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# EXTERNAL DEBT, DEBT SERVICING AND ECONOMIC GROWTH IN NIGERIA

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## Abstract

The period, 2005-2016, when Nigeria was free from the debt overhang, due to \$18 billion debt written off, there is now another panic than another debt crisis that may loom in Nigeria, considering the rising debt profile of the country. In view of this, the study seeks to investigate the impact of external debt servicing on GDP in Nigeria. The study adopted econometric technique of Autoregressive Distributive Lag (ARDL) model and applied on a time-series data for Nigeria, spanning between 1985 through 2016. The empirical study is based on the ARDL bound test estimated results indicate a long-run association among the variables. The results show that external debt servicing is negatively related with economic growth both in the short-run and long-run. The evidence suggests that increase in external debt servicing leads to lower economic growth. Based on these findings, the study suggests that debt service obligation should not be allowed to rise more than the debt. And, the contracted loan should be invested in building infrastructure through efficient and judicious utilization of the loan.

**Keyword:** External Debt; External Debt Servicing; Economic Growth; ARDL

## 1. Introduction

In Nigeria, capital and recurrent expenditures which are captured in the budget are usually anchored on projected revenue that may be realized as projected or not. Most often, they are not realized as projected. The deficit, coupled with the desire to build capital stock has pushed government to resort to borrowing. The required fund may inadequate domestically due the underdeveloped capital market, low savings, low investments and low productivity. (Uma, et al, 2013), opined that when a country lacks the necessary resources for optimal development, one of the alternatives is borrowing and borrowing serves as an option when the period of intended expenditure does not synchronize with the time of receipt of revenue from the major sources such as oil revenue and taxation or when there is shortfall in the expected revenue. However, the government's intention of sourcing any loan is aimed at achieving some macroeconomic objectives of economic growth and stability. The payment and servicing of such loans are part of public expenditure. Hence, the cost of servicing external debt may go beyond the servicing capacity of the economy to cope, thereby impacting negatively on the ability to achieve the desired fiscal and monetary policy objectives. Thus, rising debt burden may constitute a hindrance to the ability of the government to undertake more productive investment in infrastructure, education and public health (Ifeoma, *et al.*, 2015).

Similarly, debt servicing has become a heavy burden due to the unproductive application of external loans. The unproductive application of debt is stemmed from factors such as political, economic, policy instability, corruption, misappropriation, embezzlement of public funds, non-commitment to economic philosophy, politicization economic projects and weak legal framework (Harrison, Momodu&Tamunomieibi, 1999). This has led to the low capital formation, underdevelopment of the country and the growth of the debt profile. Nigeria has acquired substantial amount of external debt during the past two decades and which has posed serious problems to the nation's development. The country's debt servicing burden reached critical proportions as reflected in the high number of debt rescheduling, sharp in external payment arrears and continuous recourse to more credit facilities. The resultant effect of this debt service burden creates additional problems for the nation, particularly the increasing fiscal deficit that is driven by higher levels of debt servicing. This poses great threat to the economy as large chunk of the nation's tax earnings and oil proceeds are being eaten up. For instance, Nigeria's external debt outstanding stood at \$28.35 million in 2001 which was about 59.4% of GDP from \$8.5 million in 1980 which was about 14.6% of GDP (WDI, 2013). The debt crisis reached a maximum stage in 2003 when \$2.3 billion was transferred to service Nigeria's external debt. In the year 2005, the Paris Club of creditor nations forgave 60% (\$18 billion) of \$30.85 billion debt owed by Nigeria. Bakare, (2010), noted that that despite the debt relief received by Nigeria, the situation remains the same. Thereafter, the nation's debt increased steadily from \$3.4 billion in 2007 to \$3.7 billion in 2008, \$3.9 billion in 2009, \$4.5 billion in 2010, \$5.7 in 2011, \$6.5 billion in 2012, \$9.0 billion in 2013, \$9.5 billion in 2015. However, between May, 2015 and June, 2016, the country debt had increased by more than \$14 billion (NBS, 2016). As at 31 March, 2021, the Debt Management Office (DMO) says Nigeria's public Debt stock is #33,107 trillion (about 87.239 billion dollars)( DMO, 2021)

This paper seeks to investigate the effects of external debt on economic growth in Nigeria taking economic growth as the dependent variable while the components of external debt are the predictor variables. This paper is unique because it enhanced the current understanding of the existing body of knowledge between external debts on economic growth in Nigeria.

### 2. Literature Review

**External Debt:** External debt refers to that part of a nation's debt that is owed to creditors outside the nation. Arnone, et al (2005), defines external debt as that portion of a country's debt that is acquired from foreign sources such as foreign corporations, government or financial institutions. According to (Ogbeifin, 2007), external debt arises as a result of the gap between domestic saving and investment. As the gap widens, debt accumulates and this makes the

country to continually borrow increasing amounts in order to stay afloat. He further defined Nigeria's external debt as the debt owed by the public and private sectors of the Nigerian economy to non-residents and citizens that is payable in foreign currency, goods and services.

External Debt Servicing: Umah, etal, (2013), defined external debt servicing as the amount of money required to make payments on the principal and interest on outstanding loans, the interest on bonds or the principal of maturing bonds. Clements et al, (2005), described external debt servicing as a form of implicit tax, which discourages investment and stifles economic growth. Debt servicing is the ability of a debtor nation to continue to repay the principal and the interest components of an outstanding loan as and when due. In Nigeria, the proportion of interest payments in total debt service has been very high in absolute terms and it is still on the increase. Interest payments constitute a major cause of concern in the country's debt servicing difficulties (DMO, 2016).

**Economic Growth:** Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the per cent rate of increase in real gross domestic product, or real GDP, usually in per capita terms (CBN, 2015).the concept economic growth is described as the positive and sustained increase in aggregate goods and services produced in an economy within a given time period. When measured with the population of a given country, then economic growth can be stated in terms of per capita income according to which the aggregate production of goods and services in a given year is divided by the population of the country in the given period. Economic growth can also be stated in nominal or in real terms. Hence, the increase in the aggregate level of goods and services is deflated by the rate of inflation, we have the real economic growth, otherwise, when measured without deflating, it is called nominal economic growth.

**Exchange Rate:** Exchange rate is among the most important prices in an open economy. It influences the flow of services and capital in a country and exerts strong pressure on the balance of payment, inflation and other macroeconomic variables. Therefore, exchange rate implies the price of one

currency in terms of another. Exchange rate is the value between a value of one currency and the amount of another for which that unit can be exchanged within a particular time (Ngerobo&Ibe, 2013). In other words, exchange rate is the price of one currency with another and is the number of units a currency required to buy another currency (Mordi, 2006). Exchange rate of a particular currency is the link between domestic and foreign prices of goods and services. It can appreciate or depreciate. Appreciation in the exchange rate occurs if less unit of domestic currency is exchange with more units of a foreign currency and vice verca.

## 2. Empirical Review

Adesola, (2009), investigated the effect of external debt service payment practices on sustainable economic growth and development in Nigeria. The study covers the period from 1981 to 2004. The empirical analysis was carried out using econometric techniques of Ordinary Least Squares, Augmented Dickey-Fuller Unit Root test, Johansen Cointegration test, and Error Correction Method. Findings indicate that debt payments to London Club Creditors, Paris Club Creditors, Promissory notes Holders and other creditors have significant impact on the GDP and Gross Fixed Capital Formation (GFCF).

Austin, (2014), x-rays the correlation between debt servicing and economic growth in Nigeria. Decomposing the debt stock along creditor line and using the relevant statistical data from multinational finance institution. The study adopted the Ordinary Least Square multiple regression method. The study found that debt payments to Nigeria's creditors have significant impact on the GDP and GFCF. Debt payment to Paris Club creditors and debt payment to Promissory note holders are positively related to GDP and GFCF, while debt payment to London club creditors and other creditors shows a negative significant relation to GDP and GFCF.

Utomi, (2014), investigated the impact of external debt on economic growth in Nigeria for the period 1980-2012. The study used time series data on external debt stock and external debt service payment was used to capture the external debt burden. The study employed the Augmented Dickey Fuller test, Johansen Cointegration, Vector Error Correction

Mechanism and Granger Causality test. The study found an insignificant long- run relationship and a bidirectional relationship between external debt and economic growth in Nigeria.

Ajayi and Oke, (2012), investigated the effect of external debt on economic growth and development in Nigeria, employing Ordinary Least Square Method of data analysis and found that external debt burden had an adverse effect on the national income and per capita income of the nation, and high level of external debt led to devaluation of the nation's currency, increase in retrenchment of workers, continuous industrial strike and poverty.

Faraji and Makame, (2013), investigated the impact of external debt on the economic growth of Tanzania, using time series data on external debt and economic performance, covering the period 1990-2010. It was observed through the Johansen Co-integration test that no long-run relationship between external debt and GDP. However, the findings showed that external debt and debt service both have significant impact on GDP growth, with the total external debt stock having a positive effect of about 0.36939 and debt service payment having a negative effect of about 28.517. The study also identified the need for further researches on impact of external debt on Foreign Direct Investment (FDI) and domestic revenues.

Safdari&Mehrizi, (2011), analysed the impact of external debt on economic growth in Iran by observing the balance and long-run relation of five variables: GDP, private investment, public investment, external debt and imports. Time series data covering the period 1974-2007 was used and the Vector Autoregressive model (VAR) technique of estimation was employed. Their findings reveal that external debt has a negative effect on GDP and private investment while public investment has positive relationship with private investment.

Ejigayehu, (2013), also analysed the effect of external debt on economic growth of eight selected heavily indebted African countries, (Benin, Ethiopia, Mali, Madagascar, Mozambique, Senegal, Tanzania and Uganda) through the debt overhang and crowding out effect with ratio of external debt to gross national income as a proxy for debt overhang and debt service export ratio as a proxy for debt crowding out. Panel data covering which covered the period of 1991-2010

was used. The empirical investigation was carried out on a cross-sectional regression model with test for stationarity using Augment Dickey Fuller test, heteroskedesticity and ordinary regression. The concluding results from the estimation shows that external debt affects economic growth through debt crowding out rather than debt overhang.

Ekperiware and Oladeji, (2012), examined the structural break relationship between external debt and economic growth in Nigeria. The study employs the use of quarterly time series data of external debt, external debt service and real GDP from 1980-2009. An empirical investigation was conducted using the Chow test technique of estimation to determine the structural break effect on external debt on economic growth in Nigeria as a result of the 2005 Paris Club debt relief. The result of their findings revealed that the 2005 external debt relief caused a structural break effect in the relationship between external debt and economic growth. Based on these findings, they concluded that the external debt relief made available resources for growth enhancing projects.

Kasidi& Said, (2013), investigate the impact of external debt on economic growth of Tanzania, using time series of 1990-2010. The study reveals that there is significant impact of the external debt on and debt service on GDP growth. Whereas total external debt stock has a positive effect of about 0.36939, debt service payment has a negative effect of about 28.517. Atique and Malik, (2012), examine the impact of domestic and external debt on the economic growth of Pakistan separately over a period of 1980-2010, using Ordinary Least Square (OLS) approachto Co-integration. The result showed a significant inverse relationship in both. That is, inverse relationship between domestic debt and economic growth, and external debt and economic growth.

Sunday, et al, (2016), examined the impact of public sector borrowings on prices, interest rates, and output in Nigeria. They utilized Vector Autoregressive framework, the Granger causality test, impulse response, and variance decomposition model. They found that the level of external debt over the period of the study had no significant impact on the general price level and output.

## 2.3 Theoretical Review

## The Debt Laffer Curve

There is a theoretical literature that suggests foreign borrowing can affect investment and economic growth positively up to a certain threshold level, but beyond that level, the effect becomes negative. In other words, this idea is focusing on the nonlinear relationship between debt and growth. As posited by Cohen (1993), the relationship between the face value of debt can be represented as a "Laffer curve," which illustrates that as outstanding debt increases beyond a threshold level, the expected repayment will fall. Cohen (1993), studies the correlation between the less developed country's debts and investment. He has concluded that it is not the large debt that lowers investment, but the actual service of the debt. Thus, debt Laffer curve is a graphical explanation of debt overhang theory.

According to Bachvarova (2008), debt Laffer curve was first introduced by Jeffery Sachs (1989), in the context of debt overhang argument, while Krugman (1988) formalized the actual derivation of the curve and the underlying logic behind it. The ability of countries to service and finally repay their actual levels of debt has been linked by Krugman in his study on Market-Based Debt-Reduction Schemes. That is, the obligation of servicing debt will act like a high marginal tax rate when a country has accumulated too much debt or when its obligation exceeds the amount it is likely to pay. The upshot of this situation will be a disincentive for any government to do well to improve its performance. This is because much benefit from growth will go to creditors rather than the country itself. Besides, the financing of debt will be at the expense of tax payers through the taxation of capital that will further discourage investment. The debt Laffer curve on Krugman study is based upon the market value and face value of debt.

# 3. Methodology Model Specification

The study adopted a modified version of regression model of Fosu (1999) and Iyoha (1996):

$$RPY_{t} = \beta_{0} + \beta_{1}EDY_{t} + \beta_{2}EDE_{t} + \beta_{3}GNE_{t} + \beta_{4}EXR_{t} + \mu_{t}.....(1)$$

From the above model:

 $RPY_t$  is the real per capita GDP which represents growth as a dependent variable;  $EDY_t$  is the external debt as a percentage of GNI which captures the direct effect of external debt on growth which has two possible twin effects. i.e., it can either be positive or negative;  $EDE_t$  is the external debt service as a share of exports and it measures the amount of resources that must be set aside each year for a country to settle its external debt as it falls due. Negative relationship exists between the debt service and the economic growth; GNE<sub>t</sub>is the gross national expenditure as a percentage of GDP. It exerts positive influence on the GDP and it was used as a control variable;  $EXR_t$  is the real exchange rate and which is expected to have positive impact on economic;  $\beta_0$ - $\beta_5$  are coefficients to be estimated, while  $\mu_t$  is the stochastic error term, tis the time period.

## **ARDL Bounds Test for Cointegration**

In order to empirically analyse the short-run and long-run dynamic interaction among the variables of interest, the study used Autoregressive Distributive lag (ARDL) Cointegration technique. It was developed by Pesaran and Shin (1999) and Pesaranet, al. (2001). The approach has three advantages when compared with the traditional Cointegration approach. First, it does not need that all variables under study must be of the same order. Second, it is relative more

efficient in the case of small and finite sample data size. Third, it provides unbiased estimates of the long-run model (Harris &Sollis, 2003; Belloumi, 2010). The generalized ARDL model is specified as:

$$Y_{t} = \gamma 0_{i} + \sum_{i=1}^{p} \delta_{i} Y_{t-1} + \sum_{i=0}^{q} \beta_{i} X_{t-1} + \varphi_{1} Y_{t-1} + \varphi_{2} X_{t-1} \varepsilon_{it}$$
.. (2)

Where:

 $Y'_t$  is a vector, and the variables in  $(X'_t)$  are allowed to be purely I(0) or I(1) or cointegrated;  $\beta$  and  $\delta$  are coefficients;  $\gamma$  is the constant; I=1,2,...k, p,q, are optimal lag orders;  $\epsilon_{it}$  is the vector of the error terms. The components that represent the long-run are  $\phi_1 y_{t-1} + \phi_2 x_{t-1}$ .

The critical values of this F-statistic associated with the cointegrated equation should be looked upon from the tables Pesaran et al (2001) or Narayan (2005).

#### 4. Results and Discussion

## 4.1 Unit Root Test

The study employed the use of Augmented Dickey Fuller and Phillip Peron tests in order to test for the presence of unit root or otherwise in both the dependent and explanatory variables in the study. The results are presented in the following table:

**Table 1: Unit Root Test** 

ADF @ 5%			
Variable	Level	1st Diff.	Order of integration
RPY	-0.69721	-4.282781	I(1)
GNE	-3.547907	-4.805511	I(1)
EDY	-1.47868	-5.621940	I(1)
EDE	-2.602774	-9.929785	I(1)
EXR	-0.981609	-3.697738	I(1)
PP @5%			
RPY	-0.067038	-4.051346	I(1)
GNE	-2.183166	-3.800492	I(1)
EDY	-1.051582	-9.252183	I(1)
EDE	-2.602774	-11.86200	I(1)
EXR	-0.837232	-3.480135	I(1)

**Source:** Researcher's Computation Using Eviews 10 (2020)

To determine the order of integration of the variables, the Augmented Dickey-Fuller (ADF) and Phillip Perron tests were conducted. The null hypothesis is Ho =  $\beta$  = 0 (i.e.,  $\beta$  has a unit root), and the alternative hypothesis is  $H_1$  =  $\beta$  < 0 were implemented. The results for the level and differenced variables are

presented in table 4.1. The stationary tests were performed first in levels and then in first difference to establish the presence of unit roots and the order of integration in all the variables. The results of both the ADF and Phillip Perron stationarity tests for each variable shows that the tests fail to reject the presence of unit root in for the data series in levels, indicating that these variables are non stationary in levels. The first difference results show that the variables are stationary at 5% significance level (integrated of order

one I(1)). Therefore, the existence of the unit root in all the variables necessitates the conduct of Cointegration test, as it signifies the existence of Cointegration among the variables. Cointegration is aimed at testing the long-run relationship of the variables. The recognized ARDL model of Pesaran and Shin (1999), which assumes to capture both short-run and long-run asymmetries in the variables of interest, was used.

**Table 2: Bounds Test for Cointegration** 

F- statistic	Lower bound	Upper bound	K(n-1)	Sign.lev.	Remarks
5.564600	2.2	3.09	3	10%	Cointegration
	2.79	3.67		5%	
	3.29	4.37		1%	

**Source:** Researcher's Computation Using Eviews 10 (2020).

From the table 2, it can be seen that the value of F-statistic is 5.564600. The value is greater than the lower and upper bounds t-statistic at 5% level of significance using Pesaran, *etal.* (2001). This justifies the rejection of the null hypothesis against the alternative hypothesis that a cointegration relation

exists among the variables in the model. This implies that the null hypothesis of "no Cointegration" among the variables of interest was rejected. Hence, we concluded that there exists a long-run or cointegrating relationship among all the variables in the study. As such, the ARDL cointegration approach was applied to estimate the individual short-run and long-run relationship among the variables.

**Table 3: Estimated Long Run Coefficients** 

Variable	Coefficient	Strd.err.	t- statistic	Prob.
Constant	158.9002	223.3206	0.711534	0.4833
EDY	-1.848763	0.805992	-2.293773	0.0305
EDE	-6.787775	4.486467	-1.512944	0.1428
EXR	0.124465	0.919029	0.135431	0.8934

Source: Researcher's Computation Using Eviews 10 (2020).

Table 3 presents the long-run relationship among the variables under consideration. -1.848763 implies that given an increase of external debt as a percentage of GNI by 1%, GDP will ,on average, decrease by -1.848763% keeping all other variables constant. Hence, there is significant negative relationship between external debt as a percentage of exports and the gross domestic product. Again,-6.787775 implies that a unit increase in external debt service as a percentage of exports will decrease gross domestic product by -6.787775% keeping other variables constant. As such, there is insignificant negative relationship between the external debt service as a

percentage of exports and the GDP. Similarly, 0.124465 implies that one percentage point increase exchange rate will lead to on average increase of gross domestic product by 0.124465% holding other variables constant. This implies there is insignificant positive relationship between exchange rate and the GDP. However, the most important is the coefficient of the Error Correction Term (-0.187327) which represents the speed of adjustment towards the longrun equilibrium. The value is negative and statistically positive. This implies that the adjustment process from the short-run deviation is very fast. Thus, the model adjusts itself towards equilibrium by 18%.

**Table 4: Short Run Result ARDL (1, 0, 0, 0, 0)** 

Variable	Coefficient	Standard error	t- statistic	p. value
Constant	29.76626	42.07164	0.707514	0.4858
$\Delta RPY_t(-1)$	0.812673	0.083434	9.740360	0.0000
$\Delta EDY_t$	-0.346323	0.134417	-2.576474	0.0163
$\Delta EDE_t$	-1.271532	0.693229	-1.834217	0.0786
$\Delta EXR_t$	0.023316	0.178724	0.130456	0.8972
$\Delta GEP_t$	0.628542	0.282954	2.221358	0.0356
$ECT_t$	-0.187327	0.029595	-6.329702	0.0000
R-squared	0.984679			
Adjusted R-squared	0.981615			
Serial Correlation LM	0.491991			0.4830
Test				
Heteroscedasticity Test:	4.732729			0.4494
Breusch-Pagan-Godfrey				
Ramsey RESET Test	0.748274			0.5969

**Source:** Researchers Computation Using Eviews 10 (2018).

Table 4 presents the ARDL regression result in which ARDL 1,0,0,0,0 was estimated. Meaning that, one lag was selected for the dependent variable, real per capita GDP, zero lag for external debt, zero lag for external debt service, zero lag for exchange rate and zero lag for gross national expenditure. Previous year's real per capita GDP has a positive and significant impact on its current value. It means, a previous year's value of the dependent variable has an impact on itself by 81% and is statistically significant. For external debt stock current value, it has a negative and statistically significant value on the dependent variable, real per capita GDP. That means, a unit increase in external debt stock will reduce GDP by-1.358710%. The coefficient of external debt service reveals negative and statistically insignificant impact on real per capita GDP. i.e.,a one unit increase in external debt service will reduce real per capita GDP by -1.271532% as for the exchange rate, it is positively related to the real per capita GDP, but statistically insignificant. A unit increase in exchange rate will increase real per capita GDP by 0.023316%. As for the gross national expenditure; it is positive and statistically significant. A unit increase in expenditure will stimulate growth by 0.628542%.

As for diagnostic tests, the model passes all the tests. It shows there is no evidence of serial correlation and the model is normally distributed. In the same vein, the model also passesthe test for heteroscedasticity and linearity. The stability of the model was tested. The technique applied was cumulative sum (CUSUM) test

proposed by Brown et al. (1975). If the plot of the CUSUM remains within the critical limits of 5percent significance level, the null hypothesis that all the coefficients are stable cannot be rejected. However, if one or another of the parallel line crosses, then the null hypothesis of parameters stability is rejected at 5% significance level. Figure 5 shows the result of CUSUM test. It indicates evidence of stability of the model as the critical line remains within the boundary, at 5% significance level.

# **Figure 1 Cusum Test**

The stability of the short-run coefficients was tested by using the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ) of the recursive residuals as proposed by (Brown *etal.*, 1975). If the plots (CUSUM and CUSUMQ) remain within the critical limits of 5percent significance level, the null hypothesis that all the coefficients are stable cannot be rejected. However, if one or another of the parallel line crosses, then the null hypothesis of parameters stability is rejected at 5% significance level. Figures show the result of CUSUM and CUSUMQ tests. They indicate evidence of stability of the model as the critical line remains within the boundary, at 5% significance level.

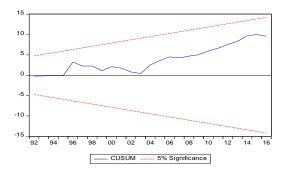
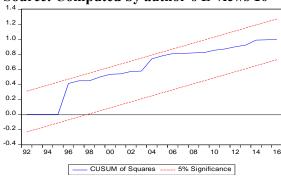


Figure 1 Cusum Test Source: Computed by author's E-views 10



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Figure 2 CUSUMSQ Test

Source: Computed by author's E-views 10

#### 5. Conclusion and Recommendations

The study employed econometrics analytical techniques including ADF and PP for unit root tests; as suggested from the unit root test, Pesaran, Smith and Shin (1999) ARDL model was conducted to explore the effects of external debt on economic growth in Nigeria. The empirical study is based on the ARDL bound test estimated results indicate a long-run association among the variables. The results show that external debt servicing is negatively related with economic growth both in the short-run and long-run. The evidence suggests that increase in external debt servicing leads to lower economic growth. Based on these findings, the study suggests that debt service obligation should not be allowed to rise more than the debt. And, the contracted loan should be invested in building infrastructure through efficient and judicious utilization.

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