

## ESCALATING DEBT AND ECONOMIC GROWTH IN NIGERIA

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### Abstract

The study examined the effect of escalating debts on the Nigeria economy. The paper analyzed data collected from the Central Bank of Nigeria (CBN) Statistical bulletin using descriptive and inferential statistics for 37 years. The real gross domestic product (RGDP) was captured as the dependent variable, while the explanatory variables included external debt (EXD) and domestic debt (DSD). The augmented dickey fuller (ADF), the error correction model (ECM) and the Johansen's Co-integration test were testing methods used in the study. These variables measured the effect of escalating debt on Nigerian economy for the period of 1980 to 2016. The mean and median statistics of the variables showed that all the variables were positively skewed and their mean was significantly greater than their median due to its volatility in the economic system of Nigeria. The descriptive statistics and correlation analysis showed that there was a positive relationship between real gross domestic product (RGDP), external debt (EXD) and domestic debt (DSD). The analyses revealed that external debt had a negative and insignificant effect on economic growth; on the contrary, domestic debt had a positive and significant effect on economic growth. However the F statistics revealed that jointly external debt and domestic debt have significant effect on economic growth. External debt and domestic debt were positively correlated to RGDP in the range of 27.14% and 98.67% respectively. The policy direction is for the government to deploy debt for the improvement of productive capacity in other to engender increased employment, price stability and balance of payment equilibrium.

**Keywords:** Gross domestic product, domestic debt, external debt

### INTRODUCTION

Nigeria, like other developing countries of the world is faced with inadequacy of fund to execute the entire conceived project which can make life meaningful to her citizens and bring about meaningful expansion in her economic growth. The acute shortage of the needed fund often results to borrowing from creditors both from within and outside the shore of the country to finance her activities. Osinubi and Olaleru, (2006) opines that borrowing are usually sought by countries to finance their budget deficit. However, it was observed that the borrowed funds have been on an increase for instance, the Nigerian debt management office (DMO) statistics revealed that the country's foreign loan rose from N2.03tn in June, 2015 to N6.75tn in March, 2018 which is about 232.51 percent increase. The domestic debt also increased from N10.09tn as at June, 2015 to N15.96tn in March, 2018 representing an increase of 58.23 percent within the period. That is, the country's public debt profile increased from N12.12 trillion as at June, 2015 to N22.71tn as of March, 2018. This reflects a difference of N10.59tn with 87.37 percentage increase within the pace of 33 months. This has been a usual

phenomenon since 1978 after a fall in world oil prices which led to the first major loan of N1bn known as Jumbo loan from the international capital market without a commensurate expansion in the economy. In 2008, the growth rate is put at 7.20% , 8.35% in 2009, 9.54% in 2010, 7.43% in 2011, 6.58% in 2012, 5.49% in 2013, 6.22% in 2014, 2.79% in 2015, 1.58% in 2016, and 0.83% in 2017 (Central Bank of Nigeria, 2018).

More often, the borrowed funds are either diverted or not properly utilized to create the desired expansion in the economy. The burden of repayment and servicing the debt is another controversial issue as large proportion of the country's revenue are used in servicing the debt and many times unable to meet its debt service obligations therefore resulting in debt overhang or debt service burden which in turn hindered economic growth and development (Audu, 2004). According to the debt management office, it was stated that in 2017, the Federal Government borrowed from the international capital market to refinance \$3bn maturing domestic debts alone as part of its overall debt management strategy of reducing debt service costs. The debt-growth relationship is complex, varying across countries and affected by global factors. While there is no simple universal threshold above which debt to gross domestic product (GDP) significantly depresses growth, high and rising public debt burdens slow growth in the long term (Alexander, Kamiar, Pesaran, & Mehdi, 2018).

Between 2007 and 2016 in Nigeria, federal government domestic debt increased by 410% from N2,169.64 billion to N11,058.20 billion and Nigeria external debt outstanding increased by 692% from N439 billion to N3,478 billion, however, the gross domestic product at current basic prices increased by only 207% from N32,995 billion to N101,489 billion within the period.. With this ever increasing debt profile which has led to agitations among stakeholder in Nigeria, it is imperative to re-assess the effect of debt rise on the economic growth of Nigeria.

### **Research Question**

This study shall be based on these research questions.

- i. What is the effect of external debt on the economic growth of Nigeria?
- ii. What is the effect of domestic debt on the economic growth of Nigeria?
- iii. To what extent has increase in debt affected economic growth in Nigeria?

### **Research objectives**

The study's main objective is to ascertain the effect of escalating debt profile on economic growth in Nigeria and in line with the stated research questions, the research objectives are to:

- i. Ascertain the effect of external debt on economic growth in Nigeria.
- ii. Assess the effect of domestic debt on the economic growth of Nigeria
- iii. Examine the effect of increase in debt on the economic growth of Nigeria.

### **Hypotheses**

The hypotheses for this study are as stated below;

H<sub>01</sub>= External debt has no significant effect on economic growth in Nigeria.

H<sub>01</sub> = Domestic debt has no significant effect on the Nigeria economic growth.

H<sub>03</sub> = increase in debt has no significant effect on the Nigeria economic growth.

## LITERATURE REVIEW

There have been various studies on the relationship and effect of public debt and economic growth of developing countries like Pakistan, Argentina, Brazil, and Chile. This study has reviewed some important empirical studies on escalating public debt and economic growth.

Muhammad, Muhammad, and Khadija (2010), investigates the impact of domestic debt on economic growth in Pakistan using the ordinary least square (OLS) technique for the period of 1972-2009, this study revealed that the stock of domestic debt has positive effect on economic growth, furthermore it was also revealed that an inverse relationship exists between domestic debt servicing and economic growth with the negative effect of domestic debt servicing stronger than the positive impact of domestic debt on economic growth.

Alejandro and Ileana (2017) in their working paper investigates the impact of government debt on GDP in 16 Latin American Countries, namely Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela over a period of about fifty years from 1960-2015. Their study revealed that there is a positive short-run impact of debt on GDP growth, but decreases to close to zero beyond public debt to GDP ratios between 64 and 71% (i.e., up to this threshold, additional debt has a stimulating impact on growth).

Vigneswara (2005) in his study on government debt provides a data-rich analysis of the dynamics of government debt and economic growth for the period between 1960 and 2009, it spans across different debt regimes and involves a worldwide sample of countries that are more representative than that of studies confined to advanced countries. The study employed panel vector auto regressions (PVARs) approach. The result established a non-linear relationship between debt and growth. The result further showed the evidence of long-term effect of debt on economic growth. The results indicated that the effect is not uniform for all countries but depends on the debt regimes and other important macro-economic variables like; inflation, trade openness, general government final consumption expenditure and foreign direct investment.

Abu, Selvanathan, and Saroja (2015) conducted research on the impact of external debt on economic growth for highly indebted poor countries using data from heavily indebted poor countries (HIPC) over the period 1970-2007. The findings suggested that a reduction in debt stock would result in significant growth performance of the indebted nations in both the short-run and long-run.

Marku and Rainer (2015) in their study of public debt and economic growth of Nordic and continental countries employed two stage least squares estimation. Their empirical evidence supports the assumption that; continental countries face more growth reducing public debt effects than especially liberal countries, where public debt exerts neutral or positive growth effects, while for Nordic countries a non-linear relationship is discovered with negative debt effects kicking in at public debt value of around 60% of GDP.

Brenda (2013) analyzed the impact of increasing public debt on Zambia's economic growth covering the period 1980 to 2008. The study also analyzed the

channels through which public debt is said to have impact on economic growth namely through private investment, public investments and domestic savings. Vector error correction model (VECM) approach was adopted for its analyses. The findings revealed that the impact of public debt on private investments and domestic savings it showed the presence of the crowding out and debt overhang effects which can be explained by a rising debt burden measured by both the stock of public debt to GDP and public debt service to revenue.

Ajayi and Oke (2012) investigated the effect of the external debt burden on economic growth and development of Nigeria. The study adopted ordinary least square analysis (OLS). The findings revealed that external debt burden had an adverse effect on the nation income and per capital income and concluded that high level of external debt led to devaluation of the nation currency, increase in retrenchment of workers, continuous industrial strike and poor educational system eventually leading to a depressed economy.

Olasode (2016) examined external debts and economic growth in Nigeria using autoregressive distributed lag model to capture the effect of external debts on viability and growth in Nigeria economy from 1984-2012. The result revealed that external debts have positive effects on economic growth.

Victor (2016) examined the relationship between external debt and economic growth in Nigeria, the study adopted both descriptive and econometric tools. The regression results showed a significant relationship between external debt and economic growth in Nigeria. The external debt exerted positively while debt servicing exerted negatively on annual growth rate of the Nigeria economy in both long-run and short-run. Interest paid on debt constitutes major part of debt servicing obligations.

Lucky and Godday (2017) examined the Nigeria debt structure and its effects on economic performance. Multiple regression technique was deployed in its analyses, the analyses indicate that external debt impacted negatively and domestic debt impacted positively on the GDP and concluded that Nigeria public debts are valuable in predicting partially variations in Nigeria's economic performance.

Sulaiman and Azeez (2012) examined the effect of external debt on economic growth in Nigeria using OLS, augmented Dickey-Fuller (ADF) unit root test, Johansen co-integration test and error correction model in their empirical analysis. The co-integration test showed that Long-run relationship exists among the variables. The findings from error correction method showed that external debt contributed positively to the Nigeria economy.

Mbah, Umunna, and Agu (2016) examined the impact of external debt on economic growth in Nigeria. They adopted the autoregressive distributed lag (ARDL) bound test approach to co-integrate and the error correction models for regression on data spanning 1970-2013. The study indicated a long-run relationship among the variables and established that external debt has a negative but significant effect on output. In addition, the analysis established a unidirectional causality between external debts and output.

Abula and Ben (2016) examined the impact of public debt on economic development in Nigeria using annual time series data spanning 1986 to 2014. The study

adopted augmented Dickey-Fuller test, Johansen co-integration test, error correction method and the Granger causality test. The study showed that external debt, domestic debt, domestic debt servicing and external debt servicing have long-run relationship with gross domestic product. The error correction model revealed that external debt and external debt servicing have insignificant negative relationship with economic growth, the domestic debt has a direct and significant relationship with economic growth and domestic debt servicing has a negative relationship with economic development of Nigeria.

Lawal, Bibire, and Adegbola (2016) in their study of external debt and growth in Nigeria adopted data for the period 1981-2014. Auto-regressive distributed lag (ARDL) was adopted, the ARDL showed that a significant relationship exist between external debt and economic growth both at the long and short-run. Also, the Granger causality test revealed no causal relationship among the variables examined.

Many of the reviewed literature established a mixed relationship between external debt and economic growth, while some reported positive effects, some reported negative relationships. In addition, reviewed literature combined only debt service obligations with external debt as independent variables in a model measuring their effects on economic indexes leaving out domestic debt, this study fills this gap by measuring the individual and joint effects of domestic and external debt on economic growth using Error correction model.

## METHODOLOGY

The study used Nigerian economic data spanning 37 years from 1980 to 2016. Secondary data used in the study were chiefly obtained from the Central Bank of Nigeria statistical bulletin. The error correction model was used to determine variables' coefficients and the student t test was used to test the hypotheses. The augmented dickey fuller method of unit root testing was deployed to foreclose spurious regressions while the Johansen cointegration method was used for cointegration testing to determine the existence of long run equilibrium relationship.

### Model Specification

The study adapted the model used by Olasode (2016) and Victor(2016) resulting into the model below

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu$$

Where:

Y = GDP (Dependent variable)

X<sub>1</sub> = External Debt (EXD)

X<sub>2</sub> = Domestic (DSD)

μ = Error Term

β<sub>0</sub>, β<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub> = Coefficients/parameters.

## Data Presentation, Analysis and Interpretation

### Descriptive Statistics

The Table 1 provides information on descriptive statistics such as mean, median, skewness and minimum value, and the distribution of the sample measured by the skewness, kurtosis and the Jarque-Bera statistics for the time series period of 37 years. The mean and median statistics of the variables shows that all the variables were positively skewed and their mean is significantly greater than their median due to its volatility in the economic system of Nigeria. The Jarque-Bera of the variables shows that all the variables reject the null hypothesis of normal distribution at 5 percent level of significance. It is worthy of note that, descriptive statistics was carried out in order to ensure that the estimated coefficient of the model do not suffer from the problem of inconsistency and lack of efficiency.

**Table 1: Descriptive Statistic**

	RGDP	EXD	DSD
Mean	21790.79	1179.709	1959.327
Median	4588.990	617.3200	560.8300
Maximum	101489.5	4890.270	11058.20
Minimum	97.27000	1.870000	10.20000
Std. Dev.	31066.76	1384.949	2892.655
Skewness	1.366117	1.313190	1.715143
Kurtosis	3.496330	3.505164	4.863458
Jarque-Bera	11.88847	11.02765	23.49397
Probability	0.002621	0.004031	0.000008
Sum	806259.1	43649.25	72495.11
Sum Sq. Dev.	3.47E+10	69050968	3.01E+08
Observations	37	37	37

Source: Authors' computation (2019)

### Correlation Matrix

The correlation matrix for the variables is reported in Table 2 in order to examine the correlation that exists among the variables. The results show that there is a positive relationship between RGDP, EXD and DSD. This implies that EXD and DSD are positively correlated to RGDP in the range of 27.14% and 98.67% respectively. It is also revealed that EXD has a positive relationship with DSD at a percentage of 31.43%.

**Table 2: Correlation Matrix between the Variables**

	RGDP	EXD	DSD
RGDP	1.0000		
EXD	0.2714	1.0000	
DSD	0.9867	0.3143	1.0000

Source: Authors' computation (2019)

### Unit Root Test

The stationarity test, which is the unit root, showed that the included variables were not stationary at level but became stationary at first and second differences and at lag 2 only. The lag lengths were chosen using Akaike Information Criteria (AIC). The results strongly support the conclusion that the series are stationary at first and second difference series at the 1%, 5% and 10% significance levels.

**Table 3: Result for Stationarity test**

Variable	ADF Statistic	Critical value			DW	Lag	inference
		1%	5%	10%			
RGDP	-10.4702	-3.6394	-2.9511	-2.6143	1.8284	2	I(2)
EXD	-3.3970	-3.6329	-2.9484	-2.6129	1.7016	2	I(1)
DSD	-3.4362	-3.6394	-2.9511	-2.6143	1.4666	2	I(2)

Source: Authors' computation (2019)

### Test for Cointegration with Johansen Cointegration Test

Having established that the various series are integrated of the first and second order, the second step in testing the relationship between RGDP, EXD and DSD is to test for the cointegration relationship between the variables, in order to determine if there is a long-run relationship between the variables. The test for the long-run relationship between the variables was done using Johansen cointegration test as shown on Table 4.

It can be seen from the test results in the table that there are two cointegrating equation at both 1% and 5% significance level. This implies a long run relationship among the variables. That is, there is a long-run steady state relationship between RGDP, EXD and DSD for Nigeria. We may conclude that there exists a long-run relationship between them which is also in agreement with the trace statistics or the Likelihood ratio greater than the critical value.

**Table 4: Johansen's Cointegration Test Result**

Johansen Test Statistics						
Testing Hypothesis	Trace value	Critical value	value	Max-Eigen value	Critical value	value
		[prob]**			[prob]**	
None*	68.8941	29.7971[0.0000]		47.2263	21.1316[0.0000]	
At Most 1*	21.6679	15.4947[0.0052]		21.5232	14.2646[0.0030]	
At Most 2	0.1447	3.8415[0.7036]		0.1447	3.8415[0.7036]	

\*Denotes rejection of the null hypothesis at the 1% and 5% level. Figures in parentheses are MacKinnon-Haug-Michelis p-values, (1973).

Source: Authors' Computation (2019)

### The results of the statistical significance of the parameter estimates

Statistical significance of the parameter estimates were conducted with student t-test and Fisher test.

**The student’s t test results**

The summary of the results of student’s t test of significance of the parameter estimates is presented in Table 5. Since the alternative hypothesis is expressed in the form of  $b_i \neq 0$ , a two-tail critical region is used. Each tail corresponds to half the chosen level of significance, that is, the area of each tail is 0.025 (or 2.5 percent) and with  $n-3 = 34$  degree of freedom, the critical t value is 2.032.

**Table 5: The results of the student’s test**

Dependent variable	Explanatory variable	$t_{cal}$	$t_{tab}$ at 5% critical value	Implication		Decision
				$t_{cal} > t_{tab}$ or $-t_{cal} < -t_{tab}$	$t_{cal} < t_{tab}$ or $-t_{cal} > -t_{tab}$	
RGDP	EXD	-1.8474	2.032		$-1.8474 > -2.032$	Null hyp. Is accepted.
	DSD	56.4182	2.032	$56.4182 > 2.032$		Null hyp. Is rejected.
	ECM(-1)	9.6931	2.032	$9.6931 > 2.032$		Null hyp. Is rejected.
	Constant	4.1328	2.032	$4.1328 > 2.032$		Null hyp. Is rejected.

Source: Authors’ computation (2019)

From Table 5, domestic debt and the error correction model introduced into the model is significant. The significant effect of the variables is good in explaining the variation in real gross domestic product (RGDP) at the 5% level of significance. Domestic debt has a positive and significant effect on economic growth proxied by real GDP, while external debt has a negative and insignificant effect on economic growth.

**The ‘F’ Distribution Test Result**

The result of ‘F’ ratio distribution test with  $V_1$  and  $V_2$  degrees of freedom at 5% significant level for the Model is summarized in Table 6:

**Table 6: The results of ‘F’ distribution test**

$F_{cal}$	Prob.	$F_{tab}$	Implication		Decision
			$F_{cal} > F_{tab}$	$F_{cal} < F_{tab}$	
1664.767	0.000	3.256	$1664.767 > 3.256$		Null hyp. Is rejected.

Source: Authors’ computation (2019)

The observed F-ratio ( $F_{cal}$ ) is compared with the theoretical F value with  $V_1 = k-1 = 2$  and  $V_2 = N-K = 34$  for the model at 5 per cent level of significance. Based on the result, we hereby reject the null hypothesis and accept that the regression is significant. That is, the model is significant due to the overriding effect of the domestic debt in the Nigerian economy.

**The Result of the Regression and Test of Hypotheses**

The summary of Ordinary least square regression result is contained in Table 7.

**Table 4.7:** Regression Analysis Result

Dependent Variable	Explanatory Variable	Coefficient	Std. Error	t-statistic	Prob.
RGDP	EXD	-0.6196	0.3354	-1.8474	0.0739
	DSD	9.9797	0.1769	56.4182	0.0000
	ECM(-1)	1.1459	0.1182	9.6931	0.0000
	Constant	2547.181	616.3306	4.1328	0.0002

R<sup>2</sup> = 0.9936, Adj. R<sup>2</sup> = 0.9930, DW = 1.3152, F-statistic = 1664.767, Prob (F-statistic) = 0.0000

Source: Authors' computation (2019)

The coefficient of the error correction model for the estimated RGDP equation is statistically significant and positive. Thus, it will rightly act to correct deviations from long-run equilibrium but with much effect. Specifically, if the actual equilibrium value is too high, the error correction term will bring it down, while if it is too low, the error correction term will raise it. The value of the coefficient however implies that when RGDP is out of its long run trend, 114.59% of the error is corrected at each level to restore equilibrium but with a stronger and significant effect.

However, statistically, the fit is good with R<sup>2</sup> indicating 99.36% of the total variation when compared to the adjusted R<sup>2</sup> value of 99.30% as been explained by the included variables. The remaining 0.64 percent of the total variation in RGDP is unaccounted for by the regression line and is attributed to the factors included in the disturbance term ( $\mu$ ). The presence of unit root in the residual series usually drive Durbin-Watson test towards zero, but the value of this statistic (1.3152), which is approximately 1, is within the acceptable limit for zero autocorrelation and it is considered interesting because it reinforces the acceptance of the null hypothesis of no serial correlation in the residual of the model

## SUMMARY AND CONCLUSION

From the above analysis, the mean and median statistics of the variables shows that all the variables were positively skewed and their mean is significantly greater than their median due to its volatility in the economic system of Nigeria. The descriptive statistics and correlation analysis show that there is a positive relationship between RGDP, EXD and DSD. This implies that EXD and DSD are positively correlated to RGDP in the range of 27.14% and 98.67% respectively. The Unit Root Test showed that the variables were stationary at first and second difference and at lag 2 only. The co-integration with Johansen co-integration test showed a long run relationship among variables. That is, there is a long run steady relationship between RGDP, EXD and DSD for Nigeria which means the explanatory variables have long run relationship with the dependent variable. The Error Correction Model was conducted to reconcile the short run and the long run dynamism. The coefficient of the error correction model for the estimated RGDP equation is statistically significant and positive. The study therefore concludes that escalating debt exerted a significant effect on the Nigerian economy over the period under study. Hence, the government should ensure that borrowed funds are not diverted but used for projects such as physical infrastructures, agricultural projects and so on that will in turn generate revenue and have multiplier effect on the economy.

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