



The Impact of Public Debt on Economic Development of Nigeria

Abula Matthew¹ and Ben Daddy Mordecai^{1*}

¹Department of Economics, Faculty of Social Sciences, Kogi State University, Nigeria.

Authors' contributions

This work was carried out in collaboration between both authors. Author AM designed the study, wrote the managed the literature searches, wrote the first draft and literature review of the manuscript. Author BDM managed the analyses of the study which enabled us to draw the recommendations and conclusion from the result findings. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/ARJASS/2016/27263

Editor(s):

(1) Tsung Hung Lee, National Yunlin University of Science & Technology, University Road, Touliu, Yunlin, Taiwan.

Original Research Article

Received 26th May 2016
Accepted 20th June 2016
Published 28th June 2016

ABSTRACT

This study examined the impact of public debt on economic development of Nigeria using annual time series data spanning 1986 to 2014. The study employed the Augmented Dickey-Fuller test, Johansen co-integration test, Error Correction Method (ECM) and the Granger Causality test. The Johansen co-integration test results revealed the presence of a long-run relationship among the variables viz; external debt stock, domestic debt stock, external debt servicing, domestic debt servicing and economic development (proxied with GDP per capita) in Nigeria. The ECM results revealed that external debt stock and external debt servicing have insignificant negative relationship with economic development in Nigeria, however, domestic debt stock has a direct and significant relationship with economic development while domestic debt service payment was significant but inversely related to economic development in Nigeria. The lagged error correction terms in ECM 1 and ECM 2 equations are high and statistically significant judging from its high and negatively signed coefficient. The study therefore recommended that the government should reduce the level of external debt it accumulates overtime, but domestic debt accumulation would contribute significantly to the development of the economy.

Keywords: Economic development; external debt; domestic debt; error correction method.

*Corresponding author: Email: Abulamathew@yahoo.com;

1. INTRODUCTION

One most important objective of macroeconomic policies in recent years has been the attainment of sustainable economic growth and development of an economy most especially the Less Developed Countries (LDCs) (like Nigeria) which are characterized by low capital formation due to low levels of domestic savings and investment [1]. No government is an island on its own; it would require aid so as to perform efficiently and effectively. It is expected that these LDC's when facing a scarcity of capital would resort to borrowing from either internal or external sources so as to supplement domestic saving [2,3,4]. Hence, borrowing may be considered as a second best alternative to capital formation during periods of depression in an economy.

Nigeria has an economy that is very dependent upon its oil sector. The oil sector accounts for about 95% of Nigeria's foreign exchange earnings, they have oil reserves estimated between 24 billion and 31.5 billion, and produce 90 million tons per year. Oil revenue constitutes about 14% of Nigeria's GDP and roughly 90% of its income [5]. Essentially, Oil revenues are as well the main source of financing government expenditures and imports of goods and services, as increasing oil prices over the years has boosted public expenditures on social and economic infrastructures [6]. Yet the many years with oil money have not brought the population an end to poverty nor, at least until recently, have they enabled the economy to break out of what seems like perennial stagnation in the non-oil economy. The problem with Nigerian economy has been traced to failure of successive governments to use oil revenue and excess crude oil income effectively in the development of other sectors of the economy [7].

Nigeria has been a member of the Organization of the Petroleum Exporting Countries (OPEC) since 1971. Nigeria was the fifth largest producer in OPEC in 1986 and estimated to have reserves of sixteen billion barrels, 2.23% of the world reserves. Nigeria oil boom could rightly, be traced to the mid-seventies when there was crisis in the Middle East which led to an increase demand and sale of Nigeria oil. This resulted in considerable foreign exchange earnings by the government. The government embarked on fiscal policy expansion during the oil boom era of the 1970s. Public expenditure as a per centage of GDP increased from 13 per cent in the 1960-69

periods to 29.7 per cent in the late 1980s. However, towards the close of the decade, the international oil market started experiencing a glut and the prices of oil fell drastically low. But as the oil boom declined in the 1980s, priorities of government expenditure did not change. In addition, the revenue base of the federal government in relation to the GDP declined continuously during the period [8]. From 19.5 per cent of GDP in the 1970s, this declined to 11 per cent of GDP in 1990s and further to 9 per cent in 2000. Consequently, the fiscal operations of the federal government resulted in large deficits. From an average of 0.8 percent of GDP in the 1970-1979 periods, the level of deficit increased persistently averaging 5.1 percent in 1980-1994 and 10.0 in 1990-94 [9].

In order to avoid economic problems like inflation, political and social crisis inherent in the period (1980-1985), the government of Shagari opened the gate way to borrowing. Loans were raised primarily to finance a number of projects. Being a loan from private sources, it attracted higher interest rates while the maturity period was shorter. At the end of 1990, the level of total debt outstanding increased more than two-fold from the preceding years level of N1, 265.7 million. Since then more loans have been raised in the private capital market as funds from the bilateral and multilateral institutions dwindled. This caused a remarkable shift in the structure of the debt outstanding and consequent increase in debt burden [10].

Actually, the borrowing was done with the hope that there would be a turnaround in the international oil market perhaps in no distance future. It was equally, hoped that the borrowed fund would be a turnaround in the purchasing of domestic goods. However, the expected turn around did not materialize. Rather it came to a point that the amount borrowed was greater than the national income [11].

Nigeria has not had a stable macroeconomic background since the late 1990's up to the early 2000. The GDP growth has been fluctuating widely, peaking at an all time high of 10.2% in 2003. The inflation rate, which had reached an all time high of 29.3% in 1996, dropped in the early part of 2000 but has kept fluctuating. The performance of major monetary aggregates did not show any appreciable improvement. They have grown very rapidly in most of the years, exceeding set targets, sometimes by wide margins. The excessive fiscal operations of the

three tiers of government were financed principally through increased debt [9]. There are two major sources of debts in Nigeria the internal and external sources: the internal sources include development stocks, treasury bills, treasury certificate, treasury bonds and ways and means of advances, while external debt sources include bilateral and multilateral sources such as world bank, International monetary fund (IMF), African Development bank. There are London group of creditors and the Paris club group of creditors [11].

The gross increase in the total debt stock has exposed the nation to high debt burden and has resulted to the poor growth of the nation's output. Nigeria's high debt burden has had grave consequences for the economy and the welfare of the people. The servicing of the debt has severely encroached on resources available for social-economic development and poverty alteration. What appears undisputable is the increasingly large debt service requirement which imposes considerable stress on the Nigerian economy even when the improved resource inflow is factored into the country's cash flows [12]. Despite the government conscious effort in managing the nation's debt, the issue of debt has still been a burden to the Nigerian economy. Large debt service payment obligations and debt burden has depressed investment and hence economic growth through its illiquidity and disincentive effects. The country has been experiencing resource underutilization, high incident of poverty and decay of infrastructures [13].

The objective of this study was therefore to examine the impact of public debt on economic development of Nigeria by assessing the individual effects of the country's domestic and external debt stocks and service payments on economic development (proxied with GDP per capita) of Nigeria. This study will serve as a tool in revamping government policies towards loan procurement and debt servicing in Nigeria, and may also serve as a yardstick for further research and documentation on Nigeria's debt situation.

This paper is organized into five sections: section one comprises the introductory background of the study. Section two is the theoretical and empirical literature review, and theoretical framework of the study. Section three provides information about the research method while section four is the presentation, interpretation

and discussion of results. Section five consists of the conclusion and policy recommendations.

2. LITERATURE REVIEW

2.1 Definition of Concepts

2.1.1 DEBT

Debt according to Oyejide, Soyede and Kayode [14] is the resource or money used in an organization that is not contributed by its owner and does not in any other way belong to them. It is a liability represented by a financial instrument or other formal equivalent.

2.1.2 External debt

Arnone, Bandiera and Presbiterio [15] defined external debt as that portion of a country's debt that is acquired from foreign sources such as foreign corporations, government or financial institutions. External debt is that part of the total debt of a country that is owed to creditors outside the country. The debtors can be the government, corporations or private households [16].

2.1.3 Domestic debt

According to Ozurumba and Kanu [17] domestic debts refer to the portion of a country's debt borrowed from within the confines of the country. These loans are usually obtained from the central bank of Nigeria, deposit money banks, discount houses and other non bank financial houses.

Domestic Debts are debts that originate from within the geographical region of a country, which are contracted through debt instruments such as treasury bills, treasury certificates and treasury bonds. Others are development stocks, FGN bonds and Promissory notes [18].

2.1.4 Economic development

This is refers to increase in the standard of living in a nation's population with sustained growth form a simple, low-income economy to a modern high-income economy [19]. It also involves achieving a balance in all sectors of the Economy in the process of production of goods and services be it agriculture, finance, manufacturing, health, education, etc. The Economic challenge inherent in the Nigeria Economy include issues social such as poverty, low per capital income, inequitable distribution of

home, low capital formation, inefficiency in the mobilization of resource, over-dependence on a singular commodity oil-as a major source of income, Unemployment, inflation to mention a few [20].

2.2 Theoretical Literature Review

2.2.1 Debt- cum - growth model

The original non-optimizing approach was advanced in the framework of “Debt-cum-growth” literature, in which emphasis has mainly been on foreign borrowing for investment purposes, i.e. for filling the gap between domestic investment and saving [21]. The Debt-cum-Growth Model considers debt capacity in terms of the benefit and cost of borrowing in the process of economic growth. The basic argument is that a country will maintain its capacity to service debt provided that additions to its debt overtime contribute (sufficiently) to growth. A ‘debt’ cycle is proposed, in which the behavior of capital flows may change over a number of stages which are closely linked to the course of economic growth. The merit of the debt cum-growth mode lies in its summary of the complexities of the debt growth mechanics into a simple and readily understandable insight, namely that any debt strategy will only work, ultimately, if there is sufficient economic growth to support it. However, in terms of analyzing debt capacity in a more specific manner, the Debt-cum-Growth Model framework suffers from a number of conceptual problems relating to its theoretical underpinning and the rigidity of its basic assumptions [22]. A particular weakness is that the model focuses solely on the saving-investment gap. Yet, given that external financing will have been made available in foreign currency and the saving surplus most therefore somehow be converted into foreign exchange. By not considering the performance of the external sector of economy the Debt-cum-Growth Model is silent on this transformation problem.

2.2.2 The profligacy theory

The profligacy theory thesis attempts to correct the weakness of the Debt-cum-growth model by focusing on the institutional arrangement under which a loan was contracted. The profligacy thesis, a component of the system stability theory, recognizes that the debt crisis arose from weak institution and policies that have wasted resources through unbridled official corruption and damaged living standard and development.

These policies led to distortions in relative prices and encouraged capital flight as seen in substantial external liquid funds of private citizens of countries in foreign banks.

2.2.3 The dependency theory

The Dependency theory originated from developing countries themselves in the 1770s. This theory is based on the assumption that resources flows from a “periphery” of poor and underdeveloped states to a “core” of wealthy states thereby enriching the latter at the expense of the former. Dependency theory states that the poverty of the countries in the periphery is not because they are not integrated or fully integrated into the world system as is often argued by free market economists, but because of how they are integrated into the system. From this standpoint, a common school of thought is the bourgeoisie scholars. To them, the state of underdevelopment and the constant dependence of less developed countries on developed countries are as a result of their domestic mishaps. They believe this issue can be explained by their lack of close integration, diffusion of capital, low level of technology, poor institutional framework, bad leadership, corruption, mismanagement, etc [23]. They see the under-development and dependency of the third world countries as being internally inflicted rather than externally afflicted. To this school of thought, a way out of the problem is for third world countries to seek foreign assistance in terms of aid, loan, investment etc. and allow undisrupted operations of the Multinational Corporations (MNCs). Due to the underdeveloped nature of most LDCs, they are dependent on the developed nations for virtually everything ranging from technology, aid, technical assistance, to culture, etc. the dependent position of most underdeveloped countries has made them vulnerable to the products of the Western metropolitan countries and Breton Woods institutions [24]. The dependency theory gives a detailed account of the factors responsible for the position of the developing countries and their constant and continuous reliance on external aid for their economic growth and development.

2.2.4 The neoclassical theory

According to the Neoclassical growth theory, debt has a direct effect on economic growth. This is because the amount borrowed, if used optimally, is anticipated to increase investment. As long as countries use the borrowed funds for

productive investment and do not suffer from macroeconomic instability, policies that distort economic incentives or sizable adverse shocks, growth should increase and allow for timely debt repayment.

On the other hand, the indirect effect of debts is its effect on investment. The transmission mechanism through which debts affect growth is its reduction on the resources available for investment by debt servicing. Also, public debt can act as an implicit tax on the resources generated by a country and create a burden on future generations which come in the form of a reduced flow of income from a lower stock of private capital. This in turn, may lead to an increase in long-term interest rates, a crowding out of private investments necessary for productivity growth, and a reduction in capital accumulation.

2.2.5 The Keynesian theory

Keynes view fiscal policy as the best policy that brings about growth in any economy since it acts in the interest of the general public. According to Keynes, when the government embark on public borrowing to finance its expenditure, unemployed funds are withdrawn from the private pockets such that the consumption level of private individuals remains unaffected. This funds when injected back into the economy by the government leads to a multiple increase in aggregate demand causing an increase in output and employment. Hence, public borrowing can be used to influence macroeconomic performance of the economy [18]. On the other hand, the indirect effect of public borrowing is its effect on investment. The transmission mechanism through which debts affect growth is its reduction on the resources available for investment by debt servicing. Also, public debt can act as an implicit tax on the resources generated by a country and create a burden on future generations which come in the form of a reduced flow of income from a lower stock of private capital. This in turn, may lead to an increase in long-term interest rates, a crowding out of private investments necessary for productivity growth, and a reduction in capital accumulation [19].

2.3 An Analysis of the Movement in Gross Domestic Product Per Capita, External Debt and Domestic Debt

Following the introduction of the Structural Adjustment Programme (SAP) by the Babangida

administration in 1986 the GDP_{PC} which was N0.00156 billion in 1986 slightly increased to N0.00218 billion in 1987, while external debt more than doubled from N41.4524 billion to N100.189 billion. Domestic debt increased from N28.4387 billion to N36.7891 billion. From 1986, Nigeria's public debt kept on rising in absolute terms until 1995 when both the external and domestic debts stock stood at N716.866 billion and N477.734 billion respectively [25]. This was contrary to the intents of SAP which main thrust was the reduction in deficit financing. However, the rising trends in debts also saw a sustained increase in GDP_{PC} which closed 1995 with N0.02681 billion, an upward movement of 102.6% from the 1994 figure of N0.01324 billion. In 1996 and 1997, the hey days of General Sani Abacha government, the public debt stock reduced drastically from the 1995 levels to N617.320 billion – external and N419.976 billion – domestic in 1996, while in 1997 the stock stood at N595.932 billion – external and N501.751 billion – domestic (19.47%). The reduction in external debt during this period could be attributed to the inability of the government to further secure external financing due to the country being isolated and treated as a pariah state by major Western countries. Interestingly, this period also saw increased GDP_{PC} of N0.03627 and 0.03675 in 1996 and 1997 respectively, which can be interpreted to mean that the Abacha regime prudently managed the lean resources at its disposal [25,26].

During the short period of General Abdulsalami Abubakar government, 1998/1999, the GDP_{PC} reduced by 7.1% from the 1997 figure to N0.03413 billion in 1998 and increased to N0.03905 billion in 1999, while the external and domestic debts levels started rising again and peaked at N2,577.37 billion (external) and N794.806 billion (domestic) when the regime handed over power to civilians in 1999. When the civilian government of Chief Olusegun Obasanjo settled down for governance at the start of year 2000 the debt stock continued the sustained rise inherited from the Abubakar's government. The public debt stock stood at an all time high of N4,890.27 billion (external) and N1,370.33 billion (domestic) at the end of 2004. At this point, although the GDP_{PC} was increasing with the debts (GDP_{PC} was N0.08391 billion as at 2004), the government saw that the debt levels, especially the external one, with its concomitant high service obligations, was unsustainable. The government therefore commenced debt cancelation negotiations with the Paris Club

Creditor nations. This effort yielded fruits as the government procured debt relief/cancellation of over \$18billion in 2005 which brought the country's external debt level to N431.080 billion at the end of 2007, a cumulative reduction of 132.67 percent from the 2004 level [25,26].

The reduction in external debt had a reverse effect on domestic debt as it (domestic debt) continued its upward trend to peak at N2,169.63 billion at end of 2007 from the 2004 figure, a cumulative increase of 50 percent. During this period, the GDP_{PC} performed very well as it rose from the 2004 figure to close year 2007 at N0.14035 billion. The reduction in external debt, increase in domestic debt and increase in GDP_{PC} is an indication that when government resorted to local financing of its programmes via domestic borrowings this had positive effect on GDP_{PC}. This same effect is also seen in the periods 2008 to 2014 when low level external debt and increased domestic debt led to improved GDP_{PC} levels. The debt stocks increased persistently from N523.437 billion (external) and N3,228.03 billion (domestic) in 2008 to N1,631.52 billion (external) and N7,904.02 billion (domestic) in 2014, while GDP_{PC} increased from N0.16068 in 2008 to N0.49880 in 2014 [25,26,27]. The figure below presents the trend in gross domestic product per capita (GDP_{PC}), external debt (EDS) and domestic debt (DDS) between the period 1986 and 2014. The data is also depicted in appendix I of this paper.

2.4 Empirical Literature

Choong, Lau, Liew, and Pua [28] examined the effect of different types of debts on the economic growth in Malaysia during the period 1970 – 2006. Using Co-integration test, the findings suggest that all components of debts have a negative effect on long run economic growth.

Barik [29] studied the direct and indirect effect of public debt on economic growth of India between 1981 and 2011. His econometric investigation revealed that there is an indirect connection between public debt and economic growths of India within the period. He discovered that both investment and output growth had an indirect positive effect on economic growth through its influence on investment. He recommended that it is not enough to just raise public debt but to put measure in place to stabilize them both in the medium and long-term.

In Nigeria, Aminu et al. [11] investigated the impact of external debt and domestic debt on

economic growth in Nigeria between 1970-2010 through the application of Ordinary least square method, Augmented Dickey-Fuller technique and Granger causality test. The results of the Causality test suggest that there is a bi-directional causation between external debt and GDP while no causation existed between domestic debt and GDP, no causation existed between external debt and domestic debt as well. The results of OLS also revealed that external debt possessed a negative impact on economic growth while domestic debt has impacted positively on economic growth (GDP). They assert that good performance of an economy in terms of per capita growth may therefore be attributed to the level of domestic debt and not on the level of external debt in the country; therefore external debt is seen as inimical to the economic progress of a country.

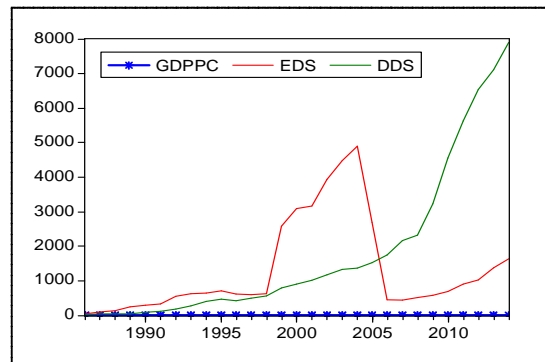


Fig. 1. Trends in GDP per capita, external debt and domestic debt (1986-2014)

Source: Authors extract from CBN and DMO [25,27]

Amassoma [30] examined the causal nexus between external debt, domestic debt and economic growth in Nigeria between 1970 and 2009 using a Vector Autoregressive (VAR) and a Vector Error Correction (VEC) models. They found that whereas there was no long-run relationship between domestic debt and economic growth external debt and economic growth showed a long-run relationship. He also found a bi-directional causality between domestic debt and economic growth and a unidirectional causality from economic growth to external debt in Nigeria.

Uma, Eboh and Obidike [31] empirically investigated the influence of total domestic debt, total external debt cum servicing of external debt on the economic development of Nigeria from 1970-2010. The study started with the battery test of stationarity of time series data using

Augmented Dickey-Fuller test and Johansen test for co-integration to ascertain the long-run relationship of the variables. Ordinary Least Squares was used to analyse the data. The results show that total domestic and total external debts are inversely related to real gross domestic product, a proxy for economic development, but at an insignificant level. Interest on total external debt relates positively on real gross domestic product contrary to our expectation but at an insignificant level. On this basis, they recommend among others that the government must be sincere and focus more on internally generated revenue to finance development projects until all the debts and its interests are finally settled.

Tajudeen [32] examined the causal nexus between total public debt (external and domestic debt) and economic growth in Nigeria between 1970 and 2010 using a Vector Autoregressive (VAR). The results of the Augmented Dickey Fuller and Philip Peron test showed that the variables were stationary at first difference. Co-integration test was also performed and the result revealed the presence of co-integration between public debt and economic growth. The co-integration results show that public debt and economic growth have long-run relationship. The findings of the VAR model revealed that there is a bi-directional causality between public debt and economic growth in Nigeria. He recommended that government should be sincere with the loans it obtains by channeling it towards development of the economy rather than diverting it into private pockets.

Okon et al. [26] investigated the relative impact or potency of both external and domestic debts on the performance of the Nigerian economy with emphasis on which of the debt type exert more impact or influence on the major macroeconomic variables of per capita GDP and gross domestic investment. They obtained time series data from various sources from 1970 to 2011 and were further subjected to series of econometric analysis. The result reveals that external debt is superior to domestic debt in terms of economic growth, external debt and not domestic debt crowd-out domestic investment in Nigeria. They concluded that government should have recourse to domestic market-based borrowing in order to help mobilize domestic saving and stimulate domestic investment in Nigeria.

Kehinde [33] attempted to estimate the effect and volatility of debt on the GDP. Secondary data

was used and the E-view package was adopted in the study. The study revealed that only lag in GDP affect the GDP volume, while debt and volatility in debt does not affect the GDP. There is no ARCH effect of debt on GDP. It was recommended that debt management regime should be refocused to ensure that debt repayment is exogenously determined. Moreover, future debt should be attached to a specific capital development program to ensure the growth in the economy.

ThankGod [34] examined the impact of public debt on private investment in Nigeria over the period 1981 – 2012 using the instrumental variable technique of estimation and bootstrapping technique for the computation of normal based standard errors for the turning points. The results show that domestic debt has a linear and positive impact on private investment; external debt has a U-shaped impact on private investment; and private consumption expenditure has a negative impact on private investment. The external debt turning point was estimated to be 124.69 percent and was statistically significant at the 1% level. The study therefore recommended that for Nigeria to benefit from government external borrowings such funds should be large enough compare to her GDP and should be invested in productive ventures.

Emmanuel [35] focused on the impact of public debt on economic growth in Nigeria. He showed that the joint impact of debt on economic growth is negative and quite significant in the long-run but become positive in the short-run. This was attributed to incompetent debt management.

Jakob [36] showed in his study that low income countries like Nigeria have a tradition in borrowing to finance huge capital projects like the debt procured by the government for its own use. He employed a cross - sectional survey of the role of domestic debt market in sub-Saharan African based on data set of 27 countries between (1980-2000) 20 years periods. He finds out that domestic markets in these countries are more generally small, involves short and medium term and a very narrow investor's base. It also pinpointed that there exist significant differences among the size, cost, and maturity structure of domestic debt markets in heavily indebted poor countries. He further discovered from his study that domestic interest rate payment present a significant burden to their budget despite much smaller domestic debt than foreign debt which in

turn affects private investment and growth at large.

Adenike, Adekunle and Abiodun [37] reviewed the roles of debt management practices on sustainable economic growth and development with particular emphasis on Nigeria. The analysis of the data collected using the Ordinary Least Square regression method with descriptive statistics shows that, availability of access to external finance strongly influences the economic development process of any nation. Debt is an important resources needed to support sustainable economic growth. But a huge external debt without servicing as it is the case for Nigeria before year 2000 constituted a major impediment to the revitalization of her shattered economy as well as the alleviation of debilitating poverty.

It is obvious that in the study carried out [11,31,37], the OLS estimation technique was used as the tool for analysis which does not capture the short-run and long-run dynamics of the variables. This study tries to fill this gap by employing the Error Correction Method of analysis as it depicts short-run and long-run equilibrium of the variables.

2.5 Theoretical Framework

The Keynesian theory of public borrowing was adopted as the theoretical framework of this study. The Keynesians view fiscal policy as the best policy that brings about growth and development in any economy since it acts in the interest of the general public. According to Keynes, when the government embark on borrowing to finance its expenditure, unemployed funds are withdrawn from the private pockets and as such the consumption level of the private individuals is unaffected. This funds when injected back into the economy by the government leads to a multiple increase in aggregate demand causing an increase in output and employment. This according to Keynes is the multiplier effect of government expenditure [18].

Given the national income model as follows;

$$Y = C + I + G + (X-M) \quad (2.1)$$

The change in output will be equal to the multiplier times the change in government expenditure

$$\Delta Y = \frac{1}{1-b} (\Delta G) \quad (2.2)$$

$$\text{Where } = \frac{1}{1-b} = K$$

$$\Delta Y = K \Delta G$$

$$\frac{\Delta Y}{\Delta G} = K \quad (2.3)$$

Therefore change in output all over change in government expenditure is equal to the multiplier. This shows that public borrowing can be used to influence macroeconomic performance of the economy [19].

3. RESEARCH METHODOLOGY

3.1 Data Types and Sources

In examining the impact of public debt on economic development of Nigeria for the period of 1986-2014, this work solely relied on secondary type of data collection, which was gotten from the Central Bank of Nigeria statistical bulletin and annual reports, and the various Publications of the Debt Management office [25,27].

3.2 Method of Data Analysis

To avoid spurious regression due to the problem of non-stationarity of data, the Augmented Dickey Fuller test was used to check for the presence of a unit root in the variables i.e whether the variables are stationary or not and to what degree. After testing for the stationarity of the variables, the next step was to test for co-integration. This test was used to check if long-run relationship exists among the variables in the model and was carried out using the Johansen technique. In the short-run, deviations from the long-run relationship established could occur due to shocks to any of the variables. In addition, the dynamics governing the short-run behaviour of the model are different from those in the long-run. Due to this difference, the short-run interactions and the adjustments to long-run equilibrium are important because of the policy implications. The Error Correction Model (ECM) was therefore used to correct or eliminate the discrepancy that occurs in the short-run. It was used to test the speed of adjustment from short-run to long-run equilibrium. The coefficient of error-correction variable gives the per centage of the discrepancy between the variables that can be eliminated in the next time period. The apriori expectation is that the ECM coefficient must be

negative and significant. The higher the ECM the more the speed of adjustment. Finally, the granger causality test was used to check for causality between the variables. That is to test if the past of the explanatory variables contains information that can be used to predict the future of the dependent variable.

3.3 Model Specification

Okon et al. [26] specified a two model of; the relative potency of external and domestic debts on economic growth of the form;

$$PCGDP = f(EXD, DD, GDI, DSP, INFLA) \quad (3.1)$$

And the relative potency of external and domestic debts on gross domestic investment as;

$$GDI = f(EXD, DD, INTR) \quad (3.2)$$

Where; PCGDP = Per capita GDP, EXD = External debt, DD = Domestic debt, GDI = Gross domestic investment, INFLA = Inflation and INTR = Interest rate.

In order to appropriately capture the impact of public debt on economic development of Nigeria, this study modified the empirical work of [26]. A multiple regression model was used with economic development proxied with Gross Domestic Product Per Capita (GDP_{pc}) as the dependent variable, while external debt stock, domestic debt stock, external debt service payment and domestic debt service payment during the period of study are treated as independent variables.

The structural form of the model is:

$$GDP_{pc} = f(EDS, DDS, ESP, DSP) \quad (3.3)$$

The stochastic form of the model is:

$$GDP_{pc} = \beta_0 + \beta_1EDS + \beta_2DDS + \beta_3ESP + \beta_4DSP + \mu \quad (3.4)$$

Where;

GDP = Gross domestic product per capita

EDS = External debt stock

DDS = Domestic debt stock

ESP = External debt service payment

DSP = Domestic debt service payment

μ = Error term

β_0 = intercept

$\beta_1, \beta_2, \beta_3, \beta_4$, = slope of the regression equation
Our apriori expectations are:

$$\beta_1 \text{ and } \beta_2 > 0, \text{ \& } \beta_3 \text{ and } \beta_4 < 0.$$

3.4 Justification of Chosen Variables and Measurement

Gross domestic product is a measure that reflects the value of goods and services produced per individual in the economy in a given year and is measured in N' Billion. It is used to capture economic growth and development in this study because it captures the total output produced by each individual in the country and as such provides a more accurate figure.

External debt stock is used as a proxy for capturing total external debt of the economy in a given period. It is measured in N' Billion. The a priori expectation is a positive relationship between gross domestic product per capita and external debt stock, i.e. the higher the external debt Stock, the higher would be the level of gross domestic product per capita.

Domestic debt stock is used as a proxy for capturing total domestic debt of the economy in a given period. It is measured in N' Billion. The a priori expectation was a positive relationship between gross domestic product per capita and domestic debt stock.

External debt service payment is used to capture the total amount of money expended by the federal government on debt payment abroad and is measured in N' Billion. This is characterized by channelling domestic resources abroad for servicing debt and will reduce the money available for domestic investment and consumption, hence reduce the GDP per capita. We expected to have a negative relationship between external debt service payment and GDP Per Capita.

Domestic debt service payment is used to capture the total amount of money expended by the federal government on debt payment within the country and is measured in N' Billion. When government embark on servicing domestic debt, the government expenditure component of aggregate demand falls resulting to a multiple decrease in output and employment. Hence, we expected to have a negative relationship between domestic debt service payment and GDP Per Capita.

4. RESULT PRESENTATION AND ANALYSIS

4.1 The Unit Root Test Results

Non-stationary data produces spurious regression, hence the result may be misleading. Therefore, it was cognizant to establish the stationarity of data. The test result of the Augmented Dickey-Fuller statistic for all the time series variables used in the estimation are presented in Table 1.

The presence of unit root indicates that the variables are non-stationary. The result of the ADF test statistics showed that the five variables viz; GDP_{PC}, EDS, DDS, ESP and DSP were not stationary in their level form but were stationary after the first difference. The null hypothesis of the presence of unit root in the series was rejected as indicated by their probability values which were less than 0.05 and the values of their calculated ADF (in absolute terms) statistics which were higher than their critical values. In

this direction, we say that their series are integrated of the order one, that is 1(1).

4.2 Johansen Co-integration Test

Having confirmed the stationarity of the variables at 1(1) we proceeded to examine the presence or non presence of co-integration among the variables. The co-integration test was carried out using the Johansen technique and it produced the following results:

The Trace statistic and the Max-Eigen statistic (Tables 2 & 3) indicated three co-integrating equations at the 0.05 level. The results of the Johansen Co-integration tests above strongly rejected the null hypothesis of no co-integration, i.e. no long-run relationship between the dependent and the independent variables in favour of at least 3, co-integrating vectors. This implies that there is long-run relationship between the dependent variable and the explanatory variables.

Table 1. Test for stationarity

Variable	Augmented Dickey Fuller statistic	Critical value	Probability	Level of significance %	Order of integration
GDP _{PC}	-4.257845	-2.976263	0.0026	5	1 (1)
EDS	-3.279825	-2.976263	0.0261	5	1 (1)
DDS	-3.921428	-2.976263	0.0059	5	1(1)
ESP	-4.603289	-3.012363	0.0017	5	1 (1)
DSP	-4.579357	-2.976263	0.0012	5	1 (1)

Source: Author's computation from unit root test (ADF)

Table 2. Test for Johansen co-integration using trace statistic

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	5 Per cent Critical Value
None *	0.882813	126.4789	69.81889
At most 1 *	0.725331	68.59132	47.85613
At most 2 *	0.594813	33.70226	29.79707
At most 3	0.258894	9.310292	15.49471
At most 4	0.044208	1.220794	3.841466

(**) denotes rejection of the hypothesis at the 5% level

Trace test indicates 3 cointegrating equation(s) at the 5% level

Source: Author's computation from E-views 4.1.

Table 3. Test for Johansen co-integration using max-eigen value

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	5 Per cent critical value
None *	0.882813	57.88758	33.87687
At most 1 *	0.725331	34.88906	27.58434
At most 2 *	0.594813	24.39197	21.13162
At most 3	0.258894	8.089498	14.26460
At most 4	0.044208	1.220794	3.841466

* denotes rejection of the hypothesis at the 5% level

Max-eigenvalue test indicates 3 cointegrating equation(s) at 5% level

Source: Author's computation from E-views 4.1.

Table 4. Result of the over parameterized GDP_{PC} model in Nigeria (ECM 1)

Dependent Variable: D(GDP _{PC})				
Variable	Coefficient	Standard error	t-Statistic	Prob.
C	0.001120	0.001970	0.568505	0.5811
D(GDPPC(-1))	-0.779323	0.274650	-2.837517	0.0162
D(EDS)	-5.52E-06	2.15E-06	-2.572352	0.0259
D(EDS(-1))	-5.24E-06	3.40E-06	-1.539336	0.1520
D(EDS(-2))	-2.25E-07	2.75E-06	-0.081866	0.9362
D(DDS)	4.35E-05	1.18E-05	3.693279	0.0035
D(DDS(-1))	8.73E-05	1.95E-05	4.469149	0.0009
D(DDS(-2))	-2.85E-05	1.66E-05	-1.710582	0.1152
D(ESP)	2.07E-05	9.34E-06	2.219276	0.0484
D(ESP(-1))	4.67E-06	9.93E-06	0.470415	0.6472
D(ESP(-2))	-3.21E-05	1.00E-05	-3.203072	0.0084
D(DSP)	8.15E-05	4.50E-05	1.809522	0.0977
D(DSP(-1))	-3.12E-05	6.55E-05	-0.475965	0.6434
D(DSP(-2))	4.59E-05	4.81E-05	0.953664	0.3607
ECM(-1)	-0.870081	0.331510	-2.624598	0.0236
R-squared	0.989171	Adjusted R-squared	0.975389	
F-statistic	71.77267	Prob(F-statistic)	0.000000	
Durbin-Watson stat	1.750459			

Source: Author's computation from E-views 4.1.

4.3 Error Correction Estimates

The coefficient of the explanatory variables in the error correction model measures the short-run relationship of the dependent variable and the explanatory variables. When conducting error correction technique, an over parameterized model is usually expressed to deal with the problem of misspecification in the model. This is followed by the parsimonious model, which is derived after some stepwise elimination of relatively insignificant parameters in the over-parameterized model.

The result in Table 4 indicated that most of the variables and their lags are not significant. This is expected possibly because of multicollinearity [38]. The R² of the over-parameterized model presented above however indicated that all the explanatory variables in the model accounts for 98.9171% of the systematic variation in GDP_{PC}. The f-statistical value of 71.77267 with the probability value of 0.000000 indicated that the whole model is significant. The error correction term i.e. ECM(-1) is negative and statistically significant at the 5% level. Its coefficient of -0.870081 implied that the speed at which the short-run equation converges to equilibrium in the long-run is high.

We however simplify the error correction model by estimating a parsimonious model (ECM 2) which is developed from the over-parameterized model (ECM 1).

The above results (Table 5) show that external debt stock (EDS) has a negative but not significant relationship with gross domestic product per capita (GDP_{PC}) in Nigeria. The negatively signed coefficient of EDS is not in conformity with our apriori expectation. A unit increase in EXD consequently means that GDP decreases by 0.000004 units. Domestic debt stock (DDS) has a positive and highly significant relationship with gross domestic product per capita (GDP_{PC}) in Nigeria conforming to our apriori expectation. A unit increase in DDS will lead to 0.000150 units increase in GDP_{PC}. External debt servicing (ESP) has a negative but not significant relationship with GDP_{PC}. A unit rise in ESP will cause GDP_{PC} to decrease by 0.000013 units. Also, domestic debt service payment (DSP) in conformity with our apriori expectation is highly statistically significant and negatively related to GDP_{PC}. A one per cent increase in DSP will cause GDP_{PC} to decrease by 0.000222 units.

The value of the coefficient of determination (R²) of 0.923031 shows that that the exogenous variables in the ECM equation, EDS, DDS, ESP and DSP explains over 92% of the systematic variations in GDP_{PC} while the remaining 8% variations in GDP are caused by factors outside the model captured in the stochastic term (μ). Taking into consideration the degree of freedom, the Adjusted R² dips down a little to 0.899940. This confirms the goodness of fit of the model.

Furthermore, the f-statistical value (39.97409) is highly statistically significant at the 5% level going by its probability value of 0.000000. This implies that EDS, DDS, ESP and DSP taken together, have significant linear relationship with the dependent variable, GDP_{PC}. The Durbin-Watson statistic of 1.460562 is indicative of the presence of a low positive serial autocorrelation in the model. The coefficient of the ECM(-1) is significant with the appropriate negative sign, indicating that the adjustment is in the right direction to restore the long-run relationship. It's coefficient of -0.893909 means that the present value in GDP_{PC} adjusts rapidly to previous changes in EDS, DDS, ESP and DSP specifically by about 89%.

4.4 Granger Causality Test

The result of Pairwise Granger's causality between the variable under study is provided in table 6. However, our focus is on the causal relationship public debt burden and economic growth and development in Nigeria. The null

hypothesis states that EDS and DDS does not Granger cause GDP_{PC}, and GDP_{PC} does not Granger cause EDS and DDS. The rule of thumb states that the probability of the f-statistic must be less than 0.5 to show causal relationship at the 5% level.

The probabilities for our causal variables EDS and GDP_{PC} are 0.98256 and 0.96959. Therefore we accept the null hypothesis and conclude that there is no causal relationship between external debt and gross domestic product per capita in Nigeria. Also, the probabilities for our causal variables DDS and GDP_{PC} are 0.00000 and 0.64365. Therefore we reject the null hypothesis and conclude that there is one way causal relationship between domestic debt and gross domestic product per capita in Nigeria. It is generally implied that no causal relationship exists between external debt burden and gross domestic product per capita while a one way causal relationship exist between domestic debt burden and gross domestic product per capita in Nigeria.

Table 5. Result of the parsimonious GDP_{PC} Model in Nigeria

Dependent variable: D(GDP _{PC})				
Variable	Coefficient	Standard error	t-statistic	Prob.
C	0.003991	0.002748	1.452257	0.1619
D(GDPPC(-1))	-1.043054	0.252601	-4.129256	0.0005
D(EDS(-1))	-0.000004	0.000004	-1.186486	0.2493
D(DDS(-1))	0.000150	0.000002	8.569639	0.0000
D(ESP(-1))	-0.000013	0.000008	-1.516067	0.1451
D(DSP(-1))	-0.000222	0.000043	-5.140327	0.0000
ECM(-1)	-0.893909	0.414923	-2.154398	0.0436
R-squared	0.923031	Adjusted R-squared	0.899940	
F-statistic	39.97409	Prob(F-statistic)	0.000000	
Durbin-Watson stat	1.460562			

Source: Author's computation from E-views 4.1

Table 6. Granger causality test

Pairwise Granger Causality Tests			
Date: 02/06/16 Time: 15:47			
Sample: 1986 2014			
Lags: 2			
Null hypothesis:	Obs	F-statistic	Probability
EDS does not Granger Cause GDPPC	27	0.01761	0.98256
GDPPC does not Granger Cause EDS		0.03092	0.96959
DDS does not Granger Cause GDPPC	27	38.7716	6.1E-08
GDPPC does not Granger Cause DDS		0.44954	0.64365
ESP does not Granger Cause GDPPC	27	0.36038	0.70145
GDPPC does not Granger Cause ESP		0.06557	0.93672
DSP does not Granger Cause GDPPC	27	17.7189	2.6E-05
GDPPC does not Granger Cause DSP		14.2629	0.00011

Source: Author's computation from E-views 4.1

4.5 Analysis of the Regression Results

The result of the Johansen co-integration test above revealed that there exists a long-run relationship between external debt stock, domestic debt stock, external debt servicing, domestic debt servicing and gross domestic product per capita in Nigeria. Result of the parsimonious ECM equation indicated that external debt stock and external debt servicing have insignificant negative relationship with gross domestic product per capita in Nigeria implying that external debt has been unproductive in terms of its contribution to the development process of the country. However, domestic debt stock (DDS) has a positive and highly significant relationship with gross domestic product per capita (GDP_{PC}) while domestic debt service payment (DSP) was statistically significant and negatively related to GDP_{PC} in Nigeria. The value of the coefficient of determination (R^2) of 0.923031 showed that that the exogenous variables in the ECM equation, EDS, DDS, ESP and DSP explains about 99% (ECM 1) and over 92% (ECM 2) of the systematic variations in GDP_{PC} . The f-statistical values, 71.77267 and 39.97409 for ECM 1 and ECM 2, were statistically significant at the 5% level going by their probability values of 0.000000 and 0.0000090 respectively, implying that EDS, DDS, ESP and DSP taken together, have significant linear relationship with the dependent variable, GDP_{PC} . The error correction method revealed that the lagged error correction term in ECM 1 and ECM 2 are high and statistically significant judging from its high and negatively signed coefficient. Finally, the Granger Causality test revealed that that no causal relationship exists between external debt burden and gross domestic product per capita while a one way causal relationship exist between domestic debt burden and gross domestic product per capita in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The objective of the study was to examine the impact of public debt on economic development of Nigeria. The study used annual time series data spanning 1986-2014. Economic development (proxied by GDP per capita) was regressed on external debt stock (EDS), domestic debt stock (DDS), external debt service payment (ESP) and domestic debt service

payment (DSP). The study employed the Augmented Dickey-Fuller test, Johansen co-integration test, Error Correction Method (ECM) and the Granger causality test.

The results of the study revealed that there exists a long-run relationship between external debt stock, domestic debt stock, external debt servicing, domestic debt servicing and gross domestic product per capita in Nigeria. Also, it was discovered that external debt stock and external debt servicing have insignificant negative relationship with gross domestic product per capita in Nigeria. However, domestic debt stock (DDS) has a positive and highly significant relationship with gross domestic product per capita (GDP_{PC}) while domestic debt service payment (DSP) was statistically significant and negatively related to GDP_{PC} in Nigeria.

It is therefore concluded based on the findings of this study that external debt of Nigeria has not been instrumental in enhancing the development of Nigerian economy and an increase in the level of debt servicing to the various creditors to the economy would reduce the level of economic growth and development in Nigeria. It is also ascertained that that domestic debt is superior to external debt in terms of overall economic growth and development, and that domestic debt accumulation contributes significantly to the development process of the nation as it increases the level of government expenditure leading to a rise in aggregate demand, output and employment of Nigeria.

5.2 Recommendations

The implication of the above findings is that the external debt does not play any important role in the development process of Nigeria and has been unproductive in terms of its contribution to the Nigerian economic development due to mismanagement and embezzlement of public funds, corruption and challenges of debt sustainability. The servicing of external debt is detrimental to Nigeria as funds that should have been put into investment in the economy are been used in servicing the debt. Hence, external debt is no means through which the growth and development of the country can be stimulated.

The accumulation of domestic debt contributes significantly to the development of the nation as it increases the level of government expenditure in the economy leading to a rise in aggregate demand, output and employment. However, the

servicing of domestic debt impedes on the growth and development in the economy.

Based on the findings of this study, the following recommendations are made:

- i. External debt does not play any important role in the development process of Nigerian economy and has been unproductive in terms of its contribution to the GDP per capita of the country. Hence, the government should reduce the level of external debt it accumulates overtime.
- ii. The accumulation of domestic debt contributes significantly in the growth and development process of the nation as it increases the level of government expenditure in the economy leading to a rise in aggregate demand, output and employment. Increasing the level of domestic debt accumulation would contribute significantly to the overall development of the economy.
- iii. The government should as a matter of urgency begin the process of diversifying its economic base to avoid over reliance on external and domestic borrowing to finance its deficits since both the servicing of external and domestic debt hinders the growth and development of the nation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Adepoju AA, Salau AS, Obayelu AE. The effects of external debt management on sustainable economic growth and development: Lessons from Nigeria. Munich Personal RePEc Archive (MPRA). 2007;2147:1-30.
2. Aluko F, Arowolo D. Foreign aid, the third world debt crisis and the implication for economic development: The Nigerian experience. *Afri J of Pol Sci & Int Rel.* 2010;4(4):120-127.
3. Safdari M, Mehrizi MA. External debt and economic growth in Iran. *J of Eco & Int Fin.* 2011;3(5).
4. Suleiman LA, Azeez BA. Effect of external debt on economic growth in Nigeria. *J of Eco & Sust Dev.* 2012;3(8):71-78.
5. African Economic Outlook. Nigeria; 2012. Available:www.africaneconomicoutlook.org
6. Hamdi H, Sbia R. Dynamic relationships between oil revenues, government spending and economic growth in an oil-dependent economy. *Eco Modelling.* 2013; 35(C):118-125. Available:<http://dx.doi.org/10.1016/j.econmod.2013.06.043>
7. Matthew A, Mordecai DB. An empirical examination of crude oil, government expenditure and economic growth of Nigeria from 1981 to 2014. *J of Har Res in Mgt.* 2016;2(2):216-236.
8. Rapu S. Assessment of Nigerian domestic debt sustainability. *CBN Eco & Fin Rev.* 2003;2(42):41-66.
9. Asogwa RC, Ezema CC. Domestic Government debt structure, risk characteristics and monetary policy conduct: Evidence from Nigeria. *Macroeconomic policy challenges for low Income Countries;* 2005. Available:<http://www.imf.org/external/np/res/seminars/2005/macro/pdf/asogwa.pdf>
10. Okechukwu AC, Anele OP. External debt: a tool for, or a threat to the economic growth of Nigeria. *International Journal of Science and Research;* 2012. ISSN 2319-7064
11. Aminu U, Ahmadu AH, Saliu M. External debt and domestic debt impact on the growth of the Nigerian economy. *International Journal of Educational Research.* 2013;1(2):70-85.
12. Obadan MI, Ujah D. Foreign capital flows and external debt: Perspectives on Nigeria and the LDCs group. Oyo: Ibadan University Press; 2004.
13. Udo AB, Antai AS. Opportunity cost of Nigeria's external reserves. *J of Eco & Fin.* 2014;5(3):2321-5925.
14. Oyejide TA. Nigeria and the IMF. Ibadan, Nigeria: Heinemann Books Ltd; 2004.
15. Arnone M, Bandiera L, Presbitero A. External debt sustainability: Theory and empirical evidence; 2005. Available:<http://www3.unicatt.it/dipartimento/DISES/allegati/ArnoneBandieraPresbitero.pdf>
16. Abula M, Ben DM, Ozovehe AI. The impact of corruption on external debt in Nigeria: A co-integration approach. *Adv in Soc Sci Res J.* 2016;3(4):84-95.
17. Ozurumba BA, Kanu SI. Domestic debts and economic growth in Nigeria. *J of Eco & Sust Dev.* 2014;1:5.
18. Matthew A, Mordecai DB. The impact of domestic debt on agricultural output in

- Nigeria (1985-2014). *British J of Eco, Mgt & Trade*. 2016;13(3):1-12.
19. Jhingan ML. *Macroeconomic theory*. 12th ed. New Delhi: Vrinda publications Ltd; 2010.
20. Adejumo VA, Adejumo OO. Prospects for achieving sustainable development through the millennium development goals in Nigeria. *Euro J of Sust Dev*. 2014;3(1):33-46.
21. Abdullahi YZ, Aliero HM, Abdullahi M. Analysis of the relationship between external debt and economic growth in Nigeria. *Interdisciplinary Rev of Eco & Mgt*. 2013;3(1):1-11.
22. McDonald C. Debt capacity and developing country borrowing: A survey of the literature. *IMF Working Paper*. 1982;29(4).
23. Momoh A, Hundeyin T. Perspectives on political economy in Anifowose R, Enemu F. (Eds). *Elements of politics*. Lagos: Malthouse Press Limited; 1999.
24. Ajayi SI, Khan MS. External debt and capital flight in sub-saharan Africa. *IMF Working Paper*. 2000;68(5):1-18.
25. Central Bank of Nigeria. *Statistical Bulletin*, December; 2014.
Available:<http://statistics.cbn.gov.ng/cbn-onlinestats>
26. Okon EB, Maji, A, Denies CO. The relative potency of external and domestic debt on economic performance in Nigeria. *European J of Hum & Soc Sci*. 2013;1(27):14-29.
27. Debt Management Office. *Annual Reports and statement of account*; 2014.
Available: www.dmo.gov.ng
28. Choong C, Lau E, Liew VK, Puah C. Does debts foster economic growth?: The experience of Malaysia. *Afri J of Bus Mgt*. 2010;4(8):1564-1575.
29. Barik A. Government debt and economic growth in India. *Centre for Economic Studies and Planning (CESP)*. 2012;1-16.
30. Amassoma D. External debt, internal debt and economic growth bound in Nigeria using a causality approach. *Cur Res J of Soc Sci*. 2011;3(4):320-325.
31. Uma KE, Eboh FE, Obidike PC. Debt and debt service: Implications on Nigerian economic development. *Asian J of Soc Sci & Hum*. 2013;2(2):275-284.
32. Tajudeen E. Public debt and economic growth in Nigeria: Evidence from granger causality. *Ame J of Econ*. 2012;2(6):101-106.
33. Kehinde JS. Debt and debt volatility: Effect on economic growth in Nigeria. *Asian Eco & Fin Rev*. 2012;2(2):325-329.
34. ThankGod OA. The impact of public debt on private investment in Nigeria: Evidence from a nonlinear model. *Int J of Res in Soc Sci*. 2014;2(4):1-9.
35. Emmanuel OO. An empirical analysis of the impact of public debt on economic growth: Evidence from Nigeria. *Can Soc Sci*. 2012;8(4):154-161.
36. Jakob C. Domestic debt markets in sub-saharan Africa. *Special Data Section. IMF Staff Paper*. 2005;52(3):518-538.
37. Adenike AA, Adekunle SS, Abiodun EO. The effects of external debt management on sustainable economic growth and development: Lessons from Nigeria. *Munich Personal RePEc Archive*. 2007;2147.
38. Gujarati DN, Porter DC. *Basic econometrics*. New York, California: McGraw Hill International Edition; 2009.

APPENDIX I

Data for Regression

Year	GDP _{PC} (N'Billion)	EDS (N'Billion)	DDS (N'Billion)	ESP (N'Billion)	DSP (N'Billion)
1986	0.001563	41.4524	28.4387	4.24	0
1987	0.002184	100.7891	36.7891	3.1	0
1988	0.0029	133.9563	47.0296	8.47	0
1989	0.004102	240.3937	47.0496	16.59	0
1990	0.004943	298.6144	84.0931	32.15	0
1991	0.005563	328.4538	116.1987	33.51	0
1992	0.008701	544.2641	177.9617	47.04	0
1993	0.010564	633.1444	273.8364	40.11	0
1994	0.013235	648.813	407.5827	40.34	0
1995	0.026814	716.8656	477.73389	35.47	0
1996	0.036272	617.32	419.9756	41.07	23.15
1997	0.036754	595.9319	501.7511	32.76	32
1998	0.034136	633.017	560.8302	27.85	41.89
1999	0.039048	2577.3744	794.8066	159.89	79.57
2000	0.054636	3097.3839	898.2539	175.21	108.49
2001	0.054721	3176.291	1016.974	238.23	155.4
2002	0.060327	3932.8848	1166.0007	141.34	170.64
2003	0.07479	4478.3293	1329.6845	234.04	200
2004	0.083905	4890.2696	1370.3252	234.26	203.64
2005	0.104673	2695.0722	1525.9066	1181.52	150.45
2006	0.129537	451.4617	1753.2591	865.55	135.1467
2007	0.140347	438.8909	2169.6376	1271.54	252.63
2008	0.160681	523.2541	2320.3072	54.63	471.28
2009	0.15957	590.4371	3228.0290	63.73	281.54
2010	0.341951	689.8375	4551.8219	53.27	354.126
2011	0.383575	896.8496	5622.8432	54.1	537.39
2012	0.42476	1026.9039	6537.5363	46.15	720.55
2013	0.461321	1373.58	7118.9789	46.77	794.1
2014	0.498796	1631.52	7904.02	54.97	865.81

Source: CBN statistical bulletin, 2014 and DMO, 2014

© 2016 Matthew and Mordecai; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.