External Debt and Nigerian Economic Growth Connection: Evidence from Autoregressive Distributed Lag Approach

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Abstract

This study examined the impact of external debt in bridging the gap resource required for economic growth in Nigeria. After preliminary evaluation of the data which indicated the non-normality of all the variables, the research deployed the Autoregressive Bounds testing method Distributed Lag (ARDL) method using the Ordinary Least Squares technique. Evidence of long run association was reported. The follow-up error correction mechanism found out that 45 present of disequilibrium errors are corrected after short run shock. External debt is negatively related to economic growth. On the average, one per cent increase in export will decrease the real GDP by 0.25 per cent in the long run. Although statistically significant at 1 per cent it did not fill savings and/or external finance gap. Furthermore, the pairwise granger causality test showed that external debt does not cause economic growth at 5% level of significance. The study recommended that adequatemeasures be put in place to ensure that borrowed funds are expended on development-promoting capital projects. In addition, appropriate institutional checks and balances on government fiscal performances are prerequisite for analyzing and managing public investment projects

Keywords: Economic Growth, External Debt, Bounds Testing Approach, Autoregressive Distributed Lag

1.0 Introduction

The need to balance the savings-investment gap and offset fiscal deficits in developing countries compels government to source for finance outside taxation, its established main source of revenue (Ajayi & Oke, 2012). Multilateral finance institutions including International Monetary Fund (IMF), International Development Association (IDA), Africa Development Bank (ADB) and the World Bank have to the rescue. Chimniya (2013) and Ebi, Abu and Clement (2013) have identified bilateral and consortium of credit sources to include both the London and the Paris clubs. The literature has reported conflicting impact of a country's external debt on the economic agents. The rationale is that a country should borrow provided that the capital borrowed produces a rate of return that is higher than the cost of borrowing. In effect, the marginal product of external debt must be higher than its interest rate. Otherwise, external borrowing will become burdensome rather than stimulate the economy (Pattillo, Ricci, & Poirson, 2002; Soludo, 2003). Significant positive impact of external debt on economic growth was reported by Utomi (2014) and Ebi et al. (2013). Together with Izedonmi (2012) and Kadiu (2015) they see external debt as a source of trade and aid, stressing its importance to the growth process of a nation. Some other studies which argue that external debt carries huge risk that far outweigh its benefits, cited the examples of some heavily indebted poor countries in Africa suggested a contrarian effect (Ijeoma, 2013; Faraji and Makome, 2013; Ezenwa (2012).

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Yet some studies established insignificant relationship between the variables (Ibi and Aganyi, 2015; Ogunmuyiwa, 2011).Before the global oil crisis in the late 1970s, Nigeria external debt was minimal (Erhieyovwe and Onovwoakpoma, 2013). However, dwindling oil revenue and the need to meet its financial obligation necessitate the government to borrow US$1 billion known as the Jumbo loan in 1978 from the International Capital Market. Since the year 1978 and thereafter, Nigeria external debt has sporadically increase because of the prevalence of borrowing from international financial organizations and countries at a non-concessional interest rate. Despite global assistance by the London club and Paris clubs in ameliorating the impact through debt reliefs, debt forgiveness and outright grants, gross structural deficiencies are still manifest in the economy. The $18 billion debt forgiveness received by Nigeria from the Paris club in 2005 and the subsequent payment of $12 billion to offset the remaining debt, Bakare (2010) found no evidence growth and development in Nigeria. Indeed, in a bid to plug the huge financing gap needed to facilitate her growth and development aspirations, Nigeria has resorted to external borrowings. The decision of the federal fiscal authorities in Nigeria to borrow about $4.55 billion and $4.97 billion externally and locally respectively will bring the debt GDP ratio to 2.16 percent and double its budget deficit to double to =N=2.2 trillion ($11 billion) in 2016 (Buhari, 2016).

The seemingly deleterious impact of the falling price of crude oil which accounts for about 90 per cent of the country's external revenue has provoked a fresh thirst for public debt. Coupled with the divergent findings on the foreign debt-growth nexus, the need for this study has become manifest. While some studies established a negative relationship, some established a positive relationship. Others found the relationship to be insignificant either in the short run or long run. This study will attempt to contribute to knowledge, resolve the gap created by further investigating the implication of external debt on Nigeria economic growth and a data period of 1981 – 2014. This rest of study is therefore organized as follows: section two covers the review of relevant literature (stylised facts, theoretical and empirical). In section three the methodology which will consist of theoretical framework, model specification, a priori expectation, and estimation techniques is presented. Section four entails presentation, interpretation and analysis of data. Section five will focus on summary, conclusion and policy recommendations.

2.0 Review of Relevant Literature

This section is in two parts: theoretical underpinning of the study and empirical review.

2.1 Theoretical Review

Classical economists (Smith, Ricardo and Mill) observed a correlation between rising public debt and unproductive government spending that crowd out private savings which in turn diminish the society's investible resources. However, Harrod-Domar emphasizes the role of savings and investment in stimulating economic growth and that the rate of economic growth in an economy depends on the level of saving and the capital output ratio. The dual gap analysis is built on the works of Dormar (1939), Harrod (1946, 1947), and Chenery and Strout (1966) which hinges development on investment. Such investment requires savings. Theoretically, savings is expected to equal investment but in reality, it is insufficient to stimulate development. The model further assumed that most developing countries experience scarcity of domestic savings needed to augment scarce investment and foreign exchange needed to finance intermediate and capital goods. (Emmanuel and Ola-David, 2010)
The two gap model is explained using the national income identity:

$$Y = C + I + G + X - M = C + S + T \tag{1}$$

Where Y is total output produced in a given year (GDP); *C* is private consumption; *I* represents Investment and *G* is government consumption. *X* explains export while *M* denotes imports. *S* and *T* are savings and total government tax revenue respectively.The premise on the analysis is that domestic investment can be financed by domestic saving as well as through inflows of capital. Therefore by rearranging equation (1), the resource gap is highlighted with the savings gap (constraint) on the left hand side constraints to financing growth and foreign exchange (external finance gap) constraint on the right hand side of equation (2):

$$I - S = (X - M) + (G - T) \tag{2}$$

By representing (M – X) with F, and with the assumption that government plans its expenditure, to be equal to its tax revenue, equation (2) is modified to be:

$$I - S = F \ or \ I = S + F \hspace{4cm} (3)$$

There are several possible scenarios that may play out: where savings (S)is too small to permit the amount required for investment (I) for the country to undertake, a savings gap would exist. On the other hand, if export (X) is too small to permit the importation (M) and ensure full utilization of the resources of the economy, a foreign exchange (or trade) gap would exist. The deduction from equation (3)is that domestic investment can be financed by domestic savings and/or external debt in which case external debt can augment investment, which in turn stimulates economic growth by filling either the savings gap or foreign exchange gap.This model is relevant for this study considering the level of development of Nigeria economy and its domestic realities. Presented in the next sections are evidence gathered from Nigeria and some other developing countries.

2.2 Empirical Review

Several attempts have been made to establish the nexus external debt and economic growth. Different models have also been deployed with conflicting results.

2.2.1 Empirical Evidence from Nigeria

The paper by Bolanle, Fapetu and Olufemi (2015) analyze the impact of external debt and foreign direct investment on economic growth in Nigeria using error correction model with data spanning 1990 to 2013. Augmented Dickey Fuller test indicates that all the variables are first differenced stationary while Johansen co integration test indicate the presence of at least one co integrating equation among the variables. The short run estimation shows that external debt has a negative impact on economic growth in the short run but statistically insignificant while foreign direct investment has a negative but significant impact on economic growth in Nigeria.Ibi and Aganyi (2015) tested the same in Nigeria using a Vector Auto Regression model. Secondary data which covers 1970 to 2011 were used in the model and five variables were regressed on gross domestic product which proxy economic growth. The variance decomposition shows that at horizon 5, shock arising from external debt was 0.7% thereby aligning with studies that found a weak and insignificant causation between external debt and economic growth in Nigeria. Similar study by Utomi (2014) using the same method over the period of 1980 to 2012 established a long run relationship among external debt, debt servicing, exchange rate and real gross domestic product but a positive relationship between external debt and economic growth in the short run. Amassoma (2011) employed the same method over the period 1970 to 2009and reported that while there is a bidirectional relationship between internal debt and economic growth, there is a unidirectional causality which runs from economic growth to external debt in the country.

Erhieyovwe, and Onovwoakpoma(2013) and Ogunbiyi and Okunlola (2015) established a long run cointegrating relationship between external debt, economic growth, and capital accumulation in Nigeria using Johansen cointegration test. The ordinary least square model shows a positive relationship between economic growth and external debt in Nigeria for the period of 1980 to 2012. However, the study fails to estimate short run relationship among the variables despite the fact that the variables are non-stationary and there is a long run convergence among them. The shortcomings of these studies lie in its inability to estimate the short run relationship among the variables. Taiwo (2012) and, Bamidele and Joseph (2013) both using the ordinary least square model examine the causal relationship between external debt and economic growth in Nigeria usingpairwisegranger causality. Their studies reported different results.

While the former affirms a positive, unidirectional causality from external debt to economic growth in Nigeria, the latter indicates that external debt has a negative impact on economic growth in Nigeria. Ajayi and Oke (2012) also empirically assessed the effect of external debt on economic growth and development in Nigeria using ordinary least square model. Although the study failed to test for the existence of unit root in the variables of study, the findings showed the existence of a positive relationship between external debt and national income. This according to the authors did not conform to the a priori expectation of a negative relationship. This is not unconnected with the failure to test for the existence of unit root in the variables which can lead to spurious regression and result. Imimole, Imoughele and Okhuese (2014) analyzed the determinants of external debt in Nigeria using time series data covering 1986 to 2010. Terms of trade, openness of the economy, budget deficit, gross domestic product, foreign direct investment, and exchange rate are some determinants of external debt evaluated in the study.

Johansen cointegration test shows the existence of at least two co integrating relationship among the variables in the long run and the error correction model shows that exchange rate, gross domestic product, and external debt services are significant determinant of external debt in Nigeria.Using the private investment channel, Thank God (2014) estimates the causal relationship between public debt and economic growth in Nigeria using a two-stage least squares evaluation of time series data covering the period 1981 to 2012. The findings revealed that a linear positive relationship between domestic debt and private investment and a quadratic relationship between external debt and private investment. However, Ijeoma (2013) established an inverse relationship between external debt and economic growth in Nigeria. Same result was established by Ishola,Olaleye and Ajayi (2013) over the period 1980 to 2010.

In 2011, Ogunmuyiwa investigated the possibility of external debt stimulating economic growth in developing countries using Nigeria as a case study. The findings reveal the causality between external debt and economic growth was found to be weak and insignificant but the short run error correction mechanism shows a positive relationship debt and growth in the country. Tajudeen (2012) however established a positive relationship between external debt and economic growth and between domestic debt and economic growth. A negative relationship was however found to exist between debt service payment and economic growth in Nigeria.The same negative short and long run relationship between external debt and economic growth was reported by Izedonmi and Ilaboya (2012) using time series data from 1980 to 2010. Sulaiman and Azeez (2012) hypothesized that there is no significant relationship between economic growth and external debt in Nigeria.

On the contrary, the analysis by Obademi (2012) of the long run impact of public debt on economic growth in Nigeria using time series data spanning 1975 to 2005 however shows that external debt has a positive impact on economic growth in the short run while it negatively impact on economic growth in the long run.Ezenwa (2012) using Engle Granger cointegration test and ordinary classical regression model to estimate the short run dynamics from 1981 to 2010 on real gross domestic product, external debt service, government expenditure, and average interest rate. The study established an inverse relationship between external debt stock and economic growth while it established a positive relationship between external debt service and economic growth. Similarly, Onaolapo and Kayode (2015) established a negative correlation between Nigeria's external debt and economic growth but a positive correlation between external debt management and economic growth which purports better debt management augments economic growth in the country.

Idris (2014) found a unidirectional causality runs from economic growth to external debt implying that the level of growth in the country necessitates more debt in his research which employed a vector error correction model to estimate the short run relationship between external debt and economic growth in Nigeria between the year 1980 and 2013. Specifically, external debt negatively impact on economic growth in the short run while external debt positively impact on economic growth in the long run.

2.2.2 Empirical Evidence from Other Developing Countries

Wellington (2015) analyzed the growth-debt nexus in Zimbabwe over the period 1980 to 2013 using ordinary least square estimation technique and reported that public debt has a negative effect on economic growth in Zimbabwe. In 2010, Manmohan and Jaejoon constructed a panel of thirty eighty advanced and emerging economies for the period of 1970 to 2008 to analyze the public debt-growth nexus. System Generalized Method of Moment and Arellano-bond dynamic panel model affirms the negative relationship between public debt and economic growth. The study by Poly and Niaz (2014) on Bangladesh applied the Autoregressive Distributive lag model for time series data over the period of 1972 to 2010 The existence of negative long run relationship from debt to economic growth was recorded. Hadhek and Mrad (2014) investigated the effect of debt on economic growth in 19 developing countries for the period 1990 to 2011 using Arellano-Bond dynamic panel technique.

The variables included in the model are growth rate of real GDP per capita, investment, trade openness, rate of inflation, change in total external, short term debt, private guarantee debt, ratio of total debt to GDP, and external debt as percentage of GNI. The countries sampled include Tunisia, Egypt, Mali, Niger, Congo Dem Rep., Ethiopia, Angola, Gambia, Bangladesh, Jordan, Mauritania, Algeria, Malawi, Guinea, Ghana, India, Sri Lanka, Cote d'Ivoire, and El Salvador. Findings showed that external debt has a negative impact on economic growth in these countries.

The examination by Chiminya and Nicolaidou (2014) of the determinants of external debt in 36 Sub-Saharan Africa countries, using time series data between 1975 and 2012showed that democratic government accumulate more debt that autocratic regimes; government accountable are eager to accumulate external debts; trade openness, gross domestic growth rate, external debt to GDP, and inflation rate are the economic determinants of external debt accumulation. Rehmat, Akhtar, and Shazia (2014) deployed an autoregressive distributed lag model to analyse the determinant of external debt in Pakistan using time series data between 1976 and 2010. The study concluded that fiscal deficit, trade openness and exchange rate are statistically significant factors that determine external debt.

Al-Zeaud(2014) empirically assessed the impact of public debt on Jordan economic performance using time series data that covers the period 1991 to 2010. Per capita growth was the dependent variable while the independent variables are population growth rate, investment rate, terms of trade, inflation rate, ratio of fiscal balance to economic growth, ratio of public debt to GDP, and debt service payment in Jordan. Using ordinary least square technique, results estimated showed that public debt has a positive impact on economic growth while debt service has a negative impact on economic growth in the Jordanian economy.

Rashid and Muhammad (2014) uncovered the positive role of external debt on Pakistan economy between 1972 and 2010 using ordinary least square estimation technique. However, Faraji and Makame (2013) using a classical ordinary regression model, reports positive relationship between external debt and economic growth in the country but a negative relationship between external debt service and economic growth. There is absence of long run relationship between external debt and economic growth in the country. Thomas (2010) hypothesized that autocracies are more likely to borrow more than democracies in developing countries. An error correction model was conducted and panel data was gathered for seventy eight developing countries between 1976 and 1998. The survey of literature reveals that the nexus of external debts and economic growth causality have yielded conflicting results.

3.0 Methodology

This section deals with the method employed to obtain relevant information on implication of external debt on Nigeria economic growth.

3.1 Data Source and Descriptions

Secondary data for a period of thirty years covering 1981 to 2014 were obtained from Central Bank of Nigeria Statistical Bulletin (2014), Debt Management Office, World Bank and National Bureau of Statistics (2014).

3.2 Model Specification

The study adapts the 2001 empirical model of Pattillo, Ricci, and Poirson (2001) which seeks to investigate the nexus between growth and debt. Predicated on the dual gap theory as expressed in equation (3), the model specification assumes a linear relationship between the variables and seeks to investigate how government fills the two gaps identified in the gap theory (savings and external finance gaps). In this respect, domestic and external debts are used proxies for investment, since it is expected that foreign and domestic debts will fill growth-financing gap in equation (4):

$$RGDPKt = \beta_0 + \beta_1 ExtDebt_t + \beta_2 Inf_t + \beta_3 DomDebt_t + \beta_4 ExtSer_t + \beta_5 Exp + \varepsilon_{t+} \quad (4)$$

Where RGDPK represents Real Gross Domestic Product Per Capita, ExtDebt represents total debt owed to external/foreign creditors; Dom Debt represents the country's debt owed to domestic creditors. ExtServ represents external debt service payment which is the cost of debt. Inf denotes inflation, measuring price level in the country. Given that the country is not in autarky, Exp representing exports has also been included. ε_t represents error term and $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 are the parameter estimates. Specifically, the model seeks to find out if external debt has sufficiently impacted growth in the Nigerian economy thereby suggesting that it has sufficiently filled the huge financing gap in the period of study. The a priori expectation based on the theoretical underpinning are that a positive relationship exists between external debt and economic growth in the short run but in the long run a negative relationship will exist because of the resources that will be lost as result of servicing the debt. For inflation, a negative sign is expected to be exhibited in which case an increase in inflation rate will lead to a decrease in economic growth. It is expected that domestic debt will exhibit a negative sign implying that domestic debt as a negative relationship with economic growth while export will exhibit a positive sign.

It is further expected that external debt servicing will exhibit a negative sign. This implies that an increase in external debt servicing will lead to a decrease in economic growth.

3.3 Model Estimation Procedure

The study employs three-prong procedural steps. The first step, descriptive statistics is employed in the analysis of the data in order to help show, describe and summarize the data in a meaningful way and also to know if the data are normally distributed through their averages and Jarque-Bera values.

The second step is the test for stationary. Unlike other techniques, the Autoregressive Distributed Lag (ARDL) approach does not require the pre-testing of the series used in the model for the presence or otherwise of unit root (Pesaran,Shin & Smith, 2001). However, this test is conducted to exclude the possibility of variables integrated of second order, a scenario, which may not suit the applicability of the bounds testing approach. Indeed, Engle and Granger (1987) pointed out that a linear combination of two or more non-stationary series may be stationary.

Thereafter the third step of ARDL approach as recommended by Pesaran et al., 2001 is deployed in estimating the specified model. This approach is favoured due to its many advantages. In the first instance, this method yields consistent estimates of long run coefficients that are asymptotically normal irrespective of whether the variable used are I(0) and or I(1) (Pesaran et al., 2001). On the other hand, the Engle Granger two-step (Engle and Granger, 1987), Johansen Maximum Likelihood (Johansen and Juselius, 1990) Philips and Hansen (Philips and Hansen, 1990) amongst other prominent cointegration tests are solely suitable for strictly I(1) stationary variables. Secondly, the ARDL technique has good small sample properties as compared to alternative techniques of multivariate cointegration (Narayan, 2005). This is in addition to being suitable for addressing potential endogeneity case in the model, as it provides unbiased estimates of long run model and valid t-statistics in the presence of endogeneity problem. The OLS is simply employed in this approach. The final diagnostics is the pairwise granger causality test to examine the direction of causality of the series in the model, particularly on the relationship between growth, domestic debt and external debt servicing.

4.0 Results and Discussion of Findings

4.1 Preliminary Analyses

The preliminary characteristics of the data and summary of the statistics of the variables are presented in Table 1.

Table 1: Descriptive Statistics

	Real GDP	External Debt	Inflation	Domestic Debt	External Debt Service	Export
Mean	2.70	2.66	17.12	2.66	1,580.42	5.81
Median	2.59	2.79	11.00	2.75	1,496.60	6.09
Maximum	3.22	3.69	57.00	3.99	6,729.20	7.18
Minimum	2.21	0.94	0.00	1.18	0.00	3.88
Std. Dev.	0.30	0.76	15.16	0.84	1,276.59	1.12
Skewness	0.40	-0.88	1.25	-0.26	2.06	0.45
Kurtosis	1.89	3.07	3.38	1.88	9.16	1.85
Jarque-Bera	2.58	4.25	8.84	2.12	75.56	2.96
Probability	0.28	0.12	0.01	0.35	0.00	0.23

Source: Authors' computation

There is evidence of significant variation in the trends of the variable over the period of consideration. This is shown by the large difference between the minimum and maximum values of the series. With respect to the statistical distribution of the series, half of the series (debt service, inflation and real GDP) are positively skewed. The others are not. The domestic debt, export and real GDP are platykurtic.

The kurtosis values are less than 3 meaning that the curvature found in a normal distribution. The debt service, external debt and inflation however, are leptokurtic. This indicates a higher than normal distribution. The Jarque-Bera statistic is a goodness of fit of tests of data normality which combines skewness and kurtosis. All their values are greater than the standard threshold of 2 which is indicative of the non-normality of all the variables.

4.2 Unit Root Test

As discussed in the preceding section, in order to determine the appropriateness of the Autoregressive Distributed Lag (ARDL) approach, the Augmented Dickey-Fuller and Elliot-Rothenberg-Stock Dickey-Fuller-GLS (DF-GLS) are employed in this study. As shown in Table 2, the unit root test reveals that the series are mix of I(0), and I(1) thereby confirming the suitability of the ARDL technique. The result of the stationary test is presented below:

Table 2 Result of the Unit Root Tests

Variables all in log (Except External Debt Service)	ADF levels	ADF 1st Difference	DF-GLS Levels	DF-GLS 1st Difference	Decision
Real GDP	-3.01	-4.15**	-1.92	-4.30***	I(1)
External Debt	-1.71	-4.50***	-1.34	-4.25***	I(1)
Inflation	-2.88	-5.30***	-3.00*	-4.74***	I(1)
Domestic Debt	-2.07	-4.93***	-1.91	-5.08***	I(1)
Ext Debt Service	- 4.26***	-	-3.99***	-	I(0)
Export	-1.2.0	-4.73***	-1.58	-5.80***	I(1)

*** signifies 1% level of significance, ** signifies 5% and *signifies 10%

Source: Authors' computation

4.3 Autoregressive Distributed Lag (ARDL) Estimates and Cointegration test Result

The next step is the employment of the ARDL method. Prior to the application of the Bounds testing technique for cointegration some preliminary checks are required. The first move is the use of the Schwarz Bayesian Criterion to select the optimal lag. The estimation result shows the 0 lag length for domestic debt, foreign debt, Inflation and external debt servicing. For GDP and export, the optimum lag length is 1.The White's heteroskedasticity adjusted standard errors is used in order to forestall the problem of heteroskedasticity. Furthermore, to ensure that the model is correct, a test of serial correlation of residuals in the OLS case is conducted (Table 3).

Table 3: Test Result of Serial Correlation of Residuals

Serial Correlation Lagrange Multiplier Test:				Conclusion
F-statistic; F(1,22)	2.25	Prob. F(1,22)	0.085	Accept the null of no serial correlation
Chi-Square	2.97	Prob. Chi-Square(1)	0.15	

Source: Authors' computation

A candid perusal of Table 3 indicates that the null hypothesis of no serial correlation be accepted at 5% level of significance. The ARDL Bounds testing approach for co integration is then estimated having affirmed the well behaved characteristics of the ARDL model. This is presented in the next section.

4. 4: Cointegration Result

The specified ARDL model is used to test for the existence of a level relationship amongst the variables.The result of the cointegration reveals the presence of long run relationship amongst the variables in the model given that the F-statistics in Table 4(19.58) is greater than the upper bound in asymptotic critical value (-4.96) for testing levels relationship as computed by Pesaran et al. (2001). The Null hypothesis of no cointegration is rejected.

Table 4: ARDL Co integration Test (Wald Test)

Test Statistic	Value	Probability	Reject the Null hypothesis of no cointegration
F-statistic	19.58	0.000	
Chi-square	19.58	0.0001	
Critical Levels			
Critical Bounds	99%	95%	90%
Upper Bound	-5.94	-5.29	-4.96
Lower Bound	-3.96	-3.41	-3.13

*unrestricted intercept, unrestricted trend

Source: Authors' computation

The long run coefficient using the ARDL approach with the error correction representation for the selected ARDL is estimated as shown in Tables5 and 6 respectively.

4.5 Estimated Long and Short Run Coefficients

External debt is negatively related to economic growth. On the average, one per cent increase in export will decrease the real GDP by 0.25 per cent in the long run. It is also statistically significant at 1per cent.

Table 5: Result of Long Run Coefficients

Dependent Variable: Gross Domestic Product			
Regressor	Coefficient	t-Statistic	Relationship
External Debt	-0.25	-3.35***	Negative/Significant
Inflation	0.95	-0.43	Negative/Not Significant
Domestic Debt	-0.46	-1.47	Negative/Not Significant
External Debt Service	0.17	0.64	Positive/ Not significant
Export	0.18	1.029	Positive/Not Significant
Constant	2.29	4.13***	
Trend	0.066	2.83***	

*** denotes statistical significance 1%, **5% and*10%

Source: Authors' computation

The negative value of the Error Correction Model (ECM (-1)) in Table (6) means the convergence of the short and long run values. The interpretation of the value of -0.45 is that 45 percent of disequilibrium errors are corrected. The variables are therefore considered related in the two time spans. With a coefficient of determination ($\overline{R}^2$ = 0.72), the explanatory power of the short run relationship can be considered adequate. The variables are also positively and significantly trended over time.

Table 6: Error Correction Representation for the ARDL Model

(Short Run Coefficients) Dependent Variable: Gross Domestic Product		
Regressor	Coefficient	t-Statistic
D(External Debt)	-0. 110	-2.32**
D(Inflation)	-0.4313E-3	-0.43
D(Domestic Debt)	-0.21	-1.40
D(External Debt Service	0.7722E-5	0.68
D(Export)	0.37	4.63***
D(Constant)	1.04	2.14**
D(Trend)	0.030	2.11**
ECM(-1)	-0.45	-3.81***
AdjR-squared	0.72	
F-Statistic	8.46***	
Durbin Watson	2.85***	

***, **,*denotes statistical significance at 1%, 5% and 10% respectively.
Source: Authors' computation

The short run model is depicted in equation (5) as:

$$RGDPKt = 1.04 - 0.11ExtDebt - 0.4313E - 3Inf - 0.21Dom\,Debt - 0.7722E - 5Extserv + 3.37Exp(5)$$

The series are positively trended. In the short run, external debt impacts economic growth negatively in Nigeria. On the average, one per cent increase external debt will reduce the real GDP by 0.11 per cent. The external debt is statistically significant at five 5 per cent. Domestic debt, inflation and debt servicing although negatively impacting on growth are insignificant.

The export is on the other hand a positive and significant determinant of economic growth. Thirty-seven per cent rise in real GDP will be generated from 100 per cent increase in export. The impact of the external debt servicing is insignificant. The next presentation is the pairwise granger causality test result.

4.6 Pairwise Granger Causality Test

Pairwise granger causality test was also conducted, to examine the direction of causality of the series in the model. The results for the variables of interest are presented in Table (7). The full report can be found in Appendix I

Table 7 Pairwise Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.	Decision
RGDP does not Granger Cause External Debt	0.46	0.64	Reject
External Debt does not Granger Cause RGDP	2.97	0.07	Accept
RGDP does not Granger Cause Export	5.07	0.01	Accept
Export does not Granger Cause RGDP	3.31	0.05	Accept
RGDP does not Granger Cause Domestic Debt	2.12	0.14	Accept
Domestic Debt does not Granger Cause RGDP	4.05	0.03	Accept

Source: Authors' computation

The result of the pair wise granger causality test shown in Table (7) suggests that at 5% level of significance external debt does not cause economic growth. There exist uni-directional causality from external debt to growth, and a bi-directional causality between growth and export.

4.7 Discussion of Findings

This study presents some interesting findings, notable amongst them is the fact that External debt indeed impacts negatively on economic growth in Nigeria. This result aligns with Obademi (2013) and Vincent, Hamilton and Joseph (2011). The short run error correction model which shows a negative relationship between external debt and economic growth in Nigeria is in tandem with Mayowa and Aigbedo (2012).

As theoretically established, one would have expected that foreign debt should help fill the finance gap in the country, knowing fully-well that capital formation from domestic savings is inadequate for engendering financial inclusion and the development of both social and economic infrastructure. The negative relationship can be ascribed to improper channelization of external borrowings to productive endeavours. The manifest systemic corruption appears to make it impossible for the country to extract the benefits of leveraging in debt to finance huge infrastructure projects in energy, transport housing etc., all of which would have facilitated growth in the economy.

Also insightful is the fact that external debt servicing, though seen to have positive relationship with economic growth is reported as not significant in determining economic growth. One possible explanation for this finding could be that external debt servicing, which is a factor of the debt stock is still within global threshold given the low debt-to-GDP ratio of the country.

In agreement with a priori expectations, export is revealed to have positive impact on economic growth at 10 per cent statistical level. On the average, one per cent increase in export will increase the real GDP by 0.21per cent. However, the negative but insignificance of domestic debt to economic growth manifests the absence of crowding out effect on private investment. The robust private sector and large informal sector of the economy may have rendered the limited the relevance of public governance in economic activities. The next section contains the conclusions and the recommendations proffered from the deductions of this study.

5.0 Conclusion and Recommendations

The study examined the implications of external debt on economic growth of Nigeria between 1981- 2014. The investigation started with introduction of the problem and the objectives of the study as well as how the objectives were intended to be achieved. External debt does not impact economic growth in Nigeria both in the long run and short run, substantiating on the inapplicability of the two-gap theory, which establishes that external finance can fill savings gap to propel an economy towards achieving a target growth rate. These findings is quite instructive as it sheds light on what policy makers should focus on drivers such as export promotion import prohibition and capital formation in the country. The current belief of reliance on assistance from countries and partners abroad should be de-emphasized if real growth is to be pursued.

In conclusion, it is important to take cognizance of the fact that borrowing is not at all bad, but borrowed funds should not be misused. It is a well-known fact that finance is the bedrock for development of any economy. Therefore, a country that does not augment the deficiencies in its finances may likely not grow. When there is room to borrow current income will increase which will lead to increase in consumption and thereby increase investment. However, there is a need to review the country's debt policy and strategies, with a view to making it pro-growth.

This study, in its findings appears to paint a strange but realistic departure from most studies on public debt and economic growth, but interestingly resonates with the tone of argument of concerned Nigeria about how debt in the country has been anti-growth. The study raises questions on what debt incurred, running to trillions of Naira have been used for. The debt policy, which the former Coordinating Minister of the economy suggests should be tilted towards more domestic looks unfound employing empirical analysis as this. We should be able to ask ourselves if borrowing is the way to go when the country seats on wasting abundance.

Debt in the country is found not to be properly channelled for growth purpose, systemic corruption appears to make it impossible for the country to extract the benefits of leveraging in debt to finance huge infrastructure projects in energy, transport housing etc., all of which will facilitate growth in the economy. After establishing the implication and relationship between external debt and economic growth and the effect of external debt servicing on economic growth, it then becomes essential to draw the attention of government and policy makers towards the need to execute appropriate measures to manage borrowed funds.

Therefore, on the study recommends adequate measures to be put in place to manage borrowed fund by ensuring that borrowed fund are expended on capital project that will generate income and there should be appropriate measures in place that will serve as checks and balances on government spending such as institutional framework for analyzing and managing public investment projects. Also, borrowed funds should be channelled to the purpose in which they have been borrowed this will help foster economic development. Furthermore, the government should work towards freeing up more expenditure for capital project, as this stimulates growth, encourage productivity as against the current focus on more recurrent spending, which only compounds our fate as a consuming nation, thereby affecting long run growth in the country.

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Appendix I

Granger Causality Test

Pairwise Granger Causality Tests
Lags: 2
Sample: 1981 2014

Null Hypothesis:	Prob.	Decision
ED_SERV does not Granger Cause DOM_DEBT	0.9038	Reject
DOM_DEBT does not Granger Cause ED_SERV	0.6001	Reject
EXPT does not Granger Cause DOM_DEBT	0.1104	Reject
DOM_DEBT does not Granger Cause EXPT	0.3008	Reject
FOR_DEBT does not Granger Cause DOM_DEBT	0.8283	Reject
DOM_DEBT does not Granger Cause FOR_DEBT	0.8093	Reject
INF does not Granger Cause DOM_DEBT	0.9999	Reject
DOM_DEBT does not Granger Cause INF	0.0052	Accept
RGDP does not Granger Cause DOM_DEBT	0.1392	Reject
DOM_DEBT does not Granger Cause RGDP	0.0289	Accept
EXPT does not Granger Cause ED_SERV	0.2251	Reject
ED_SERV does not Granger Cause EXPT	0.5047	Reject
FOR_DEBT does not Granger Cause ED_SERV	0.6102	Reject
ED_SERV does not Granger Cause FOR_DEBT	0.6136	Reject
INF does not Granger Cause ED_SERV	0.5183	Reject
ED_SERV does not Granger Cause INF	0.2988	Reject
RGDP does not Granger Cause ED_SERV	0.0704	Reject
ED_SERV does not Granger Cause RGDP	0.8433	Reject
EXT_DEBT does not Granger Cause EXPT	0.0965	Accept
EXPT does not Granger Cause FOR_DEBT	0.1215	Reject
INF does not Granger Cause EXPT	0.1644	Reject
EXPT does not Granger Cause INF	0.2518	Reject
RGDP does not Granger Cause EXPT	0.0135	Accept
EXPT does not Granger Cause RGDP	0.0516	Accept
INF does not Granger Cause FOR_DEBT	0.4662	Reject
FOR_DEBT does not Granger Cause INF	0.5094	Reject
RGDP does not Granger Cause EXT_DEBT	0.6349	Reject
EXT_DEBT does not Granger Cause RGDP	0.0681	Accept
RGDP does not Granger Cause INF	0.0926	Accept
INF does not Granger Cause RGDP	0.6905	Reject