



MIDLANDS STATE UNIVERSITY
FACULTY OF COMMERCE
DEPARTMENT OF ECONOMICS

ASSESSING THE DYNAMICS OF FISCAL PERFORMANCE IN ZIMBABWE (1990-2018).

BY:

NYABUNZE ADMIRE

R114861X

SUPERVISOR: Dr N. MUPUNGA

Submitted to the Midlands State University in partial fulfilment of the requirements for the
Master of Commerce in Economics Degree

Gweru, Zimbabwe

June 2019

SUPERVISOR’S APPROVAL FORMS

The undersigned certifies that they have supervised the student, Nyabunze Admire’s (R114861X) thesis entitled: **“Assessing the dynamics of fiscal performance in Zimbabwe (1990-2018)”**. Submitted in partial fulfilment of the requirements of Master of Commerce in Economics Degree at the Midlands State University.

SUPERVISOR’S SIGNATURE

CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
DATE

APPROVAL FORM

The undersigned certify that they have supervised, read and recommend to the Midlands State University for acceptance of a research project entitled: **“Assessing the dynamics of fiscal performance in Zimbabwe (1990-2018)”**. Submitted by **Nyabunze Admire**, in partial fulfilment of the requirements for the **Master of Commerce in Degree Economics**.

.....

(Signature of Student)

...../...../.....

Date

.....

(Signature of Supervisor)

...../...../.....

Date

.....

(Signature of Chairperson)

...../...../.....

Date

.....

(Signature of the Examiner(s))

...../...../.....

Date

DECLARATION

I, **NYABUNZE ADMIRE**, do hereby declare that this is a true and unpublished research which presents my own hard work, sweat and has never been previously submitted for a degree at this or any other university. I also certify that all the support and assistance received in preparing this thesis and the entire sources abstracted have been acknowledged.

.....

Student signature

.....

Date

DEDICATION

Under all the circumstances, let God be the leading light.

Lisa Weed once reasoned that, 'Being a family means you are part of something very wonderful. It means you will love and be loved for the rest of your life'

This thesis is dedicated to the complete family for the confidence they showed in me and for supporting me throughout the duration of the study. To my parents, Cecilia and Biton, no one knows the strength of my love for you guys. You are the only one who knows what my heart sounds like from the inside.

ACKNOWLEDGEMENTS

I would like to show my appreciation to my supervisor, Dr N. Mupunga for his resolute, buoyant command and supervision throughout the study. An equal share of acknowledgement also goes to the department of Economics at MSU for making me realise my dream. All the mentorship you provided, the interactions and the time we had played a priceless role for me to be where I am today.

Special appreciation is also shown to my brother Dr Stephen Chiweshe, you keep motivating me to reach greater heights and you have taught me that the sky is the footing. To my brother, Cde Tendai Chiweshe and wife Cde Locardia, you guys have been such a central mainstay during the entire study of the master's degree. May the good Lord continue to richly bless you forever

Indebtedness is extended to my classmates, the discussions, the arguments and the jokes we had played a critical role in ensuring that I complete this programme. To my friends ,Anesu 'Dozen' Musunga , Nkomo Takesure, Lukwa Akim, Mambo Prince, Malvine Mkokwayarira, Farai 'Chombo' Banda, Mitchel Name and Tatenda Chavhinda, thank you guys for being there for me . The unconditional support you gave me will be cherished forever, thank you guys.

LIST OF ACRONMYS

BD	Budget deficits
GDP	Gross Domestic Product
ESAP	Economic Structural Adjustment Programme
GNU	Government of National Unity
ZIMPREST	Zimbabwe Programme for Economic and Social Transformation
ZIMSTATS	Zimbabwe National Statistics Agency
OLS	Ordinary Least Squares
WB	World Bank
MoF	Ministry of Finance
MSU	Midlands State University.

ABSTRACT

The thesis examines the dynamics of fiscal performance in the Zimbabwean economy. The study used annual time series data starting from the year 1990 up to 2018 to establish the economic factors contributing to budget deficits. During the period under review, Zimbabwe has experienced perpetual budget deficits except during the years 2009, 2010 and 2011 where budget surpluses were chronicled. The fiscal imbalance that has characterised the economic landscape of Zimbabwe has had negative pass through effects to the broader economy at large. The variable budget deficit was used as the depended variable whilst the explanatory variables used in the study are unemployment, gross domestic product, gross fixed capital formation, foreign debt and real interest rates. The lagged value of the budget deficit was also included amongst the independent variables. Using the robust Ordinary Least Squares regression methodology, the empirical results indicated that unemployment and gross domestic product are significant in explaining budget deficits in Zimbabwe. The lagged value of the budget deficit was also found to be significant in determining budget deficits in Zimbabwe. The variable unemployment was found to be positively related to budget deficits meaning that an increase in unemployment is associated with an increase in the fiscal deficit. The GDP variable was found to be inversely related to budget deficits meaning that an increase in the GDP level helps in reducing the size of the budget deficit. The lagged value of the budget deficit was found to be positively related to budget deficits in the current period. This means that if the government runs a fiscal deficit in the current year, the government will continue to incur deficits in the coming years. It is against this background that this research recommends the government to reduce unemployment so as to increase final demand in the economy which boosts tax revenues thereby reducing budget deficits. The government also need to increase gross investment levels in the country so as to boost GDP which will result in the reduction of the budget deficit via multiplier effects. This goes a long way in ensuring that the government will balance its books thereby avoiding the rolling over budget deficits in the coming years.

TABLE OF CONTENTS

Contents

SUPERVISOR’S APPROVAL FORMS	i
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF ACRONYMS	vi
ABSTRACT	vii
LIST OF TABLES	xi
LIST OF APPENDICES	xii
LIST OF FIGURES	xiii
CHAPTER ONE	1
1.1 Background to the Study	2
1.2 Budget Deficits and Macroeconomic Performance in Zimbabwe	7
1.3 Budget deficit financing in Zimbabwe	8
1.4 Statement of the problem	8
1.5 objectives of the Study	9
1.6 Significance of the Study	9
1.7 Research Hypothesis	10
1.8 Delimitations of the Study	10
1.9 Organisation of the rest of the study	10
CHAPTER TWO	11
2.0 Introduction	11
2.1 Theoretical Literature Review	11
2.1.1 The Keynesian Theory	11
2.1.2 The Neoclassical Hypothesis	13
2.1.3 The Ricardian Equivalents Hypothesis	15
2.2 Empirical Literature Review	17
2.3 Conclusion	20
CHAPTER THREE	21
RESEARCH METHODOLOGY	21
3.0 Introduction	21
3.1 Model specification	21
3.2 Justification of the Variables	22

3.2.1 Unemployment Rate	22
3.2.2 Gross Domestic Product	22
3.2.3 Foreign Debt (FODET)	23
3.2.4 Gross Fixed Capital Formation (GFCF)	23
3.2.5 Real Interest Rates (RIR).	23
3.3 Data Sources and Characteristics.	24
3.4 Preliminary Data Analysis.....	24
3.4.1 Unit Root Test.....	24
3.4.2 Cointegration Test	25
3.4.3 Chowbreak Point Test	25
3.4.4 Normality Test	26
3.4.5 Multicollinearity Test	26
3.4.6 Autocorrelation Test.....	27
3.4.7 Model Specification Test.....	27
3.4.8 Heteroscedasticity Test	27
3.5 Conclusion.....	28
CHAPTER FOUR.....	29
PRESANTATION AND ANALYSIS OF RESULTS	29
4.0 Introduction	29
4.1 Preliminary Data Analysis.....	29
4.1.1Unit Root Tests Results.....	29
4.1.2 Cointegration Test Results.....	30
4.1.3 Multicollinearity Test Results.....	30
4.1.4 Autocorrelation Test Results	31
4.1.5 Model specification Test Results	31
4.1.6 Chow Break Point Test Results.	32
4.1.7 Normality Test Results	32
4.1.8 Heteroscadasticity Test Results	33
4.2Regression Results.	33
4.3 Interpretation of the Results.....	34
4.4 Conclusion.....	36
CHAPTER FIVE.....	37
SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS	37
5.0 Introduction	37
5.1 Summary of the Thesis.	37
5.2 Policy Implications and recommendations	38

5.3 Suggestions for Future Studies.....	39
REFERENCE LIST	40
APPENDICES PAGE.....	44
Appendix 1.....	44
Data set used in the model.....	44
Appendix 2: Preliminary Data Analysis Results.	45
Appendix 3.....	57

LIST OF TABLES

Table 4.1.1 Unit Root Test Results.....	29
Table 4.1.2 Summary of Cointegration Results.....	30
Table 4.1.3 Correlation Matrix.....	30
Table 4.1.3 Variance Inflation Factor.....	31
Table 4.1.4 Autocorrelation Results.....	31
Table 4.1.5 Normality Test Results.....	32
Table 4.1.6 Chow Break Point Test Results.....	32
Table 4.1.7 Ramsey Reset Test for Model Specification.....	32
Table 4.1.8 Arch Test for Heteroscedasticity Results.....	33
Table 4.2 Summary of Regression Results.....	33

LIST OF APPENDICES

Appendix 1 Dataset.....43
Appendix 2 Diagnostic tests results.....45
Appendix 3 Model estimation results.....57

LIST OF FIGURES

Fig 1.1: Budget deficit as a percentage of GDP (1990-2018).....	4
Fig 1.2: Trends in Budget Deficit (% of GDP) and GDP Growth Rate (1990- 2018).....	7

CHAPTER ONE

INTRODUCTION

Fiscal performance has been a focus of countless deliberation and dialogue among economists for many years such that the issues surrounding fiscal performance are not new but have led to renewed interest in the fiscal themes. The Fiscal Council (2012) defined fiscal performance as the relationship between total government expenditure and revenue in a specific year. When government expenditure exceeds revenue, the government is said to have ran a budget deficit. On the other hand, a budget surplus occurs when government tax receipts exceeds government expenditure. A budget deficit is usually expressed as a percentage of GDP computed by dividing the value of the deficit by the value of GDP and multiplying the result by one hundred.

The variance between the revenue and expenditure outline of the government is either bridged by borrowing or by injecting new money into the system. A budget deficit is credited to a number of reasons which include the considered determination by the authorities to stimulate the economy through reducing taxes or growing expenditure (Perotti, R 2004). In some instances, a budget deficit can be caused by the inefficiencies in the generation of the revenue mainly through the evasion of taxes and other leakages. Wrong economic policies which translate to uneconomical spending can also result in imbalances in the fiscal space. It is also important to mention that budget deficits can also be politically motivated.

The budget deficit and its financing is a major predicament in front of many countries in the world, Zimbabwe is not spared. Fiscal deficits where at the centre of adjustment in the broader macroeconomic perspective of emerging and industrialised countries during the 1980s. (Easterly *etal*, 1994). It is argued that budget deficits led to a series of macroeconomic challenges in Latin America especially that of over indebtedness which ultimately led to the debt crisis of 1982. According to the Economoniter (2013), budget deficits also played a role in causing the emerging market crisis that affected the emerging economies between 1997 and 2002. Emerging economies are characterised by the desire to increase their growth rates, as a result, most governments ran budget deficits which lead to the crisis. Budget deficits also played a critical role in the transmission mechanism of the recent global financial crisis of 2007-2011 (The Guardian 2011).

Budget deficits have characterised the economic landscape of Zimbabwe as far as from 1990 to date except in 2009, 2010 and 2011 where budget surpluses were recorded. Ross (2018) argues that budget deficits results in serious challenges to the economy which include the crowding out the private sector from the borrowing market, distortion of investment structures and interest rates, a reduction in net exports, higher taxes and higher inflation among others. Zimbabwe is not spared from the economic tribulations that are brought about by budget deficits. In this look upon, the aim of this study is to analyse the dynamics of fiscal performance in Zimbabwe paying attention to the economic determinants of budget deficits. The study employs regression analysis using annual data of budget deficits and the selected macroeconomic indicators from 1990 up to 2018.

1.1 Background to the Study.

Zimbabwe's liberation came in 1980 and the country maintained the economic course that was used by that of the preceding government of Ian Smith (Sibanda and Makwata, 2017). The economy was protected dominated by controls on trade and a deep-seated import substitution strategy. The inflow of foreign currency into the country was controlled, exchange rates were monitored and government actively participated in the economy through price controls, regulation of wages and interest rate caps.

Soon after independence, the government embarked on massive capital expenditure in infrastructure developments such as roads, schools and hospitals. The justification of this huge expenditure was to rebalance the lack or unavailability of these basic amenities to the majority of Zimbabweans (Saungweme, T 2013). The previous government's expenditures on these and other expenditure items were greatly biased to the small white minority race. Such enormous social expenditure programmes, coupled with extensive development in infrastructure, immense industrial and agricultural subsidies, blew up public expenditure against government revenue. As a result, the budget deficit averaged at 10% of GDP between 1980 and 1990. During the same period, the budget deficit was financed mainly from the external sources of finance. In 1983, the government of Zimbabwe received a \$375 million advance from the IMF in the form of a standby credit that was used to finance the deficit.

Between 1980 and 1990, the economy was affected by a series of economic challenges which included industrial inefficiency, low productivity, low import cover, rent seeking behaviour and public sector decay (Tekere, M. 2001). Faced with these economic challenges, the government had no other choice than to liberalise the economy and open it to the rest of the

world. In 1991 the government announced the reform package, Economic Structural Adjustment Programme (ESAP) which was confined within the framework of the World Bank and the International Monetary Fund. The entire reform programme was to stretch for five years starting in 1991 up to 1995. The rationale of the programme was to reform the public sector by cutting expenditure on social services and so that the resources can be channelled towards capital formation. The reform package aimed at reducing the budget deficit from 10% of GDP to about 5% of GDP between 1991 and 1995. In the years 1991 and 1992, the budget deficit stood at 7% and 8% of GDP respectively. During the fiscal year 1993, the budget deficit stood at 5% of GDP. However, the budget deficit widened during the last years of the reform package as it stood at 9% of GDP in 1994 and 12% of GDP in 1995 (Sibanda, V and Makwata, R 2017).

The ESAP failed to meet the target of reducing the budget deficit to 5% of GDP on average and the programme also failed to achieve the other broader objectives. As a result, the government adopted another blueprint, the Zimbabwe Programme for Economic and Social Transformation (ZIMPREST). The policy stretched from the year 1996 up to the year 2000 and it was aimed at correcting the mistakes of the ESAP reform package. The programme intended to reduce the budget deficit to a figure below 5% of GDP. However, ZIMPREST failed to reduce the budget deficit to an initial target of less than 5% of GDP. As a percentage of GDP, the budget deficit stood at 9.7% and 6.7% in 1996 and 1997 respectively (Bonga ,W 2018). During the fiscal year 1998, the budget deficit stood at 6.4% of GDP. In the year 2000, the size of the budget deficit stood at 18.6% of GDP much owing to the unbudgeted costs associated with the controversial fast track land reform. In 2005 and 2006, the budget deficit as a percentage of GDP stood at 6.1% and 3.1% respectively.

Zimbabwe experienced the most awful economic crisis during the year 2008 which was characterised by hyperinflation which peaked 231 million percent (ZIMSTATS 2008). The country witnessed an increasing decline in GDP which was -17.7% in 2008. The level of exports in the country performed below average amounting to US\$1.376 billion against US\$ 2 billion imports (MoF, 2009). The rate of unemployment in Zimbabwe stood at around 95% in 2008 which was the highest unemployment rate in the world during that time. The budget deficit was also a notable feature of the 2008 crisis which was estimated at 11% of GDP.

In 2009, there was great motivation to arouse the economy and the country embraced the multicurrency system after the establishment of the GNU between the then president of

Zimbabwe, Robert Mugabe and the former Prime Minister, Morgan Tsvangirai the late. The inclusive government stabilised the economy as most of the macroeconomic essentials were put right back on track. Between 2009 and 2011, the country recorded budget surpluses owing to the ‘we eat what we kill’ mantra of the then minister of finance, Tendai Biti. This period was characterized by cash budgeting meaning that no ministry or public agent was allowed to spend beyond its budget allocation (Ministry of Finance, 2009). Zimbabwe recorded a budget surplus of 0, 4% of GDP in 2009, 2% of GDP in 2010 and 0, 2% of GDP in 2011. It is only in the last year of the GNU that a budget deficit of 0, 1% of GDP was chronicled mainly due to the 2013 general elections related expenses.

After the expiry of the GNU, the government managed to contain the budget deficit below 3% of GDP. However, in 2016, fiscal negligence affected the authorities such that the government overran its revenues thereby taking the budget deficit to 10% of GDP. In 2017, the budget deficit stood at 16.6 % of GDP much owing to the fiscal mismanagement eluded above. The trends in Zimbabwe’s budget deficit from 1990 up to 2018 are shown on the graph drawn below.

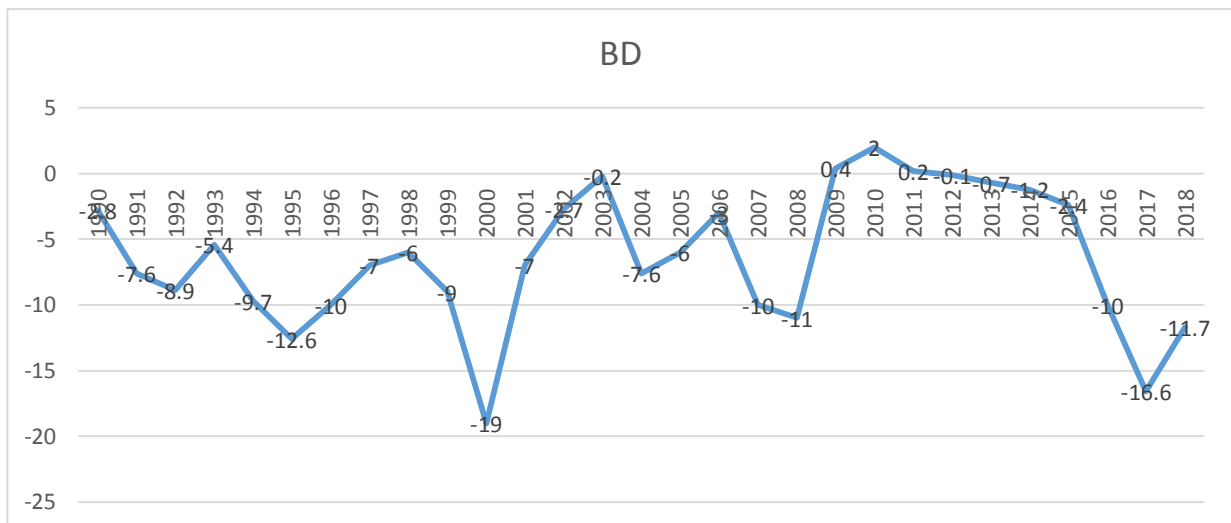


Fig 1.1: Budget deficit as a percentage of GDP (1990-2018)

Source: own Computation with data from ZIMSTATS and WB

The graph above shows that the government of Zimbabwe has had unsteadiness in its fiscal policy with fiscal deficits dominating the scene. The instability shown above is qualified to several factors which in some instances compelled the government to intervene and in some cases it was uneconomic spending on the part of the government. In 1992, Zimbabwe experienced the worst drought in the country’s history. All the countries in the Southern parts

of Africa were affected and it transformed Zimbabwe from a food surplus country to a net food importer. In that respect, only 13 000 tonnes of maize were delivered to the GMB and this was enough to cover two days of the country's consumption (Maphosa, 1994). This threatened food security at household level and at national level at large prompting the government to intercede through grain importation. In the years 1992/1993, the Government of Zimbabwe imported 1.85 million tonnes of grain at a cost of Z\$1200 per tonne. The drought also affected most sectors of the economy which resulted in the low veld sugar and ancillary factories closing down resulting in job losses. Other industries which were affected by the drought include meat processing, clothing manufacture, and stock feed manufacture among others. This then affected the ability of the government to generate revenue thereby creating a discrepancy between government expenditure and government revenue contributing to budget deficits.

In 1997, the government submitted itself to the enormous pressure from the war veterans who commanded to be accredited for the work they did in emancipating the country. They appealed to be paid a tax free gratuity in the form of a lump sum pension amounting to Z\$50 000 (an equivalent of US\$4000) per each war veteran and a monthly pension of Z\$4000 which was tax free. They also demanded free education and free health care for the liberation fighters and their dependents (Kriger, 2004). Apart from the above, they also demanded funds so that they will be able to start projects. In a bid to finance the payment of gratuities and the other demands, taxes on electricity, fuel, goods and services were introduced. The government also introduced a war veteran's levy on wages and salaries. These strategies to raise the revenue proved to be unpopular as they triggered demonstrations and resistance forcing the government to backtrack on them. Makocheke (2010) argued that there was no proper financing mechanism for these gratuities since the government had not budgeted for them. As a result, government expenditure remained way above the government revenue there by playing a critical role in causing budget deficits.

In 1998, the government of Zimbabwe played a part in the DRC war where an estimated number of 11 000 troops were deployed. According to the Mail Guardian (2004), the war is believed to have been costing the economy of Zimbabwe the sum of US\$1 million a day. It is important to point out that Zimbabwe participated in that war at a time when the country was facing serious scarcities of fuel and foreign currency. The Financial Gazette (2000) asserts that the government had not budgeted for this war such that the national budget on defence expenditure increased by 45% during that period. It is against this background that the disparity between

government revenue and government expenditure was inevitable. Budget deficits continued to be a major problem facing the Zimbabwean Government.

In 2008, the Government of Zimbabwe implemented the fast the Fast Track Land Reform Programme. The ownership of land was transferred from the hands of the white commercial farmers into the hands of the black Zimbabweans through compulsory acquisition. Between 2000 and 2009, more than 4500 farms (an equivalent of 7.6 million hectares of land) were grabbed for distribution. Under the A1 scheme, 145 000 farm households were resettled and 16 500 were resettled under the A2 model. By the end of 2011, about 237,858 households had access to land and a total of 10,816,886 hectares had been acquired (Scoones et al, 2011). Again, this process was very costly to the government as the process was done without proper planning. The process of acquiring land is believed to have been costly since the government had not provided budgetary support for that process. This means that government expenditure remained high at the expense of government revenue. As a result, the government continued to face a mismatch between government expenditure and government revenue.

The graph above reveals that the economy of Zimbabwe witnessed budget surpluses during 2009, 2010 and 2011 fiscal years. As eluded above, the country was under the administration of the GNU that had been formed by the two main political parties in Zimbabwe. A new culture of managing the economic affairs of the country was adopted characterised by cash budgeting. All the government ministries where required to spend within their means. This played a critical role in containing government expenditure there by creating the necessary conditions for budget surpluses. Stated differently, the GNU managed to instil fiscal discipline on the part of the government.

Between 2012 and 2018, budget deficits were back on the limelight in the economy of Zimbabwe. During this period, budget deficits were mainly caused by increase in government expenditure and dwindling revenue due to the underperforming economy. The growth of public expenditures was largely skewed towards recurrent spending which gulped an average of 90% of total public spending. This has left 10% of the budget on average to be left for capital expenditure projects. According to the World Bank (2017), Zimbabwe's public sector is too big for the economy which ultimately compromise the government's ability to deliver public services and in steering sound fiscal policy.

1.2 Budget Deficits and Macroeconomic Performance in Zimbabwe.

To measure the macroeconomic performance of any economy, a macroeconomic health index can be used. The index is made up of several variables which are not limited to inflation, real exchange rate, external debt and the fraction of black market premium over the official exchange rate (Schmidt- Hebbel, 1995). Alternatively, GDP can also be used to proxy the macroeconomic performance of an economy. For the purpose of this analysis, GDP is going to be used as a representation of macroeconomic performance in Zimbabwe. Thus, the relationship between budget deficits as a percentage of GDP and GDP growth rate for Zimbabwe is shown on the graph below.

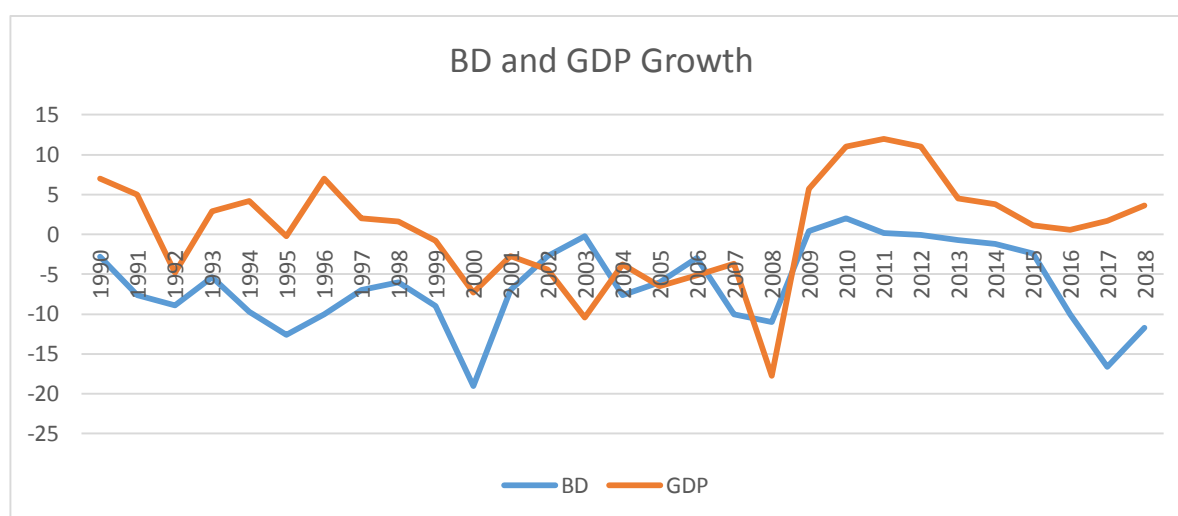


Fig 1.2: Trends in Budget Deficit (% of GDP) and GDP Growth Rate (1990- 2018)

Source: own Computation with data from ZIMSTATS and WB

Fig 1.2 above shows that a relationship between budget deficits and economic growth (GDP) can be established. For example, periods of high budget deficits such as years 2000 and 2017 are characterised by low GDP growth rates. Between the years 2009 up to 2011, the country witnessed budget surpluses and the GDP growth rate was high. This can mean to say a high budget deficit can retard GDP growth rate whilst budget surpluses propels economic growth. However, the opposite may also be observed for the years 2005 and 2006 were the budget deficit was fairly low and GDP growth rate was low as well. Basing on the data presented in the figure above, the relationship between Budget Deficits and GDP growth remains unclear. The budget deficit is a key fiscal indicator for any country since it has important bearings on the macroeconomic performance of any economy.

1.3 Budget deficit financing in Zimbabwe.

There are a variety of ways that can be used to finance a budget deficit which include the use of foreign currency reserves, domestic borrowing, external borrowing and seigniorage (Kosimbei, 2009). Financing of budget deficits through the use of foreign currency reserves is not common in Africa since most the countries are diminutive of reserves, Zimbabwe is not excluded. The period before the formation of the GNU (1990 up to 2008), Budget deficits that were incurred in Zimbabwe were supported commonly through the printing of money with a smaller percentage of less than five percent was financed through banking sector borrowings. No significant sources of foreign finance was used to bridge the gap between expenditure and revenue during the period under review (Munangagwa C, 2009).

The economy of Zimbabwe was officially dollarized in 2009 and the central bank lost some of its functions which included the lender of last resort and money printing. As a result, the option of printing money could not be used by the Zimbabwean government to finance the budget deficit in a dollarized economy. The government of Zimbabwe has also failed to utilize the option of borrowing from abroad to finance its budget deficit due to the high external debt. According to the 2019 budget statement, as at August 2018, total public debt for Zimbabwe stood at US\$17.69 billion. From the total public debt, 54% is domestic debt and 46% is the portion of the external debt. The huge external debt has resulted in the country being labelled a bad debtor by the foreign financiers and this has hampered the ability of the government to secure the lines of credit. Due to the limited options available for Zimbabwe to finance its budget deficit, the authorities have resorted to borrowing from the domestic market through the use of treasury bills and an overdraft facility with the central bank. In 2016, US\$2.1 billion worth of treasury bills were issued and the figure increase to US\$7.6 billion cumulatively by the end of August 2018. As at August 2018, the overdraft facility with the central bank stood at US\$2.3 billion, a figure above the statutory limit of US\$762.8 million (Ministry of Finance, 2018). The Reserve bank act mandates that the central bank advances to the government not exceed 20% of the previous year revenue.

1.4 Statement of the problem

Since 1990, Zimbabwe has recorded massive budget deficits except in 2009, 2010 and 2011 when the budget surpluses as a percentage of GDP stood at 0.4%, 2% and 0.2% in that order. It is therefore imperative to argue that the country has the ability and potential to balance its national accounts and or run budget surpluses. This prompts a countless analysis on whether the budget deficits in Zimbabwe are a function of poor governance or are a result of the

complex nature of the economic glitches that the authorities seeks to ease. Therefore, this study pursues to scrutinize the economic determinants of fiscal performance dynamics (budget deficits) in Zimbabwe from 1990 up to 2018. Explicitly, the study seeks to ascertain if budget deficits in Zimbabwe are a result of the fight against the economic problems.

1.5 objectives of the Study

The comprehensive objective of this thesis is to assess the pattern of fiscal performance in Zimbabwe. The precise goals of the study are to:

- (a) Scrutinise and evaluate the foundations of budget deficits in Zimbabwe
- (b) Explore the numerous techniques used by the Zimbabwean government to finance budget deficits
- (c) Analyse the effects of selected macroeconomic variables on budget deficits.
- (d) To work as a base for designing budget deficit management strategies which improves the performance of the economy.

1.6 Significance of the Study

The imbalance in the fiscal situation of the government is reflected by budget deficits. Perpetual fiscal discrepancies typically infer that the government will always escalate its stock of debt there by creating a debt burden to the future generations. The rationale of this study is to ascertain and evaluate the economic factors contributing to budget deficits in Zimbabwe. A study which was done by Zuze in 2016 looked at the nexus between budget deficits and economic growth from 1980 up to 2015. The study revealed that there is a negative relationship between economic growth and budget deficits. Makohekana (2008) did another research on budget deficits in Zimbabwe. In his research, he looked at the impact of budget deficits on inflation from 1980 up to 2005. The empirical results from his study revealed that a positive relationship exists between inflation and budget deficits. Both of the studies did not look at the determinants of budget deficits, rather the studies looked at the connection that the budget deficit has on selected individual economic variables.

Murwirapachena (2013) did a study on the economic determinants of budget deficits in South Africa. In his study, he estimated the impact of unemployment, economic growth, foreign reserves, foreign debt, government investment and consumption on the budget deficit. This study was not done on the Zimbabwean economy hence it will be difficult to generalise the results and apply them to the Zimbabwean context. This is because the economic behaviours vary from country to country and from region to region. It is therefore important to analyse

the effects that the economic variables in Zimbabwe have on budget deficits so as to add to the existing literature on budget deficits in developing countries.

This study is very important because it sheds light on the real causes of the budget deficits in Zimbabwe. The study will also help to highlight the effects of government's fiscal position on macroeconomic performance. Empirical evidence of relationships between these variables and budget deficits is very important because it enables economists and policy makers to better understand whether there is a causal relationship or merely a correlation between the variables, hence be able to formulate solid fiscal policies.

1.7 Research Hypothesis

H₀: Unemployment, Gross Domestic Product, External debt, Gross Fixed Capital Formation and Real interest rates do not influence budget deficits.

H₁: Unemployment, Gross Domestic Product, External debt, Gross Fixed Capital Formation and Real Interest Rates do influence budget deficits

1.8 Delimitations of the Study

The study is strictly restricted for Zimbabwe from 1990 up to 2018 and secondary data collected from the Zimbabwe National Statistics Agency (ZIMSTATS), Ministry of Finance and the World Bank Data is used. The data from these authorities may undergo various smoothing processes such that some of the data may not reveal the true state of the economy. Some of the figures from these authorities are estimates not actual figures and this constrain valid and sound forecasting for appropriate policy recommendations. Also, the literature to be reviewed is basically the one at the disposal of the researcher.

1.9 Organisation of the rest of the study

The rest of the study is structured as follows, Chapter two will review both the theoretical and empirical literature on budget deficits. Chapter three outlines the methodology that will be used and it is in this chapter that proper diagnostic tests will be carried out. Chapter four will put the methodology in Chapter three into good use, results will be presented and analysed in this chapter as well. Chapter five wraps up the study hence policy recommendations and suggestion for future studies will be given.

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

This chapter will look into the theoretical and empirical suggestions and outcomes put forward by theorists and researchers on budget deficits. The main intention of this segment is to provide the investigator with up to date material on budget deficits. Theoretical literature review is chiefly secured on numerous schools of thoughts on budget deficits. On the other hand, empirical literature review will be guided by the studies on budget deficits done in Zimbabwe and other countries at large. This research therefore embraces the collected work which enhances the understanding of fiscal performance dynamics in Zimbabwe.

2.1 Theoretical Literature Review

2.1.1 The Keynesian Theory

The period before the Keynesian economists was dominated by an economic practice of balancing the government budget. This was continued for quite a long time and this helped in guiding and ensuring that government expenditure is always aligned to revenue (Odim *et al*, 2014). Following the Great Depression of the 1930s, this belief came to an end among many governments. This was the worst economic downturn in the history of the industrialised world which began after the great crash of the Wall Street stock market in the United States in 1929.

During the time of the Great Depression, consumer spending and investment dropped significantly leading to sharp decline in industrial output and employment (Vamvoukas (1997). In 1933, the Great depression reached its lowest point with nearly 15 million Americans being unemployed and nearly half of the country's banks had failed. The Great depression had devastating effects in both the rich and poor countries evidenced by a fall in worldwide GDP of about 15% and the plunging of world international trade by 50%. The classical economists failed to proffer solutions to the great depression and this marked the birth of the Keynesian theory as he tried to give solutions to the Great Depression.

In 1936, a book titled "The General Theory of Employment, Interest and Money" was published by John Maynard Keynes proposing a new line of thinking in analysing the economy. Keynes qualified the high unemployment and low income that characterised the great depression to low or weak aggregate demand in the economy. The Keynesian model is hinged upon three key assumptions with the first one being that an economy is assumed not to be at

the full level of utilisation of its resources. In other words, he reasoned that it is a rare case for an economy to always be at the full employment level, economies are at an under employment level. Secondly, the theory assumes that there exists a considerable number of liquidity constrained economic agents. Thirdly, it is assumed that consumption is related to current income. The grouping of these three critical assumptions purifies a positive impact of an increase in the budget deficit on consumption and investment and thus output

Deficit spending upsurges aggregate demand, which gets previously unutilized resources into the production process there by increasing output. The economic agents who are constrained in terms of liquidity are assumed to have a high inclination to consume from the escalations in disposable income brought about by tax reduction or government expenditure increases. Given the fact that some resources are underutilized in the economy, an increase in aggregate demand escalates production and the overall profitability of investments (Eisner (1989)). Keynesians argue that public investment is complementary to private investment and that the high level of demand resulting from large deficits increases investors' expectations of profitability. Through these two mechanisms, deficit-financed public investment can crowd in private investment, and thereby increasing the rate of capital accumulation

Oluba (2008) asserts that the Keynesian uprising brought the budget deficit out of the closet as an important macroeconomic variable. Keynes argued that the primary cause of unemployment is under consumption of goods in any economic set up. In this respect, unemployment is a result of insufficient or weak aggregate demand for goods and services in the economy. Deficit spending by the government stimulates the economy by making households feel wealthier there by raising total private and public consumption expenditure. Since the economy is assumed not to be at full employment level, deficit spending boosts aggregate demand, private investment and savings at a given level of interest rates in the economy. This stimulates domestic production in the economy thereby accelerating capital accumulation and growth. Keynes argued that aggregate demand in the economy can be stimulated by running budget deficits through the increase in government expenditure and/or reducing taxes.

According to Cinar *et al* (2014), Keynes rejected the classicist budget deficit approach for minimizing the government's role in the economy. He argued that the government has a role to play in the economy and should intervene in the economy through implementing policies that raise public expenditure and that reduce taxes to boost aggregate demand. Keynesian theory postulates that discretionary fiscal policy can be used to stabilize the economy. Keynes

wrote that once an economy had moved into a situation of high unemployment, the price mechanism would not work to adjust the economy back to a high level of employment. Instead, the government should intervene to raise the demand for output by increasing public expenditure such that once demand had increased, firms would produce more output and employ more labour, which in turn would increase demand still further (Levacic and Rebmann, 1986).

As a result, Keynes contended that output and employment can be stimulated when the government use the financial instruments at its disposal. It is acceptable to finance public expenditure using taxes or other non-tax sources such as the sources available at the central bank and borrowing. In this respect, the Keynesian Proposition is regarded as the standard theory of budget deficit or the conventional view which suggests that households always respond to an increase in current disposable income. A tax cut financed by government borrowing stimulates consumer spending leading to a rise in the demand for goods and services thereby rising output and employment. It is against this background that the Keynesians argue that budget deficits do not crowd out private sector investments in the economy

In as much as the Keynesian theory plays a critical role in explaining the significance of deficit financing in the economy, it is subject to criticism. The theory did not give enough attention to the money supply variable which has a pervasive influence on economic behaviour. Also, the Keynesian theory did not look at inflation as a policy problem. Apart from the above, Reinhart and Rogoff (2010) argued that fiscal deficits could impact negatively on the external sector of the economy reflected by trade deficit. If the domestic economy is not able to absorb the additional liquidity brought about by an expansion in output, the surplus expenditure would increase the level of imports thereby contributing to a trade deficit.

2.1.2 The Neoclassical Hypothesis.

The standard neoclassical model is made up of three normal central features or assumptions. Firstly, the consumption of each individual is determined as the solution to an inter-temporal optimization problem where both borrowing and lending are permitted at the prevailing market rate of interest. The other central feature is that the individuals have a finite life span meaning that the economic agents do not live in perpetuity. As a result, each consumer belongs to a specific generation and the lifespans of the successive generations overlap. Lastly, the market is assumed to clear in all the periods meaning that the economy is always at or moving rapidly towards the full employment of resources. In light of these three important assumptions, a

permanent increase in government consumption brought about by a permanent increase in the budget deficit raises interest rates, reducing private investment (Diamond (1965)).

The school of thought states that budget deficits raise the total lifetime or generation consumption by shifting taxes to the future generation. This is so because the individuals living in the current period perceive the prevailing budget deficits to be financed by the future generations in the form of taxation. In this respect, government budget deficits increase the level of consumption in the short run. Since the economy is assumed to be at full employment level, an increase in consumption decreases the level of savings in the economy. Examining this relationship from the saving-investment identity in the economy, interest rates will increase to balance the decrease in savings. The increase in interest rates makes private investments less profitable thereby decreasing private sector investment significantly. Alternatively, the Neoclassical economists argue that if the government finances the deficit by issuing out treasury bills instead of increasing taxes, aggregate demand will increase and national savings will fall leading to the crowding out of private sector investment.

The effect that the budget deficit has on interest rates depends whether the economy is closed or open. In a closed economy, a budget deficit increases interest rates because the demand for the loanable funds to finance the deficit increases relative to the supply of the funds. The increased interest rates are said to have crowded out private investment (Abedian, 1998). In an open economy where the exchange rate is freely floating with perfect capital mobility, the increase in the interest rates in the domestic market attracts foreign capital. This causes the real exchange rate to appreciate thereby decreasing the competitiveness of domestic goods on the international market. This naturally translates into a deterioration of the country's balance of trade and in real terms the budget deficit is said to be financed by an increase in trade deficit.

The neoclassical hypothesis distinguishes between the effects of a permanent deficit and a temporary deficit. A permanent budget deficit is the average deficit over time whilst a temporary deficit is the deviation away from the permanent deficit. In other words, the theory generally focuses on the long run effects of permanent changes in the budget deficits under conditions of full employment of resources. The expected permanent portion of the budget deficit is built into the aggregate demand curve and is taken into account when equilibrium prices and quantities are determined (Bernheim, 1989). As a result, permanent budget deficits do not have expansionary demand effects, they negatively affect capital accumulation. Diamond (1965) formally studied the effects that a permanent change in the budget deficit has

on the economy. He reasoned that a permanent increase in the ratio of domestically held debt to national income depresses the steady state capital-labor ratio. At the original rate of interest, consumers are unwilling to hold the original volume of physical capital and bonds, plus the new bonds. Rising interest rates stimulate additional saving and reduce investment until capital market equilibrium is re-established. Thus, persistent government deficits crowd out private capital accumulation.

However, some of the assumptions used in the build up to the neoclassical hypothesis are not close to reality. The assumption of full employment of resources is spurious in the context of both developed and developing countries. The assumption of perfect market clearing is also not close to reality. In theory and in practice, the concept of perfect markets is an ideal and not a possibility. Individuals are not as rational as asserted by the neoclassical hypothesis, especially to advocate that they have all the information they need to plan ahead in a given life cycle. Information asymmetry is ubiquitous in most economic setups.

2.1.3 The Ricardian Equivalent Hypothesis.

The Ricardian School was first proposed by David Ricardo and was later advanced by Barro (1989). The main idea behind the Ricardian hypothesis is that a budget deficit signifies a rescheduling of taxes into the future. The theory is made up of several assumptions with the first one being that successive generations are linked by altruistically motivated transfers. The other second critical assumption building this theory is that capital markets are either perfect or they fail in some way. Consumers are also assumed to be rational and far sighted, and the postponement of taxes does not redistribute resources across families with systematically different marginal propensities to consume. Taxes are also assumed to be non-distortionary and the use of deficits does not create any value. The last assumption is that the availability of deficit financing as an instrument doesn't alter the political process.

The Ricardian equivalence proposition states that budget deficits and taxes have the same effect on consumption (Barro, 1974). An increase in the budget deficit that is brought about by a tax cut has no impact on consumer spending. In other words, a tax cut by the government reduces government savings leading to an offsetting increase in the level of the desired private saving leaving the level of national savings unchanged. If the consumers are Ricardian (forward-looking), they are fully aware of the intertemporal budget constraint of the government. They anticipate that if the government reduces taxes today and borrow by issuing a government debt, the future generations will pay the debt in the future in the form of higher taxes. As a result,

permanent income is not affected, given the absence of liquidity constraints and perfect capital markets, consumption will remain the same (Barro, 1974). In this respect, there is a Ricardian equivalence between taxes and debt. Perfect Ricardian equivalence implies that a reduction in government saving resulting from a tax cut is fully offset by higher private saving, and aggregate demand is not affected (Hemming, Kell and Mahfouz, 2002).

The Ricardian Equivalence hypothesis further asserts that the financing mechanism as in debt financing or tax financing of the budget deficit does not affect aggregate demand. The assumption is that individuals are rational and have all the information about their present and future tax liabilities, as a result, their current consumption is not altered. Thus, under conditions of short run full employment equilibrium, debt finance has no effect on the price level or the cost of borrowing. Barro (1989) argued that the reduction of taxes in the current period would somehow still have to be offset by some future tax hikes induced by the government debt. The overall effect is that the interest rates will remain unchanged and private investment remains the same as well. Therefore the wealth effect of the deficit would be offset. Huang (1986) is of the opinion that it doesn't matter whether government expenditure is financed from taxes or the issuing of bonds, the neutrality argument will still hold.

Government expenditure and private sector investments are considered to behave independently from each other. This is so because an increase in government spending is anticipated to be accompanied by a rise in taxes in the future, if not today (Philip Arestis 2011). In this respect, government spending that is financed by the issuing public bonds is expected to be repaid by revenue generated through taxes levied in the future. This does not alter interest rates and private investment because the economic agents realize that their income would be taxed in the future. It is against this background that the economic agents will not alter their current savings and consumption level

The Ricardian view's base of argument is that there is no direct relationship between budget deficit and the economic variables and assumes farsighted individuals with extremely long time horizons for evaluating the present value of taxes. Budget deficits have no real effects on the economy as they do not affect the overall level of demand in the economy. A rise in government budget deficit financed through borrowing is in actual fact equivalent to a future rise in the tax burden. Lower taxes in the present are offset by higher taxes in the future. In this sense, budget deficits and taxation have equivalent effects on the economy.

The conditions required for the Ricardian Equivalence to hold as discussed above are restrictive in nature. According to Agenor and Montiel (1996), the restrictive nature of these assumptions poses serious challenges in applying the theory in the real world. The debt neutrality assumption breaks down if agents have finite horizons. In the real world, capital markets are imperfect meaning that borrowing constraints are always present in the borrowing market.

2.2 Empirical Literature Review

Studies on fiscal performance dynamics have been done for both developing and developed economies. In 2016, Zuze did a research on fiscal deficit and economic growth nexus in Zimbabwe from 1980 to 2015. To analyse the relationship, the Vector Auto Regression (VAR) model was used coupled with variance decomposition and impulse response functions. As per tradition in econometric analysis, diagnostic tests were conducted using the ADF tests and the results indicated that both budget deficits and economic growth are integrated of order one. The empirical results from the study revealed that an inverse relationship between budget deficits and economic growth exists. This means that an increase in GDP is accompanied by a decrease in the level of the budget deficit.

Furthermore, Makochekanwa (2008) did another research on the nexus between budget deficits and inflation in Zimbabwe. He used annual time series data which stretched from 1980 to 2005. Two unit root tests were done to investigate the invariant characteristics of the four time series data. These are the Augmented – Dickey – Fuller (ADF) and Phillips Peron (PP) and in both tests, the null hypothesis of a unit root could not be rejected for the variables expressed in level form. The empirical results from his studies revealed that a strong and positive relationship between budget deficits and inflation exists

Murwirapachena *et al* (2013) did a research on the economic determinants of budget deficits in South Africa. In the study, annual data which stretched from 1980 up to 2010 was used. To determine the impact of selected macroeconomic variables in South Africa, the Vector Error Correction (VECM) was used. The budget deficit was used as the endogenous variable and the exogenous variables used were unemployment, gross fixed capital formation, foreign exchange reserves, economic growth, and total foreign debt. The results from the findings revealed that all the explanatory variables were statistically significant in explaining budget deficits in South Africa. The results also indicated that all the explanatory variables had a positive relationship with budget deficits with the exception of foreign debt. However, foreign reserves explained

the largest component variation of budget deficit followed by foreign debt, unemployment, economic growth and government investment, in that order.

Odim (2018) analysed the Keynesian –Ricardian dichotomy on budget deficits in Nigeria. Annual data from the Nigerian economy ranging from 1970-2007 was used in order to examine the relationship between budget deficits and interest rates. The study employed cointegration analysis, Granger causality tests and impulse response functions (IRF). Both the shortrun empirical findings using VEC and IRF and the long run empirical findings using Johansen technique were in line with the Keynesian proposition (crowding in effect). The Granger causality test using pair-wise Granger causality was also employed to test if there is causality between interest rates and budget deficit and to know the direction of causality (if it exists). The result reveals the independence of BD and RIR in both the regressions except at lag 6 and 8 where there is a unidirectional causality from RIR to BD. The message that a change in budget deficit implies no effect on the rate of interest supports the theoretical grounds of the Ricardian equivalence hypothesis.

Halkawt (2015) did a research in Malaysia on the impact of macroeconomic variables on the budget deficit. The study employed the OLS regression methodology using annual data from 1980 up to 2013. The research aimed at establishing if there is a significant relationship and causal effect between current account balance (CAB), interest rates (IR), total investment (INV), gross national savings (GNS) and the budget deficit. The empirical results revealed that a significantly negative relationship between CAB and INV variables with the budget deficit exists. A significant positive relationship between IR and budget deficit was also found in the study. The Granger causality revealed the present of unidirectional causality between IR and BDF, CAB and INV both have a unidirectional association with INR.

Mar G (2018) also looked at the determinants of budget deficits in South Africa using time series data which stretched from 1985 up to 2017. The co-integration technique and the vector error correction model were used in the study. The budget deficit was used as the depended variable and it was regressed against a set of explanatory variables which are gross domestic product, government expenditure, gross fixed capital formulation and unemployment. The empirical results revealed that a positive and significant relationship between the budget deficit and GDP exists. The results also revealed a negative and significant relationship exists between budget deficits and gross fixed capital formulation.

Ochieng V (2013) did a research on the determinants of deficit financing in Kenya. The study used an explanatory design which analysed data for 10 years from 2003 up to 2012. Using the Multivariate Linear Regression Model, the empirical results from the estimation revealed that government ordinary revenues, external revenues, debt service and government expenditure are significant determinants of fiscal deficits in Kenya. The research concluded by urging the government of Kenya to channel resources towards productive activities.

In Azerbaijan, a research on budget deficits and macroeconomic fundamentals was conducted by Farajova in 2011. The study aimed at investigating the reasons for changes in budget deficits. The ARDL cointegration method together with the Granger causality tests were used to analyse both the long run and short run dynamics. The empirical results revealed that there is a long run causality which runs from current account, real interest rates, GDP, inflation and exchange rate to the budget deficit. There was also found evidence of short-run Granger causal effects running from current account and real interest rate towards budget deficit and a rather weak causal effect from inflation to budget deficit. However, the results also revealed that there is no causality which runs from interest rates to budget deficits.

Kalim and Hassan (2013) looked at the factors behind budget deficits in Pakistan during the period 1976 up to 2010. The budget deficit was used as the depended variable and the explanatory variables that were used in the study are international trade, economic growth, total debt servicing and broad money supply. The variable economic growth was found to be insignificant in causing budget deficits in the long run but was significant in the short run. All the other explanatory variables were found to be significant both in the short run and long run analysis. Furthermore, the empirical results revealed that there exists univariate Granger causality which runs from economic growth to fiscal deficit, from total debt servicing to fiscal deficit, and there exists bivariate causality between money supply and fiscal deficit in the short run. Also, in the long run all the factors Granger cause to fiscal deficit. The study also found the existence of joint causality among fiscal deficit, trade, economic growth, total debt servicing and money supply.

Riaz and Sajid (2000) also did another research in Pakistan on budget deficits, money supply and inflation. The Vector Error Correction technique was employed using quarterly time series data from 1971Q1 to 2003Q4. The main results from the empirical study are that there is a short run causality between budget deficit and different measures of money supply and inflation. The study also revealed that there is unidirectional casualty from all the measures of

inflation to budget deficit. Both measures of money supply also cause budget deficit in the short run but not the other way round. Evidence of bidirectional causality between M1 and budget deficit was found when CPI is used as measure of inflation. There is long run bidirectional causality between all variable used in the study. The results indicates long run mutual causality budget deficit, money supply and (M1 & M2) and different measure of inflation (WPI, CPI and GDP deflator). The variables adjust to their equilibrium values with high speed when CPI is used as inflation rate as compared to other measure of inflation. In brief the results of study provide an evidence to support the hypothesis that money financing budget deficits lead to inflation which in turn causes deficit to rise over time.

2.3 Conclusion

In this chapter, the investigator reviewed literature relating to the Keynesians, the classical economists and the Ricardian equivalents hypothesis on budget deficits. Several studies pertaining to the determinants of budget deficits were reviewed. The methodology of the study is presented in the next section.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The methodology of the study focusses on the systematic structure of the study and it summaries the model that is going to be used in carrying out the research. It also focuses on other aspects such as the data type to be used and the justification of variables included in the model. The model itself and some of the variables emanate from the literature reviewed in Chapter Two.

3.1 Model specification

In order to determine the dynamics of fiscal performance in Zimbabwe, the explanatory variables to be used are, unemployment rate, gross domestic product, real interest rates, foreign debt and gross fixed capital formation. This research will adopt a model that was used by Murwirapachena *et al* (2013) in evaluating the economic determinants of budget deficits in South Africa. In their model, they modelled budget deficits as a function of selected macroeconomic variables and the model they used is shown below

$$BD = \alpha + \beta_1 UNEMP + \beta_2 GDP + \beta_3 FoREV + \beta_4 FoDET + \beta_5 GoVIN + \epsilon t$$

From the model used by Murwirapachena *et al* above, budget deficit is the endogenous (dependent) variable. The exogenous (independent) variables are unemployment, gross domestic product, foreign currency reserves, foreign debt, and gross capital formation. From the model above, due to the unavailability of data, the variable foreign reserves will be dropped and a new explanatory variable will be incorporated which are Real Interest Rates. Thus, the model in this study is specified as shown below:

$$BD = \alpha + \beta_1 UNEMP + \beta_2 GDP + \beta_3 RIR + \beta_4 FoDET + \beta_5 GFCF + \epsilon t$$

Where:

BD: Budget Deficits

UNEMP: Unemployment Rate

GDP: Gross Domestic Product

RIR: Real Interest Rate

FoDET: Foreign Debt

GFCF: Gross Fixed Capital Formation

α : Is the intercept term

3.2 Justification of the Variables.

3.2.1 Unemployment Rate

Morr (2007) argued that unemployment occurs when a person who is vigorously searching for work is unable to find it. Unemployment reflects the healthiness of the economy and the most regularly quoted measure is the unemployment rate. If unemployment is too high in an economy, the sources of government revenue in the form of taxation will be narrowed. This includes the pay as you earn tax revenue and other tax revenues collected from the purchase and consumption of goods such as the value added tax. High unemployment also calls for increased government social support which escalates government expenditure. Once this happens, the government will be likely to run a budget deficit such that a positive relationship between the two can exist. However, Saeidi and Valizadeh (2012) are of the opinion that a negative relationship between the two can also exist. This is supported by the famous economist Keynes who are argued that during a recession, the government can run a budget deficit to stimulate aggregate demand in the economy which will later reduce the unemployment level in any economy. Thus, this variable is expected to carry a positive or a negative sign

3.2.2 Gross Domestic Product

Gross Domestic Product denotes the monetary value of all goods and services produced in in an economy. An increase in the GDP represents a source of liquidity in the market and the general economy at large. The relationship between budget deficits and GDP is not straight forward (Rahman, 2012). The Keynesian economists argue that a positive relationship exists between the two. This is so because the budget deficit helps the economy to grow provided that the deficits are due to productive expenditures such as education, health and capital expenditures. On the other hand, the new classical economists refute the prescriptions of the Keynesians. They argued that the government has to borrow money internally or externally in order to finance the budget deficit. This drives up the demand of the loanable funds by the government which later distorts the level of private investment by increasing in the interest rates. The decline in the private investment will definitely reduce the level of economic growth. It is against this background that the expected sign of this variable is also not a clear cut issue.

3.2.3 Foreign Debt (FODET)

External debt is the share of a country's debt that was borrowed from foreign financiers not limited to commercial banks, governments or international financial institutions. The principal amount and the interest of these loans is paid back in the currency in which the loan was made. The external debt increases the national income of the borrowing country during the period of borrowing and decrease it during the repayment period (İnce, 1996:86). During the repayment period, the borrowing countries have to decrease their investments, consumption, or both of them in line to debt repayment. This negatively affects the revenue that can be generated and collected by the government. This distorts the relationship between government revenues and government expenditure such that budget deficits will be inevitable. Sinan (2016), did a research on the relationship between budget deficits and external debt and found out that a negative relationship exists between the two. Thus, in this study, an inverse relationship between the two such that this variable is expected to carry a negative sign.

3.2.4 Gross Fixed Capital Formation (GFCF)

It refers to the net increase in physical assets (investment less disposal) within the measurement period. This investment includes both private and public investments in infrastructure such as roads, bridges and power generation. The figure is then expressed as a percentage of total government expenditure. Nelson and Singh (1994) reasoned that the developing economies have the desire to increase the growth rates of their respective countries. As a result, they have to increase the level of gross fixed capital formation which will have multiplier effects to the whole economy. Given the large amounts of idle resources in these respective economies, the government can increase investment by running a budget deficit. As a result, GFCF can impact positively on budget deficits. Okoye *etal* (2015) did a research on fiscal deficits and macro-economic performance in Kenya. In the study, gross fixed capital formation was used as an explanatory variable and the empirical results revealed that a positive relationship exists between the two. As a result, this variable in this study is expected to carry a positive sign.

3.2.5 Real Interest Rates (RIR).

Real interest rates are nominal interests adjusted for inflation and the rate measures the cost of borrowing. The relationship between budget deficits and interest rates is not straight forward as it needs careful attention. Budget deficits artificially inflates the real interest rate (not the market interest rate) thereby increasing the cost of borrowing. This creates an imbalance between the supply and demand of funds putting an upward pressure on interest rates. This makes it easy for the government to borrow, but hard for individuals and small companies to

survive marginal increases in the real rate. Stated differently, high interest rates makes it difficult for the private sector to borrow. This means that the government will be the only player taking an active role in the borrowing market. Given dwindling government revenues against the pressing demands of government expenditure, budget deficits will be inevitable. A study by Thomas Laubach revealed that there is a positive relationship between interest rates and budget deficits. As a result, the variable real interest rate is expected to carry a positive sign in this study.

3.3 Data Sources and Characteristics.

The study is mainly anchored on secondary time series data. The main sources of the secondary data are the issued reports and journals from Zimstats, the Ministry of Finance and the World Bank. The internet is used as a source of published data especially with regards to empirical support on the dynamics of fiscal performance. Using the e-views 8 econometrics software, the ordinary Least Squares method is going to be employed in assessing the dynamics of fiscal performance in Zimbabwe

3.4 Preliminary Data Analysis

3.4.1 Unit Root Test

It is conducted to test for the stationarity of the time series variables used in the study. A time series is said to be stationary if the mean, variance and autocorrelation structure do not change over time. It represents a flat looking series without trend but with constant variance over time, a constant autocorrelation structure over time and no periodic fluctuations (Gujarati, 2004). If the data is not stationary, it is said to have a unit root and the opposite holds if the data is stationary. It is very important to conduct unit root testing before the actual regression so as to avoid fabricated regression results. Stated differently, conducting regression with non-stationary variables can produce results which do not have any economic sense.

Unit root testing can be conducted using the Augmented Dickey Fuller (ADF) Test or the Phillip Peron (PP) test. The ADF test is used in a situation where the data has no structural breaks and the PP test is used if the data contains structural breaks. A structural break occurs when a time series abruptly changes at a point in time. This change could involve a change in mean or a change in the other parameters of the process that produce the series. The null hypothesis in conducting the test will be that the series contain a unit root or it is not stationary and it is rejected if the modulus value of the ADF or the PP test statistic is greater than the t-

static values. Rejecting the null hypothesis entails that the data is stationary or it does not have a unit root. The series is going to be tested under the following hypothesis:

H_0 : The series contains unit root problems.

H_1 : The series does not have unit root problems

3.4.2 Cointegration Test

Cointegration tests examine non-stationary time series processes that have variances and means that vary over time. In other words, the method allows one to estimate the long-run parameters or equilibrium in systems with unit root variables (Rao, 2007). Thus, cointegration does not reflect whether the pairs would move in the same or opposite direction, it reveals whether the distance between them remains the same over time. In this model, the Engle-Granger methodology is going to be employed to test for the presence of cointegration. The method generates the residual and test it for stationarity using the ADF test. The hypothesis to be tested is that the model is cointegrated against the alternative one which says that there is no cointegration in the model. The decision rule is not to reject the null hypothesis if the ADF statistic of the generated residual is greater than the critical values especially at the 5% level of significance. The hypothesis to be conducted are shown below.

H_0 : The variables are cointegrated.

H_1 : The variables are not cointegrated

3.4.3 Chowbreak Point Test

A significant adjustment in policies or shocks to the economy can make a series to contain structural breaks. A structural break occurs when a time series shortly changes at a certain point in time provoking changes in the mean or other parameters of the process that produce the series. The test is going to be conducted under the null hypothesis of no structural breaks against the alternative of the presence of structural breaks. The Chow Forecast is going to be conducted to ascertain if the structural break affected the parameters in the model. If the p-value of the f statistic is less than 5%, it means that the parameters were affected by the break and this requires the estimation of two regression models, one before and the one after the break

The government of Zimbabwe initiated a fast track land reform during the year 2000 and this could be a potential source of a structural break in the series. Also, the hyperinflation period between 2007-2008 where the inflation rate peaked 231 million percent could also be another

source of a structural break. On that note, the test is going to be done for the years 2000 and 2008 under the following hypothesis.

H₀: There were no structural breaks.

H₁: There were structural breaks.

3.4.4 Normality Test

The normality test is used to detect if the residual that has been generated is technically white noise (Gujarati, 2004). Technically white noise means that the generated residual has a mean equal to zero and its variance remains the same across the observations. To detect normality, the Jargue Bera statistic will be employed. The hypothesis to be tested is that the residuals are normally distributed against the alternative that they are not distributed normally. The decision rule is not to reject the null hypothesis if the probability value is greater than 0.05. The normality test is going to be conducted under the following hypothesis

H₀: The data is normally distributed

H₁: The data is not normally distributed

3.4.5 Multicollinearity Test

The use of the OLS method necessitates that the explanatory variables be liberated from each other. Andren (2008) reasoned that multicollinearity embodies the availability of a linear connection between the explanatory variables in the model. The effect of multicollinearity in regression analysis is that it makes it difficult for one to separate the individual impacts of the exogenous variables on the endogenous variable. It can also make the signs of the estimated coefficients to alternate which results in misleading forecast and policy recommendations. It also leads to the standard errors of the parameters being too large such that the t-statistics tend to be insignificant. To detect the presence of multicollinearity, the correlation matrix and the variance inflation factor (VIF) will be used. Using the pairwise correlation matrix, multicollinearity exists when the pairwise correlation between the explanatory variables is greater or equal to 0.8. Using the VIF, multicollinearity exists when the VIF coefficient is greater than five. To correct for multicollinearity, the least important variable amongst the correlated ones is dropped (Gujarati, 2004)

The test is going to be conducted under the following null and alternative hypothesis:

H₀: There is no multicollinearity.

H₁: There is multicollinearity

3.4.6 Autocorrelation Test

Andren (2008) reasoned that one of the critical assumptions of the classical linear regression models is the absence of autocorrelation amongst the disturbance terms. Auto correlation occurs when the error terms of dissimilar time series data happen to be correlated. Stated differently, it occurs when there is a connexion between the error terms of sequential observations. Thus, the error term relating to any observation should not be influenced by the error term relating to any other period. The Breush-Godfrey Serial Correlation LM Test is going to be used to test first order serial correlation. The probability value of the Breush-Godfrey Test must be greater than 0.05 for the null hypothesis not to be rejected implying no serial autocorrelation. The test is going to be conducted under the following hypothesis

Ho: There is no autocorrelation.

H1: The series is autocorrelation.

3.4.7 Model Specification Test.

A properly quantified model is of dominant importance in elucidating the dynamics of fiscal performance in Zimbabwe. A model is said to be correctly specified if it encompasses the shortcomings of rival models. According to Gujarati (2004), model misspecification may arise due to the transformation of the variables and data limitations which might result in other variables being dropped. The Ramsey Regression Error Specification (Ramsey RESET) test is going to be used. The significance of the variables in the model is going to be determined by the t-statistic values obtained after running the regression. If the p value of the Ramsey RESET is greater than 0.05, the model is said to be correctly specified and the opposite equally holds. The test is going to be conducted under the following hypothesis

Ho: The model is incorrectly specified.

H1: The model is correctly specified.

3.4.8 Heteroscedasticity Test

Homoscedasticity is a critical assumption of the Classical Linear Regression Models. It assumes that the error terms must be homoscedastic meaning that they must be constant over time. The presence of heteroscedasticity leaves the estimators unaffected since they remain unbiased and consistent but the t-statistic values and the F-statistic values will be distorted such that engaging an OLS will lead to spurious regression. In identifying the presence of heteroscedasticity, the ARCH test method is going to be employed. The null hypothesis of homoscedasticity will be used together with the alternate hypothesis of heteroscedasticity. If

the p value of the F statistic is greater than 0.05, it means that the null hypothesis will not be rejected especially at 5% level of significance.

Ho: There is homoscedasticity

H1: There is heteroscedasticity

3.5 Conclusion

This chapter specified the model on the dynamics of fiscal performance in Zimbabwe. The ordinary Least Squares is the methodology that is going to be used. The chapter also highlighted the proper preliminary data analysis to be done before the actual running of the regression. The explanatory variables to be used in this study are unemployment, external debt, gross fixed capital formation, real interest rates and the lagged value of the budget deficit.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter discusses the results obtained from an econometric analysis of time series data for Zimbabwe from the year 1990 up to 2018. Using the EViews 8 econometrics software, the interpretation of the results is based on the theoretical propositions and the empirical research findings discussed in Chapter Two in light of the research problem.

4.1 Preliminary Data Analysis

This analysis starts with assessing the data properties. This assessment is necessary to know if the data conforms to the expected econometric rules. This goes a long way in ensuring that appropriate results are produced thereby eliminating the possibility of running spurious regression. Preliminary data analysis undertaken include unit root testing, cointegration, multicollinearity, and chow break point test among others.

4.1.1 Unit Root Tests Results.

The ADF test statistic was used to test for stationarity and the results are presented in the table below.

Table 4.1.1- Summary of the Unit Root Test.

Variable	ADF Statistic	Critical Value	Intercept	order of Integration
BD	-5.530167***	-3.711457	YES	I(1)
		-2.981038		
		-2.629906		
UNEMP	-5.60111***	-3.699871	YES	I(1)
		-2.976263		
		-2.627420		
GDP	-6.918591***	-3.699871	YES	I(1)
		-2.976263		
		-2.627420		
RIR	-3.389405***	-2.650145	No	I(0)
		-1.953381		
		-1.609798		
FoDET	-3.836565***	-3.711457	YES	I(1)
		-2.981038		
		-2.629906		
GFCF	-4.221585***	-3.699871	YES	I(1)
		-2.976263		

		-2.627420		
--	--	-----------	--	--

means significant at 10% **significant at 5% and *means significant at 1% and at all levels.*

The above results reveal that the variable Real Interest Rates is stationary at level whilst the rest of the variables are difference stationary. The ADF test statistic of all the variables is greater than the critical values at all levels thereby signifying stationarity of the variables.

4.1.2 Cointegration Test Results.

The Engle and Granger methodology was used to test for cointegration. The method generates the residual and test it for stationarity using the ADF test statistic. If the residual is stationary at level, it means that it is a cointegrated equation. The results are presented below.

Table 4.1.2- Summary of the Cointegration test Results.

Variable	ADF Statistic	Critical Values	Intercept	order of Integration
Residual	-2.635351**	-2.655351 -1.953858 -1.609571	No	I(0)

***means significant at 5% and 10%*

The above results reveal that the residual is stationary at level implying the presence of cointegration. The ADF test statistic is greater than the critical values especially at 5% level of significance thereby implying stationarity of the residual.

4.1.3 Multicollinearity Test Results

The correlation matrix and the Variance Inflation Factors were used to test for multicollinearity. Firstly, the results from the correlation matrix are presented below.

Table: 4.1.3 Multicollinearity Tests Results.

	FoDET	GDP	RIR	GFCF	UNEMP
FoDET	1.000000	0.171508	-0.034063	0.106725	-0.521957
GDP	0.171508	1.000000	-0.633276	0.652723	-0.354012
RIR	-0.034063	-0.633276	1.000000	-0.437964	0.591028
GFCF	0.106725	0.652723	-0.437964	1.000000	-0.259984
UNEMP	-0.521957	-0.354012	0.591028	-0.259984	1.000000

See appendices page for the results.

The above results reveal that there is no severe multicollinearity amongst the variables since there are no variables with a pairwise relationship exceeding 0.8.

The Variance Inflation Factor (VIF) results confirmed the results from the correlation matrix above. Gujarati (2004) asserts that a VIF of less than five is desirable since it reveals the absence of multicollinearity. The results are presented below.

Table 4.1.3-Variance Inflation Factor Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
UNEMP	0.093838	1.433794	1.433664
GDP	0.024551	1.475254	1.474767
RIR	1.21E-05	1.674690	1.443989
FoDET	3735.330	1.313796	1.296350
GFCF	0.092330	1.437132	1.434594

See appendices page for the results

The above results show that both the centred and uncentred VIFs of all the variables are less than five indicating that there is no severe multicollinearity amongst the explanatory variables.

4.1.4 Autocorrelation Test Results

To detect any possibility of autocorrelation in the model, the Breusch-Godfrey test was used and the results are presented below.

Table 4.1.4- Autocorrelation Test Results

F-Statistic	Probability	obs* R-Squared	Probability
2.926310	0.0757	6.320648	0.0424

From the results above, the Breusch-Geodfrey Serial correlation LM test has a p-value of 0.0757 which is greater than 0.05. This implies that the null hypothesis cannot be rejected revealing the absence of autocorrelation in the model.

4.1.5 Model specification Test Results

The Ramsey RESET test was used to test if the model is correctly specified under the null hypothesis that the model is correctly specified and the results are presented below.

Table 4.1.5- Ramsey Reset test for Model Specification.

Probability	D.W statistic	R^2	Adjusted R^2	F-Statistic
0.0747	1.283401	0.401087	0.238664	2.462906

The probability value of the Ramsey Reset test was found to be 0.0747 which is above 0.05 meaning that the model is specified correctly. Furthermore, the DW statistic is greater than both the both R^2 and adjusted R^2 ruling out the probability of spurious regression.

4.1.6 Chow Break Point Test Results.

The test was used to identify any potential structural breaks in the series and the results are shown below.

Table 4.1.6: Chow break point tests results

Year	P value: Chow test	P value: Chow forecast	Structural break	Parameters affected
2000	0.9465	0.1298	No	No
2008	0.1666	0.1217	No	No

See appendices page for results.

The above results for the year 2000 showed a p-value of 0.9465 which is above 0.05 there by dismissing the possibility of a structural break. The results for the year 2008 also revealed a p-value greater than 5% meaning that there was no structural break during that period. To add on, the chow forecast results for both years also revealed that the parameters were not affected. This justifies the use of a single model since the p-values of the F-statistic of the Chow Forecast tests were greater than the 5% level of significance.

4.1.7 Normality Test Results

The Jargue Bera test was used to test for normality of the residual that was generated. The results revealed that the p-value of the Jargue Bera test statistic was 0.695797 which is greater than 0.05. This implies that the null hypothesis is not rejected meaning that the residuals are normally distributed and the results are shown below.

Table 4.1.7 - Normality Test Results.

Mean	Skewness	Kurtosis	Jarque-Bera Statistic	Probability
8.88e-16	-0.314567	3.452237	0.725396	0.695797

4.1.8 Heteroscedasticity Test Results

The Arch test was used to detect the presence of heteroscedasticity in the model. Heteroscedasticity was tested at 5% level of significance. From the test, the probability value is 0.7120 which is greater than 0.05 hence the conclusion is that there is homoscedasticity.

Table 4.1.8- Arch Test for Heteroscedasticity Results

Variable	F-Statistic	Probability	obs* R-Squared	Probability
Residual	0.139324	0.7120	0.149241	0.6993

4.2 Regression Results.

The variable budget deficit was regressed on six explanatory variables which are real interest rates (*RIR*), gross domestic product (*GDP*), gross fixed capital formation (*GFCF*), unemployment rate (*UNEMP*), foreign debt (*FODET*) and the lagged value of the budget deficit *BD(-1)*.

Table 4.7- Summary of Regression Results

Variable	Coefficient	Std Error	t-statistic	Prob
C	-3.065066	1.245624	-2.460667	0.0226
RIR	0.001959	0.003206	0.610937	0.5478
GDP	-0.343538	0.156687	-2.192507*	0.0392
GFCF	-0.071010	0.283645	-0.250347	0.8048
UNEMP	0.586671	0.273556	2.144607*	0.0438
FODET	42.75027	54.79177	0.780232	0.4440
BD (-1)	0.417399	0.160938	2.593536*	0.0170

$$R^2 = 0.708861$$

$$\text{Adjusted } R^2 = 0.59424$$

$$\text{D W statistic} = 1.934401$$

$$\text{F statistic} = 6.928801$$

$$\text{Probability (F-value)} = 0.008670$$

After running the OLS, the regression model is therefore specified as

$$\text{BD} = -3.065066 + 0.001959\text{RIR} - 0.343538\text{GDP} - 0.071010\text{GFCF} + 0.586671\text{UNEMP} + 41.75027\text{FODET}$$

4.3 Interpretation of the Results.

The R^2 value of 0.708861% specifies that about 70.89% of budget deficits in Zimbabwe is described by the explanatory variables in the model. The remaining percentage (29.11%) is explained by the factors captured by the error term. The adjusted R^2 reveals that, after adjusting for the degrees of freedom, about 59.42 % of the budget deficits in Zimbabwe are determined in the model and the factors not included in the model account for 40.58%. The results also reveal a DW statistic of 1.934401 which is above the R^2 the adjusted R^2 there by ruling out the possibility of spurious or nonsense regression analysis. The empirical results strongly reveal that unemployment and GDP are significant in explaining budget deficits. The lagged value of the budget deficit was also found to be significant in explaining budget deficits.

The variable GDP was found to be significant in explaining budget deficits in Zimbabwe since it had a t-statistic value of -2.192507 which is above 2. The results from the estimated model also revealed that a negative relationship between GDP and the budget deficit do exist which is signaled by a negative sign of the coefficient of -0.343538. This means that a one percent increase in the level of GDP is accompanied by a 0.343538% decrease in the level of the budget deficit. An increase in the level of GDP represents an increase in liquidity in the economy attributable to the thriving business activity that will be prevailing in the economy. This then improves the revenue generating capacity of the government which then goes a long way in reducing the budget deficit. An increase in GDP in the economy can also reduce government expenditure in other sectors that will be taken care of by the private sector. A reduction in government expenditure is necessary for reducing budget deficits. This is in line with neoclassical hypothesis which postulates that the budget deficit has a crowding out effect on investment in the economy. The results of the study also conforms to the research done by Zuze in 2016 when he looked at the nexus between economic growth and budget deficits for Zimbabwe.

The empirical results produced a positive coefficient of 0.586671 indicating that there is a positive relationship between unemployment and budget deficits. This means that a unit percent increase in the level of unemployment rate is accompanied by a 0.586671% increase in the level of budget deficits. This variable was also found to be significant in explaining budget deficits in Zimbabwe since it had a t statistic value of 2.144607, a figure above the rule of thumb of 2. High unemployment rate is a consequence of depressed business activity in the economy. A depressed business environment results in less tax revenue being collected by the revenue authorities. On another note, high unemployment calls for increased government

expenditure in the economy as the government will intervene in the economy in order to provide more social services to the nation. This then without any doubt leads to excessive budget deficits since there will be a disparity between government expenditure and government revenue. Zimbabwe is currently being troubled by a high unemployment rate which is estimated to be above 80%. This has severely affected aggregate demand in the economy which has impacted the revenue collected in the form of taxation such as the PAYE tax, the corporate tax and other taxes linked to final demand in the economy.

The lagged value of the budget deficit was also found to be significant in explaining budget deficits in the Zimbabwe evidenced by a t statistic value of -2.593536. The empirical results also reveal that a positive relationship exists between the budget deficit in the previous year and the budget deficit in the current year. This is supported by a positive coefficient of 0.417399 that was obtained after running the regression. This means that if the government continues to roll over budget deficits into the forthcoming years, fiscal deficits will be inevitable during that particular year. Interest payments from the budget deficit in the previous year will continue to put pressure on the fiscal equation of the government in the periods to come.

The variable real interest rate was found to insignificant in explaining budget deficits in Zimbabwe. This is so because the variable had a t statistic value of 0.61093 which is less than the rule of thumb of 2. Moreover, Gross Fixed Capital Formation (GFCF) variable was also found to be insignificant since it had a t statistic value of -0.250347 which is below the rule of thumb of 2. A possible explanation to this insignificance is that Zimbabwe has been channeling fewer resources towards GFCF over the time yet the budget deficits have continued to dominate the economic landscape of the country. As a result, this variable cannot be expected to influence the current budget deficits trends in Zimbabwe since it has been hovering far below the levels required to have a significant impact in the economy.

Furthermore, the variable foreign debt was also found to be insignificant since it had a t -statistic value of 0.780232 which is less than 2. A possible explanation to this is that Zimbabwe has a huge external debt estimated to be at US\$7 billion. As a result, the country has not been able to secure fresh lines of credit since it is struggling service the external debt. As a result, this variable cannot be expected to affect budget deficits since the government is failing to pay its external debt. In other words, the government is channeling little or no funds towards external debt servicing. It is against this background that this variable cannot be expected to lead to budget deficits in Zimbabwe.

4.4 Conclusion

The results revealed that only three variables which are unemployment rate and GDP are significant in explaining fiscal performance dynamics in Zimbabwe. Also, the lagged value of the budget deficit was found to be positively related to budget deficits. On the other hand, gross fixed capital formation, real interest rate and foreign debt were found to be insignificant in explaining the budget deficits prevailing in Zimbabwe.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.0 Introduction

This chapter seeks to give recommendations based on the results presented in the previous chapter. This study plays a critical role in examining fiscal performance dynamics in Zimbabwe but the researcher believes that not everything was exhausted in this area of study. As a result, this chapter will also suggest areas that future studies can explore to enrich and enhance the literature on budget deficits.

5.1 Summary of the Thesis.

This thesis is about assessing fiscal performance dynamics in Zimbabwe. A comprehensive background to the study was outlined and the research questions and objectives were mentioned in the first chapter. The first chapter also looked at the statement of the problem, the significance of the study, the research hypotheses and the delimitation of the study. The literature to the study was critically reviewed in chapter two where it covered the various economic theories pertaining to budget deficits. Empirical literature review was mainly anchored on studies done in Zimbabwe and other countries.

Chapter three outlined the methodology used in the study which is the OLS. Proper diagnostic tests such as unit root testing, cointegration test, multicollinearity among other tests were outlined. This chapter also outlined the type and sources of data to be used in econometric modelling. The results of the study were presented in Chapter four and they revealed that the variables unemployment and gross domestic product are significant in explaining budget deficits in Zimbabwe. The lagged value of the budget deficit was also found to be significant in explaining budget deficits in Zimbabwe. Furthermore, the results reveal that there is an inverse relationship between GDP and budget, and a positive relationship between budget deficits, unemployment and the lagged value of the budget deficit. However, the variables foreign debt, GFCF and real interest rates were found to be insignificant in explaining the budget deficits in Zimbabwe.

In the context of this study, the objectives of the study have been met since the research was able to articulate the sources of budget deficits in Zimbabwe. The research also looked at the various ways that have been used by the Zimbabwean government to finance budget deficits and also the effect of macroeconomic variables has been analysed. The next section of this

chapter is going to give the recommendations which is going to help in achieving the last objective.

5.2 Policy Implications and recommendations

The results of the empirical study revealed that unemployment, gross domestic product and the lagged value of the budget deficit be targeted as policy instruments in order to reduce budget deficits in Zimbabwe. The research revealed that an inverse relationship exists between budget deficits and GDP. This means that an increase in the level of GDP will be accompanied by a decrease in the level of the budget deficit. An increase in the level of GDP proxies an increase in the general liquidity in the economy (Bonga, 2018). It can also be viewed as an increase in the number of formal businesses in the economy since they are the ones that contribute to the fiscus of the nation. This calls for the government of Zimbabwe to increase the level of GDP by boosting domestic investment and attracting foreign direct investment in the country. This can be done by easing the conditions of doing business in Zimbabwe through the elimination of unnecessary red tape, corruption in the public sector and ensuring a stable political environment. This increase in gross investment will have multiplier effects to the overall economy such that the overall effect will be an increase in the revenue that is collected by the government. An increase in GDP can help to reduce government expenditure in some way since the private sector can complement some of the roles of the government in the economy.

The government can also formalise many informal businesses that are currently prevailing in Zimbabwe. This can be done by easing the requirements needed by firms to formally register their businesses. When more businesses are formally registered in any economy, it means that they will contribute to the fiscus. This goes a long way in boosting government revenue thereby playing a critical role in reducing budget deficits.

Moreover, the research findings also revealed that there is a positive relationship between unemployment and budget deficits. This means that an increase in unemployment is accompanied by an increase in the level of the budget deficit. This is so because unemployment reduces the revenue that the government can collect in the form of taxes such as the PAYE tax. Also, unemployment reduces the final demand in the economy which naturally impacts the firm's profits. When firms record low profits, it means that they will contribute less towards government revenue which then plays a critical role in causing imbalances between government expenditure and government revenue.

High unemployment also calls for increased government expenditure in the economy through the provision of social services and needs to the unemployed. This calls for the government to reduce unemployment in the country so that budget deficits will be reduced. Unemployment can be reduced by increasing investment levels in the country. An increase in investment has multiplier effects that brings previously unemployed resources into the production line. Once this happens, unemployment levels can witness a significant decrease which has pass through effects in increasing revenues in the economy at the same time reducing a significant proportion of government expenditure. This goes a long way in ensuring that government expenditure and government revenue aligns to levels required to reduce budget deficits.

The results from the model revealed that the budget deficit in the previous period increases the budget deficit in the current period. This means that the government should balance its books thereby not rolling over its budget deficit in the next period. This calls for the government to reduce the size of its budget deficit so as to avoid a recurring of the budget deficit in the coming periods. In the context of this study, the two other significant variables which are unemployment and GDP can play a significant role in ensuring that the government does balance its books. This implies that the government can implement the policy response measures given in light of the two significant variables above. This goes a long way via pass through effects in the overall reduction of the budget deficit thereby avoiding the rolling over of budget deficits in the next period.

5.3 Suggestions for Future Studies.

This study was mainly anchored on the economic determinants of budget deficits in Zimbabwe. The thesis did not include the political variables in the analysis, as a result, future studies can be hinged upon these political variables. It is also important to note that there is limited literature pertaining to the effects of political factors on budget deficits

REFERENCE LIST

- Andren, T (2008). Econometrics Part III, Business Sum Up.
- Arestis, Philip. 2011. "Fiscal Policy Is Still an Effective Instrument of Macroeconomic
- Aschauer, David A. 1989. "Does Public Capital Crowd-Out Private Capital?" *Journal of Monetary Economics*, 24(2): 171-188
- Barro, R.J. (1989). The Ricardian equivalence to budget deficits. *The Journal of Economic Perspectives*, 3. (2), 37-55.
- Bernheim B. D., (1989) "A Neoclassical Perspective on Budget Deficits", *Journal of Economic Perspectives*, Vol. 3, pp. 55-72.
- Bonga W (2018), *Economic Policy Analysis in Zimbabwe: A review of Zimbabwe Economic Policies*, SSRN Electrical Journal
- Diamond, Peter A., "National Debt and Neoclassical Economic Growth," *American Economic Review*, 1965, 55, 1125–1150.
- Easterly, W., & Schmidt-Hebbel, K. (1993). Public sector deficits and macroeconomic
- Eisner R, (1989) "Federal Debt." *Journal of Economic Perspectives* 3 (1989). pp. 37-54. *Performance. World Bank Research Observer*, 8 (2) 211-237.
- Farajova K (2011), Budget deficits and macroeconomic fundamentals: The case of Azerbaijan, *International Journal of Economic Sciences and Applied Research*, ISSN 1791-3373, Kavala Institute of Technology, Kavala, Vol. 4, Iss. 2, pp. 143-158
- Gujarati D.N (2004). *Basic Econometrics*, 4th Edition, McGraw Hill Compan
- Halkawt I , M (2015), *The impact of macroeconomic variables on the budget deficit in Malaysia*, Near East University, Nicosia 2015.
- Kalim and Hassan (2013), What lies behind fiscal deficits: A case of Pakistan, *Transylvanian Review of Administrative Sciences*, No. 40 E/2013, pp. 96-113.
- Kufa, P., & Pellechio, A., & Rizavi, S. (2003). Fiscal sustainability and policy issues in the eastern Caribbean currency union. *International Monetary Fund Working Paper* 03/162.

Kruger N (2004), Veterans' Pension in Zimbabwe: Dispute Resolution and Nation Building: Ohio State Journal on Dispute Resolutions, Vol 20, No 1

Kosimbei G, K (2009), Budget Deficits and Macroeconomic Performance in Kenya: An empirical analysis

Levacic R and Rebman A., (1986) International Review of Business Research Papers, Vol.3

Maphosa B (1994), Lessons from the 1992 Drought in Zimbabwe: The Quest for alternative food policies: Nomadic Journal of African Studies 3(1):53-59 (1994)

Makochehanwa A (2010), Impact of budget deficits on inflation in Zimbabwe, available @ <http://mpira.ub.un-munchen.de/24227/>.

Mar Gisele (2018), Determinants of budget deficits in South Africa: A Bounds Cointegration, 10th Economics & Finance Conference Presentation, Rome.

Munangagwa C, L (2009), The Economic Decline of Zimbabwe, Gettysburg economic review, Vol 3, No 9.

Ministry of Finance (2019): 2019 Budget Statement

Mehmet Çınar, İlhan Eroğlu and Baki Demirel (2014), Examining the Role of Budget deficit Policies in Economic Growth from a Keynesian Perspective, International Journal of Economics and Finance, No 10, Vol 6, pp 191.

Mohr, P. (2008) and associates, Economics for South African Students, (4th ed), Pretoria: Van Schaik publisher

Nelson, M. A and Singh, R. D (1994). The Deficit Growth Connection: Some Recent Evidence from Developing Countries: Economic Development and Cultural Change, 43(1), 167-191.

Orji Uka Odum, Onyeze Clementina Ngozi and Edeh Lawrence (2014), The Keynesian-Ricardian Dichotomy on budget deficits in Nigeria, Journal of Economics and Finance, Vol 5, Issue No 2, pp 69-78.

Oluba, Martin N. (2008), How years of Fiscal Deficits emasculated the Nigerian Economy. Journal of Economic Reflections, No. 5, Vol B , pp.1-2

Ochieng, Victor O (2013), The determinants of deficit financing in Kenya, University of Nairobi, Kenya

Perotti, R. (2004), Estimating the effects of fiscal policy in OECD countries. IGIER – University Beconi and Centre for Economic Policy: 1-43

Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review*, 100(2), 573-578.

Rahman (2012), The Relationship between budget deficit and economic growth from Malaysia's perspective: An ARDL Approach: International Conference on Economics, Business Innovation, IPEDR vol.38 (2012) © (2012) IACSIT Press, Singapore

Rao, B. (2007), *Cointegration: for the Applied Economist*, Springer

Scoones, I., Marongwe, N., Mavedzenge, B., Murimbarimba, F. Mahenehene, J. and Sukume, C. (2011). *Zimbabwe's Land Reform: A summary of findings*. IDS: Brighton

Saeidi P and Valizadeh Y (2012), Impact of budget deficit on inflation and unemployment in Iran's economy, *Journal of Basic and Applied Scientific Research*: ISSN 2090-4304

Sean Ross (2018), Understanding the effects of fiscal deficits on the economy, available at www.investopedia.com, accessed (13/11/2018)

Sibanda V and Makwata R (2017), *Zimbabwe Post Independence Economic Policies: A critical Review*, available @ www.researchgate.net.

Saungweme T (2013), Causality between government expenditures and revenues: The Zimbabwean Case 1980-2004, *Int. J. Eco. Res.*, 2013, v4i6, 28 – 40, ISSN: 2229-6158

The fiscal Council (2012), *Fiscal Assessment Report*, available @ www.fiscalcouncil.ie, accessed (06/11/18)

Tekere M (2001), Trade liberalization under structural adjustment program-Impact on social welfare in Zimbabwe

The Guardian (2011), The Global Financial Crisis: Five Key Stages 2007-2011, available @ www.theguardian.com, accessed on (23/02/2018)

The Financial Gazzete (2000), DRC war costs tax payers \$6 billion in 18 months, available @ www.allafrica.com, accessed on (27/02/18)

The Mail Guardian (2004), Zimbabwe's Secret Involvement in the DRC, available @ www.mg.co.za, accessed (27/02/17)

The World Bank (2017), Zimbabwe Economic Update: The State in the Economy, available @ www.worldbank.org, accessed on (25/02/19)

The Economonitor (2013), The Return of the emerging market crisis, available @ www.economonitor.com, accessed on (22/02/14)

Policy.” Panoeconomicus, 58(2): 143-156.

Vamvoukas, G. A. (1997), A Note on Budget Deficits and Interest Rates: Evidence from a small Economy, Southern Economic Journal, 63, No 3, January, pp. 803-811.

Zuze M (2016), Fiscal Deficit-Economic growth nexus in Zimbabwe from 1980 to 2015, International Journal of Innovative Research and development, Vol 5, Issue 6

Zuze M (2015), The relationship between fiscal deficit, money growth and Inflation: The case of Zimbabwe (1980-2007), University of Zimbabwe, June 2015.

APPENDICES PAGE

Appendix 1

Data set used in the model

Year	BD	GFCF	RINT	UNEMP	GDP	FODET
1990	-2.8	17	12.75	6	7	0.26
1991	-7.6	19	9.8	5.7	5	0.26
1992	-8.9	20	9	5	-4.8	0.241
1993	-5.4	23	15	5.9	2.9	0.218
1994	-9.7	24	18	6	4.2	0.218
1995	-12.6	20	25	6.9	-0.2	0.193
1996	-10	19	30.75	8	7	0.18
1997	-7	18	35	10	2	0.157
1998	-6	21	42.24	11	1.6	0.165
1999	-9	15.1	55.25	15	-0.8	0.163
2000	-19	14	86.48	18	-7.3	0.148
2001	-7	10	85	12	-2.7	0.156
2002	-2.7	5	90.76	15	-4.4	0.178
2003	-0.2	8	89.7	6	-10.4	0.183
2004	-7.6	5	74.24	5.5	-3.8	0.181
2005	-6	2	219.3	8	-6.5	0.228
2006	-3	2	200	10	-5.1	0.207
2007	-10	7	575.25	15	-3.7	0.187
2008	-11	5	1550	20	-17.7	0.2
2009	0.4	11	30	12	5.7	0.211
2010	2	19	22.5	11.8	11	0.199
2011	0.2	21	22	11	12	0.194
2012	-0.1	19	7.8	11	11	0.178
2013	-0.7	14.5	0.34	5.3	4.5	0.196
2014	-1.2	11.5	9.74	5.27	3.8	0.203
2015	-2.4	12	7.89	5.19	1.1	0.204
2016	-10	11	4.85	5.18	0.6	0.208
2017	-16.6	14	4.36	5.16	1.7	0.202
2018	-11.7	13	6	5.1	3.6	0.208

Source (ZIMSTATS, WORLD BANK, MoF)

Appendix 2: Preliminary Data Analysis Results.

2.1 Unit Root Test Results

2.1.1 BD Unit Root Test Results

Null Hypothesis: D(BD) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.530167	0.0001
Test critical values: 1% level	-3.711457	
5% level	-2.981038	
10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(BD,2)

Method: Least Squares

Date: 04/01/19 Time: 07:40

Sample (adjusted): 1993 2018

Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BD(-1))	-1.511148	0.273255	-5.530167	0.0000
D(BD(-1),2)	0.445806	0.193820	2.300102	0.0309
C	-0.253765	0.986378	-0.257269	0.7993

R-squared	0.611325	Mean dependent var	0.238462
Adjusted R-squared	0.577528	S.D. dependent var	7.708908
S.E. of regression	5.010626	Akaike info criterion	6.169166
Sum squared resid	577.4466	Schwarz criterion	6.314331
Log likelihood	-77.19915	Hannan-Quinn criter.	6.210968

2.1.2 UNEMP Unit Root Test Results

Null Hypothesis: D(UNEMP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.610111	0.0001
Test critical values: 1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(UNEMP,2)
 Method: Least Squares
 Date: 04/01/19 Time: 07:58
 Sample (adjusted): 1992 2018
 Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNEMP(-1))	-1.114511	0.198661	-5.610111	0.0000
C	-0.025785	0.681328	-0.037845	0.9701
R-squared	0.557313	Mean dependent var		0.008889
Adjusted R-squared	0.539606	S.D. dependent var		5.217411
S.E. of regression	3.540136	Akaike info criterion		5.437395
Sum squared resid	313.3141	Schwarz criterion		5.533382
Log likelihood	-71.40483	Hannan-Quinn criter.		5.465937
F-statistic	31.47335	Durbin-Watson stat		1.987576
Prob(F-statistic)	0.000008			

2.1.3 GDP Unit Root Test Results

Null Hypothesis: D(GDP) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.918591	0.0000
Test critical values: 1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GDP,2)
 Method: Least Squares
 Date: 04/16/19 Time: 15:20
 Sample (adjusted): 1992 2018
 Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-1.314049	0.189930	-6.918591	0.0000

C	-0.113499	1.289906	-0.087990	0.9306
R-squared	0.656909	Mean dependent var	0.144444	
Adjusted R-squared	0.643185	S.D. dependent var	11.21597	
S.E. of regression	6.699746	Akaike info criterion	6.713203	
Sum squared resid	1122.165	Schwarz criterion	6.809191	
Log likelihood	-88.62824	Hannan-Quinn criter.	6.741746	
F-statistic	47.86690	Durbin-Watson stat	2.043985	
Prob(F-statistic)	0.000000			

2.1.4 RIR Unit Root Test Results

Null Hypothesis: RIR has a unit root

Exogenous: None

Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.389405	0.0015
Test critical values: 1% level	-2.650145	
5% level	-1.953381	
10% level	-1.609798	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RIR)

Method: Least Squares

Date: 04/01/19 Time: 08:12

Sample (adjusted): 1991 2018

Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RIR(-1)	-0.596946	0.176121	-3.389405	0.0022
R-squared	0.298483	Mean dependent var	-0.241071	
Adjusted R-squared	0.298483	S.D. dependent var	356.1510	
S.E. of regression	298.2999	Akaike info criterion	14.26914	
Sum squared resid	2402537.	Schwarz criterion	14.31672	
Log likelihood	-198.7679	Hannan-Quinn criter.	14.28368	
Durbin-Watson stat	2.031528			

2.1.5 Foreign Debt Unit Root Test Results.

Null Hypothesis: D(FODET) has a unit root

Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.836565	0.0075
Test critical values: 1% level	-3.711457	
5% level	-2.981038	
10% level	-2.629906	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FODET,2)
Method: Least Squares
Date: 04/01/19 Time: 08:21
Sample (adjusted): 1993 2018
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FODET(-1))	-1.107388	0.288640	-3.836565	0.0008
D(FODET(-1),2)	0.106114	0.203976	0.520229	0.6079
C	-0.001484	0.003434	-0.432282	0.6696
R-squared	0.514694	Mean dependent var		0.000962
Adjusted R-squared	0.472494	S.D. dependent var		0.023721
S.E. of regression	0.017228	Akaike info criterion		-5.176353
Sum squared resid	0.006827	Schwarz criterion		-5.031188
Log likelihood	70.29259	Hannan-Quinn criter.		-5.134551
F-statistic	12.19640	Durbin-Watson stat		1.973725
Prob(F-statistic)	0.000245			

2.1.6 GFCF Unit Root Test Results

Null Hypothesis: D(GFCF) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.221585	0.0029
Test critical values: 1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GFCF,2)
 Method: Least Squares
 Date: 04/01/19 Time: 08:28
 Sample (adjusted): 1992 2018
 Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFCF(-1))	-0.826115	0.195688	-4.221585	0.0003
C	-0.202902	0.676335	-0.300002	0.7667
R-squared	0.416185	Mean dependent var	-0.111111	
Adjusted R-squared	0.392832	S.D. dependent var	4.507800	
S.E. of regression	3.512521	Akaike info criterion	5.421732	
Sum squared resid	308.4451	Schwarz criterion	5.517720	
Log likelihood	-71.19338	Hannan-Quinn criter.	5.450274	
F-statistic	17.82178	Durbin-Watson stat	2.009114	
Prob(F-statistic)	0.000280			

2.2 Cointegration Test Results

Null Hypothesis: E has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic - based on SIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.635351	0.0105
Test critical values: 1% level	-2.653401	
5% level	-1.953858	
10% level	-1.609571	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(E)
 Method: Least Squares
 Date: 04/16/19 Time: 14:36
 Sample (adjusted): 1992 2018
 Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
E(-1)	-0.413138	0.156768	-2.635351	0.0140
R-squared	0.210324	Mean dependent var	0.340097	
Adjusted R-squared	0.210324	S.D. dependent var	14.00503	
S.E. of regression	12.44539	Akaike info criterion	7.916911	

Sum squared resid	4027.080	Schwarz criterion	7.964905
Log likelihood	-105.8783	Hannan-Quinn criter.	7.931182
Durbin-Watson stat	1.976740		

2.3 Multicollinearity Test Results

	FODET	GDP	RIR	GFCF	UNEMP
FODET	1.000000	0.171508	-0.034063	0.106725	-0.521957
GDP	0.171508	1.000000	-0.633276	0.652723	-0.354012
RIR	-0.034063	-0.633276	1.000000	-0.437964	0.591028
GFCF	0.106725	0.652723	-0.437964	1.000000	-0.259984
UNEMP	-0.521957	-0.354012	0.591028	-0.259984	1.000000

2.4 Variance Inflation Factor Results

Variance Inflation Factors
Date: 05/03/19 Time: 12:16
Sample: 1990 2018
Included observations: 28

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.968218	1.304316	NA
D(UNEMP)	0.093838	1.433794	1.433664
D(GDP)	0.024551	1.475254	1.474767
RIR	1.21E-05	1.674690	1.443989
D(FODET)	3735.330	1.313706	1.296350
D(GFCF)	0.092330	1.437132	1.434594

2.5 Autocorrelation Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.926310	Prob. F(2,21)	0.0757
Obs*R-squared	6.320648	Prob. Chi-Square(2)	0.0424

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 03/30/19 Time: 13:30

Sample: 1990 2018

Included observations: 29

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.240285	10.15944	-0.023651	0.9814
GDP	-0.065463	0.203010	-0.322460	0.7503
RIR	0.001561	0.004882	0.319779	0.7523
UNEMP	-0.074670	0.325075	-0.229701	0.8205
FODET	1.953153	40.16642	0.048627	0.9617
GFCF	0.034654	0.176333	0.196526	0.8461
RESID(-1)	0.508430	0.219046	2.321114	0.0304
RESID(-2)	-0.338318	0.256350	-1.319752	0.2011

R-squared	0.217953	Mean dependent var	8.88E-16
Adjusted R-squared	-0.042729	S.D. dependent var	4.367913
S.E. of regression	4.460255	Akaike info criterion	6.057240
Sum squared resid	417.7713	Schwarz criterion	6.434425
Log likelihood	-79.82997	Hannan-Quinn criter.	6.175369
F-statistic	0.836088	Durbin-Watson stat	1.989422
Prob(F-statistic)	0.569820		

2.6 Model Specification Test Results.

Ramsey RESET Test

Equation: UNTITLED

Specification: BD C GDP RIR UNEMP FODET GFCF

Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	1.871138	22	0.0747
F-statistic	3.501157	(1, 22)	0.0747
Likelihood ratio	4.282759	1	0.0385

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	73.34282	1	73.34282

Restricted SSR	534.2026	23	23.22620
Unrestricted SSR	460.8597	22	20.94817
Unrestricted SSR	460.8597	22	20.94817

LR test summary:

	Value	Df
Restricted LogL	-83.39467	23
Unrestricted LogL	-81.25329	22

Unrestricted Test Equation:

Dependent Variable: BD

Method: Least Squares

Date: 03/30/19 Time: 14:08

Sample: 1990 2018

Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.191433	10.37253	-0.693315	0.4954
GDP	2.421987	1.010755	2.396216	0.0255
RIR	0.000190	0.004934	0.038457	0.9697
UNEMP	0.054278	0.324861	0.167080	0.8688
FODET	61.55025	46.41189	1.326174	0.1984
GFCF	-1.800048	0.764925	-2.353236	0.0280
FITTED^2	0.234375	0.125258	1.871138	0.0747
R-squared	0.401807	Mean dependent var	-6.400000	
Adjusted R-squared	0.238664	S.D. dependent var	5.245474	
S.E. of regression	4.576917	Akaike info criterion	6.086434	
Sum squared resid	460.8597	Schwarz criterion	6.416471	
Log likelihood	-81.25329	Hannan-Quinn criter.	6.189797	
F-statistic	2.462906	Durbin-Watson stat	1.283401	
Prob(F-statistic)	0.056418			

2.7 Chow Break Point Test Results for the year 2000

Chow Breakpoint Test: 2000

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1990 2018

F-statistic	0.263527	Prob. F(6,17)	0.9465
Log likelihood ratio	2.579113	Prob. Chi-Square(6)	0.8595
Wald Statistic	1.581162	Prob. Chi-Square(6)	0.9539

2.8 Chow Break Point Test Results for the year 2008

Chow Breakpoint Test: 2008
 Null Hypothesis: No breaks at specified breakpoints
 Varying regressors: All equation variables
 Equation Sample: 1990 2018

F-statistic	1.764524	Prob. F(6,17)	0.1666
Log likelihood ratio	14.03996	Prob. Chi-Square(6)	0.0292
Wald Statistic	10.58714	Prob. Chi-Square(6)	0.1020

2.9 Chow Forecast Test Results year 2000

Equation: UNTITLED
 Specification: BD C GDP RIR UNEMP FODET GFCF
 Test predictions for observations from 2000 to 2018

	Value	Df	Probability
F-statistic	3.265385	(19, 4)	0.1298
Likelihood ratio	81.31604	19	0.0000

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	501.8474	19	26.41302
Restricted SSR	534.2026	23	23.22620
Unrestricted SSR	32.35517	4	8.088792
Unrestricted SSR	32.35517	4	8.088792

LR test summary:

	Value	Df
Restricted LogL	-83.39467	23
Unrestricted LogL	-42.73665	4

Unrestricted log likelihood adjusts test equation results to account for observations in forecast sample

Unrestricted Test Equation:
 Dependent Variable: BD
 Method: Least Squares
 Date: 03/30/19 Time: 21:54
 Sample: 1990 1999
 Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.31142	24.39459	-0.463685	0.6670

GDP	0.347083	0.272859	1.272025	0.2723
RIR	-0.645207	0.492174	-1.310933	0.2601
UNEMP	2.831838	1.810959	1.563723	0.1929
FODET	-31.86076	79.66584	-0.399930	0.7096
GFCF	0.155004	0.495337	0.312926	0.7700

R-squared	0.529174	Mean dependent var	-7.900000
Adjusted R-squared	-0.059359	S.D. dependent var	2.763251
S.E. of regression	2.844080	Akaike info criterion	5.212066
Sum squared resid	32.35517	Schwarz criterion	5.393617
Log likelihood	-20.06033	Hannan-Quinn criter.	5.012905
F-statistic	0.899141	Durbin-Watson stat	2.454936
Prob(F-statistic)	0.556527		

2.10 Chow forecast test Results for the year 2008

Chow Forecast Test

Equation: UNTITLED

Specification: BD C GDP RIR UNEMP FODET GFCF

Test predictions for observations from 2008 to 2018

	Value	Df	Probability
F-statistic	2.017627	(11, 12)	0.1217
Likelihood ratio	30.36708	11	0.0014

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	346.7296	11	31.52087
Restricted SSR	534.2026	23	23.22620
Unrestricted SSR	187.4730	12	15.62275
Unrestricted SSR	187.4730	12	15.62275

LR test summary:

	Value	Df
Restricted LogL	-83.39467	23
Unrestricted LogL	-68.21113	12

Unrestricted log likelihood adjusts test equation results to account for

observations in forecast sample

Unrestricted Test Equation:

Dependent Variable: BD

Method: Least Squares

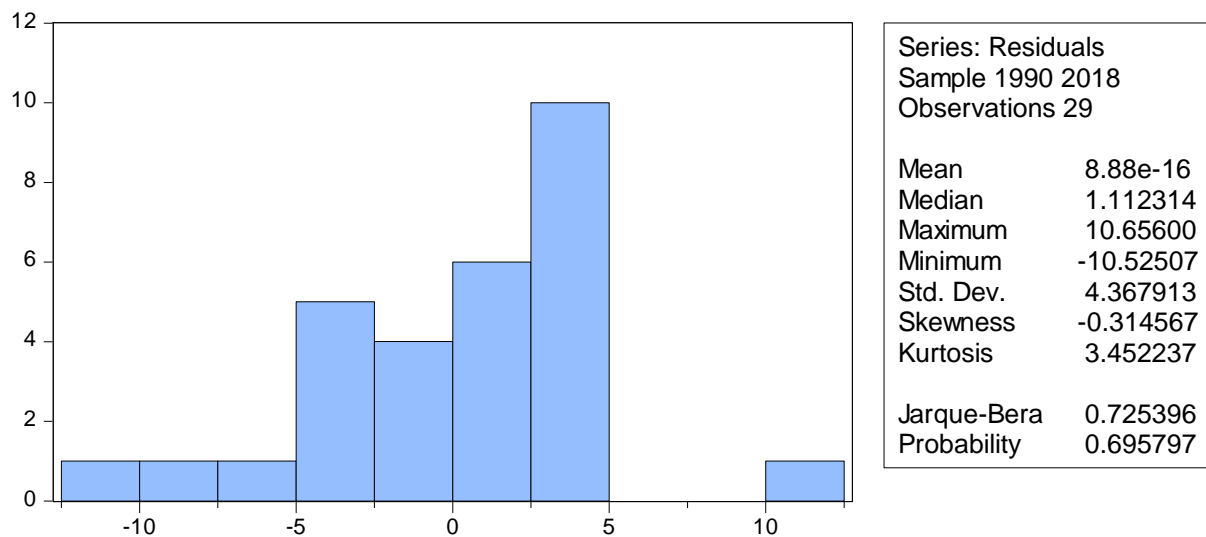
Date: 03/30/19 Time: 22:00

Sample: 1990 2007

Included observations: 18

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	1.589683	10.82318	0.146878	0.8857
GDP	0.225001	0.274127	0.820790	0.4278
RIR	-0.006078	0.009608	-0.632646	0.5388
UNEMP	-0.393430	0.357825	-1.099505	0.2931
FODET	7.292735	39.41508	0.185024	0.8563
GFCF	-0.432764	0.204941	-2.111650	0.0564
R-squared	0.391116	Mean dependent var	-7.472222	
Adjusted R-squared	0.137415	S.D. dependent var	4.255765	
S.E. of regression	3.952562	Akaike info criterion	5.847807	
Sum squared resid	187.4730	Schwarz criterion	6.144597	
Log likelihood	-46.63026	Hannan-Quinn criter.	5.888730	
F-statistic	1.541639	Durbin-Watson stat	1.832976	
Prob(F-statistic)	0.249243			

2.11 Normality Test Results



2.12 Heteroscedasticity Test Results

Heteroskedasticity Test: ARCH

F-statistic	0.139324	Prob. F(1,26)	0.7120
Obs*R-squared	0.149241	Prob. Chi-Square(1)	0.6993

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 04/01/19 Time: 09:55

Sample (adjusted): 1991 2018
 Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.79855	6.650997	2.676072	0.0127
RESID^2(-1)	0.074347	0.199182	0.373261	0.7120
R-squared	0.005330	Mean dependent var	19.07770	
Adjusted R-squared	-0.032926	S.D. dependent var	29.67767	
S.E. of regression	30.16231	Akaike info criterion	9.719812	
Sum squared resid	23653.89	Schwarz criterion	9.814970	
Log likelihood	-134.0774	Hannan-Quinn criter.	9.748903	
F-statistic	0.139324	Durbin-Watson stat	1.968444	
Prob(F-statistic)	0.711980			

Appendix 3
Model Estimation Results

Dependent Variable: D(BD)
 Dependent Variable: D(BD)
 Method: Least Squares
 Date: 05/03/19 Time: 14:21
 Sample (adjusted): 1991 2018
 Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.065066	1.245624	-2.460667	0.0226
RIR	0.001959	0.003206	0.610937	0.5478
D(GDP)	-0.343538	0.156687	2.192507	0.0392
D(FODET)	42.75027	54.79177	0.780232	0.4440
D(UNEMP)	0.586671	0.273556	2.144607	0.0438
D(GFCF)	-0.071010	0.283645	-0.250347	0.8048
BD(-1)	0.417399	0.160938	2.593536	0.0170
R-squared	0.708861	Mean dependent var	-0.317857	
Adjusted R-squared	0.594249	S.D. dependent var	5.217851	
S.E. of regression	4.061052	Akaike info criterion	5.853079	
Sum squared resid	346.3350	Schwarz criterion	6.186130	
Log likelihood	-74.94311	Hannan-Quinn criter.	5.954896	
F-statistic	6.928801	Durbin-Watson stat	1.934401	
Prob(F-statistic)	0.008670			