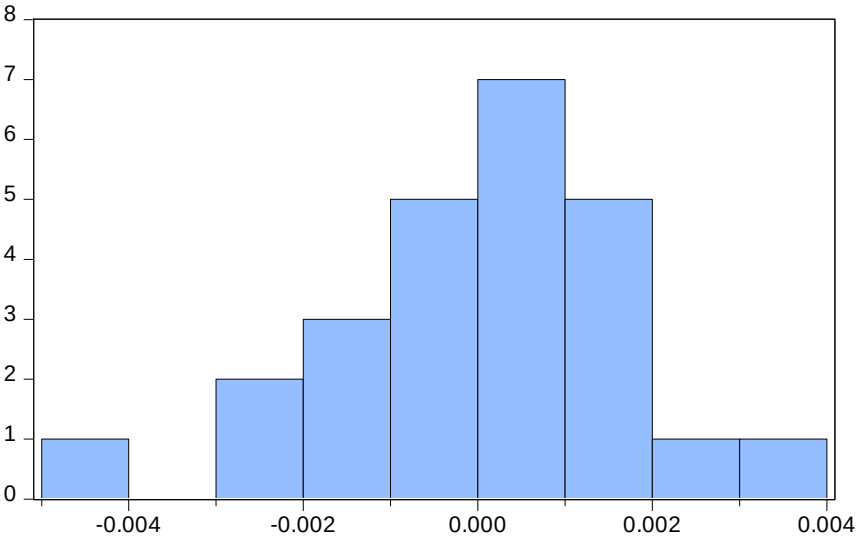
F-statistic	1.749810	Prob. F(1,15)	0.2057
Obs*R-squared	2.611687	Prob. Chi-Square(1)	0.1061

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 11/29/18 Time: 19:07
Sample: 1993 2017
Included observations: 25
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.014187	0.300806	0.047162	0.9630
C(2)	0.001448	0.293152	0.004940	0.9961
C(3)	0.001512	0.007721	0.195819	0.8474
C(4)	-0.001422	0.002180	-0.651999	0.5243
C(5)	0.003925	0.006232	0.629921	0.5382
C(6)	0.003015	0.021370	0.141101	0.8897
C(7)	-0.003539	0.008188	-0.432228	0.6717
C(8)	-0.005889	0.008473	-0.695030	0.4977
C(9)	-0.000313	0.000637	-0.491272	0.6303
RESID(-1)	-0.643437	0.486419	-1.322804	0.2057

R-squared	0.104467	Mean dependent var	-2.78E-18
Adjusted R-squared	-0.432852	S.D. dependent var	0.001670
S.E. of regression	0.001999	Akaike info criterion	-9.302984
Sum squared resid	6.00E-05	Schwarz criterion	-8.815434
Log likelihood	126.2873	Hannan-Quinn criter.	-9.167758
F-statistic	0.194423	Durbin-Watson stat	1.782032
Prob(F-statistic)	0.991174		

Table A2: Normality test output



Series: Residuals	
Sample 1993 2017	
Observations 25	
Mean	-2.78e-18
Median	0.000136
Maximum	0.003448
Minimum	-0.004165
Std. Dev.	0.001670
Skewness	-0.376919
Kurtosis	3.252191
Jarque-Bera	0.658200
Probability	0.719571

Table A3: cusum test

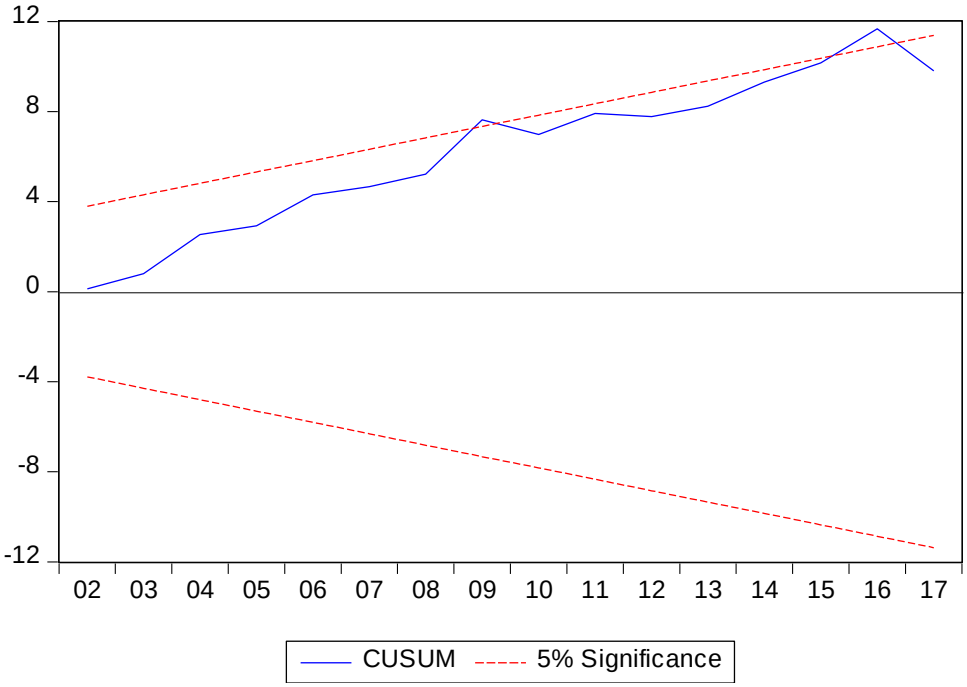


Table A4: cusum of squares test

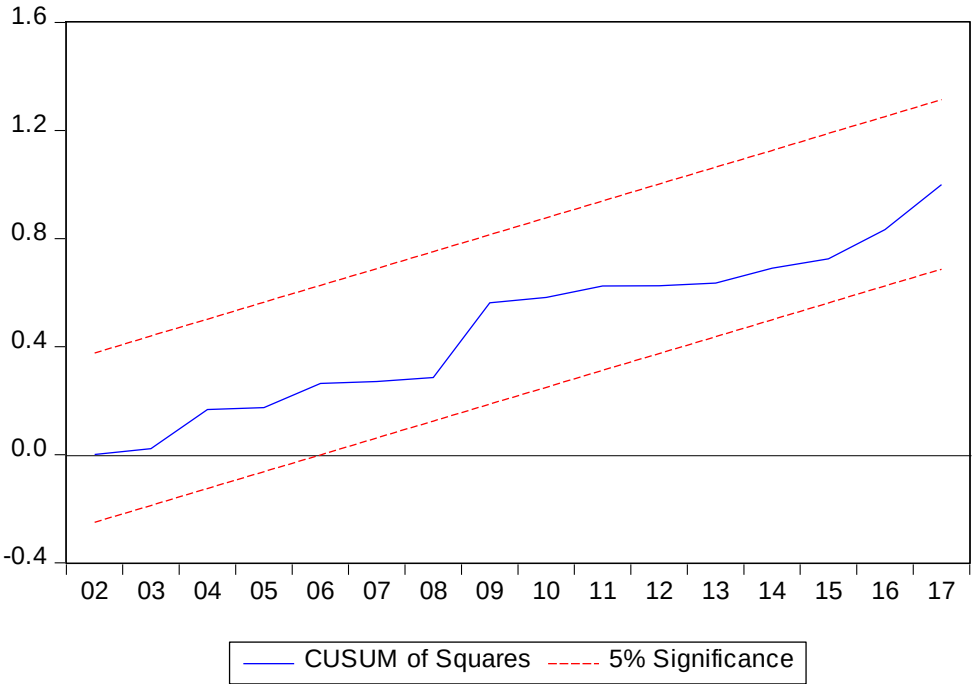


Table A5: Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.186032	Prob. F(14,10)	0.4009
Obs*R-squared	15.60307	Prob. Chi-Square(14)	0.3382
Scaled explained SS	7.196898	Prob. Chi-Square(14)	0.9269

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/29/18 Time: 19:11
Sample: 1993 2017
Included observations: 25

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002024	0.001219	-1.660635	0.1278
INPOV(-1)	0.000541	0.000577	0.937417	0.3706
INCREDIT(-1)	1.79E-05	2.91E-05	0.615268	0.5521
INSAV(-1)	3.69E-06	4.57E-06	0.806981	0.4384
ININF(-1)	3.69E-05	1.53E-05	2.403519	0.0371
INPGDP(-1)	-1.12E-05	4.81E-05	-0.231764	0.8214
INGOV(-1)	-6.44E-05	2.81E-05	-2.289888	0.0450
INTRADE(-1)	4.56E-05	2.60E-05	1.753979	0.1100
INPOV(-2)	0.001398	0.001072	1.303822	0.2215
INCREDIT(-2)	2.48E-06	1.64E-05	0.151076	0.8829
INSAV(-2)	7.28E-06	1.02E-05	0.716975	0.4898
ININF(-2)	-1.38E-05	1.17E-05	-1.172495	0.2682
INPGDP(-2)	-0.000119	6.07E-05	-1.963105	0.0780
INGOV(-2)	1.72E-05	1.92E-05	0.898389	0.3901
INTRADE(-2)	-3.38E-05	2.12E-05	-1.597286	0.1413

R-squared	0.624123	Mean dependent var	2.68E-06
Adjusted R-squared	0.097895	S.D. dependent var	4.10E-06
S.E. of regression	3.90E-06	Akaike info criterion	-21.78976
Sum squared resid	1.52E-10	Schwarz criterion	-21.05844
Log likelihood	287.3720	Hannan-Quinn criter.	-21.58692
F-statistic	1.186032	Durbin-Watson stat	2.573963
Prob(F-statistic)	0.400940		