IMPACT OF EXTERNAL DEBT ON ECONOMIC GROWTH IN NIGERIA

BY

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ABSTRAK

Objective kajian ini adalah untuk mengkaji kesan hutang luar negara dan perkhidmatan hutang luar negara terhadap pertumbuhan ekonomi Nigeria dalam jangka pendek dan jangka panjang bagi jangkamasa 1980-20013. Kajian ini menggunakan pendekatan kointegrasi Johansen dan Model Vector Pembetulan Ralat bagi menganalisis hubungan jangka panjang dan jangka pendek dalam kalangan pemboleh ubah yang dipilih. Hubungan bersebab antara hutang luaran, perkhidmatan hutang luaran dan pertumbuhan ekonomi dikaji dengan menggunakan ujian penyebab Granger. Keputusan empirik menunjukkan bahawa hutang luaran dan perkhidmatan hutang luaran masing-masing mempunyai kesan negatif dan positif yang signifikan ke atas pertumbulah ekonomi dalam jangka panjang. Kecuali pemboleh ubah kadar pertukaran benar tertangguh pertama, semua pemboleh ubah yang dipilih tidak mempunyai hubangan signifikan dengan pertumbuhan ekonomi dalam jangka pendek. Terma pembetulan ralat mempunyai kelajuan penyesuaian sederhana yang signifikan dan tanda yang betul. Keputusan ujian penyebab Granger menunjukkan bahawa hubungan sehala pertumbuhan ekonomi dan hutang luar negara. Sementara itu, tiada hubungan penyebab antara perkhidmatan hutang luaran dan pertumbuhan ekonomi. Hubungan bersebab wujud antara perkhimatan hutang luaran dengan hutan luaran, tetapi tiada timbal balas. Oleh itu, sebagai cadangan, projek yang dibiayai dengan memggunakan hutang luaran perlu dinilai dengan baik dan berupaya membayar polisi, balik hutang tersebut. Tatacara perolehan dan kelulusan memperoleh hutang luaran perlu diperkemaskan.

ABSTRACT

The objective of this study is to examine the long run and short run impact of external debt and external debt service on the economic growth of Nigeria over the period 1980-2013. This study employs Johansen cointegration approach and Vector Error Correction Model for analyzing long-run and short-run relationships among the selected variables. The causality among the external debt, external debt service and economic growth has also been examined using Granger causality test for the period under consideration. The empirical results show that external debt has a significant negative effect on the economic growth in the long run. External debt service has a significant positive effect on growth in the long run, suggesting no crowding out effect on investment. There is no significant short run relationship among the variables under consideration except for the first lag of real exchange rate, but the error correction term has a moderate speed of adjustment with correct sign and it is significance. The study also finds uni-directional causality running from economic growth to external debt. It is found that there is no causality between external debt service and economic growth. Finally, external debt service has been found to Granger cause external debt, but there was no feedback. Therefore, as policy suggestions, projects to be financed by external debt should be well-appraised and must be self-liquidating, while the guidelines for external debt acquisition and approval should be strengthened.

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All praises and glory be to Allah for His ceaseless watch over all my affairs, especially towards the completion of this academic pursuit. His love, support and inspiration cannot be described by words. The time He gives, the health He grants and the ability He bestows on me to complete this thesis will always be appreciated.

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LIST OF ABBREVIATIONS/NOTATIONS/GLOSSARY TERMS

~I (.)	Integrated of order
ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
APEC	Asia Pacific Economic Co-operation
AR	Autoregressive
ARCH	Autoregressive Conditional Heteroscedasticity
ARDL	Autoregressive Distributed Lag
CE (s)	Cointegrating Equation(s)
DF	Dickey-Fuller
DGP	Data Generating Process
DMO	Debt Management Office
ECM	Error Correction Model
ECT	Error Correction Term
FDI	Foreign Direct Investment
FE	Fixed Effects
FEDV	Forecast Error Variance Decomposition
FMOLS	Fully Modified Ordinary Least Square
GARCH	General Autoregressive Conditional Heteroscedasticity
GDP	Gross Domestic Product
GMM	General Moment Method
GNP	Gross National Product
HIC	Highly Indebted Countries
HIPC	Highly Indebted Poor Countries

IMF	International Monetary Found
IRF	Impulse Response Function
IV	Instrumental Variable
LHS	Left Hand Side
M2	Broad Money
NEEDS	National Economic Empowerment Development Strategy
OECD	Organization for Economic Co-operation Development
OLS	Ordinary Least Square
RE	Random Effects
SAP	Structural Adjustment Program
SIC	Schwartz Information Criterion
SSA	Sub-Sahara African Countries
SSE	South Eastern Europe
STAR	Smooth Autoregressive
SUR	Seemingly Unrelated Equations
TSLS	Two Stage Least Square
VAR	Vector Autoregressive
VECM	Vector Error Correction Model
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Meaningful economic development requires resources to lay solid foundation for a smooth take off the economy. These resources are not readily available in the home country and so a country must naturally look outside to acquire such resources. The resources in the form of external debts have been the main source of finance to fill the savings gap for most developing countries. The natural question is whether such external debts fulfill the purpose for which they are obtained. Nigeria in its bid to achieve economic development has resorted to external borrowings over the year and so face the same question of whether external debt contributes to its economic progress.

1.2 BACKGROUND OF THE STUDY

Any nation must acquire sufficient finance whether internally or externally to carry out fundamental development projects to achieve economic progress. External debt falls into the latter category source of funds. The question of impact of external debt on economic growth has gained new recurrence since external debt crisis in 1982 (Ajisafe, Nassar, & Fatokun, 2006). The debate about its effect remains heated and inconclusive (Okonkwo & Odularu, 2013 Ali & Sadraoui, 2013). Considering this trend, swollen level of external debt held by less developed countries continues to generate questions about its contribution to the economies, its sustenance and a reasonable amount to be managed

without jeopardizing the economies (Daud & Podivinsky, 2012). Such high level of debt is more likely to lead to defaulting and failure in tackling economic menace such as poverty.

Nigeria, as a developing country, is faced with acute scarcity of resources to carry out developmental programmes so as to maximally harness the vast potentials in natural and human resources in the country. The sources of finance would chiefly be obtained externally in forms of loans or external debts (Lof & Malinen, 2014; Adepoju, Salau & Obayelu, 2007). In 1982, Nigeria's external debt profile took a dramatic dimension when it took an external loan that was over 160 percent of its gross domestic product (GDP). With the drastic fall in oil revenue in the late 80s, the country deemed it necessary to contract the first "jumbo loan" to the tune of over $1b in the international capital market. The sources raised would be used for various infrastructural projects which finally did not give intended result (DMO, 2009).

External borrowing provides an avenue for financing economic progress in poor countries in the areas of infrastructure and human capital development. This is because such sources of finance are not enough to obtain internally as such countries are characterized by low levels of export earnings (Ramzan & Ahmad, 2014)

Thus, Nigeria as a less developed country followed suit in acquiring external loans to take advantage of such borrowings. Investment through external debt is likely to induce economic performance in the host country (Rocha & Oreiro, 2013; Okonkwo &

Odularu, 2013). It is asserted that when external debt as source of finance is channeled into productive projects, the borrowing country can meet the debt obligations and witness economic progress (Hameed, Ashraf, & Chaudhary, 2008).

1.2.1 Economic Growth

Nigerian economy had been experiencing ups and downs, including negative growth since 1987 until 1992. Figure 1.1 captures the trend in the GDP growth rate from 1980 to 2013.

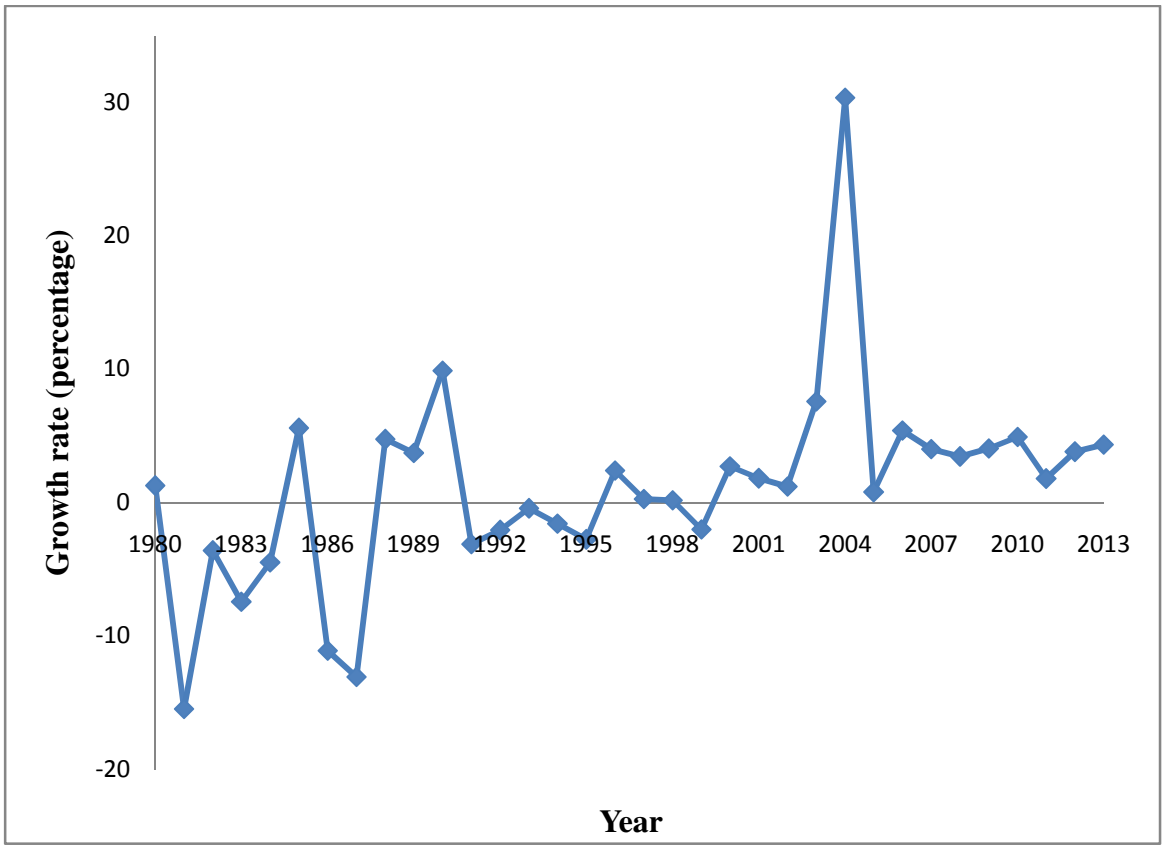

Figure 1.1: GDP Growth Rate, 1980-2013

The worst negative rate of growth was in 1981 when it was -13.1 percent, followed by some improvement around 1985. This was, however, accompanied by another negative performance around 1987 when the growth rate was -10.8 percent. This was the worst performance, which was accentuated by crash in world oil price that continued towards the middle of 1980s. This started barely a year after the Structural Adjustment Program (SAP) took into effect. As part of SAP package, Nigeria adopted a floating exchange rate policy as against the hitherto fixed exchange rate policy. There was depreciation of Naira (₦) against Dollar from ₦0.77 to ₦1.57 in 1986 and to ₦ 4.016 in 1987. This really dealt a heavy blow to the economy and was the major contributor of the then economic stress. After this stressful time onward, Nigerian economy continues to enjoy moderate levels of growth with some minor ups and downs until 2004 when the growth skyrocketed to 33.7 percent from the 2003 rate of 10.4 percent. Of course, this was the period when there was a large oil proceed following Iraq War and its invasion in 2003. Also, the sound performance in economic growth was accounted by effective application of the economic program of National Economic Empowerment Strategy (NEEDS). Agriculture, general commerce and services were the driving force of growth. This was a temporary boost in the Nigeria's oil revenue as it soon started shrinking with the moderate improvement in 2006 and 2010 having 8.2 percent and 7.8 percent increase, respectively. But 2011 growth rate of GDP dropped to 4.7 percent with upturn to 6.7 percent and 7.3 percent in 2012 and 2013, respectively (World Bank, 2014).

1.2.2 External Debt Macro Facts and External debt/GDP

External debt stock refers to the amount of money that is borrowed from foreign lenders whether private or international financial organization (World Bank, 2014). It comprises all debts contracted abroad in various hard currencies, primarily for the purpose of carrying out developmental projects in the receiving country. Nigeria, like other resource-poor countries, has not been spared of the plight of lack of capital for development. It would be therefore expedient if the country borrowed from outside to augment the shortfall in its domestic savings to finance its developmental initiatives (Malik & Hayat, 2010). Despite these seemingly beneficial facts, borrowing abroad would only give positive impact if and only if the sourced funds are put in productive ventures and taken good care of to ooze returns higher than the interest charged against them (Adepoju, Salau & Obayelu, 2007).

Nigeria external debt history began in its early years of independence in 1960 when the debt was contracted to build the railway. It all began with the pre-independence debt of $28 million from both bilateral and multilateral agencies at lower interest rate and longer period of payment. However, the crash in the oil price in 1970s had been a major hurdle in the flow of revenue. The effect of the dramatic fall in the government revenue was so great that the government had to acquire new loans to continue the development projects. At the same time, Decree No. 3 of 1985 put a ceiling of external loan to ₦5 billion. That year marked the beginning of first "jumbo loan" to tune of $1 billion, thereby raising the accumulated debt to $2.2 billion. From this time on, Nigeria's external borrowing has been growing in leaps and bounds until 2005. Figure 1.2 captures three epochs in the

external debt/GDP history in Nigeria; namely 1980s, 1990s and 2000s. The figure shows the dynamism of external debt/GDP over the three distinct decades in Nigeria. The early part of first the decade shows a steady increase in external debt/GDP ratio dramatically escalated in the later part of the decade. The ratio was 0.057 in 1980 and steadily increased to 0.14 in 1984. It then rose to an alarming rate of 0.98 or 98 percent of GDP in 1987. This has been accounted for by the crash in the world market oil price in 1982 and the increase in external debt by the government to be able to carry on with already started development projects. The implementation of SAP also ironically added insult to the injury as the deterioration of exchange rate aggravated foreign exchange inflows. In absolute terms, the external debt grew from $8.94 billion to $33.44 billion, a more than 246% increase in the decade. The second decade shows a generally decreasing external debt/GDP ratio from 0.91 in 1991 to 0.65 in 2000. However, despite this decrease in external debt/GDP ratio, external still remains high until the third decade when the country appealed for debt relief in 2005, a move which reduced the external debt to $4.07 billion from about $35 billion in 2004. In terms of external debt/GDP ratio, the ratio fell from 0.66 to 0.02 in 2006. The ratio continues to fall until 2011 when an upward movement sets in, following resurgence in the external borrowings. This trend is most likely to continue as the country is passing through another type of price crash in its major exporting commodity, namely petroleum product.

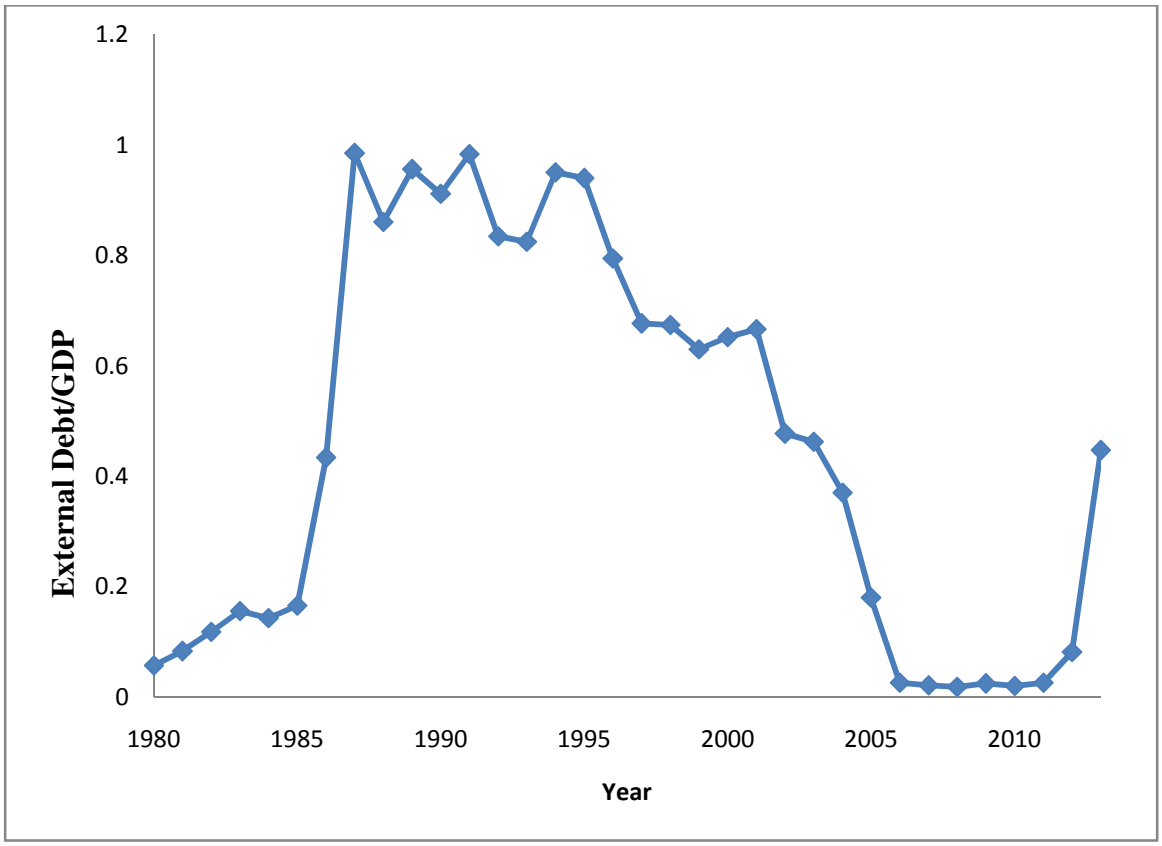

Figure 1.2: External Debt/GDP, 1980-2013

1.2.3 External Debt Service Stylized Facts

Debt service is the charge for a contracting loan by a country. It includes yearly principal amount repayment and interest charges due every year (World Bank, 2014). It represents the drain of resources to foreign creditors and as such it is considered halt potential investment in a country (Clements, Bhattacharya & Nguyen, 2003). Debt service is usually expressed as the ratio or percentage of the country's exports. Debt service-exports ratio indicates country's ability to meet is a debt obligation out of its current income over time. The year 1985 marked the year when Nigeria's external debt reached about $19 billion, a worrisome level due to the country's inability to pay off the debt service. In the same year, the debt service payment was above $4 billion out of

which Nigeria could only pay $1.5 billion (DMO, 2009). This was followed by various re-schedules and policy changes in form of SAP. Figure 1.3 shows the evolution in the Nigerian external debt service as percentage of exports.

External debt service as percentage of exports was less than 2 percent in 1980 but quickly assumes drastic increase, reaching the highest level in the decade of about 30 percent in 1986. This was when the country was hits by deterioration of exchange rate and fall in foreign exchange earnings, following the adoption of SAP and crisis in the international market for oil around the period. The debt service increased from $50 million 1980 to $3.85 billion in 1985. With the debt re-schedule and refinancing, the debt service payment dropped to $0.91 billion, but it quickly began to swell up the following year (2009). From this period onward, debt service as percentage of exports continues to dwindle until 2005 but despite decrease, the country could not honour its debt obligation that it had to seek for debt for relief. This plea was granted and since there has continuous decline in the percentage.

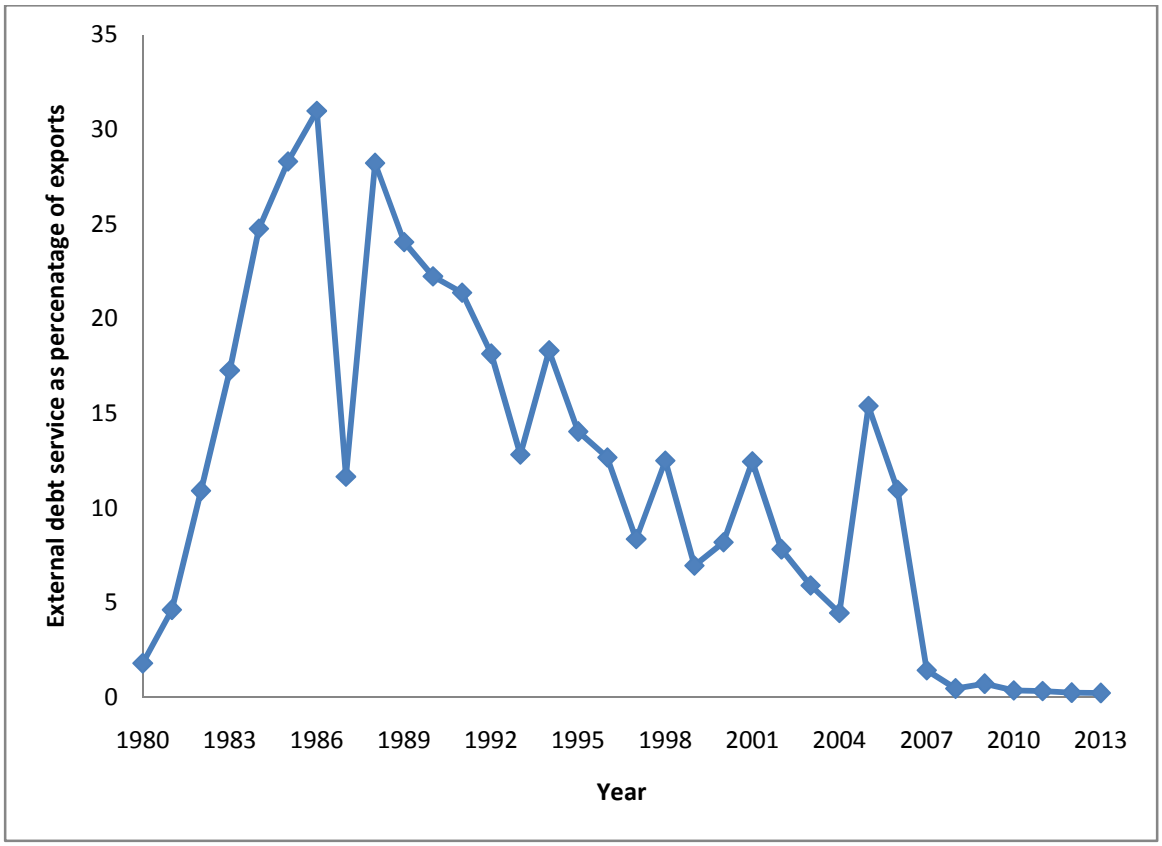

Figure 1.3: The Trend of External Debt Service as percentage of exports, 1980-2013

1.2.4 Inflation Facts

Inflation is one of the key factors that influence performance of any economy. Maintaining price stability is crucial in ensuring economic growth of a country (Umaru & Zubairu, 2012). A moderate level of inflation can spur up economic growth whereas a a high level of inflation can be harmful to it. Besides that, the effect of inflation can be so pervasive that it cuts across ranges of macroeconomic variables. Thus, a mild level of inflation acts as catalyst to enhance output growth and excessive inflation dampens economic performance (Mubarik, 2005) . Inflation has long been recognized in Nigeria

as a factor that exerts serious effect on the economy as far back as 1960s. Figure 1.4 shows inflationary trend in Nigeria.

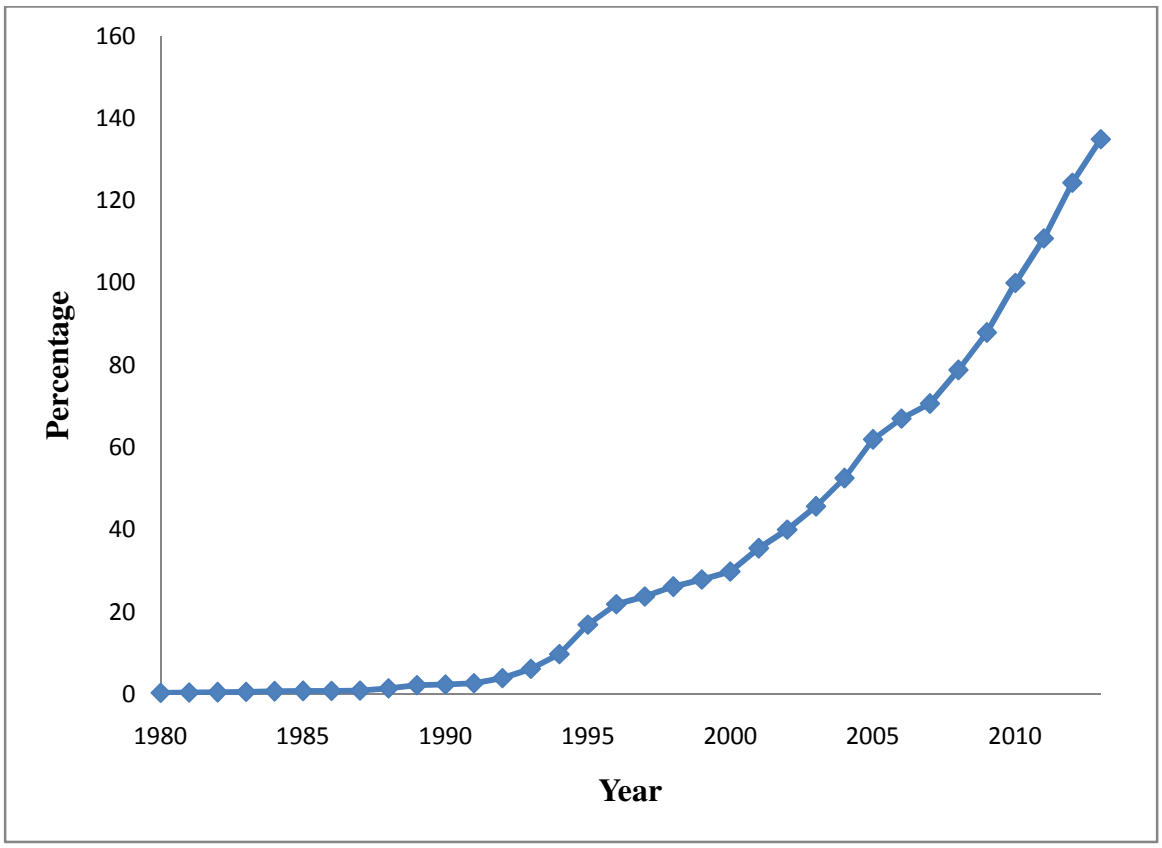

Figure 1.4: The Trend of Inflation, 1977-2013

Inflation began by a single digit in Nigeria in 1987 when it all began as one percent. Since then there has been a persistent rise in the inflation rate and changed to double digit in 1995 with continuous trend. In the year 2010, inflation reached 100 percent increase and by 2012 it was 124.4 percent. Various studies emphasize on the effect of inflation on economic growth in Nigeria (Doguwa, 2012; Chimobi, 2010).

1.2.5 Government Consumption Expenditure

Government participates in the economy to influence development. It remains contentious whether government size promotes growth or dampens it (Bergh & Karlsson, 2010). However, there is no doubt that government policy can alter the path of economic growth (Herath, 2012). It is in line with this notion that the Nigerian government has, since independence, been making efforts to shape its economy to enable economic progress. Notable effort in this direction is in terms of its size. The type of government expenditure is broadly classified into recurrent and capital expenditure. The recurrent covers all values of goods and services used by the government. It also includes expenses on security but excludes military expenses that are capital in nature (World Bank, 2005). Capital expenditure comprises all those expenses on assets that are capable of yielding benefits in the future. Final government consumption fits in well in the class of recurrent expenditure and this research considers it. Government final consumption has been increasing to bring about desired result in terms of economic progress. Figure 1.5 depicts the trend in government size in Nigeria.

The general trend in the figure demonstrates an increase in final consumption expenditure of the government in Nigeria over the years. In 1981, the expenditure was $8.95 billion, but by 2008 the amount had jumped to $24.221 billion. This was about three fold in twenty seven years. In 2010, the amount rose to $36.45 billion. The value keeps on swelling even afterwards to the level of $39.23 billion in 2011.

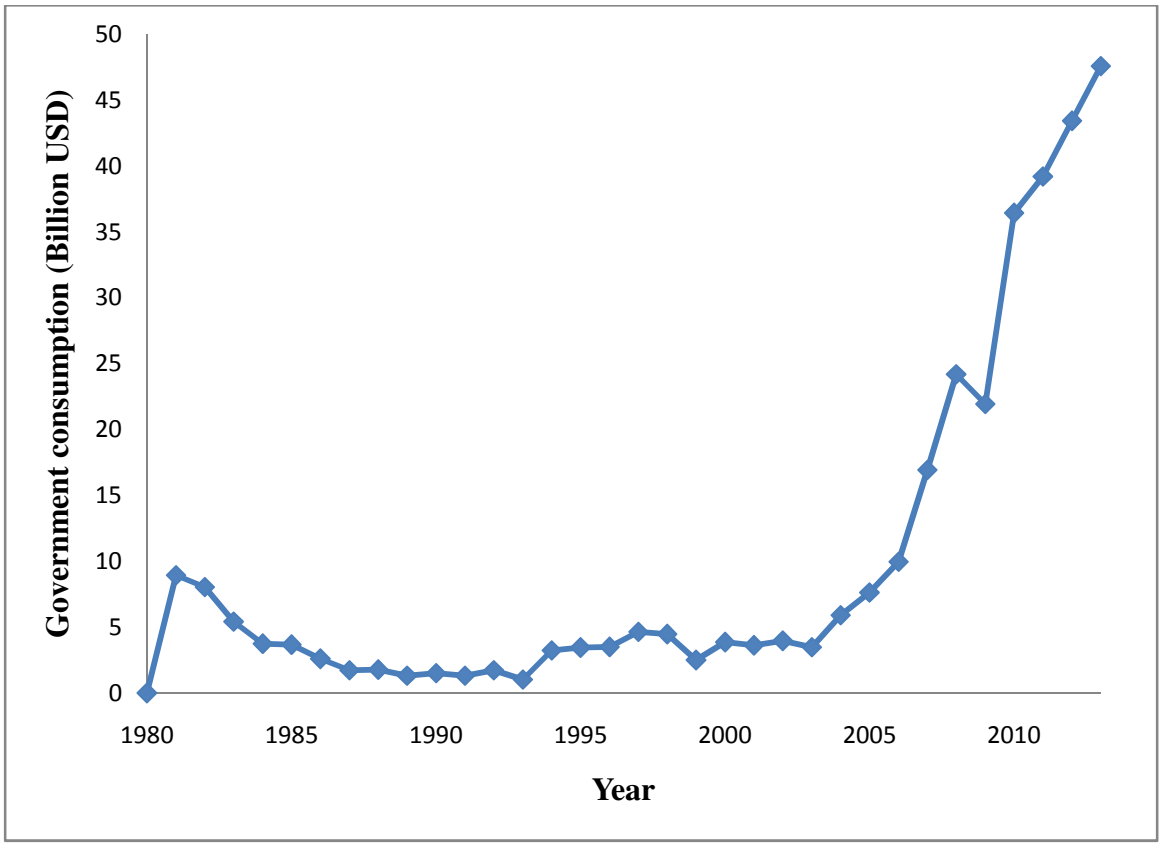

Figure 1.5: Government Consumption Expenditure,1980-2013

1.2.6 Facts about Real Exchange Rate

In an ever increasingly globalized world, the competitiveness of an economy has been a great concern for policy makers. Real effective misalignment has been experimented with success in developing countries in Asia (Rodrik, 2008; Kogid, Asid, Mulok & Loganathan, 2012). Undervaluation is generally found to enhance growth of an economy by making domestic goods abroad cheaper and thereby boosting exports while overvaluation exchange rate alignment drag on the economic performance (Berg & Miao, 2010). Undervalue and overvalue of exchange rates are associated with penalty of overheating and high inflation and drag on growth respectively for corrections (Berg &

Miao, 2010). The importance of exchange rate comes to the fore with the collapse of international oil market in the early 80s, a situation which prompted the change from the fixed exchange rate regime to the flexible exchange rate as encapsulated in SAP package (Omotor, 2008). Figure 1.6 portrays the major changes in the Nigeria's real effective exchange rate from 1980-2013.

Figure 1.6 reveals that Nigeria's real effective exchange rate underwent steady upward movements from 1980 until 1984. The value rose from 408 in 1980 to 615 in 1984. The year 1984 marked the apex value in the history of Nigeria's real exchange rate. The sudden upsurge has been attributed to the use of pegged exchange rate regime around early 80s to mid-80s (World Bank, 1984). However, with huge external debt burden and structural imperfections, it became impossible for Nigeria to honour its debt obligations (DMO, 2009).

Thus, Nigeria adopted SAP while include among other things liberalization of exchange rate market, switching to floating exchange rate regime (Omotor, 2008). By 1987 real effective exchange rate dropped to 105 with some improvements to 136 in 1988. From 1988 on, Nigeria's real effective exchange rate has been steady with little discernable ups and down movements until 2011 when it reached 151 baskets. This was not last as just a year later the value fell to 115 and then rose to 129 baskets in 2013. The dynamism in the Nigeria's real effective exchange rate can have an effect on its economic growth since the economy has been greatly linked to the rest of the world.

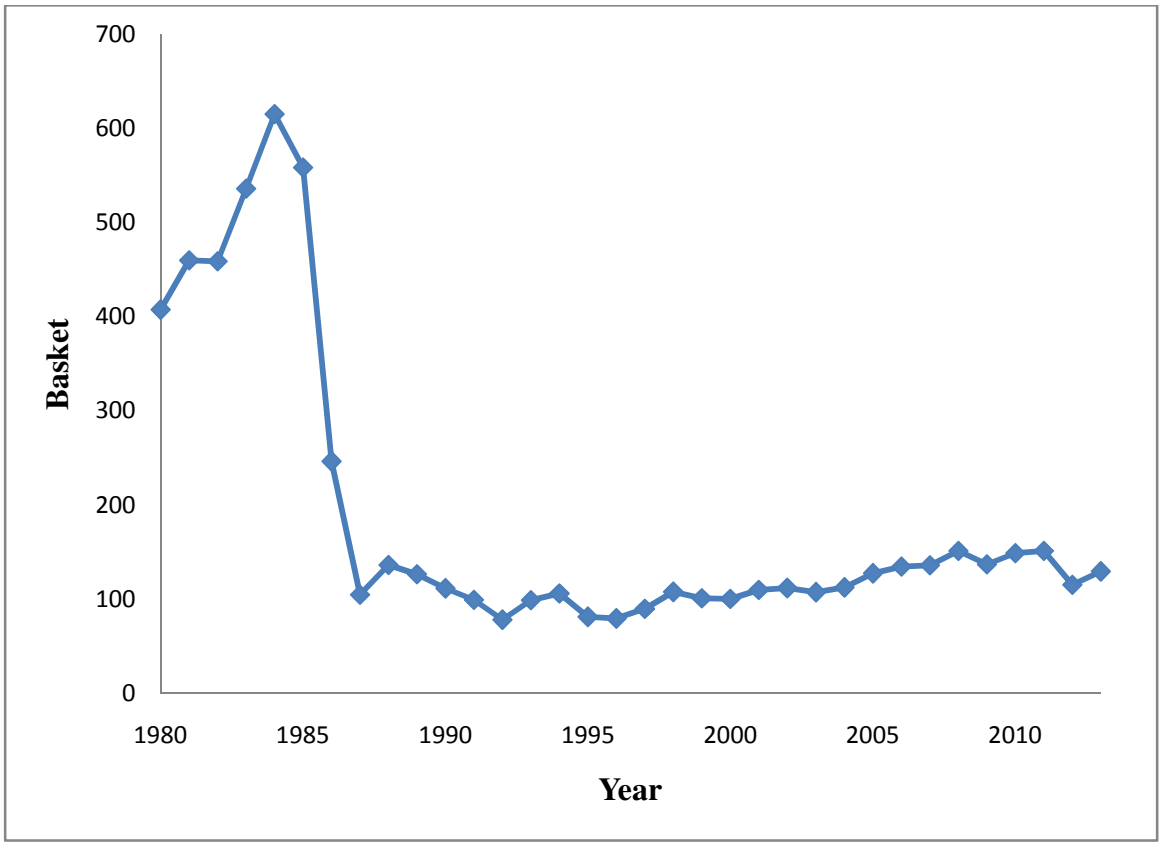

Figure 1. 4: Real effective Exchange Rate, 1980-2013

1.3 PROBLEM STATEMENT

Nigeria, as a resource-poor country, has for long resorted to external borrowings in order to bridge the savings-investment mismatch which its internal resources cannot provide. These external borrowings are taken to implement developmental projects like road and rail networks and other infrastructural facilities (Ramzan & Ahmad, 2014). The external debt is expected to enhance the economic progress of the receiving country by generating enough resources to pay not only the principal amount borrowed but also the interest service (Chenery & Strout, 1966). Motivated by these prospects, Nigeria like other poor countries, began external borrowings in its infancy of independence in the 60s when the

loans were soft and had longer periods of payment. Soon after, two decades or so, Nigeria's debt profile changed dramatically as its external debt reached $18.63 billion by the year 1982, a situation which accentuate to the debt crisis (DMO, 2009). Nigeria's debt problem got accentuated in the early 80s following the adoption of SAP aimed at resuscitating the economy to better service its debts (Muritala, 2012; Adegbite, Ayadi, & Ayadi, 2008). The SAP could not bring the desired results but culminated in making the situation even worse for the economy (Iyoha, 2008). The ever increasing external debt services have at time landed the economy in the quagmire of insolvency (Adegbite et al., 2008). This large debt service is noted to militate against the growth process of poor countries (Lof & Malimen, 2014; Kasidi & Said, 2013; Ramzan & Ahmad, 2013). At some point in time, the debt burden had been so much that the country could not honour its external debt obligation (DMO, 2009). Restructuring and recapitalization options were used to ease the pressure, at least in the short run. Soon after these short run palliatives, the country embarks yet on another external borrowing course (Ezeabasili, Isu & Mijekwu, 2001). From 1985 to 2004, Nigeria's external debt rose from $18 billion to a whopping figure of $35 billion. By 2006, Nigeria sought debt relief and its plea was granted which led to drastic fall in its external debt to the tune of $3.54 billion and by 2009 its outstanding external debt by economic sector rose to $3.72 billion. Just a year later the external debt stock had risen to $4.58 billion and by 2013 Nigeria's appetite for external borrowings continued to increase up to the tune of $13.79 billion (World Bank, 2014).

In terms of external debt/GDP ratio, there had been a consistent increase in such ratio in the first ten years namely namely 1980 to 1990. Therefore, the external debt/GDP continued to fall and reached its lowest ebb following the debt relief in 2006. For example, the ratio drastically fell from 0.98 in 1991 to the lowest level of 0.026 in 2006. However, the ratio assumes yet another pattern of increase in the later years, reaching levels of 0.082 in 2012 and 0.45 in 2013, respectively. Given Nigeria's seemingly unending appetite for external debt and the foregoing development in the external debt/GDP ratio, it can reasonably be argued there is a need to for fresh investigation on the effect of external debt on the economic growth in the country to avoid a repeat of bitter lesson of the past.

As for debt service, Nigerian external debt service was $0.1 billion in 1978 and by 1985 the figure grew to reach a soaring level of $3.83 billion. With debt re-schedule and refinancing, the debt service payment dropped to $0.91 billion, but quickly began to swell up the following year (DMO, 2009). By the year 2005, Nigeria's external debt service peaked to reach $8.80 billion, a figure that spurred up the government to negotiate for debt relief as it evidently showed that Nigeria could not settle its debt service. This call was considered by the creditors and the debt service was partly pardoned. This gave rise to shrinkage in the external debt service to $6.7 billion in 2006 and from this time on the external debt service reduced to $0.25 billion in 2012.

On the other hand, the growth rate of Nigerian economy has been characterized by ups and down. In 2005, it was 3.4 percent, but rose higher to 8.2 percent in 2006. Shortly

after, the figure fell to 6.8 percent. By 2011, the growth rate hit the lowest ebb of 4.7 percent. A rather little improvement is observed in 2012 and 2013 when the growth rate increased to 6.7 percent and 7.3 percent, respectively (World Bank, 2014).

Few studies on the impact of external debt on economic growth in Nigeria were carried out but these studies either used data that were not up to date or used Ordinary Least Square (OLS) method which may not be able the capture the actual dynamics of external debt and growth in Nigeria. Ajayi and Oke (2012) and Sulaiman and Azeez (2012) used OLS in the studies in their analysis of effects of external debts on Nigerian economic growth. Ajayi and Oke (2012) used only external debt service to capture the effect of debt on growth whereas Sulaiman and Azeez (2012) used external debt in their model. Sulaiman and Azeez (2012) use Johansen Cointegration Approach in addition to OLS but the Error Correction Term, though significant, did not conform to the theoretical less than minus one. Also, the reported external debt is positively related to economic growth. Muritala (2012) also used OLS with dependent variable as GDP and independent variables as external debt and external debt service only. He finds that external debt has a negative effect on the economic growth. It is apparently discernable that there has been conflicting findings in these studies which may be partly due to the technique used and partly due to the sensitivity of the control variables included in the models. In retrospective, this study combines both external debt and external debt service in addition to the more key control variables to ensure the robustness in the model.

1.4 OBJECTIVES OF THE STUDY

The general objective of this research is to study the impacts of external debt on economic growth in Nigeria. The specific objective of this study is to:

i) Examine the long-run relationship between external debt, external debt service and economic growth in Nigeria,

ii) Determine the short-run relationship between external debt, external debt service, inflation, government consumption, real exchange rate and economic growth

iii) Determine the causal relationship among external debt, external debt service and economic growth.

1.5 SCOPE OF THE STUDY

This study entails the investigating the long run and short run relationship between external debt, external debt service and economic growth in Nigeria over the period of 1980-2013.

1.6 SIGNIFICANCE OF THE STUDY

Previous studies on the impact of external debt emphasize the relationship between external debt and economic growth without much consideration on the nature of causality. Most of the previous studies are based on group of countries or panel analysis. For example, Boamah and Moore (2009), Scott,(2001), Daud and Podivinsky (2012), Lin & Sosin (2001), Shalishali (2008) and Ali and Sadraoui (2013). This study boosts the scanty country-specific studies on debt-growth debate.

The findings of this study are hoped to enable policy makers to reach informed judgment as to debt sustainability and further debt contract. It will hopefully give policy guidance in formulating sound policy of managing debt in Nigeria. In the academic field, the findings are expected to serve as a basis for further study in the area. The findings can also motivate the use of different approach to counter them or justify them empirically.

1.7 ORGANIZATION OF THE STUDY

This research has been portioned into five distinct chapters. Chapter One covers introduction. It touches on the background of the study, the facts of the economic variables of the study, problem statement, and objectives of the study, significance and coverage of the study. Chapter Two pertains to survey on the studies done. Literature on each variable of the study is reviewed. Chapter Three presents the analytical techniques that are used in the analysis of the study while Chapter Four presents the result of the analysis. The study is summarized and conclusion is drawn in Chapter Five.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses theoretical literature of debt-growth nexus; it discusses Ricardian equivalence theory, reasonable debt theory, high debt theory and debt overhang theory. Empirical studies previously done have been reviewed starting with studies that show a positive relationship between debt and economic growth and then those that show negative relationship and those that are based on nonlinear relationship. In addition to these, the chapter discusses the literature on the relationship between growth and other independent variable of the study such as inflation, government expenditure and real exchange rate.

2.2 PRE-LITERATURE DISCUSSION

Vast amounts of works have been submitted on the issue of debt-growth relation fairly recently. This is prompted by the definite result of world financial turbulence which resulted in a number of countries across the globe to become financially crippled. The snag is highly evident in overwhelming levels of debts in the affected countries.

Before the world experienced the recent financial trouble in the 70s and 80s, many nations were quite settled with the matter of external debt as a source of financing their needed economic growth. This might be the case as there was a relatively low interest rate with the longest payment periods and a plethora of savings was available around

21st century. At same the time, there is a race in enticing foreign private capital in order to augment the needed economic growth, especially in growth-yawning developing nations but external debts seemed to be easy to access by the countries. Thus, many countries, particularly developing ones, have progressively amassed external debts above the level of GDP. The 1980's debts crisis had dealt a great blow to the world economy, a phenomenon that led to the declaration of some countries as highly indebted poor countries (HIPC) and highly indebted countries (HIC). This is to be felt in the memory of these economies. A myriad of studies have been carried out on the issue of the relationship between growth and debt. These studies are tilted to developed countries and others in developing countries, but few others exist on HIPC and SSA. Some of these studies pinpointed on the dire need to sustain debts and lethal effect of debt level beyond tolerable limits.

The literature review has been carried out by discussing each of the independent variables in relation to growth. The independent variables are external debt, external debt service, inflation, government size and real effective exchange rate.

2.3 THEORETICAL REVIEW OF DEBT THEORIES

Theories on the effects of debt on growth have been discussed. One theory holds that moderate amount of debts can have a flourishing effect on economic growth. Quite a number of theories emphasize that soaring levels of external debt are expected to dampen the economic performance of developing countries in the long run. On the theoretical ground, the swollen level of external debt may be seen as a displacing agent

of private investment and therefore reduce the long run possible contribution of investment to growth. Additionally, increased need for funds by government may bid up long run interest rate which also further discourages investment and hence reduce output growth. With the initial supposition that reasonable doses of external debt promote growth and higher doses retard economic performance of developing countries, literature on the nonlinear relationship between external debt and economic growth sprang up and came to be known as debt Laffer relationship associated with the debt overhang theory. Firstly, the Ricardian equivalence theory has been presented and then followed by other theories.

2.3.1 Ricardian Equivalence Theory

Barro (1974) puts forward Ricardian equivalence theory and holds that public debt does not affect growth. Under his thesis, increased public spending through borrowing is perceived by the rational economic agents to be a tax that must be reimbursed in the near future. This is especially true when the increased public borrowing is carried out along with a reduction in taxes. The rational agents do not change their spending habit and therefore save the tax cut in anticipation that in the future the tax will be raised to pool funds necessary for debt settlement. In a sense, government spending through bond raise is not net wealth as household will increase savings to counteract government policy. Thus, government bond is a wealth for the household and on the other hand, it is a liability to the tax payers (Poterba & Summers, 1987; Seater, 1993). Consumers save the reduction in tax so as to be able to settle the future liability. Thus when public spending decreases, it is counteracted by increase in private savings of the same size (Elmendorf

& Mankiw, 1998). It implies that aggregate demand does not increase by the cut in taxes or increased savings. Thus, aggregate output will not increase.

2.3.2 Reasonable Level of Debt Theory

Cohen (1991) argues that mild level of debt can stimulate increase in growth even though a country will have to pay interest and not really secure the debt for free. It follows that a country can make use of external debt to finance development goals in so far it is able to generate output that exceeds its debt obligation. He argues further that the debtor nation cannot afford to neglect the issue of debt repudiation because of its repercussion on the rest of the agents in the debtor country. Such effects as trade sanctions cannot be allowed by the debtor nation provided the cost is more than the interest payment. At a initial level of development, developing countries faced by shortage of capital and investment can enhance their economic growth through capital mobility Chowdhury (2001). Provided that the externally borrowed funds are used in productive ventures, the borrowing country has no threat from macroeconomic instability and economic growth will ensue (Burnside & Dollar, 2000).

2.3.3 High Level of Debt Theory

In contrast to moderate debt theory, Alesina and Tabellini (1989) and Tornell and Velasco (1992) demonstrate that higher amount of debt motivated by political reasons dampens economic activity when higher debt service is not taken into account as higher debt heralds higher taxes in the future. The negative effect occurs when there is possibility that country's future debt obligation is more than resources generated and

available for repayment. This is because higher debt service than resource generated is most likely to result in capital flight and this of course will lead to reduced capital formation and production. In addition, high external debt has adverse effect on macroeconomic stability. Government lacks incentive to effect adjustment policies since the gain from such policies will be appropriated by the creditors. Thus, this inhibits capital inflows and accelerates capital outflows (Singn, 2006).

2.3.4 Debt Overhang Theory

The debt overhang model put forward that debt service of a debtor country will increase as the output of that economy increases if there is possibility that in the near future the debt of the country will be beyond its ability to honour. This means that the yields that come from the investment in the country will be taken highly and given to the creditors, thus further doses of investment that may emanate domestically and internationally are hindered (Krugman, 1988; Sachs, 1989). The debt overhang theory did not clearly dwell on growth; implications can be inferred from it though. One implication is that any activity that involves cost today in order to have output in the future may be discouraged when part of the output is to be taken away by the creditors (Corden, 1989). This implication is not only limited to discouragement of investment but also on reluctance of government to implement reforms including trade liberalization that are meant to improve economic efficiency.

In another variant view of debt overhang, Agrénor and Montiel (1996) emphasize on the fiscal part of debt. High accumulated level of debt may signal that debt service will be

financed through inflation tax or a reduction in public investment. It follows that the effect of debt on growth will be through reduced investment efficiency and lesser investment dose. Uncertainty about the source of financing debt service may also lead to negative effect of debt on growth. The parts of the country's resources from which debt may be served may not be clearly stated in the terms of debt, terms of the debt reschedule, change in the government policy in light of the reschedule and so on may not be clear. When investment is contemplated in an uncertain atmosphere, investors are most likely to continue to wait (Servén, 1997). Investment that is done in high debt and uncertain country will be only on short-term yielding activities as against long term, high risk or irreversible investments. The misplaced priority in the investment lowers mean capital accumulation. This implies that swelling levels of debt in uncertain environment will likely affect growth through reduced investment efficiency and reduced productivity.

2.3.5 Nonlinear Debt Overhang Theory

Some models incorporate the moderate level of debt effect on growth and that of high debt effect on growth models to come up with the nonlinear effect of debt on growth theory. Investment appears to be the main way via which debt affects growth. For example, Cohen and Sachs (1986) and Cohen (1991, 1993) argue that capital accumulation constitutes the driving force of growth in an endogenous growth model. Even though countries have restrictions on borrowing, external debt when borrowed and invested, high growth ensues initially. Growth falls in subsequent phase even though higher than if there was no international borrowing. At the initial phase, country is able

to repay its debt service as there is no crowding out of investment given the patience of the creditor country and its enthusiasm for growth than even the debtor country. When the creditor countries are patient esnough to exercise the rescheduling policy throughout the life span of the debt, growth will be greater than when no foreign borrowing is available. However, if the creditor countries cannot be patience throughout the life of the debt, then investment and growth will be lower than when there was no foreign credit.

Calvo (1998) asserts that debt and growth snag is associated with outward movement of capital. In a simplistic framework, he shows that high debt is connected with low growth as a substantial distortionary tax buarden must be levied on capital to raise funds for servicing the debt. As a consequence, there is lower return on capital which results in lower investment and hence lower growth. On the other regime, low debt is associated with high growth since it means lower tax to finance debt service which leads to higher return on capital and hence higher investment and growth. The implication of this model is a nonlinear relationship between debt and growth in a cross-sectional data set.

With the above discussed models, it is quite possible to figure out Laffer curve out of the debt Laffer curve concerning the effect of debt on growth. The Laffer curve has two regions called good side and bad side. The good side of the Laffer curve shows that the face value of the debt service is associated with an increase in the repayment ability while the bad side shows an increase in the face value of debt service is associated with the low payment ability of a country. From the Laffer curve, it can be inferred that the

peak of the u-inverted curve represents the optimal stock of debt after which debt begins to exert a negative effect on growth.

From the discussion of the theoretical review, it is clear that external debts taken by developing countries are meant to boost the pace of economic development whereas high external will drag on performance of such economies. This implies that the positive effect of moderate external debt to economic growth can ensue, but the reverse will be seen in the case of high levels of debt.

2.4 EMPIRICAL REVIEW OF EXTERNAL DEBT AND ECONOMIC GROWTH

On the empirical studies on the external debt and growth, three divergent views emerged. The first view is that external borrowing at a manageable level enhances growth as debts are being channeled to productive ventures that generate returns in excess of the interest payment and installment payment of the principal amount borrowed. Aside this, the country is able to add to its growth from the investment on such borrowing and the investment is not crowded out but is rather encouraged as in Adegbite et al., (2008), Jalles (2011), Kasidi and Said (2013), Kutivadze (2011), Osinubi, Dauda and Olaleru (2010), Pattillo, Poirson and Ricci (2011), Poirson, Pattillo and Ricci (2004), Presbitero (2010), Rocha and Oreiro (2013) Shalishali (2008) and Simic and Mustra (2012).

The second view argues that high level of debts result in a negative linear relationship between external debt and growth. High external debt may signal high marginal tax on investment to finance such debt. Investment is therefore discouraged which leads to lower productivity and lower growth. In third view, a nonlinear relationship subsists between external debt and economic growth with both positive and negative linear models are combined as in Okonkwo and Odularu (2013), Ali and Sadraoui (2013) and Adegbite et al. (2008). However, Schclarek and Francisco (2005) argue that there is no nonlinear relationship between debt and economic growth.

2.4.1 Positive Relationship with Economic Growth

Kasidi and Said (2013) estimate the relationship between external debt and growth in Tanzania for the period covering 1990-2010. The study uses OLS and establishes that there is a positive but an insignificant relationship between external debts and economic growth in Tanzania.

Ramzan and Ahmad (2014) study the debt in a different fashion by decomposing it into bilateral and multilateral components to investigate the role of each component on growth in Pakistan utilizing Autoregressive Distributed Lag (ARDL) model of cointegration. Augmenting macroeconomic policy in their model, they show that external debt exerts decreasing impact on growth, but maintain that bilateral debt halts growth as against multilateral debt. They also identify that the interaction of external debt and policy index yields positive impact on growth. They further find that multilateral external debt exerts significant positive influence on real GDP growth. They

therefore conclude that Pakistan can experience better growth by accessing loan from international organizations like the International Monetary Fund (IMF) or regional development banks rather from many individual countries. The finding is similar to Schclarek and Francisco (2005) in a study of Latin and Caribbean countries over 35 years averaged in five years using Generalized Method of Moment (GMM). Decomposing debt into external private and public debt, they investigate the channels through which debt affects growth. They could not prove the existence of non-linearity of debt-growth relationship in the sample. They also show that small amount of external debt is positively related to growth but maintain that this happens only through external public debt and not private debt.

Kutivadze (2011) carries out research on a number of countries from low-middle-and high income brackets over the period 1990-2007 using both static fixed effect and dynamic GMM technique of estimations. The study yields interesting results. He finds that external debt has significant positive effect on growth in the case of high-income countries but could not show nonlinear relationship between the two variables. However, in the case of low-income and middle-income countries debt ratio has positive impact on growth around 70 percent and 80 percent respectively, beyond these levels it starts to affect growth negatively. He adds that the quality of institutions positively enhance growth and can affect how well the debts are use.

2.4.2 Negative Relationship with Economic Growth

Daud and Podivinsky (2012) consider spatial relationship among 31 developing countries over a period of 36 years to investigate relationship between external debt and growth using system GMM. They find that external debt does not displace investment. Most importantly, accumulated external borrowings impede growth but they could not find evidence of non-linearity relationship of debt-growth.

Lin and Sosin (2001) studies 77 countries from Africa, Latin America, Asian and other industrialized countries using cross-section regression. They show that a significant negative association exists between external debt and growth for African countries but in the case of industrialized and Latin America it is insignificant. The relationship of foreign debt and growth in the case of Asia and other developing nations it is positive but insignificant.

Lof and Malinen (2014) use panel vector autoregressive (VAR) analysis to answer the fundamental question as to whether sovereign debt dampens growth. They show no effect of debt on growth but they obtain evidence of growth causing debt.

Stella and Chikaza (2013) focus on debt overhang hypothesis in Zimbabwe using cointegration to check possible causality between debt and growth. They establish a significant negative relationship between external debt and growth. One-directional relationship goes from investment to interest on investment but cannot show causality between investment and external debt.

In the same vein, Dritsaki (2013) looks at time series data for Greece for 52 years to test possible association between growth, government external debt and export. Long-run bidirectional causality between growth and external debt is established.

Were (2001) studies the elements of Kenya's external debt using time series data for the episode 1970-1995 viz-a-viz their effect on economic growth, using Error Correction Model (ECM). He finds that external debt amassment has negative impact on both economic growth and private investment in Kenya. The study strengthens the existence of debt overhang. He however notices that that current flow of debt in Kenya improves private investment. He therefore advocates forceful implementation of macroeconomic measures to achieve both debt sustainability and economic growth at the same time. And these measures should be tailored to pave a good atmosphere for private finance.

Akin to this study is that of Diallo (2009) on the assessment of effect of foreign debt on economic performance of Guinea. The study reveals that external debt is negatively related to the economic growth of Guinea. He argues that despite various economic policy introductions and extended help from donors, Guinean economy continues to do badly. He therefore concludes that over relying on external aid and accumulation of foreign borrowings is a threat to Guinean socio-economic progress. In another corroborating study, Tchereni, Sekhampu, and Ndovi (2013) carried out study on Malawian data spanning the period 1975. They also find negative and significant relationship between external debt and growth.

Rocha and Oreiro (2013) in a study of 55 emerging economies find that debt exerts significant negative impact on growth. They also find that Debt/GDP squared negatively affects growth and so conclude that positive effect can only occur if the economies run a perpetual budget surplus. This conclusion must have emanated from the fact that the debt is measured as deficit. Thus, a country must remain a net creditor to have a budget surplus and hence have positive effect on the growth level.

2.4.3 Nonlinear Relationship with Economic Growth

Cordella, Ricci and Ruiz-arranz (2005) investigate the relevance of or otherwise of debt overhang in 80 developing countries with the emphasis on institutional quality. Classifying the countries into HIPC and non-HIPC, they show that debt affect growth negatively after medium level of debt but this does not hold below it. They also show that countries characterized by good policies and institutions exhibit debt-Laffer phenomenon above 15-30 percent of GDP. The significance of the marginal effect however disappears above 70-80 percent of GDP. These results are similar to Presbitero (2010) although their thresholds differ.

Emphasizing on democracy and corruption, Jalles (2011) lends a vehement support for debt Laffer evidence in a study of 72 developing countries. He employed fixed effects model (FE) and GMM, System GMM and even panel Granger causality techniques. He finds that debt level tolerance is higher in countries characterized by low levels of corruption and high level of democracy. Thus, countries with good governance reach

debt threshold later than those with bad governance. Moreover, the study identifies that causality runs from debt/institutional quality to growth even though it is weak.

Presbitero (2010, 2008) finds similar results in a study of 92 low, middle income countries and 114 developing nations. He finds that debt-growth hump relationship holds in countries with sound macroeconomic policies, but maintains that debt/GDP impacts positively on growth in low-income countries up to the threshold of 90 percent above which the impact becomes immaterial. Still on emphasizing policy environment, Boamah and Moore (2009) argue in their study of 12 Caribbean countries that external debt in a good policy environment has a positive impact on growth until it is in excess of 63 percent of GDP. He, however rounds off that even in good policy setting amassing debt would have a harmful effect on economic performance.

Pattillo et al. (2011) investigate the ways in which debt might affect growth in 93 developing countries over the period 1968-1998 using system GMM and FE models. They find that external debt affects growth positively up to a limit. The relationship changes at the levels of debt above 160-170 percent of export in the case of debt/export indicator and 35-40 percent of GDP in the case of debt/GDP indicator. However, the nonlinearity relationship between debt and growth is stronger in debt/GDP than in debt/Export indicator. They finally concluded that investment is not the main avenue in which high debt adversely affects growth.

Osinubi et al. (2010) examine use linear spline model to examine the effect of budget deficit through external debt accumulation on the economic growth in Nigeria. The study finds evidence of nonlinear relationship between external debt and growth. The study finds evidence of non-linear association between external debt and growth.

Doğan and Bilgili (2014) employ Markov-Switching model that takes care of two regimes to examine non-linear relationship between growth and private and public debts in Turkey. They find that public and private external debts have significant negative relationship with growth in both zero and one regime. They, however, pointed out that negative impact of public external debt is higher than that of private debt on growth. In addition, they find that investment and human capital have positive impact on growth.

Chang and Chiang (2011) use somewhat similar model of panel-smoothing transition regression on the data of 21 developing Latin and Caribbean countries that segregate the countries into three distinct regions (middle and left and right regions) based on the threshold of 32.88 percent and 55.89 percent. Positive relationship is seen in the middle part while in the other extreme parts significant negative relationship between debt and growth, an evidence of crowding out effect. Therefore, they concluded these extreme parts of the continuum could be a threat to these economies.

Reinhart and Rogoff (2010) explore systematic relationship between public debt, growth and inflation in 44 developed and emerging economies using simple correlation on the historical data of these countries. They identified that debt/GDP levels of 90 percent and

above are associated with lower growth rates when developments in emerging economies are considered jointly. As for the emerging economies in isolation, debt/GDP above 60 percent of GDP is associated with growth adversely. They lastly show that inflation becomes significantly higher for countries with debt above 90 percent of GDP.

2.5 EXTERNAL DEBT SERVICE

Debt service comprises the annual interest payment and part of the principle amount that is agreed to be paid towards the settlement of the debt over an agreed period of time. The principal amount is split up and spread over the life span of the debt. Principal amounts broken up are summed up with the annual interest amount and paid at the end of the agreed period of payment which is usually a year. In the context of international debt, debt can be contracted in any foreign currency depending on the contract terms. The debtor country must acquire foreign exchange to service the debt. Such foreign exchange is expected to come from the country's export earnings. Debt can also be serviced by levying tax on profit generated by both domestic and foreign investments. This high debt may signal high debt service and hence high tax on investment. According to external debt theories, debt service is considered as a tax in the offing on the country's resources. Therefore, it discourages the debt nation to take bold actions that will revitalize the economy since such resources will eventually end up in the hands of creditor nation(s). Private investment is also halted for the fact its returns will also be taxed away to meet debt payment. The government may also be reluctant to carry out adjustment policy to boost economy since the returns generated will end up in the hands

of the creditors. Thus, macroeconomic adjustments and investments are delayed to the extent that their potential contribution to output is reduced thereby reducing the output.

Ramzan and Ahmad (2014) employ historical time-series data of debt service of Pakistan over the period 1970-2009 using ARDL approach of cointegration to study debt service-growth relationship, with emphasis on macroeconomic policies. They find out that external debt service negatively affect growth. This finding is similar to that of Kasidi and Said (2013) used Tanzanian data over the period 1990-2010. They used OLS technique of estimation and finally conclude that negative relationship between external debt service and growth happens because of the delay in returns from infrastructure.

Akram (2013) considers four South Asian countries over the period 1975-2011 to investigate the influence of public debt and investment on economic growth. A number of estimation techniques have been employed including pooled OLS, FE, random effects model (RE) and GMM and system GMM. The finding shows that there is a significant negative relationship between external debt service and growth. Two specifications on external debt service were made, one on linear of external debt service and the other on quadratic or squared form. The findings show that linear debt service variable negatively affects growth, whereas non-linear specification shows external debt service to be insignificant.

Qayyum and Haider (2012) study 60 developing countries using both static and dynamic panel analysis. They consider aid, external debt and external debt service along with

other control variables. The study gives interesting results which show significant negative relationship between external debts service and growth in all specifications.

Diallo (2009) use the Guinean time-series data for the period 1972-2005 using cointegration technique. The result shows significant negative relationship between external debt service and growth. She however argues that aids and accumulation of external debt service constitute great threat to Guinean social and economic development.

Hameed et al. (2008) use the same method of analysis on the time series observation for Pakistan for the period 1970-2003 to examine the effect of external debt on economic growth of the country. They find that external debt service negatively affects economic growth both in the short and long run.

Jalles (2011) emphasizes on democracy and corruption to investigate debt service and growth relationship in 72 developing nations for the period spanning 36 years. The study reveals that external debt service has negative but insignificant relationship with the growth. Similar result is also obtained in the study of Clements et al. (2003) on 55 low-income countries that are qualified for International Monetary Funds' poverty reduction and growth facility program. The study covers the period 1970-1999. In addition, they show that reduction in external debt service can indirectly boost growth through public investment.

Also, Hansen (2002) stresses on aid, external debt and the associated debt service and growth. He uses both growth and investment equations to capture the impact of debt service on the respective models. The result shows external debt service has negative and but insignificant effect on growth. He finally shows that if both aid and debt services are both reduced in equal amount, the impact on growth is nil. Were (2001) employs ECM to study debt and growth relationship in Kenya's economy over the period 1970-1995. He finds that external debt service does not affect growth negatively.

2.6 RELATIONSHIP BETWEEN INFLATION AND GROWTH

Inflation has long been important aspect that registers itself in an economy. It is one of the problems that bother many, especially macroeconomic policy makers. The actual relationship between inflation and growth remain largely contentious and subject to empirical evidence. Some authors found the evidence of negative linear relationship between inflation and economic growth while others encounter non-linear relationship. They argue that moderate levels of inflation can spur up economic activities, but when they reach the highest level, further increase in inflation retards growth. Intensive work on inflation-growth has been documented, especially in the 90s.

Barro (1995) re-considers the relationship between inflation and growth by taking a sample of 100 countries for 30 years. He employs cross-sectional sectional analysis and controls for standard growth variables. He finds that inflation significantly halts growth and investment. In the sample, a 10 percent mean increase in inflation decreases growth by 0.2 to 0.3 percentage points a year.

Alexander (1997) carries out study on 11 OECD countries for the period 1966-1988 gather both pooled time series-series and cross-sectional data. He uses FE model, RE model, pooled OLS and between-effect techniques of estimation to analyze inflation-growth relationship. He also finds that inflation negatively affect growth in a significant way.

Mallick (2008) examines the impact of inflation on India's economy for the period 1960-2005 using cointegration approach. The variables used in the study in the study include GDP, capital formation, fiscal deficit, inflation, real interest rate and credit to private sector all expressed in growth rate. He finds that inflation has significantly retards growth. For example, one percent increase in inflation brings about a decrease in growth rate from 0.05 to 0.16 percent. He concludes that the policy of targeting inflation should be considers.

In examining the relationship between inflation and economic growth using 101 sample countries for the period 1960-1989, Fischer (1993) finds a striking result. He finds that inflation reduces growth via a by distorting price signals and thereby having decreasing effect on investment and productivity. Small level of inflation induces growth but high level of inflation is harmful to growth. He, however, concludes that small inflation and small deficit balance are not necessary condition for economic growth.

Gillman, Harris and Mátyás (2004) include both Organization for Economic Co-operation Development (OECD) and Asia-Pacific Economic Co-operation (APEC) data to study the inflation-growth nexus over the period 1961-1977 using within, instrumental variable (IV) and spline estimation techniques. They find significant negative relationship between inflation and growth in both OECD and APEC sample when within and IV techniques were used. In the case of non-linear specification, the relationship is negatively significant on the spline technique but not significant when IV technique was used in APEC sample.

In a similar study, Pollin and Zhu (2006) use data of 80 OECD countries and categorized them middle-income and lower-income groups. The study covers the period 1961-2000 and employs static panel data analysis technique of FE model, RE model, polled OLS and between effect methods. They find that inflation in the range of 15-18 percent threshold positively influences growth. The result in the sub-samples shows that inflation and growth have strong connection due macroeconomic policy on demand management. They conclude that there is no justification for inflation targeting policies.

Munir, Mansur and Furuoka (2009) conduct their study on Malaysian economy over the period 1970-2005 using threshold autoregressive model and OLS to capture inflation-growth relationship. The result of the study shows that inflation up to 3.89 percent has positive and significant effect on growth. Beyond the threshold, one percent increase in inflation dampens growth by 0.31 percent significantly. Below the threshold, one percent increase in inflation brings about increase in growth by 1.28 percent.

Mallik and Chowdhury (2001) investigate inflation-growth relation in a comparative study of four Asian countries using cointegration and ECM. They find positive relationship between inflation and economic growth in all the countries both in the short run and long run. They warn that faster economic growth may trigger up inflationary spiral. The finding is at variance with that of Chaudhry, Zakariya, Qambar and Farooq (2012) as positive relationship is found but not significant both in the short run and long run. Tchereni et al. (2013) in connection to the study of debt-growth relationship in Malawi for the period 1975-2003 find inflation to be statistically significant in influencing positive increase in growth.

2.7 RELATIONSHIP BETWEEN GOVERNMENT CONSUMPTION EXPENDITURE AND GROWTH

Government has long been involved in playing a vital role in influencing economic activities. The major part plays by government in spending to alter or improve economic behavior. A commonly held idea is that government spending tends to retard economic activity, but this is not always agreed both theoretically and empirically. Some components of government expenditure such as education and productive public investment are recognized to promote growth.

Empirical evidence shows mixed results of effect on government expenditure on growth. Some studies show positive effects of government expenditure on growth (Alexiou, 2009; Kalu & James, 2012). Another strand of literature finds evidence of complete negative relationship between government spending and economic growth.

The last line of evidences shows a nonlinear relationship between government spending and economic growth.

Egbetunde (2013) analyzes the effects of public expenditure on the Nigerian economy over the period 1970-2010 using ARDL approach. The public expenditure was split into current, capital and total government expenditures. The findings indicate that development expenditure (capital) has significant positive impact on economic growth in the long run. For example, one percent increase in capital expenditure promotes growth by 66 percent. Recurrent expenditure is found to exert some positive effect on growth while the total expenditure does not improve growth in the long run. They therefore suggest close monitoring of budgetary discipline to ensure effective performance.

Attari and Javed (2013) find similar results in the study of Pakistan's economic performance during the period 1980-2010. They use both ARDL and Johansen and Granger causality techniques. The results are quite interesting in that in both bivariate and trivariate specifications, recurrent expenditure have significant positive effect on growth both in the short run and long run. Government development expenditure also has enhancing effect on growth. Uni-directional causality from government expenditure to growth is also found.

Hamdi and Sbia (2013) explore the historical data of Bahrain over the period 1960-2010 using co-integration, ECM, Granger causality test and impulse response function (IRF).

The variables are GDP, government revenue and total government expenditure all expressed in real terms and log. The findings reveal that government total spending has significant positive effect on growth. One percent increase in government spending brings about 88 percent in increase in growth in the long run but not in the long run. Causality between government spending and growth is not found. They suggest that government should diversify to non-oil sector to promote growth. This result also agrees with the findings of Kalu and James (2012) on the study of the relationship between Nigerian recurrent and capital expenditure effects on growth during the period 1980-2011. Both recurrent and capital expenditures are found to positively and significantly influence growth.

Alexiou (2009) assesses the role of government expenditure in seven South Eastern Europe (SSE) countries using traditional techniques of panel data analysis of FE model and RE model. The study covers the period 1995-2005. The government capital expenditure was of two parts; capital expenditure sourced domestically and that which is obtained from abroad. Both components of government capital expenditure are found to have a significant effect on economic growth.

In a similar panel analysis of 71 countries divided according to income levels over the period 1996-2003, Cooray (2009) emphasizes on governance. He uses GMM and seemingly unrelated regression (SUR) techniques to investigate the role of government expenditure and good governance in economic growth. The findings show that government expenditure has an expansionary effect on the economic growth of these

countries. In addition, the interaction of government spending and governance provides evidence that nations with good governance tend to optimize the use of public spending. He therefore suggests encouragement of good governance to speed up economic performance.

In the study of impact of government expenditure on economic performance of India, Dash and Sharma (2008) find that government expenditure accelerates economic progress in India. They, therefore, conclude that government has a critical role in economic development and this lends support to the Keynesian framework.

A country-specific study by Jiranyakul and Brahmasrene (2007) examine the causal effects of government expenditure and economic growth in Thailand over the period 1993-2006. He uses cointegration, Granger causality and OLS with the dependent variable GDP and independent variables broad money (M2) and government expenditure all in real terms. There was no cointegration but OLS shows strong positive relationship between government expenditure and economic growth. He therefore advised for suitable demand management policies and plans for conducive economic and political climates.

In another comparative study comprising Greece, UK and Ireland, Loizides and Vamvoukas (2005) examine trivariate causality between real per capita GNP, government size, unemployment and inflation using Engle-Granger cointegration and ECM over the period 1960-1995. Government size is found to Granger cause economic

growth in all the three countries both in the short run and long run. The findings also show that economic growth has a causal effect on government size in the case of Greece supporting the Wagner theory. They, therefore, conclude that the study negates hypothesis that public spending decreases economic growth in this countries.

Another stream of empirical literature shows that government spending to drag on economic performance. A pioneering work in this is that of Barro (1991). Barro in a study of 98 countries for the period spanning 1960-1985 cross country regression shows that government consumption expenditure acts to inversely decrease economic growth in a significant way.

Chipaumire, Ngirade, Method and Ruswa (2014) study the impact of government spending on the economic growth of South Africa for the period 1990-2010. They use cointegration and vector error correction model (VECM) in their analysis and find a negative causal relationship between government spending and economic growth under the period of study. For example, one percent increase in government spending brings about 6.5 percent reductions in growth. They suggest, therefore elimination of waste in government spending. This study has been supported by the finding of Ogundipe and Oluwatobi (2013) on the Nigerian economy over the period 1970-2009. The research indicates that most components of government spending are negatively related to growth.

Carter, Craigwell and Lowe (2013) examine the relationship between government expenditure and economic growth of Barbados over the period 1976-2011 using dynamic OLS and Unrestricted ECM. The government spending was divided as total government spending, spending on education, spending on health and spending on security. The findings of the study show that total government spending has negative influence on economic growth, but this holds only in the short run. Surprisingly enough, education spending and that of heath are found that negatively affect growth both in the short run and long run. For example, education expenditure has negative impact ranging from 3.84-3.91 percent, while that of health has 3.87-5.34 percent. Lastly, social security expenditure has no any effect on growth both in the short run and long run. They advocate the transfer of funds from one component of government spending to another without decreasing the government expenditure.

Emphasizing on the institutional quality on the study of 100 developing and developed countries, Butkiewicz and Yanikkaya (2011) used Seeming Unrelated Regression (SUR) model to investigate the impact of government expenditure on growth. The countries include SSA, Latin America and East Asian countries. The variables of total government expenditure are total government expenditure and government consumption expenditure used in the study. The results of the study indicate that total government expenditure has a small negative effect on economic growth while that of government consumption expenditure reduces growth in those countries with ineffective government. For example, one percent increase in government consumption expenditure has deceasing effect on growth of 0.1 percent. Moreover, capital expenditure exerts positive effects on

growth of developing countries with ineffective governance. The study suggests limiting government consumption expenditure and increase in investment of development enhancing facilities.

Last stream of literature relates to nonlinearity between government expenditure and economic growth. Altunc and Aydin (2013) study the relationship between public spending and economic growth of Turkey, Bulgaria and Romania using ARDL bound test. The study covers the period 1995-2011. It reveals the evidence of quadratic relationship between public spending and economic growth. The maximum amounts below which increase in government spending increases growth are 25, 20 and 22 percent in Turkey, Romania and Bulgaria, respectively. The study also shows that the current government spending exceeds their respective thresholds and therefore suggests slashing government spending to ensure positive economic growth. These findings strengthen that of Herath (2012) in the study of Sri Lankan economy over the period 1959-2009. Herath used OLS and shows that negative and significant which implies nonlinearity between government spending and economic growth. The threshold is determined at 27 percent. In addition to this, he finds that investment and government spending enhances economic growth. The squared term of government spending is accelerates growth.

Another yet strengthening study is that of Chiou-wei, Zhu and Kuo (2010) on South Korea, Malaysia, Taiwan and Thailand covering the period 1961-2004. Using smooth autoregressive model (STAR), the study yields fascinating results. Evidence of

nonlinearity is found in all countries, Malaysia exception. The thresholds for Korea, Singapore, Thailand and Taiwan range from 11 percent to 16 percent. A weird result is seen in the case of Singaporean government spending as when it is smaller than 11 percent, the effect is negative, but above this level the effect of government spending is positive. They, therefore, conclude that the study refutes the notion that the higher the government spending the higher the economic growth.

2.8 RELATIONSHIP BETWEEN REAL EXCHANGE RATE AND GROWTH

Exchange rate is another important variable that influences the growth rate of a developing country. The nature of effect on growth has been greatly debated among economists (Pablo, Osborn, & Sensier, 2010). The effective exchange rate is a barometer for country's competitiveness in international trade with trading partners (Kogid, Asid, Lily, Mulok, & Loganathan, 2012). Real effective exchange rate is driven by nominal exchange rate. It is the nominal exchange rate after accounting for domestic inflation and that of trading partners.

A sustained long run economic progress must have stable exchange rate. But real exchange rate misalignment has par reaching effect on economic growth. Misalignment occurs when an actual exchange rate is prevented from changing in relation to fundamentals which consequently affects investment and exports. Misalignment of exchange rate takes the forms of either undervalue or undervalue which have epicenter of exchange rate and economic growth debate.

The old established belief sees depreciation of exchange rate as a tool for expansion of growth by replacing the imports with exports (Dornsbush, 1976). Substitution of imports with exports is possible by making home-produced goods cheaper than those from abroad dearer. Thus, foreign demand is boosted and investment at home will be increased with an attended increase in output. The modern view is that real exchange rate depreciation has a depressing effect on growth, especially in an economy characterized by elements of industrialization. In such economy, basic inputs are mostly obtained from abroad and working capital is hard-pressing to obtain. Devaluation acts to raise cost of inputs and increase the need for working capital. The working capital can only be obtained at high interest rate. Thus, increased cost of material inputs from abroad and high interest rate at home outweigh the positive effect of depreciation on foreign scene making firms to decrease production (Lizondo & Montiel, 1988).

On empirical platform, different evidences are encountered depending on the measurement of exchange rate and sample studied on a particular episode (Kogid et al., 2012; Musyoki, Pokhariyal, & Pundo, 2012; Yoll, 2009). Kogid et al. (2012) explore the effect of exchange rate on the economic performance of Malaysia during the period 1970-2009 using ECM based on ARDL. They use both nominal and real exchange rate in their exploration. They find that both nominal and real exchange rates have significant positive effects on the economic growth of Malaysia but the effect of real exchange rate is more pronounced. In addition, real exchange rate is found to influence growth both in the short run and long run significantly. They, therefore, advocate stable monetary policy towards exchange rate in order to ensure sustained economic growth.

Yoll (2009) uses Two-Stage-Least Square (TSLS) approach to investigate exchange rate instability effects on the Malaysian economic performance during the period 1980-2005. The dependent variable used in the study is real per capita growth while the independent variables are real exchange rate variability, capital stock, terms of trade, population growth rate and real exchange rate misalignment. In the main, the study finds that real exchange rate misalignment, capital stock and terms of trade have significant positive effects on growth. He therefore concludes that sustained economic progress must have good trade and foreign exchange markets with stable exchange rate system apart from physical capital.

Rodrik (2008) examines the connection between real exchange rate and economic growth of 118 developing and developed countries using FE model (within-effect). He constructs undervalue real exchange rate in order to capture its effect on growth. The result shows that increase in undervalue leads to increase in economic growth in developing countries but reverse case is obtained in developed countries. Thus, the findings show that real exchange rate has a tremendous role in convergence of developing countries towards developed countries' income. Rapetti, Skott and Razmi (2012) criticized the Rodrik (2008) and provided alternative methods of classification and model specification. The alternative models are GMM, system GMM and FE model. The alternative classification and empirical strategy corroborate the evidence that undervalue of real exchange rate is larger and more robust in least developing countries.

Not only that, the effect of exchange rate undervaluation is strong in highest-income countries.

In Washington Consensus, Berg and Miao (2010) assess which of the misalignments should take priority for growth in the study of 181 countries using dynamic panel analysis. They reach interesting results. They find that both undervalue and overvalue are bad for the economy. They opine that undervalue heralds internal imbalance which is associated with inherent overheating and high inflation, whereas overvaluation connotes external imbalance which requires lower to growth for correction. In a nutshell, the findings agree with that of Rodrik (2008) that undervaluation promotes growth, but requires painful measures to ensure internal stability.

Kočenda, Maurel and Schnabl (2013) attempted to separate short run and long run effects of exchange rate adjustment on growth in a panel study of 60 countries using quarterly data for the period 1994-2010. They used panel cointegration, mean group, pooled mean and dynamic FE model to analyze the data. The study shows that exchange rate flexibility promotes growth in the short but tends to dampen it in the long run. They therefore suggest that to ensure long run growth, exchange rate should be stabilized through price and wage flexibility.

Musyoki, Pokhariyal and Pundo (2012) investigate the effect of real exchange rate volatility on economic growth of Kenya for the period 1993-2000 on the historical data. They use General Autoregressive Conditional Heteroscedasicity (GARCH),

Unconditional Standard Deviation and GMM. The findings of the study indicate that increase in real exchange rate volatility significantly retards growth. For example, one percent increase in real exchange rate brings about decrease in growth by 0.38 percent. They, therefore, conclude that Kenya's global competitiveness worsened over the period of the study.

Ndambendia and Al-Hayky (2011) carry out research on 15 SSA countries for the period 1980-2004 to investigate the long run effect of exchange rate volatility on economic growth. Using Fully-Modified OLS (FMOLS), the findings show no matter the level of financial development, exchange rate volatility negatively affects economic growth. The interaction of financial development and exchange rate volatility shows stronger financial development of a country the less adversely it is affected by exchange rate volatility.

Wong (2013) uses historical data over the period 1960-2005 to measure the effect of positive and negative effects of real exchange rates on economic growth of Malaysia using ARDL and generalized forecast error variance decomposition (FEDV). He finds that interest rate differential, productivity, oil price, reserve differential are important determinants of exchange rate. The findings show that devaluation enhances economic growth whereas appreciation demotes economic growth. He therefore suggests that real exchange misalignment should be shunned to allow for optimal resource allocation. These findings are in agreement with that of Rocha and Oreiro (2013) in all specification in the study.

In conclusion, the literature reviewed showed that external debts are obtained to finance development projects in developing countries which Nigeria is also a part. Such debts are envisaged to foster growth in the economy. Some studies, especially country-specific substantiate this view. However, a number of other studies provided contrary evidence. Most of these studies are country-specific and linearly specified. On the other hand, some studies provided evidence of positive and negative effects of external debts on economic performance. Thus, these studies pointed to the nonlinear relationship between external debt and economic growth. Most of the panel studies reviewed established this reality but the other could not establish the nonlinearity. The nonlinear specification tends to establish different maximum thresholds of external debt beyond which external debt affects growth negatively, depending on country under study and data available. Thus, there is no consensus on the maximum threshold of external debt. For this reason, our study will go for linear specification as it has been done for most of the country-specific studies and in line with the cointegration approach which this study makes use of.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter gives details about the methodology of the study. It has been partitioned into five major parts; theoretical framework, the general model description, justification for including the variables, statement of the hypothesis, gathering of data and discussion of methods of analysis.

3.2 THEORETICAL FRAMEWORK

According to the reasonable level of debt theory, a mild level of external borrowing can stimulate growth despite the fact that borrowing- country has to pay the interest and part of the principal amount. This implies that a country can utilize external debt to finance development projects that foster investment and generate growth provided the resultant output exceeds the debt obligation (Cohen, 1991). It is therefore expected that external debt has positive effect on economic growth. In contrast to reasonable level of debt theory, high level of debt theory holds that higher amount of external debt motivated by political reasons dampens the economic activities when the debt service is not taken into account. This is because higher debt service heralds higher taxes in the future. Alesina and Tabellini (1989) and Tornell and Velasco (1992) argue that negative effect of external debt on economic growth occurs when there is possibility that the country's debt obligation is more than resources generated and available for repayment. This is

because higher debt service than resources generated is most likely to result in capital flight and this of course will lead to reduced capital formation and production. Thus, high external has a negative effect on economic growth.

The debt overhang theory put forward that debt service of a debtor country will increase as the output of the economy increases if there is possibility that in the near future the debt of the country will be beyond its ability to honour. This means that yields that come from investment in the country will be higherly taken and given to the creditors. Thus, further doses of investment that may emanate are domestically and internationally hindered (Krugman, 1988; Sachs, 1989). One implication is that any activity that involves cost today in order to output in the future may be discouraged as part of the output will be taken away by the creditors (Corden, 1989). The government will also be reluctant to implement adjustment policies such as trade liberalization meant to improve the economy. Thus, debt service will have crowding out effect on investment and hence reduce economic growth. It is therefore expected that debt service has a negative effect on economic growth.

According to Tobin's effect, inflation tends to influence individual to change their money holding for precautionary motive to assets such as bonds and securities that generate interest. The interest rate falls down as a result, leading to an increase in investment and greater use of capital and hence higher output growth. Thus, inflation exerts positive effect on economic growth. Tobin (1965) argues that downward rigidity of prices is unlikely during economic growth but upward movement in the individual

prices is possible. Another Neoclassical economist, Sidrauski (1967) in his infinite-living representative agent model argues that money is 'superneutral'. By superneutrality of money, he means the real variables are autonomous of growth rate of money in the long run. Thus, inflation rate does not affect either output or economic growth in Sidrauki's framework. Furthermore, Stockman (1981) demonstrates entirely different relationship in that inflation brings about lower output in the steady state and fall in the well being of the people. Firms set aside cash for investment. The cash earmarked is purely for carrying out the investment project and at other times, it is the minimum requirement which firms are obliged to keep with the banks from which they contracted the loans. This cash for investment is a restriction on both consumption and capital purchases. With the rise in inflation the purchasing power of money is eroded and thus people cut their spending on tradable goods and capital goods. In response, the steady-state level of output decreases when inflation rises.

Depreciation of exchange rate provides a tool for expansion of growth for replacing imports with exports. The substitution of imports with exports is possible when home-made goods prices are cheaper than foreign goods. In this way, foreign demand is boosted and investment will be increased with the attended increase in output (Dornsbush, 1976). It is therefore expected that competitive exchange rate influences economic growth positively. The New Structuralist School holds that depreciation of real exchange rate in economies with elements of industrialization is contractionary. Productive inputs are mostly imported and running capital is mostly rationed. Under this state, an abrupt devaluation acts to increase the cost of inputs and working capital. Thus,

increased cost of material inputs and high interest rate at home outweighs the positive effect of depreciation on foreign scene causing the firms to decrease production (Lizondo & Montiel, 1988). Thus, depreciation in real exchange rate is expected to be negatively related to economic growth as well.

Government expenditure on productive ventures would have positive effect on economic growth whereas government consumption expenditure would have retarding effect on economic growth (Barro, 1990). Barro incorporated government consumption into household utility function, but this has no effect on productive activities. He demonstrated that an increase in government consumption expenditure carried out by raising income tax rates will lead to decrease in profit rate which finally leads to fall in output at steady-state. So, it is expected that the government consumption expenditure will negatively affect economic growth. Figure 3.1 depicts the theoretical framework

3.3 THE MODEL

Various studies on country-specific growth model used many different determinants of growth. Different growth models with different determinants were used in different countries. This study builds economic model on the basis of the literature and theoretical framework that have been discussed in Chapter Two. These variables are included because they are used in most of the previous studies. The studies that employed similar variables in many developing countries included Baum, Checherita-westphal and Rother (2012), Cordella et al. (2005), Malik and Hayat (2010), Okonkwo and Odularu (2013) and Rocha and Oreiro (2013). The variables used in the study are more important

determinants of growth. The model to be estimated in the study has been specified in Equation [1]:

$$GDPPC_t = \gamma_0 + \gamma_1 EXDB_t + \gamma_2 EDSV_t + \gamma_3 INFL_t + \gamma_4 GOV_t + \gamma_5 RREX_t + \varepsilon_t \quad [1]$$

where;

$GDPPC$	=	GDP per capita in USD
$EXDB$	=	ratio of outstanding external debt to GDP
$EDSV$	=	external debt service as percentage of exports
$INFL$	=	inflation rate in percentage
GOV	=	government consumption expenditure as percentage of GDP
$RREX$	=	real exchange rate
ε	=	disturbance term
γ_i	=	coefficients ($i=0,1,2,3,4,5$)

3.4 JUSTIFICATIONS OF THE VARIABLES

Having reviewed an ample number of related literatures, quite close relationship between economic growth and specified variables exists. The variables are very important in determining the growth of the Nigerian economy. The variables are EXDB, EDSV, GOV, INFL and RREX

3.4.1 Gross Domestic Product Per Capita

Gross Domestic Product per capita (GDPPC) is GDP divided by the number of people living in a country. Growth (GDPPC) is measured as real per capita GDP at constant price 2005 in USD. It reflects how prosperous people feel as the citizens. GDP consists of the total value of goods added by the producers in the country, plus net taxes that is

not captured in the value of the goods. GDPPC is used in the studies such as that of Chang and Chiang (2011), Cordella et al. (2005), Hansen (2002) and Kutivadze (2011).

3.4.2 External Debt

External debt variable (EXDB) represents the ratio of funds acquired from abroad to finance various infrastructural developments to GDP. EDB is measured as the ratio of outstanding external debt to GDP at current USD. The EXDB captures the effects of debt on economic growth. Moderate level of EXDB enhances economic growth when it is efficiently utilized (Cohen, 1991). High level of debt on the other hand will have negative effects economic growth (Alesina & Tabellini, 1989). This measure of EXDB has been in the studies such that of Lin and Sosin (2012), Ali and Sadraoui (2013), Adegbite et al. (2008) and Baum et al. (2012). It is expected that a reasonable of EXDB will have a positive effect on economic growth while the high level of debt will have negative effect on growth.

3.4.3 External Debt Service

External debt service (EDSV) represents a transfer of resources to the creditor nations. As such, it constitutes drain of resources that could have been used to increase domestic investment and ultimately enhance economic growth. EDSV is measured as a percentage of exports. It captures the crowding out effect. Okonkwo and Odulau (2013) and Ali and Sadraoui (2013) used this variable in their studies. It is expected that EDSV

Theoretical Framework

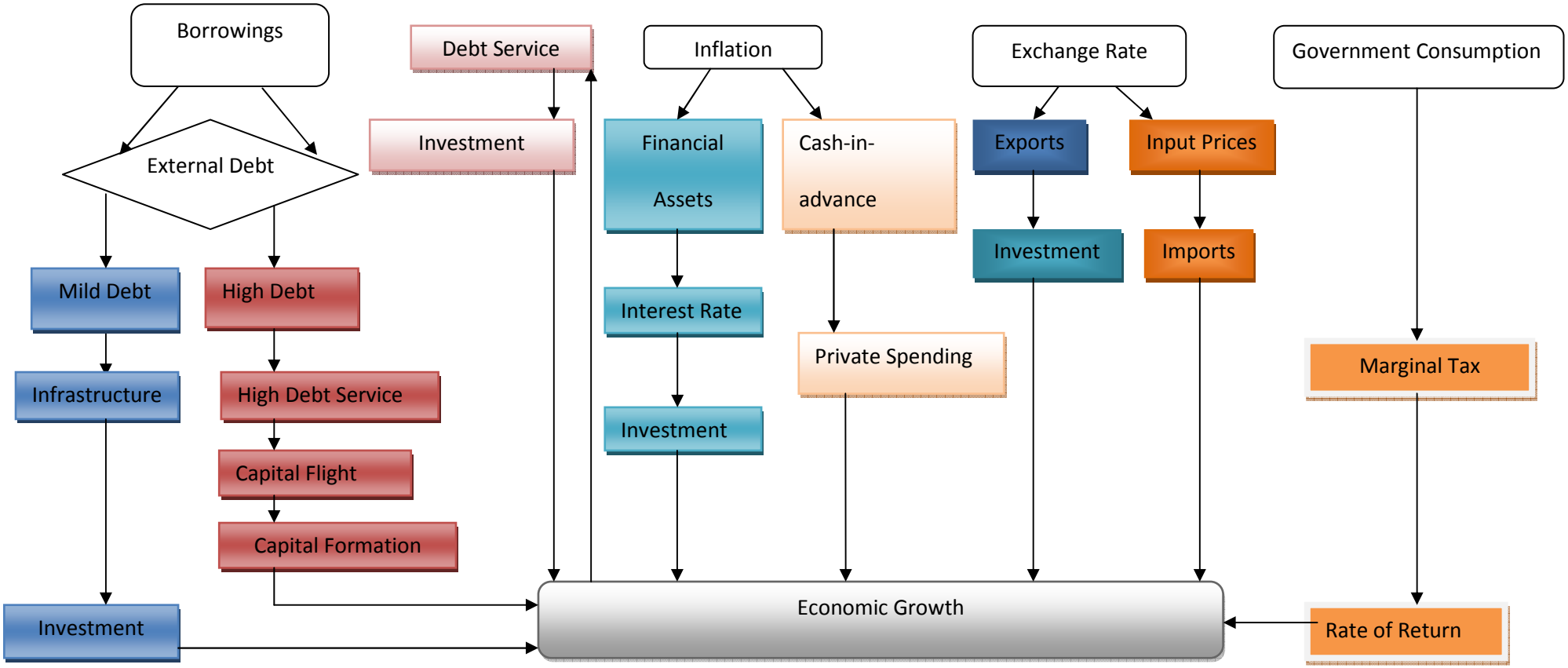

Figure 3.1: Theoretical Framework

will have a dragging effect on growth if there is crowding out effect (Krugman, 1988; Sachs, 1989).

3.4.4 Inflation

Inflation (INFL) is picked due to its impact on economic growth. Inflation is the persistent increase in the general price of goods and services over a period of time. $INFL_t$ is consumer price index (CPI) and gives inflation effect. It is used to capture price stability of the economy. Previous studies that used inflation include Chaudhry et al. (2012), Alexander (1997) and Pollin and Zhu (2006). It is expected that a moderate level of inflation to enhance economic growth while excessive inflation has deleterious effect on economic growth (Stockman, 1981; Tobin, 1965).

3.4.5 Government Final Consumption Expenditure

Government consumption expenditure (GOV) includes all current expenditure incurred in acquiring goods and services and compensation to employees (World Bank, 2014). It is expressed as a percentage of GDP. GOV is chosen because of the dominant role of government in Nigeria's economy. Past studies that included in their models included Butkiewicz and Yanikkaya (2011), Attari and Javed (2013) and Barro (1990). It is thus hypothesized that GOV has a negative effect on economic growth Barro (1990).

3.4.6 Real Exchange Rate

Real exchange rate (RREX) has been selected to capture the competitiveness of the Nigerian economy in the increasing globalized world. The RREX accounts for price difference between the trading partners (United Nations Conference on Trade and Development, 2014). It is obtained by adjusting nominal exchange of the cost indicator in the country to that of trading partners based on 2000 CPI. Yoll (2009), Kogid et al. (2012) and Musyoki et al. (2012) used RREX in their models. Competitive exchange rate promotes economic growth by boosting exports Dornsbush (1976). Depreciation of exchange rate will retard economic growth (Lizondo and Montiel (1988). Thus, it is expected competitive exchange rate will positively relate to the growth and depreciation of exchange rate negatively will relate to growth.

3.5 DATA

This study employed annual time-series data covering the period 1980-2013. Data for GDPPC, EDVS and GDP come from World Bank's World Development Indicators. EXDBT indicator has been constructed using outstanding external debt from the United Nations Conference on Trade and Development. While the GDP data are from WDI. The indicators of inflation and effective exchange rate have been sourced from UNCTAD.

3.6 THE METHOD OF ANALYSIS

This study employs time-series method for analyzing and estimating the model. The time series study includes the long run relationship estimation and the short run

relationship determination. The step-by-step explanation of the analysis is given in the following sub-sections.

3.6.1 The Unit Root Test

The unit root test is used to detect the stationarity of the series under study. Theoretically, a series Y_t is said to be stationary when its statistical properties including its mean, variance, autocorrelation and other higher order moments are not affected by time influence. In a more compacted way, $\mathrm{E}(Y_h) = (Y_{t+h}) = \mu$, $Var(Y_t) = \mathrm{E}(Y_k) = \sigma_y^2$ and $Cov(Y_t, Y_{t+h}) = \gamma_h$ (constant) for all $h \neq 0$. A non-stationary series must be induced to become stationary in order to yield a meaningful inference (Granger, 1974).

Suppose Y_t series is to be tested for stationarity. The test is carried out in two steps. Firstly, Y_t series will be tested for stationarity. If it is stationary, it follows that $Y_t \sim I(0)$ and if it is not stationary, then it implies that $Y_t \sim$ I (n) where $n > 0$. Secondly, the first difference of Y_t will be taken like $\Delta Y_t = Y_t - Y_{t-1}$, and further subjected to stationarity test. If ΔY_t is stationary, then $(Y_t) \sim \mathrm{I}(1)$ and if it is not, it means $Y_t \sim$ I (n); where $n > 1$.

Dicky-Fuller (DF) test provides test for unit root of a series as represented in Equation [2]. The DF test presupposes independence and constancy in the error term ε_t. This assumption poses uncertainty over the actual data generating process (DGP). DGP

may contain autoregressive (AR) or moving average (MA) elements. Also, DF test considers only single unit root, but there can be $\rho - th$ order of the AR with ρ characteristic roots which require differencing m time if there are $m \leq p$. Structural break distorts the test when there is a trend in the data. Considering these limitations Dickey and Fuller (1981) improved on their method by including lagged difference of the series. This improved method is known as Augmented Dickey Fuller (ADF) test developed by Dickey and Fuller (1981) would be used to detect stationarity of the series. ADF test is used to test the presence of a unit root in the series. Thus, the ADF test is conditioned on the sample of AR (1) model. The initial series may be represented in Equation [2];

$$Y_t = \rho Y_{t-t} + \varepsilon_t \qquad [2]$$

where ρ is the coefficient of Y_{t-1} and ε_t is the white noise term with zero mean and constant variance that $\varepsilon_t \sim N(0, \sigma^2)$.

In essence, the goal to find out whether the null hypothesis H_0: $\rho = 1$ and the alternative hypothesis is H_1: $\rho < 0$. Equation [2] will be manipulated by subtracting Y_{t-1} from the left hand side (LHS), Equation [2] simplifies to:

$$\Delta Y_t = (\rho - 1) Y_{t-1} + \varepsilon_t \qquad [3]$$

In order to test for unit root, the null hypothesis is modified as H_0: $(\rho - 1) = 0$ and the alternative hypothesis H_1: $(\rho - 1) \neq 0$

Furthermore, Dickey and Fuller (1979) offered alternative regression equations. Equation [3] is used to test for unit root by including constant term and trend as in Equation [4] and Equation [5]:

$$\Delta Y_t = \alpha_0 + (\rho - 1)Y_{t-1} + \varepsilon_t \quad [4]$$

$$\Delta Y_t = \alpha_0 + t\alpha_1 + (\rho - 1)Y_{t-1} + \varepsilon_t \quad [5]$$

To correct for the problem of serial correlation in the series, Dickey and Fuller (1979) extended their test procedures by adding extra lagged difference of the series in the model. Three forms of the ADF test are given by Equation [6], Equation [7] and Equation [8];

$$\Delta Y_t = (\rho - 1)Y_{t-1} + \sum_{i=1}^{\rho} \beta_i \Delta Y_{t-1} + \varepsilon_t \quad [6]$$

$$\Delta Y_t = \alpha_0 + (\rho - 1)Y_{t-1} + \sum_{i=1}^{\rho} \beta_i \Delta Y_{t-1} + \varepsilon_t \quad [7]$$

$$\Delta Y_t = \alpha_0 + t\alpha_1 + (\rho - 1)Y_{t-1} + \sum_{i=1}^{\rho} \beta_i \Delta Y_{t-1} + \varepsilon_t \quad [8]$$

where; α_0 are deterministic parts to represent constant and time trend t respectively, β_i is a coefficient of the lagged difference (Enders, 2004).

3.6.2 The Long Run Relationship

The long run relationship has been examined and analyzed through the use of Johansen cointegration method. This approach was developed by Johansen (1988) and Johansen and Juselius (1990). The method revolutionized way of estimating long run and short run relationship for multivariate equation. It has the advantage over Engle and Granger (1987) approach in that it tests for cointegration by determining the cointegrating vectors and number of cointegrating vectors between the variables. Johansen and Juselius method also considers all variables as latent endogenous variables, thereby averting the exogeneity problem. In addition, Johansen and Juselius model can estimate the causal relationship between variables as the causality estimation is embedded in VECM. Lastly, it uses maximum eigenvalue and trace statistics in determining the number of cointegrating relationships with expected signs of the coefficients. Engle and Granger approach determines the cointegration by testing the stationarity of the residual only.

The Johansen cointegration approach has the ability of expanding single equation for an error correction model to multivariate equation. Suppose that GDP per capita (Y_t), external debt (X_t) and external debt service (W_t) series take the form of $\mathrm{Z_t} = [\mathrm{Y_t}, \mathrm{X_t}, \mathrm{W_t}]$. The AR (1) model of Z_t is shown as in Equation [9];

$$Z_t = A_1 Z_{t-1} + A_2 Z_{t-2} + \ldots A_k Z_{t-k} + \varepsilon_t \qquad [9]$$

Equation [9] may be altered to a VECM as given by Equation [10].

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + ... + \Gamma_{K-1} \Delta Z_{t-k-1} + \Pi Z_{t-1} + \varepsilon_t \quad [10]$$

where; $\Gamma_i = [\mathrm{I} - A_1 - A_2 - ...A_k]$, $i = 1,2,...k-1,$ and

$$\Pi = -(\mathrm{I} - A_1 - A_2 - ...A_k).$$

Therefore, Π form 3x3 matrix because of the assumed three variables, Y_t , X_t and W_t. The Π matrix has information about the long run relationship. The Π matrix can be broken down as $\Pi = \alpha\beta'$ where α contains the speed of adjustment towards equilibrium. The value α must be negative, but less than one and significant while β' is the matrix of the long run coefficients. Hence, the $\beta' Z_{t-1}$ term is the error correction term (ECT) or $(Y_{t-1} - \beta_0 - \beta_1 X_{t-1})$ in the case of a single equation.

For a simplistic example, takes that $k = 2$ That is to say the lag length will have only two lagged terms. In this case, the model may be presented as shown by Equation [11] or invariably Equation [12];

$$\begin{bmatrix} \Delta Y_t \\ \Delta X_t \\ \Delta W_t \end{bmatrix} = \Gamma_1 \begin{bmatrix} \Delta Y_{t-1} \\ \Delta X_{t-1} \\ \Delta W_{t-1} \end{bmatrix} + \Pi \begin{bmatrix} Y_{t-1} \\ X_{t-1} \\ W_{t-1} \end{bmatrix} + \varepsilon_t \quad [11]$$

$$\begin{bmatrix} \Delta Y_t \\ \Delta X_t \\ \Delta W_t \end{bmatrix} = \Gamma_1 \begin{bmatrix} \Delta Y_{t-1} \\ \Delta X_{t-1} \\ \Delta W_{t-1} \end{bmatrix} + \begin{bmatrix} a_{11} & a_{12} \\ a_{12} & a_{22} \\ a_{13} & a_{23} \end{bmatrix} \begin{bmatrix} \beta_{11} & \beta_{12} & \beta_{13} \\ \beta_{21} & \beta_{22} & \beta_{23} \end{bmatrix} \begin{bmatrix} \Delta Y_{t-1} \\ \Delta X_{t-1} \\ \Delta W_{t-1} \end{bmatrix} + \varepsilon_t \quad [12]$$

The ECT in Equation [9] can be determined by Equation [13];

$$\Pi_1 Z_t = ([a_{11}\beta_{11} + a_{21}\beta_{21}][a_{11}\beta_{21} + a_{21}\beta_{22}][a_{11}\beta_{31} + a_{21}\beta_{32}]) \begin{bmatrix} Y_{t-1} \\ X_{t-1} \\ W_{t-1} \end{bmatrix} \quad [13]$$

where; Π_1 represents the first row of Π matrix. The Equation [13] can be further expanded and re-arranged to yield Equation [14] .Thus:

$$\Pi_1 Z_{t-1} = a_{11}(\beta_{11}Y_{t-1} + \beta_{21}X_{t-1} + \beta_{31}W_{t-1}) + a_{12}(\beta_{12}Y_{t-1} + \beta_{22}X_{t-1} + \beta_{32}W_{t-1}) \quad [14]$$

Therefore, Equation [14] gives us information of the cointegrated vectors and their respective speed of adjustment terms a_{11} and a_{12} (Enders, 2004).

3.6.3 The Short Run Relationship

The short term relationship has been estimated through the use VECM. The VECM provides the short term dynamics regarding the relationship between the variables. Let us say that Y_t and X_t are cointegrated variables having parameter β. It follows that there have been additional variable in the model which is I (0). Put into symbolic form: $V_t = Y_t - \beta X_t$. Suppose that V_t has zero and that one lag of V_t is included in the equation, the ECM can be expressed by Equation [15];

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \gamma_0 \Delta X + \gamma_1 \Delta X_{t-1} + \delta V_t + \varepsilon_t \quad [15]$$

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \gamma_0 \Delta X + \gamma_1 \Delta X_{t-1} + \delta (Y_{t-1} - \beta X_{t-1}) + \varepsilon_t \quad [16]$$

where; $E(\varepsilon_t \mid I_{t-1}) = 0$, and I_{t-1} has the information on $\Delta' X_t$ and all previous values of X and Y. The term $(Y_{t-1} - \beta X_{t-1})$ is referred to as ECT (Wooldridge, 2003).

3.6.4 Granger Causality Test

When variables are cointegrated, Engle and Granger (1987) argues that there has to be at least one direction of causality. Granger causality test is conducted in three steps. The first step involves testing of order of integration of the variables using unit root at the level and first difference. When the variables are found to be integrated of the same order of integration, then cointegration test can be conducted. With cointegration detected, causality test can be further carried out. The unit root test and cointegration test have been expounded in Section 3.6.1 and Section 3.6.2, respectively. Assuming the variables are cointegrated, the pairwise causal relationship between the external debt (X), external debt service (Z) and GDP per capita (Y) can be specified as below;

$$Y_t = \alpha_{10} + \sum_{j=1}^{k} \alpha_i Y_{t-1} + \sum_{j=1}^{k} b_i X_{t-1} + \varepsilon_{1t} \quad [17]$$

$$X_t = \gamma_{20} + \sum_{j=1}^{k} \beta_i X_{t-1} + \sum_{j=1}^{k} \lambda_i Y_{t-1} + \varepsilon_{2t} \quad [18]$$

$$Y_t = \alpha_{20} + \sum_{j=1}^{k} \delta_i Y_{t-1} + \sum_{j=1}^{k} a_i Z_{t-1} + V_{1t} \quad [19]$$

$$Z_t = \alpha_{30} + \sum_{j=1}^{k} \varpi_i Z_{t-1} + \sum_{j=1}^{k} \vartheta_i Y_{t-1} + V_{2t} \quad [20]$$

$$X_t = V_{20} + \sum_{j=1}^{k} \psi_i X_{t-1} + \sum_{j=1}^{k} \phi_i Z_{t-1} + \eta_{1t} \quad [21]$$

$$Z_t = V_{30} + \sum_{j=1}^{k} \kappa_i Z_{t-1} + \sum_{j=1}^{k} \pi_i X_{t-1} + \eta_{2t} \quad [22]$$

where ϵ_{1t},ϵ_{2t},$V_{1t,}V_{2t}$, η_{1t} and η_{2t} are white noises in the respective equations.

The aim is to find out whether the past values of the independent variable can better predict the current value of the dependent variable than the past values of the latter. If the sum of coefficients of the past values of the independent variable is different from zero, then it can be concluded that the dependent variable Granger causes the dependent variable. To test this, the null hypothesis (H_0) can be stated, for instance, as X_t does not Granger cause Y_t and the alternative hypothesis H_1 can be stated as X_t does Granger cause Y_t. Put technically, the null hypothesis states that the sum of the coefficients of the lagged values of the independent variable is equal to zero in each respective equation. Therefore, H_{0s} are rejected when;

$$\sum_{j=1}^{k} b_i \neq 0 \quad \text{and} \quad \sum_{j=1}^{k} \lambda_i \neq 0$$

$$\sum_{j=1}^{k} \alpha_i \neq 0 \quad \text{and} \quad \sum_{j=1}^{k} \vartheta_i \neq 0$$

$$\sum_{j=1}^{k} \phi_i \neq 0 \quad \text{and} \quad \sum_{j=1}^{k} \pi_i \neq 0$$

To check whether the coefficients of the lagged values of independent variables are no different from zero Wald *F*-test is determined thus;

$$F_{cal} = \frac{(SSR_r - SSR_u)/k}{(SSR_u)/(n-2k-1)} \quad [23]$$

where: SSS_u = sum of squared residuals from the whole equation

SSR_r = sum of squared residuals under redundancy restriction.

When the value of $F_{cal} > F_{critical}$, then the H_0 fails to be rejected. Table 3.1 summarizes the hypothesis statements.

Table 3. 1: Granger Causality Hypotheses

Hypothesis	Statement
Hypothesis one:	
H_0:	External debt does not Granger cause economic growth
H_1:	External debt does Granger cause economic growth
Hypothesis two:	
H_0:	Debt service does not Granger cause economic growth
H_1:	Debt service does Granger cause economic growth
Hypothesis three:	
H_0:	External debt service does not Granger cause external debt
H_1:	External debt service does Granger cause external debt

3.7 Diagnostic Checking

In order to examine the robustness of the model, three standard ways of diagnostic check of ARCH test for heteroscedasticity, LM test of Breusch-Godfrey to identify the presence or otherwise of serial autocorrelation and lastly normality test to see if the errors are normally distributed have been carried out. These tests have been shown below.

3.7.1 Autoregressive Conditional Heteroscedasticity Test

Heteroscedasticity seems to be the common problem that plagues time series data. Estimated model from a time series data that has unequal variance can not used used to

make a reliable prediction. Therefore, the test of ARCH has been shown as below. Suppose there is a model as presented in Equation [24]:

$$Y_t = \beta_1 + \beta_2 X_{2t} + K + B_k X_k + \mu_t \quad [24]$$

And the variance is determined in auxiliary equation, namely Equation [25].

$$\sigma_1^2 = \alpha_0 + \alpha_{t-1}\alpha_{t-1}^2 + K + \alpha_p \alpha_{t-p}^2 + \varepsilon_t \quad [25]$$

where the hypothesis is stated as;

$H_0 = \alpha_1 = \alpha_2 = K = \alpha_p = 0$ (No ARCH effect)

When the value of R^2 is obtained from the Equation [25], ARCH test statistic can be computed using this formular (n-p) x R^2

Where n = sample size and p = number of the regressors. The test statistic has chi-square distribution with p degree of freedom (χ^2_p)

3.7.2 Lagrange Multiplier Test

To test for the presence of influence of a previous error term on another error term in another period, Breusc-Godfrey serial correlation LM test has been used. Take it that the μ_t disturbance is obtained in the following p*th*-order autoregressive model:

$$\mu_t = p_1\mu_{t-1} + p_2\mu_{t-2} + ... + p_p\mu_{t-p} + \varepsilon_t \quad [26]$$

where ε_t is purely random disturbance term with mean zero and constant variance. The hypothesis can be stated thus;

H_0: $p_1 = p_2 = p_3 = p_4 = 0$

H_1: at least one of the p is not equal to zero.

The null hypothesis shows that there is no presence of autocorrelation of any order. If p = 2, it follows that two lagged values of the residuals are included as regressors in the model. The formular for this test is: (n-p) $R^2 \sim \chi^2_p$, where n is the sample size, p is the number of lag and R^2 is the goodness of fit. If the value of (n-p) $R^2 > \chi^2_p$ at a chosen level of significance, the null hypothesis is rejected and the conclusion is that at least one p is significantly different from zero.

3.7.3 Normality Test

Normality is often taken for granted in many statistical and economic methods. Violation of this assumption can render inferences and interpretations misleading. In the case of multivariate analysis, the assumption is that the combination of variables follows a multivariate normal distribution. Graphical and statistical methods for evaluation of normality are available. The graphical approach explains the distribution of random variables by comparing the empirical distribution and theoretical distribution. Both methods have been used in this analysis. A histogram of the residuals is compared to a normal probability curve. The empirical distribution should be bell-shaped and should be reasonably similar to the normal distribution. To further confirm the visual test, Jarque-

Bera test statistic for empirical detection of normality has been used. If the errors are not normally distributed, the estimator will be biased. The hypothesis of normality test is presented as follows:

H_0: Residuals are normally distributed

H_1: Residuals are not normally distributed

3.8 Conclusion

This chapter discussed the theoretical framework of the study, specified the model and justified the variables used in the study. The method of analysis of unit root test, cointegration, VECM and Granger causality have been elaborated. In the end, diagnostic test of serial correlation, heteroscedasticity and normality have been discussed

CHAPTER FOUR

DISCUSSION OF THE RESULTS

4.1 INTRODUCTION

This chapter shows the analysis of the time series. Descriptive statistics and correlation results have been presented at the outset. Then empirical analysis has been put forward on the basis of Johansen and Juselius cointegration method so as to obtain a long run relationship between economic growth and variables of the study. VECM has been employed to determine the short run dynamism. To begin with, unit root test developed by Dickey and Fuller (1979) named ADF approach has been carried out and then it has been proceeded to conduct the cointegration test based on Johansen and Juselius multivariate cointegration test to find out whether the long run equilibrium relationship exists among the variables. The chapter also conducted Granger causality test between EXBD, EDSV and GDPPC. Finally the diagnostic tests of ARCH, LM test of serial autocorrelation and normality have been conducted.

4.2 DESCRIPTIVE STATISTICS

The descriptive statistics of the variables has been presented in Table 4.1. The Table tells that the average value of GDP per capita is $701.12 and has a standard deviation of $409.49. The mean value of EXBD reads $0.46 with the standard deviation of 0.361. EDVS averages 12.09 and has a standard deviation of 8.9. GOV has a mean value of 9.76 and standard deviation of 3.500 while INFL has an average value of 20.09 and standard deviation of 18.07. Finally RREX is observed to have a mean of

187.39 and standard deviation of 155.56. Coming to the issue of skewness of the variables, all the variable are skewed to the right as indicated by the positive values of their respective skewness.

4.3 CORRELATION ANALYSIS

The correlation analysis can be used to identify the direction and strength of the association between two variables. Table 4.2 provides the correlation results. The reveals that EXDB, EDVS and INFL tend to have a negative correlation with the GDPPC. The negative correlation is highest in the case of EXDB. On the other hand, GOV and RREX are positively correlated with GDPPC. In addition the highest value of correlation among the explanatory variables is 0.54 in an absolute sense. This implies that independent variables are not highly corelated

4.4 UNIT ROOT TEST

The stationarity is crucial for valid statistical tests such as *t*-statistic and *F*-statistic. In addition to these, the unit root test is used to identify the order of integration of the variables. Thus, it becomes imperative to conduct unit root tests before embarking deeply on econometric analysis. Table 4.3 presents the results of unit root tests. ADF has been employed.

Table 4.3 presents the unit root output based on ADF method which basically divides the analysis into level and first difference with constant and with constant and trend

respectively. The analysis used different lag specifications in order to harness best result.

Table 4.1: Descriptive Statistics

	GDPPC	EXDB	EDSV	GOV	INFL	RREX
Mean	701.116	0.461	12.085	9.759	20.086	187.389
Median	503.091	0.455	11.707	9.467	12.547	120.702
Maximum	1496.3	0.985	30.990	17.944	72.836	615.444
Minimum	279.058	0.019	0.255	4.833	5.382	77.835
Std. Dev.	409.485	0.361	8.909	3.500	18.072	155.558
Skewness	0.440	0.096	0.431	0.458	1.586	1.718
Kurtosis	1.667	1.437	2.274	2.242	4.233	4.365
Jarque-Bera	3.611	3.512	1.798	2.003	16.406	19.354
Probability	0.164	0.173	0.407	0.367	0.000274	0.000063
Observations	34	34	34	34	34	44

Table 4.2: Correlation Results

	GDPC	EXDB	EDSV	GOV	INFL	RREX
GDPPC	1.000					
EXDB	-0.914	1.000				
EDVS	-0.478	0.492	1.000			
GOV	0.287	-0.320	-0.007	1.000		
INFL	-0.428	0.540	0.333	0.019	1.000	
RREX	0.472	-0.503	0.235	0.528	-0.19	1.000

On the basis of Table 4.3, the *t*-statistic for all the variables at levels is not statistically significant. This implies that H_0 of non-stationary cannot be rejected at all the conventional level of significance. It should be noticed that for the variable EDVS in the specification of constant trend we used "user specified" option in the choice of the lag. Therefore, the generality of the specification shows the series have a unit root at the level. Conducting the ADF test at the first difference, there is evidence of rejecting the null hypothesis at the one percent level of significance. Thus, it can be concluded that all the series are integrated of order one. That is to say the series are $\sim$ I (1).

4.3: Augmented Dickey-Fuller Test

Variable	Level		Difference	
	Constant	Constant and Trend	Constant	Constant and Trend
GDPPC	-1.386[1]	-1.982[1]	-5.343[0]	-5.709[0]
	(0.577)	(0.589)	(0.000)***	(0.000)***
EXDB	-1.454[8]	-1.792[8]	-3.861[1]	-3.768[0]
	(0.544)	(0.686)	(0.006)***	(0.003)***
EDSV	-2.382[2]	-2.778[5]	-7.069[2]	-7.022[2]
	(0.154)	(0.216)	(0.000)***	(0.0000)***
GOV	-2.814[1]	-2.916[1]	-6.838[3]	-6.738[3]
	(0.067)	(0.171)	(0.000)***	(0.000)***
INFL	-2.784[8]	2.946[0]	-5.678[8]	-5.650[8]
	(0.071)	(0.162)	(0.000)***	(0.000)***
RREX	-1.950[2]	-1.499[2]	-4.731[1]	-4.899[2]
	(0.306)	(0.808)	(0.000)***	(0.002)***

Note: *** indicates the rejection of null hypothesis at one percent level of significance. [ ] shows lag specification. ( ) is the Makinnon(1996) one-side *p*-value.

4.5 THE LONG RUN RELATIONSHIP

This part elaborates on the results of cointegration analysis. The determination of optimal lag length is discussed first and then followed by Johansen cointegration results.

4.5.1 The Optimal Lag Length Selection

The first and foremost in the Johansen cointegration test is that optimal lag length must be determined. The optimal lag length should be such that sufficient to be with white noise (Johansen & Juselius, 1995). Optimal lag length for obtaining the Johansen cointegration is based on the Vector Autoregressive Model (VAR). Then, lag order is obtained according to the information criteria (Enders, 2004). As vividly seen in Table 4.4, different information criteria suggested different optimal lag for cointegration. Akaike Information Criterion (AIC) chose two lag while Schwartz Information Criterion (SIC) suggested lag one. The two lags as suggested by AIC has been used. The aim is to have parsimonious and best results.

Table 4.4 Length Selection Criterion

Lag	LogL	LR	FPE	AIC	SC
0	-730.929	NA	4.05e+12	46.058	46.332
1	-624.659	166.047*	5.24e+10*	41.667	43.590*
2	-585.569	46.418	5.58e+10	41.473*	45.046

Note: LR: sequence modified LR test statistics; FPE: final prediction error
AIC: Akaike information criterion; SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion. * denote choice of lag

4.5.2 The Johansen Cointegration Analysis

Cointegration is all about long run relationship, among at least two variables which are non-stationary. The test for cointegration requires that the variables be integrated of the same order. The Johansen test uses trace test and maximum eigenvalue test

determine the number of cointegrating equation. Table 4.5 presents the cointegration results.

Based on Table 4.5, the test procedures showed a number of cointegrating equations. The trace statistic indicated 4 cointegrating equations, whereas maximum eigenvalue test identified 2 cointegrating equations at the five percent level of significance. Multiple cointegration vectors may be seen as an identification problem if the aim is to choose one or single equation. At this juncture, this problem can be overcome by selecting a cointegrating vector which approximates well to the theory in both sign and magnitude (Ghatak, Milner, & Utkulu 1997). Thus, single cointegrating vector is considered in the analysis. For cointegration equation with a number of cointegrating vectors, Choudhry (1995) and Thornton (1998) argued that the single error correction term should be selected since at best there is one cointegrating vector. Normalized coefficients of the equation of the variables have been displayed in Table 4.6.

4.5.3 Short Run Relationship

The Vector Error Correction Model (VECM) enables understanding of the dynamic nature of the variables in the short run which eventually connects to long run. VECM results have been presented in Table 4.7.

The cointegration method reveals that external debt, external debt service and real effective exchange rate are important factors that affect economic growth in Nigeria. The VECM approach, on the other hand, shows the first and second lags of all the

independent variables are not important to economic growth during the short run with the exception of first lag of exchange rate. ECT appears to have correct sign and is significant. On the basis of cointegration and VECM, each independent variable is considered as to its impact on economic growth of Nigeria.

Table: 4.6 Cointegration Equation

Independent variables	Coefficients	Standard error	*t*-statistic
EXDB	-2706.055	137.811	-19.636***
EDSV	54.334	6.025	9.018***
GOV	9.828	9.239	1.063
INFL	7.496	1.949	-3.846**
RREX	-3.296	0.365	-9.021**

Note that (***), ** denotes significance at one percent and five percent respectively

The result of the analysis in Table 4.6 indicates that external debt ratio has relationship with the GDP per capita. This is in contradiction to some theoretical expectation that external debt works to fill investment-saving gap and boost economic growth in resources-poor countries. It further contradicts the findings of Kasi and Said (2013), Shalishali (2008) and Kutivadze (2011). But the negative relationship of EXDB and growth agrees with many findings such as Okonkwo and Odularo (2013), Akram (2013), Ramzan and Ahmad (2013), Rocha and Oreiro (2013) and Were (2001). This happening may not have been unassociated with the attitude of not channeling the funds borrowed

to unproductive ventures and sometimes siphoning part of the funds to private pockets. Additionally, some of such projects are abandoned and thus have never seen the light of the day. Thus, external debt will have a dragging effect on the economic growth of the country. The effect is really substantial considering the long run relationship.On the basis of the cointegration method, one dollar increase in EXDB will decrease GDPPC by $2706. Looking at the short run dynamism obtained through VECM, lag one and lag two of ΔEXDB has a positive and negative impact on GDPPC respectively. One dollar increase in first lag difference of EXDB will bring about $0.52 decrease in GDPPC in the short run while at second lag of EXDB decrease GDPPC by $0.476 in the short run. These effects are, however, not statistically significant.

External debt service ration exhibits a positive effect on economic growth in the long run, a result that is surprising. Fosu (as cited in Were, 2001) could not agree that the debt service ratio could serve as an adequate barometer of measuring debt burden. Nigeria's external debt service has quite recently been not too high on the face of it. One percent increase in debt service ratio brings about significant positive increase in GDPPC by about $54 in the long run. This finding is tangential to that of Were (2001) and Ajayi and Oke (2012) but contradicts many other studies such as that of Okonkwo and Odularu (2013), Chowdhry (2001), Akram (2013) and Hameed, Ashraf and Chaudhary (2008). On the other hand, short run VECM shows that both lags of external debt service ratio have negative effects on the GDPPC but are not statistically significant at all common levels of significance.

4.5: Johanson Cointegration Test

Hypothesized No. of CE(s)	Eigen-Value	Rank Test (Trace)			Max-Eigen Value(Stat)		
		Trace Stat.	0.05 Critical value	Prob.**	Max-eigen value Stat.	0.05 Critical value	Prob.**
None	0.871	175.161	95.754	0.000*	63.389	40.078	0.000*
At most 1	0.816	111.772	69.819	0.000*	52.494	33.877	0.000*
At most 2	0.556	59.278	47.856	0.003*	25.137	27.584	0.100
At most 3	0.478	34.141	29.797	0.015*	20.123	21.132	0.069
At most 4	0.319	14.017	15.495	0.083	11.927	14.265	0.113
At most 5	0.062	2.091	3.841	0.148	2.091	3.841	0.148

Note: the trace statistic identified 4 cointegrating equations at 5 percent level of significance while maximum eigen-value statistic indicates two.

* signifies rejection of null hypothesis at 5 level of significance. Prob.** is Mackinnon-Haug-Machelis (1999) p- values.

Table 4.7: The Error Correction Model

Variable	Coefficient	Standard error	*t*-statistic	Probability
Constant	23.785	33.451	0.711	0.487
ΔGDPPC(-1)	-0.520	0.247	-2.104	0.051
ΔGDPPC(-2)	-0.476	0.332	-1.430	0.172
ΔEXDB(-1)	71.594	556.847	0.129	0.688
ΔEXDB(-2)	-228.330	422.617	-0.540	0.596
ΔEDVS(-1)	-8.963	9.854	-0.910	0.377
ΔEDVS(-2)	-2.952	7.787	-0.379	0.710
ΔGOV(-1)	5.652	14.696	0.3846	0.706
ΔGOV(-2)	14.643	11.636	1.259	0.226
ΔINFL(-1)	-1.931	2.281	-0.846	0.410
ΔINFL(-2)	-0.175	1.968	-0.089	0.930
ΔRREX(-1)	2.508	1.083	2.315	0.034*
ΔRREX(-2)	-0.960	1.242	-0.773	0.451
ECM(-1)	-0.418	0.196	-2.136	0.048*
R^2	0.545			
Adj. R^2	0.147			
DW. Stat	2.059			

*denotes significance at five percent level.

From the normalized cointegration equation in Table 4.6, inflation has a positive effect on GDPPC at all levels of significance. An increase in inflation by one percent brings about $7 increase in GDPPC in the long run. This result is at variance with some theoretical expectation and many studies previously done. It however agrees with Tobin's effect. Mallik and Chowdhury (2001) stated that some structuralists believe that inflation has positive effect on economic growth. They argue that during inflation, there is a delay in time between the increase in the price of final products and prices of inputs such as wages. When the lag in wage lasts for a long time, the profit is increased. The increased profit provides an incentive for further production when it is ploughed back as investment. Increased investment means increase in productive capacity of the economy and through this higher growth is realized. This result is similar to the findings of Mallik and Chowdhry (2001) and Chaudhary, Chaudhry et al. (2012) but contradicts many

previous studies such as Barro (1990), Fischer (1993), (Alexander, 1997), Gillman et al. (2004) and Mallick (2008). The short run relationship shows that both lags of inflation have positive but insignificant effect of GDPPC during the short run.

Government final consumption expenditure shows insignificant effect on the GDPPC in the long run. This result does not tally with the expectation in that this type of spending is financed through higher taxes and the spending itself did not spurt up economic growth. The finding contradicts that of Barro (1990), Pollard, Shackman and Piffaut (2011) and Butkiewicz and Yanikkay (2011). However, the results is in agreement with the findings of Egbetinde and Fasanya (2013), Kalu and James (2012), Hareth (2012), Attiri and Jared (2013) and Alexiou (2009). The long run relationship shows that a one percent increase in government final consumption spending as percentage of GDP brings about $9 increase in GDPPC but this is not significant at any conventional level of significance. On the other hand, VECM shows both lagged difference of government final consumption spending are negatively related to ΔGDDPC but are not significant in the short run.

The real effective exchange rate has significant impact on GDPPC according to the long run relationship in Table 4.6. When real effective exchange rate increases by one basket value, GDPPC decreases by about $3. According to Kogit et al. (2012), real exchange rate policy in developing countries is usually overvaluation which dampens real producer prices and consequently reduces investment and exports. Furthermore, Nigeria's competitiveness in the international trade arena is weak partly due to its mono-

product economy of primary product and partly due the weak manufacturing base. The result contradicts the finding of Rodrik (2007), Kocenda et al. (2013), Yoll (2009), Rapetti et al. (2012). However, the short run relationship between real effective exchange rate and GDPPC is positive at first lag difference and is significant at a five percent level. One basket increase in real effective exchange rate will lead to about $3 increase in ΔGDPPC in the short run. The second lagged difference of real effective exchange rate has negative effect on ΔGDPPC but it is statistically not significant. Lastly, our ECM is the short run adjustment that has been derived from VECM. It simply signifies that 42 percent correction is done in the short run within a year. This is a fairly moderate adjustment. The coefficient has a correct negative sign and it is significant at the five percent level of significance.

4.5.4 Granger Causality Test

Granger causality between EXDB, EDSV and GDPPC have been considered in order to see the direction of causality and of course pinpoint which of the variables Granger causes the other. Table 4.8 gives the information of the causality. This table shows that the null hypothesis that GDPPC does not Granger cause EXDB is rejected at the five percent level of significance while the null hypothesis that EDSV does not Granger cause GDPPC cannot be rejected since p-value is greater than all the common levels of significance. Therefore, it is concluded that there is uni-directional causality from GDPPC to EDVS.

Table 4.8: Granger Causality Test 1

Null hypothesis	Obs.	*F*-Stat	Prob.
GDPPC does not Granger cause EXDB	32	6.845	0.039*
EXDB does not Granger cause GDPPC	32	2.165	0.134
GDPPC does not Granger cause EDSV	32	0.278	0.760
EDSV does not Granger cause GDPPC	32	3.140	0.059
EXBD does not Granger cause EDSV	32	1.392	0.266
EDSV does not Granger cause EXBD	32	3.312	0.051

Note: * rejection of null hypothesis at one percent level of significance

On the causality between GDPPC and EDSV, Table 4.8 shows both the null hypotheses cannot be rejected at the five percent level of significance. Lastly, the null hypothesis that EXDB does not Granger causes EDVS cannot be rejected, but the null hypothesis that EDSV does not Granger cause EXBD is rejected at one percent level of significance. This might be expected when debt service is rescheduled or converted to another debt as when Nigeria could not honour its debt service in early 80s.

4.6 DIAGNOSTIC CHECKING

The diagnostic checking of ARCH, LM and normality have presented in the following sub-sections.

4.6.1 Autoregressive Conditional Heteroscedasticity (ARCH) Test

The problem of heteroscedasticity has been checked using ARCH and summarized the result presented in Table 4.9

Table 4.9 ARCH Test for the GDPPC

F-statistic	0.186498	Prob.	0.6692
Obs*R-squared	0.198497	Prob.	0.6559

The result in Table 4.9 shows that the null hypothesis of homoscedasticity cannot be rejected because the probability of *F*-test is substantially bigger than the common level of significance. It is therefore concluded that the residuals are not plagued by the problem of unequal variance and thus they possess equal variance.

4.6.2 Lagrange Multiplier Test

Breusch-Godfrey Multiplier test has been conducted with two lags choice to x-ray the presence of serial correlation problem in the model. The result of the test has been presented in Table 4.10.

Table 4.10 ARCH Test for the GDPPC

Breusch-Godfrey Serial correlation LM Test:			
F-Statistic	0.748537	Prob.	0.4911
Obs.*R-squared	2.994713	Prob.	0.2237

According to Table 4.10, the null hypothesis cannot be rejected as the *p*-value of the *F*-test is about 37 percent, while is greater that all the conventional critical values of probabilities. Thus, it can be concluded that there is no proof for the existence of serial correlation in the model.

4.6.3 Normality Test

For reliable and meaningful inference, it is important for the residuals in the model to be normally distributed. Normality test has been presented in Figure 4.1.

As the graph shows, the histogram exhibits bell, a typical depiction of normality in the residuals. It is, however, acknowledged some signs of shock trend in the residuals. The graphical evidence of normal distribution of the residuals is corroborated by the statistical approach of the Jarque-Bera.

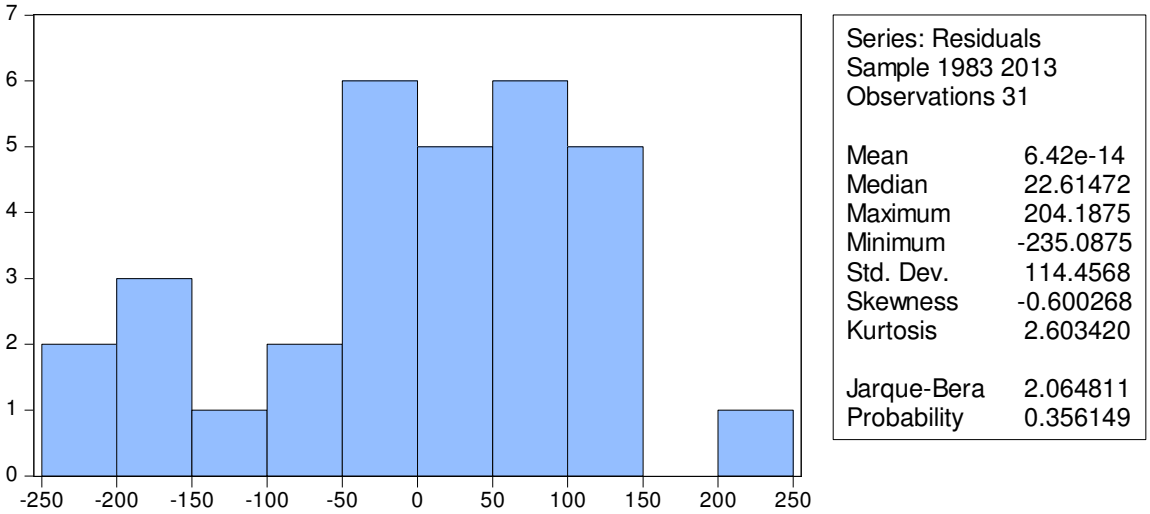

Figure 4.1 Normality Test

The test shows that p-value to be around 36 percent, a value which is greater than all the conventional critical value of probability. In other words, the null hypothesis that the residuals are normally distributed cannot be rejected. For this reason, it has been summed up that the residuals are normally distributed.

The long run analysis of this chapter shows that external debt and exchange rate have negative effects on economic growth while external debt service and inflation exert

significant positive effects. The government expenditure has a positive, but insignificant effect on economic growth. In the short run, all the variable under consideration are not statistically significant with the exception of the first lag of exchange rate while the error correction term has the correct sign and is statistically significant. The causality analysis shows uni-directional causality from economic growth to external debt but there is no causality between external debt service and economic growth. Finally, weak unidirectional causality from external debt service to external debt has been found

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATION

5.1 INTRODUCTION

The study examined the impact of external debt on the economic growth of Nigeria and examined the causality between economic growth, external debt and external debt service. This was because of inclusive results in the previous studies and seemingly incessant dependence on external loans by Nigeria. This chapter summarizes the findings of the study, reel off the limitations faced by the study and suggests some areas for further expansion of frontier of knowledge in the area. The chapter also gives policy implications and recommendations to match theoretical and practical aspects of the study. Finally, a conclusion has been drawn on the basis of the overall study.

5.2 SUMMARY OF THE FINDINGS

The objective of this study is to examine the effect of external debt on the economic growth and determine the direction of causality between economic growth, external debt and external debt service. The result shows that external debt exerts a significant negative impact on the economic growth of Nigerian while external debt service has no crowding out effect on the economic growth. The effect of the external debt is consistent with the high level of debt theory during the long run.

External debt and real exchange have significant negative effects on the GDP per capita. External debt service and inflation have significant positive effects on the GDP per capita while government final consumption expenditure has positive but not significant impact the GDP per head. This indicates that more government spending should be channeled to productive ventures to reduce waste and enhance economic growth while policy should be geared towards ensuring competitive exchange rate. The result of the long run relationship shows that inflation has a significant positive effect on economic growth. This is consistent with the Tobin's effects. Monetary policy should then be tailored towards maintaining price stability for sustainable economic growth. As for the short run relationship, all lagged variables on the right hand side (RHS) of the short run equation have no significant impact on the economic growth with the exception the first lag of real exchange rate. Still in the short run relationship, the study finds that ECT to be significant and with the correct sign, passing all the diagnostic checks. The ECT has fairly quick speed of adjustment towards long run equilibrium.

With the regards to the causality, the study finds unidirectional causality from economic growth to external debt and not the other way round. There is no causality between economic growth and external debt service. Interestingly, external debt service is found to Granger cause external debt, but there is no feedback. This may be the case that external debt service are rescheduled and converted to debt.

5.3 LIMITATIONS OF THE STUDY

This study examined the impact of external debt on economic growth of Nigeria during the period 1980-2013, using the Johansen cointegration technique. The study faced some limitations which are worthy of being considered. The data used in the study are limited to the period earlier stated. It is expected that a larger sample of longer period when available, will enable better and robust result. There are other measures of capturing the effects of debt on economic growth, such as net present value (NPV) to GDP for which data are limited in the case of Nigeria. Such data with longer covered will no doubt yield sound result, but such coverage is conspicuously unavailable for some variables and hence only common coverage has been used in the study.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

Appreciation of the relationship and direction of causality between economic growth, external debt and external debt service is crucial since it paves the way for the proper policy formulation. The results of the study highlight the growth behavior of the Nigerian economy and can spur the interested researchers to expand the frontier of knowledge in the area. The analysis used six variables, including focus variables such as external debt and external debt service. Other variables that can bridge the saving-investment gap can be incorporated in the model. These variables can be debt relief or foreign aid and foreign direct investment. In addition, future studies can include variables such as public investment and private investment since they too can strongly influence economic growth.

This has been conducted using annual time series data, using data of different frequency, such as monthly data or quarterly data can yield different results. Moreover, a study can be conducted in a different setting with the time series data. For the purpose of comparison between countries in the similar phase of economic development, a study can be conducted between the countries.

5.5 POLICY IMPLICATIONS AND RECOMMENDATIONS

The role of external debt in bridging saving-investment gap in economic growth cannot be overemphasized. On the basis of the relationship between economic growth and external debt, external debt service and other control variables, many policy implications and recommendations can be drawn. Policy makers can manipulate these variables to ensure desired direction in the economic growth in the short run and long run. The external debt has a significant negative effect on the economic growth. Therefore, external debt should be acquired on the basis of economic purpose rather than on political or social purpose. The projects to which these funds are channeled should be well-appraised to ensure that they yield enough returns to service the debt. The projects should be self-liquidating and should have a direct impact on the economic growth. The government should strengthen guidelines under which external funds are obtained and conditions for debt acquisition and approval should be well adhered to for sustainable debt and economic growth. Nigeria can also seek further debt relief by considering the conditions under which debt reliefs are granted. This can greatly reduce the resources given in servicing the debt and such resources can be re-allocated to the productive sector in the economy. Concerted efforts should be made to boost domestic savings and

capital accumulation to foster confidence and reduce reliance on external loans. Such savings can be pooled and used in the direction of developing the economy. Macroeconomic policies that attract FDI should be strengthened and implemented, including removal of market distortion and more stable macroeconomic atmosphere. In this connection, exports-oriented strategy should be promoted to lure more FDI into the economy.

As for the external debt service, it has been found to have no crowding out effect since it has a positive effect on the economic growth. More effort is needed to diversify the exports to ensure uninterrupted flows of foreign exchange. Sectors as agriculture and tourism should be developed to increase sources of foreign exchange. Increasing sources of foreign exchange through diversification can help forestall any effect of the crash in the world price of the dominant source of foreign exchange of the country. Also increased sources of foreign exchange will go a long away in settling of debt service without scaring or reducing potential investment in the economy be it domestic or FDI.

Government consumption has an insignificant increasing effect on economic growth in the long run. The government expenditure should be shifted to productive investment to reduce waste. Such expenditure should be allocated to develop human capital to allow for absorptive capacity for FDI. Overall, budget execution should be monitored to ensure good performance.

Inflation has significant positive impact on the economic growth in the sampled period. To ensure price stability that warrants economic growth, money supply should be closely monitored so as not trigger harmful inflationary effect on growth. Ensuring a stable price level will enable smooth macroeconomic policies that stimulate growth.

Real exchange enters the long run relationship with significant negative effect on long run economic growth. In a globalized world, competitive exchange rate should be prioritized for a favourable economic growth. Nigeria's competitive edge relative to its trading partners has not been healthy for economic growth. A sound foreign exchange market should be established to ensure long run growth. There should be strict monitoring to prevent fraudulent transfer of foreign exchange by unscrupulous banks. Round-tripping should be meted out severe penalty

5.6 CONCLUSION

Despite several reports on the benefits of external debts on the economic growth in both theoretical and practical issues, this empirical study showed different results in the Nigerian context for the period covered by the study. The benefits of external debt to economic growth in Nigeria are far from being realized. In fact, the latter is being dragged by the former. External debt service poses no threat to investment, but Granger causes the external debt. In a nutshell, external debt does not confer the expected positive effect on the economic growth in Nigeria.

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