

BUDGET DEFICIT AND ECONOMIC GROWTH IN NAMIBIA

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ABSTRACT

The study provides an assessment of the relationship between budget deficit and economic growth in Namibia, using time series quarterly secondary data covering the period, 1990 to 2015. The study employed the Auto Regressive Distributed Lag (ARDL) Bounds Test and estimated the coefficients of the variables from the Error Correction Model in examining the relationship between budget deficit and economic growth. According to the cointegration test, the result has shown that past budget deficit and past Population growth has a negative and effect and that current Trade balance has a positive effect on economic growth in the short run. The overall findings indicate that budget deficit negatively affects economic growth. This is in conformity with the Neo-Classical Theory, which holds that fiscal deficit leads to low GDP. The study therefore recommends that government expenditure be invested in developmental infrastructure that will give positive results in the future.

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List of abbreviations

ADF - Augmented Dickey Fuller

ALRD - Auto-Regressive Distributed Lag

ARDL BT - Auto-Regressive Distributed Lag Bounds Test

BD – Budget Deficit

CUSUM - cumulative sum of recursive residuals

CUSUMSQ - cumulative sum of recursive residuals of squares

ECM - Error Correction Model

ECT – Error Correction Term

GDP- Gross Domestic Products

LGPD – Natural logarithm of GDB

LPG – Natural Logarithm of Population Growth

LTD – Natural Logarithm of Trade

MPC - Marginal Propensity to Consume

PG – Population Growth

PP – Phillips Perrons

SACU- Southern African Customs Union

SADC – South African Development Community

SSA - Sub-Sahara Africa

UN- United Nations

VAR – Value at risk

VECM – Vector Error Correction Model

CHAPTER 1: Introduction

1.1 Background of the Study

At the global level, sustainable economic growth and development are important macroeconomic variables that are being pursued by all nations (Leamer, 2009). Economic growth in its entirety is measured by the Gross Domestic Product (GDP), and is determined by different factors such as: public expenditure, capital formation, private or public investment, employment rates, population growth, inflation, trade, exchange rates, etc. All such factors impact the economy differently. GDP refers to the total amount of finished good and services produced by a country within a specific period, but are normally measured (Leamer, 2009). As an instrument to finance economic growth, most developing countries use fiscal deficit, which is defined as the difference between the total revenue and total expenditure of the government (Mboga, 2015).

In comparison to the developed countries, a study conducted by Berry (2014) revealed that the remarkable success of western economies was built by the increase in population. It is assumed that this was made possible through the exploitation of slavery. Noteworthy, trade liberalization through the reduction of trade barriers has become a popular economic policy for developing countries (Herath, 2012). Consequently, most developing countries implement free trade policies to boost their economic growth and reduce the unemployment rate.

Namibia is an upper middle-income country that is located in the Southwest of Africa. It covers an area of approximately 824, 290 km², and has a population of approximately 2,3 million people, according to the projections for the year 2016 (United Nations, 2015). Namibia obtained its independence in 1990 from the South African colonial rule. In terms of natural resources availability, Namibia can be viewed as a rich country, as it produces a diversity of resources such as diamonds, uranium and other minerals, and has agricultural and fisheries products such as beef, crops, fruits and fish, which also contribute to the GDP.

As it is the case with many African countries, Namibia is faced with many economic challenges, such as low economic growth, high poverty rate, unequal distribution of wealth

and income, and high unemployment (Christiansen, 2012). Since its independence, Namibia has been striving to achieve sustainable economic development through implementing its national development plans, as outlined in its developmental framework, known as 'Vision 2030' (Christiansen, 2012).

A report by Schade (2017) from the Economic Association of Namibia, revealed that Namibia's population growth has dropped from 3.6 % per annum between 1981 and 1991 to 1.4 % between 2001 and 2011. According to that report, the economic growth outperformed the population growth, which resulted in an increased average in per-capita income. Generally, the size and growth rate of the population significantly impacts the country's ability to reach its developmental objectives. It is therefore worthwhile to realise that a large population with a low dependency ratio can positively contribute to economic growth, while a large population with a high dependency ratio can negatively affect the economic growth of a country (Savas, 2008).

The Namibian economy is closely linked to that of South Africa, as most of its goods are imported from and exported through South Africa. Since independence, the Namibian dollar has been pegged to the South African Rand under a fixed currency regime (United Nations, 2015). Interestingly, Namibia's credit rating has been among the highest in the Southern African Development Community (SADC) Region. However, in 2016 Namibia's rating was downgraded by Moody to Baa3- citing: Erosion of Namibian fiscal strength due to sizable fiscal imbalance and increasing debt burden, limited institutional capacity to manage the shock and address long-term structural fiscal rigidities and risk of renewed liquidity pressure in the coming years (Ministry of Finance, 2017). Baa3 refers to a credit rating used by Moody's Investor Service for long-term bonds and some other investments (Elkhoury, 2008)

According to KPMG (2016), the Namibian budget deficit became alarming since 2014, when the government realised that the country is facing an economic challenge and that it needs to safeguard against public spending. In 2016, the budget deficit reached 4.88 Million Namibian dollars (N\$), decreasing by N\$ 82 million since 2015. The national debt stated rising in 2006, when it was recorded at N\$ 2,015 million, which is equivalent to 24.39% of GDP. In 2016, the Namibian economy decreased by 0.2%, compared to the 6.1% growth in 2015. In terms of the national GDP, the growth rate averaged 4.71% from 1990 to 2016.

There are various factors that contribute to the increase of the national budget in Namibia, as a result causing the budget deficit. Such factors include:

- An increase in salaries and wages for government employees;
- Infrastructure development programs; and
- Interest payments and waiving of revenue efforts (International Monetary Fund, 2018)

Over the past years, there have been notable significant differences between the projected and actual annual economic growth rate. In such situations, the Namibian government's income has always been lower than the projected, which resulted in high budget deficits, and eventual increased national debt, higher than the foreseen.

Since the global economic crisis in 2008, the fiscal policy has been used as a major microeconomic tool to sustain economic growth in Namibia. To curb the situation, government deficits in Namibia are financed through local or foreign borrowings (International Monetary Fund, 2018). Nevertheless, despite its usefulness, borrowing has a lot of consequences, one of which is the increase in interest rates, given the high risk involved in view of repayment (Ball & Mankiw, 1988). In efforts to avoid high interest rates, private firms have a tendency of borrowing and investing in profitable ventures, which however negatively impacts the economic growth, by slowing it down (Ball & Mankiw, 1988). As an approach during the times of economic downturn, tax relief to individuals and adjustments to personal income tax brackets, are considered as options to generate income, such that the tax burden is minimised, especially on the low-income earners, in order to boost their disposable income.

A study conducted by (Amwaama, 2018) on the relationship between budget deficit and economic growth in Namibia revealed that, budget deficit negatively affects economic growth, her study revealed that budget deficit plays a significant role in determining economic growth in the short run and long run. Similarly (Molefe, 2016) conducted a study on the relationship between budget deficit and economic growth in South Africa, and found a negative relationship. These similar findings can be highlighted since Namibia's economy is closely linked to that of South Africa.

The current economic status in Namibia highlighted in the above background, and the subsequent concern led to the need for this study. Therefore, the aim of this study was to assess the impact that budget deficit has on economic growth in Namibia.

1.2 Budget Deficit

Budget deficit refers to the negative difference between government revenues and spending in a single year, which implies that there is an increase in debt over a particular year (Ball & Mankiw, 1988). What usually happens is that, even when government revenue falls, there are usually key budgetary expenditure that remain stable, such as expenditure under the national defence, police, education and health institutions, which cause budget deficits. By definition, a budget is a plan stating how the government intends to meet its obligations given the expected economic developments during the relevant fiscal year (The World Bank, 2007). As new information arises during the fiscal year, meeting those goals efficiently requires reactions and flexibility in the execution of the budget.

Budget deficit is a major economic problem for many developing countries that needs to be put under control (Barisk, 2017). It is mainly used as a fiscal policy measure, but at the same time can cause various economic challenges. The persistence of budget deficit in Namibia has led to the accumulation of national debt. As a result, debt servicing took up a significant portion of government expenditures, putting additional pressure on the government's already depleted budget (Christiansen, 2012). The re-occurrence of budget deficit over the years causes what is referred to as 'build up debt'. The build-up debt adds pressure on the current year's expenditure, causing an even larger budget deficit.

According Edwin et al. (2017), most countries in Sub-Sahara Africa (SSA) rely on debt to finance budget deficits. Therefore, efforts must be made to instil among political leaders in the sub-Saharan African countries, fiscal discipline and high responsibility when it comes to the handling of public funds. In addition, fiscal administration has a significant impact on government budgets, which is why governments in the SSA countries should make efforts to improve their tax ratios. Consequently, effective measures of fiscal administration need to be put in place to ensure autonomous tax administration to promote voluntary tax compliance

and autonomy. This will eventually increase the tax base of a country, and will to a large extent reduce over-reliance on deficit financing.

1.3 Statement of Research Problem

Budget deficit is an economic challenge facing many developing countries in Africa (Todora & Smith, 2011). Namibia is not an exception to this. Most governments use debt to finance budget deficit, and this is a risky approach. Namibia has been experiencing budget deficit over the past decades, which has led into many economic challenges. Along with the budget deficit have been various economic risks, which resulted in the government being forced to implement austerity measures, by cutting its spending to keep the budget within sustainable limits set for key indicators of financial health (United Nations, 2015). According to a report by (Deloitte, 2018) the budget deficit in the 2015/2016 financial year was 8.3% of the GDP, while it stood at 6.4% in the 2016/2017 financial year . Those were the highest percentages seen since independence (Figure 1).

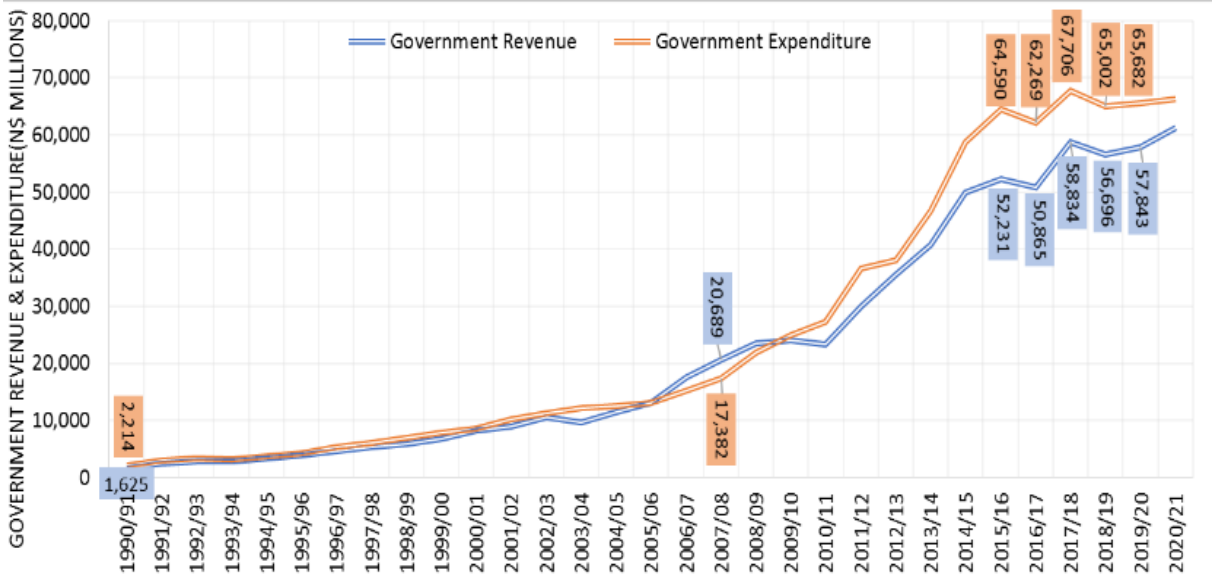


Figure 1: Government revenue and expenditure trend (Source: Namibia Ministry of finance)

The emphasis on the Namibian government to prioritise expenditure has left some developmental projects stranded, a situation that has become a national concern. At the moment, the public is worried about the economic situation that the country is currently in, and is questioning why the government has to take drastic measures such as cutting down on expenditure, which looks threatening to the social and economic well-being of the country.

Sadly, the economic growth of the country is currently being perceived to be progressing at a very low rate.

Despite such a situation, it is unfortunate that the government does not currently have enough resources to pay for the current on-going commitments (*Bank of Namibia, Economic Outlook Update, 2017*). Therefore, it is forced to prioritise expenditure, an exercise that will result in slowing down the economic growth. The current economic situation has necessitated this study, which has analysed the impact of the budget deficit on the economic growth in Namibia. The study has further examined the problems that have resulted due to budget deficit, and has proposed a remedial action for the country to move forward. This study has conducted an analysis that aimed to identify an acceptable level of deficit in Namibia, in order to guide policy makers and government to budget within the acceptable means.

The study attempted to answer the following questions:

1. Is there a relationship between budget deficit and economic growth in Namibia?
2. What is the causal relationship between budget deficit and economic growth in Namibia?

1.4 Research objectives and hypotheses

The overall objective of this study was to establish the effects of budget deficit on economic growth in Namibia in order to recommend a remedial action that will help the country to move forward. The specific objectives were to:

- 1) Examine the long-run and short-run relationship between budget deficit and economic growth in Namibia; and
- 2) Examine the direction of causality between budget deficit and economic growth.

1.4.1 Hypothesis

Based on the aforementioned objectives, the following hypotheses were formulated:

1. H_0 : There is no long-run and short-run relationship between budget deficit and economic growth in Namibia.
 H_1 : There is a long-run and short-run relationship between budget deficit and economic growth in Namibia.

2. H_0 : There is no causality between budget deficit and economic growth in Namibia.

H_1 : There is causality between budget deficit and economic growth in Namibia.

1.5 Significance of the Research

The study aimed to analyse the trend in the budget deficit observed since Namibia's independence, from the year 1990 to 2016. It also attempted to analyse the national budget performance over the stated period. This is the first time the Namibian economic situation is under an extensive threat, thus there is a need to develop a thorough understanding of the actual situation.

To date only one similar study done by Amwaama, (2018) has so far been found on same topic in Namibia,. This particular study will therefore primarily serve as an additional foundation for future scholars who will be interested in this topic, as they will use it as a baseline. Secondly, the study aims to encourage, arise and deepen interest in further research on the topic of budget deficit financing and sustainability policies for Namibia, and other African developing nations. The outcomes of this study will benefit the government, investors, policy makers, international agents, and the public at large, as it will help them establish an understanding of the determinants of budget deficit, how it affects the economy of a country and how to budget within the acceptable levels. It will seek to provide guidance on the formulation of effective policies aiming to manage the challenging economic situation, while at the same time avoiding the re-occurrence of a similar financial situation in Namibia.

1.6 Organization of the Research

Chapter 1 has presented an introduction and background of the study, focusing on economic growth, using examples of developing and developed countries. Under this chapter, the situation of economic growth in Namibia has been covered in more details. Apart from the introduction, the chapter has paid particular attention to the issue of budget deficit, starting with its definition and has highlighted its impact on the economic growth. Furthermore, a clear overview of the Namibian economic status has been given. In addition to the above content included, the chapter has presented a problem statement, which has shed light on the

current budgetary challenges facing Namibia, that have alarmed the public, to the point that the Namibian nation at large has become concerned about its current and future economy.

Following the problem statement are the research questions that the research attempted to answer, after which the research objectives and hypotheses were presented. The study tested two hypotheses, first of which was formulated under the assumption that there is a relationship between budget deficit and economic growth, while the second hypothesis was formulated based on the assumption that budget deficit has an impact on the economic growth of Namibia.

Finally, the chapter covered in details, the research significance. Under this section, the factors that necessitated the study were highlighted, along with the associated benefits of the study outcomes.

Chapter 2 presents the literature review, which covered a broad review of the available literature on the subject. The first part of the review looked at three schools of thoughts of the theoretical studies that are of relevance to the study focus i.e. budget deficit and economic growth. The three schools of thought been reviewed are: Neoclassical economics, Keynesians economics, and on Radical equivalence economics. Under such schools of thought, valuable explanations have been given on the relationship between budget deficit and economic growth. The second part of the chapter looked at the conclusions made from empirical studies done on the same topic, in relation to the available theoretical frameworks.

Chapter 3 presents the research methodology, and has provided in details the research design, the data collection techniques employed, as well as the methods used to analyse the data.

Chapter 4 has presented and analysed the research findings.

Chapter 5 has provided a summary of the whole research and has presented recommendations based on the research findings. The conclusion made by this study has been presented under this chapter.

CHAPTER 2: Literature Review

2.1 Introduction

The study sought to explore some of the theories in economics that study the relationship between budget deficit and economic growth. It has also looked at various views from empirical studies with evidence on the subject.

2.2 Theoretical Literature Review

As defined earlier, economic growth is the increase in the goods and services produced by an economy or a country over a period of time (Boldeanu & Constantinescu, 2015). It is measured by GDP. A question commonly asked by many scholars is: “How does a country increase its GDP to keep the economic growth trend upward?”. Three main economic growth theories have tried to answer this question, as follow: Classical Theory, Solow-Swan Growth Model, and Modern Day Theory.

2.1 Classical Theory

The Classical Theory was formulated as a combination of economics works done by the following economists: Adam Smith, David Ricardo and Robert Malthus in the late eighteenth and early nineteenth centuries (Harris, 2007). According to Harris, the Classical Theory states that every economy has a steady state of GDP, and any deviation from that steady state is temporary, and will eventually be returned to. The three economists have made such an assumption based on the fact that when there is growth in GDP, then the population will increase (Dao, 2012). An increase in the population will adversely affect the GDP because of the demand of the available limited resources from the large population. This will bring the GDP back to its steady state. The same will happen when there is GDP deviation below the steady level, thus the population will decrease, releasing the pressure on the resources. In return, the GDP will rise back to its steady level.

Lanza (2012) explained that the Classical Theory of economic growth is based on the existence of an economic activity that generates a surplus. Interestingly, the success of the

growth process depends on the reinvestment of this surplus back into the economy. The surplus also represents the main source of the government income.

2.2 Neo-Classical Theory

The Neo Classical Theory is also called the Solow-Swan Growth Model. This theory was developed by two economists: T.W Swan and Robert Solow (Bennett, 1996). Such a theory has identified that there are three factors that impact economic growth, which are: labour, capital and technology. However, it has placed emphasis on technological advancement. As part of this theory, it is believed that economic growth only takes place when there are technological advances, which however only happen occasionally. Under the same theory, an idea has been suggested, that if all nations get access to the same technology, then they are likely to have equal standards of living. Generally, Neoclassical models predict convergence between countries, meaning that poorer economies develop faster than richer ones (Piętak, 2014).

2.3 Modern Day Theory

The Modern Day Theory is newly emerging and is now spreading all over the world. It mainly emphasises the main channels of inducing growth through expenses (R and D expenditures) spent on research and development, particularly on the core components of knowledge innovation (Neveen, 2009). One of the focal channels of this theory is the impact made on the available goods and services, while the other channel is the impact made on the stock of knowledge phenomena.

Research has revealed that budget deficit has an effect on economic development (Hussain & Haque, 2017). Noteworthy, different schools of economic thought exist in literature on the relationship between budget deficit and economic growth. In essence, establishing a relationship between budget deficit and economic growth, with strong linkage to the current economic situation will allow policymakers to take up better decisions, useful for formulating public debt policies, while seeking to ensure favourable conditions for economic

development. The three schools of economic thought considered by this study are: Neoclassical Economics, Keynesian Economics, and Radical Equivalence Economics.

Neoclassical Economics

A group of economists called 'classical economists' developed a policy prescription about an economy that limits the role of government involvement in the market, as introduced by Adam Smith between 1723-1790. According to the Neoclassical economist Smith, the government is not to be assigned a role in the economy beyond its provision of basic services (public goods). Smith hailed as a father of classical political economy, where public budget was maintained and expenditure advise was provided, which is to be limited to the income available, while borrowing is only allowed in the emergencies (Khan & Aziz, 2011).

The Neoclassic theory was developed in the late 1950 to 1960 as part of an intensive research in the field of economic growth (Lanza, 2012). In general, the Neoclassical growth emphasises on capital accumulation and its related decision of saving as an important determinant of economic growth. The Neoclassical economy considers factors such as capital production and technology as determinants of economic growth (Bernheim, 1989). The Neoclassic approach believes that the accumulation of deficit results in crowding of private investment and decrease in savings. Based on this theory, a fall in savings raises interest rates, which reduces investments.

According to Bernheim & Kellogg (1989), the Neoclassical model has three central features. The first among others is that the consumption of each individual is determined as the solution to an intertemporal optimization problem, whereby both borrowing and lending are permitted at the market rate of interest. Secondly, individuals have finite lifespans. Each consumer belongs to a specific cohort or generation, and the lifespans of successive generations overlap. Thirdly, market clearing is generally assumed in all periods, such as week, month or year. It occurs in those market situations in which the amount demanded by consumers is equated to the amount supplied (Bernheim & Kellogg , 1989).

2.2.3 Keynesian Economics

The Keynesian economics approach according to Bernheim (1989) is based on a theory that gives a perspective that there is a propensity to consume what is available. A temporary reduction in tax for example, has a significant impact on economic growth. In such an approach, deficit stimulates the national income, savings and capital accumulation. In view of spending, an increase in government spending increases aggregate demand, further leading to economic downturn and an in output (Bernheim, 1989)

Upon the development of the Keynesian economics theory, an argument was made by a British economist John Maynard Keynes in the 1930s, that the deficit by government spending would raise the aggregate demand, and consequently the employment level in the economy (Khan & Aziz, 2011). It was during a time of great economic depression that the Keynesian theory was developed. During that period, private investment out of the government saving was not effective, due to the fact that it would slow down the multiplier effect of investment as the determinant of a multiplier is the marginal propensity to consume (i.e. $mpc + mps = 1$). By definition the marginal propensity to consume (MPC) is the proportion of an aggregate raise in pay that is spent by consumers on goods and services through consumption, instead of saving it (Kenton, 2018). Government spending through created money would keep the economy growing in accordance with the multiplier value. Therefore Keynes was the first economist to provide theoretical confirmation of the relationship between deficit and public debt (Khan & Aziz, 2011). Even before the onset depression, Keynes argued in favour of deficit financed public works to raise employment. In matters regarding public policies, the great depression was the most serious challenge faced by a classical principle. Unfortunately the market was unable to offer any solution to the crises of demand deficiency, thus the demand induced investment was not expected to be forthcoming.

Keynesians argue that when private spending falls, government must increase its spending to close the gap that will be brought by since the private is not spending to prevent the economy from going into a recession (Ireland, 2011). This method encourages business and consumer

optimism, and shifts out aggregate demand. Most importantly, reducing government spending has a positive effect, which can be seen in the basic macroeconomic equation below:

$$Y = C + I + G + (X - M)$$

Where Y is GDP, C is consumption, I is investment, G is government spending, while (X is Export and M is import).

The Keynesian economists implied that government does not only have the obligation, but also the ability to address the problem of economic instability (Khan & Aziz, 2011). For this reason, the Keynesian economy was introduced as a short-term solution but it continued to be relevant because of the need to enhance public spending during World War 2, which was followed by a depression and post war recovery instability (Khan & Aziz, 2011).

2.2.4 The Ricardian Equivalence

One of the economic theories is the Ricardian equivalence, that was developed by a British economist known as David Ricardo (Dome, 2003). Based on this theory, deficits and taxes are equivalent in their effects on consumption. Generally, the redistribution of tax burden across generations is influenced by the size of debt. This is due to the fact that there is always a balance between debt and consumption, which has led to an assumption that a change in public debt will be compensated by a change in private contribution (Barro, 1989). Therefore if private savings rise by less than the tax cut, the desired national savings decline. This is expected in a close economy that a real interest rate would have to rise to restore equality between the desired national saving and investment demand (Barro, 1989). The higher real interest rate crowds out investment, which in the long run will show up as a small stock of productive capital.

In a small country like Namibia that is operating in an open economy, the budget deficit or social economic programs would have a small effect on the real interest rate in the capital markets. That is why substituting budget deficit with tax cuts leads to increased borrowing from abroad, rather than to high real interest rate. This means the budget deficit will lead to current account deficits.

There are five major theoretical objections raised against the Ricardian Equivalence theory, as discussed by Barro (1989). Such objections are listed below:

- 1). People do not live forever, and hence do not care about the taxes that are levied after their deaths.
- 2). Private capital markets are imperfect, with the typical person's real discount rate exceeding that of the government.
- 3). Future taxes and income are uncertain.
- 4). Taxes are not lump sum, since they depend on income, spending, wealth and others.
- 5). The Ricardian Equivalence results rely on full employment.

2.4 Empirical Literature Review

The subject of budget deficit and economic growth is one of the topics that remain standing in the study of economics. Given the situation, there have been several argumentative topics on the subject of budget deficit and economic growth, however, no conclusion has been reached. Other literature on the effect of population growth and trade on economic growth were also included because the study has employed those two variables as control variables.

2.4.1 Empirical Literature from the International Perspective

China is known to have the largest economy in the world. Evidence is available from the study which was conducted by Tasos (2014), which aimed to establish a relationship between economic growth and government's debt in China using error correction and granger casualty; the study found that the relationship between government's debt and long-term growth is weak for the debt-to-GDP ratio. Hassan (2014) conducted a study on the effect of government's deficit on the GDP in the United States using data from 1930 to 2010. The study found that deficit spending has a negative effect on economic growth, which can be attributed to unemployment, interest rate and inflation as control variables.

A study conducted by Rahman (2012) in Kenya concluded that fiscal deficit can increase economic growth as the resources are expended towards providing infrastructure, education, health, and as the harmonisation of private and social interest is increased. Using the error correction and co-integration approaches, the study found a positive relationship between economic growth and budget deficit in Kenya. Another study on Kenya was conducted by Winnyrose (2014) on the relationship between budget deficit and economic growth in Kenya. Using regression analysis, he found that budget deficit financing has a positive and significant impact on economic growth. His study also found that human capital creation through employment is positively related to economic growth. The study also found a positive and significant effect of investment in the country, on the growth of the economy.

Muyamba (2016) conducted a study aiming to determine the effects of public expenditure on economic growth in Zambia. His results revealed an existing long-run relationship between public expenditure and economic growth in Zambia. He concluded that public expenditure is an important tool in achieving economic growth, as supported by the research findings. Prior to Muyamba's study, Caleb et al. (2014) conducted a study of the co-integration analysis of the relationship between international trade and economic growth in Zambia. Their study revealed an existence of a long-run relationship between the GDP and trade. Interestingly, the results have shown that a stable macroeconomic environment encourages growth in trade and economic growth. A study done by Ntshakala (2014) measured the effects of domestic debt on economic growth in Swaziland, and found that domestic debt is an important determinant of economic growth, to an extent that increase in domestic debt will increase economic growth. This means there is a positive relationship between the two variables. The study however found that an increase in government expenditure has a negative impact on the economy.

Olayiwola (2011) analysed the challenges of budget deficit and socio-economic development in Nigeria. Using a T 21 model, this study found that Nigeria performed fairly well between the years 1990 to 2008. The model also indicated that budget deficit is an expansionary fiscal policy instrument that leads to increased GDP. According to the model, budget deficit can also be used to enhance economic development, as it can increase life expectancy, and can contribute to the reduction of a population living below the poverty line and the employment rate. Mboga (2015) in a study that aimed to establish the effects of budget deficit on economic growth in East Africa found that budget deficit is common in the annual fiscal budgets for

most developing countries in East Africa. The study has further shown that there is a positive relationship between budget deficit and economic development in East Africa, as supported by the Keynesian Theory. As a conclusion for this study, fiscal deficits could increase economic growth, as it enhances productivity by contributing to infrastructure development, education, and health; and can potentially harmonise private and social interest. Onwioduokit & Bassey (2014) in their contribution to the subject of fiscal deficit and economic growth, conducted a study to estimate the threshold level of fiscal deficit that is conducive to the economic growth from 1980-2009 in Gambia. Their study concluded that fiscal deficit positively affects real economic growth, with a lag of one year. The study supports Keynesian economics, as it indicates that the fiscal deficit was due to finances that were borrowed and used towards the development of economic and social infrastructure in Gambia.

Molefe (2016) examined the nature of the relationship between South Africa's budget deficit and economic growth for the period 1985 and 2015. The study incorporated variables such as the gross capital formation, real interest rate, and unemployment rate to assist explaining the behaviour of budget deficit towards economic growth. The study employed the Vector Error Correction Model (VECM) technique to discover the relationship between the variables used. A significant negative relationship between budget deficit and economic growth was discovered, which has shown that an increase in budget deficit results in a reduction of economic growth in South Africa. The study results support the neoclassical hypothesis that indicated that budget deficit is detrimental to the growth and development of a country. The conclusion made by Molefe (2016) is very unique from other developing African countries discussed that supports the Keynesian theory on economic growth. There are other studies with similar conclusions such as Edwin et al. (2017), who studied the relationship between Ghana's budget deficit and the economic growth observed from 2000 to 2015, using quarterly data. An Autoregressive Distributed Lag modelling approach was used to analyse the data, after which the data trend revealed a high budget deficit, followed by low economic growth since 2000. The econometric results have shown a negative long-run relationship between budget deficit and economic growth, in conformity with the prediction of Neo-Classical economics that high budget deficit does not necessarily translate into high economic growth in the long-run. Rising debt poses sustainability changes for the future of Egypt, as confirmed by Neveen (2009) in his study on debt sustainability and economic growth in Egypt. Using

annual data for the period 1985-2006, an empirical analysis confirmed a strong and negative impact of public domestic debt on economic growth, indicating crowding out argument.

Thamae (2013) analysed the growth of government spending in Lesotho, whose study results revealed that government spending positively contributes to income and population growth, however, it will negatively affect tax shares in the long-run. This can be supported by the idea that as government spends its budget, people get jobs and the population increases because people have income to support their children. However, this will have a negative impact in the long-run, as the tax will have to be increased to finance past government spending

Leonard & Mashakada (2013) examined the macro-economic effects on fiscal deficits and the contribution of bad governance to micro economic instability in Zimbabwe. The study found that fiscal deficit and bad governance have been contributing to the deterioration of micro-economic condition in Zimbabwe since 1908. In addition, the researchers noted that bad governance, corruption and land reform programs in Zimbabwe contribute to the deterioration of macroeconomic instability in Zimbabwe. Leonard and Mashakada identified a strong need for fiscal adjustment and political reforms as an approach to the restoration of the national economy. For this reason, policy makers need to be equipped with the required skills in order to handle microeconomic challenges that can sustain the future of the Zimbabwe.

Peterson (2017) in his article titled “The role of population on economic growth” supports the idea that population growth is an important factor in the overall economic growth, and may even contribute to increased growth in per capita output in some cases. Savas (2008) found evidence of a long-run relationship between the population and real per capita income, and has provided strong support for the hypothesis that population is driving growth. Overall, the study revealed a strong and positive relationship between population and economic growth in the Central Asian Countries over the period of the years 1989 to 2009. Both studies used population as a variable and concluded that population growth positively affects economic growth. Menike (2018) contradicts the finding by Peterson (2017) and Savas (2008) as her study concluded that population growth can be an obstacle to economic growth in Sri Lanka. Although highlighting that ‘an increase in a population is a blessing’ it is important to note that for a country to reach a state of development the speed of population growth should be reduced. Herath (2012) found a positive and significant relationship between trade and

economic growth in Sri Lanka. Using the simple regression, he indicated that trade liberalization has increased the economic growth by 2.41%.

2.4.3 Empirical evidence from Namibia

There is very little literature available on budget deficit and economic development in Namibia; therefore creating a need to study the relationship between budget deficit and economic growth in Namibia in order to minimise the knowledge gap. A report by Namibia's National Planning Commission (NPC) (2015) indicated a slow economic growth in the transition period after independence, with GDP growth per capita averaging between 3.6% and 1.1% respectively, as seen in Figure 2 below. Interestingly, there was an accelerated growth per capita between 2000 and 2015, with an output growth averaging 4.8% and per capita growth averaging 3.1% (Figure 2). During that period, the economy experienced modest growth, estimated at 2.7 %.

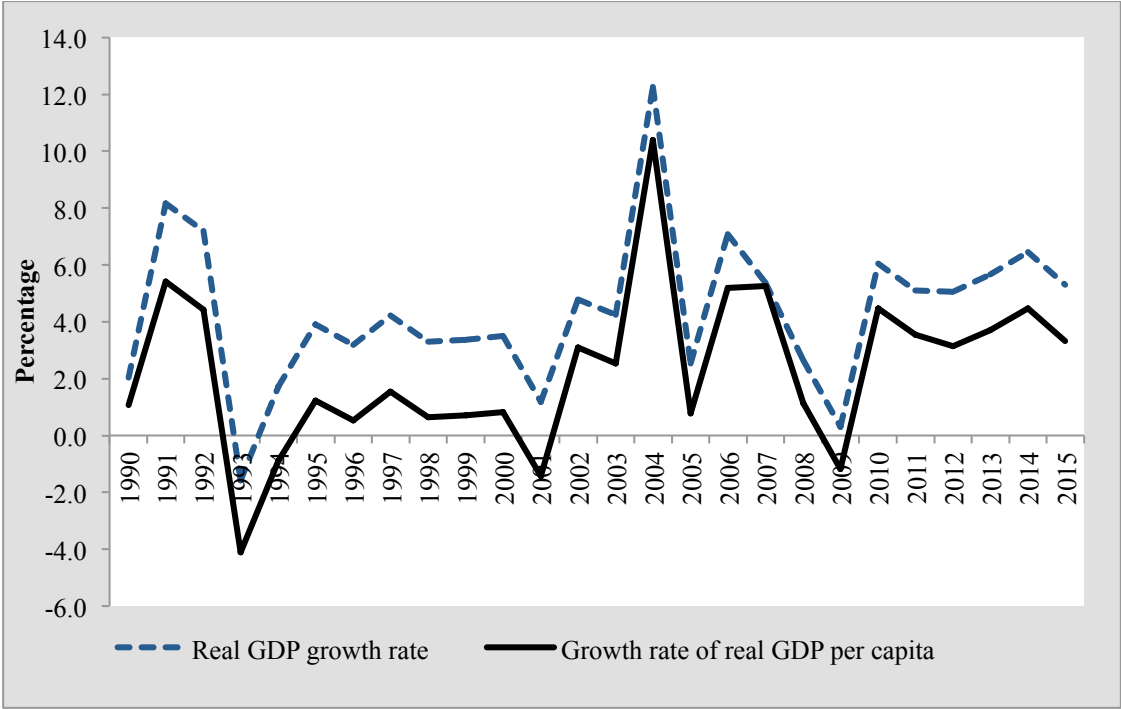


Figure 2: Growth rates of real GDP and real per capita GDP (Source: *Namibia statistic Agency (2017)*)

The slow economic growth in Namibia since its independence led the country into debt. According to the a report by Namibia National Planning Commission (2015), the national debt stock stood at N\$536 million in 1991, and increased more than a tenfold to N\$5,701.4 million by the end of 2000 respectively. The build-up in debt continued to grow over the past

years, with total central government debt having reached N\$ 29,903.3 million as of 31 December 2013.

According to KPMG (2017), in 2016, public expenditure amounted to 35% of the GDP, a figure that is considered high, compared to the average expenditure of 26.4% for developing countries. The same source revealed that the average expenditure for low-income countries is 20.8%, while that of the middle-income countries is 27.5%. However, an increase in the growth rate of government expenditure has resulted in budget deficits. It is therefore against this background that a suggestion was made for the Namibian government to introduce measures aimed at reducing government expenditure (Namibia National Planning Commission, 2015). The reduction of government expenditure on wages and salaries directly reduces the government's contribution to the economy, and to the reduction of its demands in the economy, which leads to reduced output and imports. The same applies to the reduction of government spending on goods and services, since it can have negative multiplier effects on the output of suppliers to the government.

The proposal for a reduction in government spending should be applauded. Reducing government spending should be seen as an effort to reverse the situation that has been persisting over the years in the structural budget balance. Reports on the national economic status have shown that there have been major yet inflexible public spending components, dominated by the recurring expenditures such as the public wage bill (Ministry of Finance, 2017). This is a risk to fiscal sustainability, and ultimately macroeconomic stability, particularly if revenue collection declines, and there are no alternative revenue sources. It is interesting to note that the Namibian current account deficit over the years has shown strong domestic demands for imports, necessitated by the increased investment in public infrastructure development. One of the sources of revenue for Namibia has been the Southern African Customs Union (SACU). However, with the global economic crisis, the SACU's Common Revenue Pool (CPR) registered a deficit of R7.4 billion in the 2016/2017 financial year, which led to the reduction of its contribution share to Namibia by 17.8% (SACU, 2017). With such a decline in revenue from SACU, domestic tax has been the main contributor to revenue growth.

Although Namibia mainly depends on tax for revenue, its tax base has been reported to be small (United Nations, 2015). Such a small tax base is attributed to high unemployment rate

and low tax level, meaning the income tax revenue is not sufficient. The same applies to domestic taxes on goods and services revenue, whereby public expenditure has increased from 34.0 % during the 2011/12 financial year to 40.0% in the 2015/16 financial year. As a result, final consumption expenditure was the main contributor to GDP between the years 2011 and 2016, which increased by 8.0 % during those 6 years. Sadly, Namibia's labour market has been stagnant and unresponsive to the relatively strong economic growth during the recent years, which can be linked to the ineffectiveness and limitations of fiscal policy interventions in enhancing the economy's production capacity to create employment opportunities (International Monetary Fund, 2018).

Based on the projections made for Namibia's demographic information, there is a declining fertility rate, low population growth rate, high dependency ratio, high youth unemployment rate, high death rate among the working-age population, and a high educated work force (NPC, 2015). It is essential to note that, there is a relationship between demography and economic growth (Prskawetz et al., 2006). Therefore, all the identified factors should be taken into consideration when estimating the national economic growth. In general, it is believed that the economic outcomes of a country point to economic policies, and are reflections of the general quality of life of the population, in order to enable governments to maximise benefits from population structures and allocate its resources wisely (Chang et al., 2014).

Nyambe & Kanyeumbo (2015) conducted a study on the role of government expenditure, household and inflation in the growing Namibian economy. Using multiple regression models, the results speculated an existing positive relationship between government expenditure, household expenditure and economic growth. Their study also found that inflation on its own has a negative relationship with economic growth. Similarly, Shafuda (2015) conducted a study that investigated a relationship between government spending and economic growth, which revealed a positive long-run relationship. Based on the study results, he suggested that there is a need for promotion of government intervention on economic expansion and discouraged the promotion of blind government spending.

Another study was conducted by Kaakunga (2006) on the relationship between fiscal policies and the long-term growth of the economy of Namibia, using the analytic endogenous growth model. This study revealed that expenditure on education, transport, communication and defence have a positive impact on economy, while expenditure on agriculture and health have

a negative impact on economic growth. As a conclusion of the study, overall capital expenditure promotes economic growth. Furthermore Amwaama (2018) investigated the relationship between economic growth and budget deficit during the period 1993 to 2015, and found the relationship to be negative. In her study she used debt, inflation and gross fixed capital formation as control variable; this study confirms a Neoclassical economy, which indicates that fiscal deficit leads to a fall in GDP growth.

The last study on the relationships between economic growth and another variable reviewed under this chapter was a study conducted by Kalumbu and Sheefeni (2014) on the relationship between trade and economic growth. This study found a negative, but insignificant relationship between economic growth and the terms of trade in Namibia, which could have resulted because of large quantities of imports compared to the quantity of export from Namibia

2.5 Chapter Summary

This chapter reviewed the following economic schools of thought: Neo-classic Economics, Keynesian Economics, and Radical Equivalence. The Neo-classic and Radical equivalence economics are concerned with long-term analysis of economic growth, while the Keynesian economics is concerned with the short-term analysis of budget deficit. The chapter further reviewed the three main economic growth theories, as follows: Classical Theory, Solow-Swan Growth Model, and Modern Day Theory. The three theories have something in common, such that they have all identified the factors that influence economic growth.

The Keynesian economics tackles the problem of demand deficiency quickly, and can instantly release the extra liquidity in the economy. The major limitation for this policy is that, it injects extra money in the economy in excess of goods and services. This is a clear indication of the problem facing the market but is only a short-term solution. According to the Neoclassical theory, high budget deficits lead to crowding effect in the short run, and shifts tax burdens in to the future, as suggested by the Ricardian Equivalence. The Neo-classical economy stresses that government should only spend what it has and avoid going into debt by spending what it does not have.

The review made under this chapter has gathered evidence on various factors that influence economic growth. There is sufficient evidence to confirm the relationship between budget deficit and economic development, as indicated by various studies reviewed under this chapter. The most significant observation, which is also relevant to this study, is that there is a consensus that budget deficit has an impact on economic growth. Most studies done in developing countries have shown a positive relationship between budget deficit and economic growth. A lot of literature reviewed has also revealed a relationship between budget deficit and economic growth in African countries, especially the East African countries. Nevertheless, there is shortage of literature on the relationship between budget deficit and economic growth in the SADC Countries, including Namibia. Therefore this study will help add to the available literature on the impact of budget deficit on economic growth in Namibia, and help future researchers add to the knowledge gap on the subject.

CHAPTER 3: Methodology

3.1 Introduction

A research methodology systematically explains various ways of how the research problem is solved (Kothari, 2004). Under the research methodology, various steps that were adopted by the research are explained, and the logic behind them. The main objective of the study was to analyse the impact of budget deficit on economic growth in Namibia over 26 years, using quarterly data time series drawn from the period 1990-2016. The time series has made it possible to analyse the short and long-term developmental impacts that took place during that period. Such a series has aided in answering the research questions given in the introductory chapter. This chapter has further explained the type of data that been used, how it was collected, and the tools that were used to analyse the data.

3.2 Research Design and Sample Period

The study follows a deductive research approach. A deductive research approach uses theories to speculate answers to perceived problems, and are tested by observation and experiment (Kothari, 2004). Even though it may be possible to confirm the possible truth of a theory through observation, which supports it, theories can be falsified and totally rejected by making observations that are inconsistent with its statement, and therefore it must be tested.

The study is purely quantitative, and it used a correlation design to analyse the relationship between budget deficit and economic growth in Namibia. Generally, a quantitative research is an approach that involves the generation of data in quantitative form, which can be subjected to rigorous quantitative analysis in a form of rigid fashion. The variables that were used are: GDP and debt, which were quantified, and their relationship was statistically determined.

The study used time series analysis to test the assumption of the Keynesian theoretical framework in determining the relationship between budget deficit and economic growth. Secondary data from 1990 to 2016 was collected which were on the following: GDP, budget

deficit, population growth and trade balance. The data was obtained from the Ministry of Finance and Bank of Namibia. All data was obtained was in the local currency, the Namibian dollars (N\$).

3.3 Analytical Framework

3.3.1 Regression Equation

In this study, a multiple linear regression formula was used. Generally, there are only two types of variables, namely: independent variable, which is the cause of the behaviour of the other, the depended variable. The study also used Population Growth and Trade as control variables that are believed to have an effect on the dependent variable. If consumer spending falls in an economy, then spending on all goods and services, including trade (imports) will fall (Peterson, 2017). This will reduce a current account deficit, ultimately reducing the government debt stock. During the ancient times, population growth was considered as an important determinant of economic growth because it was used as a source of labour and production. If more people are available to work then it was deemed to be a great influence on poverty reduction (Skare & Blazevic, 2015).

In addressing the objectives, this study adopted the modelling approach as used by Fatima and Ahmed (2012), with slight modification to it. The multiple linear regression model specification is given by:

$$LGDP_t = \beta_0 + \beta_1BD_t + \beta_2LPG_t + \beta_3LTD_t + \xi_t \dots\dots\dots (1)$$

Where GDP refers to Gross Domestic Product, while BD refers to Budget Deficit.

Budget deficit is measured as the gap by which government total expenditure exceeds the government’s total generated revenue. A deficit indicates the amount of money that the government will need to borrow during the financial year. PG denotes population growth, which refers to growth in the size of the population, while TD denotes Trade Balance, which is an activity of buying, and selling goods and services. ξ denotes the error term while t represents time.

The important microeconomic indicator of an economy is fiscal deficit, which is also associated with other microeconomic indicators used in the first equation like Trade balance and Population growth.

Population growth is an important factor in economic growth, which can contribute to increased or decreased capital output. A larger population can have an advantage on economic growth, particularly because the more the people, the more manpower and more value added to the economy (Berry, 2014). At the same, time a large population with limited resources puts pressure on the limited resources of the country, because the government often spends more on food, health and education.

In general, GDP increases when there is trade surplus, that is when the value of imported goods and services exceeds the total value of foreign goods and services that domestic consumers buys (Herath, 2012). If domestic consumers spend more on foreign products (exports) than domestic producers sell to foreign (imports), then there is a trade deficit, which decreases the GDP.

Table 1: Description of variables

| Variable | Variable Symbol | Expected Sign |
|------------------------|------------------------|----------------------|
| Gross Domestic Product | GDP | LGDP |
| Budget Deficit | BD | BD |
| Population Growth | PG | LPG |
| Trade Balance | TD | LTD |

3.4 Estimation Approach

3.4.1 Stationarity test

Firstly, the VAR lag selection criteria was used in order to determine the optimum number of lags that would be used in all subsequent tests.

Secondly, the study tested for unit root in order to establish the order of integration of the variables. Performing such a test is an important pre-condition especially for running the ARDL Bounds Test (ARDL BT). This is because for one to run it, it is required that none of the variables be integrated of I (2) (Pesaran, 1997). The stationarity step is hence indispensable when dealing with time series data in order to mitigate spurious regressions. Conventionally, most economic researchers carry out the Augmented Dickey Fuller (ADF) and the Philips-Perrons (PP) test for unit root. Both the ADF and PP have got their own disadvantages, since they tend to under-reject the null hypothesis of unit roots (Marketa & Darina, 2016). The flows in these tests led to the development of more other sophisticated tests, such as the DF-G, Ng Peron, Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Clemente et al., (1998), which work best when the sample size is small. Given the aforementioned limitations, this study used the ADF together with the KPSS test as a robustness check for unit root, since it is considered to be more superior to the ADF test.

The ADF and the KPSS tests are used to test for unit root so as to establish the level at which the underlying variables become stationary (Marketa & Darina, 2016). The two hypotheses jointly tested were: the null (H_0) of unit root and the alternative (H_1) of no unit root. Under the ADF test, we fail to reject the null hypothesis when the value of the computed t-statistics is less than the value of t-critical. Additionally, the p-value can also help to guide the decision of whether the data is stationary or not. In this case, any p-value less than 0.05 would imply a rejection of the H_0 . In contrast, the KPSS test does the opposite of the ADF test by rejecting the H_0 when the computed t-statistics is lesser that the t-critical. Another difference is that, the KPSS does not provide p-value as is the case of the ADF test. The hypotheses under the KPSS test are as follow:

H_0 : Variable is stationary (no unit root)

H_1 : Variable is non-stationary (has unit root)

3.4.2 Cointegration Approach

The ARDL BT was used in the cointegration approach to estimate the parameters of concern, as the third test. By using the Distributed Lag Model, it means the inclusion of more than one lag of the repressor in a regression function of the model helps to determine the effects of a change in a policy variable over another (Shittu et al., 2012). This methodology proposes an

analysis of the null hypothesis of no co-integration through a joint significance test of lagged levels of the variable. The selected ARDL (k) long-run reduced-form equation is:

$$\Delta LGDP_t = \alpha_0 + \alpha_1 LGDP_{t-1} + \alpha_2 BD_{t-1} + \alpha_3 LPG_{t-1} + \alpha_4 LTD_{t-1} + \sum_{i=1}^k \delta_i \Delta Z_{t-i} + \xi_{1i} \dots \dots \dots (2)$$

Where,

$$Z_t = (LGDP_t, BD_t, LPG_t, LTD_t,) \dots \dots \dots (3)$$

Where:

- k is the number of optimum lag orders determined by the various information criteria;
- Δ denotes the first difference operator; while
- δ is the parameter meant to capture the short-run relationship and the variables as previously defined.

The null hypothesis of no cointegration amongst the variables in equation 2 is defined as:

$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ (Null, i.e. no long-run relationship)
 $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$ (Alternative, i.e. there is a long-run relationship).

The hypothesis in equation 2 (H_1) was tested using F-test (Wald test). Pesaran et al. (2001) provides two sets of critical value for different model specifications. The first set assumes that all variables are I (0), entailing that there is no cointegration amongst the underlying variable. The second set assumes that all variables are I (1), implying the existence of cointegration amongst the variables. Given the sample size of this study (95 observations), this paper finds it appropriate to use the critical value provided by both Narayan (2005) and Pesaran et al. (2001). The critical value in Pesaran are mostly suitable for larger sample sizes, whereas those in Narayan are based on a relatively smaller sample size of 30-80 observations.

With regard to the Wald test, if the computed F-statistic for the joint significance lies outside the critical bounds, a final decision regarding cointegration can be reached, without

one bothering to know whether the integrated variables are of order I (0) or I (1) In other words, when the computed F-statistic is larger than the upper bound critical value, then the null hypothesis is rejected, meaning the variables are cointegrated. On the other hand, if F-statistic falls below the lower bound, then the null hypothesis of no cointegration amongst the variables cannot be rejected. However, if the F-statistic lies within the lower and upper bounds, the test is inconclusive. This means, other supportive tests should be carried out to reach a conclusion.

If the cointegration property is supported, an error correction model will be evaluated (Pesaran, 1997). In this case, the short-run dynamic parameters can be obtained by estimating an error correction model from the long-run estimates. The reduced form short-run model can be specified as:

$$\Delta LGDP_t = \alpha_0 + \sum_{i=1}^k \Omega_1 \Delta BD_{t-i} + \sum_{i=0}^k \Omega_i \Delta Z_{t-i} + \varphi ECT_{t-1} + \xi_{1i} \dots \dots \dots (4)$$

Where,

- Ω_i measures the short-run dynamics coefficients of the model's convergence to the equilibrium;
- φ measures the speed of adjustment parameter needed obtain long-run equilibrium in an event of a shocks in the system; while
- ECT is the error correction term obtained from long-run form of the equation. The error correction term directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variables

3.4.3 Causality Test

The four test was performed in order to test for the causal relationship between economic growth and budget deficit, whereby the Pairwise Granger causality test was employed. This test assisted to determine whether one time series is useful to predict the future of another series (Gujarati, 2004). The following subsequent models with respect to Granger causality were applied:

$$LGDP_t = \sum_{i=1}^n \phi_i BD_{t-i} + \sum_{j=1}^n \phi_j LGDP_{t-j} + \mu_{1t} \dots \dots \dots (5)$$

$$BD_t = \sum_{i=1}^n \phi_i BD_{t-i} + \sum_{j=1}^n \phi_j LGDP_{t-j} + \mu_{2t} \dots \dots \dots (6)$$

Lastly, the model's robustness was determined by checking for autocorrelation, heteroscedasticity, the model's stability and specification. All analyses were performed using a statistical and econometric software package called EVIEWS (Version 10.1).

CHAPTER 4: Discussion of Findings

4.1 Introduction

This chapter presents the findings based on the methodology explained in the preceding chapter. The chapter presents and discusses the findings of various tests used, such as: lag length test, unit root test, ARDL BT to cointegration, the Granger causality test, and the model's diagnostics.

4.2 Descriptive Statistics

The table below presents the descriptive statistics of the data used for the study. The mean, median, maximum and minimum of our variables appear not to be symmetric, as summarised in Table 2. On the Skewness and Kurtosis, the results for LGPD, LPG & LTD indicate a normal skewness and platykurtic distribution, particularly because all Kurtosis values for different parameters i.e. LGDP (1.87), LPG (1.65) & LTD (2.57), except for BD that has a skewness of 1.172, are less than 3. In the case of the BD, we can easily say that the distribution is negatively skewed and leptokurtic, given the greater Kurtosis observed (6.40 > 3), (Table 2).

The hypothesis for the Jarque-Bera test, which tests whether the series are normally distributed has shown a normal distribution (Table 2). The probability variables: BD, LDT and LPG are below the 5% significant level. Therefore, the null hypothesis of the normal distribution of those three variables should be rejected because the probability values are highly statistically significant. However, the probability value for LGDP is above the 5% significant level. As a conclusion, the null hypothesis of the normal distribution of the LGDP should not be rejected.

Table 2: Descriptive Statistics

| | LGDP | BD | LPG | LTD |
|-------------|-----------|-----------|-----------|-----------|
| Mean | 10.45937 | -1427.164 | 0.715107 | 0.000248 |
| Median | 10.47629 | -630.8000 | 0.800018 | -0.008007 |
| Maximum | 11.89559 | 3306.298 | 1.373118 | 0.069661 |
| Minimum | 8.882892 | -12423.00 | 0.127395 | -0.039329 |
| Std. Dev. | 0.875706 | 2935.828 | 0.390172 | 0.028076 |
| Skewness | -0.067855 | -1.717593 | -0.204500 | 0.767553 |
| Kurtosis | 1.865499 | 6.395117 | 1.648196 | 2.568994 |
| Jarque-Bera | 5.494023 | 98.16916 | 8.394170 | 10.69892 |

| | | | | |
|--------------|----------|-----------|----------|----------|
| Probability | 0.064119 | 0.000000 | 0.015039 | 0.004751 |
| Sum | 1056.396 | -144143.6 | 72.22580 | 0.024999 |
| Sum Sq. Dev. | 76.68604 | 8.62E+08 | 15.22344 | 0.078826 |
| Observations | 101 | 101 | 101 | 101 |

Note: LGDP= Natural logarithm of GDP; BD= Budget Deficit; LGP= Natural logarithm of Population Growth and LTD=Natural logarithm of Trade

4.3 Lag length selection test

Before conducting the ARDL BT to cointegration, it was imperative to identify the optimum number of lags to be included under the unit root test and other subsequent tests. Table 3 below shows the test results obtained for various information criteria.

Table 3: VAR lag length selection criteria

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|-----------|-----------|-----------|------------|------------|------------|
| 0 | -677.7130 | NA | 14.94584 | 14.05594 | 14.16211 | 14.09887 |
| 1 | 295.4868 | 1846.070 | 4.01e-08 | -5.680140 | -5.149272 | -5.465483 |
| 2 | 521.9375 | 410.8797* | 5.24e-10* | -10.01933* | -9.063768* | -9.632948* |
| 3 | 529.4375 | 12.98959 | 6.28e-10 | -9.844071 | -8.463814 | -9.285963 |
| 4 | 543.6375 | 23.42269 | 6.57e-10 | -9.806958 | -8.002006 | -9.077124 |

Source: Author's own compilation using Eviews. Note: * indicates lag order selected by the criterion. Where, LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike Information Criterion; HQ: Hannan-Quinn Information Criterion; and SIC: Schwarz Information Criterion.

The results from Table 2 indicate that all the lag selection tests have chosen lag 2 as the optimum number of lags. Given that the SIC is a more parsimonious model, this study finds it robustly safe to use lag 2 as the optimum lag to be applied in all the subsequent tests that will follow.

4.3 Unit root (non-stationarity) test

The ADF and KPSS stationarity tests were carried out using an equation with an intercept, and the model with an intercept and a trend, and the outcomes are presented in the Table 4. The ADF test results in Table 3 have shown that all variables have become stationary after the first difference. The outcomes obtained by the ADF tests were further verified by a more

powerful test, the KPSS unit root test. Following such a test, a conclusion was reached that most variables are still non-stationary in the level form, but after the first difference they all become stationary. In this study, the final verdict for the decision of the order of integration was decided upon by the KPSS test, due to its superiority over the ADF. With regard to the order of integration, Table 4 shows a mixture of I (0) and I (1). The mixture in the order of integration makes the application of the ARDL BT to cointegration an appropriate methodology for this study to employ.

Table 4: Unit root test: ADF & KPSS

| Name of Variable | Model Specification | Unit root test | | | | Order of Integration |
|------------------|---------------------|----------------------|------------------------|-----------------------|----------------------|----------------------|
| | | ADF | | KPSS | | |
| | | Levels | First difference | Levels | First difference | |
| LGDP | Intercept | -1.0984 (-2.8922) | -3.0109** (-2.8922) | 1.2279 (0.4630) | 0.3973** (0.4630) | I (1) |
| | Trend & Intercept | -1.5942 (-3.4578) | -3.7702** (-3.4510) | 0.1851* (0.2160) | | I (0) |
| BD | Intercept | -0.2350 (-2.8922) | -2.5377 (-2.8922) | 0.4890* (0.7390) | | I (0) |
| | Trend & Intercept | -0.9665 (-3.4578) | -2.9598 (-3.4578) | 0.1841* (0.2160) | | I (0) |
| LTD | Intercept | -0.6155 (-2.8972) | -3.2735** (-2.8972) | 1.1021 (0.4630) | 0.0557** (0.4630) | I (1) |
| | Trend & Intercept | -2.6735 (-3.4655) | -3.2357* (-3.1594) | 0.1503*** (0.2160) | | I (0) |
| LPG | Intercept | -1.4700 (-2.8909) | -1.5883 (-2.8951) | 1.1908 (0.4630) | 0.1071** (0.4630) | I (1) |
| | Trend & Intercept | -2.4429 (-3.4558) | -1.5959 (-3.4623) | 0.1212** (0.1460) | | I (0) |

Note: LGDP= Natural logarithm of GDP; BD= Budget Deficit; LGP= Natural logarithm of Population Growth and LTD=Natural logarithm of Trade. Sources: Author's own compilation using Eviews; Note: *, **, and ***, denotes rejection of a unit root null hypothesis at critical values of 10%, 5%, and 1% respectively. In instances whereby a variable is stationary in all levels, ** is chosen.

4.3 Correlation Test

Table 5 below shows the Correlation test results, for a test that was performed to see if there is multicollinearity between variables. The results have shown that BD, LPG and LGDP are negatively correlated. On the contrary, the LTD and LGDP are positively correlated. Using a threshold of 0.70, the values of the estimated correlation coefficients are all below 0.70, hence the independent variables are not strongly correlated to result in multicollinearity.

Table 5: Correlation Test results

| Correlation | LGDP | BD | LPG | LTD |
|-------------|-----------|-----------|-----------|----------|
| LGDP | 1.000000 | | | |
| BD | -0.508082 | 1.000000 | | |
| LPG | -0.602924 | -0.144302 | 1.000000 | |
| LTD | 0.875009 | -0.686103 | -0.235753 | 1.000000 |

Note: LGDP= Natural logarithm of GDP; BD= Budget Deficit; LPG= Natural logarithm of Population Growth and LTD=Natural logarithm of Trade. Sources: Author's own compilation using Eviews;

4.5 ARDL cointegration test results

The appropriate number of lags for the ARDL (2, 1, 0, 0, 1) model under consideration was based on the automation option provided in Eviews. The cointegration relationship amongst the variables is evident, as seen in Table 6 below:

Table 6: ARDL Bounds Test for cointegration

| Variables | F-Statistics | | Result | |
|-----------------|------------------|-------------|----------------|-------------|
| F(BD, LDT, LPG) | 3.5892*, **, *** | | Cointegration | |
| | Pesaran | | Narayan | |
| Critical Value | Lower Bound | Upper Bound | Lower Bound | Upper Bound |
| 1% | 3.65 | 4.66 | 3.91 | 5.04 |
| 5% | 2.79 | 3.69 | 2.79 | 3.67 |
| 10% | 2.37 | 3.20 | 2.37 | 3.20 |

Source: Author's own compilation using Eviews; Note: *, **, ***, denotes the rejection of the null hypothesis of no cointegration at the critical values of 1%, 5% and 10% respectively. The, critical values obtained from Narayan (2005) is for 80 observations; Case II is for restricted constant and no trend (k=6).

When comparing the calculated F-Statistics results from Table 5 against the critical values obtained from both Pesaran and Narayan, the results have revealed that the F-Statistics is beyond the upper bounds at all levels of significance in both cases. This implies that the null hypothesis of no counteraction must be rejected, with a conclusion that the variables bear a long-run equilibrium relationship.

4.6 Long-run coefficient using ARDL approach

Upon establishing the validity of a long-run relationship, it was essential to estimate and examine the marginal effects of all the macroeconomic variables on economic growth using equation (2), with particular interest on budget deficit. Table 7 presents the long-run

coefficients that were estimated through the test. Based on the results presented in Table 7, the LTD (trade) and is significant and positively related to LGDP (economic growth) while LPG (population) is significant and negatively related to LGDP (economic growth) in a long-run relationship. This indicates that an increase in trade enhances growth. These result are consistent with the findings of Caleb et al. (2014) , who found a long-run relationship between GDP and trade in Zambia. Herath (2012) found a positive and significant relationship between trade and economic growth. The results have shown that population growth can decrease economic growth, as supported by Menike (2018), whose study revealed that population growth can be an obstacle to economic growth.

Table 5: Estimated Long-run Coefficients (2, 1, 0, 0, 1)

| Dependent Variable: LGDP | | | |
|---------------------------------|--------------------|--------------------|--------------|
| Variables | Coefficient | t-Statistic | Prob. |
| BD | -0.000135 | -1.287606 | 0.2011 |
| LPG | -1.509152 | -2.621749 | 0.0103** |
| LTD | 18.02563 | 2.141302 | 0.0349** |
| C | 8.854503 | 5.628669 | 0.0000*** |

*Note: LGDP= Natural logarithm of GDP; BD=Natural Logarithm of Budget Deficit; LGP= Natural logarithm of Population Growth and LTD=Natural logarithm of Trade. Source: Author's own compilation using Eviews; ** and *** denotes significant at 5% and 10% respectively*

4.6 Short-run Dynamics of Economic Growth in Namibia

The study further analysed the nature and direction of the short-run dynamics of selected macroeconomic variables by estimating the error correction model (ECM). Under the ECM method, the long-run relationship amongst the variables in the model is ascertained by a negative sign and a significant probability value of the error correction term (ECT). Equation (4) was used to estimate the general short-run dynamics, and the results are presented in Table 8.

Table 6: Estimates from the Error Correction Mechanism (2, 2, 0, 2, 2, 2)

| Variables | Coefficient | t-Statistic | Prob. |
|------------------|--------------------|--------------------|--------------|
| D(LGDP(1)) | 4.162095 | 6.963523 | 0.0000 *** |
| D(LGDP(2)) | -3.542512 | -6.435574 | 0.0000*** |
| D(BD) | 5.20E-06 | 3.157387 | 0.0022*** |
| D(BD(-1)) | -2.86E-05 | -6.164901 | 0.0000*** |
| D(BD(-2)) | 2.22E-05 | 6.193563 | 0.0000*** |
| D(LPG) | -0.044649 | -1.708754 | 0.0911* |
| D(LTD) | 0.759234 | 2.679683 | 0.0088*** |

| | | | |
|-------------------------|-----------|-----------|-----------|
| ECM(-1) | -3.658442 | -5.823804 | 0.0000*** |
| C | 0.010666 | 1.882478 | 0.0632* |
| R ² | 0.689358 | | |
| Adjusted R ² | 0.652812 | | |
| F-Statistics | 18.86271 | | |
| Prob>F | 0.0000 | | |
| DW | 1.570462 | | |

*Note: LGDP= Natural logarithm of GDP; BD= Budget Deficit; LTD=Natural logarithm of Government debt stock; LIMP= Natural logarithm of import, and LGRN= Natural logarithm of government expenditure. Source: Author's own compilation using Eviews; *** and * denotes significance at denotes significance at 1% and 10% respectively.*

The results in Table 8 illustrate that the ECM is negative (-3.658), and statistically significant. Even though the ECM figure is too large we can be comfortable because the result gives a negative figure and the R² is within the acceptable range (0 -100%) , the result of R² is 0.65, indicating that the depended variables explain 65% of the variability of our dependent variable, meaning the regression model is a good fit to the data. This reaffirms the results obtained by the ARDL BT to cointegration that there is a stable long-run relationship between economic growth and the macroeconomics variables used in this study this similar to the findings of (Onwioduokit & Bassey, 2014). More precisely, the coefficient of the ECT indicates that a quarterly disequilibrium in economic growth from the previous period's shocks on the macroeconomic variables will adjust back rapidly at an unusual fast speed (approximately 367%) to the long-run equilibrium levels in the current quarter. In the same vein, Table 6 also reveals that past economic growth, current budget deficit and LTD (Trade) have a positive and a significant effect on the current economic growth in the short-run. However, the past budget deficit and current population growth have negative significant effects on economic growth. The reason why the past BD is found to have a negative significant effect on economic growth may be due to the debt serving done by the government in honour of its debt obligations from other countries in form of interest repayments. Likewise, the fact that the current population growth negatively affects economic growth makes sense because most of the people in Namibia depend on government for social safety as confirmed by (Atanda et al., 2008). According to the Economic Association of Namibia Report (2017), the overall unemployment rate in Namibia currently stands at 28.1%, of which the rate of youth unemployment is at 37%. This low rate in youth unemployment could be one of the contributing factors to economic slowdown.

4.7 Wald Coefficient test

Firstly, the Wald coefficient test was carried out on the budget deficit variable, which is the variable of interest for this study. It was tested by imposing a restriction on its coefficient, and the results are presented in Table 9. Secondly, the Wald coefficient test was carried out on lagged coefficients of all macroeconomic variables in equation (2) in order to examine and validate the significance of the effect of these coefficients on economic growth in Namibia. The results of these tests are presented in Table 9. Such results further re-affirm that the coefficient of BD is significant, and different from zero.

Table 7: Wald test on the budget deficit coefficient

| Estimated equation: $LGDP_t = \beta_0 + \beta_1 BD_t + \beta_2 LPG_t + \beta_3 LTD_1 + \xi_t$ | | | |
|---|----------|---------|-------------|
| Null Hypothesis: $\beta_1 = 0$ | | | |
| Test statistics | Value | Df | Probability |
| t-statistic | 3.157387 | 85 | 0.0022 |
| F-statistic | 9.969093 | (1, 82) | 0.0022 |
| Chi-square | 9.969093 | 1 | 0.0016 |

Source: Author's own compilation using Eviews

The results presented in Table 10 below show that the null hypothesis should be strongly rejected, given the fact that the p -value for the F-statistics is less than 5%. Such results can be attributed to the fact that the macroeconomics variables used in this study are insignificant in determining economic growth. This implies that there is enough evidence to accept the alternative hypothesis, that the macroeconomic variables in this study jointly and significantly affect economic growth in Namibia.

Table 8: Wald test for the joint significance of the macroeconomic variables

| Estimated equation: $LGDP_t = \beta_0 + \beta_1 BD_t + \beta_2 LPG_t + \beta_3 LTD_t + \xi_t$ | | | |
|---|----------|---------|-------------|
| Null Hypothesis: $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ | | | |
| Test statistics | Value | Df | Probability |
| F-statistic | 5.905568 | (4, 85) | 0.0003 |

| | | | |
|------------|----------|---|--------|
| Chi-square | 23.62227 | 4 | 0.0001 |
|------------|----------|---|--------|

Source: Author's own compilation using Eviews

4.8 Granger causality test

This study further investigated the nature of the causal relationship between the regressors (independent variables) and the regressands (dependent variables), using equations 5 and 6. However, since the focus is on the variable of interest and not necessarily on the control variables, only the results involving the variable of interest and the regress and were displayed, as presented in Table 11. The results in Table 11 fail to reject the null hypothesis of the Pairwise Granger causality. Hence, it is safe to conclude that there is no causality between BD and LGDP, as well as between LGDP and BD.

Table 9: Granger Causality

| Pair wise Granger Causality Test, Lags: 2 | | | |
|---|-----|--------------|-------------|
| Null Hypothesis: | Obs | F-Statistics | Probability |
| BD does not Granger Cause LGDP | 99 | 0.75105 | 0.4747 |
| LGDP does not Granger Cause BD | | 2.10119 | 0.1280 |

Source: Author's own compilation using Eviews

4.9 Diagnostic tests

With regard to the diagnostic checks, the model is fit and passes all the diagnostic scrutiny. Looking at the coefficients of determination i.e. R^2 (0.689) and its adjusted R^2 (0.653), it is safe to say that the model does not at all suffer from issues of multicollinearity. The R^2 indicates that almost 68% of the variations in LGDP is jointly explained by all the explanatory variables in the model. Moreover, the F-Statistics test, whose significant value is above 8% also affirms the goodness of fit of the model. The DW statistics of 1.60 shows that the model does not suffer from autocorrelation, hence the results can be relied upon. The absence of serial correlation is further confirmed by the Breusch-Godfrey LM test, which tests the autocorrelation in the errors of a regression model. shown in Table 12. To test for

heteroscedasticity, the White Heteroscedasticity test was employed, and the outcome shows that the error term is homoscedastic. Further to that, a Ramsey RESET test was performed, which has shown that the model has been correctly specified. Table 12 summarises the diagnostic test results.

Table 10: Diagnostic test

| | | | |
|--------------------------|---------------|---------|----------|
| White Heteroscedasticity | Chi-square: | 8.8712 | (0.5444) |
| Breusch-Godfrey LM test | Chi-square: | 15.4835 | (0.0004) |
| Ramsey RESET test | F-statistics: | 0.38184 | (0.5383) |

Note: The values in brackets are probability values. Source: Author's own compilation using Eviews.

In summary, the results from Table 12 indicate that the model has passed the diagnostic tests, for the following reasons: The residual is homoscedastic, there is no serial correlation, and there is no specification error in the way the overall model was specified.

4.10 Stability tests

Lastly, a stability test was conducted on the residual of the long-run model, and the model was found to be stable when the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of recursive residuals of squares (CUSUMSQ) were applied. Figures 3 and 4 illustrate the findings.

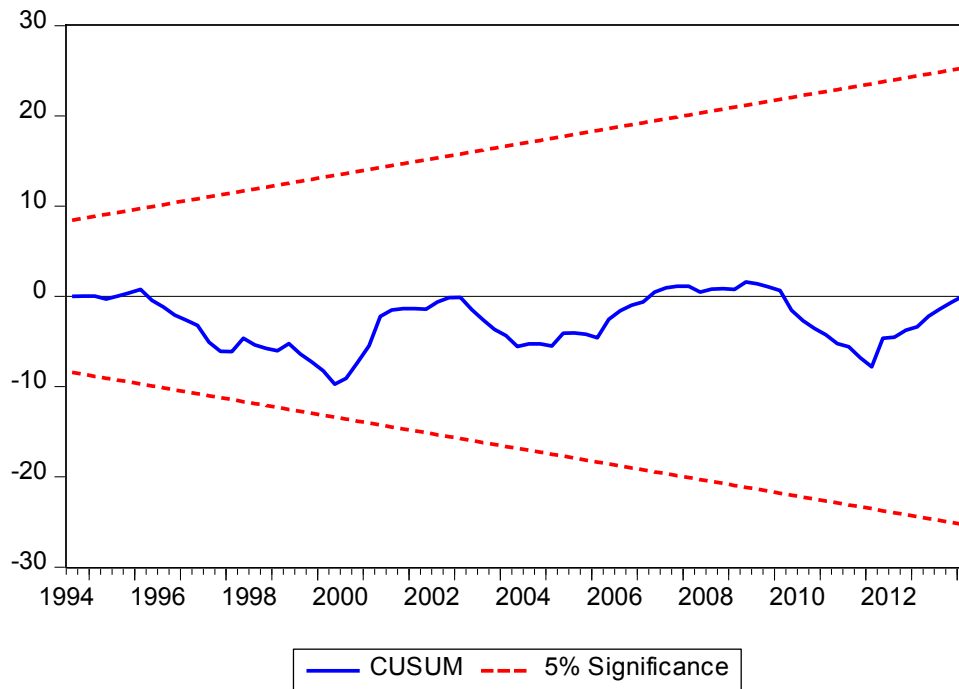


Figure 3: CUSUM

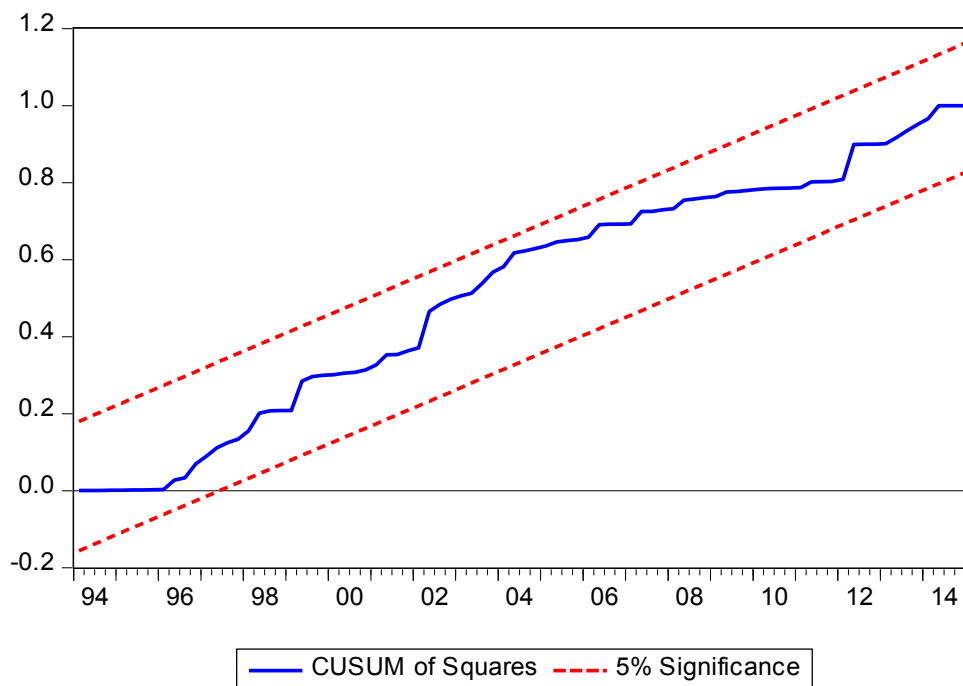


Figure 4: CUSUMSQ

The above figures were plotted using equation 3. It can be seen that both the CUSUM and the CUSUMSQ plot are within the critical bounds of 5% significance level. This once again, implies that the model is correctly specified and stable.

Hypothesis

Based on the results above, we reject the null hypothesis, which states that there is no relationship between budget deficit and economic growth; and accept the alternative hypothesis, which says there is a relationship between budget deficit and economic growth in Namibia.

CHAPTER 5: Conclusion and Recommendations

5.1 Introduction

The purpose of this study was to examine the relationship between budget deficit and economic growth in Namibia. Achieving the objective could only be possible through the analysis of annual data from 1990 to 2015 by testing such a relationship, using the Eviews software.

5.2 Summary and conclusion of the study

The main objective of this study was to examine the effects of budget deficit on economic growth in Namibia; while the specific objectives were to determine whether there is a long-run and short-run relationship between budget deficit and economic growth in Namibia, and to examine the direction of causality between budget deficit and economic growth. In order to achieve the objectives of this research the following tests were carried out on E-Views:

- The first step was to use the VAR lag selection to determine the number of lags to be used in all the subsequent tests.
- The second step was to run the Augmented Dickey-Fuller test to establish the order of integration of the variables under the research and determine whether there is a need for a subsequent test.
- The third step was to run the ARDL BT to determine the long-run and short-run relationship between BD and Economic growth in Namibia.
- The fourth was to test the casual relationship between budget deficit using the Granger causality test.

The results of the various tests conducted on the secondary data collected from Namibian Ministry of Finance and Bank of Namibia revealed the following:

1. According to the ARDL test, there is a negative and long-run relationship between budget deficit and the economic growth. This study is in agreement with a recent study done by (Amwaama, 2018) on the same topic, which found a negative relationship between budget deficit and economic growth. Theoretically, the study is

in conformity with studies from other developing countries such as Edwin et al., (2017), Molefe (2016) and Neveen (2009) that supports the Neo-classical Theory. The Neo-classical theory states that budget deficit lowers GDP growth.

2. The Granger Causality Test results concluded that there is no causal relationship between budget deficit and economic growth, as also concluded by Ossen (2009) and Odhiambo et al., (2013).
3. According to the ECT test, past BD and past population growth have significant negative effects on the economic growth. The reason why past budget deficit is found to have a significant negative effect on economic growth may be due to debt servicing done by the government in honour of its debt obligations from other countries in form of interest repayments. Debt is mostly accumulated in the past years and realised the proceeding years. As of population growth, the majority of the Namibian people live in poverty and heavily depend on government for their socio economic wellbeing. Government expenditure is mostly high on education and health, which results in government borrowing funds to cover its expenditures. Trade balance is found to be a positive and significant relationship to economic growth in Namibia.

Overall the study found a negative relationship between budget deficit and economic growth in Namibia with a very rapid adjustment of GDP to the macroeconomic variables. This is an indication that budget deficit negatively affects economic growth in Namibia. This is an indication that as the deficit becomes larger each, the government might compromising on its capital accumulation and savings are considered as important determinant of economic growth under the Neoclassical Theory.

There is a lot of shortcomings associated with deficit financing, however evidence from some studies such as Solomon & De Wet (2004), Winnyrose (2014) and Mbonga (2005) that support the Keynesian Theory has shown that budget deficit can also be a positive contributor to economic growth, provided the borrowed funds are used for the purpose they were initially intended for when borrowed.

5.3 Policy Recommendation of the Findings

The results indicated that deficit in Namibia should encourage enhanced and collective revenue collection efforts from the Private and Public sectors, and Non-governmental organisations. Even though the results have shown that budget deficit positively affects economic growth in Namibia. The Namibian government needs to be mindful that the fiscal budget is financed through foreign borrowings, which still need to be repaid. However, it is worthwhile to note that, repayment can have serious economic effects for future generations, particularly if the current resources are not utilised in a sustainable manner. Consequently, it is recommended that the Namibian government needs to find alternative ways of financing the budget deficit; such as enhanced tax revenue collection, reduction of imports, and increase of exports, and to come up with other innovative ways of generating revenue.

Currently the public does not feel the recurrent increase in budget deficit, because it is mainly financed through foreign loans. In developing countries, borrowed funds are normally channelled to fund non-developmental expenditure like financing the public wage bill instead of investing in developmental expenditure that generates revenue to achieve sustainable economic development

Overall Recommendations

- It is recommended that government representatives in Namibia should properly coordinate the management of borrowed funds and ensures that the funds are used for developmental purposes initially intended for. Borrowing to service previous debts and to finance unforeseen expenditures that have been incurred in cases of emergencies should be discouraged, as it decreases economic growth and undermines development.
- The Namibian government should come up with strict rules that seek to enhance the revenue collection methods. Such policies should include tackling how to collect tax from the informal sector, that has made it currently impossible to reach them.

Government should increase its efforts to combat tax evasion, and corruption that limits tax collection efforts.

- This study has looked at Budget deficit, Trade and Population growth impact on economic growth. However, it is recommended that further research be conducted to determine the effects of other macroeconomic variable effects on economic growth in Namibia.
- The world has recently shifted its focus is on sustainability, therefore it is important to ensure that economic growth is sustainable. For this reason the Namibian government should ensure that while it focuses on growing the economy, it is also taking into account the protection of the environment, its biodiversity, and other natural resources, which are also significantly contributing to the national economy. As the economy is becoming more competitive, it must correspond with favourable environments that are sustainable and equitable for future generations. Given such facts, the study recommends that the government of Namibia should come up with regulations to accommodate climate change in relation to the economy, as it has been identified as having a big impact on the future survival. The study further recommends other researchers to study the effect of climate change on the economy of Namibia and propose potential adaptation and mitigation strategies for the long-term.
- Even though it is not evident from our research results that population growth has a positive effect on budget deficit, Namibia has a large number of people migrating from rural to urban areas, hence the increase in the number of people concentrated in urban areas will not only strain household level consumption but also increase the burden on resource allocation by the government on education, housing and health; eventually leading to budget deficit. It is therefore recommended that the government should invest in a quality education system and human resources development that will enable job creation to accommodate the increasing number of graduates associated with population growth.

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