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An Econometric Analysis of the Relationship Between the Namibian Government Debt and Economic Growth

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by

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To my late mom and dad, thank you for instilling discipline in me, and the appreciation for the value of education. This work is for you.

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LIST OF ACRONYMS

ADF	-	Augmented Dickey-Fuller
BON	-	Bank of Namibia
DMO	-	Debt Management Office
DSA	-	Debt Sustainability Analysis
EMU	-	European Monetary Union
GDP	-	Gross Domestic Product
Growth	-	The growth rate of gross domestic product
HIPC	-	Highly Indebted Poor Countries
IMF	-	International Monetary Fund
LIC	-	Low Income Country
MDRI	-	Multilateral Debt Relief Initiative
MEFMI	-	Macroeconomic and Financial Management Institute of Eastern and Southern Africa
MFEF	-	Medium Term Expenditure Framework
OLS	-	Ordinary Least Squares
NPV	-	Net Present Value
OECD	-	Organization for Economic Cooperation and Development
RSA	-	Republic of South Africa
SACU	-	Southern Africa Customs Union
SADC	-	Southern Africa Development Community
SDMS	-	Sovereign Debt Management Strategy
SSA	-	Sub –Saharan Africa
WDI	-	World Development Indicator

ABSTRACT

The association between government debt and economic growth is complex. Namibia is not excluded from this spectacle as concerns are mounting about the fast-increasing state debt and its implication on economic growth in the long run. By the end of 2016, government debt constituted 40.6 percent of Gross Domestic Product (GDP). Domestic and external debt constituted 25.3 and 15.3 percent of GDP respectively. Total interest paid on state debt stood at about 1 percent of GDP. Various financial debates stress that the debt incurred to enhance economic growth via investment should also consider interest payment costs. Counter-arguments emphasise that if governments borrow to stimulate growth via increased economic earnings, then state debt growth might not pose a problem to the economy.

This study examined the relationship between economic growth and government debt components for Namibia over the sample period 2000-2016. The study employed a time series econometric model method to examine the nature of the relationship that exists between government debt indicators and economic growth. The augmented Dickey-Fuller (ADF) was employed in testing the unit root characteristics of the series and to determine the order of integration. The autoregressive distributed lag (ARDL) cointegration framework was also employed to determine whether there is a long run and short-run relationship between the variables. Finally, the Granger Causality Test was conducted to test causation between the variables. To investigate these issues, quarterly time series data for the period 2000-2016 was used.

The results of cointegration analysis supports the existence of a positive long run cointegration relationship between government debt indicators and economic growth to indicate that debt drives economic growth in Namibia. The study found no causality effect between general debt, foreign debt, domestic debt and GDP. The main policy recommendation from this study is that, in order to avoid the country from plunging into a debt crisis, the Namibian government should consider determining an optimal debt-to-GDP ratio to serve as an indicator beyond which an increase in debt will be deemed unsustainable. The government should further ensure that the debt Fund is used for production and infrastructure development instead of consumption spending to stimulate the productive capacity of the economy.

CHAPTER 1: INTRODUCTION

1.1 Background and Context of the Study

The 2012 Greek debt exchange was a landmark event in the Euro debt crisis. It generated fears of contagion and was regarded as a risk to the Euro itself. It attained an unparalleled debt aid of 106 billion Euros, which is 55 percent of GDP (African Development Bank, 2012). The Greek debt was unsustainable and unwarranted. Wormell (2013) asserts that the National Debt of the United Kingdom (UK) is extraordinary in combining great age with recurrence. With a single concession, for over 300 years, the UK has not experienced a default; it has not been disconcerted by political rigmarole or inflation either (Wormell, 2013). During the culmination of the twentieth century, the UK Treasury still disburses £6.9 million each year for the interest of 2½ percent. The 1990s saw ubiquitous sub-national debt crises. To many observers, running away from regional debt in Mendoza, and Buenos Aires was a cardinal feature behind Argentina's sovereign debt default in 2001. Brazil went through two sub-national debt crises ensuring the early one in the 1980s. The Venezuela government experienced massive debts to its economy coupled with galloping inflation.

The World Bank and the International Monetary Fund (IMF) charted the issuance of the frame of reference with a feasibility testing platform concerning analysis and scholarly cooperation that encapsulated twelve emerging market countries (Antonakakis, 2013:1). The World Bank and IMF then issued a report in 2007 based on evaluating the degree of reinforcement of these states' public debt management customs. Based on the appraisal of these states, they reinforced their public debt management customs and a report was issued in 2007 (Gunduz, 2017:19).

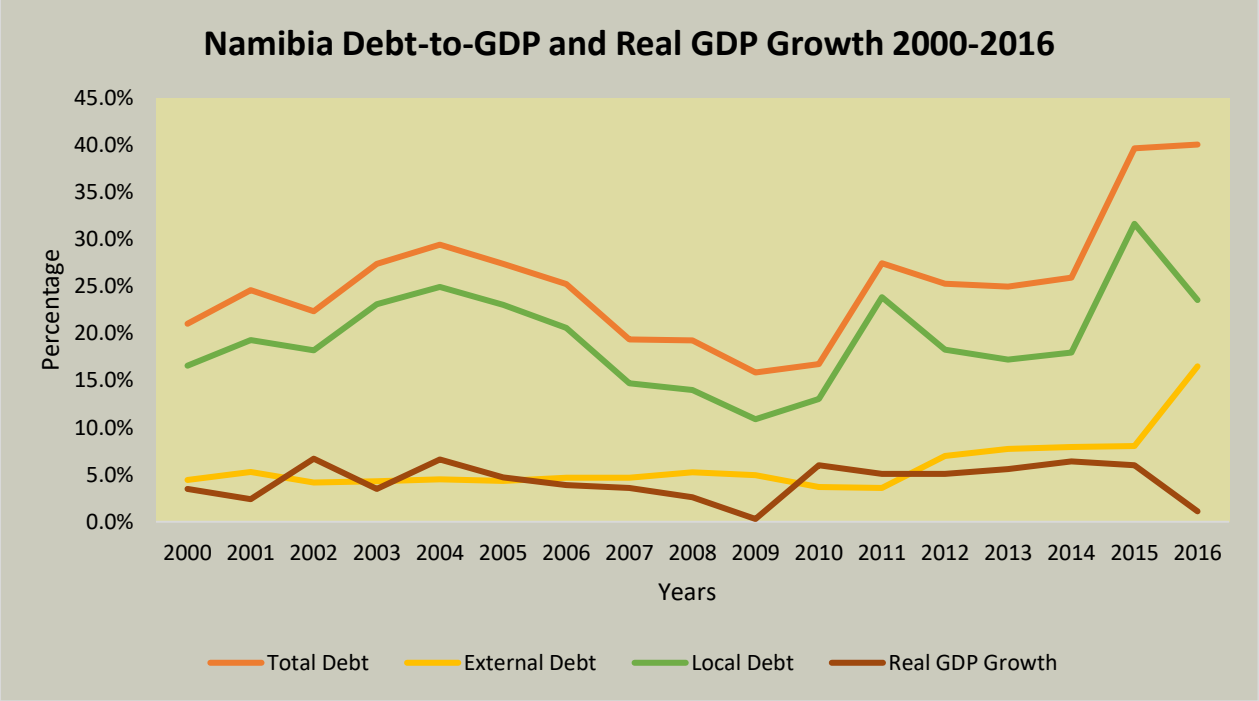
Mozambique, which was planned to take off as the third - biggest natural gas producer is instead now tottering on the edge of a major sovereign debt default which is jeopardising its eagerly anticipated gas fired boom. As a result, the International Monetary Fund, which had been working with Maputo to assist it disburse divulged debt of US$ 850 million, suspended the second instalment of a US$280 million loan to the country (Fabrics, 2016).

The Namibian sovereign credit risk has been diminishing since the first rating was assessed from Fitch Ratings' Agency in 2005. Namibia consequently received an augmenting and complementing credit rating from Moody's Ratings Agency in 2011. By then, the two rating agencies have reviewed their vantage point for the Namibian economy on an annual basis, with perception to expounding the state's rating as feasible. The sovereign rating has revitalised other corporates both private and state owned, to get their own credit scores. The

lower sovereign credit risk for the state was confirmed as well by the lower cost of borrowing by the government in the global markets when compared to its peers. Moreover, the lower sovereign risk has also assisted in narrowing the spread between the South African benchmark bonds and the Namibia domestic state bonds.

Even though Namibia's State debt stock ballooned with acceleration between financial years 2005/06 and 2012/13, it has despite that, remained within sustainable levels. In this scenario, a Debt Sustainability Analysis (DSA) was initiated for Namibia in 2013. The DSA found the fiscal state, as assessed by the ratio of total debt to GDP, to be mainly sustainable for the duration 2013-2014. Notwithstanding, the debt stock proceeds were monitored to make sure that sustainability is perpetuated.

Figure 1.1 Namibia Debt-to-GDP Ratio and Real GDP Growth 2000-2016



Source: Authors Computations with Data from the Bank of Namibia and the Namibia Statistics Agency (2019)

The primary outcome of investigating the relationship between debt and GDP in this study is based on the fact that the economy of Namibia has unbearably diminished in GDP growth with a substantial fiscal deficit from 1999-2015. There is thus, a general argument that the natural increase in debt has caused high state expenditure and slow growth at the expense of revenue that has attracted deficit. This has attracted many questions on whether the sovereign debt for Namibia is sustainable or not.

1.2 Statement of Research Problem

The increase in Namibia's government debt over the past ten years, begs the question of medium to long term fiscal sustainability of the state debt, and doubts are being articulated about the possibility of Namibia sinking into debt distress that has affected several emerging economies.

More worrying is the country's credit rating that has seen a consistent downgrade by major credit rating agencies, which now stands at sub-investment grade, or what is often referred to as "junk status" (Moody's Investor Services, 2017:1). The main reasons quoted by Moody's for this downgrade was an erosion of Namibia's financial robustness due to large fiscal imbalances, an astronomic debt burden and limited institutional capacity to manage shocks and address long-term structural fiscal rigidities.

In response to the challenges encountering the economy of Namibia due to the increase in sovereign debt and high state expenditure, "Namibian Government debt is worrying because its increasing rate causes grave implications". These were the dispositions shared from the Namibian Finance Minister's confirmation that the state debt's increase to around 40 percent of GDP in the last two years may cause economic strains in the country (Confidente, 2015:3).

The government debt is still one of the exasperating components in contemporary Namibian parliamentary debates. The sluggish economic growth and the increase in public debt remains a conundrum whether Namibia will be able to sustain its sovereign debt and manage it properly. Escalating issues such as unbudgeted land re-distribution pose a high state public debt threat, as articulated in the Fiscal Note of 2014. At the culmination of 2013, over 33 percent of the total Central Government debt was short-term or maturing in less than a year. Pressure on resources has generated inflation as a by-product of state spending (Bank of Namibia , 2014).

Even though debt sustainability assessments remain a judgmental exercise (International Monetary Fund, 2013), a country is said to have achieved fiscal sustainability when the ratio of government debt to GDP is stationary and declining in the long run (Zaaruka, Ndove, & Tjipe, 2004).

A profound answer to the economic sustainability question, however, necessitates going beyond the state's external debt (Hanson, 2016). Computation of the sustainability of aggregate central state debt, encapsulates both foreign and domestic debt, some consensus has been that for government debt to be maintainable, it must be optimally structured (Zaaruka, Ndove, & Tjipe, 2004).

Like many other developing states, Namibia has been conversant with recurrent budget deficits and rising levels of central government debt. The foci of fiscal policy in Namibia concentrated on attracting employment, investment and alleviating poverty. This policy approach has put pressure on the state to increase expenditure, which led to an increase in budget deficits and consequently rising government debt.

It is essential that research on the association of the Namibian sovereign debt to economic growth is prioritised in academic and government fiscal policy determination. It will provide a more defined stance to the much-debated Namibian government debt sustainability status as well as assist state debt managers in addressing operational and reputational risks that could emanate from non-sustainable debt levels. Debate on the relationship between sovereign debt and economic growth in Namibia has been based on socio-political arguments and inferred evidence. It is therefore a challenge to determine a robust long-run relationship between the two variables without a comprehensive examination. This study will further help policymakers develop relevant policy interventions once the establishment of the relationship between debt and GDP is concluded.

Even though a great deal of literature exists on sovereign debt and economic growth for other countries globally, similar studies on the same phenomenon for Namibia in recent years are limited. A study conducted by Zaaruka, Ndove and Tjipe in 2004 on the central government debt sustainability for Namibia is outdated, and it forms the central literature for reference in most debates around the country's state debt and its sustainability. While the study was conducted for Namibia, the methodology was focused on determining the sustainability and the optimal debt structure of state debt and not necessarily in determining the relationship between debt and economic growth.

This research aims to provide empirical evidence that determines the relationship between central government debt and economic growth as well as local and foreign debt and economic growth in Namibia for the period 2000-2016.

1.3 Research Questions

There are two research questions in this study namely;

1) What is the relationship between general government debt and economic growth in Namibia?
2) What is the effect of local and foreign debt and economic growth in Namibia?

1.4 Research Objectives

The principal objectives developed to achieve answers to the above questions are:

i. To determine the relationship between government debt and economic growth in Namibia.
ii. To assess the impact of local and foreign debt and economic growth in Namibia.

1.5 Hypothesis Testing

The predominant purpose of a null hypothesis articulated in Salkind (2012:193) is that, "the null hypothesis acts as a starting point because it is the state of affairs that was accepted as true in the absence of other information". The second idea of the null hypothesis is to furnish a standard of excellence against which observed outcomes, can be paralleled to determine whether probability causes these variations. Mumba (2013) delineates a hypothesis as a rational supposition correlation between two or more constructs uttered in the form of a testable pronouncement. The correlations are conceptualised linkages between two or more constructs articulated by the link of association established. This monograph is guided by the following hypotheses namely:

Ho: There is no relationship between the general government debt and economic growth in Namibia.

Ha: There is a negative relationship between the general government debt and economic growth in Namibia.

1.6 Significance of the Research

The Namibian State debt has rapidly increased during recent years, and its sustainability has been at the centre of much public debate. There are questions posed whether Namibia will be able to sustain the growing debt in the short to medium term given the shrinking fiscal capacity and widening of the fiscal deficit. Policy makers are assessing options to address these challenges especially given the deteriorating state of the Namibian sovereign credit rating over the years.

Understanding the long-run sustainability of the Namibian state debt requires a study into the relationship between debt and economic growth which will shed light on the fiscal policy sustainability, to guide the future stance on fiscal policy determination. Studies have shown that Debt ceilings significantly hinge on fiscal conduct, and thus can be raised by a sound fiscal record. However, there is a great uncertainty about states' performance at high debt levels, which is the main reason why countries put up debt ceilings (Jean-Marc & Falilou, 2015). The recent case of Mozambique's inability to meet obligations to international creditors resulted in the IMF suspending a further US$283 million credit to the country and other

development partners following suit, which led to the collapse of the country's currency (Serumaga, 2017).

The resolution of troubled economies' defaults, as in the case of Southern American economies during the 1980s and Greece in 2013, involves passing on the risk of sovereign defaults to the taxpayers in the form of restructured economic programs as a requirement for transferring the debt to official creditors. The pressure of sovereign defaults weighs significantly on these economies as they lose access to the international credit market, resulting in such economies to be even more reliant on more loans from official creditors as a life-support mechanism. This pressure is likely to be huge in developing countries that are prone to more massive fiscal shocks such as Namibia.

This study will assist policymakers in crafting sustainable fiscal policy techniques that support financial stability, particularly the Namibian government cash flow management. Appreciating the debt and GDP relationship for Namibia will aid inform liquidity management and planning policy. Further, escalated state debt levels could result into deteriorating sovereign risk credit ratings that renders the economy less attractive to investors and thus hindering economic development programs as the state struggles to attract investors to fund the fiscal deficit.

It is critical that this study is conducted at this stage to guide long term policy development that informs whether there could be an optimal debt-GDP ratio structure that derives maximum economic returns for the country.

1.7 Research Assumptions

The assumptions in this study are that:

a) The Namibian Government debt levels will steadily increase in the foreseeable future.

b) The Namibian Government pursues economic development initiatives to improve the livelihood of its citizens.

c) Sources of data such as Namibian Statistics Agency, Bank of Namibia and IMF are subject to thorough review processes, and hence reflect a fair representation of measures of GDP, government debt and other variables.

1.8 Justification of the Study

Research & Development-based models propose a quite ready correlation between research and economic growth: the more research is executed, the higher the economy's long-run growth rate (Blanco & Prieger, 2013). State debt sustainability has been a subject of interest by universal Bretton Woods institutions such as the IMF and the World Bank. The desideratum was to adopt a more robust position in making debt sustainability a vital condition for IMF

lending (IMF, 2016)**.** However, for Namibia, the last published discourse conducted on government debt was in 2004 by the Bank of Namibia. The debt structure has since fluctuated as the debt to GDP ratio has been on the increase. The debt-to-GDP ratio ceiling used in the 2004 paper has since varied from 25 percent to 35 percent currently. Consequently, it is valuable to conduct this study given the time that elapsed and the changes in macroeconomic constructs. Moreover, findings and actions offered on the fiscal policy path that is harmonious with state debt in the future for Namibia could prove useful to other countries with similar economic features as Namibia.

1.9 Organization of the Research

This discourse is subdivided into five (5) chapters. The remainder of the paper is as follows: Chapter 2 focuses on a literature review that unravels a perspective of debt to GDP relationship, external borrowing by the government and theories on debt sustainability. It also demonstrates theoretical models for potential indicators that can be helpful in evaluating the viability of Namibia's state debt. The chapter further highlights research gaps that could be filled by this study.

Chapter 3 describes the research methodology and discusses the research methods used to collect and analyse the data. It also provides the data sources and the justification for the variables. Chapter 4 analyses and discusses the research findings in the context of what other similar studies quoted in the literature review found. Chapter 5 summarises the research results, draws conclusions and provides policy recommendations and future research areas in relation to this study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter unravels a distinct viewpoint of the correlation between state debt and economic growth, debt sustainability assessment avenues, external borrowing by the state and schools of thought on debt sustainability. The chapter presents a non-structural outlook to pinpointing theoretical models for potential determinants that can be helpful in evaluating the relationship between Namibia's state debt and economic growth.

2.2 Definition of Debt Sustainability

The IMF and the World Bank portray debt sustainability of a state as its proficiency and disposition to meet concurrent and future debt service burdens in full, without remedy to debt postponement or accumulation of debts and without conceding growth (IMF, 2013). This delineation was acknowledged by global critiques in application to debt sustainability analysis. A plethora of indicators among others, such as debt-to-export ratios and the debt service to export ratio were deployed. Debt analysis embracing both stock and debt service concepts correlated with a state's potential reimbursement capacity (Krugman, 2014). Nonetheless, no single exposition attracts all the essentials of debt sustainability. For instance, a state can have a diminished debt service ratio and a comparatively high net present value (NPV) of debt-to-exports ratio contingent to the blueprint of debt recompense (Zaaruka, Ndove, & Tjipe, 2004).

2.3 Namibia Sovereign Debt Sustainability and Economic Growth

The research consummated by IMF (2013) enunciates that the state debt should not accumulate expeditiously than nominal GDP. The fundamental logic is that expenditure, for debt sustained, should beyond a shadow of doubt contribute to GDP growth and in so doing, propel a reciprocal increase in state revenue to service the debt. Taking into cognisance, some ideology to this rationale, Namibia performed favourably in managing the debt since the execution of the Sovereign Debt Management Strategy in 2005. Even though Namibia's state debt stock developed with acceleration between fiscal years 2005/06 and 2012/13, it has nevertheless remained within sustainable levels. In this situation, a Debt Sustainability Analysis (DSA) was taken on board for Namibia in 2013. The DSA unearthed that the economic position of the state as assessed by the ratio of total debt/GDP was most sustainable for the period 2013-2014 (Bank of Namibia , 2014).

2.3.1 Debt Sustainability Assessment (DSA) Approaches

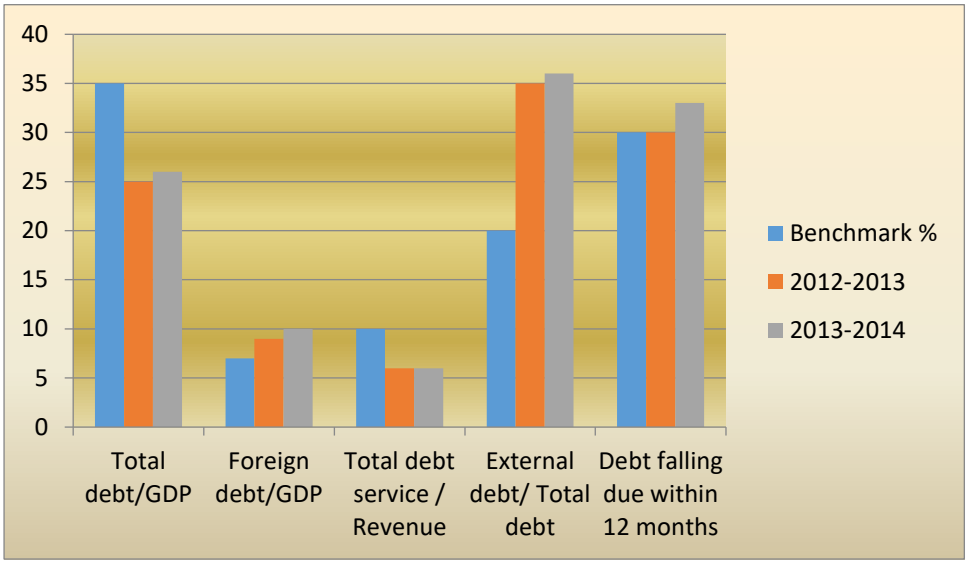
There is a plethora of dissertations to date on state debt sustainability, and sovereign debt sustainability has become a vital financial health indicator for states amongst others. Unambiguously, articulated in the wake of sovereign debt crises in European, Latin America

as well as sub-Saharan African states (Charles, 2005). Woden and Counter (2012) unpack that there are a variety of approaches used to analyse debt sustainability, such as World Bank's Global Development Finance (GDF), the HIPC Initiative, the United Nations' Millennium Development Goals (MDGs), and the European Union's Maastricht Treaty.

The World Bank's GDF classifications on external indebtedness is incumbent upon two dimensions, the ratio of the NPV of the sum external debt (computed based on all future debt service) to the three-year backward-looking mean of gross national product (GNP). If either ratio is more than a critical value, 80 percent for the NPV-debt-to-GNP ratio and 220 percent for the NPV-debt-to-exports ratio, the state is considered to be plentifully indebted. If the critical value is not more than but either ratio is three-fifths or more of the critical value (that is, 48 percent for present value of debt service to GNP and 132 percent for present value of debt service to exports), the state is categorised as moderately indebted. If both ratios are less than three-fifths of the critical value, the state is categorised as less indebted (Woden & Counter, 2012).

The IMF has a DSA program crafted for Article IV consultations. These DSAs scrutinise both the public and external debts exclusively from Ley's algebra approach. Cline (2012) mooted a new probabilistic approach to sovereign debt forecasting that could furnish conjectures of debt ratios through to decades into the future. This approach considers ostensible connexions across 243 alternate abstracts with three states (Cline, 2012). The state of Namibia put in place Sovereign Debt Management Strategy risk yardsticks to lead the administration of the debt portfolio and to ensure that state borrowing was executed with an acceptable degree of risk. Figure 2.1 shows that for the duration 2012 the total debt/GDP for Namibia was within comfortable benchmark levels, but for other variables such as foreign debt/GDP, total debt service/ revenue and external debt/total debt, they were not within the determined target.

Figure 2.1 Namibia Debt Performance Against GDP



Source: Bank of Namibia (2014)

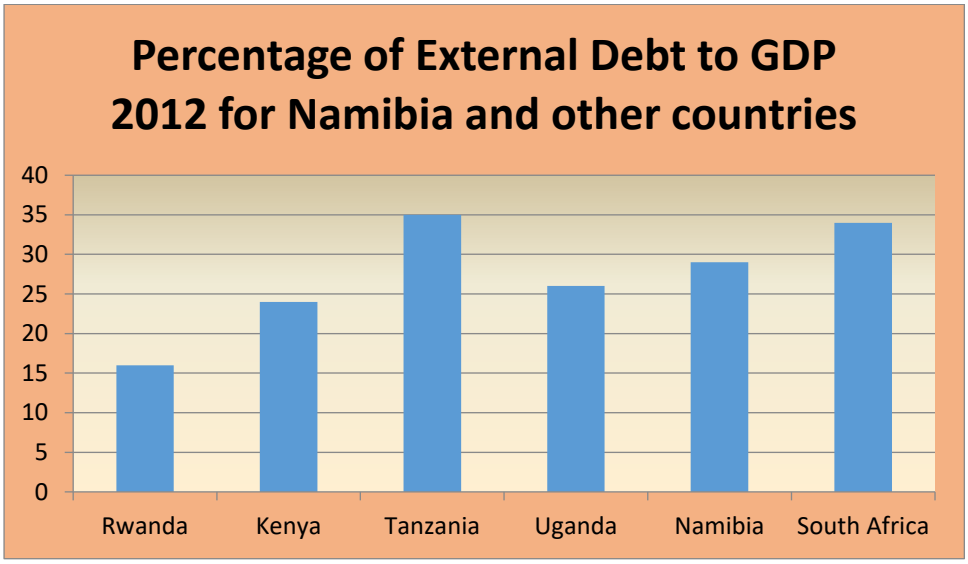
2.3.2 Domestic and External Borrowing by the Government

Many emerging states are incumbent upon foreign investors to hold a conspicuous disbursement of their debt. This foreign debt is usually comprised of external borrowing and some states, even a significant fraction of the locally held debt is designated in exchange. The options between local and external borrowing are varied and demonstrate four germane dimensions namely; macroeconomic; public options; debt maintenance; and balance sheets. The macroeconomic modulations between local and external borrowing in the short extension are that state borrowing locally drives up domestic interest rates, and so crowds out private sector borrowing (Masengo, 2016). The public choice magnitude makes sure that the malicious consequences of excessive state borrowing are felt immediately through higher local interest rates (Hawkins & Turner, 2009:27).

2.3.3 Namibia External Debt and Other States

Multinationals are construed to be the cardinal source of external credit to Kenya; notwithstanding, their relative share has diminished since 2011. In the same vein, the share of reciprocal creditors, the second most crucial source of external credit, has retrogressed since 2010. Kenya was not endorsed from debt relief under either the HIPC or MDRI astuteness (International Monetary Fund, 2013). Namibia, Rwanda, and Uganda have managed to preserve their debt to some governable levels.

Figure 2.2 External Public Debt as % of GDP in Selected African Countries 2012



Source: World Bank (2016)

2.4 Theories of Debt and Economic Growth

2.4.1 State Debt Risk of Default: A Political-Economic Theory of the Strategic Role of Debt

Dornbusch and Draghi (2011) assert that most belligerent literature on macroeconomic codification was about when and whether debt-financed state deficits have real effects on total output and employment (Dornbusch & Draghi, 2011). This challenge has been classically unraveled in a model of a representative agent interweaving with a compassionate state maximising social welfare function. Placidly, only a limited set of challenges can be attended within this frame of reference. Blanchard and Fischer (1989) developed a model to study whether an increase in the state financial plan deficit and public commitment leads to a rise in real interest rate. They found that real interest rates are based on projected categorization of debt or on the current obligation levels and the anticipated order of government deficits (Blanchard & Fischer, 1989). Subsequently, a chiefly crucial feature of fiscal policy repressed in this model, is the redistributive stimulus of fiscal policy and the resultant political rigmarole emanating from these distributional concerns.

2.4.2 Confidence Crisis Theory and Public Debt Management

Central banks strive to be outspoken about the prevailing nominal exchange-rate parity and trails of monetary policy, unfluctuating with unspecified exchange-rate stability (Aizema, 2013). While fundamentals are unswerving with the prevailing parity, in some events, the interlocution between the private sector and the Treasury can lead to an effectual attack on the central bank and compel it to devalue the currency. The erosion of a confidence is a crisis, multifarious in this regard, since a crisis can take place not only if the public is discombobulated

that the state might not honour its debt, however also if it dreads that the central bank might reject the fixed parity (Arslanap & Tsuda, 2012). Before motivating this modelling strategy, it is worth offering a quick synopsis of the analysis to explicate how a speculative attack on the currency links up with debt management challenges. This study argues that investor confidence is significant for Namibia sovereign debt sustainability because it boosts investor demand which is crucial for economic development.

2.4.3 The Relationship Between Sovereign Debt and Economic Growth

The scrutiny of public debt in emerging states has ceremoniously focused on external debt. Previous theories have concentrated on foreign debt for two main motives; first, while foreign borrowing can raise a country's access to assets, local borrowing only transfers' resources within the nation. Therefore, only the external debt attracts a "transfer" challenge (Keyness, 1994:7). Second, since central banks in emerging states cannot print the money necessary to reimburse external debt and foreign borrowing, the mean per capita revenue diminishes regardless of the high assistance injection flows (Panizza, 2010). This consequence stimulates aid donor agencies and academia to see in the new light the earlier deliberations on the efficacy of foreign aid (Lancaster, 2014). The high convergence of foreign aid also instills a dependency syndrome.

2.4.4 Sovereign Debt Sustainability Theory

The theoretical literary works suggest that those states which are conversant in rapid economic growth can sustain more when they are more bound and determined with current account deficits without increasing their external debt about national output, provided they have positive capital inflows (Hawkins & Turner, 2009:27). Consequently, this leads to a dwindling foreign debt. Even though the multiplication of tangible capital through debt sustainability can embellish a state's resourcefulness to service its external debt commitments, the net impact depends on productivity shocks and their effect on debt sustainability and national output (North, 1999). The irrefutable local fiscal architecture has the behavior on the state's capability to sustain its external public debt responsibilities. When domestic financial markets become included in the global capital markets, well operational and well-regulated capital markets are indispensable (OECD, 2013). The challenges of the large-scale banking sector that have emerged in a plethora of both developed and emerging nations in the early 1980s and 1990s have raised the alarm about the consequences of these challenges (IMF, 2013). Collard, Habib and Roched (2015) developed a measure of maximum sustainable government debt for advanced economies. They took into account how much investors are willing to lend to a country's government depending on the country's expected primary surplus, the level and volatility of its rate of growth, and how much debt the government expects to be able to raise in the future for the purpose of servicing the debt it

seeks to raise at present. They calibrated the measures for 23 OECD countries and tested the relation between sovereign yield spreads and the theoretical probability of default at prevailing debt levels, and found it to be strongly statistically significant (Collard, Habib, & Rochet, 2015).

2.4.5 Real Interest Rates Theory

World Bank (2013) shows that, public debt sustainability is triggered by economic growth of the national economy, real interest rates and primary balance. A real interest rate that transcend the real growth rate and primary surplus is equal to sustainable levels (Asteriou & Hall, 2007). The sustainable level is that which keeps the debt stock as a ratio of GDP constant. The capability of a state to buoy up its external public debt is not only susciptible to the size and the life of accessible liabilities and the stock of its foreign assets but also the quantum of its debt-servicing weight (IMF, 2013). The IMF (2013) further postulates that the effect will, however, depend on other determinants such as variations in the macroeconomic habitat of the local economy, the foreign public debt to GDP ratio and the interest rate configuration of the loans. Interest rates impact the borrowers' adequacy and consequently, should have a positive impact on credit risk, an upsurge in sovereign debt is anticipated to activate an increase in loan delinquency.

2.5 The Study's Main Argument

Government debt is like the nuclear energy that can be used for "good or evil". To a certain extent, this statement is valid. Borrowing money to make more money, such as for opening a soon-to-be profitable business, does make sense (Business Mirror, 2017:2). The study argues that debt is a two-edged sword. Used wisely and in moderation, it improves welfare. However, when it is used indiscreetly and in excess, the result can be a disaster. The study argues that to avoid a sovereign debt crisis, sound governance practices should be adhered to. For individual households and firms, over-borrowing leads to bankruptcy and financial ruin. For a nation, too much debt impairs the state's ability to deliver essential services to its citizens. The study supports the view that, beyond a certain level, debt is bad for growth. The study argues that high domestic borrowing and expenditure by government impacts the economic growth of the state.

The discourse further argues that at low levels, debt is excellent as it is a predecessor of economic growth and stability. However, at high concentrations, private and public arrears are acrimonious, upsurging volatility and choking off growth. It is in this sense that borrowing can first be beneficial, so long as it is modest (Shabbir, 2013). The study argues that government debt has the paramount implication that a highly responsible state should not only aim at counterbalancing their debt but also at diminishing it to sufficiently low levels that do not retard growth. The study argues that governments should also aim to keep their debt well below the

estimated thresholds so that even extraordinary events are unlikely to push their debt to levels that become unsustainable and damaging to growth (Granvit, 2010).

2.5.1 Arguments Supporting State Borrowing

The primary argument of having state debt is that it allows the state to do more things than it otherwise could. Good debt is when one takes a loan to invest in an asset that returns more than the cost of the debt (Hesse, Bakhache, & Asonuma, 2015). A business might buy a delivery truck or a website; a family might purchase a car, so a parent can get a better job further away or borrow to send their kids to college. This is like borrowing money to buy a house which allows to do more things. If the state uses its debt wisely (by investing), this is fine (Gecchetti, Mohanty, & Zampoli, 2014). A second argument is that borrowing allows the state to be flexible in fiscal policy. The closest match to 'good debt' that governments take on is large infrastructure projects that private institutions cannot or won't fund, such as universities, roads, trains, basic research and communication lines (Jenkins, 2015). Since these are long-term investments, governments borrow money against the expected growth in the overall economy.

Hanson (2016) unravels that governments must improve the lives of their citizens. Typically, they fund this through taxes, but often taxes are not enough to cover necessary expenditures in the short term, so states must borrow. If a state has no debt, it has no way to vitalise the economy during a recession (Hanson, 2016). The sovereign debt can promote productivity such as the case of Japan. If a state has no debt, like China, it cannot prove that it is credit-worthy. If it suddenly needs to borrow, it must pay high interest rates (Ogunmuyiwa, 2011). The main argument for preserving or investing in state debt is usually attributed to the purchasing of treasury bonds. For example, foreign states and affluent individuals own most of America's national debt in this manner (Cowell, 2011).

Firstly, one of the arguments supporting sovereign bonds is their very low risk. In many cases, such as in the American scenario they are called risk- free bonds. Consequently, these bonds are suitable for investors who fear the volatility of certain investments and prefer a safe place for an investor in a market with instabilities. Secondly; sovereign bonds are liquid. The naked truth is that they are purchased and sold on the open market every day. By issuing bonds, the state can have new cash flow to spend to achieve specific national objectives. Without finance and debt, countries will likely be poor and stay poor. When they can borrow, they prove their creditworthiness and at the same time achieve national objectives that contribute to the broadening of the production base of the economy (IMF, 2013).

2.5.2 Arguments Against State Borrowing

Too much debt can cause high inflation, which is not good for any economy. Without a functional democracy allowing citizen control, it can lead to frivolous expending and unfitting portfolio (this may have happened in China the last few years, with their 'ghost states' and highways to nowhere) (Gecchetti, Mohanty, & Zampoli, 2014). Gecchetti et al., further advocate the perception that, beyond a certain level, debt is acrimonious for growth. For state debt, the quantum is about 85 percent of GDP. For corporate debt, the threshold is closer to 90 percent. Moreover, for household borrowing, reported parameters are around 85 percent of GDP, although the impact is very vaguely estimated. The outcome for state debt has the implication that highly responsible states should not only aim at stabilising their debt but also at reducing it to sufficiently low levels that do not retard growth (Granvit, 2010). Diligence dictates that states should also foci to keep their debt well below the estimated thresholds so that even extraordinary events are unlikely to push their debt to levels that become damaging to growth (Smith, 2012).

However, fiscal progression is not some necromancy potion. The cumulation of debt encapsulates risk. As debt levels surge, the ability to disburse becomes progressively more impressionable to drops in income as well as increases in interest rates (Raffer, 2010). For a given shock, the higher the debt, the higher is the probability of defaulting (Business Mirror, 2017:2). Even for a mild shock, highly accountable borrowers may abruptly no longer be concerned as credit-worthy. Moreover, when lenders stop lending, consumption and investment shrink. If the downturn is terrible, defaults, insufficient demand, and high unemployment might be the grim result (Senanayake, 2012). The higher the level of arrears, the more significant the drop for a given size of a shock to the economy. Moreover, the more significant the bubble in aggregate activity, the higher the probability that governments will not be able to make disbursements on their non-state-contingent debt (Lexuan, 2011).

2.6 Empirical Studies on State Debt and Economic Growth

Empirical literature on the correlation between government debt and economic growth within emerging market economies is scant. The scrutiny of public debt in poor states has in established usage focused primarily on external debt in developed economies. Studies knuckle down on foreign debt for two main qualifications; first, while foreign borrowing can raise a country's access to assets, local borrowing only transfers' resources within the nation. Therefore, only the external debt attracts a "transfer" challenge (Keyness, 1994:7). Second is because Central banks in emerging states cannot print the money necessary to reimburse external debt and foreign borrowing (Panizza, 2010). This ramification stimulates aid donor agencies and fundi to have second thoughts on the deliberations of the efficacy on foreign aid

(Lancaster, 2014). The high inundation of foreign aid has also displayed a dependency syndrome.

Recent studies that investigated the relationship between state debt and economic growth are such as that conducted by Swamy (2014) on the dynamics of state debt and economic growth which found that as the debt regimes rise there is a decrease in GDP growth levels (Swamy, 2014). Other studies showing that there is a negative correlation between state debt and economic growth are such as that by (Krugman 2010, and Adamu *et al.,* 2018). Such studies found that the negative correlation becomes particularly strong when state debt approaches 100 percent of GDP. Studies cited the case of Japan, reasoning that the relationship between debt and growth could be motivated by the fact that it is low economic growth that leads to high levels of state debt (Krugman, 2010).

Ballasone et al., (2011) analysed the relation between the ratio of public debt relative to GDP and the growth rate of real per capita income in Italy over 1861-2009. Their findings support the theories of an adverse relation between public debt and growth and of a stronger effect of foreign debt compared to domestic debt before World War I (Ballasone, Francese, & Pace, 2011). Eberhardt and Presbitero (2015) investigated the relationship between public debt and long-run growth in a large sample of countries by modelling potential nonlinearity within and across countries in the debt–growth relationship. Their evidence supports a negative relationship between debt and growth across countries, but they could not find substantiation for nonlinearities within states for a common debt threshold (Eberhardt & Presbitero, 2015). A study by Ogunmuyiwa (2011) scrutinised if external debt promotes economic growth in Nigeria using time series data from 1970 to 2007 and the results indicate that causality does not exist between external debt and economic growth (Ogunmuyiwa, 2011).

External debt for Nigeria possesses a negative impact on economic growth while domestic debt has a positive impact on economic growth (Umaru, Aminu, & Musa, 2013). Umaru et al., further inferred that a good performance of an economy regarding per capita growth might be attributed to the level of domestic debt and not on the level of external debt in the country. External debt is therefore considered as unfavourable to the economic progress of a country.

Kumara and Nawalage (2013) found that, above the threshold level for public debt of 59.42 percent, public debt makes a negative impact on GDP per capita growth. Pegkas (2018) investigated the relationship between economic growth and several factors including government debt in Greece. Their results indicate that the relationship between debt and growth depends on the debt breaks. Specifically, at debt levels before year 2000, increases in the government debt-to-GDP ratio are associated with insignificant effects on economic

growth. However, as government debt rises after year 2000, the effect on economic growth diminishes rapidly and the growth impacts become negative (Pegkas, 2018).

AKRAM (2017) examined the consequences of public debt for economic growth and investment in Sri Lanka, for the period 1975-2014 by using the Autoregressive Distributed Lag Model (ARDL) technique. The findings reveal that public external debt has helped the process of economic growth, but debt servicing has a negative relationship to per capita GDP and investment. The study also found that domestic debt has positive and significant relationship with per capita GDP (AKRAM, 2017)

The debt-growth nexus depends on institutions and policies (Presbitero, 2008). These are inferences from a study that investigated the relationship between external debt and economic growth over 114 developing countries, focusing on the role played by the policy and institutional framework. Findings from this study suggest that external debt proves to be irrelevant for countries with weak institutions and that efficient debt relief policies should be tailored to country-specific characteristics and conditional to a certain level of institutional quality as debt overhang seems to be at work exclusively in countries with sound institutions.

A study on Sri Lanka investigated the long run relationship of public debt on economic growth of the country for the period 1977 -2012, using time series data by employing Johansen test of cointegration analysis which relies on Vector Error Correction Model (VECM). Findings point to a disequilibrium that is corrected at the speed of 58 percent over each year, which suggest a significant error correction term as indicative evidence of the existence of long run relationship (Munashinghe, Attapattu, & Padmasiri, 2018:775).

Dreger and Reimers (2013) documented the correlation of the debt ratio on the real GDP per capita growth rate for two assemblages of states, euro-zone contributors and non-euro-zone. They exploited a pooled panel regression and made pronouncements of a negative impact of the debt ratio on economic growth (Dreger & ReImers, 2013). On the convergence, there exist pragmatic surveys that only find a negative correlation between the debt to GDP ratio and economic growth (Greiner & Fincke, 2015). Ferreira (2012), for instance, executed Granger causality tests for 20 OECD states over the time from 1988–2001, where they surveyed annual growth rates. They found that the higher debt to GDP ratios applies an adverse effect on the growth rates of economies. The impact was found to be statistically significant, and it goes in both directions that is, the higher public debt diminishes economic growth, and less growth implies higher state debt (Ferreira, 2012). Kumar and Woo (2010) analyse 19 states over the duration from 1970 -2007, where they estimate growth regressions with the growth rate over five years as the dependent variable. The result of their computations found a negative relationship between the debt to GDP ratio at the commencement of a period

and the growth rate of that period (Kumar & Woo, 2010). In addition, they investigated the relation between public deficits and economic growth and also detected a negative correlation.

Non-sustainable debt-ratios above and below the 60 percent threshold, have a harmful effect on short-run economic growth, while sustainable debt-ratios below the 90 percent threshold exert a positive influence on short-run economic growth (Antonakakis, 2013:1). This was a finding that emanated from the examination of the role of non-sustainable debt thresholds.

IMF (2013) carried out research on sovereign debt restructuring focusing on current trends and implication for the Fund's legal and policy frame of reference. The research focused on the various policies and customs that predicate market access, arrears and employment of statutory instruments. The debt re-establishment was reckoned as being too little and too late therefore failing to stabilize debt sustainability and market access. The IMF (2013) research differs from the works of Ullah (2014), who made a review of European sovereign debt crisis focusing on the causes and consequences, the crisis was precipitated by global trade in equilibrium, the impact of the 2007-2012 and the flash in the pan in bailout approaches to uplift Europe from the conundrums of global financial crisis. Significant growth was attributed from the introduction of the Euro currency and caused a sharp rise in bond yields (Ullah, 2014).

Afonso and Jalles (2011) used a panel of 155 countries to assess the links between growth, productivity and government debt by examining simultaneity, endogeneity, cross-section dependence, nonlinearities, and threshold effects via growth equations. Their finding was that, for the OECD, the higher the debt maturity the higher economic growth and thus higher debt ratios are beneficial to total factor productivity growth (Afonso & Jalles, 2011).

In their examination of the management and sustainability of external debt on the emerging economies of Africa, Muhanji and Ojah (2011) found that maintaining external debt-to-GDP sustainable levels of 80 percent helps African countries from falling into debt crises. They further found that failure to determine appropriate levels of sustainable external debt, inadequate effective governance infrastructure, and ineffective management of external shocks, are the main justifications for the persistence of Africa's external debt problems (Muhanji & Ojah, 2011:185). Mukuddem-Petersen et al., (2013) focused on the impact of state expenditure on the Greek state debt. The methodology employed was a vector error correction model frame of reference and Granger causality model. The results showed a significant negative relationship between state debt and gross national income (Mukuddem-Petersen, Mah, Miruka, & Petersen, 2013). The study also found a significant positive relationship between state debt, gross national expenditure and foreign direct investment.

Another research was carried out by Muyaba (2016) to analyse the impact of state expenditure on the economic growth in Zambia. The study employed a Granger Causality Test and simple

regression. The study by Muyaba (2016) used public expenditure and economic growth as variables, and the empirical findings demonstrated that there is a positive and significant relationship between public expenditure and economic growth in Zambia. (Muyaba, 2016).

Fournier and Fall (2015) researched the limits to state debt sustainability with the purpose to compute endogenous state debts limits given the markets evaluations of the likelihood to default. The survey was done to look at the frames of references to OECD nations over the duration 1985-2013. The findings were that the debt limits were astronomical for most of the OECD countries. The outcome unraveled that the present debt levels were not sustainable without a change in the state behavior as juxtaposed to the past (Fournier & Fall, 2015).

Zaaruka, Ndove and Tjipe (2004) conducted research on the central government debt sustainability for Namibia by deploying the cointegration approach and Rule of Thumb. They concluded that the state budget deficit was sustainable and will be sustainable in the medium term. The research also alluded to the fact that high-interest rates and low real economic growth are acrimonious for debt sustainability (Zaaruka, Ndove, & Tjipe, 2004).

Sayed (2004) researched the growth in Botswana ‘s external public debt sustainability. Their study employed the Unit Root test, residual test for stationarity and Granger Causality test. The findings were that Botswana’s sovereign debt was sustainable and the country can still borrow to finance its deficit (Sayed, 2004).

Adamu et al., (2018) analysed the relationship between debt variables and economic growth within the Solow (1956) growth framework. Their study assumed the Autoregressive Distributive Lag (ARDL) model and applied on time-series data for Nigeria spanning between 1981 and 2016, and the results indicate that external debt is negatively related with economic growth in both short and long run. The evidence suggests that increase in external debt will lead to a decline in economic growth and as such, debt service obligation should not be allowed to rise more than foreign exchange earnings (Adamu, Salihu, Musa, Abdullahi, & Bello, 2018).

Ying-Hui (2014) conducted an empirical analysis on 14 resource-exhausting cities in China focusing on the evaluation system of the state debt sustainability. The study unpacked that state debts resource regions have challenges in the scale appropriateness and sustainability. The study proposed the state debt sustainability concepts of aiming to maximise the proficiency of debt capital distribution under challenges of the optimisation of regional debt systems. The analysis demonstrates the full indexes which play a pivotal role in the assessment of the index system of local state debt risk (Ying-Hui, 2014).

On managing foreign debt and liquidity risk, the principal objective of government debt management in Belgium was to lessen the financial debt service cost, subject to certain margins prescribed by the management of related risks, as well as by the general objectives of budgetary and monetary policy. A consolidated debt-to-GDP ratio of 105.8 percent and debt service costs totaling 6.0 percent of GDP in 2002 highlight that risk management of the Belgian state debt is fundamental (Hawkins & Turner, 2009:27). Absurdly, a proportion of the debt and the high share of debt service costs in the state expenditures infer that unfavorable shocks such as higher interest rates have a substantial impact on the budget. Asymmetrically, European Union rules demand that the Debt - GDP ratio must decline at an acceptable rate vis-à-vis the reference rate of 60.0 percent.

States which are acquainted with rapid economic growth can sustain higher and more resolute current account deficits without accumulating their external debt about national output, provided they have a positive capital influx. This will usually lead to a decrease in foreign debt. Although the accumulation of tangible capital through debt sustainability can enhance a country's resourcefulness to service its external debt commitments, the net impact depends on productivity shocks and their effect on debt sustainability and national output (North, 1999).

Charan (2012) scrutinized the effect of domestic debt on economic growth in India. They settled that the unanticipated component of domestic debt affects growth (Charan, 2012). In addition, the Ricardian uniformity speak highly that it does not matter whether state funds its expanding debt, because the effect on the total level of demand in an economy is just the same (Christensen, 2010). Christensen (2010) further argues that state debt has a positive impact on the economy. When the state debt is high, it tends to positively affect the economic growth since interest rates will also be high and this will have a direct repercussion on consumption.

Pattillo (2011) assessed the non-linear impact of external debt on growth using panel data for 93 developing countries. Their findings were that for a country with average indebtedness, doubling the debt ratio reduces growth by a third to a half percentage point after controlling for endogeneity. Their findings also suggest that the average impact of debt becomes negative at about 160–170 percent of exports or 35–40 percent of GDP and the marginal impact of debt at about half of these values (Pattillo, 2011:3).

In an attempt to estimate the determinants of external debt distress in low-income countries (LICs), Gunduz (2017) found that weak economic institutions tend to raise the probability of debt distress through persistently weak economic policies and high vulnerability to external shocks (Gunduz, 2017:19). The inference from the finding is that, “countries that defaulted on their debt had worse policy records (high macroeconomic instability, large external deficits,

and low level of reserves) and were more exposed to adverse external shocks compared to the countries that did not experience debt distress" (Gunduz, 2017:19).

2.7 Research Gaps

This review of the literature shows many directions for further study in the sovereign debt and economic growth within the context of Namibia or a developing economy within an African context. The following research gaps in sovereign debt, research models, study settings and methodology were identified.

2.7.1 Sovereign Debt and Economic Growth

Previous research on sovereign debt and economic growth by Collard et al., (2015) focused on sovereign debt sustainability for advanced economies for 23 OECD countries. They employed the probability of default as a proportion of GDP ratio. This research fills a gap in which it focused on the Namibian perspective with much emphasis on the relationship of debt to GDP. IMF (2017) researched public investment, growth and debt sustainability in which they targeted low-income countries. Other studies by Krugman (2010), Ballasone (2011) and Pegkas (2018) focused on the debt-to-GDP relationship in developed economies. This research fills a gap in that it focused on Namibia, which is classified by the IMF as an upper-middle income country.

2.7.2 Research Models

Previous research by Berg et al., (2012) developed a model to study the macroeconomic effects of public investment surges in low-income countries, with consideration of public external and domestic debt accumulation and the fiscal policy reactions necessary to ensure debt-sustainability. They found that higher domestic interest rates increase the financing challenge and crowds out private investment and consumption. "With poor execution, sluggish fiscal policy reactions, or persistent negative exogenous shocks, this strategy can easily lead to unsustainable public debt dynamics" (Berg, Portillo, Buffie, Patillio, & Zanna, 2012:19). The UNCTAD Global Policy Model furnishes some macro-pecuniary analytical frames of references having different constructs on an integrated macro-economic model for the world economy which has various sets of analysis of debt sustainability. This rubric fills the gap that it employed the Deutschland et al., (2014) new conceptual frame of reference for state debt management. The dependent variable for the frame of reference is Namibia GDP, and explanatory variables are Namibia government debt and control variables of inflation and foreign direct investment.

2.7.3 Study Setting

Outstandingly, most of the research has been conducted in Western states mainly in the USA and the European Union area. Remarkably, there has been an insufficient study in a non-

western context concerning this topic. To ensure the simplification and applicability of the theory, model, hypotheses and measurement scales in different contexts, empirical research should be expanded to other developing states such as Namibia.

2.7.4 Methodology

Mukuddem-Petersen et al., (2013) conducted and econometric analysis, focusing on the impact of state expenditure on the Greece state debt employing the methodology of the vector error correction model frame of reference and Granger causality model. Studies by Munashinghe et al., (2018) also emplyed the vector error correction model to investigate the long run relationship of public debt on economic growth for Sri Lanka. This study is different in that it employs Unit Root Test, ARDL approach and Granger Causality Test in assessing the relationship between sovereign debt and GDP of Namibia.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapters presents the discussion of the research approach and the design applied in achieving the objectives.

3.2 Research Design and Strategy

The analysis in this study uses a quantitative approach to assess the relationship between state debt and economic growth. The quantitative data is advantageous as it can be easier to make predictions based on the results. It allows for the possibility to make the inferences from quantitative research generalizable as statistical analysis are often considered reliable where systematic, standardised comparisons are needed.

3.3 Quantitative Method Research Design

There are three research designs, namely: qualitative research design, quantitative research design and mixed research design (Creswell, 2014). Creswell (2014) specifies that research designs are types of inquiry within qualitative, quantitative, and mixed methods approach that furnish specific direction for procedures in research. This study sought to follow the quantitative research approach in examining the relationship between government debt and economic growth for Namibia. The acceptance of the quantitative method approach for this discourse is aimed to furnish an objective analysis of the research problem by using research techniques designed to analyse quantitative data.

3.4 Data period and Source

Quarterly nominal data on government debt, foreign debt and domestic debt were obtained from the Bank of Namibia Quarterly and Annual Reports as well as the Research Department and subsequently converted and expressed in US Dollars at the market exchange rates to the Namibian dollar also obtained from the Bank of Namibia database. Quarterly average inflation percentages were obtained from the Bank of Namibia online database. Annual foreign direct investment as percentage of GDP were obtained from IMF Data Mapper and converted to quarterly percentages by simply dividing the annual values by 4, to maintain the frequency consistency of all variables. The quarterly GDP statistics at market prices were obtained from the Namibia Statistics Agency online database. The sources and definition of the quantitative data used in this study are presented in Table 3.1.

Table 3.1 Description of Variables

NO	VARIABLE	DESCRIPTION	SOURCE
1	GROSS DOMESTIC PRODUCT (GDP)	QUARTERLY GDP FIGURES AT MARKET PRICES USED TO REPRESENT ECONOMIC GROWTH (2000Q1-2016Q4), EXPRESSED IN US DOLLARS	NAMIBIA STATISTICS AGENCY
2	GENERAL GOVERNMENT DEBT (GDEBT)	QUARTERLY OUTSTANDING GENERAL GOVERNMENT DEBT EXPRESSED IN US DOLLARS	BANK OF NAMIBIA
3	FOREIGN DEBT (FXD)	QUARTERLY OUTSTANDING EXTERNAL DEBT COMPONENT EXPRESSED IN US DOLLARS	BANK OF NAMIBIA
4	LOCAL DEBT(LOCALD)	QUARTERLY OUTSTANDING LOCAL DEBT COMPONENT EXPRESSED IN US DOLLARS	BANK OF NAMIBIA
5	INFLATION (INFL)	QUARTERLY CONSUMER PRICE INDEX PERCENTAGE VALUES	BANK OF NAMIBIA
6	FOREIGN DIRECT INVESTMENT (FDI)	NET FOREIGN DIRECT INVESTMENT AS PERCENTAGE OF GDP.	IMF DATA MAPPER

Source: Author (2018)

3.5 Specification of the Model

From the literature review, the study adopts similar models to those of Umaru et al., (2013), AKRAM (2017) and Adamu et al., (2018) which were adjusted to fit the Namibian situation.

A regression analysis is then derived mainly to study the association between the dependent and independent variables. The independent/explanatory variables are namely; general government debt (GDEBT), foreign debt (FXD) and local debt (LOCALD). Inflation (INFL) and foreign direct investment (FDI) were also introduced as control variables on the right-hand side of the equation. The dependent variable is economic growth (GDP). The relationship between GDP and the various debt categories is proposed in a linear relationship as:

$$GDP = \beta Debts_{t,} + \gamma X_{t,} + \varepsilon t \qquad \textit{(Equation 1)}$$

Where GDP is the gross domestic products expressed in nominal prices in US$, βDebts represent various debt components and γX represents the control variables.

The variables are converted into logarithms to aid with the analysis of the estimated coefficients because it makes non-linear parameters in a model linear (Asteriou & Hall, 2007).

Transferred to natural logs, the regression equations are:

$$In(GDP_t) = \beta_0 + \beta_1 In(Debts_t) + \beta_2 In(INFL_t) + \beta_3 In(FDI_t) + \varepsilon_t \qquad \textit{(Equation 2)}$$

Where Debts represent general debt (GDEBT), INFL represents inflation and FDI represents foreign direct investment and ε_t is the error term.

The relationship of various debt components to GDP will be assessed according to two categories of government debt, and the deduced models will be as follows:

$$ln(GDP)_t = \delta_0 + \delta_1 ln(FXD)_t + \delta_2 ln(INFL)_t + \delta_3 ln(FDI)_t + \varphi_t \qquad \textit{(Equation 3)}$$

$$ln(GDP)_t = \eta_0 + \eta_1 ln(LOCALD)_t + \eta_2 ln(INFL)_t + \eta_3 ln(FDI)_t + \tau_t \quad \text{(Equation 4)}$$

Where FXD and LOCALD represent foreign debt and local debt respectively.

3.6 Descriptive Statistics

The descriptive statistics produced provided information on the mean, median, minimum, maximum as well as standard deviation and skewness of the data. This provided information that helps the study determine whether the GDP and general state debt variables are the symmetric or not. Descriptive statistics also highlight features of the residual of the GDP and independent variables.

3.7 Unit Root Testing

Granger and Newbold (1974) articulate that when non-stationary data is encapsulated in data examination, it is probably going to yield spurious results. They enunciate that the sequences in the data will lead to fictitious ties that imply a correlation between the data when in pragmatic use and when no correlation exists. The data is thus gauged for stationarity, using a unit root test. To assess whether the variables are stationary and the order of integration, the test for a unit root was done using the augmented Dickey-Fuller (ADF) test to test for stationary on economic growth and general debt, local debt and foreign debt. For each trend under this study, the ADF regression of the ensuing discourse is approximated. Critical values from the Dickey and Fuller (1976) tables are engaged in evaluating the statistical significance of estimated parameters (Dickey & Fuller, 1976).

3.8 ARDL Cointegration Testing Approach

Cointegration is an econometric conceptualization which simulates the prevalence of a long-run equilibrium among economic time series. If two or more series are nonstationary, but a linear combination of them is stationary, then they are said to be cointegrated (Wagner & Lakiwa, 2014). Cointegration analysis is the statistical consequence of the long-run relationship between economic variables. The embryonic philosophy behind cointegration is that, if in the future two or more series move diligently in collaboration even though the series was trended, the variance between them is constant. Deficiency of cointegration recommends that such variables have no future correlation, in principle they can roam randomly far away from each other. Dickey and Fuller (1981) says that a linear combination of non-stationary variables is articulated to be cointegrated if the blunder term is obtained from the co-integrated. The cointegration test was conducted to establish a long-run relationship between the GDP, general debt, foreign debt and local debt variables.

Although various cointegration tests exist such as the Engle and Granger (1987) and Watson and Johansen (1988), the method deployed for testing cointegration in this research was Auto Regressive Distributed Lag (ARDL). The estimated criterion employing the ARDL is mooted by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001). This school of thought has a plethora of merits when juxtaposed to standard multivariate cointegration such as Johansen and Juselius (Goyal, 2017). One merit is that the bound test criterion is simple and easy to follow. This approach also eradicates the pretesting challenge associated with the standard cointegration test.

Another merit for using ARDL approach is that it is suited for small sample sizes and furnishes an option for evaluating long-run correlations taking into cognisance whether the nitty-gritty variables have a unit root (Riba, 2016). The specified ARDL equation is:

$$D(L(GDP_t)) = \beta_0 + \beta_1 L(GDP_{t-1}) + \beta_2 L(GDP_{t-2}) + \beta_3 L(DGP_{t-3}) + \beta_4 L(GDP_{t-4}) + \beta_5 L(GDEBT) + \beta_6 L(FXD) + \beta_7 L(LOCALD) + \beta_8 L(INFL) + \beta_9 L(FDI) + \Sigma \alpha_i DL(GDP_{t-i})) + \Sigma\alpha_5 L(GDEBT_{t-i}) + \Sigma\alpha_6 L(FXD_{t-i}) + \Sigma\alpha_7 L(LOCALD_{t-i}) + \Sigma\alpha_8 L(INFL_{t-i}) + \Sigma\alpha_{10} L(FDI_{t-i})) + \varepsilon_{lt}$$

(Equation 6)

3.9 Long and Short Run Tests

In a study by Swang (2016), the application of the ARDL approach to cointegration encapsulated probability of the following unrestricted error correction model (UECM). The ARDL frame of reference permits for the recognition of short-run dynamics and long-run relationship as per the discourse cited by Gomez -Puig and Sosvilla-Rivero (2015) on the ARDL cointegration technique. They demonstrated that this is achieved through integrating short-run dynamics with long-run equanimity, thus resulting in an analysis of long-run relations between integrated constructs and reparameterizing the correlation between the variables into an error correction model (ECM) (Gomez-Puig & Sosviella-Rivero, 2015). The reparametrized result then furnishes the short-run dynamics and the long run correlation of the variables concerned.

The expanded equation for long-run regression cointegration ARDL for a linear relationship is given as:

$$L(GDP_t) = \beta_0 + \sum_{i=0}^{p_0} \alpha_{1_i} L(GDP_{t-i}) + \sum_{i=0}^{q1} \alpha_{2_i} L(GDEBT_{t-i}) + \sum_{i=0}^{q2} \alpha_{3_i} L(FXD_{t-i}) + \sum_{i=0}^{q3} \alpha_{4_i} L(LOCALD_{t-i}) + \sum_{i=0}^{q4} \alpha_{5_i} L(INFL_{t-i}) + \sum_{i=0}^{q5} \alpha_{6_i} L(FDI_{t-i}) + \varepsilon_t$$

(Equation 7)

Pesaran, Shin and Smith (2001) furnish a set of essential values postulating first that the variables under are *I (1)* and, secondly, that such variables are *I (0)*. This academia postulates

a bound testing strategy: if the computed F or *t*-statistics is superior the upper critical bound, the discourse is in favor of a long-run relationship regardless of the order of integration. However, if these figures are below the lower critical bound, the null hypothesis of no cointegration cannot be excluded. Ultimately, if the computed F and *t*-statistics are in the range of upper critical bound and lower critical bound, then the decision about cointegration is feeble. When the order of integration for all series is *I (1)* then the decision is based on the upper critical bound; and if all the series are *I (0),* it is based on the lower critical bound (Sibanda, 2018).

The test statistics calculated on the equation have a diverse distribution under the null hypothesis of no level correlation, incumbent upon the regressions is all *I (0)* or all *I (1).* Further, under both circumstances the distribution is non-standard. Pesaran, Shin and Smith (2001) furnish critical values for the cases where all regressors are *I (0)* and the cases where all regressors are *I (1)* and enunciates that these critical values be positioned as bounds for the more typical cases where the regressions are a mixture of *I (0)* and *I (1)*.

3.10 Short Run Error Correction Model

To obtain the error correction estimates, this research adopts a study by (Swamy, 2014), that specifies the error correction models as: $DL(GDP_t) = \beta_0 + \sum_{i=1}^{P} \alpha_{1_i} D(LGDP_{t-i}) + \sum_{i=1}^{q} \alpha_{2_i} D(LGDEBT_{t-i}) + \sum_{i=1}^{q} \alpha_{3_i} D(LFXD_{t-i}) + \sum_{i=1}^{q} \alpha_{4_i} D(LLOCALD_{t-i}) + \sum_{i=1}^{q} \alpha_{5_i} D(LINFL_{t-i}) + \sum_{i=1}^{q} \alpha_{6_i} D(LFDI_{t-i}) + \alpha_i ECT_{t-1} + \varepsilon_t$

(Equation 8)

Where ECT_{t-1} is the error correction term.

As a rule of thumb for pragmatics of a short run relationship, the error correction coefficient (cointEq) should be negative and significant as shown by the t-statistic and its p-value. According to Gomez -Puig and Sosvilla- Rivero (2015) the cointEq is referred to as the speed of adjustment parameter, as it demonstrates how much of the imbalance in the previous period is corrected in the current period. Thus, the cointEq coefficient is anticipated to lie between 0 and -1, with values closer to -1 being reckoned more significant. Where the cointEq is equal to or beyond -1, it may be indicative of instantaneous changes whereas, at 0.5, the changes would be taking place in each period. The coefficients of the first-differenced variables indicate the short run impact.

3.11 Causality Test

The study employs the Granger Causality Test to address the question of provisional causality between government debt variables and economic growth. The null hypotheses in this test is that:

H_0: General debt does not cause GDP

H_1: General debt causes GDP

3.12 Limitations

The study nevertheless noted a limitation posed by variables using different conventions such as inflation and foreign direct investment which are percentage rates while the rest of the variables are monetary values. This was overcome by converting all variables into natural logs to allow for ease of interpretation of data.

CHAPTER 4: DISCUSSIONS OF FINDINGS

4.1 Introduction

This chapter presents analysis, findings, and discussions of secondary data as per the method highlighted in the prior chapter. This chapter proceeds with arguments on the descriptive statistics and discussions on results from regression, ADF, ARDL and Granger Causality tests.

4.2 Descriptive Statistics

Table 4.1 presents results from the descriptive statistics on the variables in the study. GDP recorded the highest mean, median, minimum and maximum which shows that GDP values are more substantial than all other variables. The mean for every variable is similar to their respective median values, which is indicative of symmetric characteristics in the data. Regarding variability measured by standard deviation, GDP indicates the highest variability at 4557.18 standard deviations, meaning that the GDP dataset is further from the mean and that quarterly GDP figures have changed significantly during the sample period. Foreign direct investment indicates the lowest variance of 0.43, followed by inflation with the standard deviation of 2.79.

In terms of the degree of direction and asymmetry, measured by skewness, the rule of thumb is**:** a symmetric distribution (normal distribution) has a skewness statistic of 0; if the skewness is between -0.5 and 0.5, the data is symmetrical; if it is between -1 and – 0.5 or between 0.5 and 1, the data is moderately skewed; and if skewness is less than -1 or greater than 1, the data is highly skewed. Local debt, foreign direct investment and GDP display normal distribution skewness of 0.23, 0.27 and 0.47 respectively. General debt shows a moderate positive skewness with a coefficient of 0.59, and foreign debt shows high positive skewness with a coefficient of 1.21.

In terms of the tails' extremity measured by kurtosis, the rule of thumb is that: a normal distribution has a kurtosis of 3; if the kurtosis is greater than 3, the dataset has heavier tails than a normal distribution; if the kurtosis is less than 3, the data has lighter tails than a normal distribution. All variables except foreign debt, have kurtosis coefficients of less than 3, indicating moderate lighter tails than a normal distribution. Foreign debt kurtosis coefficient of 3.58 suggest that the data has heavier tails than the normal distribution.

The Jarque–Bera statistic signals the goodness-of-fit on whether the residuals of the sample data's skewness and kurtosis meet the features of a normal distribution. Generally, a large Jarque-Bera value indicates that errors are not normally distributed. The hypotheses of Jarque-Bera Test for Normality are formulated as:

H_0: Data error term is normally distributed

H_a: Data error term is not normally distributed

Data that is normally distributed displays symmetrical features i.e. skewness of 0, a kurtosis of 3 or excess kurtosis of 0 and a Jarque-Bera statistic of 0. In the present study, resulting Jarque-Bera values of 3.66 for GDP, 4.56 for general debt, 17.66 for foreign debt, 1.55 for local debt, 3.63 for inflation and 4.38 for foreign direct investment means that the null hypothesis has been rejected at 5% level of significance. In other words, the data does not emanate from a normal distribution.

Table 4.1 Summary of Descriptive Statistics

	GDP	GDEBT	FXD	LOCALD	INFL	FDI
Mean	19672.66	2140.093	624.8237	1515.269	6.735294	1.477073
Median	19125.48	1877.127	404.7731	1535.027	5.85	1.388421
Maximum	28189.76	4766.222	2181.04	2974.497	13.1	2.18509
Minimum	12368.09	676.4836	117.0764	541.7998	2.1	0.791005
Std.Dev.	4557.18	1063.928	519.832	589.0327	2.791659	0.432336
Skewness	0.274706	0.589879	1.2144079	0.084829	0.472599	0.231158
Kurtosis	2.0004684	2.533612	3.580512	2.280338	2.377879	1.846475
Jarque-Bera	3.662109	4.559819	17.66001	1.548976	3.627899	4.375673
Probability	0.160245	0.102293	0.000146	0.460949	0.163009	0.112159
Sum	1337741	145526.3	42488.01	103038.3	458	100.441
Sum Sq.Dev.	1.39E+09	75840133	18105093	23246289	522.1553	12.52328
Observations	68	68	68	68	68	68

Notes: Hypothesis for normality = *H_0: Data is normally distributed at skewness of 0, kurtosis of 3 and Jarque-Bera of 0.* **Source*:*** Author (2019)

4.3 Correlation and Multicollinearity

A correlation matrix for all variables is presented as per Table 4.2. The Pearson correlation coefficient studies the strength and trend of the linear relationship between two constant variables. The correlation coefficient can range in value from −1 to +1. The larger the absolute value of the coefficient, the stronger the relationship between the variables. A positive value is indicative of a positive relationship, and a negative value implies an inverse relationship between the variables.

For purposes of this discourse, the strength of correlation will be determined as: the correlation absolute value obtained of 0.7 or higher, is used to indicate the independence of the variable and thus befitting for incorporation in the model; if the absolute value falls between 0.4 and 0.7, it is moderate correlation; and if the absolute value is less than 0.4, it will be considered as low correlation. From the results, the assessment of relation between GDP and each

independent variable was conducted, and foreign debt displays the highest correlation to GDP, followed by general debt and local debt respectively.

Table 4.2 Correlation Matrix

	LGDP	LGDEBT	LFXD	LLOCALD	LINFL	LFDI
LGDP	1	0.910661	0.96109	0.844211	-0.3833	0.274017
LGDEBT	0.910661	1	0.960665	0.982358	-0.5958	0.177759
LFXD	0.96109	0.960665	1	0.894853	-0.4235	0.246318
LLOCALD	0.844211	0.982358	0.894853	1	-0.67221	0.150533
LINFL	-0.3833	-0.5958	-0.4235	-0.67221	1	-0.097933
LFDI	0.274017	0.177759	0.246318	0.150533	-0.097933	1

Notes**: L=Natural logarithm; GDP= GROSS DOMESTIC PRODUCT GDEBT= GENERAL STATEDEBT; FXD=FOREIGN DEBT; LOCALD= LOCAL DEBT; INFL=INFLATION; FDI=FOREIGN DIRECT INVESTMENT**;
***Source:** Author (2019)*

Foreign direct investment shows a low positive correlation to GDP, and inflation is negatively associated with GDP, indicating a linear low inverse relationship to GDP. From the coefficients regarding an association to GDP, it can be deduced that all variables, except inflation and FDI, have a strong association and therefore linearly correlated to GDP, thus meeting the normality assumption associated with the linear regression.

Multicollinearity is the inter-relation amongst the independent variables used to weigh the significance of each independent variable in the model. If there is a high association between the independent variables, this is a signal that one of these variables could be redundant within the model and thus plausibly requiring to be dropped from the model.

The correlation matrix indicates a strong correlation between general debt, foreign debt and local debt. This is because local debt and foreign debt summed up constitute general debt. Within the setting of model 2 (general debt), it is evident that the correlation levels between general debt and foreign direct investment and inflation are significantly low as per the thresholds set prior, thus having low multicollinearity. The high correlation between general debt, foreign debt and local debt were dealt with by developing two separate models to examine the relation between foreign debt as well as local debt and economic growth in model 3 (foreign debt) and model 4 (local debt).

The correlation levels between variables in models 3 (foreign debt) and 4 (local debt) are low to medium (being less than 0.7) concerning inflation and foreign direct investment. A conclusion can be drawn that the t-statistics and related p-values of each variable can be considered to test the significance of the independent variables in the regression model and

that all the independent variables designated for this discourse are significant per models' specifications.

4.4 Unit Root Testing for Stationarity

It is critical to understand the order of integration of the variables in the research before undertaking additional econometric tests. Another reason why this is important is that it helps the study decide on the proper tests to conduct, provided the order of integration of the variables in the study. When the presence of a unit root is established for variables, the trigger is to check whether there is a long-run equilibrium relationship among the variables. The existence of a long-run equilibrium relationship amongst variables is called cointegration.

The following course of action is to test variables for stationarity of the variables, using the Augmented Dickey Fuller (ADF) test. Table 4. 3 presents the results of the ADF results. All variables contain unit root at level I(0) 5% level of significance. At first difference, none of the variables has unit root at 5% significance level. The variables were lagged at the automatic selection, but to maintain a uniform, a maximum of lag of 4 was chosen to accommodate the fact that the data is quarterly. The rest of the parameters were automatically selected in EViews with the intercept included in the equation.

The study failed to reject the null hypothesis that states that the variables have unit root at level I(0), and rejected the null hypothis at level 1(1). This finding is consistent with a study conducted by Muyaba (2016) on the relationship between public spending and economic growth in Zambia. Muyaba (2016), however, found both GDP and public expenditure to be stationary at I(1) using the intercept in the test equation.

Table 4.3 ADF Results

	t-stat I(0)	t-stat I(1)	*p(0)*	*p(1)*	I(0)	H_0	I(1)	H_0
LGDP	-0.29308	-13.2097	0.9195	0.00000	-2.90766	FTR	-2.90766	Reject
LGDebt	-0.80951	-6.67073	0.8097	0.00000	-2.90621	FTR	-2.90621	Reject
LFXD	-0.67314	-8.56734	0.8459	0.00000	-2.90552	FTR	-2.90621	Reject
LLOCALD	-1.13407	-5.80553	0.6975	0.00000	-2.90621	FTR	-2.90621	Reject
LINFL	-2.89251	-3.56281	0.0516	0.00920	-2.90621	FTR	-2.90621	Reject
LFDI	-1.44156	-6.79373	0.5564	0.00000	-2.90842	FTR	-2.90842	Reject

Note: *L=Natural logarithm; GDP= GROSS DOMESTIC PRODUCT; GDEBT= GENERAL STATEDEBT; FXD=FOREIGN DEBT; LOCALD= LOCAL DEBT; INFL=INFLATION; FDI=FOREIGN DIRECT INVESTMENT; FTR=Failed to reject the Null Hypothesis*; ***Source:*** *Author (2019*)

4.5 ARDL Cointegration Framework

The null hypothesis in ARDL bounds calculation tests states that no long-run relationship exists between the variables. Critical values at each level were tested for the hypothesis using

the F-statistic. The value of the F-statistic obtained was 8.264 for model 2, 8.525 for model 3, and 8.013 for model 4. Pesaran et al., (2001) expound on the critical values of the F-statistic for numerous variables. Two sets of critical values, one assuming that all the variables in the ARDL model are integrated at the level I (0), range from 2.37 at 10%, 2.79 at 5% to 3.65 at 1%, marking the lower critical bound, which means that there is no cointegration amongst the variables. If all the variables are integrated at first order I (1), as observed in Table 4.4. The critical values range from 3.20 at 10%, 3.67 at 5% and 4.66 at 1%, noting the upper critical bound, meaning that there is cointegration among the variables. Selecting a level 5% to test the hypothesis, the study detected that the F-statistics for model 2 of 8.264, 8.525 for model 3 and 8.013 for model 4 were more significant than both the lower critical bounds of 2.79 and the upper critical bounds of 3.67. This suggests the existence of a cointegration relationship. The study thus rejects the null hypothesis of no long-run relationship between the independent variables and GDP.

Table 4.4 Bound Tests

		Critical Value1%		Critical Value5%		Critical Value10%	
	F-statistic	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)
		3.65	4.66	2.79	3.67	2.37	3.2
Model 2	8.264088	Reject		Reject		Reject	
Model 3	8.524769	Reject		Reject		Reject	
Model 4	8.012982	Reject		Reject		Reject	

Source: Author (2019)

4.5.1 ARDL Long Run Regression Results

After establishing the presence of a long run relationship between the three types of debt and GDP, the ARDL co-integration approach can now be applied to estimate the individual long-run relationship between the variables. Table 4.5 presents the long-run estimates. Debt shows a positive relationship with GDP and is significant at 1% under models 2 (general debt) and 3 (foreign debt). Model 4 (local debt) shows a positive relationship to GDP that is significant at 5%. The positive relationship found between the Namibian government debt and GDP could imply that the government is using debt to finance productive capital projects, thus stimulating the economy to increase production output. The results could also suggest that Namibia's debt is still manageable as it falls within the sustainable debt-to-GDP threshold level for African countries of 80% as computed by Muhanji and Ojah (2011). These findings concur with those by AKRAM (2017) who found that public external debt helps the process of economic growth and that domestic debt has positive and significant relationship with GDP in Sri Lanka. The findings also resonate with those by Umaru et al., who found a positive relationship between local debt and economic growth in Nigeria. The findings contradict those by Swamy (2014),

as they found a negative relationship between state debt and growth in the long run, of which the point approximations of the range of econometric specifications suggest that a 10-percentage point increase in the debt-to-GDP ratio is associated with 2 to 23 basis point reduction in average economic growth. Their study also established a nonlinear relationship between debt and growth. The positive long-run relationship between government debt and economic growth observed in this study also differs from a study by Shabbir (2013) that found that an increase in external debt stock reduces the fiscal space to service external debt liabilities and thus dampens the economic growth.

Table 4.5 Long Run Estimates

	Model 2	**Model 3**	**Model 4**
	Coefficient	**Coefficient**	**Coefficient**
Constant	2.962439*	3.706344*	2.804185*
	(6.104795)	(20.71486)	(2.881668)
LGDebt	0.437802*		
	(3.733706)		
LFXD		0.263462*	
		(6.036176)	
LLOCALD			0.541750**
			(2.153067)
Inflation	0.012377	-0.057808	-0.012698
	(0.078228)	(-0.645996)	(-0.044311)
LFDI	0.079335	0.029203	0.095143
	(0.497583)	(0.284361)	(0.362982)

***Note**: L=Natural logarithm; GDP= GROSS DOMESTIC PRODUCT; GDEBT= GENERAL STATEDEBT; FXD=FOREIGN DEBT; LOCALD= LOCAL DEBT; INFL=INFLATION; FDI=FOREIGN DIRECT INVESTMENT**; *, ** and *** denotes significance at 1%; 5% and 10% respectively: **Source:** Author (2019)*

4.5.2 Short Run Estimates and Error Correction

Since the long run relationship was determined, the next step is to estimate the short-run dynamics within the framework of the ARDL model. Table 4.6 presents the results of the short run error correction terms. In the short run, debt has a positive relationship with GDP at 1% level of significance for model 3(foreign debt). Debt shows a negative but insignificant relationship for model 4(local debt). Inflation shows a positive relationship for models 2(general debt) and 4 at 1% level of significance. These findings are contrary with results from a study by Antonakakis (2013) that non-sustainable debt-ratios above and below the 60% threshold, have a detrimental effect on short-run economic growth, while sustainable debt-ratios below the 90% threshold exert a positive influence on short-run economic growth.

The significance of the negative coefficient of the error correction term (cointEq) across all the models confirms the convergence to long-run equilibrium from the short-run. The cointEq coefficient indicates the rate at which the long-run disequilibrium is corrected at a rate of about 11% for model 2, 17% for model 3 and 6% for model 4. The diagnostic statistics indicate a

decent predictability power across the three models, based on high R-squared and adjusted R-squared values, within the range of 60% to 63%, and Durbin-Watson values within the acceptable range as they are close to 2 which is considered relatively fit. Moreover, the estimated error correction coefficient is negative and significant at 1% level of significance to ensure the correction of the slight errors at the average speed of 12% across all models.

Table 4.6 Short Run Error Correction Terms

	Model 2	**Model 3**	**Model 4**
	Coefficient	**Coefficient**	**Coefficient**
DLGDP	*-0.738512**	*-0.697722**	*-0.769349**
	(-8.278953)	*(-7.999628)*	*(-8.438628)*
DLDebt	*0.183966*		
	(0.449458)		
DLFXD		*0.088726**	
		(3.022642)	
DLLOCALD			*-0.112510*
			(-1.313716)
DLInflation	*0.231912**	*0.077831*	*0.201099**
	(3.293675)	*(1.169459)*	*(3.928764)*
DLFDI	*0.032754*	*0.017472*	*-0.000301*
	(0.887689)	*(0.659565)*	*(-0.0009781)*
CointEq(-1)	*-0.106374**	*-0.166665**	*-0.064888**
	(-6.653713)	*(-6.757840)*	*(-6.551846)*
F-Stat	*8.264088*	*8.524769*	*8.012982*
R-Squared	*0.626003*	*0.630946*	*0.621115*
Adjusted R-Squared	*0.607303*	*0.612493*	*0.602171*
Dublin Watson	*1.84197*	*1.840432*	*1.852220*

Note: *L=Natural logarithm; GDP= GROSS DOMESTIC PRODUCT; GDEBT= GENERAL STATEDEBT; FXD=FOREIGN DEBT; LOCALD= LOCAL DEBT; INFL=INFLATION; FDI=FOREIGN DIRECT INVESTMENT *, ** and *** denotes significance at 1%; 5% and 10% respectively:* ***Source:*** *Author (2019)*

The ARDL model was further tested for stability. The CUSUM (Brown, Durbin, and Evans, 1975) test of recursive residuals was performed to check the stability of the coefficients of the ARDL model over the sample period. This route plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines. Results of the (CUSUM) and the CUSUM of the square (CUSUMSQ) found in Figures 1 - 6 in Appendix indicate the absence of any instability of the coefficients.

Other diagnostic tests were conducted for serial correlation, heteroscedasticity and normality. The results in Table 4.7 reveal that the model is stable, there is no serial correlation up to lag order 4, no heteroscedasticity and the errors are normally distributed.

Table 4.7 Diagnostics test results for ARDL model

Test	Null Hypothesis	T-Statistics	P-value	Deduction
	Model 2			
Autocorrelation LM Test	There is no serial correlation	At lag 4, LM stat = 2.664	0.0425	No serial correlation
Jarque Bera	Residuals are normally distributed	Jacque Bera = 1.8973	0.387	Normally distributed
White without cross terms	There is no heteroskedasticity	1.310278	0.9837	No heteroskedasticity
	Model 3			
Autocorrelation LM Test	There is no serial correlation	At lag 4, LM stat = 2.1037	0.0936	No serial correlation
Jarque Bera	Residuals are normally distributed	1.8009	0.406	Normally distributed
White without cross terms	There is no heteroskedasticity	1.255849	0.9852	No heteroskedasticity
	Model 4			
Autocorrelation LM Test	There is no serial correlation	At lag 4, LM stat = 2.496	0.0539	No serial correlation
Jarque Bera	Model is normally distributed	1.7556	0.4156	Residuals are normally distributed
White without cross terms	There is no heteroskedasticity	1.340811	0.982	No heteroskedasticity

Source: Author (2019)

4.6 Granger Causality

The Pairwise Granger causality analysis was conducted to determine the direction of causality relationship amongst the variables for the period 2000Q1-2016Q4. Pairwise Granger Causality Tests were conducted at different lags ranging from 2 – 4. The causality test results are presented in Table 4.8, and the study fails to reject the hypothesis when the probability value is greater than 5 % because this is the desired significance. If the probability value is smaller than 5%, the study rejects the null hypothesis and accepts the alternative for Granger causality.

Table 4.8 Summary of Pairwise Granger Causality Results

Null Hypothesis	N	Lags	F-test	P-values	Conclusion	Decision
LGDEBT does not Granger Cause LGDP			1.81065	0.1722	No Causality	Fail to Reject
LGDP does not Granger Cause LGDEBT	66	2	1.22388	0.3012	No Causality	Fail to Reject
LFXD does not Granger Cause LGDP			3.10412	0.052	No Causality	Fail to Reject
LGDP does not Granger Cause LFXD	66	2	3.10106	0.1526	No Causality	Fail to Reject
LLOCALD does not Granger Cause LGDP			1.24276	0.2958	No Causality	Fail to Reject
LGDP does not Granger Cause LLOCALD	66	2	1.1808	0.314	No Causality	Fail to Reject
LINFL does not Granger Cause LGDP			0.14203	0.8679	No Causality	Fail to Reject
LGDP does not Granger Cause LINFL	66	2	0.38901	0.6794	No Causality	Fail to Reject
LFDI does not Granger Cause LGDP			0.33408	0.7173	No Causality	Fail to Reject
LGDP does not Granger Cause LFDI	66	2	0.07109	0.9315	No Causality	Fail to Reject
LGDEBT does not Granger Cause LGDP			0.7299	0.5383	No Causality	Fail to Reject
LGDP does not Granger Cause LGDEBT	65	3	0.83909	0.478	No Causality	Fail to Reject
LFXD does not Granger Cause LGDP			1.03481	0.384	No Causality	Fail to Reject
LGDP does not Granger Cause LFXD	65	3	1.97035	0.1284	No Causality	Fail to Reject
LLOCALD does not Granger Cause LGDP			0.51672	0.6724	No Causality	Fail to Reject
LGDP does not Granger Cause LOCALD	65	3	0.9963	0.4011	No Causality	Fail to Reject
LINFL does not Granger Cause LGDP			0.12746	0.9434	No Causality	Fail to Reject
LGDP does not Granger Cause LINFL	65	3	1.06122	0.3726	No Causality	Fail to Reject
LFDI does not Granger Cause LGDP			0.37515	0.7712	No Causality	Fail to Reject
LGDP does not Granger Cause LFDI	65	3	0.06958	0.9759	No Causality	Fail to Reject
LGDEBT does not Granger Cause LGDP			1.25998	0.2968	No Causality	Fail to Reject
LGDP does not Granger Cause LGDEBT	64	4	1.18698	0.3268	No Causality	Fail to Reject
LFXD does not Granger Cause LGDP			0.93305	0.4517	No Causality	Fail to Reject
LGDP does not Granger Cause LFXD	64	4	1.72826	0.1569	No Causality	Fail to Reject
LLOCALD does not Granger Cause LGDP			1.27456	0.2911	No Causality	Fail to Reject
LGDP does not Granger Cause LOCALD	64	4	1.06202	0.3841	No Causality	Fail to Reject
LINFL does not Granger Cause LGDP			0.49648	0.7383	No Causality	Fail to Reject
LGDP does not Granger Cause LINFL	64	4	0.74544	0.5652	No Causality	Fail to Reject
LFDI does not Granger Cause LGDP			0.7533	0.5601	No Causality	Fail to Reject
LGDP does not Granger Cause LFDI	64	4	0.25014	0.9345	No Causality	Fail to Reject

Source: Author (2019)

The study found no causality effect between GDP and the independent variables (general debt, foreign debt and local debt). The study fails to reject the null hypothesis which states that government debt does not cause GDP. This finding resonates with a study by Ogunmuyiwa (2011) which concluded that causality does not exist between external debt and economic growth.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, conclusion and policy recommendations based on the study results.

5.2 Summary of Research

The purpose of this study was to examine whether there is a relationship between sovereign debt (general government debt) and economic growth for Namibia over the period 2000 - 2016. The study further assessed if there is a relationship between the two components that make up general government debt namely, external debt (foreign debt) and local debt and economic growth. The study sought to assess the short run and long run relationship and test the causality effect between the variables.

To achieve these objectives, the research used secondary data from the Namibia Statistics Agency, Bank of Namibia and IMF, and undertook the following steps to conduct tests in E-Views:

- First, the linear regression equation was estimated to determine the relationship between general government debt, foreign debt and domestic debt and economic growth in Namibia as well as the significance of the variables.
- Second, an Augmented Dickey-Fuller test was conducted for unit root test and to establish the order of integration between the variables to aid in choosing the fitness of the subsequent tests.
- Third, the ARDL bounds framework was used to determine the co-integration and to check if a long run and short run relationship exists between general state debt, domestic and external debt and economic growth.
- Finally, a Pairwise Granger Causality test was conducted to establish the causality effect between the variables.

In summary, the linearity test established a positive relationship between general government debt and economic growth and a positive relationship between foreign debt and domestic debt and economic growth.

About stationarity, all variables were found to be non-stationary and to have a unit root at level I (0) and 1%, 5% and 10% level of significance. At first difference, all variables were stationary, and none of the variables was found to contain unit root at 1%, 5% and 10% significance levels.

The results from the ARDL framework tests, the study established that a positive and significant long run and short run relationship exists between government debt components and GDP. The study rejected the null hypothesis of no long-run relationship. The cointEq coefficients indicate the rate at which the long-run disequilibrium is corrected to be an average rate of 12%.

Results from the Pairwise Granger Causality test found no causality between GDP and general government debt, foreign debt and local debt. The study failed to reject the null hypothesis which states that general government debt does not cause GDP.

5.3 Conclusion

This study analysed the effect of government debt (general debt, foreign debt and local debt) on economic growth for Namibia over the sample period, 2000 – 2016. The study does not assert that the results are perfect but affirms that they were established on generally accepted econometric standards, based on sound economic logic. The study contributes to a plethora of literature on the relationship between debt and economic growth, and it enriches literature with findings for a developing economy in the African context.

The study observed a positive relationship between general government debt and economic growth and that long run and short run relationships exist between the variables. The study, therefore, failed to reject the central hypothesis of this research which Ho states that there is a positive relationship between the government debt and economic growth in Namibia over the sample period.

The inference of these results for the Namibian government and lawmakers is that, since borrowing secures much-needed funds to aid development, a hefty debt load can also discourage economic growth and development via numerous means such as crowding out of private investment and public investment spending because of high-interest rate and debt servicing. Lawmakers need to strike a balance between excess debt levels that could threaten development and sufficient debt levels that are plausible to stimulate economic growth.

5.4 Recommendations

From a policy perceptive, the findings of this study could help in formulating debt-oriented policies. Notably, the presence of a positive impact of debt on GDP in Namibia should be deliberated on as the state could consider borrowing more to support infrastructure development needed for economic growth.

General debate has been that, where debt is significant, macroeconomic policies are less efficient and unstable, and can end up in low economic growth over a long period (Presbitero,

2008). The state of Namibia urgently needs to ensure that external debt funds are used only for developmental projects that could result in clear economic benefits because repayment and servicing of external debt depletes foreign reserves much needed to pay for import of essential goods and services that the country currently has no capacity to produce.

Finally, the study, recommends a more active use of the general government debt Fund to stimulate positive economic growth.

5.5 Areas of Further Research Studies

This research only assessed the relationship between government debt and economic growth. Further research needed to expand on this study is to examine the relationship between the Namibian government debt and other determinants of economic growth such as consumption and investment. This will add value for policymakers as it could unravel valuable evidence that can be used in determining the optimal mix of government debt and other determinants to warrant that the economy is performing at its optimal level.

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APPENDIX

Table 1.1 Secondary Data

Quarters	GDP	GDebt	FXD	LocalD	Inflation	FDI
2000Q1	13695.7	842.314	119.403	722.911	10.7	1.4
2000Q2	13361.8	786.28	117.076	669.203	10.3	1.4
2000Q3	12368.1	849.708	135.174	714.535	10	1.4
2000Q4	13907.1	750.849	127.763	623.086	9.8	1.4
2001Q1	13645.3	764.857	125.044	639.812	9.8	1.2
2001Q2	13985.3	777.782	149.786	627.996	10	1.2
2001Q3	12540.3	848.496	192.555	655.94	10.3	1.2
2001Q4	14214.7	737.387	153.278	584.109	10.7	1.2
2002Q1	14406.5	676.484	134.684	541.8	13	1.1
2002Q2	14568.3	770.549	151.874	618.675	13.1	1.1
2002Q3	12925	767.762	141.682	626.08	12.8	1.1
2002Q4	14837.8	821.499	125.675	695.824	11.9	1.1
2003Q1	15290.5	1035.96	177.631	858.327	8.9	1
2003Q2	15589.3	1241.57	183.459	1058.11	7.7	1
2003Q3	13760.1	1343.84	215.846	1127.99	6.6	1
2003Q4	15597.5	1515.46	238.48	1276.98	5.7	1
2004Q1	16591.7	1612.07	263.511	1348.56	5.1	0.9
2004Q2	16540.1	1822.56	281.247	1541.32	4.4	0.9
2004Q3	15823.3	1974.15	300.648	1673.5	3.8	0.9
2004Q4	16802.7	2072.93	332.753	1740.18	3.2	0.9
2005Q1	16926.4	2083.07	343.498	1739.57	2.3	1.4
2005Q2	16910.8	1936.42	304.255	1632.17	2.1	1.4
2005Q3	15225.7	1973.38	307.313	1666.07	2.2	1.4
2005Q4	17717.9	1935.62	298.778	1636.85	2.6	1.4
2006Q1	17715.4	2170.59	405.479	1765.12	4.2	1.3
2006Q2	18221.4	2130.34	414.889	1715.45	4.8	1.3
2006Q3	16828	1890.15	353.34	1536.81	5.3	1.3
2006Q4	18846.1	1864.11	370.444	1493.66	5.7	1.3
2007Q1	18059.1	1858.65	382.791	1475.86	5.8	2.1
2007Q2	18372	1650.83	379.446	1271.39	6.2	2.1
2007Q3	18941.1	1638.93	404.037	1234.89	6.7	2.1
2007Q4	20287.9	1762.22	464.457	1297.77	7.3	2.1
2008Q1	19878	1650.43	433.215	1217.22	8.5	2.2
2008Q2	18822.4	1628.16	440.206	1187.96	9	2.2
2008Q3	19654.7	1693.76	474.233	1219.53	9.4	2.2
2008Q4	19309.8	1361.58	376.706	984.874	9.6	2.2
2009Q1	18667.4	1327.32	333.219	994.101	10.1	1.4
2009Q2	17990.2	1545.46	359.629	1185.83	9.9	1.4
2009Q3	19825	1729.45	425.601	1303.85	9.4	1.4
2009Q4	21412.3	1590.31	406.367	1183.95	8.6	1.4
2010Q1	19895.1	1574.79	388.327	1186.46	5.9	1.8

2010Q2	20229.2	1629.57	404.068	1225.5	5	1.8
2010Q3	21081.5	1769.72	407.488	1362.23	4.5	1.8
2010Q4	21393.2	2001.95	468.698	1533.25	4.2	1.8
2011Q1	21472.9	2252.64	456.45	1796.19	4.7	1.8
2011Q2	20811.9	2692.2	575.057	2117.14	4.8	1.8
2011Q3	23035.4	3359.09	1109.29	2249.8	5.1	1.8
2011Q4	21484.3	3054.99	924.459	2130.53	5.4	1.8
2012Q1	23894.7	3302.27	1041.79	2260.48	6.5	2.2
2012Q2	22114.3	3191.12	991.572	2199.55	6.7	2.2
2012Q3	22044.6	3183.61	1093.57	2090.04	6.8	2.2
2012Q4	23144.4	3109.09	1094.05	2015.04	6.7	2.2
2013Q1	23211.8	3103.41	1136.73	1966.67	5.9	1.6
2013Q2	23309.6	3022.17	1102.52	1919.65	5.7	1.6
2013Q3	25426.5	2992.42	1088.55	1903.87	5.5	1.6
2013Q4	24370.9	3017.57	1085.85	1931.72	5.4	1.6
2014Q1	24950.2	2884.41	1016.62	1867.79	5.7	1.2
2014Q2	24458.9	3001.31	1079.77	1921.54	5.5	1.2
2014Q3	26199.9	3039.97	1062.19	1977.79	5.2	1.2
2014Q4	26827.7	3207.98	1076.01	2131.97	4.8	1.2
2015Q1	26535.4	3304.42	1108.53	2195.88	3.3	2
2015Q2	26184.3	3480.79	1268.87	2211.92	3.2	2
2015Q3	27746.7	4348.6	2181.04	2167.56	3.3	2
2015Q4	28107	4199.54	1935.37	2264.17	3.8	2
2016Q1	27814.7	3851.51	1720.88	2130.63	4.7	0.8
2016Q2	26068.9	4174.32	1737.02	2437.31	5.8	0.8
2016Q3	27674.4	4577.35	1796.06	2781.29	7.3	0.8
2016Q4	28189.8	4766.22	1791.73	2974.5	9.1	0.8

Figure 1. CUSUM Model 2 (General Debt) ARDL Residuals

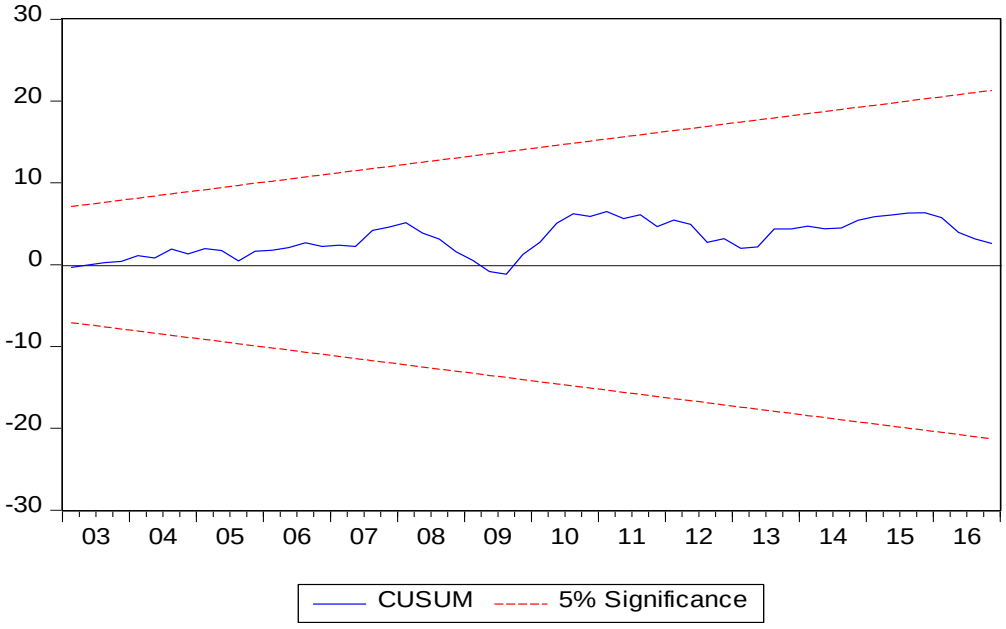

Figure 2 CUSUM of Squares Model 2 (General Debt) ARDL Residuals

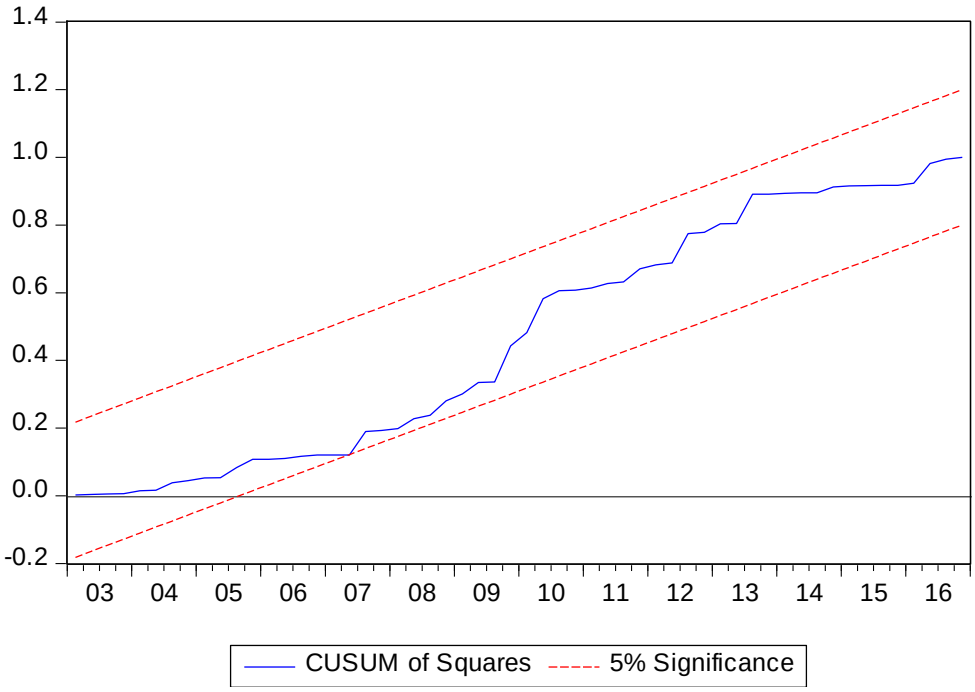

Figure 3 CUSUM Model 3(Foreign Debt) ARDL Residuals

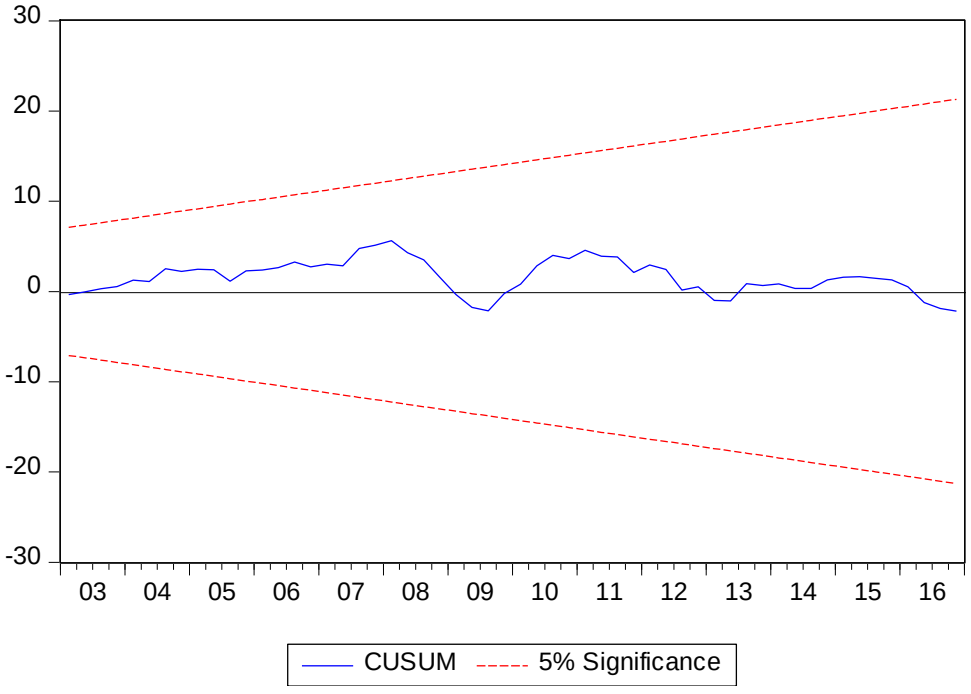

Figure 4 CUSUM of Squares Model 3(Foreign Debt) ARDL Residuals

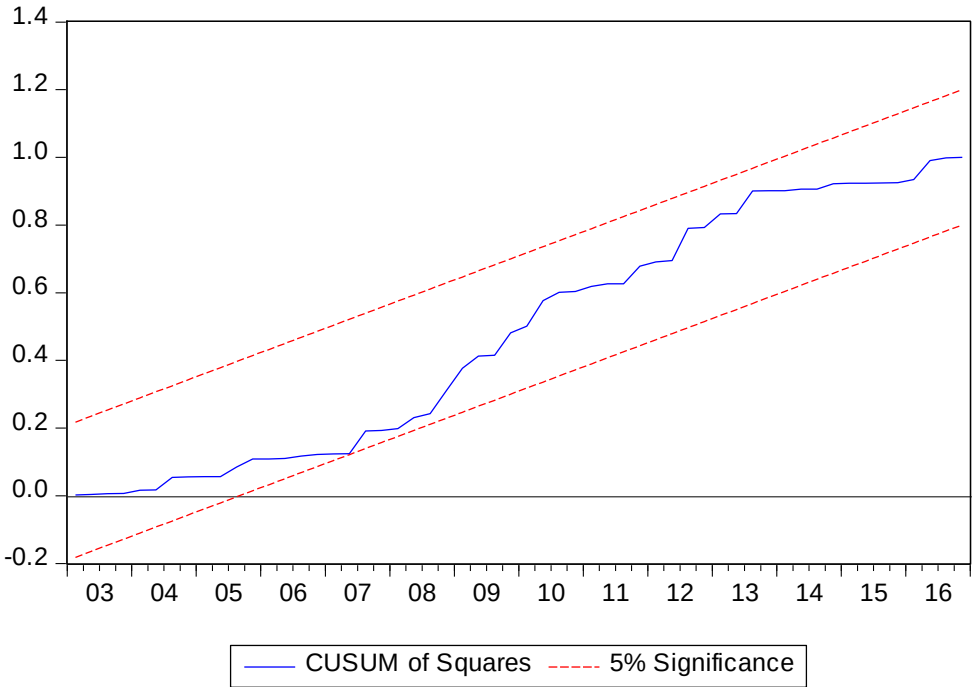

Figure 5 CUSUM Model 4(Local Debt) ARDL Residuals

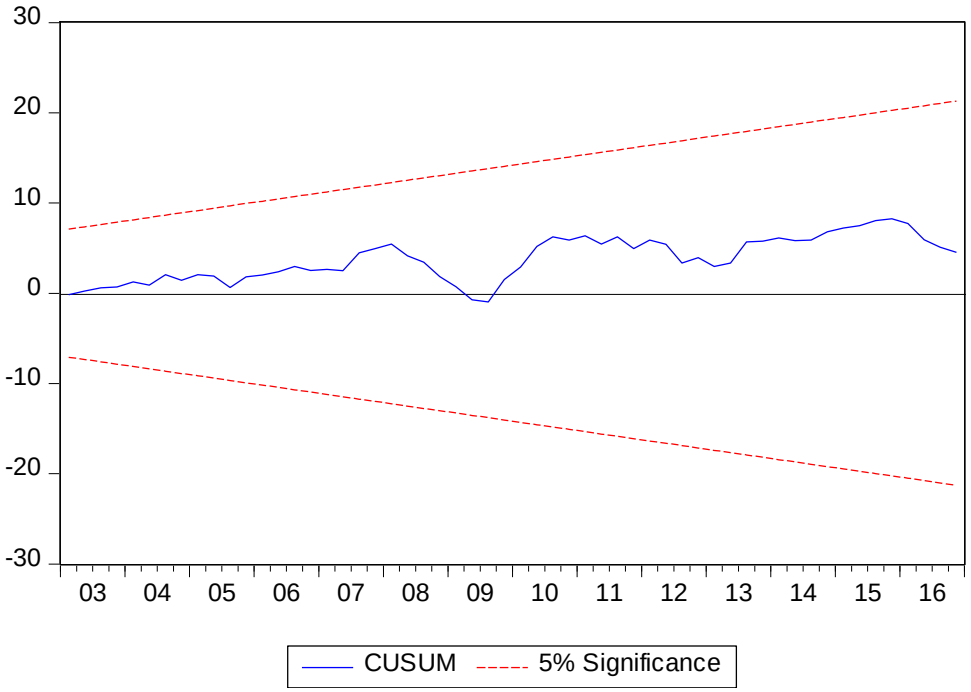

Figure 6 CUSUM of Squares Model 4(Local Debt) ARDL Residuals