The Dynamics of External Debt and Growth: The Nigerian Experience

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Abstract

The primary objective of this study is to evaluate and assess external debt-growth dynamics in Nigeria. Groups of low-income countries have continued to experience difficulties in managing and servicing huge stocks of external debts. Most of these LDCs countries including Nigeria are within the Sub-Saharan region. The relatively high level of Nigeria's external debt and rising debt burden has serious implications on the country's development and debt sustainability initiatives. While economic performance continues to deteriorate, there has been significant net outflow of resources to meet debt obligations thus far. The study employed the Autoregressive Distributed Lag estimation technique covering the period 1981 to 2017, using secondary data sourced from World Bank Development Database. The findings of the study indicate that Nigeria's debt accumulation has been rising over the years with the debt burden increasing steadily over the period under consideration. The result also indicates that external debt accumulation has a negative impact on economic growth in Nigeria and on private investment. This confirms the existence of debt overhang problem in Nigeria. However, results also indicate that current debt inflows stimulate private investment. Debt servicing does not appear to affect growth adversely but has some crowding-out effect on private investment. Several policy implications emanated from the study. The simultaneous attainment of sustainable levels of economic growth and dynamics of external debt appear difficult at the moment and could remain elusive if aggressive .Based on findings, the study recommends that government should ensure that the external debt (money borrowed) is put into productive investment to achieve the desired result

Introduction

Emerging issues pertaining external borrowing as a policy in promoting economic growth has created and still creates series of contentious debate among economists, policy makers and researchers. At present, external debt poses a global quandary for the present and future development trajectory of most emerging and developing economies across the globe, including Nigeria. According to foremost economic theories, external debt stimulates the economy vis-à-vis investment and productivity of the labour force. Since the main reason for attracting external loans stems from the shortfall of domestic funds to finance investment generating projects, an increase in gross external debt should stimulate growth in investment and capital formation, which results to increase in the probable volume of output. However, repeatedly, external loans have not been effectively and efficiently channelled into viable investment projects, rather, they are dedicated to achieving short-term goals which will ultimately cover emerging deficits for the economy. But given the ideology of the "growth-debt nexus that a country should borrow externally as long as the capital is inadequate produces a rate of return that is higher than the cost of borrowed funds. The rates at which nations borrow depend on the linkage among foreign and domestic savings, investment and economic growth, so that the

borrowing countries increase their capacity output with the aid of foreign savings. Nevertheless, external debt can only be productive if well manage by making the rate of return higher than the cost of servicing the debt.

However, it has been established that Nigeria's reliance on oil as the only source of income coupled with her steady negative trade balance as a result of the economy over reliance on import has contributed significantly to the volatile nature of the economy. The Nigeria economy benefited from the oil boom of the past decades in terms of cash flow to the economy, but there seems to be little in terms of investment and infrastructural development to support the productivity of the economy. Hence, the monocultural nature of the Nigeria economy, low per capita income, trade imbalances, persistent fiscal deficits, low productivity, unemployment, and the attendant low savings level prompted the economy to seek other means to bridge the revenue gap, especially due to the volatile nature of oil proceeds in the international market. Public borrowing, either domestically or internationally, consequently emerged as an alternative funding option for all tiers of government. As of December 31, 2018, the report by the Nigeria institution in charge of debt management office (DMO) stated that the total debt of the country stood at N12.6 trillion (US$65.4 billion). The current Administration has resorted to external borrowing to finance projects, but this has not yielded the desired result due to the attendant challenges of escalating external debt in the country. This has necessitated this study with the following objectives.

Objective of the Study

The general objective of the study is to empirically analyse the dynamics of external debt and economic growth nexus. The specific objectives of the research work are to;

i. Model external debt and economic growth nexus.
ii. Ascertain if external debt exerts significant influence on Real GDP and Private Investment

Based on the aforementioned objectives, the relevant hypothesis of the study includes;

i. H0: There is no significant relationship between external debt and growth in Nigeria.
ii. H0: There is no significant relationship between external debt and private investment in Nigeria

Theoretical Consideration and Review of Literature

In economic theory, there are different approaches in evaluating the relationship between external debt and economic growth. On the one hand, the neoclassical growth models advocated that there is a positive influence of external debt on economic growth. However, they emphasized that borrowings are among many, one of the sources for bankrolling capital formation, and they could promote economic growth. On the other hand, there are adherent followers of the opposite theory who are very much aware that due to 'debt overhang', there is always a decrease in economic growth of the countries. In essence, there are three groups of theoretical models describing this interaction.

While the early works on the debt-growth nexus focused on the positive perspective

of and need for external borrowing like in the growth-cum-debt view, critical studies considering negative implications of external debt for developing economies emerged from the 1970s onwards, Griffin and Enos (1970). According to one of those arguments, most of the external resources are not efficiently utilized in attaining economic development of recipient countries, hence creating additional debt burden. Moreover, even if they have been effectively utilized, the positive effects generated have most times been ruined due to various internal and external factors, some of which stems from debt servicing processes and uncertainty led by high levels of external debt. Considerable amount of newly borrowed resources are also used in debt servicing. Besides, external debt may enhance economic growth only to a certain point. Once debts are amassed and reach high critical levels, it becomes a major destabilizing factor and presents a serious holdup to long-term economic growth.

It has been argued that external debt can potentially promote higher economic growth when it is channelled to finance investments. Owing to the alleged link from investment towards economic growth, the debate and empirical work on the debt-growth dynamics has mostly been undertaken through its impact on domestic investment directly or indirectly. However, the effect of external debt on economic growth may occur through some other channels different than the level of investment. In subsequent literature (Cohen, 1995, Gohar & Butt, 2012, Iyoha, 1996, Rais & Anwar, 2012, amongst others), the channels through which heavy debt burden can affect economic growth have been discussed mostly under the debt overhang, liquidity constraint, and uncertainty effects, among others. This has over time led to the argument of 'debt overhang', thus becoming a key concept in the debate based on debt relief programmes for highly indebted poor countries in the 1990s and 2000s, Kim, Ha & Kim, (2017).

The concept of 'debt overhang' is thus defined as ' the presence of existing, inherited debt sufficiently large that creditors do not expect with confidence to be fully repaid' Krugman (1988) In other words, 'a country has a debt overhang problem when the expected present value of potential future resource transfers is less than it debts'. According to the debt overhang hypothesis, once a country's total debt stock is believed to exceed its repayment ability with some probability in the future, expected debt service will probably be an increasing function of its current output level (Claessens, Detragiache, Kanbur and Wickham, 1996). Accordingly, the expected rate of returns from the productive investments in such an economy will be anticipated below the required level since a significant proportion of any significant economic progress will be 'taxed away' by foreign creditors. Hence, investment by domestic and foreign investors will be discouraged, adversely affecting economic growth (Krugman, 1988; Sachs, 1989).

It is therefore argued that external debt service payments can potentially influence economic growth by creating a 'liquidity constraint', which is also captured as a 'crowding out' effect, since limited resources should be distributed among alternative uses, such as consumption and investment, and transfers to pay outstanding debt (Cohen, 1993;

Claessens et al., 1996; Fosu, 1996; Patillo et al., 2002, 2004; Clements et al., 2003; Arnone et al., 2005). High public debt service can raise the government's interest bill and the budget deficit, reducing public savings, *ceteris paribus*. This, in turn, may crowd-out private investment by snowballed taxes and/or rising interest rates, and hence reducing available funds for private investment. The effect of high debt service payment can also occur as it wrings the amount of resources available for undertaking infrastructural development and human capital formation, which in the long run negates growth and development. High debt service can invariably impede import of intermediate and technological goods, which are critical for production, hence hampering economic growth. This scenario could occur through price rationing (that is, devaluation of the domestic currency) or non-price rationing (import restriction) (Serieux and Samy, 2001).

Foreign exchange liquidity constraints can decrease the availability of investment funds, thus necessitating increased reliance on relatively short-term projects in order to service the debt rather than long-term. Furthermore, astronomical debt service may result in the substitution effect, which posits a move away from productive investments requiring expensive imported materials critical to economic growth. Hence, as a result of the adverse effects on investment mix, debt service payments could decrease output growth 'directly' by diminishing productivity even if debt service payments do not reduce saving and investment levels substantially. This is what is referred to as the 'direct effect of debt hypothesis', suggesting that both debt stock and debt service may be burdensome and deleterious to economic growth due to investment choices even when the level of investment is not impinged on.

Trends and Patterns of External Debt in Emerging Economies

The experience of emerging economies shows that macroeconomic stability is a necessary but insufficient prerequisite for improving the well being of the population and reducing poverty. If the economy is sensitive to external and internal shock phenomena, in particular, due to excessive external borrowings, the poor and the unprotected population is adversely affected. It should be noted that in international practice, a special place is devoted to the analysis of the growth of GDP, which is considered as a major indicator of economic growth of the economy and plays an extremely important role in determining the development of society. Annual growth rates of GDP and the total debt services on external debt in emerging economies are presented in figure 1. Figure 1 plots that generally, annual growth rates of GDP were higher in Nigeria compared to other countries classified under emerging markets. Moreover, from 2013 to 2018, this indicator has sharply declined in Nigeria as compared to previous period. The situation indicates a decline of economic growth in recent years, contributed by many factors such as the deterioration of macroeconomic indicators, political challenges, insecurity as well as instability in the international market, among others.

Regarding the dynamics of the ratio of debt servicing to the export of goods and services, the level of payments generally increased during 2015 by 18 percent, while in emerging economies, it was only by 9 percent
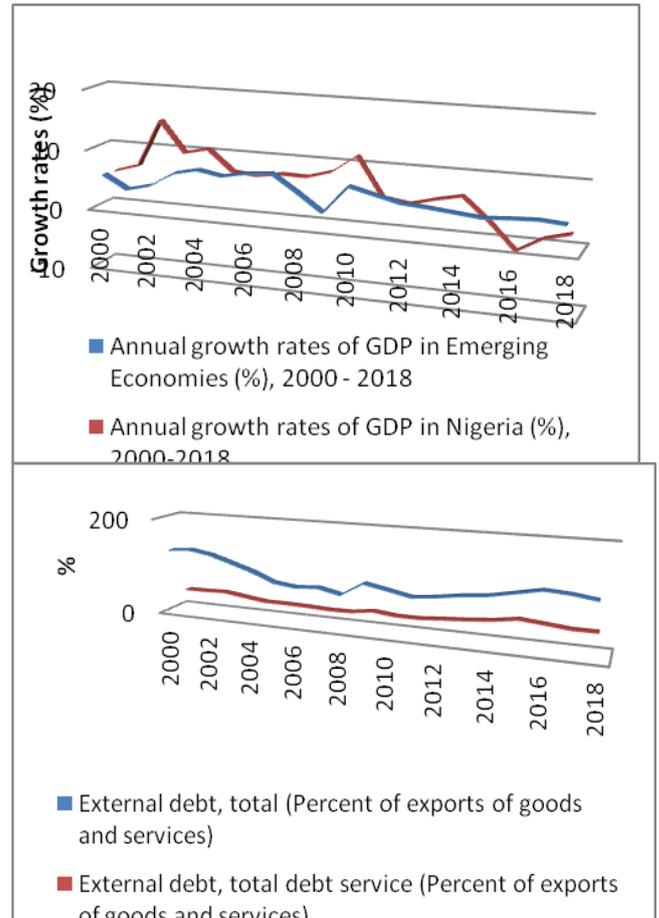
Figure1: Annual growth rates of GDP and total debt service on external debt in emerging economies, 2000-2018

Methodology

Time series data were employed, drawn from the World Development Database covering the period, 1981 to 2017. In examining the debt-growth dynamics, two variants of models are analyzed; one, a simple macroeconomic debt growth model and the other an investment-debt model as employed by Ajayi (1996), Iyoha, (1996), Maureen (2001) and Mbah, Agu & Umunna (2016) was adopted with some modifications. The model critically investigated the linear relationship between growth and external debt indicator with the inclusion of other relevant control variables as highlighted in the literature. Table 2 presents a short description of the variables as used in the analysis. The model is thus expressed as;

$$RGDP_t = \delta_0 + \delta_1 DBs_t + \delta_2 DER_t + \delta_3 INF_t + \delta_4 INTR_t + \delta_5 PRINV_t + \delta_6 TRDOPN_t + \varepsilon_t$$
$$(1)$$

Where

$RGDP_t$ = Real Gross Domestic Product

DER_t = External debt stock (ratio to GDP)

DBs_t = External debt servicing (ratio to exports)

INF_t = Inflation rate

$INTR_t$ = Interest rate

$PRINV_t$ = Private Investment

47

$TRDOPN_t$ = Trade openness (sum of imports and exports ratio to GDP)

$\delta_1, ..., \delta_6$ represents coefficients; ε_t = the error term; and t represents time period

Table 1: Description and Nomenclature of Variables

S/N	Variable	Conceptual/Operational Definition	Unit of measurement	Expected Signs
1	Real Gross Domestic Product	This reflects the value of all goods and services produced by an economy in a given year, expressed in base year prices	Constant US dollar	
2	External Debt Stock to GDP	This refers to the ratio of a country's public debt to its gross domestic product	Percent	Negative
3	External Debt Service to exports	This is the ratio of interest and principal payments made by or due from a country expressed in percentage of exports of goods and services	Percent	Negative
4	Inflation	This measures changes in the purchasing-power of a currency and the rate of inflation	weighted average of *prices*	Negative
5	Interest Rate	*Lending rate* is the bank rate that usually meets the short- and medium-term financing needs of the private sector	Percentage	Negative
6	Private Investment	This refers to the purchase of a capital asset that is expected to produce income, appreciate in value, or both generate income and appreciate in value	Constant US dollar	Positive
7	Trade openness	*This measures the sum of imports and exports of goods measured as a share of GDP*		Positive

Source: Author's compilation (Variables are expressed in logarithmic forms)

Estimation Technique

The paper adopts the Autoregressive Distributed Lag (ARDL) bound testing framework (Pesaran and Shin 1995 and 1999, Pesaran *et. al* 1996, Pesaran, 1997) to estimate the long run relationship among the variables. The ARDL model has both lagged values of the explained variables (autoregressive) and lagged values of the explanatory variables (distributed lag). The ARDL cointegration is used to establish whether a long run relationship exist among the variables under consideration when the variables are

integrated both of order zero, I(0) and order one, I(1). The advantages of using the ARDL technique as an alternative to the Johansen (1998) and Johansen and Juselius (1990) cointegration approach are that while the latter estimates the long run relationships within the context of a system of equations, the former employs only a single reduced equation (Pesaran and Shin, 1995). In addition, the ARDL method avoids configuring a alarger number of specifications in the standard cointegration test. Furthermore, the ARDL

approach allows for the use of different optimal lags for different variables, which is not possible in the standard cointegration test.

Since the time series data could be vulnerable to unit root problems, the Augmented Dickey Fuller (ADF), Phillips-Perron (PP) and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root tests are employed on the series to avoid spurious regression. Following Pesaran *et.al (*2001), the ARDL approach to cointgeration is done as shown in equation (2)

$$\Delta RGDP_t = \delta_0 + \delta_1 \Delta DER_t + \delta_2 \Delta DBs_t + \delta_3 \Delta INF_t + \delta_4 \Delta INTR_t + \delta_5 \Delta PRINV_t + \delta_6 \Delta TRDOPN_t +$$
$$+ \delta_7(RGDP_{t-1}) + \delta_8 \Delta(DER_{t-1}) + \delta_9 \Delta(DBs_{t-1}) + \delta_{10} \Delta(INF_{t-1}) + \delta_{11} \Delta(INTR_{t-1}) \qquad (2)$$
$$+ \delta_{12} \Delta(PRINV_{t-1}) + \delta_{13} \Delta(TRDOPN_{t-1}) + \varepsilon ct_{t-1}$$

In obtaining the optimal number of lags for each variable, the lag length test is conducted by estimating the single equation Vector Autoregression (VAR) and using the lag length criteria. This is

followed by the estimation of a single equation unrestricted Error Correction model with the number of estimated lags as shown in equation (3).

$$\Delta RGDP_t = \delta_0 + \sum_{i=1}^{d} \delta_1 \Delta(DER)_{t-1} + \sum_{i=0}^{d} \delta_2 \Delta(DBs)_{t-1} + \sum_{i=0}^{d} \delta_3 \Delta(INF)_{t-1} + \sum_{i=0}^{d} \delta_4 \Delta(INTR)_{t-1}$$
$$+ \sum_{i=0}^{d} \delta_5 \Delta(PRINV)_{t-1} + \sum_{i=0}^{d} \delta_6 \Delta(TRDOPN)_{t-1} + \delta_7(RGDP)_{t-1} + \delta_8(DER)_{t-1} \qquad (3)$$
$$+ \delta_9(DBs)_{t-1} + \delta_{10}(INF)_{t-1} + \delta_{11}(INTR)_{t-1} + \delta_{12}(PRINV)_{t-1} + \delta_{13}(TRDOPN)_{t-1} + \upsilon_t$$

From equation (3), Δ is the first difference operator, d is the optimal lag length, and all other variables remains the same. Wald tests are conducted on the coefficient s of the unrestricted error correction variables are conducted to obtain the F-statistics, which are used to test the existence of a long run association. The F-statistics are compared with the Pesaran's critical values at 5% level of significance. The test involves asymptotic critical value bounds depending on whether the variables are I(0) or I(1) or a mixture of both. The upper bound and lower bound critical values are

derived from the I(1) and I(0) series respectively. When an F-statistics is above the upper bound, we reject the null hypothesis of no cointegration among the other variables and therefore conclude that there is no evidence of a long run relationship. If it falls below the lower bound, we do not reject the null hypothesis of no cointegration, and if it lies between the bounds, the result is inconclusive. In the advent that the variables are cointegrated, the short-run dynamics is derived by estimating the Error Correction

Term with the specified lags as shown in equation (4)

$$\Delta RGDP_t = \delta_0 + \sum_{i=1}^{d} \delta_1 \Delta(DER)_{t-1} + \sum_{i=0}^{d} \delta_2 \Delta(DBs)_{t-1} + \sum_{i=0}^{d} \delta_3 \Delta(INF)_{t-1} + \sum_{i=0}^{d} \delta_4 \Delta(INTR)_{t-1}$$
$$+ \sum_{i=0}^{d} \delta_5 \Delta(PRINV)_{t-1} + \sum_{i=0}^{d} \delta_6 \Delta(TRDOPN)_{t-1} + \delta_7 ECT_{t-1}$$

$$(4)$$

ECT_{t-1} is the error correction term in equation (4)

All coefficients of the short run equation relate to the short-run dynamics of the model convergence to equilibrium, and δ_8 in equation (4) represent the speed of adjustment.

Empirical finding and discussions

The study focuses on the relationship between external debt and economic growth. The following statistical methods are adopted; descriptive statistics, correlation analysis and regression analysis with the inclusion of pre and post diagnostic analysis which include unit root test, serial correlation test, heteroscedasticity test, normality test and stability test. E-views 10 statistical software was used for this analysis.

Table 2: Summary of Descriptive Statistics

Variables	Mean	Std. Deviation	Min.	Max.	Jarque Bera	Prob.
RGDP	6.871	0.726	5.599	8.077	2.934	0.230
DER	3.575	1.332	1.418	5.430	4.016	0.134
DBs	2.043	1.204	-0.704	3.638	4.708	0.094
INF	2.674	0.713	1.683	4.288	4.643	0.098
INTR	2.817	0.320	2.131	3.454	2.796	0.247
PRINV	1.903	0.474	0.488	2.731	2.051	0.358
TRDOPN	3.369	0.506	2.212	3.975	6.685	0.035
Observations	37	37	37	37	37	37

Source: Author's Computation, using E-views 10

The descriptive statistics as revealed from table 2 shows that the mean value of economic growth for the period under study is (6.871) with a minimum value (5.599) and maximum value (8.077). External debt on the average has a mean value of (3.575) with minimum and maximum values (1.418) and (5.430) respectively. External debt service shows a mean value of (2.043) with minimum and maximum values (-0.704) and (3.638) respectively. The rate of inflation shows mean value of (2.674) with minimum and maximum values (1.683) and (4.288) respectively. The rate of interest on the average has a mean value of (2.817) with minimum value (2.131) and maximum value (3.454). Private investment has a mean value of (1.903) with minimum and maximum values of (0.488) and (2.731) respectively, while trade openness has a mean value of (3.369) with minimum value (2.212) and maximum value (3.985). On the whole, the variables are normally

distributed with their Jarque-Bera values

greater than their probability values.

Table 3: Summary of Correlation Matrix

	RGDP	DER	DBs	INF	INTR	PRINV	TRDOPN
RGDP	-						
DER	-0.809	-					
DBs	-0.578	0.568	-				
INF	-0.422	0.649	0.309	-			
INTR	-0.343	0.479	-0.178	0.377	-		
PRINV	-0.020	0.051	0.504	-0.045	-0.659	-	
TRDOPN	-0.137	0.037	-0.394	0.060	0.612	-0.784	-

Source: Author's Computation, using E-views 10

Table 3 shows the correlation coefficient which indicates the degree of linear relationship between the variables. The findings indicate that real gross domestic product has a negative association with external debt stock (-0.809), external debt service (-0.578), inflation rate (-0.422), interest rate (-0.343), private investment (-0.020) and trade openness (-0.137) at 5 percent significant level. Debt service shows a negative correlation with interest rate (-0.178) and trade openness (-0.394), but exhibits a positive correlation with external debt stock (0.568), inflation rate (0.309) and private investment (0.504) at 5 percent significant level. Inflation rate exhibits a positive association with external debt stock (0.649), interest rate (0.377), but exhibits a negative correlation with private investment (-0.045). Private investment shows a positive relationship with external debt stock (0.051) and external debt service (0.504) but exhibits a negative relationship with interest rate (-0.659) and trade openness (-0.784).

Stationarity Test

One of the significant issues in time series analysis is the possibility of a random walk present in the data. Table 5 presents the Augmented Dickey-fuller, Phillips-Peron and the Kwiatkowski-Phillips-Schmidt-Shin unit root test.

Table 4: Results of Unit root tests

Variable	Augmented Dickey-Fuller Unit Root Test		
	At level (prob.)	First difference (prob.)	Decision
DBs	-4.351 (0.007)**	-4.548 (0.004)**	I(1)
DER (% of GNI)	-2.528 (0.313)	-4.728 (0.003)**	I(1)
Inflation rate	-3.544 (0.050)**	-5.486 (0.000)**	I(1)
Interest rate	-2.120 (0.517)	-5.476 (0.000)**	I(1)
Prinv	-1.694 (0.732)	-6.294 (0.000)**	I(1)
REER	-1.930 (0.618)	-4.095 (0.014)**	I(1)
RGDP	-1.525 (0.802)	-6.903 (0.000)**	I(1)
TRDOPN	-2.124 (0.515)	-7.496 (0.000)**	I(1)
	Phillips-Perron Unit Root Test		

	At level (prob.)	**First difference (prob.)**	**Decision**
DBs	-4.421 (0.006)**	-8.298 (0.000)**	I(1)
DER (% of GNI)	-2.427 (0.360)	-6.372 (0.000)**	I(1)
Inflation rate	-2.870 (0.183)	-10.591 (0.000)**	I(1)
Interest rate	-2.059 (0.550)	-6.863 (0.000)**	I(1)
Prinv	-1.453 (0.826)	-13.645 (0.000)**	I(1)
REER	-2.238 (0.455)	-4.806 (0.002)**	I(1)
RGDP	-1.536 (0.797)	-6.669 (0.000)**	I(1)
TRDOPN	-2.019 (0.571)	-11.052 (0.000)**	I(1)
	KPSS Unit Root Test		
	At level (LM stat.)	**First difference (LM stat.)**	**Decision**
DBs	0.094	0.129***	I(1)
DER (% of GNI)	0.163**	0.125***	I(1)
Inflation rate	0.123***	0.500**	I(1)
Interest rate	0.172**	0.157**	I(1)
Prinv	0.187 **	0.500**	I(1)
REER	0.392***	0.061	I(0)
RGDP	0.203**	0.101	I(0)
TRDOPN	0.190**	0.128***	I(1)

Source: Author's Computation (using E-views 10)

N.B:** indicates significant at the 0.05 level, *** indicates significant at the 0.1 level

The ARDL bounds test is based on the theoretical assumption that the variables must be integrated of different orders, that is I(0) or I(1). The objective therefore is to make certain that the aforementioned variables are not integrated of a higher order, I(2); so as to avoid spurious results as the estimated results cannot be interpreted under the conditions of the F-statistics provided by Peasaran *et. al* (2001). Therefore, the results estimated in table 3 shows that a majority of the variables were not stationary at level via the ADF and the PP unit root tests. The ADF and the Phillips-Perron tests applied to the first difference rejects the null hypothesis of non-stationarity for all variables. The result from the KPSS unit root test reflects different orders of integration, though a majority of the variables integrated at first difference. Based on the afore-stated results, it is worth concluding that the null hypothesis of unit test process using the ADF and Phillips-Perron is rejected and the null hypothesis is accepted as in the case of KPSS of stationarity based on the Akaike Information Criterion (AIC) and serial correlation diagnostic test from the unit root test results.

Table 5: Summary of Results ARDL Bounds Tests

	Models	F-Statistics	t-statistics	Decision
1	$F_{RGDP}(F_{RGDP}|DBs,DER,INF,INTR,PRINV,TRDOPN)$	4.336**	-3.672**	Cointegration
2	$F_{DBs}(F_{DBs}|RGDP,DER,INF,INTR,PRINV,TRDOPN)$	6.410**	-6.020**	Cointegration
3	$F_{DER}(F_{DER}|RGDP,DBs,INF,INTR,PRINV,TRDOPN)$	3.237**	-3.062**	Cointegration
4	$F_{INF}(F_{INF}|RGDP,DBs,DER,INTR,PRINV,TRDOPN)$	-2.382***	-3.607***	Cointegration
5	$F_{INTR}(F_{INTR}|RGDP,DBs,DER,INF,PRINV,TRDOPN)$	3.107***	-4.429**	Cointegration
6	$F_{PRINV}(F_{PRINV}|RGDP,DBs,DER,INF,INTR,TRDOPN)$	1.467	-2.403	No Cointegration
7	$F_{TRDOPN}(F_{TRDOPN}|RGDP,DBs,DER,INF,INTR,PRINV)$	2.897**	-3.769**	Cointegration

Source: Author's Computation (using E-views 10)
N.B:** indicates significant at the 0.05 level, *** indicates significant at the 0.1 level

From table 5, models 1-5 and model 7 exhibits long run relationship which gives precedence to conduct a long run analysis as against model 6 which only exhibits a short-run relationship, thus giving precedence to conduct a short-run analysis.

Table 6: Summary of Long-Run Error Correction analysis

Dependent Variable: Economic Growth (RGDP)

Variables	Coefficient	T-statistics
D(LNRGDP(-1))	0.529	2.793**
D(LNDBS(-1))	-0.036	-0.892
D(LNDER(-1))	-0.141	-1.776***
D(LNINF(-1))	-0.035	-0.776
D(LNINTR(-1))	-0.385	-1.713**
D(LNPRINV(-1))	-0.114	-0.994
D(LNTRDOPN(-1))	0.087	0.813
ECM(-1)	**-0.858**	**-3.349****
C	-0.013	-0.427
R-Squared	0.420	
Adjusted R-Squared	0.241	
Durbin Watson stat.	1.799	
Model Diagnostics		
Breusch-Godfrey Serial Correlation Test	0.527	0.596
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.729	0.665
Normality Test	3.930	0.140

Source: Author's Computation, using E-views 10

As regards the growth equation, based on the lag selection criterion, the results of the long run relationship in table 6 shows that the lagged value of real gross domestic

product, external debt and interest rate are statistically significant at 5 percent and 10 percent level respectively, while the lagged value of external debt service, inflation rate, interest rate and trade openness are no statistically significant in explaining changes to economic growth. Debt to GDP ratio was negatively and statistically significant in the long run. Specifically, debt to GDP ratio coefficient of (-0.141) suggests that a 1% change in the debt to GDP ratio is associated with a 0.14 percent in growth. The result suggests the existence of the liquidity constraint hypothesis and debt overhang theory of Krugman (1989). The theory posits that a rise in accumulated debt stock results in higher tax on future output and thus crowds-out private investment and retards growth. This evidence of a significant negative relationship between economic growth and external debt in Nigeria is also consistent with the findings of Akram

(2010), Presbitero (2012) and Patillo, (2011), implying that external debt does not promote economic growth. Variables such as the lagged value of inflation rate and trade openness exhibited anticipated signs though statistically insignificant. The model is a good fit with the Durbin Watson statistics (1.799) which is approximately equal to 2.

Results also reveals the coefficient of the error term of (-0.858), implying rejection of the null hypothesis of no cointegration. This represents the speed of adjustment from the short-run to the long-run equilibrium and suggests that 0.85 percent of the error is corrected annually.

Figure 1 and 2 provides evidence of the Cumulative Sum Chart (CUSUM) and the Cumulative Sum Chart Q (CUSUMQ) stability test supporting the stability of the model at the 5 percent level because the blue line never deviates beyond the 5 percent critical lines.

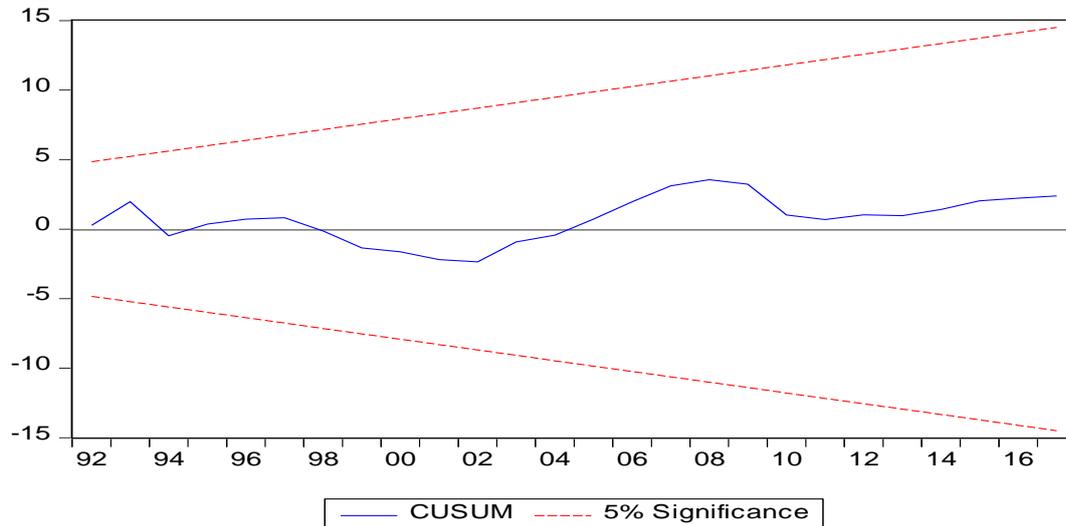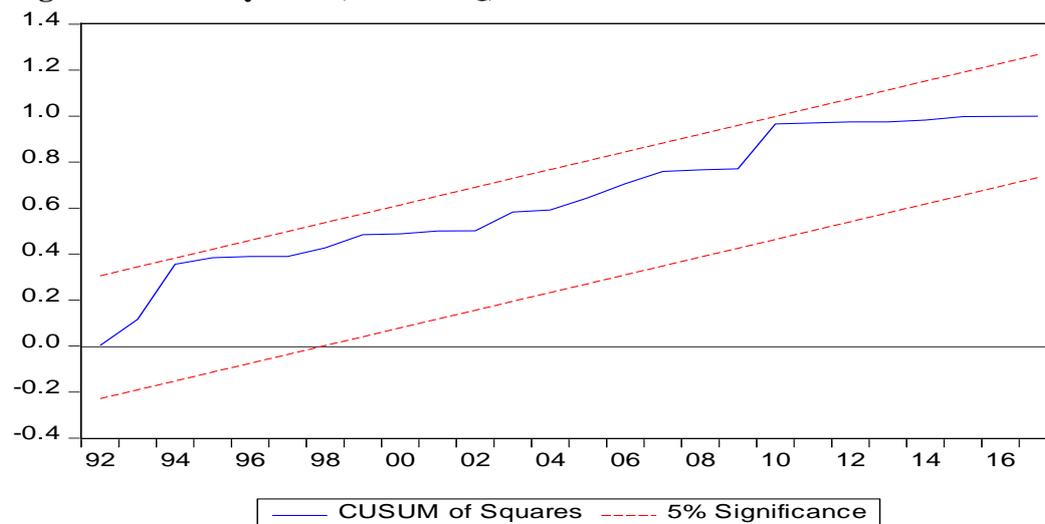**Figure 1: Stability Test (CUSUM)**

Figure 2: Stability Test (CUSUMQ)

In relation to the investment equation, based on the lag selection criterion, the results of the short run relationship as shown in table 8 suggests that the first and second period lagged values of private investment are positive but statistically insignificant to itself while the third period lagged value of private investment is statistically significant in explaining changes to itself at 5% level. The first, second and third period lagged values of real gross domestic product and debt service are statistically insignificant to private investment in the short-run at 5 percent level. The first period lagged value of external debt shows a negative and statistical significance in explaining changes to private investment in the short run. Suffice to say that the negative coefficient of debt to GDP ratio in the first lagged period suggests the crowding-out effect in the previous periods. The implication thus is that the first period lagged value of external debt-GDP ratio deters investment as expected in the short run. This evidence is consistent with the findings of Maureen, (2001), which implies that increasing debt stock retards private sector investment. The second period lagged value of inflation shows a positive and significant relationship to private investment, implying that previous year's level of inflation stimulates private investment, *ceteris paribus.* The model is a good fit with a high R-squared (0.825) and the Durbin Watson statistics (1.764) which is approximately equal to 2.

Figure 3 provides evidence of the Cumulative Sum Chart (CUSUM) supporting the stability of the model at the 5 percent level because the blue line never deviates beyond the 5 percent critical lines.

Table 7: Summary of the short-run analysis

Dependent Variable: Economic Growth (PRINV)

Variables	Coefficient	T-statistics
D(LNPRINV(-1))	0.033	0.162
D(LNPRINV(-2))	0.231	1.035
D(LNPRINV(-3))	0.701	3.150**

D(LNRGDP(-1))	0.182	0.580
D(LNRGDP(-2))	-0.122	-0.313
D(LNRGDP(-3))	0.235	1.136
D(LNDBS(-1))	0.147	1.762
D(LNDBS(-2))	0.150	1.628
D(LNDBS(-3)	0.003	0.042
D(LNDER(-1))	-0.583	-2.733**
D(LNDER(-2))	0.022	0.163
D(LNDER(-3))	-0.033	-0.221
D(LNINF(-1))	0.055	0.695
D(LNINF(-2))	0.185	2.600**
D(LNINF(-3))	-0.033	-0.221
D(LNINTR(-1))	0.691	1.296
D(LNINTR(-2))	0.602	1.605
D(LNINTR(-3))	-0.375	-1.176
D(LNTRDOPN(-1))	0.361	1.965***
D(LNTRDOPN(-2))	0.403	1.673
D(LNTRDOPN(-3))	-0.664	-2.524**
C	-0.021	-0.520
R-Squared	0.825	
Adjusted R-Squared	0.493	
Durbin Watson stat.	1.765	
Model Diagnostics		
Breusch-Godfrey Serial Correlation Test	0.288	0.756
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.913	0.589
Normality Test	0.483	0.785

Source: Author's Computation, using E-views 10

Figure 3   Stability Test (CUSUM)
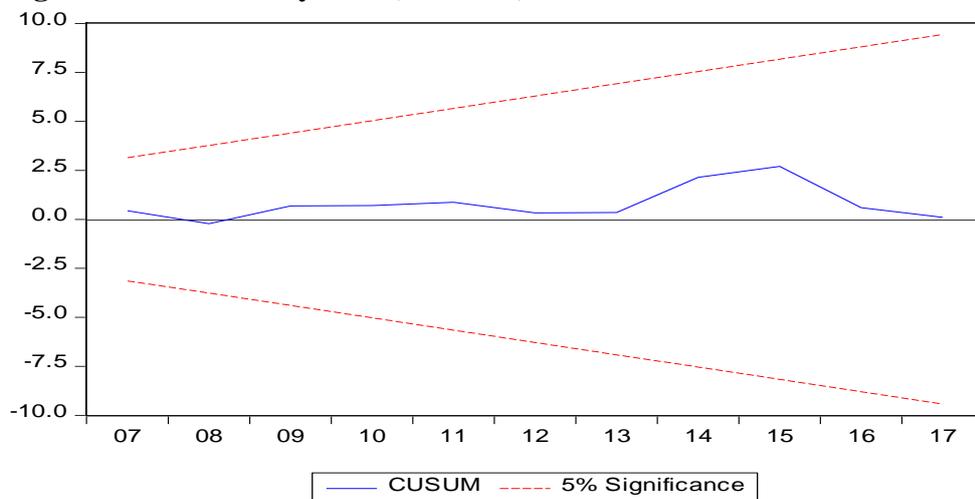
Conclusion and Policy Implications

This paper set sights to render policy contribution to the consideration of debt-growth dynamics employing the data from a small open economy over the period 1981-2017. To this end, the Autoregressive Distributed Lag estimation technique was employed to establish the afore-stated relationship. Empirical relationship between external debt and economic growth has been analyzed previously since the emergence of the ground-breaking literature. However, results from the analyses conducted are far from being conclusive. Thus, the conducted empirical testing of the growth-debt dynamics confirmed the theoretical assumptions as regards the negative linear effect of external debt on the level of output and private investment in Nigeria. The core channel through which external debt has an impact on growth invariably appears to be the debt stock directly. The uncertainty created by high indebtedness may discourage new investment (private)

and furthermore may be distortionary for investment decisions, thus leading to less efficient and short-term investment choices which impede economic growth.

The level of external debt that is supportive for growth depends on other macroeconomic issues including the productivity of investment and the proportion of debt devoted to domestic investment as compared to its use on consumption and non-productive investments. Generally, it is difficult identifying the amount of debt that is growth enhancing as economies vary in economic, institutions and political conditions. Therefore, given the negative effect of external debt on economic growth, the analyses are critical for taking relevant measures to direct external debt towards long-term growth and productive investments. Based on findings, the study recommends that (a) government should ensure that the external debt (money borrowed) is put into productive investment to achieve the desired result. (b) The government should develop a framework for recording and monitoring all money borrowed, as well as should formulate and implement a policy for the management of all money borrowed to ensure accountability and avoid corruption. (c) there is a need to be discretionary in her debt policy. Debts should be taken only when necessary, and should be used for the purpose for which it was taken. Also, since both domestic debt and external debt crowd-out private investment in the short run, government should strive to reduce her debt profile by improving its revenue base.

In conclusion, proper macroeconomic management of the economy is extremely important since it also determines the volume and servicing of external debt, as well as the credit worthiness. As part of a broader strategy, the international community must provide growth yielding environment in revamping the economy through adequate export oriented polices as it will provide a scenario of curtailing debt problems vis-à-vis other debt relief/reduction programmes.

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