

ANALYSING THE EFFECT OF BUDGET DEFICIT DYNAMICS ON
MACROECONOMIC VARIABLES IN NAMIBIA

A THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE DEGREE

OF

MASTER OF SCIENCE IN ECONOMICS

OF

THE UNIVERSITY OF NAMIBIA

BY

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APRIL 2021

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ABSTRACT

This study analysed the effect of budget deficit dynamics on economic growth (gross domestic product), unemployment and interest rate in Namibia. The study employed the Autoregressive Distributed Lag Model (ARDL) and Bounds test for the cointegration approach using time series annual data for the period 1990 – 2018. The cointegration results confirm the presence of a long run relationship among variables in all models. In order to capture the short run effects of the budget deficit, the study employed the error correction model (ECM) and decisions were made based on a five percent level of significance. Focusing on the core explanatory variable which is budget deficit, the empirical results discovered a negative and significant relationship between budget deficit and economic growth both in the short and long run period, implying that high deficit deteriorates the growth rate of the economy. Moreover, the results show a direct but insignificant relationship between deficit and unemployment rate in short and long run period in Namibia. In addition, budget deficits show a negative but insignificant relationship towards real interest rate in both the short and long run period. As a result, the study resolved that the Neoclassical theory holds in Namibia. Consequently, in order to contain this adverse effect, the government should ensure that the exacerbated level of budget deficit is addressed.

Key words: *budget deficit, Autoregressive distribution lag, macroeconomic variables*

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag
BD	Budget deficit
BoN	Bank of Namibia
CUSUM	Cumulative sum
CUSUMSQ	Cumulative sum of square
ECM	Error correction model
MTEF	Medium term expenditure framework.
PP	Phillips-Perron
RGDP	Real gross domestic product
RIR	Real interest rate
SACU	Southern African Customs Union
SSA	Sub-Saharan Africa
UEM	Unemployment

ACKNOWLEDGEMENTS

I am forever thankful to the Almighty God for his endless blessings throughout my life and for making this study a success. My profound gratitude goes to my husband, Naftal K. Shindongo as well as my three children; Etuna, Natangwe and Etuhole for inspiring, allowing and giving me the space and time to work on my thesis. I am also highly indebted to my supervisor, Prof. Teresia Kaulihowa for her patience, guidance, commitment and continuous support that made it possible for me to complete this study on time. To my fellow classmates; Laili Iipumbu, Jona Nghipona, Malakia Haikali and Phillipus Uusiku, it would not have been easy without your support and encouragement. Thank you all for sharing this wonderful and “demanding” journey with me. Last but not least, I would like to give special thanks to the African Economic Research Consortium (AERC) for the financial support during the last year of my study. It would not have been easy without your support. May God bless you all abundantly.

DEDICATION

I dedicate this research to my beloved late grandmother for her pure love, unconditional support and for making me to understand the value of education.

DECLARATIONS

I, Anna Liisa Hango, hereby declare that this study is my own work and is a true reflection of my research, and that this work, or any part thereof has not been submitted for a degree at any other institution.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Fiscal imbalance is among one of the crucial macroeconomic problems facing economies in the world. Hence, the relationship between budget deficit and macroeconomic variables (such as growth, interest rates, trade deficit, exchange rate, among others) represents one of the most widely debated topics among economists and policy makers in both developed and developing countries (Saleh, 2003). Besides, both theoretical and empirical literatures are not conclusive regarding the nature of some of the abovementioned relations. However, Shetta and Kamaly (2014) point out that generally, the method of financing government expenditures and the type of expenditure can play a substantial role in shaping the relationship between the budget deficit and various macroeconomic variables.

According to Wuyah and Amwe (2015), budget deficit (also known as a fiscal deficit) has been at the forefront of macroeconomic adjustments to the extent that purposeful and coherent sets of measures have been adopted to respond to imbalances in the economy in both developing and developed countries. In addition, Mushtaq and Zaman (2013) assert that the growing and persistent government budget deficit is a major macroeconomic problem facing both developed and developing countries although the magnitude of the deficit is relatively higher in developing nations compared to the developed ones. Intuitively, this means that budget deficit poses adverse macroeconomic consequences on the country's growth and development by affecting key macroeconomic variables such as inflation, economic growth, unemployment, interest rate, etc.

Budget deficit arises when the government spends more money that it receives within the fiscal year. In other words, budget deficit indicates the amount of money that the

government will need to borrow during the financial year. Such a deficit may be attributed to a number of motives, however, mostly it is derived from a deliberate effort by the government to facilitate and stimulate economic growth and development by either lowering the tax rate or increasing its expenditure. Murshed, Amin and Chadni (2018) opine that due to the inabilities to finance their respective public projects with their own public funds, developing countries have to resort to the utilisation of foreign funds, especially in the form of development assistance from foreign donor agencies and developed nations, thereby increasing their deficits. It is therefore, important to note that accumulating fiscal deficit has been blamed for the assortment of ills that beset developing economies for decades. And as a result, macroeconomic problems such as high inflation rate, unemployment rate, heavy debt burden and high import dependence, just to mention a few, are linked to the fiscal deficit and deficit financing (Wuyah &Amwe, 2015).

There are various methods that governments can adopt or employ in order to bridge the gap between the government's revenue and expenditure profile such as through internal and external borrowing, revenue collection (taxation), and issuing of bonds or supply of new money (printing of money) into the economy. Awolaja and Esefo (2019) explain that if the government finances its deficit by domestic borrowing such as from commercial banks, there will be consequences of "crowding out" of private investment as a result of increases in the interest rate. Awolaja and Esefo (2019) further highlight that financing the budget deficit by borrowing from the central bank will likely escalate inflation while deficits financed by external borrowings will result into exchange rate appreciation due to the inflow of foreign exchange thereby negatively affecting the export performance and deteriorating the current account balance.

In addition, the effects of budget deficit on macroeconomic variables may as well depend on sectors that the government decides to spend on. In view of that point, Lwanga and Mawejje (2014) state that in the long run, budget deficit positively influences macroeconomic variables, however, only if the government utilises deficits to finance capital spending (transport and power infrastructure), which leads to an increase in the national assets stocks. The literature thus suggests that the effects of budget deficit on the economy depend on the financing source and the expenditure patterns. In the same vein, Mavodyo (2017) adds that the appropriate utilisation of budget deficits may foster economic growth through the reduction of unemployment and social inequality, thus combating poverty resulting into a general improvement in the social wellbeing of citizens.

However, as important as fiscal policy is as a stabilisation instrument, too much reliance on public debt and budget deficits can potentially expose economies to macroeconomic risks, deteriorating the gross domestic product, deterring employment creation and hindering economic development, thereby leading to an acceleration of poverty levels among its citizens. It is therefore, of utmost importance to emphasise that for fiscal deficits to improve the economy, deficits should be carried out with an efficient and well-executed plan which should be aligned to and incorporate the national development objectives of the country.

In Africa, the consequences of the perceived budget trends have resulted in widened deficits almost throughout the region and the majority of the Southern African Development Community (SADC) countries are confronted with high budget deficits mainly due to their need to develop social and economic infrastructure. Moreover, Awe and Funlayo (2014) emphasise that in Sub-Saharan African (SSA), which is characterised by developing countries, deficit and its financing have over the years

constituted challenges to economic advancement and growth, thereby affecting employment levels in the region. Equally, the Africa Development Bank (2015) also affirms that the majority of SSA countries' fiscal policy have remained expansionary, and as such, economies remain vulnerable to external shocks.

Furthermore, Awolaja and Esefo (2019) assert that following the global financial crisis of 2008/2009, over one third of SSA countries have been experiencing budget deficits which have resulted into public debt accumulation. Kelikume (2016) also highlights that due to the 2007-2008 global economic crisis and the effects of global oil prices declining, this has led most SSA countries to respond by borrowing massively from both domestic and international markets to enable them to fund their day to day operations, hence increasing future deficit financing.

Domestically, Namibia has been experiencing a budget deficit since independence, except for two periods (2006/07 to 2008/09). As such, the government committed itself through National Development Plan 1 (NDP1) to reduce the budget deficit to 3 percent of GDP by 2000/01. However, this target has not been achieved (Bank of Namibia Working Paper, 2001). Over the past few years, the fiscal deficit has risen further, particularly from 2009/10 to 2016/17, which has necessitated a fiscal adjustment in order for the government to mitigate the adverse effects of the budget deficit in the economy. Moreover, to strengthen the country's national savings rate as well as curb the growth of the deficit and reduce public debts, the government has implemented substantial fiscal consolidation measures in 2016. However, the emphasis on the Namibian government to prioritise expenditure with the aim of reducing the budget deficit has left some developmental projects stranded, a situation that has become a national concern (Sakaria, 2019). In addition, the International Monetary Fund (2019) also argues that spending reductions did not fully translate into a lower deficit, as they

were in part offset by declining domestic and Southern African Customs Union (SACU) revenue, and increased interest repayments which have given rise to a public debt ratio. Against this background, analysing the effects of fiscal policy on the external balances, and the growth impact of fiscal policy (public debt and budget deficits), is particularly appealing within the Namibian economy for a number of reasons.

1.2 Problem statement

The budget deficit phenomenon is not new, however, its consistent occurrence and blame for the assortment of ills that beset developing nations for a number of years has become a subject of concern (Appah & Chigbu 2013). Namibia is not an exception to this scenario. According to Amwaama (2018), Namibia has been experiencing a continuous decline in its sources of revenue accompanied by budget deficits and as a result this has led to the accumulation of the national debt over the years. In addition, during the 2014/15 financial year, Namibia recorded a budget deficit of 6.1 as a percentage of GDP, which deteriorated to 8.3% in 2015/16 and narrowed to 6.4% during 2016/17 but remained above the set ceiling of 5%. Indeed, the widening of the budget deficit has caused the government to cut costs under the fiscal consolidation plan as a necessary policy intervention to preserve Namibia's macroeconomic stability (Price Waterhouse Coopers, 2019).

However, in spite of government efforts at devising policy measures such as the fiscal consolidation plan, Public Private Partnerships (PPPs) and private sector investment which are aimed at containing government debt and ease the pressure on the current account balance, the budget deficit continues to persist. Besides, Eita, Manuel, Naimhwaka and Nakusera (2019) asserts that although fiscal consolidation measures have brought some progress, reducing the budget deficit by 2.1 percentage from 6.4

percent in 2016/17 to 4.4 percent in 2018/19, indeed this has been harmful for economic growth and employment, as this has dampened it particularly during the short term period. Moreover, it is also affirmed that the widening budget deficit has a potential to adversely affect the macroeconomic variables and ultimately this threatens the country's financial and economic stability (Brima & Mansaray-Pearce, 2015).

Moreover, the reviewed literature clearly demonstrates that regarding the subject matter, much has been done in developing economies, mainly in Africa, except in Namibia. Furthermore, despite the fact that Namibia continues operating under deficits which somehow hinder the country's economic performance, empirical research on the effect of the budget deficit on macroeconomic variables such as interest rate, inflation, unemployment, current account and exchange rate remain limited, thereby widening the gap in the Namibian literature. Moreover, a few similar studies have been done such as by Amwaama (2018), Sakaria (2019), and Eita et al (2019), but these mainly focused on how the budget deficit affects economic growth and inflation. Therefore, the present study differs from these studies by focusing on how budget deficits influence macroeconomic stability by including other macroeconomic indicators such as unemployment rate and interest rate in order to broadly determine how and to what extent budget deficit can influence macroeconomic performance in Namibia. In addition, it is significant to note that the reviewed empirical studies are characterised by mixed and inconsistent findings which are mainly influenced by individual countries' level of economic development and those that pertain to deficits. Given the above background, this necessitated the need to specifically analyse the above phenomenon mainly on the Namibian economy to enable the researcher to reach conclusive findings and provide appropriate policy recommendations that are suitable for the Namibian economy.

1.3 Objectives of the study

The overall objective of this study is to empirically analyse the effect of budget deficit dynamics on selected macroeconomic variables in Namibia. Specifically, the study sought to:

- ❖ Examine the effects of budget deficit on economic growth,
- ❖ Examine the effects of budget deficit on unemployment, and
- ❖ Examine the effects of budget deficit on real interest rate in Namibia.

1.4 Hypotheses of the study

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

Hypothesis 1

H_0 : Budget deficit has no effect on economic growth in Namibia

H_1 : Budget deficit has an effect on economic growth in Namibia

Hypothesis 2

H_0 : Budget deficit has no effect on unemployment rate in Namibia

H_1 : Budget deficit has an effect on unemployment rate in Namibia

Hypothesis 3

H_0 : Budget deficit has no effect on real interest rate in Namibia

H_1 : Budget deficit has an effect on real interest rate in Namibia

1.5 Significance of the study

Firstly, fiscal policy remains a crucial aspect of an economy. Therefore, the study is timely, given the fact that Namibia has and continues to experience budget deficits for the past three decades. Such deficits somehow negatively influence the country's

financial and economic stability, thereby leading to the poor macroeconomic performance (Eita et al, 2019). Hence, this study aimed at providing a policy direction to the Namibian government on the macroeconomic consequences of the budget deficit which requires a serious attention, if Namibia is to attain a self-imposed deficit ceiling of 3% of GDP as well as financial and macroeconomic stability as per the MTEF 2001/02-2003/04.

Secondly, the mixed and inconclusive findings from previous studies under the literature review mainly in African countries pose challenges and misperceptions on fiscal policy formulation. It is therefore imperative to undertake a specific study of this nature in order to provide guiding principles to serve as the basis for policy makers in the development of policies towards budget deficit preserving particularly in Namibia.

Last but not least, to the best knowledge of the present author, empirical literatures concerning the effects of the budget deficit dynamics on macroeconomic variables in the Namibian context are limited. As such, this study contributes uniquely to literature by not only addressing the pertinent issues of persistent budget deficits in Namibia but also serving as an additional foundation for future scholars, thereby minimising the gap in the Namibian literature.

1.6 Limitations of the study

The author acknowledges that the study may have suffered some limitations with regards to insufficient data on unemployment in Namibia due to the Labour Force Surveys that are conducted only once every four years, thus making data on unemployment limited in Namibia. Thus, data base by Hartman (1988) as well as the interpolation and extrapolation methods have been used, which was also adopted by

Shifotoka (2015) and Sunde and Akanbi (2016) to cover the gap for the unknown unemployment data.

1.7 Delimitation of the study

It is worthwhile to mention that budget deficit affects various macroeconomic variables but, it is very difficult to incorporate all of them in one study. Hence, this study is confined only to three domestic macroeconomic variables (economic growth, unemployment and interest rate) as listed under research methodology. Moreover, due to availability of data the study is based on 28 observations, covering a period 1990 to 2018.

1.8 Outline of the study

The study is structured in six chapters. The first chapter (above) addresses the introduction of the study by briefly discussing the background of the study, statement of the problem, objectives, hypotheses and significance of the study as well as the limitations that the study encountered. The second chapter presents the historical evolution of budget deficit and its financing in Namibia while the third chapter extensively reviews the key theories underpinning the study as well as the empirical literature examining the effects of budget deficits on macroeconomic variables. In addition, the fourth chapter covers the methodology employed in the context of the research design, data sources, data analysis, and the econometrics package used while the fifth chapter presents the results of statistical analysis and research findings. Finally, chapter six concludes the entire study and provides the recommendations of the study.

CHAPTER TWO: HISTORICAL OVERVIEW OF MACRO-ECONOMIC VARIABLES TRENDS IN NAMIBIA

2.1 Introduction

This chapter presents a historical review and analyses of selected macro-economic variables namely; budget deficit, real GDP, unemployment rate, real interest rate, government expenditure, current account deficit, tax revenue and real exchange rate in Namibia with the assistance of graphical presentations during the period under consideration.

2.2 An overview of budget deficits in Namibia

A sound fiscal policy is an important tool to promote price stability and sustain growth in output and employment level. Moreover, low and stable fiscal deficits are of critical importance for the favourable long run prospects of a country, as well as for avoiding the short run macroeconomic ills of high inflation, high real interest rates, and real overvaluation (Zaaruka, Ndove & Tjipe, 2004). However, like many other developing economies, Namibia is faced with various economic challenges, such as low economic growth, a diverse supply-side, current account deficit, poverty, unequal distribution of wealth and income as well as high unemployment, just to mention a few. Moreover, due to low revenue collections as a result of a narrow tax base and a low resources base in terms of low income which yield low savings, Namibia faces budgetary constraints in meeting her developmental needs.

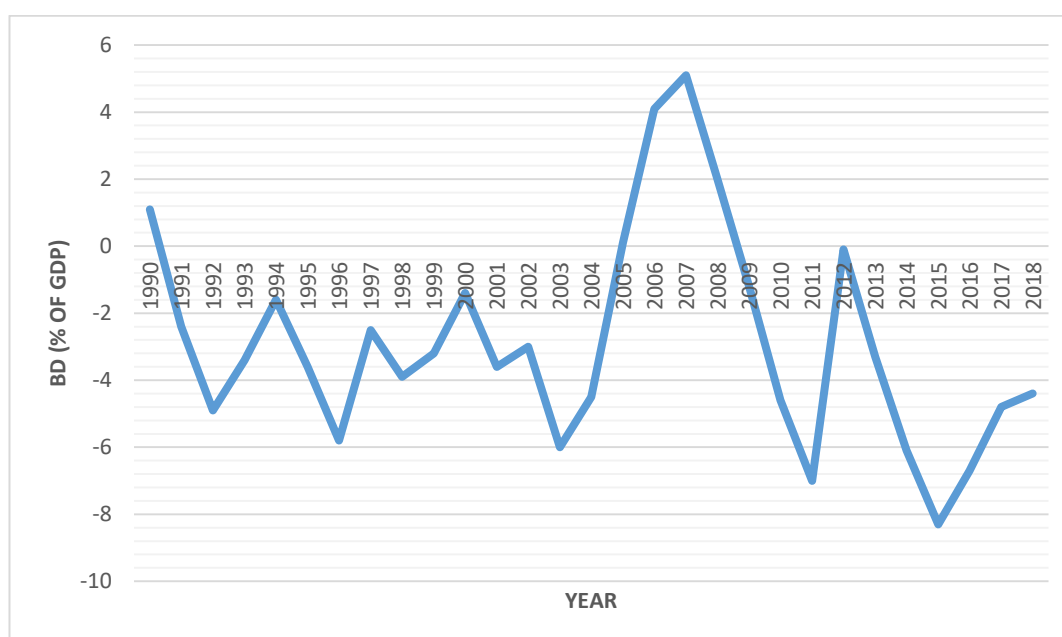
According to Zaaruka et al. (2004), although Namibia's fiscal policy is aimed at stimulating employment, investment, alleviating poverty as well as reducing inequalities in income distribution; the scholars however, stress that this policy instrument has put pressure on the government by increasing spending, which has resulted in a budget deficit and consequently a rising government debt. The National

Planning Commission (2017) revealed that among others, factors such as a high and steadily rising public sector wage bill, increased transfers to public enterprises and statutory bodies, as well as inefficient expenditure control systems are the main contributors to high government expenditure in Namibia, thereby causing an increase in the budget deficit in the economy.

The Namibian budget deficit became alarming when it surpassed 5 percent of GDP in the 2003/04 financial year, hence the government has realised that the country is facing an economic challenge and that it needs to safeguard against public spending (KPMG, 2016). In addition, Eita et al (2019) highlights that the country has been experiencing a persistent budget deficit since independence except during 2006/07 to 2008/09. Such a deficit has raised the national or government debt burden due to the fact that debt servicing took up a significant portion of government expenditures, contributing to high unemployment rate and poor economic performance as a result of meeting the country's financial and developmental needs. Furthermore, the sharp increase has culminated in concerns about public debt sustainability in Namibia and whether the high fiscal deficit will begin to impact on the conduct of the monetary policy (Eita et al, 2019). Therefore, it is against some of these reasons that the government decided to introduce and commit to austerity measures such as a fiscal consolidation policy in order to achieve macroeconomic stability through fiscal discipline.

In addition, as highlighted in the MTEF 2001/02-2003/04, the government has set an explicit target for expenditure with the aim of placing public finance on a sustainable path by lowering the budget deficit to around 3 percent of GDP and gradually reduce public debt to below 35% of GDP. It is worth mentioning that despite running budget deficits, and although the deficit in Namibia has been largely financed from the domestic market, Eita et al (2019) confirms that the government has not borrowed

from the central bank to finance its deficit. However, external financing as a share of GDP increased sharply during the period 2015 to 2017.



Source: Bank of Namibia various annual report publications

Figure 2.2: Namibia budget deficits as a percentage of GDP during 1990 to 2018

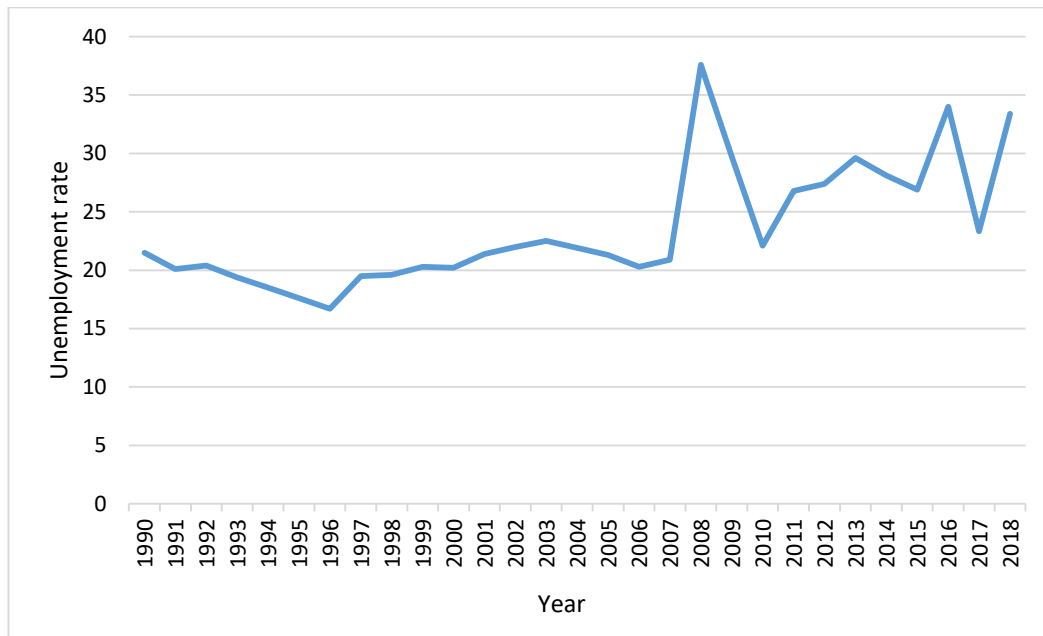
Figure 1 depicts the trend of actual fiscal deficits as percentage of GDP in Namibia from 1990 to 2018, which has been fluctuating considerably during the period under study. It indicates that since independence, Namibia has been operating under budget deficits except during 2006, 2007 as well as in 2008 when the economy recorded a budget surplus. Bank of Namibia (2008) highlights that the country recorded a budget surplus in the 2007/08 fiscal year as a result of tighter expenditure control, improved collection of domestic taxes on goods and services, and strong Southern African Customs Union (SACU) revenues. The highest deficit was recorded during 2003/04, 2011/12, 2014/15, 2015/16 as well as 2016/17, surpassing 6 percent of GDP. Nevertheless, Namibia has continued to suffer from budget deficits since right after 2009 up to date, thereby hampering economic growth and other key macroeconomic indicators.

2.3 An overview of Unemployment in Namibia

Unemployment can either be defined in the strict (narrow) sense or in the broad (expanded) sense. In accordance with the international statistical standards, Namibia define unemployment based on three criteria, namely, being without work, being available for work as well as actively seeking for work, which is referred to as a strict definition. On the other hand, broad unemployment definition refers to all persons within the economically active population or working age group of between 15 and 65 years, who are available for work and, irrespective of whether or not they are actively seeking work, are without work during the reference period which is usually seven consecutive days before the survey (Namibia Statistic Agency, 2013).

It is important to note that high and stagnant unemployment rates have been a prominent economic and social issue in the Namibian landscape for years and as a results, government has prioritized unemployment as a socio-economic problem and has since been trying to deal with the matter (Namibia statistic agency, 2015). Specifically, the Namibia Labour Force Survey (2008) highlights Namibia highest unemployment rate (broad definition) of 51.2% in 2008 as compared to that recorded in 2004 (36%) whereby the youth age group, estimated to constitute sixty percent of the Namibian population, has the highest level of unemployment. This suggests that more than half of Namibia's economically active population is unemployed, posing major social, political and economic threats due to the fact that high unemployment can yield disturbing effects on social exclusion, crime, and economic welfare, social instability and etc. (Mwiinga, 2012). Moreover, the author opines that factors such as population growth & changing demographics, fast growing young unskilled labour force, low employment intensity of economic (GDP) growth, insufficient effective demand as well as supply-driven training have exacerbated unemployment in Namibia.

Whereas, Eita and Ashipala (2010) advocate for factors such that Namibia has small manufacturing base, which makes the economy unable to absorb a large number of the unemployed people.



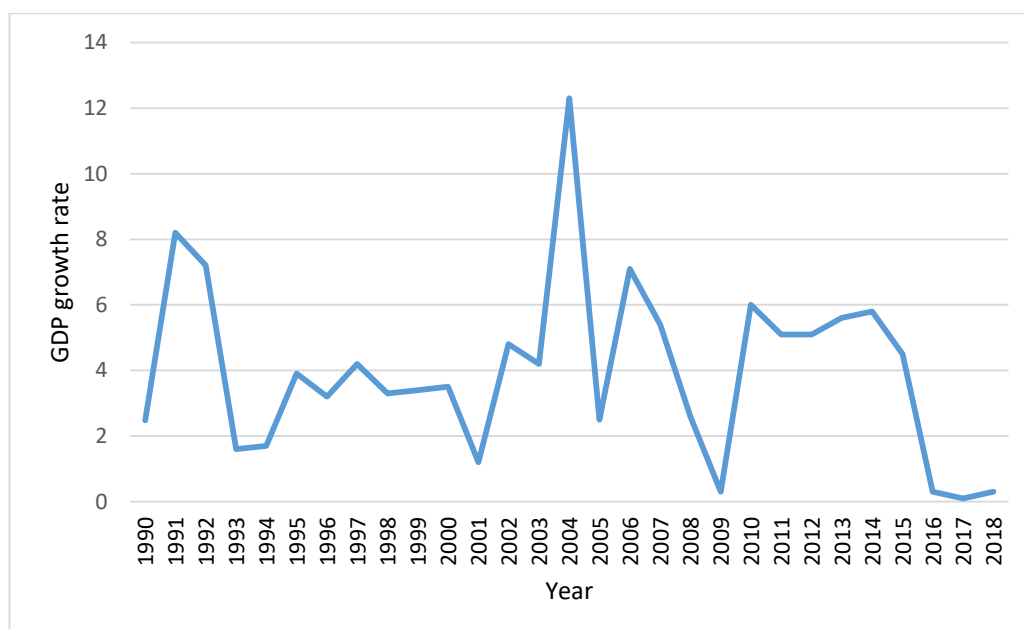
Source: Author's compilation

Figure 1.3: Annual unemployment rate in Namibia during 1990 to 2018

The figure above shows that although there were mild declines in unemployment in the 1990s, the evolution of the Namibian unemployment rate over the last three decades is characterised by a persistent upward trend. Furthermore, figure 2 above provides supporting evidence of increase in unemployment rate overtime whereby the country recorded an increase from 20.2 percent in 2000 to 22.5 percent in 2003 and reaching a maximum of 37.6 percent in 2008, after which it started to decline. The decline is mainly attributed to a combination of both expansionary monetary and fiscal policies adopted from 2008 onwards to cushion the economy against the global headwinds as well as to address the structural challenges including slow economic growth (Sunde & Akanbi, 2016).

2.4 An overview of Economic growth (GDP) in Namibia

On the macroeconomic front, Namibia's economic growth performance over the past years has been quite strong, recording growth rates above five percent per annum (Namibia Statistic Agency, 2013). Namibia is classified as a middle-income country, and it has successfully managed to build a market oriented economy and stable political environment over the years, which has contributed significantly to the country's economic growth. The economy is made up of a primary industry, secondary industry and tertiary industry whereby tertiary industry has been a key and the consistent contributor to overall economic growth in the economy. Statistically, since 2002, there have been no much changes in terms of the industries' contribution to GDP, while the tertiary industry alone contributed 56.9 percent to the GDP from 2002-2012, the secondary industry contribution increased by 2 percent from 16 percent to 18 percent contrary to the primary industry that reduced from 24 percent to 19 percent (National Planning Commission, 2015).



Source: Author's compilation

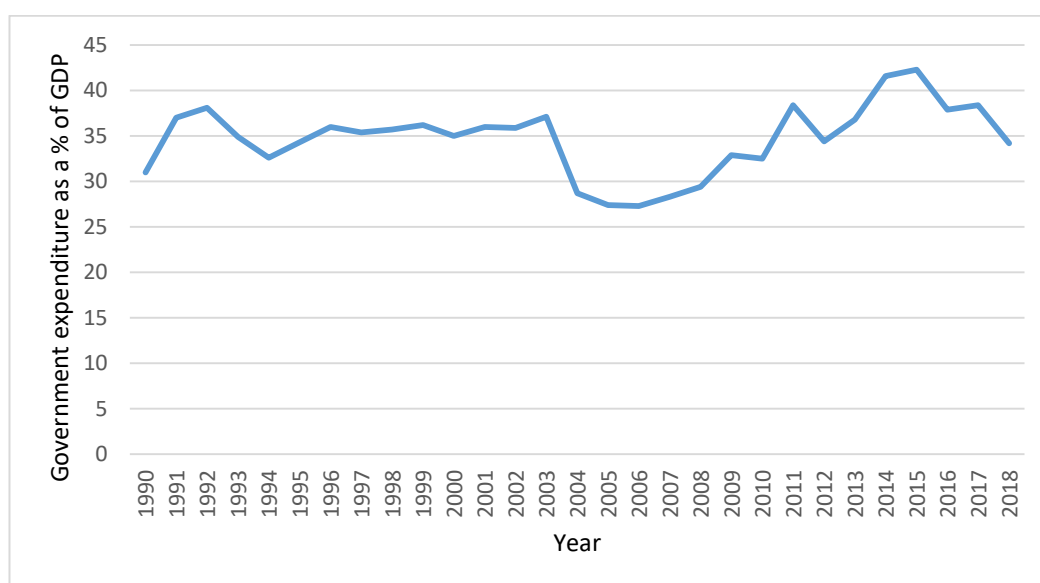
Figure 2.4: Namibia real GDP growth rate from 1990 to 2018

As depicted in figure 3 above, real GDP grew slowly during 1993 to 1994 as opposed to the 8.1 percent growth rate recorded in 1991. Moreover, in 2011, economic growth slowed down to 3.8% from 6.6% in 2010, following a contraction of 0.3% in 2009. This reflects modest performance in mining and agricultural activities due to severe flooding in the north of the country and industrial action, as well as weak demand for mineral products arising from weaker global economy (Namibia outlook, 2012). According to the Ministry of Finance (2011), there was a recovery in 2010 with an estimated growth rate of 6 percent in GDP which was attributed to an increase in the mining of diamond and uranium. However, as a result of persistent unfavorable climatic conditions such as drought and poor rainfall, the country continue to experience poor productivity and low prices resulted into slow economic growth rate during 2016 to 2018. It is however worth noting that despite the prevalent drought conditions and volatile exchange rates among other risk, the overall Namibian economic outlook activities still remain promising.

2.5 An overview of Government expenditure in Namibia

In Namibia, government spending as a share of gross domestic product is split up into four key categories. Shafunda (2015) explained those categories such as spending on entitlement programs (covering government expenditures on health care programs; pensions and retirement programs like Government Institutions Pension Fund (GIPF) and Social Security); military spending (which include all expenditures on current personnel, military and civil, social services for personnel); spending on interest on the national debt and last but not least spending on infrastructure development and services delivery. During 2015/16, total public expenditure as percentage of GDP increased to 42.3 percent from about 34.0 percent recorded in 2011/12. Demand side oriented and

counter-cyclical fiscal measures are the main contributors to these developments (National Planning Commission, 2015).



Source: Author's compilation

Figure 2.5: Total Government expenditure during 1990 to 2018

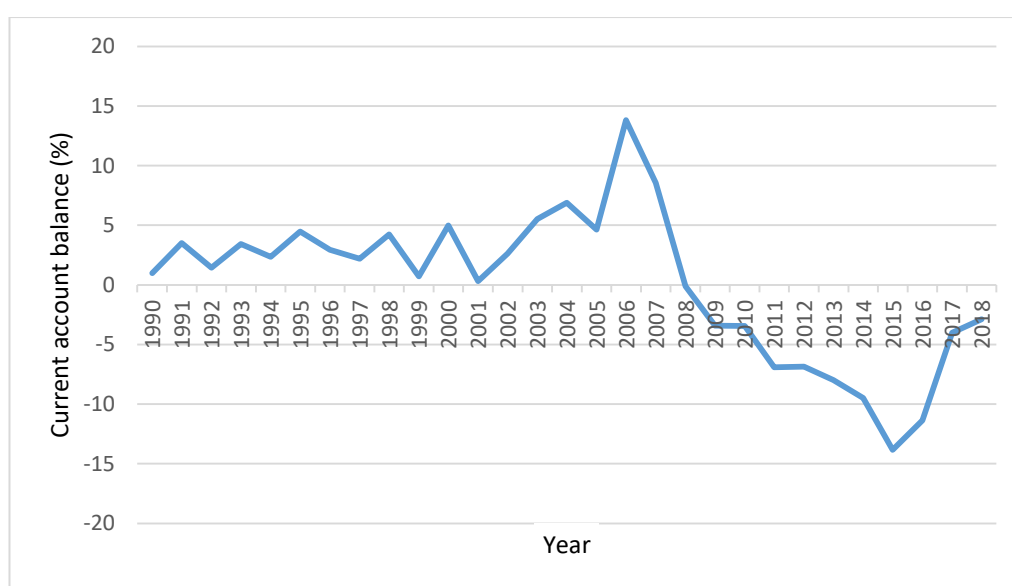
Total expenditure rose from 41.6% of GDP in 2014 to 42.3% during 2015 and such increase was driven by growth in capital spending, subsidies and transfers, and public sector wages and salaries (Santos, 2018).

2.6 An overview of Namibia current account balance

Namibia maintained a positive balance since its independence in 1990. In addition, the National planning commissioner (2015) stated that Namibia current account deficit over the years reflected the strong domestic demand for imports which was necessitated by the increased investment in public infrastructure investment. However, the country recorded a negative current account in 2009. Eita, Manuel and Naimhwaka (2018) also highlighted that Namibia is one of the countries that experienced persistent current account deficit during the period 2009 to 2017 and such persistent current account deficit has reached worrisome levels putting pressure on Namibia's foreign

reserves. The author further opines that such high current account deficit is partly attributed to the expansion in economic activity, more specifically in the mining and construction sectors.

On the other hand, Bank of Namibia (2010) indicated that factors such as significant increases in investment, larger budget deficits, private and public consumption as well as depreciation of the Namibia dollar contributed to the deterioration of the current account balance during the period 2009 – 2016. In order to ease the pressure on the current account balance and to strengthen Namibia’s national savings rate, Phiri and Odhiambo (2015) advocate for the adaptation of the fiscal consolidation measures in Namibia.



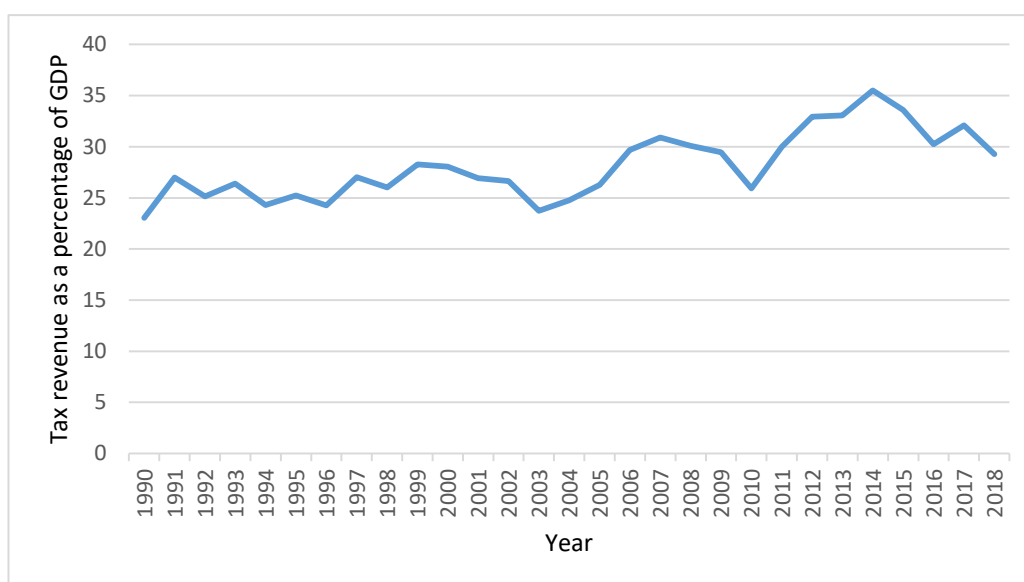
Source: Authors compilation

Figure 2.6: Namibia current account balance during 1990 to 2018

The graph above shows that Namibia maintained a positive balance since its independence in 1990 until it recorded a negative current account in 2009. Namibia’s current account deficit has been widening since 2009, with the deficit peaking at 13.6 percent of GDP in 2015 and stood at 11.3 percent of GDP in 2016.

2.7 An overview of Namibia Tax revenue

Post-independence, the main sources of tax revenue have been a share from Southern African Customs Union (SACU), income tax on individuals and the mining sector and general sales tax which was only operational from independence to 2000. Namibia introduced the value addition tax (VAT) in 2000 as a replacement of General sales taxes and Additional sale levies. According to Zaaruka, Biwa and Kalenga (2001), tax revenue from SACU since 1990/91 on average accounted for 31.6 per cent of tax revenue and close to 28.3 per cent of total revenue and grants.



Source: Author's compilation

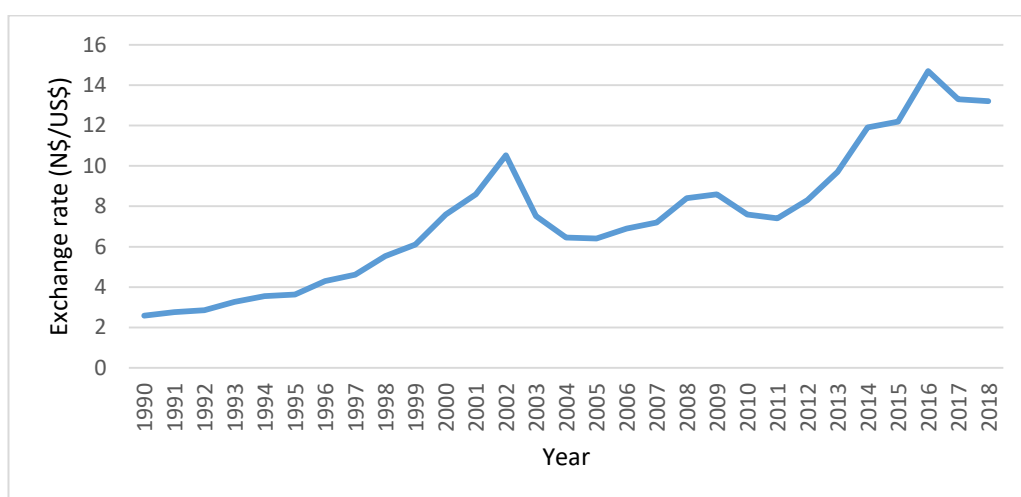
Figure 2.7: Namibia Tax revenue as a percentage of GDP during 1990 to 2018

It is evident from figure 6 that during 2014/15 financial year, total revenues as a percentage of GDP dropped from 35.3% to 33.6% in 2015/16 financial year and according to Santos (2018), this is due mainly to a sharp reduction in SACU and domestic tax receipts.

2.8 An overview of Foreign Exchange rate in Namibia

Namibia's monetary policy framework is underpinned by the fixed currency peg to the South African Rand. Therefore, the Namibian Dollar is one on one pegged to the South

African Rand and can be exchanged locally although Namibian Dollar cannot be used in South Africa. During the period under review, the Namibian dollar in terms of its value has undergone a number of depreciations and appreciations against major currencies such as Euro (€), UK Pound (£) and the United States Dollar (US\$). The interplay of demand and supply factors within the foreign exchange market accounted for most of the depreciation and appreciation that took place in respect of the country's currency, (Ogbokor & Meyer, 2016). Specifically, during 1990, 1991 and 1992, the value of the Namibian dollar value was characterized by a high degree of swinging. This depreciation was however beneficial to Namibian exports (for example: mineral products, beverages, meat and fish products etc.) and conversely costly for imports which the country does not produce such as machinery and other high-tech goods and etc.). On the other hand, between the years 1994 and 2002, the Namibian dollar was relatively stable in terms of its price in relation to USD. In 2008, the Namibian dollar appreciated again while as of 2010, the Namibian dollar has consistently depreciated in value up to 2011, and subsequently started appreciating again in 2012 as shown by figure 7 below.

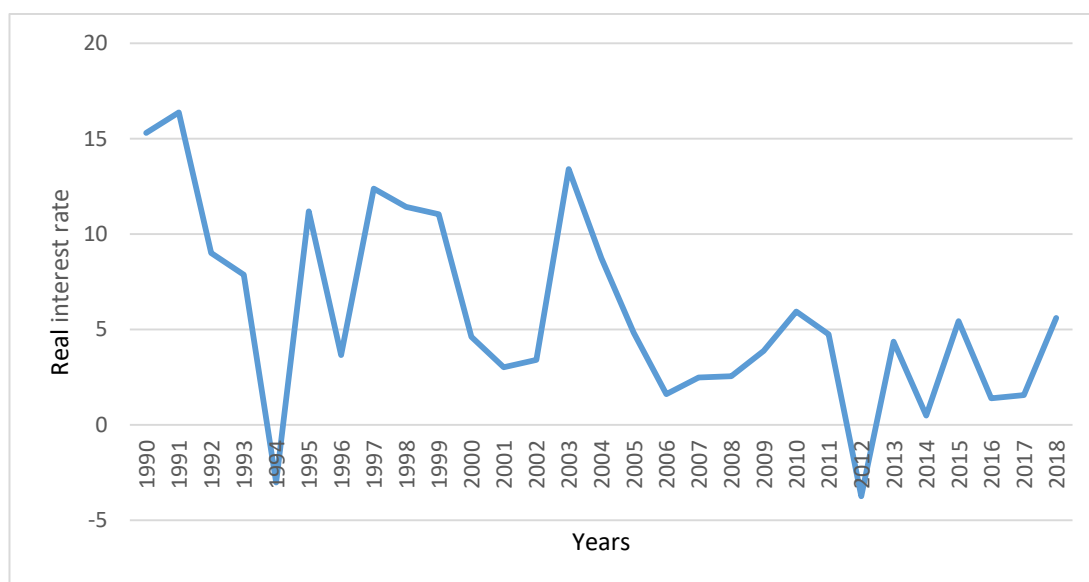


Source: Author's compilation

Figure 2.8: Foreign exchange rate (N\$ against US\$) during 1990 to 2018

2.9 An overview of real interest rate in Namibia

Namibia's monetary policy is determined by her membership of the Common Monetary Area and hence, her interest rates are set in line with the decisions made by South African Reserve Bank.



Source: Author's compilation

Figure 2.9: Real interest rate in Namibia from 1990 to 2018

As the graph above depicts, interest rate has been fluctuating over the past 27 years. In 1991 there was a drastic increase in interest rate with 16.38 per cent, this being the highest figure recorded due to, Namibia lacks its own currency, and was using the rand as legal tender, the exchange rates and the overall levels of interest rates were determined in the South African markets.

In summary, given the fact that persistent budget deficits could expose macroeconomic variables to various vulnerabilities, it is therefore imperative to analyse budget deficit effects on macroeconomic fundamentals in Namibia and test the validity of various schools of thoughts (Neoclassical, Keynesian and Ricardian equivalence theories) and perspectives on budget deficits specifically in the Namibian context.

CHAPTER THREE: LITERATURE REVIEW

3.1 Introduction

Theoretical literatures regarding budget deficit and macroeconomic variables are not without ambiguities. In addition, Saleh (2003) stressed that chronic government budget deficits and the escalating government debt have become major concerns in both developed and developing countries. Moreover, the effects of the fiscal policy on economic growth is a controversial and long-standing topic in economic theory, empirical research, and economic policymaking (Buscemi & Yallwe, 2012). Therefore, this chapter dwells on the underlying key theories namely; Neoclassical, Keynesian and Ricardian equivalence theory developed to extensively examine the effects of the budget deficit on key macroeconomic variables as well as the relationship between these variables. Furthermore, this chapter presents an overview of different empirical studies regarding the linkage between a budget deficit and macroeconomic variables in both developed and developing economies.

3.2 Theoretical perspective

3.2.1 The Neoclassical theory on budget deficit

Firstly, the neoclassical theory advocates for an adverse relationship between budget deficits and various macroeconomic fundamentals (Bernheim, 1989). The theory is supported by three assumptions: (i) the individual's consumption is determined as the solution to an inter-temporal optimisation problem where borrowing and lending are permitted at the market rate of interest; (ii) individuals have a finite lifespan such that each consumer belongs to a generation, and the lifespan of successive generations overlap; and (iii) market clearing is generally assumed in all periods. According to the theory, budget deficits reduce the supply of loanable funds, translating into high interest rates and reducing national savings, hence, budget deficit has the tendency to

crowd out private investment as it increases both inflation and current account deficits, which then slow the growth of the economy. Moreover, an increase in the interest rate would result in an exchange rate appreciation, which in turn would create lower net exports and result in a trade deficit and a slowdown in economic activities.

Moreover, in support of the theory, Snowden and Vane (2005) highlight the concern of budget deficits in the growth theories of countries in the sense that they reduce national savings. Snowden and Vane (2005) argue that the impact of savings reductions due to increases in budget deficits is ultimately lowering the growth of the economies. Snowden and Vane (2005) further assert that due to deficits, which lead to large debts, results in a burden by diverting private wealth that otherwise would be used in productive investments in capital that would raise wages of the future generations. Therefore, according to neoclassical theory, the budget deficit is inimical and has inverse effects on the economy, thus, it advocates for a balanced budget at all times.

3.2.2 The Keynesian views on budget deficit

Contrary to the neoclassical theory, the Keynesian paradigm believes that the budget deficit does not necessarily have a detrimental effect to economic growth but believes that there is a positive correlation between budget deficit and macroeconomic variables. They believe that the budget deficit has a positive effect on the economy, emphasising the multiplicative economic effects of budget deficit, or the "crowding-in" effect. Moreover, the paradigm points out that during the period of economic downturn, the budget deficit can be used to stimulate aggregate demands and as such, positively influence macroeconomic variables by increasing domestic production, aggregate demand, savings and private investment at any given level of interest rate.

In addition, Umaru and Gatawa (2014) and Saleh (2003) highlight that deficit spending is essential because it will, given a high marginal propensity to consume, lead to an increase in the domestic output and investment in the economy as the deficit induces optimistic investors to invest more (what is known as the “crowding in effect”) thereby increasing income. As such, the theory recommends economies to follow budget supervision via anti-cyclical economic settings, thus implying that during the periods of economic recession, the government should run a deficit to stimulate aggregate demand, whereas in the period of economic boom, the government should follow a surplus budgetary policy (Brima & Mansaray-Pearce, 2015).

3.2.3 The Ricardian equivalence hypothesis on budget deficit

On the other hand, the Ricardian equivalence hypothesis, also known as Barro-Ricardo equivalence, opines that an increase in budget deficits, regardless of the way of financing, have no impact on the total level of demand in an economy, hence there is a neutral relationship between the budget deficit and macroeconomic fundamentals (Barro-Ricardo, 1989). According to Gale and Orszag (2004, as cited by Shetta & Kamaly, 2014), the theory emphasises that a deficit induced by a lump-sum tax cut today followed by a lump-sum tax increase in the future will be fully offset by an increase in private saving, as taxpayers recognise that the tax is merely postponed, not cancelled. The offsetting increase in private saving means that the deficit would have no effect on national saving, interest rates, exchange rates, future domestic production, or future national income.

Additionally, the theory opines that whether governments use taxes or debt financing is of no importance because when the government borrows instead of levying taxes to finance public expenditure, the current generation is “under-taxed” thereby leading into high public debt; however, such debt will have to be repaid by their heirs.

Moreover, Mohanty (2012) also argues that fiscal deficit has no growth effects due to the fact that deficits do not stimulate private consumption or crowd out private investment because it does not have an impact on the real interest rate, thereby supporting the Ricardian hypothesis.

From the foregoing theories, different opinions have indeed continued to emerge on how the budget deficit affects economic activities. Nevertheless, the Namibian historical overview of the budget deficit evidently shows that the growth and consistence occurrence of the budget deficit is somehow responsible for the macroeconomic misfortune the country has been experiencing. Moreover, Bank of Namibia WP3 (2019) argues that policy measures such as fiscal consolidation programmes aimed at reducing budget deficits and debt accumulation has however, been harmful towards the economic growth rate, increasing the unemployment rate, etc. Therefore, in order to empirically analyse the effects of deficit on the Namibian economy, this study is underpinned by the Neoclassical school of thought which is of the opinion that the budget deficit has negative effects on economic growth, thereby increasing real interest rates which then crowd out private investments.

3.3 Empirical review

3.3.1 Empirical literature on Namibia

It is evident that persistent government budget deficits and the rising of government debt have become major concerns in both developed and developing countries and Namibia is not exceptional thereby leading to various empirical studies to investigate the effects of budget deficits on major macroeconomic variables. Specifically, in the Namibian economy, fewer studies have been conducted such as Eita et al (2019), which examined the impact of fiscal deficit on inflation in Namibia using the Autoregressive Distributed Lag Model (ARDL) and Granger causality approach. The

results confirm that fiscal deficit has a direct and positive effect on inflation in Namibia. On the other hand, Amwaama (2018) examined the relationship between budget deficit and economic growth in Namibia using quarterly time series data during 1993Q1 to 2015 Q4. Using the ARDL bounds test, the study advocates that the neoclassical paradigm holds in Namibia, indicating that budget deficit negatively affects growth rate both in the short run and long run. Equally, this result coincides with the findings by Sakaria (2019), who also conducted a study assessing the relationship between budget deficit and economic growth in Namibia and found that fiscal deficit negatively affects economic growth in Namibia.

3.3.2 Empirical evidence in support of the Neoclassical view

The Neoclassical approach believes that the accumulation of deficit results in macroeconomic instability. Fatima, Ahmed and Rehman (2012) investigated the true impact of the budget deficit on the economic growth of Pakistan, based on a multiple regression (log-log model) that was estimated by employing the Ordinary Least Square (OLS) technique for a period 1978 to 2009. Results obtained complement the neoclassical theoretical view that budget deficit significantly and negatively influences economic growth. The study recommended that to achieve a certain level of economic growth, the Pakistan government must take measures to control the deficit and must utilise its underutilised resources in order to overcome the problem of the budget deficit.

Furthermore, Nkalu (2015) examined the effects of budget deficits on selected macroeconomic variables (inflation rate, interest rate and economic growth) in Nigeria and Ghana by employing annual time-series data of the two countries spanning from 1970 to 2013. The study used Seemingly Unrelated Regression (SUR) and Two-Stage Least Squares (2SLS) models. The results showed that in both countries, budget deficit

impacted negatively on inflation rate, interest rate and economic growth, thereby affirming the neoclassical position in the literature that budget deficit impedes the growth of the economy through resources. Consequently, it was recommended that in order to achieve high and sustained long-run economic growth once the budget deficit is used as fiscal policy instrument, then the monetary policy, industrial policy and commercial policy must be strengthened to act as checks and balances in both Nigeria and Ghana.

In Sierra Leone, Brima and Mansaray-Pearceet (2015) employed the vector error correction model (VECM) and the Granger causality test techniques to examine the relationship between budget deficits and some selected macroeconomic variables. The study made use of time series data for the period from 1980 to 2014. Based on the vector error correction model (VECM), the study concluded that budget deficit negatively affects real GDP and money supply but positively influences inflation rate and interest rate, although interest rate was insignificant. Whereas, results from the Granger causality test confirmed a causal link between gross domestic products, inflation, exchange rate, money supply and budget deficit.

Similarly, Korsu (2009) investigated the effects of budget deficit on the external sector performance of Sierra Leone, using the real exchange rate and overall balance of payments as the external sector indicators. The study used the annual time series for the period 1971 to 2005 and employed the Three Stage Least Squares (3SLS). The results show that a reduction in budget deficit in Sierra Leone depreciates the real exchange rate and improves the balance of payments by reducing money supply and the general price level.

Furthermore, Ene (2018) conducted a study to ascertain the effects of budget deficit on the unemployment rate in Nigeria for the period from 1997 to 2017. Using the Vector Error Correction Mechanisms (VECM), the study showed that budget deficit had a positive effect on unemployment rate, implying that an increase in budget deficit leads to a high unemployment rate in Nigeria.

Moreover, Molefe and Gisele (2020) tested the Keynesian-Ricardian opposition in order to examine the relationship between fiscal deficits and interest rates in BRICS countries. The panel vector error correction model (PVECM) techniques was employed to capture both long-run and short-run dynamics between variables. The study utilised variables such as fiscal deficits, long-term interest rates, inflation, GDP and short-term interest rates covering the period from 1995 to 2019. These results confirmed that fiscal deficits hypothetically crowd out private investment and consumption through increased effects on interest rates as the study discovered a positive and significant relationship between both short- and long-term interest rates, whereas fiscal deficit negatively influences GDP.

In Tanzania, Epaphra (2017) employed the VECM and variance decomposition approaches to examine budget deficits and the macroeconomic variables nexus. The study used time series annual data spanning from 1966 to 2015. Unsurprisingly, the results indicated that budget deficits and real GDP are negatively correlated, whereas budget deficits and money supply as well as the rate of inflation are positively associated, thereby confirming that a growing budget deficit leads to a high inflation rate in Tanzania.

Also, in their analyses and by using the ARDL bound test approach, Myovella and Kisava (2018) confirmed the results of Epaphra (2007) by finding a positive and long

run relationship between budget deficits and inflation in Tanzania. As such, the study concluded that for the country to succeed in reducing inflation over time and witness sustained high economic growth, a decline in unemployment levels as well as accelerate the industrialisation process, the government should adopt measures that can reduce the large budget deficit that has been growing over time.

Similarly, Samuel (2016) carried out a study to inspect whether budget deficits crowd out or crowd in private investment in Tanzania using the VECM and annual data for the period from 1970 to 2012. The results indicated that when the economy constantly exhibits fiscal deficits, private investment declines, suggesting that budget deficits considerably crowd out private investment and therefore the government should readdress its fiscal policy that would support private investors.

Obinabo and Agu (2018) in their investigation of the effects of fiscal deficit on selected macroeconomic variables in Nigeria found that fiscal deficits have contributed to Nigerian macroeconomic instability. The study employed the method of Cointegration covering the period 1986-2018. According to the results, although fiscal deficit intentions may be well intended to stimulate economic growth and employment, its bad (negative) influence on inflation, Money Supply and GDP eroded the possible expansionary impact on output, thereby, resulting into poor macroeconomic performance in the country.

In another econometric analysis in Nigeria, Wuyah and Amwe (2015) adopted the VAR model to determine the extent to which fiscal deficits influence macroeconomic variables for the year 1970 to 2013. In their findings, they discovered that a large and growing budget deficit was found to be one of the major causes of high inflation, low growth and crowding out of private investment and consumption in Nigeria. The study

concluded that fiscal deficits has been at the heart of macroeconomic instability in the country, hence recommending that in order to curtail deficits, there is a need for budget restructuring and the public spending growth rate must be managed.

Adji and Alm (2016) rejected the Ricardian equivalence hypothesis in Indonesia. The study employed the two-step Engle-Granger and ECM to validate the Ricardian equivalence in Indonesia, focusing on the effects of the budget deficit on consumption, interest rates, as well as current account balance. The results depicted that deficits significantly increase the real interest rate, confirming the Neoclassical view instead. In addition, the results showed that an increase in government spending will decrease national saving which will eventually induce a trade deficit due to the need of investment financing from abroad, concluding that fiscal deficits will impose significant long run costs on an economy.

In sub Saharan Africa, Awolaja and Esefo (2019) empirically examined the long run and short run effect of budget deficit on economic growth. Using the Pooled Mean Group (PMG) estimation method, the study was based on panel data analysis for twenty (20) countries covering 1991 to 2018. The findings revealed that a high government deficit leads to debt accumulation in sub-Saharan Africa countries and as a result negatively influences economic growth in the long run. Hence, the study concluded that for the government to mitigate the problem of budget deficit, there is a need to reduce the overall recurrent expenditure and rather increase expenditure on developmental projects.

Sharma and Mittal (2019) estimated the effect of Fiscal Deficit on economic growth (GDP) in India for a period of 1985 to 2015, considering other macroeconomic variables such as current account deficit, inflation rate, interest rate, exchange rate, and

total public expenditure. Using the ARDL model, the results showed an adverse effect of fiscal deficit towards economic growth during both short run and long run periods. Furthermore, the results showed that budget deficit influences GDP through transmission channel, that is, change in the magnitude of fiscal deficit causes changes in inflation, interest rate and exchange rate which then impacts GDP. In another study, Kubendran (2018) analysed the impact of fiscal deficit on current account deficit, capital flows, and its subcomponents in India using the Granger causality approach. The results clearly proved that high fiscal deficit results into high current account deficit, which in turn negatively influence capital inflows and hence, reduce the growth of the economy.

In addition, Mashakada (2013) investigated the impact of cumulative budget deficits on macroeconomic performance in Zimbabwe for a period from 1980 to 2008. The study revealed that the impact of the budget deficit on macroeconomic performance depends first on whether the deficit is incurred on recurrent or capital projects. As such, the results indicate that deficits precipitated unprecedented hyperinflation in Zimbabwe which led to the collapse of the domestic currency. It also revealed that in the absence of official devaluation, the deficit indirectly distorted the exchange rate, thereby contributing to the country's macroeconomic instability. In addition, the study confirmed that deficits also triggered interest rate increases whereas the effect of budget deficits on the current account remains ambiguous in Zimbabwe.

In Sri Lanka, Dissanayake (2016) examined the effect of budget deficit on selected macroeconomic variables (inflation, interest rate, exchange rate, debt and real GDP growth rate), during the post-liberalisation period, 1980-2014. Using the ARDL model and Granger Causality test, the study revealed that an increase in budget deficit is one of the major causes of high government debts as well as high inflation rate in the Sri

Lanka economy. However, the results showed no effect of budget deficit towards interest rate, exchange rate and real GDP.

Furthermore, Kesavarajah (2017) examined the impact of fiscal deficits on growth in the small open economy of Sri Lanka over the period 1970 to 2015. Confirming the existence of the neoclassical view in the context of the Sri Lankan economy, the study demonstrated that an increase in fiscal deficits had a significant and negative long term impact on economic growth as it undermines the growth prospects and puts a burden on fiscal sustainability.

In the same vein, Lwanga and Maweje (2014) determined the macroeconomic effects of the budget deficit in Uganda. The study adopted the vector error correction model (VECM) and granger causality test covering the period 1999 to 2011. The results clearly revealed that the widening current account deficit and the rising interest rates were due to the high growth of budget deficits in Uganda, endorsing the Twin deficit hypothesis theory. Surprisingly, the results also indicated that an increase in inflation reduces deficit which is contrary to theory.

Furthermore, Tung (2018) adopted the Error Correction Model to examine the effect of fiscal deficit on economic growth in Vietnam, using the quarterly data covering the period 2003-2016. The results strongly indicated that there is a cointegration relationship between fiscal deficit and economic growth in Vietnam, in which fiscal deficit had harmful effects on economic growth in both the short and long run. In particular, the correlation analysis confirmed that besides, fiscal deficit can not only hurt the gross output but also private investments, foreign direct investments, and net exports.

Aworinde (2013) examined the effects of budget deficits on the current account imbalance and inflation, focusing on twelve African countries and the results were mixed across countries. The study employed the annual time series based on the VAR and ARDL models. According to the results, a rise in government deficits leads to an increase in the current account deficits in Botswana, Egypt, Ethiopia, Ghana, Morocco, South Africa and Tanzania, and this is in accordance with the twin deficits hypothesis. With respect to inflation, the results show evidence that fiscal deficit is inflationary in most of the African countries, implying that high budget deficit yield high inflation rate. On the other hand, in Cameroon and Uganda, the results show that an increase in the fiscal deficits improves the current account deficit, while in Kenya, Nigeria, and Tunisia, the current account deficit remains constant in response to changes in the government deficit, which is consistent with the Ricardian Equivalent Hypothesis (REH) instead.

Akinola (2017) conducted an empirical study to examine the impact of budget deficit on economic performance in Nigeria between 1970 and 2013. In the study, economic performance was measured by per capita income, unemployment rate and price stability. Using the multiple ordinary least square (OLS) as the econometric method of estimation, the results show that an increase in budget deficit worsened the level of unemployment rate and instability of commodity prices in Nigeria, confirming a positive relationship between budget deficit and both unemployment rate and inflation rate in the country.

3.3.3 Empirical evidence in support of the Keynesian view

Keynesian economists believe that budget deficits produce progressive impacts towards the economy through boosting economic growth. During 2019, Biplob (2019) investigated the impacts of budget deficit on economic growth in Bangladesh over the

period of 1981 to 2017. The study employed the autoregressive distributed lag (ARDL) to analyse the data and VECM to examine directional causalities between the variables. According to the ARDL results, budget deficit positively affects economic growth both in the long-run and short-run while government total expenditures lead to an increase in GDP only in the long-run, thus supporting the Keynesian proposition that budget deficits crowd-in private investments resulting into high economic growth. This finding corresponds with other studies (Abdullah, Azad, & Siddiqua, 2018; Hussain & Haque, 2017) who found that budget deficit positively affects economic growth in Bangladesh.

Using the Ordinary Least Squares (OLS) technique, Osoro (2016) ascertained the impact of budget deficit on the economic growth of Kenya for the period 1980 to 2014. According to the results, budget deficit was found to have a positive impact on the economic growth, that is, when the budget deficit increases (decreases), economic growth increases (decreases), thus supporting the Keynesian view of budget deficit which advocates for deficit in stimulating the economy during recession periods. However, the study recommended that for the Kenyan economy to reap the benefits of having a budget deficit that stimulates the economy, the optimal level of 3.696 percent of budget deficit as a ratio to GDP must be maintained or else budget deficits beyond this level will diminish the economic benefits achieved via budget deficits.

Correspondingly, Odhiambo, Momanyi, Othuon and Aila (2013) in examining the relationship between economic growth and fiscal deficits in Kenya during 1970-2007, discovered that budget deficit positively correlates with economic growth (GDP), indicating that fiscal deficits can increase economic growth by enhancing productivity through providing infrastructure, education, and health and harmonising private and social interest.

In their study, Saeidi and Valizadeh (2012) examined the impact of budget deficit on inflation and unemployment in Iran's economy for the period 1979 - 2006. Using the OLS and Least Square estimates, the findings show that budget deficit has a meaningful effect on both inflation and unemployment rate in the Iranian economy. As such, budget deficit has a reverse effect towards unemployment rate, signifying that an increase in the budget deficit leads to a decline in unemployment rate, thus revealing that the Keynesian paradigm is prevalent in Iran's economy.

Nwakobi, Echekeba and Ananwude (2018) explored the effects of fiscal deficit on selected macroeconomic variables (gross domestic product, money supply and inflation) in Nigeria. The study was based on time series data from 1981 to 2015 and employed the Johansen co-integration and Granger causality test. The results indicate a positive relationship between gross domestic product and fiscal deficit which is in line with the Keynesian theory that fiscal deficit spurs economic growth. Furthermore, the results show that fiscal deficit increases the magnitude of money in circulation in Nigeria. Similarly, Osuka and Achinihu (2014) revealed that budget deficit positively influences macroeconomic variables in Nigeria as their findings indicated that budget deficit crowd-in investment through its reducing effects on interest rate and thereby contribute to economic growth as long as emphasis is made on the provision of capital goods/capital expenditure.

Saleh (2003) conducted an overview, both theoretical and empirical, aiming to analyse the relationship and impact of the budget deficit on macroeconomic variables targeting both developed and developing countries. Supporting the Keynesian proposition, the results demonstrated strong evidence that an increase in the budget deficit would induce domestic absorption, and hence import expansion, and trigger a current account surplus in both developed and developing economies. At the same time, the findings

indicate that the effects of budget deficits on exchange rates depend on the types of methods used to fund the deficits, whether through taxation or through money growth.

Moreover, Buscemi and Yallwe (2012) analysed the effects of fiscal deficit on the sustainability of economic growth and savings in emerging economies such as China, India and South Africa for the period from 1990 to 2009. The study based its assumption on the endogenous growth model and employed the reduced form of the Generalized Method of Moment's (GMM) method for the dynamic panel's approach. According to the scholars, fiscal deficit positively influences economic growth and saving in these economies, thereby concluding that, fiscal deficit would affect economic growth and saving through the means of financing the deficit.

Moreover, Magehema (2015) established the effect of budget deficit on economic development (interest rate, inflation rate and foreign exchange rate) in East African Countries for the period from 2004 to 2013. Using the Multi-variety Linear Regression, the findings showed a positive correlation between budget deficit and economic development in East African countries. Based on the dynamic growth model, the study concluded that fiscal deficit can increase economic growth as it enhances productivity by means of providing infrastructure, education, and health and harmonising private and social interest.

Furthermore, Molocwa, Khamfula and Cheteni (2018) in their study investigated the impact of a budget deficit on macroeconomic variables such as economic growth, investment and inflation among the BRICS countries. The study utilised the annual panel data for the period 1997 to 2016 and adopted a fully modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) estimator. The results

depicted that high and accumulating budget deficit positively impacts both economic growth and inflation in these countries.

3.3.4 Empirical evidence in support of the Ricardian Equivalent Hypothesis

(REH)

The Ricardian equivalence theory posits that there is no relationship between a country's government budget deficit and its economic performance due to the fact that the budget deficit does not influence the overall demand. In sub-Saharan Africa, Kelikume (2016) examined the effect of government deficit on interest rates using the Panel Vector Auto regression techniques (PVAR) for the period from 2000 to 2014. Supporting the Ricardian Equivalence, the result showed that interest rate responds neutrally or insensitively to government fiscal deficit.

Dao and Doan (2013) investigated the impact of deficit on economic development through various macroeconomic variables such as GDP, consumer price index, exchange rate, and money supply (M2) in Vietnam. The study employed the quarterly data and utilised the Cointegration and VECM approaches covering the period from 2003Q1 to 2012Q4. According to the estimated results, budget deficit does not influence inflation and GDP, thus supporting Nguyen and Nguyen's (2010) results who also discovered that shocks to budget deficit growth have no effect on real GDP growth and inflation in Vietnam. Likewise, using the SVAR model, Khieu (2014) examined the nexus among budget deficit, money supply and inflation during 1995 to 2012 and found that shocks to budget deficit growth have no effect on real GDP growth, interest rate, money growth and therefore inflation on the Vietnamese economy.

Ayogoeze and Anidiobu (2017) assessed the impact of government budget deficits on unemployment rate in Nigeria for the period from 1986 to 2015. The study employed the Ordinary Least Square (OLS) econometric technique to estimate the variables. According to the empirical results, government budget deficit had a positive and non-significant impact on unemployment rate in Nigeria and as such, the study advocated for the expansionary fiscal policy to be encouraged since it hastened the development process of the economy.

Moreover, Van and Sudhipongpracha (2015) studied the effects of the budget deficit and economic performance in the Vietnamese economy during the period from 1989 to 2011. Consistent with the Ricardian equivalence theorem, the findings demonstrated that the government deficits have no direct effects on the country's economic productivity and economic growth. Instead, the results showed that foreign direct investment (FDI) is one of the important factors that contribute to Vietnam's economic expansion for more than two decades.

In her contribution to the debate, Wosowei (2013) studied the relationship between fiscal deficit and macroeconomic performance in Nigeria, aiming to examine the link between fiscal deficit and Nigerian unemployment rate. Using annual secondary data, the study employed OLS econometric methods in evaluating the estimation over the period from 1980 to 2010. According to the empirical findings, fiscal deficits, even though they met the economic *a priori* in terms of its negative coefficients, it did not significantly affect macroeconomic outputs within the period of study, thus advocating that fiscal deficits do not contribute significantly to the overall performance of the economy.

Also, Dantama, Gatawa and Galli (2017) examined the long run impact of fiscal deficit on private investment in Nigeria by employing annual time series data covering the period from 1980 to 2014. The study adopted the Error Correction Model (ECM) and found a positive relationship between fiscal deficit and private investment in Nigeria although not significant, implying that the prolonged deficit history in the country is not the cause of crowding in the crowding out of private investment during the period under review.

In a similar study, Damalie and Daniel (2019) empirically analysed the validity of twin deficits in Uganda both in the short and long run during the period from 1980 to 2017. Using the VECM, the results indicated evidence of Twin divergence hypothesis for Uganda, implying that budget deficits can either improve or worsen trade deficits or trade deficits can either worsen or improve budget deficits. As a result, the study concluded that although an increase in fiscal deficits could improve the current account, the government should not necessarily increase its expenses to improve trade deficits as this might negatively affect the economy during unstable economic periods.

In Turkey, Samirkaş (2014) investigated the effects of budget deficits on inflation, economic growth and interest rates during the years from 1980 to 2013. The study indicated no significant long-term correlation between budget deficit and inflation, GDP, and interest rates, and the results are consistent with those of the study conducted by Aksoy (2010) who also did not find any correlation between budget deficits and inflation in Turkey. The Granger causality results however, surprisingly indicated that interest rate affects budget deficit and not the other way around, thereby concluding that for Turkey to reduce the budget deficit, interest rates should be reduced first.

Correspondingly, Bayat, Kayhan and Senturk (2012) analysed the causality between budget deficit and its ratio to gross domestic product and interest rate in the Turkish economy. By doing so, the study investigated the validity of the crowding out view against the Ricardian equivalence hypothesis in Turkey between 2006 and 2011. Empirical results show that there is no causal correlation between budget deficit and both gross domestic product and nominal interest rate, thus accepting the Ricardian equivalence hypothesis in Turkey, signifying that there is no effect of financing budget deficit on nominal interest rate. The scholars further stressed that expansionary fiscal policies financed by loans do not affect aggregate demand and capital allocation in a full employment economy through the nominal interest rate channel.

Mukhtar (2008) tested the conventional crowding-out view against the Ricardian deficit neutrality alternative in Pakistan. Specifically, the study examined the long run relationship between nominal interest rates and budget deficits using quarterly time-series data for the period 1960 to 2005. From the ECM and Granger causality test approach, the results revealed that budget deficit does not have any significant impact on the nominal interest rate. Therefore, it suggested that the evidence from Pakistan does not support the conventional notion of crowding-out of the private investment expenditures due to the increase in the interest rates but the Ricardian neutrality hypothesis is confirmed in Pakistan.

Kosimbei (2009) established the effects of budget deficits on macroeconomic performance in Kenya for the period from 1963 to 2007. The study was based on the Mundel-Fleming model and adopted the VARs model. The results showed that budget deficit affects private investments negatively whereas it affects private consumption positively. In addition, the study revealed that budget deficits may have both negative and positive effects towards the current account depending on the changes in other

factors at that particular time, such as exchange rates. It also indicates that budget deficit showed mixed (positive and negative) effects on GDP.

In 2004, Vuyyuri and Seshaiiah (2004) studied the interaction of budget deficit with other macroeconomic variables such as Nominal effective exchange rate, GDP, Consumer Price Index and money supply for India, using the Cointegration approach and Variance Error Correction Models (VECM) covering the period from 1970 to 2002 and they found the variables to be cointegrated. Also they found a bi-directional causality between budget deficit and nominal effective exchange rates but they found no significant relationship between budget deficit and GDP, money supply and consumer price index. Instead, they observed that the GDP Granger causes budget deficit.

3.4 Summary

Theoretical literature regarding budget deficit and macroeconomic fundamentals are not without ambiguities. Consequently, there are three dominant schools of thoughts that were developed overtime to explain the relationship and effect of budget deficit on various macroeconomic variables. These theories are, the Neoclassical theory, the Keynesian and the Ricardian equivalence hypothesis. Moreover, from the foregoing reviewed empirical literature, several studies have been carried out to examine the impacts of fiscal deficit on macroeconomic variables through various methodologies and on both developed and developing countries. Many studies have focused on the impacts of fiscal deficit on selected macroeconomic variables such as money supply, unemployment, inflation, economic growth, interest rate, exchange rate, private investment, and current account deficit with evidence of differing (mixed) views regarding the subject matter. The results therefore, show either a positive, negative or

even no effects of budget deficit on these variables, in favour of the Keynesians paradigm, Neoclassical School of thoughts or the Ricardian equivalence hypothesis respectively. As a result, findings from empirical studies regarding the effects of budget deficit on macroeconomic variables are mixed, depending on the level of economic development (developed, emerging market and developing), and the level of countries' 'deficit. It is also noted that empirical findings vary considerably, depending on the factors taken into consideration in the analysis, as well as the methodology approaches used to process and evaluate the data. In addition, the reviewed literature demonstrated that much has been done on the effects of the budget deficit on macroeconomic variables in other parts of the world and African continent, particularly the East African countries. On the other hand, there is limited literature on the macroeconomic effects of the budget deficit in the Southern Africa Development Community (SADC) region, including Namibia. As such, there is still a research vacuum in the case of the Namibian context regarding the subject under study. Hence, this study aimed at filling that particular research gap in Namibia by analysing the impact of budget deficit on various macroeconomic indicators, namely, unemployment, interest rate and economic growth.

CHAPTER FOUR: METHODOLOGY

4.1 Introduction

This chapter presents and discusses the research methodology employed in analysing the effects of budget deficit on macroeconomic variables in Namibia. The chapter further outlines data sources and collection. Moreover, it provides the definitions and descriptions of the variables used as well as the diagnostic tests conducted in order to examine the underlying dynamics.

4.2 Research design

The study employed a quasi-experimental research design. Guided by past research papers that were done on similar topic as well as published journals, the study followed a quantitative research approach which includes econometric modelling using annual time series data to analyse the effects of the budget deficit on macroeconomic variables in Namibia.

4.3 Data sources and description

The study made use of annual time series data spanning from 1990 to 2018 whereby secondary data for budget deficit, economic growth, interest rate and the consumer price index were collected from the Bank of Namibia, and the Namibia Statistics Agency (NSA). On the other hand, as stated earlier under limitations in Chapter 1, the study adopted the Hartman (1988) database for unemployment data due to the Labour Force Surveys that are only conducted once every four years, making data on unemployment to be limited in Namibia. Furthermore, where there are gaps, the study adopted the interpolation and extrapolation methods to generate the unemployment data as these have been used before and proven that such a variable does not appear to cause bias problems (Sunde & Akanbi, 2016). Whereas economic growth is measured by real GDP growth rate, budget deficit is expressed in levels, unemployment is

expressed as a percentage of the total number of persons in the labour force and real interest rate is also expressed in a percentage form. The sample size was selected based on the availability of data for both variables of interest.

4.4 Model specification

Based on the selected theoretical and empirical reviews, this study adopted the Autoregressive Distributed Lag (ARDL) approach or Bound Testing approach to Cointegration by Pesaran, Shin and Smith (2001) which was also adopted by Akinola (2017) as well as Dikeogu and Karma (2018) for similar studies in Nigeria. Furthermore, to provide evidence for both the long and short run dynamics between budget deficit and macroeconomic variables specifically in Namibia, the adopted model was slightly modified in order to suit the Namibian economy.

The ARDL and bound Cointegration approach is preferred over other methodologies due to its various advantages. Firstly, the ARDL technique is unbiased and works efficiently with a small sample size which was the case for the current study. Secondly, unlike the Johansen cointegration test, the bound test for cointegration does not require all variables to be integrated of the same order, thus it is flexible and applicable irrespective of whether the underlying variables are purely zero order of integrated, I (0), purely first order integrated, I (1) or mutually cointegrated (a mixture of I (0) and I (1)). Furthermore, the approach allows for the simultaneous estimation of long-run and short-run components of the model, thereby remedying the problems associated with omitted variables and serial autocorrelation.

The general functional and mathematical equation is expressed as follows:

$$Y_t = \alpha + b_1(BD_t) \dots \dots \dots (1)$$

Where; Y pertains to the macroeconomic variables measured by economic growth which is proxy by real gross domestic product (RGDP); unemployment rate (UEM) and real interest rate (RIR). BD is the independent variable that denotes budget deficit while α is a constant, b_1 is a slope and t is a time or trend variable. Besides, it is significant to note that there are other factors other than budget deficits that influence macroeconomic variables and as a result, exogenous factors (control variables) are incorporated in the model. Also, Gujarati (2003) states that the inclusion of control variables in a model helps to avoid simultaneous bias in regression as well as addresses the issue of endogeneity. Therefore, eq. (1) become:

$$Y_t = \alpha_0 + b_1(BD_t) + b_2(X_t) + \mu_t \dots \dots \dots (2)$$

Where X represents the control variables. For the purpose of this study, the exchange rate (EXH), tax revenue (TAXRV), Government total expenditure (GEXP), and current account balance (CAB) are taken as additional control variables in the model as they are believed to influence dependent variables. Expanding the column vector of macroeconomic variables, the multivariate econometric form of the models becomes:

$$RGDP_t = \alpha_0 + b_1BD_t + b_2EXH_t + b_3TAXRV_t + b_4GEXP_t + b_5CAB_t + \mu_t \dots \dots (3)$$

$$UEM_t = \alpha_0 + b_1BD_t + b_2EXH_t + b_3TAXRV_t + b_4GEXP_t + b_5CAB_t + \mu_t \dots \dots (4)$$

$$RIR_t = \alpha_0 + b_1BD_t + b_2EXH_t + b_3TAXRV_t + b_4GEXP_t + b_5CAB_t + \mu_t \dots \dots (5)$$

And, in addressing the objectives of the study, the econometric form of ARDL models tested are specified as follows:

Model 1:

$$\begin{aligned}
\Delta RGDP_t = & \alpha_{01} + b_{11}\Delta RGDP_{t-i} + b_{21}\Delta BD_{t-i} + b_{31}\Delta EXH_{t-i} + b_{41}\Delta TAXRV_{t-i} \\
& + b_{51}\Delta GEXP_{t-i} + b_{61}\Delta CAB_{t-i} + \sum_{i=1}^n \alpha_{1i} \Delta RGDP_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} \\
& + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} \\
& + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} + \varepsilon_t \dots \dots \dots (6)
\end{aligned}$$

Model 2:

$$\begin{aligned}
\Delta UEM_t = & \alpha_{02} + b_{12}\Delta UEM_{t-i} + b_{22}\Delta BD_{t-i} + b_{32}\Delta EXH_{t-i} \\
& + b_{42}\Delta TAXRV_{t-i} + b_{52}\Delta GEXP_{t-i} + b_{62}\Delta CAB_{t-i} + \sum_{i=1}^n \alpha_{1i} \Delta UEM_{t-i} \\
& + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} \\
& + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} + \varepsilon_{2t} \dots \dots \dots (7)
\end{aligned}$$

Model 3:

$$\begin{aligned}
\Delta RIR_t = & \alpha_{03} + b_{13}\Delta RIR_{t-i} + b_{23}\Delta BD_{t-i} + b_{33}\Delta EXH_{t-i} + b_{43}\Delta TAXRV_{t-i} \\
& + b_{53}\Delta GEXP_{t-i} + b_{63}\Delta CAB_{t-i} + \sum_{i=1}^n \alpha_{1i} \Delta RIR_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} \\
& + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} \\
& + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} + \varepsilon_{3t} \dots \dots \dots (8)
\end{aligned}$$

Where Δ represents the difference operator, while α_{01}, α_{02} and α_{03} are the intercepts, b_{11} to b_{63} are the long-run coefficients and α_{1i} to α_{5i} are short-run parameters. Whereas $\varepsilon_{1i}, \varepsilon_{2i}$ and ε_{3i} are the white noise error terms. Furthermore, n represents the lag length of the variables which are determined by using the selection information (the AIC and the BIC) criteria.

4.5 Estimation Techniques

4.5.1 Stationarity test

Gujarati (2003) hypothesised that time series variables generally exhibit a non-stationary pattern in their levels. Therefore, regression with non-stationary time series on another may lead to spurious results which then lead to false conclusions and misleading policy recommendations and implications. Thus, before any econometric analysis of time series, it is necessary to examine the stationarity properties of the variables. Consequently, the unit root test as a pre-testing procedure has been conducted by employing the Augmented Dickey-Fuller (ADF) test and the Phillip Perron (PP) test. These tests determine the variables' order of integration as well as evading the likelihood of spurious regression results. Spurious correlation implies that the existence of statistically significant relationships between the variables being modelled, whereas in actual fact there exists no relationship between the variables.

According to Gujarati (2003), time series (Y_t) is only said to be stationary (no unit root) when it satisfies the following conditions:

(1). the mean is constant through time, that is:

$$E(X_t) = \mu$$

(2). the variance is constant through time, that is:

$$Var(X_t) = E[(X_t - \mu)] = \delta^2$$

(3). the covariance rely upon the number of periods between two values, that is:

$$Cov(X_t, X_{t+k}) = E[(X_t - \mu)(X_{t+k} - \mu)] = Y_k$$

Whereas, non-stationarity occurs when the mean and variance are time-variant. However, if series are found to be non-stationary (has unit root) in levels, one can difference them in order to turn them into stationarity. For instance, if series become stationary only after being differenced once (first difference) then that series is referred to as integrated of order one [I (1)] or integrated of order two [I (2)] if they become stationary only at second difference. It is important to note that although the ARDL model does not matter whether variables are integrated of order zero [I (0)] or one [I (1)], there is, however a need to test for a unit root in order to ascertain that none of the variables are integrated of order 2, that is I (2) or higher.

4.5.2 Cointegration test

Subject to the preceding results (unit root), the study conducted a Cointegration test in order to determine the existence or absence of a long-run relationship among variables. If series are found to be integrated then they exhibit long-run relationships, implying that series are related and can be combined in a linear fashion. In other words, even if there are shocks (drift away from each other) in the short run which may affect movement in the individual series, they however, would converge in the long run. Equally, Shafuda (2015) states that two or more variables are said to be co-integrated if they share a common trend.

Furthermore, as highlighted by Gujarati and Sangeetha (2007), the importance of the co-integration test can be seen also as a pre-test to avoid spurious results. There are numerous methods of testing the existence of a long-run equilibrium relationship

between variables such as the Johansen cointegration test, the Engle-Granger two-stage cointegration procedure and the Bound test for cointegration. These approaches are employed depending on the nature of the equation that is being tested, whether it is a multivariate system, a single equation or series are integrated of different orders, that is a combination of I(0) and I(1).

4.6 Estimation of the Long-run Models

After establishing the existence of co-integration among variables, the long-run relationship between dependent variables and their independent variables has been estimated using the ARDL approach. The lag orders of the ARDL model was selected using the lag selection criterion of the Akaike Information Criterion (AIC). The models that were tested are:

Model 1:

$$RGDP_t = \beta_0 + \sum_{i=1}^n \alpha_i RGDP_{t-i} + \sum_{i=1}^n \alpha_i BD_{t-i} + \sum_{i=1}^n \alpha_i EXH_{t-i} + \sum_{i=1}^n \alpha_i TAXRV_{t-i} + \sum_{i=1}^n \alpha_i GEXP_{t-i} + \sum_{i=1}^n \alpha_i CAB_{t-i} + U_{1t} \dots \dots \dots (9)$$

Model 2:

$$UEM_t = \phi_0 + \sum_{i=1}^n \alpha_i UEM_{t-i} + \sum_{i=1}^n \alpha_i BD_{t-i} + \sum_{i=1}^n \alpha_i EXH_{t-i} + \sum_{i=1}^n \alpha_i TAXRV_{t-i} + \sum_{i=1}^n \alpha_i GEXP_{t-i} + \sum_{i=1}^n \alpha_i CAB_{t-i} + U_{2t} \dots \dots \dots (10)$$

Model 3:

$$\begin{aligned}
RIR_t = & \gamma_0 + \sum_{i=1}^n \alpha_i RIR_{t-i} + \sum_{i=1}^n \alpha_i BD_{t-i} + \sum_{i=1}^n \alpha_i EXH_{t-i} + \sum_{i=1}^n \alpha_i TAXRV_{t-i} \\
& + \sum_{i=1}^n \alpha_i GEXP_{t-i} + \sum_{i=1}^n \alpha_i CAB_{t-i} + U_{3t} \dots \dots \dots (11)
\end{aligned}$$

4.7 Estimation of the Short-run Models

Building on the proof of the existence of cointegration among the variables, the study proceeded to the estimation of the error correction model (ECM). The error correction term (ECT) shows the speed of adjustment to the long-run equilibrium after initial short run disequilibrium in the system. Below are the short run models:

Model 1:

$$\begin{aligned}
\Delta RGDP_t = & \beta_0 + \sum_{i=1}^n \alpha_{1i} \Delta RGDP_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} \\
& + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} \\
& + \delta ECM_{t-i} + U_{1t} \dots \dots \dots (12)
\end{aligned}$$

Model 2:

$$\begin{aligned}
\Delta UEM_t = & \phi_0 + \sum_{i=1}^n \alpha_{1i} \Delta UEM_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} \\
& + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} \\
& + \vartheta ECM_{t-i} + U_{2t} \dots \dots \dots (13)
\end{aligned}$$

Model 3:

$$\begin{aligned}\Delta RIR_t = & \gamma_0 + \sum_{i=1}^n \alpha_{1i} \Delta RIR_{t-i} + \sum_{i=1}^n \alpha_{2i} \Delta BD_{t-i} + \sum_{i=1}^n \alpha_{3i} \Delta EXH_{t-i} \\ & + \sum_{i=1}^n \alpha_{4i} \Delta TAXRV_{t-i} + \sum_{i=1}^n \alpha_{5i} \Delta GEXP_{t-i} + \sum_{i=1}^n \alpha_{6i} \Delta CAB_{t-i} \\ & + \omega ECM_{t-i} + \varepsilon_{3t} \dots \dots \dots (14)\end{aligned}$$

Where, β_0, ϕ_0 and γ_0 are the drift components, α_{1i} to α_{6i} are the short-term dynamic coefficients, while δ, ϑ and, ω are the coefficients of the speed of adjustment for the three models. Other variables remained as defined previously.

4.8 Diagnostic tests

The ARDL is a linear regression model and therefore the underlying assumptions of the classical linear regression model (CLRM) have to be verified. Furthermore, the presence of regression pathologies such as serial correlation, multicollinearity and heteroscedasticity, etc. violates the CLRM assumptions and hence invalidates the statistical validity of parameter estimates. Consequently, to ensure the validity of the findings, establish the stability of the model as well as to ensure the robustness of the model, several diagnostic tests such as serial correlation test, heteroscedasticity test, normality test, and Ramsey reset test were carried out. Furthermore, the stability of parameters is tested using the cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) tests.

4.9 Definition and measurement of variables

4.9.1 Budget deficit (BD)

The term budget deficit is most commonly used to refer to government spending rather than business or individual spending. The budget deficit, also referred to as fiscal

deficit, represents the negative difference between total government revenue and the total government expenditure of a country over a period of a year. In other words, the budget deficit is the excess of government spending over revenues earned, indicating the amount of money that the government will need to borrow during the financial year. In this model, the budget deficit is measured in levels.

4.9.2 Economic growth (real GDP growth rate)

In this study, economic growth is a proxy by real GDP growth. GDP is the quantitative measure of a nation's total economic activity, more specifically, it represents the monetary value of all goods and services produced within a nation's geographic borders during a specified period of time, usually one year. It is a measure of the overall productivity of an economy within national borders or equally used as a measure of aggregate demand in an economy.

4.9.3 Unemployment rate (UEM)

The current study defines unemployment according to the international statistical definition as people who are without work, are available to work and are actively seeking work. It comprises all persons above a specified age, who during the period under study were (i) without work (ii) currently available for work, and (iii) are seeking work. In the present study, unemployment is expressed as a percentage of the total number of persons in the labour force. The unemployment rate reflects the inability of an economy to generate employment for those persons who want to work but are not doing so, even though they are available for employment and are actively seeking work.

4.9.4 Real interest rate (RIR)

A real interest rate is an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower and the real yield to the lender or an investor.

4.9.5 Government Expenditure (GEXP)

Government expenditure is the total government expenditure, which is a summation of recurrent and capital expenditures. This includes all expenditures made by the government, those financed by fees and charges, those from the general revenue fund as well as those that are transferred to the state-owned enterprises (SOE).

4.9.6 Tax revenue (TAXRV)

Tax revenue is defined as the revenues collected by the government from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. In this study, tax revenue is expressed as a percentage of GDP which indicates the share of the country's output that is collected by the government through taxes.

4.9.7 Current account balance (CAB)

The current account balance of payments is a record of a country's international transactions with the rest of the world. It includes all the transactions (other than those in financial items) that involve economic values and occur between resident and non-resident entities. In other words, the current account balance represents the impact that the external (foreign) markets have on the Namibian economy.

4.9.8 Real exchange rate

The real exchange rate is defined as the rate at which one currency is exchanged with another currency. Or it is the value of one currency in terms of another currency. In

the present study, the Namibian price index is used against the United States of America's price index.

4.10 Research ethics

The study adhered to all ethical behaviours of honesty and truthful reporting whereby all estimated results were accurately stated as obtained. Furthermore, data and all information that was utilised were not fabricated or misrepresented and the sources of information are acknowledged by the use of the Harvard referencing style.

CHAPTER FIVE: DATA ANALYSIS AND EMPIRICAL RESULTS

5.1 Introduction

This chapter presents the empirical data analysis and discussion of findings of the study. In examining the effects of budget deficits on selected macroeconomic variables, the study examined the nature of time series data as well as the presence of the long run relationship between variables of interest through unit root testing and Bound test for the cointegration approach respectively. Moreover, the chapter presents both short and long run ARDL estimation results as well as the outcome of various diagnostic tests undertaken to validate the finding of the study.

5.2 Analysis of Unit root test

Since data are time series in nature, it is significant to confirm their stationarity. Moreover, in order to mitigate spurious regressions as well as ascertain their order of integration, all series were subjected to unit root analysis. In order to achieve this and for consistency, two sets of stationarity tests, the Augmented Dickey Fuller (ADF) and the Phillip Perron (PP) tests were carried out. The unit root tests were conducted in view of the following general hypothesis:

- *Null hypothesis: There is a unit root (series are non-stationary)*
- *Alternative hypothesis: There is no unit root (series are stationary)*

Where-by series is said to be stationary (has no unit root) if their t-statistics if the absolute values are greater than the critical level at 1 percent, 5 percent, and 10 percent. In addition, the p-value can also help to guide the decision of whether data are stationary or not. Table 5.2 below presents the results for both ADF and PP tests.

Table 5.2: Results of the unit root test

Name of Variable	Mode of specification	ADF		PP		Order of integration
		In levels	1 st difference	In levels	1 st difference	
		T-stats	T-stats	T-stats	T-stats	
RGDP	Intercept	-4.4807***	-8.3436***	-4.4742***	-12.0468***	I(0)
	Trend & Intercept	-4.4489***	-8.1561***	-4.4844***	-11.9068***	
BD	Constant	-2.7078*	-4.7705***	-2.7030*	-5.0124***	I(1)
	Trend & Constant	-2.6402	-4.6704***	-2.6327	-4.8699***	
UEM	Intercept	-2.5122	-6.1104***	-2.4162	-19.2380***	I(1)
	Trend & Intercept	-5.3258***	-6.0576***	-6.0205***	-20.7623***	
RIR	Intercept	-4.0611***	-8.6818***	-4.0804***	-8.7519***	I(0)
	Trend & Intercept	-5.0639***	-8.6868***	-8.0478***	-8.7820***	
GEXP	Intercept	-2.3619	-5.5369***	-2.3619	-5.5369***	I(1)
	Trend & Intercept	-2.2672	-5.4282***	-2.2672	-5.4282***	
	Trend & Intercept	-2.7997	-4.4806***	-2.0722	-4.4508***	
CAB	Intercept	-1.7201	-5.8591***	-1.6985	-5.8924***	I(1)
	Trend & Intercept	-2.3508	-5.7331***	-2.3508	-5.7607***	
TAXRV	Intercept	-2.2461	-5.0437***	-2.2309	-6.2092***	I(1)
	Trend & Intercept	-4.0604**	-4.8331***	-2.8856	-6.0868***	

EXH	Intercept	-0.6197	-4.7155***	-0.5868	-4.7146***	I(1)
	Trend & Intercept	-2.0425	-4.6235***	-2.2808	-4.6235***	

*Source: Author's compilation using E-views. Note: ***, **, and ** denotes rejection of a unit root null hypothesis at a significance level of 1, 5, and 10 percent respectively.*

The ADF test results in Table 5.2 above revealed that RGDP and RIR are stationary at level, i.e. integrated of order zero [I (0)]. While BD, UEM, GEXP, TAXRV, CAB and EXH are non-stationary at levels and only become stationary at the first difference, I (1). The outcomes obtained by the ADF tests were further confirmed by the PP unit root test, implying that all variables except GDP and RIR are non-stationary in levels, and however, become stationary at first differences. Having determined the order of integration of variables, the study proceeded to determine whether these variables are cointegrated, that is, whether they possess a long-run relationship.

5.3 Bounds Test for Cointegration

To analyse the long-run relationship and the short-run dynamics of the effect of the budget deficit on selected macroeconomic variables, the study employed the Autoregressive Distributed Lag (ARDL) cointegration method. Moreover, having confirmed that series are integrated of different order [I (0) and I (1)], and none of them are integrated of order two [I (2)], the bounds testing procedure was deemed appropriate to test for the presence of long-run relationship among variables.

The null and alternative hypotheses were given as:

$$H_0: B_1 = B_2 = B_3 = B_4 = B_5 = 0 \text{ (There is no cointegration)}$$

$$H_1: B_1 \neq B_2 \neq B_3 \neq B_4 \neq B_5 \neq 0 \text{ (There is a cointegration)}$$

If the computed F-statistic lies below the lower critical bound value, then the null hypothesis of no cointegration is accepted. On the contrary, if the computed F-statistic lies above the upper critical bound value, then the null hypothesis of no cointegration cannot be accepted. Otherwise, the cointegration test is inconclusive if the computed F-statistic lies between the lower and upper critical bound values, implying that the presence or absence of the long-run cointegration cannot be determined. Table 5.3 below presents the bounds cointegration results for all three models:

Table 5.3: Bounds test for cointegration results

Models	F-Statistics	Level of significant	Lower bound	Upper bound
RGDP	3.850	10%	2.26	3.35
UEM	4.464	5%	2.62	3.79
RIR	4.527	1%	3.41	4.68

Source: Author's compilation

From the table above, the computed F-statistics of 3.850, 4.464, and 4.5274 are greater than the upper bound critical value of 3.79 at a 5 percent level of significance, thereby showing that there are long-run relationships among the variables under all models. Therefore, the null hypothesis of no cointegration cannot be accepted and as a result, the study concludes that all variables of interest are cointegrated and there are long run relationships among all models. Sequel to the cointegration test, the next step was to estimate the short-run dynamic and long-run effects of BD, GEXP, TAXRV, CAB, and EXH on RGDP, UEM, and RIR using the ARDL method.

5.4 Long run models results

Since the presence of a long-run relationship has been established in all models, the study estimated and examined the long-run marginal effects of independent variables on the dependent variables. All models' optimal ARDL specification has been selected

based on the AIC lag length criteria and the long-run estimation results presented as follows:

Table 5.4.1: Long run estimation results for RGDP Model: ARDL (1,0,0,1,0,0)

Dependent variable: RGDP			
Variables	Coefficient	t-Statistic	Prob.
C	4.670485	0.452476	0.6558
BD	-0.762355	-2.560621	0.0186**
EXH	-0.510967	-2.319147	0.0311**
GVEXP	-0.830972	-2.138904	0.0450**
TAXRV	0.750565	2.597658	0.0172**
CAB	0.186548	1.169095	0.2561

*Source: Author's Compilation. Note: ** denotes level of significance at 5 percent.*

The log-run results above depict that budget deficit has a negative effect on economic growth in Namibia. This is shown by the coefficient of BD (-0.762) which is statistically significant at a 5 percent level of significance. That is, *ceteris paribus*, a one unit increase in the budget deficit will deteriorate the economic growth rate by 0.762 units in the long run. This implies that the budget deficit has been a constraint to the growth rate of the Namibian economy, supporting the Neoclassical theory which is of the view that the budget deficit is inimical and has inverse effects on economic growth. The result attests to the findings of Amwaama (2018), who also found an adverse and significant correlation between the two series in Namibia. Moreover, the results also confirm to the findings of Fatima et al. (2012), Wuyah and Amwe (2015), Tung (2018), as well as Awolaya and Efeso (2019) for Pakistan, Nigeria, Vietnam, and Sub-Saharan Africa respectively.

With regards to the coefficient of total government expenditure, it is negative and statistically significant. That is, if the government increases its expenditure, then the growth of the economy will decline in the long run. It is important to note that the negative effect can be explained by the fact that for the past years, the share of capital expenditure in the total government expenditure for the Namibian economy has been smaller compared to that of current expenditure (Bernie, Benjamin & Paul, 2001; Kaakunga, 2006)). Consequently, the sign of the coefficient of total government expenditure conformed to the traditional view that current expenditure does not enhance economic growth. Furthermore, the study's result is consistent with findings by Godspower and Ogbeide (2018), who also discovered that total government expenditure negatively influences economic growth in sub-Saharan countries.

The result also shows that tax revenue collected by the government is statistically significant and exhibits a positive sign which signifies a positive growth effect. Specifically, in the long run, holding other variables constant, a one unit increase in tax revenue collection will stimulate economic growth by 0.750 units. These results are consistent with findings by Kaakunga (2006), who also discovered a positive relationship between these series particularly, in Namibia. Moreover, the results revealed an inverse correlation between the exchange rate and economic growth rate, denoting that a one unit increase in exchange rate (a depreciation of the Namibia dollar against the US dollar) will weaken the growth rate of the Namibian economy by 0.511 units in the long run. This result seems to imply that an appreciation of the Namibian dollar favours the growth rate of the Namibian economy due to the fact that currency appreciation in the long run shows a sign of monetary stability which attracts investment and eventually enhances the economy (Dembo & Nyambe, 2016). This outcome is consistent with the findings of Musyoka (2013) for Kenya.

Table 5.4.2: Long run estimation results for UEM Model: ARDL (1,0,0,0,0,0)

Dependent variable: UEM			
Independent Variables	Coefficient	t-Statistic	Prob.
C	36.260800	2.706140	0.0132
BD	0.674215	1.859152	0.0771
EXH	0.616044	1.970603	0.0621
GVEXP	-0.456693	-1.023427	0.3178
TAXREV	-0.149105	-0.368212	0.7164
CAB	-0.640760	-2.975391	0.0072

Source: Author's compilation.

The long run estimation results in Table 5.4.2 above shows a positive correlation between budget deficits and unemployment rate. However, the relationship is statistically insignificant at a 5 percent level of significance, indicating that deficit has no strong impact on the unemployment rate in Namibia. This finding is in congruence with Ayoguezze and Anidiobu's (2017) as well as Madueme and Nwosu's (2011) findings which indicated that deficit had a positive but statistically insignificant effect on the unemployment rate in Nigeria.

On the other hand, the results show that during the long run, an increase in current account balance decreases unemployment in Namibia. More specifically, a one unit improvement (surplus) recorded in the current account balance will lead to an increase in the employment rate of the country by reducing the unemployment rate by 0.641 units. This can be explained by the fact that in the long run the country probably experiences a current account surplus that contributes to a decline in the unemployment rate through its effects (improvement) in the export segment of its international transactions (Raifu, 2017). This finding is also akin to the finding of

Hojjat (2014) who discovered that the current account balance negatively influences the unemployment rate in the USA during the long run period.

Table 1.4.3: Long run estimation results for RIR Model: ARDL (1,0,0,0,0,0)

Dependent variable: RIR			
Variables	Coefficient	t-Statistic	Prob.
C	-6.950000	-0.430373	0.6713
BD	-0.863614	-2.032945	0.0549
EXH	-0.383880	-1.005466	0.3261
GVEXP	0.463045	0.845960	0.4071
TAXRV	0.053437	0.111463	0.9123
CAB	0.453479	1.767387	0.0917

Source: Author's compilation.

The estimation above shows that at a 5 percent level of significance, all variables are statistically insignificant, whereby the budget deficit has a negative and non-significant relationship towards the real interest rate. This implies that during the long run period, the prolonged budget deficit is not the cause of crowding in crowding out of the private investment as it does not influence interest rate. In other words, changes in the budget deficit do not have any immediate effect on the fluctuation of the interest rate, supporting the Ricardian equivalence hypothesis which claims that there is a neutral relationship between deficits and interest rate. Furthermore, the result is in accordance with the findings of Mukhtar and Zakaria (2008), who discarded a significant relationship between budget deficit and interest rate.

5.5 Short run models' results

All variables being co-integrated, the study further analysed the nature and direction of the short-run dynamics of the selected macroeconomic variables by estimating the error correction model (ECM). The results of the different models are presented as follows:

Table 5.5.1: Short run estimation results for the RGDP Model

Dependent variable: RGDP			
Variables	Coefficients	t-Statistic	Prob.
Δ (BD)	-0.805607	-2.761772	0.0120**
Δ (EXH)	-0.539957	-2.094161	0.0492**
Δ (GVEXP)	-0.144712	-0.388573	0.7017
Δ (TAXRV)	0.793148	2.554443	0.0189**
Δ (CAB)	0.197132	1.257806	0.2230
ECT(-1)	-1.056735	-5.284325	0.0000
R-square	0.41.42		
Durbin Watson stat.	2. 74		

*Source: Author's compilation using E-view 9. Note: **denotes the level of significance at 5 percent.*

Table 5.5.1 presents the short-run results of the economic growth model. The results revealed that budget deficit has a negative sign and it is statistically significant at 5 percent which reaffirms the results presented in the long run model as well as the findings by Amwaama (2018) and Sakaria (2019), who found the same results in the Namibian context. This certainly confirms that high budget deficits are indeed detrimental to economic growth in Namibia. Similar to the long run results, the study also depicted that an increase in the tax revenue collected will boost the growth rate of

the economy during the short run period. The result confirms the theory because when the government's tax revenue increases, it will also increase government expenditure and thereby positively influence economic growth (Wosowei, 2013). Therefore, tax revenue has proven to be a significant variable that plays a great role in the determination of economic growth in Namibia both in the long run and short run. This outcome is consistent with that by Wosowei (2013), who also found that a high government tax revenue will increase real GDP in Nigeria during the short run period. Moreover, the negative sign of the exchange rate is also consistent with that in the long run model, suggesting that the depreciation of the Namibia dollar negatively influences the economic growth of the country.

Regarding the error correction term (ECT), the coefficient is statistically significant at a 1 percent level and has an expected sign (negative), confirming that indeed co-integration exists between variables. As mentioned in the preceding chapter, the coefficient of the ECT measures the speed of adjustment to obtain equilibrium in the event of shocks to the system. The coefficient of ECT (-1) reported is -1.05, indicating that about 105 percent of disequilibrium in the system will be offset by short-run adjustment in 1 year. However, this coefficient is out of the range of what is theoretically accepted (that is between 0 to -1) and this is a questionable result that needs further analysis. Moreover, the R-square of 0.414 affirms that about 41.3 percent of the variations in real GDP growth rate is explained by budget deficits, total government expenditure, tax revenue, current account balance, and exchange rate. Whereas, the remaining 58.7 percent of variations are explained by other exogenous factors not included in the model, however, captured by the error term. As per the rule of thumb, the model is free from autocorrelation if its Durbin Watson stats is equal to

or closer to 2. Given the model's Durbin Watson stats of 2.7, the study concluded that the model is free from serial correlation.

Table 5.5.2: Short run estimation results for the UEM model

Dependent variable: UEM			
Variables	Coefficients	t-Statistic	Prob.
Δ (BD)	0.703645	1.925521	0.0678
Δ (EXH)	0.642935	1.904143	0.0707
Δ (GVEXP)	-0.476628	-1.038642	0.3108
Δ (TAXRV)	-0.155613	-0.371404	0.7141
Δ (CAB)	-0.668730	-3.070996	0.0058
ECT(-1)	-0.443652	-5.785300	0.0000
R-square	0.6835		
Durbin -Watson stat.	1.9590		

Source: Author's compilation.

The short run estimated results are consistent with that of the long run period, indicating that the fiscal deficits, even though it met the economic theory expectations in terms of its positive coefficients, however, did not significantly affect the unemployment rate judging from its p-value of -0.0678. In addition, all other explanatory variables are also insignificant with the exception of the current account balance which recorded a negative sign as before and it is statistically significant at a 1 percent level of significance. This implies that an improvement in current account balance indeed lowers the unemployment rate in Namibia. Consistently, Hojjat, (2014) also concluded that improvements in the current account balance brought about a decline in the unemployment rate in the United States of America.

In terms of the ECM, the coefficient of ECT (-1) is -0.4436, which is negative and significant at 1 percent, indicating that equilibrium is restored in the unemployment model or equation. Therefore, about 44.36 percent of the disequilibrium in UEM is corrected or adjusted each year and it takes approximately 2 and a half years to reach full equilibrium. The R-square 0.6835 shows that about 68.35% of variations in the unemployment rate is explained by a change in the budget deficit, exchange rate, government expenditure, tax revenue collected, and current account balance, while the remaining 37% is explained by variables not included in the model. Furthermore, the model is free from serial correlation, given the Durbin-Watson stats of 1.96 which is closer to two (2).

Table 5.5.3: Short run estimation results for the RIR model

Dependent variable: RIR			
Variables	Coefficients	t-Statistic	Prob.
Δ (BD)	-0.887000	-2.014902	0.0569
Δ (EXH)	-0.394275	-0.956032	0.3499
Δ (TAXRV)	0.054884	0.111539	0.9122
Δ (GEXP)	0.475584	0.871903	0.3931
Δ (CAB)	0.465759	1.850222	0.0784
ECT (-1)	-0.927079	-5.502452	0.000
R-squared:		0.454585	
Durbin-Watson stat:		2.012389	

Source: Author's compilation.

Consistent to the long run results, the coefficient of budget deficit exhibits a negative sign and it is statistically insignificant at a 5 percent level of significance, implying that during the short run period, deficits do not influence real interest rate. This result

is in line with that obtained by other studies such as Akinboade (2004) and Samirkaş (2014). Nevertheless, all explanatory variables are insignificant, thus, they do not bear any effect on interest rate in the short-run. Regarding the ECT, the coefficient (-0.927) is negative and significant at a 1 percent level of significance. That is, the absolute value of the coefficient of the ECT indicates that in one year, about 92 percent of the disequilibrium in real interest rate is offset by short-run adjustment. In addition, the R-square of 0.4542 affirms that about 45.4% variation in the interest rate is traceable to the budget deficit, exchange rate, government expenditure, tax revenue and current account balance. Furthermore, the value of the Durbin Watson statistic (DW Stat.) is 2.01, affirming the absence of serial autocorrelation in the estimated model equation.

5.6 The diagnostic tests

It is essential to confirm whether the results obtained are stable and meet the standard classical linear regression assumptions as well as to detect any possible spurious results. As a result, all the estimation results were subjected to several diagnostic tests including normality, model specification, serial correlation, heteroscedasticity as well as a stability test. The results of these diagnostic tests are summarised and presented as follows:

Table 5.6.1: Ramsey RESET test results

Model	Test statistics	Probability
RGDP model	0.912796	0.3728
UEM model	0.980977	0.3383
RIR model	0.143830	0.8871

Source: Author's compilation using E-view 9

The Ramsey RESET tests above indicate that the probabilities of all models are greater than 0.05 (5 percent). This proves that there are no general error specifications, hence all models are correctly specified.

Table 5.6.2: Autocorrelation test results: Breusch Godfrey LM test

Model	Test statistics	Probability
RGDP model	1.5226	0.1446
UEM model	0.522539	0.4820
RIR model	0.530947	0.4766

Source: Author's compilation using E-view 9

The results above show that the probability of the chi-square for the Breusch Godfrey LM test is greater than 0.05 percent at all models, indicating that there is no presence of autocorrelation. Therefore, the study concludes that all models are free from autocorrelation and their results are stable and reliable.

Table 5.6.3: Heteroskedasticity test results: Breusch-Pagan Godfrey

Model	Test statistics	Probability
RGDP model	0.854057	0.4890
UEM model	1.198906	0.3077
RIR model	1.299111	0.3005

Source: Author's compilation using E-view 9

The probability of the chi-square for Breusch-Pagan Godfrey is more than 0.05 percent for all models, indicating that all models are free from heteroscedasticity. Therefore, the size of the error term does not vary across the values of independent variables (homoscedasticity).

Table 5.6.4: Normality test results: Jarque Bera

Model	Test statistics	Probability
RGDP model	3.380057	0.184514
UEM model	1.234432	0.539473
RIR model	1.452044	0.483830

Source: Author's compilation using E-view 9

Table 5.6.4 above depicts that the probability value of the Jarque Bera is greater than 0.05 percent for each model, which confirms that the residuals are normally distributed (see appendix 1 – 3).

5.7 Stability test

Additionally, to test for structural changes, as there might be structural changes in the relationship between the dependent and independent variables, the study went further to test for the existence of parameter stability of the models through the Cumulative Sum (CUSUM) and the CUSUM of squares (CUSUMSQ) of recursive residuals. The results are presented as follows:

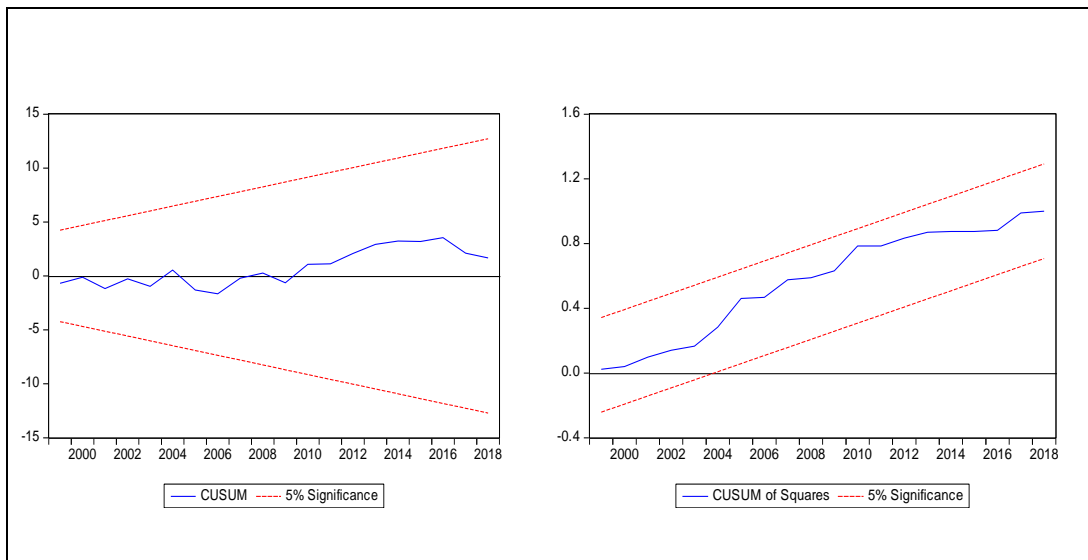


Figure 5.7.1: Plot of CUSUM and CUSUMQ results for RGDP model

By rule of thumb, if the plot of CUSUM and CUSUMQ statistic stays within critical bands of the 5% confidence interval of the parameter, then estimated coefficients are

said to be stable. Figure 5.7.1 above shows that both CUSUM and CUSUMQ plots confirm that the model estimated coefficients are stable and that there might not have been major structural changes that could warrant instability.



Figure 5.7.2: Plot of CUSUM and CUSUMQ results for UEM model

Based on the results reported in figure 5.7.2 above, the CUSUM statistic stays within a 5 percent significance level, signifying that the model is stable. On the other hand, the plots of CUSUMSQ statistics marginally cross the critical value lines, which, however, do not threaten the stability of the model as it went back within the range of critical values. Hence, one can confidently conclude that the unemployment model under examination is stable.

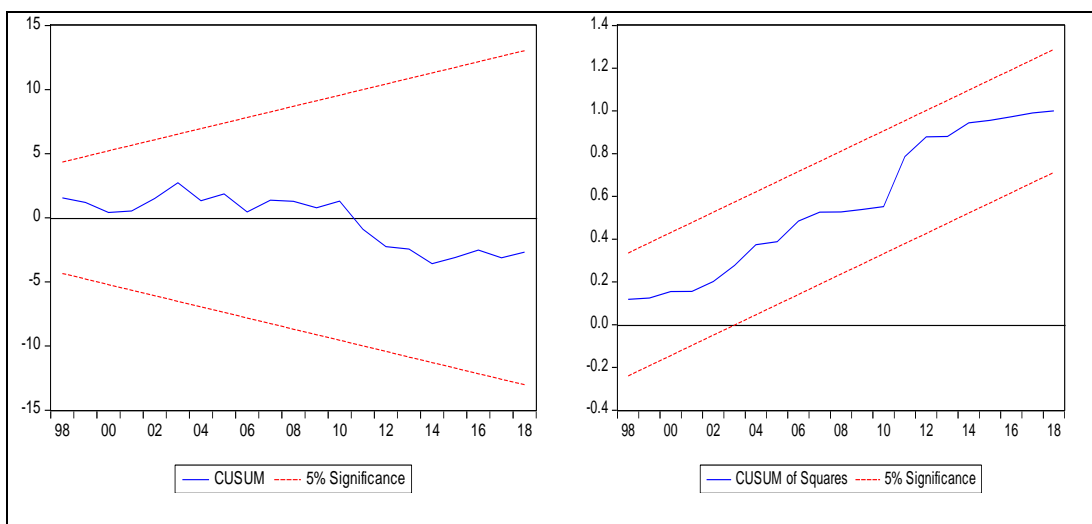


Figure 5.7.3: Plot of CUSUM and CUSUMQ results for RIR model

Based on the parameter stability test results above, both CUSUM and CUSUMSQ statistic stays within a 5 percent significance level. As a result, the study concluded that the estimated RIR model fulfils the stability condition as there is no evidence of parameters structural breaks. All in all, the overall results showed that all models pass all the diagnostic tests conducted. Thus, the study concluded that all estimated models are reliable and can be used for economic policy, forecasting and prediction.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

Fiscal imbalance is among one of the key macroeconomic problems facing economies in the world. Thus, the main objective of this study was to empirically analyse the effect of budget deficit dynamics on selected macroeconomic variables in Namibia using time series annual data for the period 1990 to 2018. In the current study, economic growth (real GDP), unemployment, and interest rate were used to proxy for macroeconomic variables. Since the study was based on time series data, it is, therefore crucial to determine their stationarity in order to mitigate spurious results and avoid a misleading conclusion as a result of using non-stationary variables in the regression. Consequently, the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests were conducted to test for unit root among the variables. Unit root test results revealed that RGDP and interest rate were stationary in levels, whereas, unemployment, exchange rate, current account balance, government expenditure, and tax revenue were non-stationary in levels, however, they all became stationary at first difference.

Given that variables were of a different order of integration [$I(0)$ and $I(1)$] as well as to achieve the objective of the study, the Autoregressive Distributed Lag (ARDL) approach was utilised. The bounds test for cointegration was then employed to ascertain the presence of a long-run relationship among the variables. The bounds test for cointegration shows that the value of F-statistics exceeds the upper bound of the critical value in all cases, which confirms the existence of long run relationships among all the variables in all three models. This implies that in the long run, all these variables have the potential of affecting economic growth, unemployment rate, and real interest rate in Namibia. The study further applied the Error Correction Model (ECM) to analyse the short-run relation between variables. The diagnostic checks validated all

the models estimated thus the study concluded that the models are reliable and can be used for economic policy, forecasting, and prediction.

From the empirical results, the null hypothesis that the budget deficit does not affect economic growth cannot be accepted. Instead, the outcome revealed that an increase in budget deficit slows the growth rate of the economy both in the short and long run period. This is in conformity with Amwaama (2018) and Sakaria (2019) findings, which indicated that fiscal deficit affects economic growth negatively in Namibia. This suggests that the budget deficit has indeed been a constraint to the growth rate of the Namibian economy, thereby supporting the neoclassical school of thought which is of the view that budget deficits are inimical and have inverse effects on the economic growth. Furthermore, the results indicate that in the long run, high government expenditure weakens economic growth although it becomes insignificant in short run. The negative correlation can be justifiable since the country has been recording lower capital expenditure as a share of total government expenditure compared to current expenditure. As a result, the government spends more on current expenditure which does not enhance economic growth. Moreover, this result is consistent with findings by Godspower and Ogbeide (2018), who also discovered that total government expenditure negatively influences economic growth in sub-Saharan countries. Tax revenue collected by the government exhibits a positive growth effect towards economic growth in the short and long run period; whereas, the exchange rate negatively correlated with RGDP, implying that depreciation of the Namibia dollar against the US dollar is not favourable to the growth rate of the Namibian economy during the period under consideration.

In addition, the findings show an insignificant positive and negative correlation between budget deficits towards unemployment and real interest rate respectively. As

a result, the study failed to reject the null hypotheses that budget deficit does not affect unemployment and real interest rate, contradicting the results of Ene (2018) who found that budget deficit had a positive effect on unemployment rate in Nigeria as well as that of Lwanga and Mawejje (2014) who revealed that indeed, in Uganda the rising interest rates was due to the high growth of budget deficits in the country.

All in all, the study resolved that the Neoclassical theory of budget deficits holds in Namibia, concluding that the fiscal deficit has been at the heart of macroeconomic instability in the country by worsening economic growth. Therefore, in order to contain this adverse effect, the government should ensure that the exacerbated level of the budget deficit is addressed.

6.2 Policy recommendations

From the empirical results, it is noticeable that budget deficits deteriorate the economic growth rate. Therefore, in order to strengthen the long-run sustainability of economic growth, the study recommends that the government through the Ministry of Finance (MoF) should strive to minimize its debt and stabilise the budget deficit. This can be achieved by reducing the government's total recurrent expenditure bill and rather increase capital formation or spend more on capital and development expenditures (like infrastructural development) that have the potential of stimulating productivity and as a result boosting economic growth and employment opportunities.

Moreover, it is important to note that although fiscal consolidation measures have brought some progress in reducing the country's budget deficits, it however, dampened economic growth as well as employment creation, particularly in the short term period. As such, the study recommends that for the country to curtail its deficits, the government must instead adopt a fiscal adjustment mechanism that increases revenue

collection through an improved taxation system and raise domestic revenue mobilisation rather than borrowing with high service rates to finance its budget deficits.

Last but not least, the government should also work hand in hand with the private sector and other stakeholders such as state-owned enterprises (SOEs) to create a conducive business environment for both private and foreign direct investors to ensure Namibia's full participation in the global business opportunities that would create job opportunities and reduce the unemployment rate. Furthermore, although not much can be done with regards to the exchange rate policies due to the Namibian dollar being pegged to the South African Rand, exchange rate depreciation should be discouraged as it has negative consequences on economic growth and employment opportunities.

6.3 Recommendations for further study

The sample size used in this study was relatively small, hence the study invites further research to use a longer sampling time frame.

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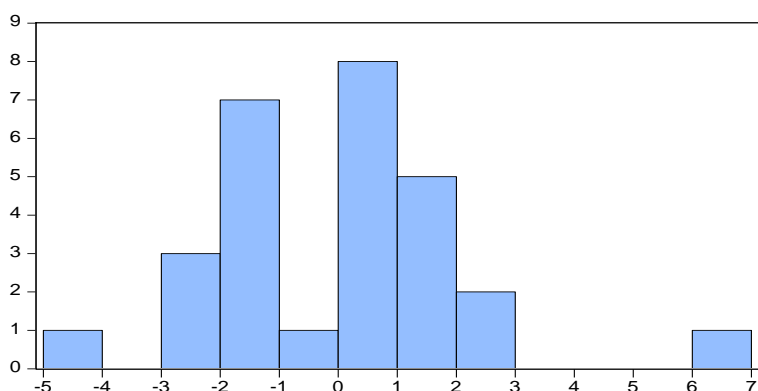
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APPENDICES

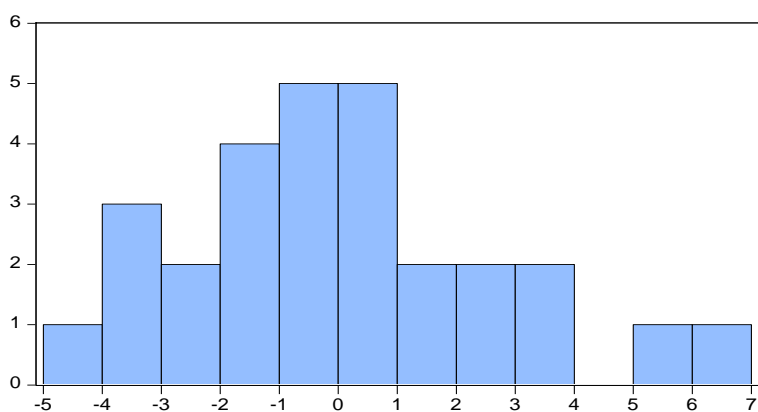
Results of the residual diagnostic tests

Appendix 1: RGDP normality test result



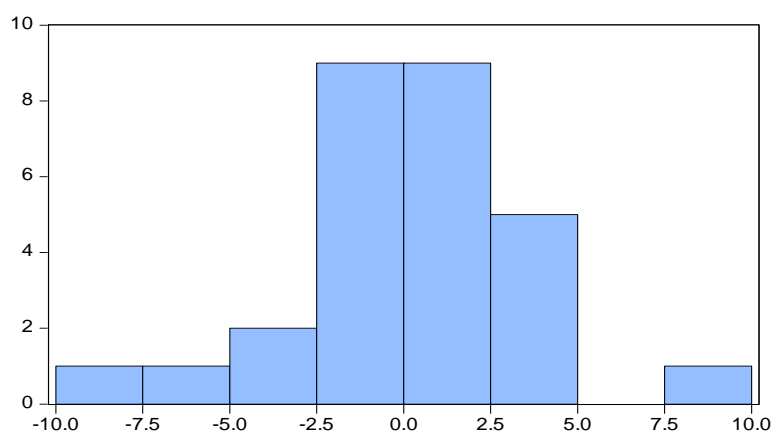
Series: Residuals	
Sample 1991 2018	
Observations 28	
Mean	-1.98e-15
Median	0.266736
Maximum	6.199906
Minimum	-4.045636
Std. Dev.	2.096501
Skewness	0.678326
Kurtosis	4.027952
Jarque-Bera	3.380057
Probability	0.184514

Appendix 2: UEM normality test result



Series: Residuals	
Sample 1991 2018	
Observations 28	
Mean	1.24e-15
Median	-0.024271
Maximum	6.280884
Minimum	-4.595613
Std. Dev.	2.638736
Skewness	0.511639
Kurtosis	2.895629
Jarque-Bera	1.234324
Probability	0.539473

Appendix 3: RIR normality test result



Series: Residuals	
Sample 1991 2018	
Observations 28	
Mean	6.34e-17
Median	0.226658
Maximum	7.699796
Minimum	-9.334208
Std. Dev.	3.549555
Skewness	-0.425992
Kurtosis	3.720231
Jarque-Bera	1.452044
Probability	0.483830