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An Empirical Analysis of the Impact of External Debt on Nigeria's Economic Growth: The Nexus on Var, Cointegration and VECM Methodological Approach

[1]Abalaka, J. N.,
[2]Ajiteru, S. A. R &
[3]Sulaiman, T. H
[1&3]Crown University Intl Chartered Inc, Faculty of Social Science, in USA, Official Partners' Constituent Campuses at Government Regulated Universities Worldwide and Online Operation.
[2]Department of Political Science & International Relations Achievers University, Owo, P.M.B.1030 Owo Ondo State Nigeria.

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Corresponding Author:
Abalaka, J. N.

Abstract

This paper study the rationale for raising external loans has always been to bridge the domestic resource gap in order to accelerate economic growth and development. The Nigerian government embarked on external borrowing just like other developing countries in order to accelerate economic growth and ensure sustainable economic growth and development. This study tried to ascertain the relationship between external debt and economic growth in Nigeria. Data were sourced from secondary sources and it ranged from 1980 to 2013. Variables used are External debt- output ratio, external debt service-output ratio, public investment, private savings, export and import. Augmented Dickey-Fuller test was used to test for the stationarity of the variables. To determine the long-run relationship between the variables, Engle-Granger co-integration approach was used. Variables were over parameterized and the parsimonious error correction model was applied to determine the speed of adjustment to equilibrium. The study also estimated the relationship between external debt and economic growth in Nigeria using Pairwise Granger Causality Test. The result showed that external debt indirectly affects growth when channeled into investment. It was therefore recommended that since debt is inevitable, Government should be guided in its accumulation.

Background to the Study

Countries borrow when they are unable to generate enough domestic savings to carry out their productive activities. The funds borrowed are meant to boost economic growth and development of the country thereby improves the standard of living of the citizenry. Governments usually borrow by issuing securities, government bonds, and bills. Countries could also borrow directly from supranational organization such as the World Bank and international financial institutions (Sulaiman, 2018).

In the early 1970s, developing countries borrowed to finance their current account deficit. Such borrowing was geared towards boosting the level of economic growth and development. As the debt piled up, the international financial institutions from the 1980s started providing both technical and financial debt-management assistance to debtor countries. This effort, which was still aimed at fostering economic growth, was equally meant to reduce both debt burdens and poverty level of these countries in order to make them more viable (Ajiteru, 2017). While these measures succeeded in substantially reducing the external debt burdens of many middle-income countries, a different scenario played out for many of their poor counterparts. On the other hand, not much attention was being paid to the domestic debt. Thus, some countries, Nigeria inclusive, have been witnessing bloated domestic debt. Generally, debt burden of poor countries had continued to pile up coupled with chronic poverty and civil conflicts, culminating in sluggish economic growth. In recent times there seems to be a consensus among public opinion leaders that huge external debt was adversely affecting economic growth and development in developing countries (Mojekwu and Ogege, 2017)). This was affirmed by Sulaiman (2018) who observed that 'the relationship between government debt and real GDP growth is weak for debt/GDP ratios below a threshold of 90 percent of GDP'.

Nigeria incurred both domestic and external debts. The external debt is typically owed to foreign creditors. These are multilateral agencies such as the Africa Development Bank, the World Bank, or the Islamic Development Bank, and bilateral agencies such as the China Exim Bank, the French Development Bank, or the Japanese Aid Agency. There are also foreign private creditors such as investors in Nigeria's Eurobonds Abalaka, (2019). The domestic debt, however, is contracted within Nigerian borders, usually through bond and Treasury bills which are purchased by Nigerian banks, local pension funds, and other domestic and foreign investors. The government also has some contractor arrears, and other local liabilities which form part of total public debt. The concern is that excessive domestic borrowing could crowd out private sector investment as the government competes with the private sector for available funds (Ajiteru, 2017).

The objectives of this paper are to assess the impact of public debt on key macroeconomic variables such as output, prices and interest rates in Nigeria. Thus, the paper would examine the implications of Nigeria's rising public debt profile with a view to proffering policy recommendations. The paper is structured into five sections. Following this introduction, section two gives an overview of Nigeria's public debt. Section three undertakes a review of theoretical and empirical literature. Discussions on the

methodology, model estimation, and empirical results are contained in section four, while section five provides the policy implications of the analysis and concludes the paper.

Overview of Nigeria's Public Debt

Nigeria's indebtedness dates back to pre-independence era. The debts incurred before 1978 were relatively small and mainly long-term loans from multilateral and official sources such as the World Bank and Nigeria's major trading partners. The loans were majorly obtained on soft terms and therefore did not constitute a burden to the economy (Ajiteru, 2017). However, due to the fall in oil prices and oil receipts, the country in 1977/78 raised the first jumbo loan to the tune of US$1.0 billion from the international capital market. The loan was used to finance various medium to long-term infrastructural projects.

Domestic debt management in Nigeria had hitherto been carried out by the CBN through the issuance of government instruments, such as the Nigerian Treasury Bills (NTBs); Nigerian Treasury Certificates; Federal Government Development Stocks; and Treasury Bonds. The debt management strategy adopted at that time led to inefficiencies resulting in fundamental challenges. In consideration of these numerous difficulties, the government established an autonomous debt management office in order to achieve efficient debt management practices. The Debt Management Office (DMO) was thus established on October 4, 2000 to centrally co-ordinate the management of Nigeria's debt for all the tiers of government. While the state governments' external borrowing is guaranteed by the Federal Government (FG), their domestic borrowings required analysis and confirmation by the FG based on clear criteria and guidelines that the states can repay based on their monthly allocations from the Federation Account Allocation Committee (FAAC) and internally generated revenue (IGR).

The past couple of decades have witnessed rising concern on the increase in Nigeria's public debt. The first most significant rise in Nigeria's public debt occurred in 1987 when the total debt rose by 96.9 per cent to N137.58 billion. From then, the rise in Nigeria's public debt continued unabated such that as at 2004, total public debt stood at N6,188.03 million. In 1986, total debt which was hitherto driven largely by the domestic debt witnessed a reversal and was being driven by the external debt. Thus, the dominance of the external debt as well as the steady rise in total debt remained till 2005 when the country was granted debt pardon by the Paris Club. The debt forgiveness saw Nigeria's total debt and external debt plummeting by 59.0 per cent and 90.8 per cent, respectively between 2004 and 2006 to N2,533.47 billion and N451.5 billion. Incidentally, as external debt shrunk, domestic debt continued to grow unabated such that by 2011, total debt which was being driven by the domestic debt had exceeded the 2004 level and stood at N6,519.65 billion. By 2012, Nigeria's total debt had hit an all-time high of N7,564.4 billion. Between 2006 and 2012, the domestic debt had accounted for 82.2 to 87.2 per cent of the total debt (Abalaka, 2019).

Current debates on fiscal consolidation emphasized the crucial role of prudential limits on public debt-to-GDP ratios. A debt-to-GDP ratio of 60 per cent is quite often noted as a prudential limit for developed countries, while for developing and emerging economies, a ratio of 30.0 per cent was maintained before 2008 and 40 per cent was being applied since 2009 (DMO, 2013). However, these ratios are not sacrosanct as countries are encouraged to adapt different strategies to achieve fiscal consolidation (IMF, 2011).

Nigeria's public debt was unsustainable between the periods of 1985-1995 and 1998-2004. While brief sustainability was enjoyed in 1996-1998, Nigeria's debt had been below the threshold since 2005. The sustainability of the former was due to astronomical increase in Gross Domestic Product (GDP) whereas that of the later could be attributable to both GDP growth and debt forgiveness. Though Nigeria's debt had remained sustainable since 2005, it is however noteworthy that both public debt and GDP had been on continuous rise. At 62.41 per cent, by end-2012 the bulk of Nigerian domestic debt was made up of Federal Government of Nigeria (FGN) bonds. This was followed by the treasury bills at 32.47 per cent (Sulaiman, 2018).

Most of Nigeria's domestic debt which was mostly long-term in 2010 became more of short-term, that is, they had maturity of less than one year. This led to increased debt service burden. As at end-2012, the Nigerian total public debt service / GDP ratio stood at 0.5 per cent. With the debt forgiveness in 2005, Nigerian foreign debt which was hitherto being driven by Paris Club was being dominated by the multilateral debt. The holding of the domestic debt which was mostly taken up by the CBN from 1981 to 2003 changed such that the Deposit Money Banks (DMBs) and the Non-Bank Public surpassed the CBN and became major players in the domestic debt market with the DMBs taking the lead (Abalaka, 2019).

Review of Related Literature

Review of related literature is done under the following sub-headings: Conceptual Framework, Theoretical Framework, and Empirical Review.

Conceptual Framework

The act of borrowing creates debts and this debt may be domestic or external. The focus of this study is on external debt which refers to that part of a nation's debt that is owed to creditors' outside the nation. Abalaka (2019), defines external debt as that portion of a country's debt that is acquired from foreign sources such as foreign corporations, government or financial institutions. According to Sulaiman (2018), external debt arises as a result of the gap between domestic savings and investment. As the gap widens, debt accumulates and this makes the country to continually borrow increasing amount in order to stay afloat. Nigeria's external debts are the debt owed by the public and private sectors of the Nigerian economy to non-residents and citizens that is payable in foreign currency, goods and service (Ogbeifin, 2017).

External debt is made up of different types. The types of external debt reflect the purpose for which the debt was incurred. According to Audu (2016) some of these are trade arrears, loans or socio-economic needs, balance of payment support loans, project tied loans, short-term loans, medium and long-term debt, public and publicly guaranteed debt and private non-guaranteed external debt. According to Abalaka (2019), the explanation for the growing debt burden of developing economies is of two-fold. Firstly, developing countries have become over-depended on external borrowing. Secondly, the difficulties they experience in servicing external debt due to huge debt service payments. Ahmed (1984) asserts that the causes of debt problem relate to both the nature of the economy and the economic policies put in place by the government. He opines that the developing economies are characterized by heavy dependence on one or few agricultural and mineral commodities and export trade is highly concentrated on the other. The manufacturing sector is mostly at the infant stage and relies heavily on imported inputs.

Sulaiman (2018), point out that the major cause of debt crisis situation in Nigeria is the fact that the country's foreign loans are not being used for developmental purposes. According to Debt Management Office of Nigeria (DMO) (2017), the factors that led to Nigeria's external debt burden can be grouped into six areas which include; inefficient trade and exchange rate policies, adverse exchange rate movements, adverse interest rate movements, poor lending and inefficient loan utilization, poor debt management practices and accumulation of arrears and penalties. Debt management strategy is a framework that the government intends to use over the medium term (5years) to ensure that debt levels stay affordable and sustainable, that any new borrowing is for a good purpose and that the costs and risks of borrowing are minimized (Abalaka, 2019).

The Central Bank of Nigeria (CBN) has the responsibility to manage Nigeria's external debt. This led to the establishment of a Department in the CBN to undertake the functions in collaboration with the Federal Ministry of finance and other agencies. In 2000, the Debt Management Office (DMO) was also established. Since Independence, Nigeria had attempted to manage her external debt through several measures which include; embargo on new loans, limitation on debt service payments, debt restructuring, refinancing of trade areas, debt rescheduling, debt buy-back, collateralization and new money options and debt swap/conversion options (Ajiteru, 2017).

Theoretical Framework

The burden of external debt service has become a major impediment to the growth and stability of developing countries. Economists have therefore chosen to explore the channels through which the effects of external debt burden are analyzed and have come up with two competing theories namely the debt overhang theory and the crowding-out effect theory (Abalaka, 2019). The Solow growth model is built on a closed economy which makes use of labor and capital as its means of production. Under this scenario the implication of external debt on growth can be seen through its effect on domestic saving which in turn is used as investment in a closed model. The general effect of external debt on the Solow growth model can be analyzed by looking at the individual effect of the debt overhang and debt crowding theories on the Solow growth model.

The Debt Overhang Theory

Debt-overhang occurs when a nation's debt is more than its debt repayment ability. Krugman (1982) explains debt overhang as one whereby the expected repayment amount of debt exceeds the actual amount at which it was contracted. Borensztein (2020) also defined debt overhang as one where the debtor nation benefits very little from the returns on additional investment due to huge debt service obligations. The "debt overhang effect" comes into play when accumulated debt stock discourages investors from investing in the private sector for fear of heavy tax placed on them by government. This is known as tax disincentive. Tax disincentive here implies that because of the high debt and as such huge debt service payments, it is assumed that any future income accrued to potential investors would be taxed heavily by government so as to reduce the amount of debt service and this scares off the investors thereby leading to disinvestment in the overall economy and as such a fall in the rate of growth (Ayadi and Ayadi, 2018).

The Over-Crowding Out Effect Theory

Ajiteru (2017) observe that aside from the effect of high debt stock on investment, external debt can also affect growth through accumulated debt service payments which are likely to "crowd out" investment (private or public) in the economy. The crowding-out effect refers to a situation whereby a nation's revenue which is obtained from foreign exchange earnings is used to pay up debt service payment. This limits the resources available for use for the domestic economy as most of it is soaked up by external debt service burden which reduces the level of investment. Tayo (2018) opined that the impact of debt servicing on growth is damaging as a result of debt-induced liquidity constraints which reduces government expenditure in the economy. These liquidity constraints arise as a result of debt service requirements which shift the focus from developing the domestic economy to repayment of the debt. Public expenditure on social infrastructure is reduced substantially and this affects the level of public investment in the economy (Abalaka, 2019).

Furthermore, some researchers have come up with other ways through which external debt may affect economic growth. According to Borensztein (2020) external debt affects growths through the credit rationing effect which is a condition faced by countries that are unable to contract new loans based on their previous inability to pay. Other theories, among others include the dual-gap theory and the dependency theory. The dual gap theory provides a framework that shows that the development of any nation is a function of investment and that such investment requires domestic savings which is not sufficient to ensure that development take place (Oloyede, 2017). The dual-gap theory is coined from a national income accounting identity which connotes that excess investment expenditure (investment-savings gap) is equivalent to the surplus of imports over exports (foreign exchange gap).

The dependency theory seeks to outline the factors that have contributed to the development of the underdeveloped countries. This theory is based on the assumption that resource flow from a "periphery" of poor and underdeveloped states to a "core" of

wealthy states thereby enriching the latter at the expense of the former. The phenomenon associated with the dependency theory is that poor states are impoverished while rich ones are enriched by the way poor state are integrated into the world system (Todaro, 2018; Amin, 2016).

Empiric Review

Ajiteru (2017) investigated the relationship between external debt and economic growth in thirty-five (35) African countries. Granger causality test was applied. The result showed a unidirectional and positive causal relationship between economic growth and debt servicing. Ogunmuyiwa (2021), examined whether external debt promotes economic growth in Nigeria using time series data from 1970-2022. The regression equation was estimated using econometric techniques such as Augmented Dickey-Fuller test, Granger causality test, Johansen co-integration test and vector error correction method (VECM). The results revealed that causality does not exist between external debt and economic growth in Nigeria (Abalaka, 2019).

Sulaiman (2018), in their study "the effect of external debt on the economic growth of Nigeria" utilized time series data covering the period from 1970-2022. Empirical analysis was carried out using econometrics techniques of Ordinary least squares (OLS), Augmented Dickey-fuller unit root test, Johansen Cointegration test and error correlation method. The integration test shows long-run relationship amongst the variables and findings from the error correlation model revealed that external debt has contributed positively to the growth of Nigerian economy. The study concludes that Nigeria should ensure political and economic stability so as to ensure effective debt management.

In the empirical research by Ishola et al (2018), on the effect of external debt on sustainable economic growth in Nigeria for the period of 1980-2012, using the ordinary least Square regression method, the study found that a 12.3 percent change in economic growth is as a result of external debt and prime lending rate in Nigeria. It therefore recommends that the government should through an act of its political will address the fundamental causes of external debt and also ensure adequate utilization of borrowed funds to develop the different sectors of the economy so as to enhance the economic growth of the nation (Abalaka, 2019).

Mbah et.al, (2016) in their work, the impact of external debt on economic growth in Nigeria: An ARDL Bound Testing approach, employed the ARDL bound testing approach to cointegration and error correction models for the period 1970 – 2018; in order to investigate the existence of long-run equilibrium relationship among the variables of study. The Granger causality test was also used to check for the direction of causality among the variables. The result of study indicates a long-run relationship among the variables. External debt impacts negatively significant on output while a unidirectional causality exists between external debt and economic growth. It was recommended that

government should embark on prudent borrowing and encourage export-oriented growth.

Materials and Methods

Data and Source

Series data on the real gross domestic product (RGDP), external debt service payment (EDSP), official exchange rate (EXCR) and inflation rate (INFR) were obtained from Central Bank of Nigeria (CBN) statistical bulletin, 2020 version and the World Bank International Debt Statistics.

Estimation Technique

Overtime, it has been observed that time series data generally suffer from serial correlation i.e. E(UiUj) = 0, is likely to be violated, and multicollinearity problem (Egbon, 2021). This gives a spurious correlation result especially when ordinary least square method of analysis is applied to it since macroeconomic variables are said to be in a non-stationary state. In order to ascertain if these problems exist in the variables listed above and to correct methodological weaknesses inherent in the traditional or ordinary least square methods, the study used Augmented Dickey Fuller test (ADF) to test for the stationarity of the variables. Engle Granger Method of Cointegration test of the residual (ECM) was applied, thereby testing for its unit root and its significance at trend and intercept. Testing for cointegration is a necessary step to check if the modeling exhibit empirically meaningful relationships. Over parameterizing the variables followed by the parsimonious Error Correction Model was done to ascertain if the variables will return to equilibrium whenever the actual level deviates from the long-run equilibrium. On the other hand, to establish the relationship between external debt and economic growth, the study adopted the Granger Causality test to determine the direction of causality.

Empirical Result and Findings

Table 1: OLS Regression Result
Dependent variable = RGDP

Variables	Coefficient	Standard Error	t-statistic	Prob.
C	3.640986	0.722597	5.038752	0.0000
LDEBTGDP	-0.098304	0.052676	-1.866209	0.0738
LEDSGDP	0.235601	0.115223	2.044735	0.0515
LPINV	0.462655	0.181414	2.550276	0.0173
LPSAV	0.017452	0.103633	0.168397	0.8676
LIMP	0.045978	0.118969	0.386471	0.7024
LEXPT	-0.145715	0.148871	-0.978800	0.3371

R^2= 0.877, F-STATISTIC = 29.89252, D-W = 1.391118,

The OLS result above showed a spurious regression result. Only PINV is statistically significant at 5 percent level of significance. Other variables are not statistically significant. The high $R^2$of 88 percent is accompanied with a very low Durbin Watson value

of 1.391118 which showed the presence of autocorrelation in the model Ajiteru, (2017).

To correct this abnormality (spurious regression), cointegration test was adopted. The first step was to check for the stationarity of the variables so as to ascertain their order of integration. This was done using ADF test for unit root. This is shown in table 2

Unit Root Test for Stationarity
Table 2: Stationarity test using ADF

	ADF Statistic	**ADF Statistic**		**Decision**
Variables	**Levels**	**First Difference**		**5%**
LRGDP	-1.059589	-4.978300		I(1)
LDEBTGDP	-3.103114	-3.270243		I(1)
LEDSGDP	-1.905438	-5.586794		I(1)
LPINV	-0.695819	-3.603503		I(1)
LPSAV	-1.560849	1530249	-4.314766	I(2)
LIMP	-1.011437	-2.441162	-5.014876	I(2)
LEXPT	-0.306814	-4.475916		I(1)

ADF Critical Value at 5% = 2.96

The result above showed that the dependent variable (GDP) is not stationary at levels but stationary at first difference. The explanatory variables are all stationary at first difference except LIMP and LPSAV that are stationary at second difference.

Cointegration Test
The ADF test for stationarity showed that the variables are stationary at different order (I(1), I(2)). This implied that cointegration test which shows or ascertain the long-run equilibrium to which economic system converges overtime can be conducted. To conduct the cointegration test, the study adopted Engle-Granger cointegration test and conducted on the residual term generated from the regression result in Table 4.0.1 a unit root test using ADF. The results are shown below.

Table 3a: ECM Residual with Intercept and Trend
Dependent Variable = ECM

Variable	Coefficient	Std. Error	t-statistic / Prob.
C	0.001693	0.061467	0.027537 /0.9782
@trend	-9.96E-05	0.003155	-0.031563 /0.9750

The result showed that the residual (ECM) has no trend or intercept. This was deduced from the insignificant t-statistic of the ECM at trend. This finding informed the form of unit root to be performed on ECM as shown below

Table 3b: ADF unit root test on ECM

	ADF Statistic	**Decision**
Variables	**Levels**	5% Critical Value = -2.9591
ECM	-4.310757	I(0)

Since the ADF test statistic of -4.310757 is significant at 5 percent critical value, it implied that a linear combination of the non-stationary series (LRGDP, LDEBTGDP, LEDSGDP, LPINV, LPSAV, LIMP and LEXPT) is stationary. Therefore, the variables are cointegrated.

Error Correction Mechanism

From the ADF test, the variables are cointegrated, it becomes necessary to consider the short-run evolution of the series and dynamics of adjustment Abalaka, (2019). The fact that there may be disequilibrium in the short-run necessitated the use of the error correction mechanism. Since the study adopted Engle-Granger method, the variables were over parameterized and the result shown below:

Table 4a: Over Parameterized Result

Variables	coefficient	Std. Error	t- statistic	Prob.
C	0.028719	0.131629	0.218183	0.8335
DLOG(DEBTGDP)	-0.221745	0.169549	-1.307848	0.2322
DLOG(DEBTGDP(-1))	0.078140	0.151234	0.516684	0.6213
DLOG(DEBTGDP(-2))	0.235556	0.145591	1.617925	0.1497
DLOG(EDSGDP)	0.192090	0.216871	0.885734	0.4052
DLOG(EDSGDP(-1))	-0.152019	0.215658	-0.704908	0.5036
DLOG(EDSGDP(-2))	-0.383744	0.266801	-1.438317	0.1935
DLOG(EXPT)	-0.515021	0.348009	-1.479909	0.1824
DLOG(EXPT(-1))	-0.278309	0.307126	-0.906171	0.3950
DLOG(EXPT(-2))	0.113633	0.249451	0.455534	0.6625
DLOG(IMP)	0.151101	0.268569	0.562614	0.5913
DLOG(IMP(-1))	0.385727	0.297106	1.298280	0.2353
DLOG(IMP(-2))	0.371170	0.257447	1.441734	0.1926
DLOG(PINV)	0.426830	0.283564	1.505233	0.1760
DLOG(PINV(-1))	-0.016978	0.316507	-0.053643	0.9587
DLOG(PINV(-2))	-0.452993	0.364550	-1.242609	0.2540
DLOG(PSAV)	-0.028195	0.338041	-0.083407	0.9359
DLOG(PSAV(-1))	-0.069022	0.315073	-0.219067	0.8328
DLOG(PSAV(-2))	-0.105878	0.301057	-0.351687	0.7354
DLOG(RGDP(-1))	0.031854	0.393526	0.080945	0.9378
DLOG(RGDP(-2))	0.036871	0.364028	0.101287	0.9222
ECM(-1)	-0.841999	0.502401	-1.675950	0.1377

R-squared	0.821899	Akaike info criterion	0.336332
Adjusted R-squared	0.287595	Schwarz criterion	0.700927
Durbin-Watson stat	2.206718	F-statistic	1.538260
		Prob(F-statistic)	0.289605

The over parameterized result showed that some of the variables are not significant. The result therefore needs to go through a process of re-parameterization during which insignificant variables are sequentially removed. This is shown below:

Table 4b: Over Parameterized Result After Some Adjustments
Dependent Variable = DLOG(RGDP)

Variables	coefficient	Std. Error	t- statistic	Prob.
C	0.048738	0.040084	1.215874	0.2397
DLOG(EXPT)	-0.470813	0.138274	-3.404920	0.0032
DLOG(EXPT(-1))	-0.266773	0.110254	-2.419623	0.0263
DLOG(IMP(-1))	0.318038	0.131690	2.415051	0.0266
DLOG(IMP(-2))	0.322996	0.111354	2.900609	0.0095
DLOG(PINV)	0.437133	0.116871	3.740311	0.0015
DLOG(PINV(-2))	-0.250487	0.102065	-2.454196	0.0245
DLOG(DEBTGDP)	-0.228570	0.073250	-3.120412	0.0059
DLOG(DEBTGDP(-2))	0.172266	0.064576	2.667666	0.0157
DLOG(EDSGDP)	0.252059	0.081030	3.110674	0.0060
DLOG(EDSGDP(-1))	-0.075980	0.071461	-1.063235	0.3017
DLOG(EDSGDP(-2))	-0.192713	0.075902	-2.538979	0.0206
ECM(-1)	-0.820776	0.194961	-4.209949	0.0005

R-squared	0.762383	Akaike info criterion	-0.792556
Adjusted R-squared	0.603971	Schwarz criterion	-0.191207
Durbin-Watson stat	2.031632	F-statistic	4.812674
		Prob(F-statistic)	0.001463

Table 4c: Parsimonious Error Correction Mechanism

Variables	coefficient	Std. Error	t- statistic	Prob.
C	0.029236	0.040552	0.720967	0.4785
DLOG(EXPT)	-0.300001	0.138356	-2.168330	0.0412
DLOG(EXPT(-1))	-0.224132	0.110557	-2.027304	0.0549
DLOG(IMP(-1))	0.221068	0.140477	1.573689	0.1298
DLOG(IMP(-2))	0.226585	0.108193	2.094273	0.0480
DLOG(PINV)	0.394198	0.129983	3.032687	0.0061
DLOG(DEBTGDP)	-0.173382	0.072758	-2.383008	0.0262
DLOG(EDSGDP)	0.238952	0.085787	2.785393	0.0108
ECM(-1)	-0.679737	0.207975	-3.268354	0.0035

R-squared	0.633869	Mean dependent var	0.049286
Adjusted R-squared	0.500731	S.D. dependent var	0.223213
S.E. of regression	0.157720	Akaike info criterion	-0.618291
Sum squared resid	0.547263	Schwarz criterion	-0.201972
Log likelihood	18.58351	F-statistic	4.760976
Durbin-Watson stat	2.021246	Prob(F-statistic)	0.001701

From the parsimonious error correction result, the ECM is statistically significant, effortlessly passing 5 percent level of significance. This is deduced from its t-statistic of -3.268354. The coefficient of ECM (-0.679737) is largely negative which shows that the speed of adjustment to equilibrium in the course of displacement will take place in a very short period of time. R^2 of 63 percent showed that there is goodness of fit in the result Abalaka, (2019). 63 percent of the systematic variation in RGDP is explained by external debt, external debt service, public investment, one year/ two years lags of import, export and a year lag of export. The explanatory variables are all statistically significant judging from their t-statistic at 5 percent level of significance, except import by one-year lag (Sulaiman, 2018). The F-statistic of 4.76 showed that the explanatory variables are statistically significant in explaining the dependent variable when put together. The D.W of 2.02 showed that there is no autocorrelation in the model.

Granger Causality Diagnostics

Pairwise Granger Causality test was used to ascertain the relationship between external debt and economic growth. The result is shown in the table below.

Table 5: Result of the Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Probability
LRGDP does not Granger Cause LPINV	32	2.05159	0.14810
LPINV does not Granger Cause LRGDP		2.03945	0.14967
LDEBTGDP does not Granger Cause LPINV	32	6.59302	0.00466
LPINV does not Granger Cause LDEBTGDP		0.88979	0.42245
LDEBTGDP does not Granger Cause LRGDP	32	0.96216	0.39478
LRGDP does not Granger Cause LDEBTGDP		0.28034	0.75770
LEDSGDP does not Granger Cause LDEBTGDP	32	0.94667	0.40054
LDEBTGDP does not Granger Cause LEDSGDP		2.46886	0.10359

From the result above, there is no causal relationship between external debt and economic growth. A uni-directional relationship exists between External Debt and public investment. This implied that external borrowing (external debt) significantly affects public investment. Public investment on the other hand affects economic growth as shown in the table above. It therefore implies that the resultant effect of channeling external debt into investment by government is economic growth. Therefore, external debt affects growth indirectly through investment (Sulaiman, 2018).

Concluding Remarks/Recommendation

As noted early, most developing countries borrow finance higher investment or higher consumption, and to circumvent hard budget constraint, implying that countries borrow

to boost economic growth and reduce poverty. External borrowing thus creates an avenue to reduce the obstacles posed to economic growth and investment. In this regard debt is seen to be inevitable i.e a necessary evil that cannot be avoided by developing countries in their process of achieving its growth objectives. It had been shown in the study that Nigeria borrows for various reasons especially for fiscal deficit financing. The result from the empirical result had shown that debt does not directly influence growth but indirectly influences growth through public investment. Therefore, it is recommended that:

1. Since debt is inevitable in the process of development and achieving growth objectives of the country, its accumulation should be guided.
2. Government should continue to channel borrowed funds into infrastructure development and other forms of investment that can yield income for debt servicing and at the same meet its growth objectives.

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