

Domestic Debt Structure and Economic Growth in Nigeria, 1980 -2018

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Abstract:-The main objective of the study is to examine the impact of public debt structure on Nigeria's economic growth in from 1980 to 2018. Conceptual framework of the study was based on the Keynesian theory of public debt which opined that changes public debt structure has effect on aggregate demand and economic growth. The study used secondary data collected from the Central Bank of Nigeria statistical Bulletin and the World Bank Economic Development Index (WDI). The model specification adopted for the study was a modified version of Okon (2013) to accommodate development stock. The study applied the Engle-Granger (1979) Error Correction Model estimation techniques. The unit root test result revealed that all the variables were not stationary at level, but became stationary after 1st differencing. The co-integration results showed that there is long run relationship among the variable. The estimation of the error correction model (ECM) revealed that development stock had negative, but significant relationship with economic growth. Treasury bond impact on the economic growth was found positive but insignificant. The impact of Treasury bill was found negative, but also insignificant. It was also observed that variations in public debt structure accounted for about 67% variation in economic growth during the period under review. It was therefore recommended that government should diversify the economy to reduce debt Borden on economic growth.

Keywords: Domestic debt, Debt Overhang. Economic growth, Treasury bill, Treasury bond

I. INTRODUCTION

Domestic debt is mainly debt owed to holders of government securities such as Treasury Bills (TBs), Development stock (DS) and Treasury Bond (TB). The government usually borrow by issuing securities which are (IOUs) to the lenders. According to Musgrave and Musgrave (2010) government usually borrow or incur debt for two reasons. The first is when government revenue falls short of expenditure. The second is for the reason of paying off maturing loan. Government could borrow from the domestic sources, especially, if domestic financial market is developed or overseas if where the domestic market is underdeveloped. Thus, government borrowing or public debt can be classified into domestic debt and external debt.

Domestic debt refers to the portion of country's debt borrowed within the confines of the country (Ozumba & Kanu, 2012). The government borrows by issuing financial instruments in the form of securities such as treasury bill, for short term borrowing, usually with maturity period ranging from 30 days to 360 days, development stock usually run from five years to twenty-five years, and bonds carrying maturity

period of between 10 years and above. The distribution of public debt among the various instruments is the structure of domestic debt. In essence, the structure of domestic debt is the spread, distribution or the proportion of the various debt instruments in the domestic debt. Structure of domestic debt can also be explained from maturity angle. In terms of maturity, there are 0-1, 1-5, 5-10, 10-20 and 20 years and above. Also, structure could be explained with respect to the types of holders: Thus, we have public holders and private holders.

Appropriate applications of domestic borrowing can lead to economic growth and thus engender better standard of living. But the right application of domestic debt requires adequate understanding of the structure and the effect of domestic debt structure on the macro-economic performance of the economy. According to the Keynesian theory, increases in the public expenditure financed by domestic debt will stimulate aggregate demand and economic growth. the neoclassical on the contrary, say public debt has adverse effect on aggregate demand and on economic growth in the long run. There is incomplete knowledge of the effect of domestic debt structure on the performance of the domestic economy. Where there is knowledge gap, the management of domestic debt, and the entire economy would become difficult and subject to abuse. In most cases, economic growth and development are compromised. In the light of the importance of understanding the structure of public domestic debt and the effects of the public debt structure on the overall performance of the macro-economy, this study is undertaken to examine and explains the relationship between structure of domestic debt and economic growth in Nigerian economy.

The study will expose the real effect of federal government of Nigeria debt structure on the economic growth in Nigeria. This is important and beneficial to the debt management office, the federal government for effective fiscal policy management and proper timing.

The remaining part of the paper is structured as follows: section two (2) is the Literature Review: It reviewed theoretical and empirical literature. Section three (3) presents the Method of Study: It explains the method employed in the collection and analysis of the research data. Section four (4) is resents and discussed the empirical result; while section five (5) summarized and conclusion from the study

II. LITERATURE REVIEW

The focus of this section is to present brief theoretical and empirical reviews of literature on public debt and economic growth. Primarily, it focused on the review of theoretical and empirical literature relevant to the study.

2.1 Theoretical Literature

The theoretical literature regarding the impact of debt on economic growth is vast and varied. The present review does not intend to exhaust it. However, a few of the theories are reviewed below.

In the Ricardian theory, government debt is considered equivalent to future taxes. According to the Ricardian Equivalence Theory, consumers are forward looking and so internalize the government's budget constraint when making their consumption decisions. So, a debt financed deficit or tax cut does not produce increase in wealth. The increase in government debt does not affect consumption and hence, it does not change aggregate demand. The rational consumer facing current deficit saves for future rise in taxes and consequently total savings in the economy are unaffected. A decrease in government saving is matched by increase in private savings, in view of unchanged total savings, investment and interest rates are also unaffected and so is the national income. This theorem is used as an argument against tax cuts and spending increase aimed to boost aggregate demand. The bottom line of the theory is that government deficit financed by domestic debt (borrowing from the domestic economy) has no effect on national income. It is neutral.

Keynesian theory views 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 the Keynesian theory (Keynes, 1936), when the government embarks on domestic 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. The funds when injected back into the economy by the government lead to a multiple increase in aggregate demand, causing increase in output and employment. Hence, public domestic borrowing can be used to influence macro-economic performance of the economy, especially, economic growth. On the other hand, the indirect effect of domestic borrowing is its effect on investments. The reduction in private investment results to a fall in aggregate demand, output and employment (Jhingan 2010). But the fall in aggregate demand is not as strong as to completely rule out the positive effect. Hence domestic debt has minimal crowding out, and is effective for stimulating the economy, especially in stimulating growth; not neutral according to the neoclassical.

The neoclassical theory of public debt is articulated in Franco-Modigliani (1961) domestic debt theory. According to this theory, public 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 also do not suffer from macroeconomic instability. On the other hand, the indirect effect of debt is its effect on investment. The transmission mechanism through which debts affect growth is its reduction of the resources available for investment by debt servicing. 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. Thus, in the neoclassical theory, domestic borrowing crowds out private investment and lead to fall in capital formation and productivity growth in the long run. It has adverse effect on economic growth.

Krugman (1988) coined the term of "debt overhang" to describe a situation in which a country's expected repayment ability on external debt falls below the contractual value of debt. Cohen's (1993) theoretical model posits a non-linear impact of foreign borrowing on investment as suggested by Clements (2003) who indicates that this relationship can be arguably extended to growth. Thus, up to a certain threshold, foreign debt accumulation can promote investment, while beyond such a point the debt overhang will start adding negative pressure on investor's willingness to provide capital.

In the same vein, the growth model proposed by Aschauer (2000), in which public capital has a non-linear impact on economic growth can be extended to cover the impact of public debt. Assuming that government debt is used at least partly to finance productive public capital, an increase in debt would have positive effects up to a certain threshold and negative effect beyond it.

2.2 Review of Empirical Literature

There is large body of empirical literature on the relationship between domestic debt and economic growth, within and outside the country. This section reviewed some empirical studies on the effect of domestic debt on economic growth.

In a cross-country study, Kalulumia (2018) analyzed the impact of government debt on interest rates of United States, Germany, the United Kingdom and Canada using the Johansen error correction model (ECM) and the general portfolio balance model. The variables used were exchange rate, real GDP, interest rate and stock of domestic assets. The evidence generally indicated the absence of causality in the long-run between government debt and interest-rate related variables for all the four countries.

Traum and Yang (2017) estimated the crowding out effects of government debt for the U.S. economy using a New Keynesian model which includes the following variables: real aggregate consumption, investment, labor, wages, nominal interest rate, gross inflation rate, and fiscal variables such as

capital, labor, consumption tax revenues, real government consumption and investment, and transfers. The result of the estimates revealed that whether private investment is crowded in or out in the short term depends on the fiscal shock that triggers debt accumulation.

Onyeiwu (2015) carried out an investigation on the relationship between domestic debt and economic growth in Nigeria using the error correction modeling approach to regression analysis. He used quarterly data between 1994 and 2008 for GDP, foreign exchange rate, credit to private sector, budget deficit and money supply. The result showed that the domestic debt holding of government was far above the healthy threshold of 35 percent of bank deposits, which resulted in a negative effect on economic growth. He recommended that government should maintain a debt-to-bank deposit ratio of below 35 percent.

Damian and Chukwunonso (2014) investigated the empirical issues pertaining to the structure and composition of domestic debt and its impact on private investment in Nigeria. The study employed multiple regression models using secondary data from 1970 to 2012. The study found that domestic debt has significantly negative impact on domestic private investment in Nigeria.

Ozurumba and Kanu (2014) examined the impact of the different component of domestic debt on economic growth of Nigeria using multiple regression technique and discovered that in the short-run, Federal Government of Nigeria Bonds (FGN) proved to have a positive and significant relationship with economic growth. In the long-run, Treasury Bills and the lagged value of GDP variable were positively significant.

Udoka and Ogege (2013) examined the extent of public debt crisis and its consequences on economic development using data on the Nigerian economy for the period 1970 to 2010. They employed the error correction modeling framework with co-integration techniques to test the relationship between per capita GDP and other macroeconomic variables (foreign reserve, debt stock, investment, debt service payment). The test revealed public debt may reduce the rate of development. Hence, they recommended that, to avoid the crisis of economic development in Nigeria, public debt should be reduce to minimal level.

Peter, Denis and Chukwuedo (2013) examined the relationship between government domestic debt and economic growth in Nigeria using unit root and co-integration test. Findings from the study show that domestic debt and credit have positive and significant relationship with GDP, while debt servicing has an inverse relationship with GDP. Also, government expenditure has a positive but insignificant relationship with GDP.

A study by Ekperiware and Oladeji (2012) examined the effect of external debt relief on economic growth in Nigeria using regression technique on quarterly time series of external debt, external debt service and real gross domestic product

and applying chow-test to the regression result for stability. They found that there was a structural break in the relationship between economic growth and external debt in Nigeria during the period 1975 to 2005. The study concluded that the external debt relief made more resources available for economic growth in Nigeria and recommended a shift towards discretionary concessional borrowing.

Obademi (2012) used the Ordinary Least Squares (OLS) technique in an augmented Cobb Douglas model to analyzing the impact of public debt on economic growth in Nigeria. The variables used were the external debt, domestic debt, total debt and budget deficit. He found that the impact of debt on economic growth was negative and quite significant in the long-run, though in the short-run, the impact was useful. He concluded that though the impact of borrowed funds on the Nigerian economy was positive in the short-run, its impact in the long-run depressed the economy as a result of inefficient debt management.

Onyeiwu (2012) examined the relationship between domestic debt and economic growth in Nigeria using ordinary least squares method (OLS) to analyze quarterly data between 1994 and 2008. Result of the study indicates that domestic debt holding of government is far above a healthy threshold of 35 percent of bank deposit. This portends crowding out effect on private investments. The study affirmed that the level of debt has negative effect on economic growth in Nigeria. The study recommends that government should maintain a debt – bank deposit ratio below 35 percent.

In another attempt to study the impact of debt management on macroeconomic performance in Nigeria, Ezike and Mojekwu (2011) applied the OLS technique to examine the impact of total debt stock, total external debt stock, and debt service ratio on real GDP. Their results revealed that foreign capital inflow was positive as expected while debt service/export ratio was negative as expected. This was because debt capital adds to capital formation and positively impacted on economic growth. On the other hand, debt-service ratio reflects capital outflow and consequently deteriorates the performance of a country and thus reduces real GDP. It also confirms the theoretical expectations that debt service/export ratio diverts resources away from the debtor country.

In contrast, a recent study by Reinhart and Rogoff (2010), which analyzed through simple correlation statistics, the developments of public debt and the long-term real GDP growth rate in a sample of 20 developed countries over a period spanning about two centuries (1790 – 2009), found that: (i) The relationship between government debt and long-term growth is weak for debt/GDP ratios below a threshold of 90% of GDP: (ii) Above 90%, the median growth rate falls by one percent and the average by considerably more.

In an empirical investigation of the relationship between domestic debt and economic growth in Nigeria, Adofu and Bula (2010) using ordinary least square regression techniques

explored the relationship between domestic debt and economic growth in Nigeria. The result showed that domestic debt affected the growth of the economy negatively. They recommended that government domestic borrowing should be discouraged and that increasing the revenue base through tax reform programmes should be encouraged.

Gurley and Shaw(2008) examined the impact of domestic debt the Kenyan economy using the Barro Growth Regression Model (BGRM). The results indicated that although the position of Kenyan public debt has shifted in favour of domestic debt. Domestic debt expansion had a positive but no significant effect on economic growth during the period of the study (1975 – 2007).

There is no consensus with respect to the impact of public domestic debt on economic growth. Study by Anyanwu and Erhija-Kpor (2004) found the effect of domestic debt as a ratio of GDP on economic growth negative, while study by Gurley and Shaw (2005) found the effect of public debt in terms of total debt on economic growth in Kenya positive. All the studies in Nigeria economy did not use development stock. All the studies used treasury bills and total debt. This study will include development stock as this debt components constitutes a significant parts of the total debt to see the effect of this debt items on economic growth in Nigeria.

III. METHODOLOGY

This section explains the method employed for the collection and analysis of the study data.

3.1 Model Specification

The analytical framework of this study is anchored on the Neo-classical theory of debt. The Neo-classical theory of domestic debt as explained by Franco-Modigliani asserts that increases in domestic debt has significant effect on the growth of the domestic economy. Following the Neoclassical theory, and the empirical literature reviewed, the present study adopted the model of Okon (2013) modified to accommodate Development stock. Hence, the functional relationship between domestic debt structure and economic growth in Nigeria could be specified as

$$RGDP = f(DS, TBD, TB) \quad 3.1$$

The implicit function above could be transformed into explicit linear econometrics model as:

$$\text{LogRGDP} = \beta_0 + \beta_1 \text{LogDS} + \beta_2 \text{LogTBD} + \beta_3 \text{LogTB} + \epsilon \quad 3.2$$

Where RGDP is Real Gross Domestic Product (Proxy for economic growth) DS is Development Stock, TBD is Federal Government of Nigeria Treasury Bond, and TB is the Federal Government of Nigeria Treasury Bills β_0 is the intercept term, $\beta_1 \dots \beta_3$ are the Variable Coefficient ϵ is a white noise error Term

3.2 Variables in the Model

There are two kinds of variables in the model. They are the dependent variable and the independent variable.

Dependent Variable:	Description
Economic Growth	logarithmic value of real GDP per capital
Independent Variables:	
Treasury Bill	sovereign debt security maturing in one year or less
Treasury bond	sovereign debt security with maturity period 10- 30 years
Development stock	sovereign security for the purpose of investing in a development project

Source :Authors computation

Hence, the *apriori* expectation for the variables are positive $\beta_1 > 0$, $\beta_2 > 0$, and $\beta_3 > 0$

3.3 Nature and Sources of Data

The data required for this study are secondary in nature and consist of annual time series of the following variables: Federal government of Nigeria Treasury Bill issues (TB), Federal Government of Nigeria Treasury bond (TBD), Federal Government of Nigeria Development Stock (DS), and Real Gross Domestic Product (RGDP). All data were collected from 1980 to 2018. Data for Federal government of Nigeria Treasury Bills, Treasury Bond, and Development stock were collected from the Central Bank of Nigeria (CBN) Statistical Bulletin (various issues). Data for Real Gross Domestic Product (RGDP) were collected from the World Bank's World Development Indicator (WDI) on the internet, and from the National Bureau of Statistics (NBS). Supplementary materials were collected from text-books, journals, newspapers, internet resources, published and unpublished work of other researchers.

3.4 Method of Data Analysis

The data analysis techniques employed is the ordinary least square approach using the Engle-Granger(1978) error correction model analysis techniques. The ordinary least square method was chosen because of the statistical properties of its estimates. The Engle-Granger Error Correction Model analysis techniques has four important steps of unit root analysis, cointegration analysis, Error Correction Model Estimation, and Model Diagnostic test

3.4.1 Unit Root Test

Time series data always have the property of non-stationarity (Maddala, 2007). Running regression on non-stationary data would lead to spurious regression. (Yule, 1926, Granger, & Newbold 1979) Therefore, it is always necessary to; first, examine the unit root property of the variables before running regression on them. Hence, we began the analysis of our research data with unit root test. There are many different types of unit root test in the literature. In this study, the Augmented-Dickey-Fuller (ADF) method was employed

(Dickey and Fuller, 1979). There are three main forms of the ADF: pure random walk, random walk with drift, and random walk with drift and trend. This study used the ADF model with constant and deterministic trend. Hence, the model for test was specified as thus;

$$\Delta Y_t = \alpha_0 + \alpha_1 t_{-1} + \beta_2 Y_{t-1} + \beta_3 \Delta Y_{t-1} + \mu_1 \quad (3.3)$$

The null hypothesis for test is $H_0: \beta_1 = 0$ as against the alternative $H_1: \beta_1 < 0$. The ADF would be completed by the Phillip-Perron test (Phillip & Perron, 1988)

3.4.2 Co-integration Test

As some authors have observed, it is wrong to proceed to running regression on differenced variables without examining whether a long run relationship exists among non-stationary variables. Long run relationship is not captured by regression on differenced variables. It is only if there is no long run equilibrium relationship among the variables, we should proceed to running regression on difference variables.

Hence there is the need to examine the long run relationship of the variables. Co-integration test was conducted to examine the equilibrium relationship among the model variables. Here it was used to examine whether there exists a stable long run relationship between real gross domestic product growth rate and domestic debt structure variables. The Johansen Co-integration Approach was employed using both Trace and Maximum Eigen value statistics (Johansen, 1988)

3.4.3 Error Correction Model Estimation

According to Granger Representation Theory if two or more non-stationary variables are co-integrated, then they have a valid error correction mechanism, and their relationship can be expressed as error correction model (ECM). Therefore, the error correction model of the relationship between Real Gross

Domestic Product (RGDP) and domestic debt structure as expressed in 3.2 was re-specified as Error Correction Model as:

$$\Delta RGDP_t = \sum_{i=1}^n \delta_1 \Delta RGDP_{t-i} + \sum_{i=1}^n \delta_2 \Delta DS_{t-i} + \sum_{i=1}^n \delta_3 \Delta TBD_{t-i} + \sum_{i=1}^n \delta_4 \Delta TB_{t-i} + ECM_{t-1} + V_1 \quad 3.4$$

The ECM model was estimated using the One Step Engle-Granger method.

3.4.4 Model Diagnostic Test

The following diagnostic test were carried out using the approaches specified below.

Test	Method
Residual Normality	Jarque-Bera Method
Serial Correlation:	Breusch Godfrey (BG)
Heteroscedasticity	Autoregressive Conditional Heteroscedasticity (ARCH) approach
Model Specification	the Ramsey RESET
Model Stability	Brown et al. (1975) CUSUM and CUSUMSQ test

Null Hypothesis

1. Residual normally distributed, 2. Error terms are not serially correlated 3. Variance of error terms constant, 4. Model correctly specified, 5. Functional model stable throughout the period 1980 to 2018.

All tests were carried out at 0.05 levels of significance.

IV. EMPIRICAL RESULTS AND DISCUSSION

4.1 Unit Root Test

Table 4.2 Unit Root Test Result

Augmented Dickey-Fuller (ADF)			Philip-Person (PP)			
Variable	Level	1 st Difference	Order	Level	1 st difference	Order
RGDP	0.175	-3.6567	1(1)	0.5236	-3.9220	1(1)
DS	-2.4476	-5.3069	1(1)	-0.1631	-2.9717	1(1)
TBD	-1.3855	-4.3510	1(1)	-1.3266	-5.1910	1(1)
TB	-1.01918	-3.0247	1(1)	-0.6611	-4.0308	1(1)

Source: Bview 9.0 computer Printout

The results of the unit root test as presented in Table 4.1 showed that all the variables have unit root at level and are therefore not stationary. After 1st differencing all the variables became stationary at 0.05 level. Hence, they are 1st difference stationary or 1(1) series. Having identified the order of integration of the variables, the next stage is to examine the integrated variables for co-integration. Hence, the analysis

moved to the stage of examining the integrated variables for co-integration. The Johansen (1988) Co-integration approach was employed for examining cointegration among the integrated variables. The results of the co-integration are presented below as:

4.2 Cointegration Analysis

Table 4.2a: Unrestricted Cointegration Rank Test Result (Trace)

Hypothesis	$r \leq 0$	$r \leq 1$	$r \leq 2$	$r \leq 3$
Trace Statistic	60.2737 (0.0023) *	24.3420 (0.1864)	8.3568 (0.4280)	1.4698 (0.2254)
5% Critical Value	47.8561	29.7970	15.4947	3.8414

Source: Eview 9.0 computer Printout

Table 4.2b: Unrestricted Cointegration Rank Test Result (Maximum Eigen Value)

Hypothesis:	$r \leq 0$	$r \leq 1$	$r \leq 2$	$r \leq 3$
Maximum Eigen Value	35.9317 (0.0034) *	15.9852 (0.2257)	6.8869 (0.5026)	1.4698 (0.2254)
5% Critical Value	27.5834	21.1316	14.2646	3.8414

Source: Bview 9.0 computer Printout

Figures in parenthesis are the Mackinnon-Hang-Mitchells p-value.

*Indicate rejection of null hypothesis at 0.05 level.

The co-integration results presented in Table 4.1 shows co-integration among the variables. Both the Trace and the maximum Eigen value statistics indicated at least 1 co-integration equation in the model. The results of the co-integration analysis boils down to the fact that there is a stable

long run relationship among the variables. The variables have equilibrium values.

4.3 Error Correction Model Estimates

Table 4.3: parsimonious Error Correction Model Estimate Results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(RGDP(-1))	0.927144	0.222190	4.172752	0.0003
DLOG(DS)	-0.266987	0.094462	-2.826396	0.0093
DLOG(DS(-1))	-0.329462	0.103258	-3.190676	0.0039
DLOG(TBD(-3))	0.047383	0.041156	1.151299	0.2610
DLOG(TB)	-0.017447	0.021157	-0.824649	0.4177
ECM(-1)	-0.059252	0.077541	-0.764132	0.0422
R-squared	0.668882			
Adjusted R-squared	0.572306			

Source: Eview 9.0 computer Printout

The parsimonious error correction model results are presented in Table 4.3. The model has Real Gross Domestic Product as the dependent variable. The independent variables are the lag values of Real Gross Domestic Product, Development stock, Treasury bond and treasury bills issues.

The result revealed that the relationship between development stock and economic growth is negative. The relationship between development stock and growth represented by growth of the economic growth is negative and statistically significant after 1 period lag. This result agrees with the *a priori* expectation for this variable. Also, the result corroborates the findings of Onyeiwu (2012) and Damian and Chukwunonso (2014) which found negative and significant impact of development stock on economic growth in Nigeria. However, the result contradicts the findings of Ozurumba and Kanu (2014) which examined the impact of the different components of domestic debt on economic growth in Nigeria

and found that development stock had positive and significant effect on economic growth. This implies that the falling volume of development stock was associated with economic growth. In particular fall in volume of development stock issue by 1% brought about increase in economic growth of 0.33% after one period lag and is statistically significant.

The impact of Treasury bond on economic growth was positive during the period under review. Increase in Treasury bond value by 1% brought about increase in economic growth of about 0.05% after 3 years lag. However, the coefficient of Treasury bond is statistically insignificant at 0.05 level. The effect of Treasury bill issues on economic growth is negative and statistically insignificant. Again, this is contrary to the *a priori* expectation for this variable. Specifically, increase in total debt by 1% brought about, on the average, decrease in economic growth by about 0.02% during the period under review.

All the various components have impact on economic growth in Nigerian during the period of the study. The impact of Development stock is significant, while the impact of treasury bills and bonds are not significant. In essence. The impact of the various components is small, individually, but account for about 67% variation in economic growth. This shows that domestic debt and domestic debt structure account significant effect on economic growth in Nigeria

The model R^2 has a value of 0.6688. This implies that, altogether, Development stock, Treasury bond, and treasury bills issues accounted for about 67% variation in the level of economic growth during the period under review. Other

variables outside the model accounted for the remaining 33% variations in the level of real GDP changes during the period under review.

The model ECM-1 coefficient has a value of -0.05925 and is statistically significant. The value of the ECM-1 coefficient measures the speed of adjustment of the dependent variable to any disequilibrium. In his particular case, the ECM coefficient of -0.05925 means that the speed of adjustment is 6%. This implies that about 6% of any discrepancy between the current value and the long run or equilibrium value will be adjusted to within one year.

4.2.4 Model Diagnostic Test

Table 4.5: Result of Model Diagnostic Test

Hypothesis	Test	Statistic	P-value	Remark
1. Residual normality	Jacque-Bera (JB)	$X^2=0.3843$	0.8252	Accepted
2. Serial correlation	Breusch-Godfrey (BG)	$X^2=1.1997$	0.0573	Accepted
3. Homoskedasticity	ARCH	$X^2=1.5219$	0.4672	Accepted
4. No Misspecification	Ramsey RESET	$F(2,22) = 1.6748$	0.2308	Accepted
5. Stability	CUSUM	-	-	Accepted

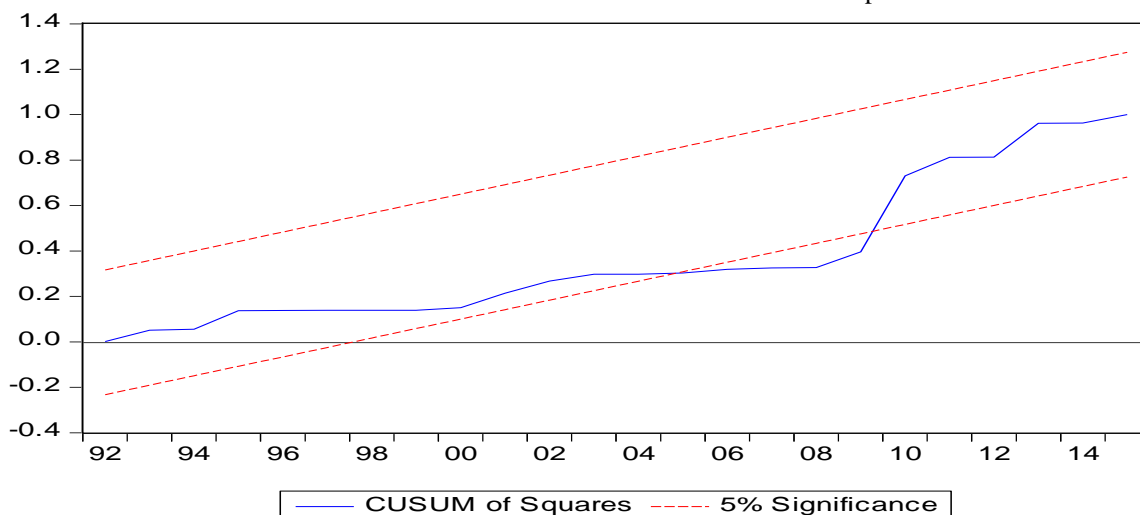
Source: E-view computer printout

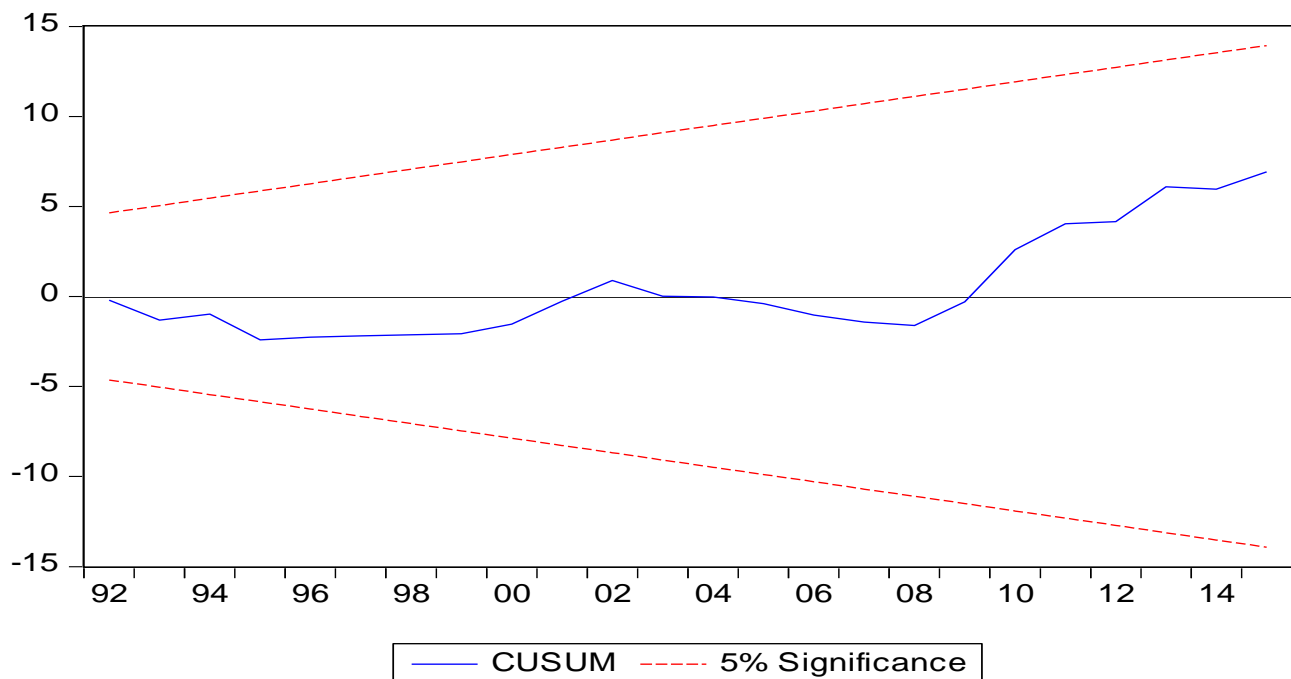
The Jacque-Beratest result shows that the residuals are normally distributed with mean zero. The Breusch-Godfrey (BJ) test of series correlation (auto correlation) shows that there is no serial correlation. The error terms are independently and identically distributed. The Auto Regressive Conditional Heteroskedasticity (ARCH) test shows that there is no incidence of heteroscedasticity. The variance of the error terms over time is constant (homoscedasticity). In addition, the Ramsey RESET model specification test shows that the model employed for the empirical analysis was correctly specified. That is, the model adequately captured the true relationship among the variable.

Stability test was conducted using the Cumulative Sum (CUSUM) and the Cumulative Sum of Square developed by Brown et al. (1975). If the plot remains within the 5% critical

band, then the model is stable, otherwise, the model is not stable. The CUSUM and CUSUMSQ plot is presented as figure 4.1a and 4.1b. The CUSUM plot show that the model is stable throughout the period of the study, while the CUSUMSQ shows that the model was not stable.

The existence of normally distributed residuals, absence of serial correlation, and distributed heteroscedasticity implied that the residuals are independently and identically distributed with mean zero and constant variance. Hence, $e \sim \text{IID}(0, \delta)$. According to the Gauss-Markov theorem, if the residual terms have the three properties above; that is, normally distributed, no serial correlation, and homoscedastic, $e \sim \text{IID}(0, \delta)$, then, the estimates from such regression are the best Linear Unbiased and Efficient (BLUE) estimators. Thus, by extension, implies that the estimates are dependable.





V. SUMMARY AND CONCLUSION

The main objective of the study was to examine the effect of Federal Government of Nigeria's debt structure on Nigeria's economic growth from the period 1980 to 2018. The study adopted an *ex post* quasi-experimental research design approach. The analytical framework of the study was based on the Keynesian theory of public debt which says that changes in public debt has impact on aggregate demand and by extension economic growth. The empirical model of the relationship between public domestic debt and economic growth was specified and estimated as Error correction model.

The data for the analysis were secondary in nature and were sourced from various resources including the Central Bank of Nigeria statistical bulletin and the World Bank's world development indicator. The empirical model was estimated using the Engle -Granger One-step method. The estimated results indicated that there is a long run relationship between domestic debt structure and Economic Growth in Nigerian economy. Furthermore, the result revealed that development bond had positive, but insignificant impact on Nigeria's economic growth. Treasury bills and treasury bonds had negative, but statistically insignificant impact on Nigeria's economic growth during the period under review. Altogether, variations in public domestic debt structure accounted for about 67% variation in the level of Nigeria's economic growth during the period under review.

In this study mixed results were observed between some components of domestic debt structure and economic growth. However, the result implies that increasing domestic debt has negative consequence on the growth and development of Nigerian economy. Economic growth is important for

development and job creation. More importantly, economic growth is the only means of improving the standard of living. For a country like Nigeria, growth is important because of the need for job creation to reduce unemployment and poverty. For Nigeria to achieve sustainable growth, there is the necessity to reduce domestic debt in the economy. Since Treasury bond has the smallest destabilizing effect on the economy's growth, the fiscal authority and the Debt Management Office can improve on its use in the structure of domestic debt. The debt structure should be skewed towards the use of treasury securities which has a ready and developed market.

The conclusion from this study is that the current level and structure of the Nigeria's domestic debt, which consists more of short-term debt instruments, have negative effect on the growth potentials of the Nigerian economy. Restructuring toward longer term money market instrument such as bonds, will reduce the destabilizing effect of domestic debt on economic growth.

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