

## GROWTH OF NIGERIAN ECONOMY ON PRIVATE AND PUBLIC DEBT IN NIGERIA

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### Abstract

*This paper empirically investigated the effect of public debt on economic growth in Nigeria, covering the period, 1981-2018. Employing a co-integration approach, the study revealed, prominent among others that a significant short-run relationship exists between Nigeria's public debt and economic growth. Also, the study further showed that whereas both the domestic debt and external debt variables were statistically significant, only the latter failed the a priori expectation test and thus, exerts a negative contribution to economic growth in Nigeria. On the other basis of the findings, the study concluded that most of the external borrowings in Nigeria end up being misappropriated. Hence, the recommendations that there should be proper ways of monitoring public borrowing, with special emphasis on all external debts contracted with a view to ensuring that misappropriation is drastically reduced if not eradicated.*

*Keywords: Public debt, Co-integration Approach, Economic Growth.*

### Introduction

Sustainable economic growth is a major concern for any sovereign nation most especially the Less Developed Countries (LDCs) which are characterized by low capital formation due to low levels of domestic savings and investment (Adepoju, Salau and Obayelu, 2007). It is expected that these LDCs when facing a scarcity of capital would resort to borrowing from external sources so as to supplement domestic saving. Aliko and Arowolo (2010); Saifari and Mehrizi (2011); Silaiman and Azeez (2011) Soludo (2003) asserted that countries borrow for two broad reasons; macroeconomic reason, that is, to finance high level of consumption and investment or to finance budget deficit which has led to the creation of external debt (Osinubi and Olaleru, 2006).

Public debt constitutes a medium used by countries to bridge their deficits and carry out economic projects that are able to increase the standard of living of the citizenry and promote sustainable growth and development. Hameed, Ashraf and Chaudary (2008) stated that public borrowing ought to accelerate economic growth especially when domestic financing is inadequate. Public debt also improves total factor productivity through an increase in output which in turn enhances Gross Domestic Product (GDP) growth of a nation. The importance of public debt cannot be overemphasized as it is an ardent booster of growth and thus improves living standards thereby alleviating poverty. However, it is widely recognized in the international community that excess foreign indebtedness in most developed countries is a major impediment to their economic growth and stability (Audu, 2004; Mutasa, 2003).

Developing countries like Nigeria have often contracted large amount of public debt that has led to the mounting of trade debt arrears at highly concessional interest rates. Gohar and Butt (2012) opined that accumulated debt service payments create a lot of problems for

countries especially the developing nations, reason being that a debt is actually serviced for more than the amount it was acquired and this slows down the growth process in such nations. The inability of the Nigerian economy to meet its debt service payments obligations has resulted in debt overhang or debt service burden that has mitigated against her growth and development (Audu, 2004). The genesis of Nigeria's debt service burden dates back to 1978 after a fall in world oil prices. Prior to this occurrences, Nigeria had incurred minor debts from World Bank in 1958 with loan of USD28million for railway construction and the Paris Club debtor nations in 1964 from the Italian government with loan od USD13.1 million for the construction of the Niger dam. The first major borrowing of USD1 billion known as the "Jumbo Loan" was in 1978 from the International Capital Market (ICM) (Adesola, 2009).

Public borrowing has a significant impact on the growth and investment of a nation up to a point where high levels of external debt servicing sets in and affects the growth as the focus moves from financing private investment to repayments of debts. Pattilo, Poirson and Ricci (2002) asserted that at low levels, debt has positive effects on growth but above particular points or thresholds, accumulated debt begins to have a negative impact on growth. Furthermore, Fosu (2009) observed that high debt service payments shift spending away from health, educational and social sectors. The obscure motive behind public borrowing which is to boost growth and development rather than get drowned in a pool of debt service payment which eats most of the nation's resources and hinders growth due to high interest payments on external debt.

Nigeria as a developing nation has adopted a number of policies such as the Structural Adjustment Programme (SAP) of 1986 to liberalize her economy and boost Gross Domestic Product (GDP) growth. In a bid to ensure the implementation of these policies, the government embarked upon massive borrowings from multilateral sources which resulted in a high external debt service burden and by 1992 Nigeria was classified among the heavily indebted poor countries (HIPC) by the World Bank.

According to Omotoye, Sharma, Ngassam and Eseonu (2006), Nigeria is the largest debtor nation in sub Saharan Africa. When compared with the sub Saharan nation such as South Africa, Nigeria's external debt stock follows an upward pattern over the years while the former is relatively stabilized (Ayad and Ayad, 2008).

Nigeria's external debt stock rose from USD 28,454.8 million in 1997 to USD31,041.6 and USD37,883.1 million in 2001 and 2004 with 80.3, 64.67 and 52.58 percentages of GDP respectively. On the other hand, South Africa's external debt stock stood at USD25,272.4 million, USD24,050 million and USD27,112.4 million in 1997, 2001 and 2004 with 16.98 20.34 and 12.52 percentage of GDP respectively.

The unabated increase in the level of external debt service payment has led to huge imbalance in fiscal deficits and budgetary constraints that have militated against the growth of the Nigerian Economy. The resultant effect of the debt quagmire in Nigeria could create same unfavourable circumstances such as crowding out of private investment, poor GDP growth (Okonjo-Iweala, 2011). All told, huge external debt does not necessarily imply a slow economic growth; it is a nation's inability to meet its debt service payments fueled by inadequate knowledge on the nature, structure and magnitude of the debt in question (Were, 2011). It is no exaggeration that this is the major challenge faced by the Nigerian economy. The inability of the Nigerian economy to effectively meet its debt servicing requirements has exposed the

nation to a high debt service burden. The resultant effect of this debt service burden creates additional problem for the nation particularly the increasing fiscal deficit which is driven by higher levels of debt servicing. The debt crisis reached its maximum in 2003 when USD2.3 billion debt owed by Nigeria.

Despite the debt relief of USD18 billion received by Nigeria from the Paris Club in 2005 the situation remains largely the same (Bakare, 2010). The question then becomes, why has public borrowing not accelerated the pace of growth of the Nigerian Economy? There are various empirical studies that have been conducted to investigate the impact of either external or domestic debt burden on economic growth in Nigeria which have arrived at different results applying different methodologies (Bhattarchanya and Nguyen, 2003; Fosu, 2007; Hunt, 2007; Ayadi, 2008). The present study therefore investigates the impact of aggregate external and domestic public debt on economic growth in Nigeria, with special emphasis on gross domestic product, covering the period, 1981-2018.

The need to pursue policies aimed at promoting economic growth and development has continued to dominate public discourse. Government's responsibility of providing education, health, electricity and other forms of physical infrastructures to uplift the wellbeing of its citizenry has given rise to accumulation of debts, which like a monster is difficult to chase away. It has been argued that public debt generally is incurred because of the need to finance government expenditures.

When government revenues are inadequate to finance its expenditures, a gap therefore exists that must be filled through borrowing either internally or externally. Hence, public debts generally arise because of the need to finance the obvious resource gap between the ever-increasing public expenditure and the dwindling government revenue, as is over the years the case of Nigeria.

According to Paito (2012), deficit is financed either through borrowings (domestically or foreign) or use of foreign reserve to settle the deficit. Paito (2012) further posits that by borrowing, it means that the government has to agree on the terms of payments which usually are attached with strange regulations. Hence, this will perpetrate the deficit as more money will be spent by government on servicing the debt which creates more expenditure and deficit. He argued that persistence of this may result in high and variable inflation, debt crises with crowding out of investment and growth coupled with macro-economic imbalance in general.

However, it has also been said that there is nothing intrinsically wrong in obtaining loans whether foreign or domestic, provided such funds are invested appropriately in creating wealth and improving the quality of lives of the people. Public borrowing in Nigeria has failed to produce the desired economic benefits. Rather it has been characterized by strange terms, occasioning high interest payments and unpalatable debts service agreements coupled with this high incidence of corruption among government officials who connive with some of the lender agencies to defraud Nigeria billions of naira. In addition to this, is the problem of accepting loans from sources with very difficult repayment conditions.

However, what is striking is that in spite of all these sentiments expressed against public borrowing to finance government expenditures, the federal and state governments have seen nothing wrong with this development. Accordingly, the Director general of the Debt Management Office (DMO) Mr. Abraham Nwankwo, had this to say;

“Nigeria’s debt profile USD32.5 billion as at September 2010. Only last month, the federal government secured another USD195 million about (₦28.67 billion) loan package from World Bank, and when that is added to the existing external commitment to various international financial institutions and groups, Nigeria’s external debt portfolio would have soared above (₦558.6 billion). And the World Bank Component would also have risen to about ₦327 billion (USD 2.31 billion). In 2006, Nigeria’s external debt overhang was USD3.54 billion; in 2007, it was USD 3.67 billion; in 2008, it was USD3.67 billion; in 2008, it was USD3.72 billion. In 2009 it went down to USD3.62 billion and at March 2010 the external debt rose to an uncomfortable level of USD4.3 billion”.

It is therefore curious that Nigerian government has continued to expose the country to another round of public borrowing just few years after the country exited from inglorious club of debtor nations. It is on this premise that this study empirically investigates the effect of public debt on economic growth in Nigeria.

Invariably, this study aims to evaluate the impact of public debt on the level of economic growth in Nigeria measured in terms of gross domestic product. More specifically, the study will accomplish the following objectives;

- i. To determine the relationship between public debt and economic growth in Nigeria.
- ii. To determine the effect of aggregate domestic debt and economic growth in Nigeria
- iii To determine the effect of aggregate external debt and economic growth in Nigeria.
- iv. To ascertain the effect of inflation and economic growth in Nigeria.

The burden of public debt has been a matter of great concern to the Government of Nigeria and the nation as a whole which has resulted in the nation embarking upon drastic actions like dividing the nation’s scarce resources in servicing of debts annually. This action has thus led to disinvestment in the economy, and as result a fall in the domestic savings and the overall rate of growth and economic development.

Therefore, this study is significant as its findings will provide a basis which will aid policy makers in proffering policies aimed at managing the debt crisis situation in Nigeria much more efficiently than before. The study will equally be important to students and other researchers as it opens new frontiers in the area of public debt and economic growth in Nigeria.

The study seeks to analyze public debt impact on economic growth in Nigeria. In order to fully capture its effect on the economy, a thorough empirical investigation will be conducted covering a period; 1981-2018. This period was chosen to cover the period after the oil collapse and also capture the post debt-relief era.

Hence, in the way of limitation, the study focuses only on Nigeria, and so no attempt is made to cover other countries of the world or other aspects of the Nigerian economy.

### **Review of Related Literature theoretical Review**

Public debt has been described as one of the major indicators of the macroeconomic variables, which forms the image of countries in the international markets. Generally, it is one of the determinants of foreign direct investment flows. Prudent management of public debt increases economic growth and stability via resources mobilization with low borrowing cost and limited financial risk exposure (Christabell, 2013). Public debt can also be described as the total debts of a country, which include debts of governments at all levels such as local, state and national governments, thereby showing how many public expenditures are financed through

borrowing instead of taxation (Makau, 2008 cited in Christabell, 2013). Public debt is one of the approaches used in financing government projects, even though the approach is not the only way the government can finance its operations as she can also create money to monetize its debts, and by creating money to finance government operations, the need to pay interest may be removed (Martin, 2009).

According to Kibui (1997), the fundamental factor that causes public debt to rise over-reliance on external borrowings to augment capital formation in the nation's economy. If the interest payment is high, the deficit on the current account will also be high thereby resulting in the huge debt burden. Isaac and Rosa (2016) also postulated that sub-national governments acquire debt mainly to financing public investment projects that complement the private investments to translate into improved economic growth, from which the contracted debt becomes sustainable and not risk for their finances. Nassir and Wani (2016), opined that a debt implies an obligation to pay money, deliver goods, or render service under an express or implied agreement. Hence, they described public debt as the total debts of the nation which include debt of national, state and local governments that revealed how much public spending is financed through borrowing instead of taxation. Obi (2014), argued that most theoretical literature on the nexus between external debt stock and growth-focused largely on the adverse effects of debt overhang. Debt overhang according to Krugman (1998), is defined as a condition by which the expected repayment on external debt falls short of the contractual value of debt. If the level of a nation's debt is expected to exceed the country's ability to repay with some probability in the future, expected debt service is likely to be increasing function of the output level of the country. The returns from investing in the domestic economy may effectively be taxed away by existing foreign creditors and investment by foreign and domestic investors, and hence, economic growth is discouraged.

### **The Ricardo Theory of Public Debt**

This theory of public debt was propounded by David Ricardo in 1819. In his Principles, Ricardo developed the theory of public debts by stating that the ordinary and extraordinary spending of government were mainly payments made to sustain unproductive laborers. Therefore, any saving from the government expenses would be included in the income if not to the capital of the contributors. Ricardo in a letter written to McCulloch in 1816 believed that public expenditure itself rather than from the methods adopted to finance such expenditure (Precious, 2015).

The theory postulated that financing public expenditure should be focused on drawing the funds from the liquid resources of the community. This is because to focus on the economy, does not make any significant difference whether the funds were raised by loans or taxes. Accordingly, Ricardo's argument about payments of interest on public debt deals with a transfer of wealth from one pocket to another within the society. Thus, when countries borrow, it is uncertain whether the loan would be used productively or unproductively, it deters economic growth in the economy (Okoye, Modebe & Evbuomwan, 2013). In conclusion, this theory is relevant to this study as it would help to determine whether actually, the government expenditures in Nigeria have over time been used productively or unproductively according to the theory.

### **The Keynesian theory of Public Debt**

The Keynesian theory of public debt was developed partly as a result of the economic crisis created by the great depression of the 1930s in the 19th century. In the theory, constant unbalanced budgets and rapid increase in public debt is a national asset rather than a liability and hence, conscious deficit spending is very essential to the economic growth of nations because, it leads to full employment (Precious, 2015). The Keynesian theory postulated that the economy tends to equilibrium at full employment, which was an attack on the classical principles of budgeting and public finance. By assumption, Keynes assumes that if there were unemployed resources that the private sector could not employ, these resources can be put to use by adopting an unbalanced budget.

Accordingly, Keynes upheld that a rise in public debt via the multiple effects would raise the National Income. It linked public borrowing with deficit financing and urged the government to borrowing for all purposes in order to increase effective demand in the economy, which would, in turn, result in increased employment and output. Lerner (1955), opined that due importance should be given to certain advantage of public borrowing while considering burden thesis of public debt. The economic effect of public debt is assessed in the consideration of the nature of the income generating potentialities. In modern theory, it was postulated that additional flow of income generated by increased debt to finance expenditure leads the payment of taxes to serve the debt. During the period of unemployment, public increase contributes to current capital for the nation. More so, the theory stated that public borrowing promotes the development of more and more institutionalized sources of saving a like stock, capital market, insurance companies, and Bank.

### **Keynesian Growth theory**

The Keynesian theory specifically focused on the role of money, the principles of effective demand and on the function of savings transition to investments and multiplication effect. While Harrod started from the accelerator principle, Dommar begun from the multiplication effect. In the end, the two authors came to the same conclusion that the output growth is jointly determined by the national capital-output ratio and national savings ratio. In economic theory, the theory is simply referred to as the Harrod-Domar growth model (precious, 2015). The model expressed through a mathematical equation, showed the existence of a direct relationship between saving and economic growth. The model is written as  $Y = f(k,s)$ ; where Y depicts output, k represents a national capital-output ratio and , s is the national savings ratio.

### **Neo-Classical Growth Theory**

This theory is dated back to 1956, when Robert Solow put forward a formal model which postulated that the key variable in growth is labor productivity (i.e output per worker). For this model, the role of technological change became imperative, and even more important than capital accumulation. The model assumed that output (Y) is produced by employing technology, labour, and physical capital. The model is expressed as  $Y = f(A,K,L)$ ; where Y is the aggregate output, A is the number based on the current state of technology, K is the quantitative measure of the size of the stock of manufactured capital, and L the quantity of labor employed during that period of time. K, A, and L are the only factors of production explicitly included in the model. All factors are required for the production of output, with the

exponents in the equation indicating their relative contributions. Increase in output growth results from increases in the factors of production and productivity that increases as a result of technological change, in addition to changes in organization and practices (Precious, 2015).

### **Theoretical Framework for the study**

This study adopts the neo-classical growth theory as the theoretical framework guiding this research work (The work). The theory postulated that output (Y) is produced by employing technology, labor and physical capital [i.e.  $Y = f(A, K, L)$ ] (Precious, 2015). The theory believed that an increase in the growth rate of output results from increase in the factors of production and productivity that increase as a result of technological change alongside the changes in organization and practices. Thus, an increase in government expenditure could be justified if it results from a rise in education and health services because they are assumed to be the most important investments in human capital. It is against the back drop that the neo-classical growth theory was adopted considering the fact that public debt if borrowed to finance health, education, and development investments, it is referred as being productive, which can contribute positively to economic growth via increased labor, capital, and technology (Eze, Nweke and Atuma, 2019)

### **Empirical Review**

Panagiotis (2018) empirically investigated the nexus between public debt and the determinants of economic growth such as private and government consumptions, investment, trade openness and population growth in Greece through the applications of unit root test, and population growth in Greece through the applications of unit root tests, and auto-regressive distributed lag (ARDL) model. The unit root tests indicated mixed integration or order one among the variables. The results of the ARDL model revealed a long-run relationship between variables. It also showed that private and government consumption, investment and trade openness had positive effects on economic growth; while government debt and population growth had a positive effects on economic growth. The study also addresses the break effects issue between debt and growth depends on debt breaks. Particularly, at debt levels before 2000, the effect on economic growth diminishes rapidly and the growth impact becomes negative.

Alejandro and Ileana (2017), examined the impact of government debt on gross domestic product in 16 Latin American economies including Bolivia, Argentina, Chile, Brazil, Costa Rica, Colombia, Dominican Republic, Mexico, Honduras, Panama, Nicaragua, Peru, Paraguay, Venezuela and Uruguay for the period 1960 – 2015 using Two-Stage Least Squares 2-SLS in the analysis. The variables employed in the analysis include the initial level of GDP per capita, the growth rate of GDP per capita, gross government debt as a share of GDP, investment rate proxied as gross fixed capital formation as share to GDP and population growth rate. The results indicated that debt has a positive impact on GDP and population growth rate. The results indicated that debt has a positive impact on GDP growth but declines to close to zero beyond public debt-to-GDP ratios between 64% and 71%; up to this threshold, additional debt has a stimulating impact on growth.

Nassir and Wani (2016), investigated the relationship between public debt and economic growth in Afghanistan for the period 2008-2012 using analysis variance (ANOVA). The variables employed in the study include the gross domestic product (GDP), government stock.

Advances from Commercial banks and external debt have negative and insignificant influence on the gross domestic product (GDP) in Afghanistan. Thus, the study recommended that the government should develop a framework for recording and monitoring all contingent liabilities and also formulate and implement a policy for the management of the contingent liabilities. More so, it recommended that the government should continue to implement wider economic reform policies that promote investment in Treasury bonds.

Isaac and Rosa (2016), examined the effect of public debt and public investment on economic growth in Mexico for the period 1993 -2012 using dynamic models of panel data and the generalize method of moments in the analysis. The variables used in the study were a nominal budget deficit, public income, public spending, volume of interest paid, the nominal effective rate of interest, and the total value of domestic public debt. The empirical results showed that public debt has a positive influence on public investment and economic growth in the economy.

Naeem (2015), examined the consequence of public debt from economic growth investment in the Philippines for the period 1975 -2010 using the autoregressive distributed lag technique. The results showed that public external debt had a negative and significant impact on economic growth and investment, which confirmed the existence of a debt overhang effect. However, the study could not confirm the existence of crowding out hypothesis since debt servicing revealed insignificant relationships with investment and economic growth in the economy. The study also indicated that domestic debt had a negative influence on the investment and positive effect on economic growth. Therefore, the study recommended that for economic growth to be accelerated, the developing countries should adopt those policies that are likely to result in reducing their debt burden, and must be allowed to reach unsustainable level.

Precious (2015), examined the effects of both public external and domestic debt on economic growth in Swaziland for the period 1988 – 2013 by applying unit root test and ordinary least square (OLS) approach. The variables used in the study were real gross domestic product growth rate, external debt, domestic debt, government expenditure, and inflation rate. The study discovered that external debt had insignificant influence on economic growth in Swaziland, while domestic debt had a positive and significant impact on economic growth. Hence, the study recommended that the government of Swaziland should encourage sustainable external and domestic borrowing and utilize the funds in productive economic activities.

Lucky and Goodday (2017) empirically examined the nexus between the public debts structure and the growth performance of the Nigerian economy for the period 1990 – 2015 using simple and multiple regression analyses. The variable used in the analysis include gross domestic debt, external debt, and total debt. The results of the simple regression showed that total public debt have a positive and significant impact on gross domestic product in Nigeria. Similarly, the results of the multiple regression analysis revealed that whereas the external debt is negative and significant to economic growth, the domestic debt has a positive and significant effect on the economic growth in Nigeria. Therefore, the study recommended that Nigeria should pursue domestic debts policies as against its external debts counterpart.

Elom-Obed, Odo, Elom, and Anoke (2017), carried out research on the nexus between public debt and economic growth in Nigeria for the period 1980 – 2015 using cointegration test,



Vector Error Correction Model (VECM) and Granger casualty test. The variables employed in the investigation were the real gross domestic product, domestic private savings, external debt and domestic debt. The empirical results revealed that external debt and domestic debt have negative and significant effects on economic debt. Granger cause real gross domestic product (RGDP) with casualty runs from external debt and domestic debt to RGDP. Stephen and Obah (2017), analyzed the impact of national savings on economic growth in Nigeria over the period of 1990 -2015 with the application of descriptive statistics analysis and Ordinary Least Square (OLS). The variables utilized in the investigation were the gross domestic product (GDP) and national savings. The result indicated that national savings had a positive impact on gross domestic product (economic growth) in Nigeria.

Abula and Ben (2016) examined the effect of public debt on economic development in Nigeria from 1986 to 2014. Johnsen cointegration test, Error Correction Method (ECM) and the Granger Casualty test were utilized in the analysis. The variables employed in the study include gross domestic product, external debt stock, domestic debt stock, external debt service payment. The results showed evidence of long-run relationship among the variables. The results of the ECM indicated that external debt stock have a negative and insignificant impact on economic development in Nigeria while domestic debt stock has a significant influence on economic development. The results also showed that domestic debt service payment has a negative and significant effect on economic development in Nigeria. Therefore, the study recommended that the government should reduce its external debt stock level but should accumulate more domestic debt accumulation as it will contribute significantly to the development of the development of the economy.

Similarly, Okwu, Obiwuru, Obiakor, and Oluwalaiye (2016), investigated the effects of domestic debt on economic growth in Nigeria from 1980 to 2015 through the applications of descriptive statistics, unit root test, cointegration test, and error correction model (ECM) in the analysis. The variables used in the investigation were the real gross domestic product, domestic debt stock, domestic debt service expenditure, and average banks' lending rate. The results indicated evidence of the significant and positive impact of external debt service on economic growth while domestic debt service expenditure had a negative and significant impact on the growth of the economy. On the other hand, the bank's lending rate had a negative and significant effect on growth in Nigeria.

More so, Igodika, Jessie and Andabai (2016), investigated empirically the nexus between domestic debt and growth performance of Nigerian economy from 1987 to 2014 through the application of ordinary least square (OLS) technique, Gross domestic product, domestic debt, interest rate, and inflation rate were the variables used in the analysis. The empirical results indicated that the interest rate had a negative and significant effect on the gross domestic product (GDP) in Nigeria. The results also showed that domestic debt had a positive and significant influence on the gross domestic product in Nigeria.

Peter and Ferdinand (2016), studied the nexus between debt burden and development tangle in Nigeria for the period 1980 – 2014 by employing unit root test, cointegration test and Granger causality test. Real gross domestic product (RGDP), domestic debt, external debt, domestic debt burden, external debt burden, total debt burden, and total debt/GDP ratio were the variables employed in the study. The results of the co-integration indicated evidence of long-run

relationship among the variables. More so, the Granger Causality results revealed that various debt stocks granger cause the performance of the growth of the Nigerian Economy.

Sunday, Ngozi, Michael, and Ogochukwu (2016) carried out research on the impact of public sector borrowings on interest rates, prices, and output in Nigeria. Vector Autoregressive (VAR), Granger causality test, impulse response, and variance decomposition of the various innovations were engaged in the analysis to study the impact of the variables. The variables specified in the model of the study include real gross domestic product (RGDP), prime lending rate, external debt, domestic debt, and composite consumer price index. The estimation results showed that external debt stock raises the prime lending rate. The results indicated that external and domestic debts had an insignificant impact on the output and general price level.

## **Research Methodology**

### **Research Design**

In order to examine the impact of public debts on economic growth in Nigeria for the period 1981 to 2018, unit root test through the application of the Phillip-Peron unit root test, co-integration and vector autoregressive model (VAR) were analyzed in the study. The unit root test is conducted to examine the order of integration among the series used in the investigation. The co-integration and vector error correction model, on the variables, and then estimate the model of public debt and economic growth in the Nigeria. The variables utilized in the model consist gross domestic product (GDP), aggregate external debt (TXD), aggregate domestic debt (TDD), and the inflationary rate proxied with the consumer price index (CPI). Data used in the analysis are obtained from the statistical bulletin of the Central Bank of Nigeria (CBN), 2018 publications.

### **Model Specification**

This model specification follows the theoretical framework of this study (neo-classical growth theory), with modification. The theory assumed that output (Y) is a function of technology, labor, and physical capital. The equation of the neo-classical growth theory is expressed as:  $Y = f(A, K, L)$  Where Y is the aggregate output, A is the number based on the current state of technology, K is the quantitative measure of the size of the stock of manufactured capital, and L is the quantity of labor employed during that period of time (Precious, 2015).

The above model has three important predictions. First, increasing capital relative to labor creates economic growth, since people can be more productive given more capital. Second, poor countries with less capital per person grow faster because each investment in capital produces higher return than rich countries with little capital. Third, because of diminishing returns to capital, economies will eventually reach a point at which any increase in capital will no longer create economic growth. An increase in government expenditure means an increase in government acquisition of goods and services for current or future use. However, this increase is justified if it emanated from an improvement in health services and education as they are believed to be the most important investments in human capital. This research adopts this theory, considering the fact that if public debt is borrowed to finance education, health and development investments, it is considered to be productive and expected to positively contribute to economic growth through improved capital, labor, and technology. This will result in an increase in government spending. Them instead of having the function:  $Y = f(A, K, L)$ , the model specification is modified as:  $GDP = f(TDD, TXD, INFL)$  .....3.1

Where; GDP is Gross Domestic Product, TDD id Domestic Debt, TXD is the External Debt, and INFL is the inflationary rate of consumer price index. In linear function, the relationship is specified thus:

$$GDPT = \beta_0 + \beta_1TDD_t + \beta_2TXDt + \beta_3INFL_t + U_t \dots\dots 3.2$$

In log function, it is illustrated as:  $LGDP_t = \beta_0 + \beta_1LTDD_t + \beta_2LTXD_t + \beta_3LINFL_t + U_t + U_t \dots\dots\dots 3.3$

Where;

LGDP is the explained variable; whereas LTDD, LTXD, and LINFL are the explanatory variables;  $U_t$  is the error term;  $\beta_0$  = constant term; L is the log function, whereas  $\beta_s$  are the coefficients of the regression equation.

Hence;

GDPT = Gross domestic product in year, t;

TDDt = Total domestic debt in year, t;

INFL = Inflation rate in year, t.

Meanwhile, the apriori expectation is expected to take the form;

$\beta_1 > 0$ ;  $\beta_2 > 0$ ;  $\beta_3 > 0$ .

### Data Presentation and Analysis

This section focuses on the analysis and interpretation of the data collected mainly through secondary sources as indicated in section three. Therefore, here we estimate, analyze and interpret the model of this report. Also, in carrying out the tests, other support analytical tools include percentages, charts and so on, where applicable. However, due to the nature of the hypothesis, the multiple linear regression model was employed after conducting the unit root, granger causality and co-integration tests using the E-views package. Therefore, the multiple regression analysis was adopted for the model in order to account for the relationship between the public debt variables and economic growth proxied by gross domestic product, for the period, 1981 – 2018.

### Unit Root Test Results

This section begins with the analysis of the unit root test, recalling that the unit root test is essentially conducted to confirm the stationarity status of the individual data set and hence its quality for inclusion in the analysis to avoid spurious results.

**Table 1: Unit Root Test for the Variables Employed.**

		Philip-Peron Unit root Test			
Variable		T-Statistics	Critical value	Order of Integration	Significance
1	GDP	-7.918615	-3.632900	1(2)	1%
2	INFL	-10.97355	-2.630762	1(1)	1%
3	TDD	-3.425086	-2.632688	1(2)	1%
4	TXD	-2.393118	-1.950394	1(1)	5%

The unit root test is carried out using the Philip-Peron test in order to determine whether the data set is stationary and the order of integration. While, two of the explanatory variable (external debt and inflation) turned out to be stationary at first difference, the other two, (gross domestic product and domestic debt), were significant at second difference, thus necessitating the application of the vector autoregressive modelling (VAR).

### The Co-integration Result

Thus, with the data set turning out to be stationary, we then applied the Johansen co-integration test which adopts no exogenous variables. The essence of this test is to establish the presence of a short or long-run equilibrium existing between the variable and hence the estimated regression equation result. This result is presented in table 4.2.

**Table 2. Co-integration and Test Results**

		Johanssen Co-integration Test	
Model		Number of Co-integration Equation	Nature of Equilibrium
1	Public Debt and Economic Growth	2	Long-run is suspected

**Source: E views 9.0 Econometrics Package.**

The above Johansson co-integration tests revealed evidence of 2 co-integrating equations for the GDP model. However, the result of the vector error correction model (VECM) failed to prove the existence of a long run relationship between the explanatory variables and economic growth in Nigeria (See VECM result in the appendices. On the basis of this therefore, the result is estimated in the short run.

### Granger Causality Test

These result produced evidence on bi-casual relationship between aggregate domestic debt and gross domestic product, while gross domestic product granger causes aggregate external debt. Other pair of inflation and gross domestic product produced no statistically significant causal relationship.

### The Influence of Public Debt on Economic growth in Nigeria/Test of Short-run Causal Effects Test of the Model Significance, ANOVA Approach

This hypothesis states thus;

$H_{01}$ : There is no significant relationship between public debt and the level of economic growth in Nigeria.

In order to determine the relationship between public debt and the level of economic growth in Nigeria, we refer to table 4.3. here, with the F-ratio calculated of 609.3256, having a p-value (0.0000) being less than 1%, we therefore, reject  $H_{01}$  and accept  $H_A$  to conclude that at 1% level of significance, there is a significant relationship between public debt and the level of economic growth in Nigeria. The resulting estimated equation is given as;

$$\text{GDP}_t = 5191.93 + 10.34\text{TDD}_t - 1.45\text{TXD}_t - 106.35\text{INFL}_t + U_t \dots\dots 3.2$$

**Table 3:** ANOVA Results for the Hypotheses on the Relationship between Public debt Components and Economic Growth | Nigeria, 1981-2018

Dependent Variable: GDP

Method: Least Squares

Date: 01/23/20 time: 13:24

Sample: 1981 2018

Included observations: 38

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5191.931	1677.231	3.095538	0.0039
INFL	-106.3451	54.77267	-1.941573	0.0605
TDD	10.34179	0.299975	34.47553	0.0000
TXD	-1.453025	0.591732	2.455544	0.0193
R-squared	0.981740	Mean dependent var		27569.37
Adjusted R-squared	0.980129	S.D. dependent var		37734.90
S.E. of regression	5319.330	Akaike info criterion		20.09538
Sum squared residual	9.62E+08	Schwarz criterion		20.26776
Log likelihood	-377.8123	Hannan-Quinn criter.		20.15671
F-statistic	609.3256	Durbin-Watson stat		2.636320
Prob(F-statistics)	0.000000			

Source: E-VIEWS 9.0

From table 3, both aggregate domestic debt and aggregate external debt exert significant effects on economic growth, at least, within the period under investigation, 1981-2018. Generally, the model also indicates that the changes in the explanatory variable taken together have been able to explain at least, 98% of the variations in the dependent variable, gross domestic product, thus, leaving only about 2% to chance occurrence.

### Discussion of Findings

This study empirically determined the effect of public debt on economic growth in Nigeria, covering the period, 1981-2018, to reveal that a significant relationship exists between public debt and economic growth in Nigeria with the model exhibiting a short-run casual relationship. Both the aggregate domestic debt and aggregate external debt exert significant effects on economic growth. Also, whereas both the domestic debt and inflation variables, with their positive and negative coefficients, respectively met the a priori expectation, the external debt variable, on the other hand, with the negative coefficient, failed the a priori expectation test

### Conclusion and Recommendations

#### Conclusions

Thus, the conclusion from this therefore, is that the negative coefficient of the external debt variable is indicative of the fact that external borrowings in Nigeria, within the period under review, ended up being misappropriated, since the borrowings contributed negatively to economic growth.

### Recommendations

On the basis of these findings therefore, this paper recommends that the Nigerian Debt Management Office should pay more attention to external borrowings into Nigeria. To this end, agencies like the Economics and Financial Crimes Commission need to fish out offenders that engage in external debt misappropriation and prosecute them without delays to serve as deterrent. Also, since short-term domestic borrowings manifest more under gross domestic product, more of the short-term domestic borrowings should be contracted than the external borrowings, in order to engender economic growth.

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