EXTERNAL DEBT AND ECONOMIC GROWTH IN NIGERIA: IS THERE A NEXUS?

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Abstract
This study investigates the nexus between external debt and economic growth in Nigeria drawing inference from 1986 to2014. The study Employ Error Correction Mechanism to analyze time series data culled on Gross Domestic Product (GDP),Debt Service Payment (DSP), External Reserve (ERS)and Interest Rate(INT). The empirical findings revealed that all the independent variables (ERS, INT and DSP) are significant in explaining the dependent variable (GDP) in the long run. The coefficient of all the variables are negative except DSP that is positively signed. Furthermore, all the explanatory variables are significant in explaining economic growth in the long run. The coefficient of multiple determination (R Squared) as obtained from the parsimonious model is 47% which simply implies that the variables of external debt (DSP, ERS and INT) all put together accounted for 47% variation in GDP while the other 53% is due to the presence of disturbance mean in the model. Conclusively, findings in the study revealed that Nigeria should implement policies that could increase external reserve treasures by increasing export. This will in turn relief debt profile of the country. For the benefits of external debt to be enjoyed, the study recommend that government should ensure economic and political stability and reduce the debt burden to the minimal to enhance the effect on economic growth.

Keywords: External debt, Economic growth, Debt service payment, External reserve, Interest rate, emerging economy

1. INTRODUCTION
No government or economy can stand on its own and perform efficiently and effectively without receiving any aid from other nations in form of foreign borrowing or external debt. So a "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.

Nigeria's external debt outstanding stood at US$28.35 million in 2001 which was about 59.4% of the GDP in 1980 which was about US$8.5 million (WDI 2013). The debt crisis reached its maximum in 2003 when US$2.3 billion was transferred to service Nigeria's external debt. In the year 2005 the Paris Club group of creditor nations forgave 60% (US$18 billion) of the US$30.85 billion debt owed by Nigeria. Despite the debt relief of US$18 billion received by Nigeria from the Paris club in 2005 the situation remains the same (Bakare, 2010). The question then becomes why has external 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 external debt

burden on economic growth in Nigeria and have arrived at different results and empirical conclusions.

In the work of Sulaiman and Azeez (2012) "Effect of External debt on Economic Growth of Nigeria" which spans through1970 to 2010, the Ordinary Least Square and Error Correction Model was used and it was concluded that external debt has contributed positively to the Nigerian economy. The lacuna here is that the scope is regarded as not sufficient enough to make current structural decision making considering the recent changes in the economic policies both internally and internationally. Also, Shehu and Aliyu (2014) in their work "External Debt and Economic Growth: Evidence from Nigeria, the scope and technique in their work is directly the same as the work of Sulaiman and Azeez (2012) and is regarded as outdated as far as policy recommendation that affects the economy is concerned. This present study will cater for this lacuna by making use of recent relevant statistics in order to inculcate recent figures in the course of data analysis. This is assumed to be more revealing and give room for accurate policy implementation.

Furthermore, Ishola, Olaleye and Ajayi (2013) investigated External debt and the Nigerian Economy: An Empirical Analysis which spans through 1980 to 2010. It was found that 12.3% changes in economic growth is caused by external debt and prime lending rate. Ordinary Least Square method of estimation was used, therefore the findings is only valid and useful in the short run. This study will attempt to fill this gap by making use of the long run method of analysis which will provide for reliable findings useful now and in years to come through the use of Error Correction Mechanism (ECM). All these serve as the impetus to investigate once again if there a nexus in the long run relationship between external debt and economic growth in Nigeria by employing the time-series annual data to cover a period of 1986 to2014.

1.1 Theoretical Framework

This study adopts the Dual Gap as its theoretical framework out of various theories that have been propounded by scholars to explain the subject of external debt. Ajayi and Oke (2012) posited that "The dual gap analysis explained that development is a function of investment and that such investment which require domestic savings, is not sufficient to ensure that development take place. There must be the possibility of obtaining from abroad the amount that can be invested in any country is identical with the amount that is saved. Furthermore, if the domestic resources are to be supplemented from abroad, such as excess of import over export (i.e. M > E)." broken down further;

I – S

M – E

 Hence, I – S = M – E

In national income accounting, an excess of investment over domestic saving is equivalent to excess surplus of import over export.

Income = consumption + import + savings

Output = consumption + export + investment

Income = output

Then Investment – Saving = Import – Export (Ajayi and Oke, 2012)

This is the basis of dual gap analysis, assure that there is a country that requires saving and investment good import to achieve a particular rate of growth. "If the available domestic saving fall short of the level necessary to achieve the target rate of growth, a savings investment gap is said to exist on a similar note, if the maximum import requirement needed to achieve the growth target are greater than the maximum possible level of export, then these is an export-import of origin exchange gap." (Ajayi and Oke, 2012)

1.2 Review of Empirical Literature

Ogunmuyiwa, (2011) posited that countries experiencing fiscal deficits, especially the developing ones borrow to improve their economic growth. Government borrows in principle to finance public goods that increase welfare and promote economic growth (Sulaiman and Azeez, 2012).

The impact of external debt on economic growth and public investment in Nigeria from 1970-2002was examined by Audu (2004).The empirical investigation was carried out using the Co-integration test and Error Correction Method. The study shows that debt servicing pressure in the country has had a significant adverse effect on the growth process and past debt accumulation negatively affect public investment. Adepoju, Salau and Obayelu (2007) in their work analyzed the effects of external debt management on the economic growth of Nigeria to cover the period spanning between 1962 to 2006 using time-series data of the various bilateral and multilateral arrangements. Their study concluded that accumulation of external debt adversely affected Nigeria's economic growth.

Aminu and Anono (2012) conducted a study on external debt relationship in Nigeria and found that external debt impacted positively on the growth of the economy within the period under review. And that external debt does not cause GDP, but the flow of causation runs from GDP to external debt.

A number of empirical researches related to Nigeria also came up with different findings. Ajayi and Oke (2012) in their study concluded that external debt burden had an adverse effect on the nation's income and per capital income. Contrary to this, Sulaiman and Azeez (2012) in their study found from the error correction method that external debt has contributed positively to the Nigerian economy

Empirical studies from other countries like Malaysia carried out by Choong, Lau, Liew, and Puah (2010) examined the effect of different types of debts on the economic growth in Malaysia during the period of 1970 to 2006. The result of the findings reveal that all components of debts have a negative effect on the economic growth in the long run using Co-integration test. The study of Abdelmawla and Mohammed (2005) on the impact of external debt on economic growth of Sudan from a period covering 1978 to 2001showed that export earnings have a significant positive impact while external debt and inflation had negative impact on Sudan's economic

growth (Sulaiman and Azeez, 2012; Obadan, 2004; Rockerbie, 1994; Cohen, 1993; Savvides, 1992; Borensztein, 1989; Warner, 1992).

Karogol (2002) on the other hand examined the short-run and long-run relationships between economic growth and external debt service for Turkey during the period covering 1956 to 1996. The study concludes using multivariate co-integration techniques, Vector Autoregression estimates and Co-integration equation to establish that debt services is negatively related to economic growth (Ajayi and Khan, 2000; Deshpande, 1997; Amakom, 2003; Krugman, 1989; Iyoha and Iyare, 1994). Premised on these, this study therefore seeks to thoroughly and empirically investigate the consequential effect of Nigeria's external debt on her economy and arrive at a logical conclusion.

2. METHODOLOGY
The study gathered time series annual data for the period covering 1986 to 2014 following a similar research method used by Sulaiman and Azeez (2012) in their work "Effect of External Debt on Economic Growth of Nigeria". The methodology allows for a short and long run equilibrium relationship to be established. The model employed by Sulaiman and Azeez (2012) is adopted and specified as follows:

$GDP = f(DSP, ERS, INT)$………..(1)
Where:
GDP = Gross Domestic Product
DSP = Debt Service Payment
ERS = External Reserves
INT = Interest Rate
f = Functional Relationship
The econometric form of equation (1) is represented as:
$GDP = B_0 + B_1 DSP + B_2 ERS + B_3 INT + e$………..(2)
Where:
B_0 = Constant
B_1-B_3 = Coefficients of each independent or explanatory variable
e = Stochastic or Error term
By log linearizing, the models becomes;
$logGDP_t = B_0 + B_1 logDSP_t + B_2 logERS_t + B_3 INT_t + e$………….(3)
By stating the error correction model (ECM) from equation(4),the model becomes:

$\triangle logGDP = B_0 + B_1 \sum logDSP_{t-1} + B_2 \sum logERS_{t-1} + B_3 \sum logINT_{t-1} + \sum ECM_{t-1} + \sum_t$

$ n n n$

n

…………………………………………………………………………………..…………(4)

$ i=0 i=0 i=0 i=o$

n

$\sum ECM$ =Error Correction Term
 i=0n
t – 1 = variable lagged by one period

i=0

∑t = White noise residual

2.1 Discussion and Findings

The study examines whether there is a nexus between external debt and economic growth of Nigeria. The dependent variable was proxied as Gross Domestic Product (GDP) to measure economic growth while the independent variables were given as External Reserve, Interest Rate and Debt Service Payment.

Table 1: Result of ADF Unit Root Test

| VAR | ADF TEST | MACKINON CRITICAL | First Difference | | Second Difference | | Decision |
			ADF TEST	MACKINON CRITICAL	ADF TEST	MACKINON CRITICAL	
GDP	-1.550801	-2.971853	-4.325704	-2.976283			Accept
ERS	-0.552948	-2.986225	-2.694768	-2.986225	-10.20440	-2.986225	Accept
INT	-2.601531	-2.971853	-5.198283	-2.976263			Accept
DSP	-0.339009	-2.971853	-4.875246	-2.976263			Accept

Source: E-View Computation

The Augmented Dickey-Fuller test was conducted to test for the stationarity of data in order to determine a long run equilibrium model as shown in the table above which could be deduced that all variables (GDP, INT and DSP) have their ADF test statistics value less than Mackinnon critical value (at absolute term) and at 5% except ERS thereby requiring second differencing for its stationarity.

Table 2: Presentation of Trace and Maximum Eigen Test

Hypothesized No. of CE(s)	Trace Statistic	Critical Value 0.05	Prob.*	Max-Eigen Statistics *	Critical Value 0.05	Prob.**
None *	58.44387	40.17493	0.0003	24.91761	24.15921	0.0394
At most 1 *	33.52626	24.27596	0.0026	17.27293	17.79730	.0598
At most 2 *	16.25334	12.32090	0.0105	15.13879	11.22480	0.0098
At most 3	1.114546	4.129906	0.3389	1.114546	4.129906	0.3389

 Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

Max-eigenvalue test indicates1 cointegrating eqn(s) at the 0.05 level

 * denotes rejection of the hypothesis at the 0.05 level

 **MacKinnon-Haug-Michelis (1999) p-values

Source: E-View Computation

The result of Co-integration conducted using Trace Test and Maximum Eigen Test from the table showed that long run relationship or co-integration exists among all the variables. Trace test

indicated 3 co-integrating equation which is greater than 0.05, the expected trace statistic or maximum Eigen value meaning that all variables are closely related in the long run.

Table 3: Presentation of Normalized Long Run Equation

GDP	ERS	INT	DSP
1.000000	-1.434010	-0.358924	0.085994
	(0.16325)	(1.08959)	(0.20079)
	{8.78413}	{0.329411}	{0.42828}

Source: E-View Computation

The above table shows the normalized co-integration coefficients with the standard error and t-statistic in parentheses ( ) and { } respectively.

The t-statistic shows the significance of the independent variable with respect to the dependent variable in the long run. The rule of thumb for t-statistics states that $t \geq 2$ is significant. Therefore only ERS is found to be significant but exhibits negative relationship with GDP. Other variables such as INT and DSP are insignificant, while INT also exhibit negative relationship with GDP, DSP on the other hand maintains positive relationship with GDP.

In order to determine the goodness of fit of the model, the coefficient of multiple determination (R^2) was considered. The R^2 of the parsimonious model ($0.473673 \approx 047$) reveals that 47% of the variation in the present state of GDP is being explained by all the independent variables and lagged variables, while the remaining 53% is accounted for by the stochastic/error term.

Table 4:Result of the Over-Parameterized and Parsimonous Model (ECM 1,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1),2)	-0.628747	0.230793	-2.724286	0.0139	-0.670418	0.240162	-2.791523	0.0109
D(ERS,2)	-0.179966	0.096198	-1.870779	0.0777				
D(ERS(-1),2)	-0.160639	0.085180	-1.885883	0.0756	-0.176986	0.088366	-2.002866	0.0583
D(INT,2)	0.124995	0.225194	0.555057	0.5857				
D(INT(-1),2)	-0.143168	0.240113	-0.596253	0.5584	-0.423810	0.205259	-2.064758	0.0515
D(DSP,2)	0.102863	0.046589	2.207872	0.0405	0.116486	0.046638	2.497677	0.0209
D(DSP(-1),2)	-0.024268	0.046992	-0.516427	0.6118				
ECM(-1)	0.000461	0.055320	0.008337	0.9934	-0.034150	0.048660	-0.701804	0.4905

R2 = 0.606623 D*W = 1.562765; R^2 = 0.473673 D*W = 1.399049

Source: E-View Computation

The over-parameterized ECM results above shows that the coefficient of the error correction term is significant with the negative sign i.e. the – sign justifies its significance. This means that it will be effective to correct any deviations from the long run equilibrium. The coefficient of ECM is – 0.000461, indicating that, the speed of adjustment to long run equilibrium is 0.461%

when any past deviation will be corrected in the present period. This implies that the present value of GDP adjust too slowly to changes in ERS, INT and DSP.

The parsimonious model coefficient of ECM on the other hand is -0.034150. This indicates that the speed of adjustment of any past deviation to long run equilibrium is 3.4% showing that present value of the dependent variable adjust faster to change in the independent variables than what was obtained in the over-parameterized model.

The result of the parsimonious model also reveals that all the independent variables (ERS, INT and DSP) are significant in explaining the dependent variable (GDP) in the long run. Furthermore, the results reveals that the coefficient of all the variables are negative except DSP that is positively signed. From the results, it could be deduced that both ERS and INT have indirect relationship with GDP because of the negatively signed coefficient except DSP that is positively related to GDP. For ERS, the coefficient is -0.176986 which implies that a unit increase in ERS leads to decrease in GDP by 0.176986 units. Also, the coefficient of INT which is -0.423810 suggests that a negative relationship subsists between INT   and   GDP.   The implication is that a unit change in INT brings about declination in GDP by 0.423810 units. The coefficient of DSP is 0.116486, this typifies that when the DSP is increased by a unit, this will in turn spur the value of GDP by 0.116486 units.

Table 5: Summary of F-test

	F-test	Sig.	Decision
Regression	25.78181	.000	Accept

Source: E-View Computation

However, the coefficient of multiple determination which is 47% obtainable from the parsimonious model implies that increase or decrease in external debt profess a minimal impact on the economic growth only in the long run but as obtainable in the short run dynamism i.e. (OLS), the coefficient of multiple determination (R^2) is $0.755729 \approx 0.76$. The implication of this is that external debt management is strongly necessary for economic growth in nascent countries in the short run.

The F-test conducted at 95% confidence level as shown from the above table indicates that the whole model is statistically significant, implying that changes in GDP can be sufficiently explained by ERS, INT and DSP all put together thus the model sufficiently captures the effect of external debt on economic growth in Nigeria

 In checking for the presence or absence of serial correlation i.e. autocorrelation in the model, the findings also revealed that there is the absence of autocorrelation or serial correlation in the model as shown in the graph below. The value of the Durbin Watson statistics (1.40) obtained from the Parsimonious model falls in the inconclusive region.
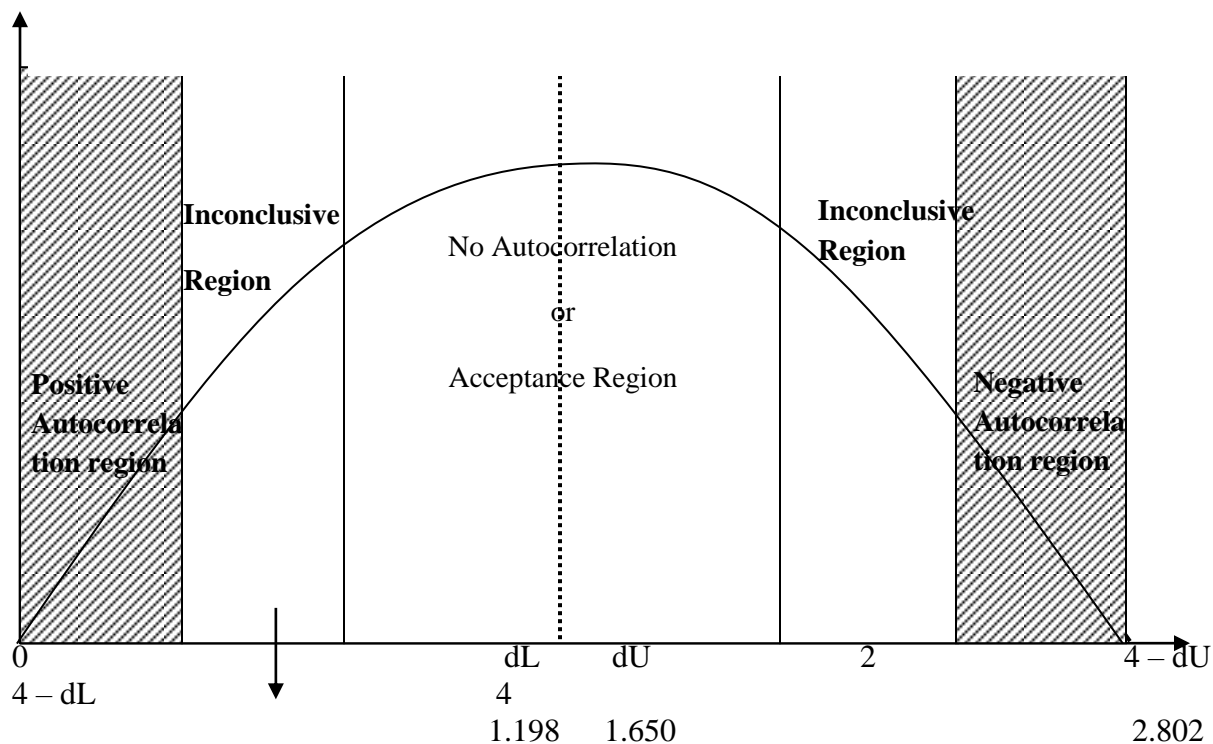
2. D*W = 1.40

Fig 1: Durbin Watson Graph

2.2 Implication of Findings

This study examined the nexus between external debt and economic growth of Nigeria from 1986 to 2014. A vivid observant of the result showed that external reserve has a significant impact on gross domestic product in the short run. This means that increase in external reserve will spur economic growth by reducing the debt profile of the country. The appropriate authority should therefore implement policies to increase the reserve treasure of the country. Furthermore, the presence of long run relationship among the variables justifies the relevance of external debt of the economy as its management may in one way or the other affects economic growth of nascent countries such as Nigeria.

However, the coefficient of multiple determination which is 47% obtainable from the parsimonious model implies that increase or decrease in external debt profess a minimal impact on the economic growth only in the long run but as obtainable in the short run dynamism i.e. (OLS), the coefficient of multiple determination (R^2) is $0.755729 \approx 0.76$. This implies that external debt management is strongly necessary for economic growth in nascent countries in the short run. Also, the F-test result implies that the model is adequate and sufficient enough to explain GDP; this means that the model sufficiently captures the effect of external debt on economic growth in Nigeria.

On the basis of *a priori* expectation, ERS is in accordance with the *a priori* expectation in the long run while both INT and DSP are in consonance with the theoretical expectation in the long run. The absence of autocorrelation implies that all the independent variables (ERS, INT and

DSP) are not serially correlated with the error term i.e. they are strictly exogenous.

3. Summary, Conclusion and Recommendation

The connection between external debt management and economic growth and development is completely inevitable. This has drawn the attention of many scholars in the field of finance to critically and empirically examine the nexus between external debt and economic growth. In this study on Nigeria, time series data that spans through 1986 to 2014 was used and the result of ECM and Johansen co-integration reveals that there exist a long run co-integration relationship among the variables which shows that there is a long run positive relationship between the external debt and economic growth in Nigeria. The findings of this study suggest that of the three external debt variables examined, both External Reserves (ERS) and Interest Rate were found to exert a positive relationship with economic growth measured by GDP, it also revealed that all the explanatory variables was statistically significant in the long run. On the contrary, Debt Service Payment (DSP) exert a negative relationship with economic growth in the short run. The study corroborate the findings in the work of Sulaiman and Azeez (2012)where they found that there exist a long rung run relationship between external debt and economic growth.

This study hereby affirm that there is a nexus between external debt and national development if used for long term investment activities such as construction of railway lines and building of industries that will improve economic growth rather than for consumption. This is because most of this foreign borrowing usually have long term as its maturity.

For the benefits of external debt to be enjoyed, the government should ensure economic and political stability and reduce the debt burden to the minimal if the effect on economic growth is to be enhanced. External debt should largely be incurred for economic reasons so as to increase the nation's productivity and above all, government should negotiate for permanent debt relief.

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