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Effect of Public Debt on Economic Growth in Nigeria with or without Domestic Investment

KAZEEM FASOYE
Obafemi Awolowo University, Ile-Ife, Nigeria

ABIODUN SUNDAY OLAYIWOLA
Chrisland University, Abeokuta, Nigeria

Abstract. The paper examines the effect of public debt on economic growth in Nigeria with or without domestic investment between 1981 and 2020 using a technique of Dynamic Least Square (DOLS). The findings of the study reveal that public debt in Nigeria retards economic growth through reduction in the level of investment. This indicates the possibility that the current levels of public debt in the Nigeria might not have been reducing the volume of growth but have the tendency to create a poorer macroeconomic and uncertain climate for investment. The implication is that the nonlinear relationship between debt and economic growth is a reality. It is suggested that there should be big push investment into all sectors of the economy that serve as engine of growth to the nation and whenever public debt is acquired, domestic investment must be given priority.

Keywords: Effect, Public Debt, Economic Growth, Domestic Investment, Nigeria

1. Introduction

Debt as a global phenomenon is seen virtually in all countries of the world to encourage economic growth. Fischer and Easterly (1990) stated four different ways of supporting fiscal deficit, each of them resulted to certain macroeconomic imbalances. The approaches include minting of currency which may fuel inflation, depleting foreign reserves might result into exchange rate crisis, borrowing from outside the country might end up in an external debt crisis, and borrowing within the economy might raise interest rates and also result in debt crisis. The first two scenarios may be initially fascinating but has harsh macroeconomic implications on the economy. But, borrowing from within and outside the country if properly managed and channeled towards productive investment will bring desirable growth.

Public debt allows a nation to invest and consume more than the present national income limit. It is an essential stimulator for driving economic growth and a means to balance the budget deficit of developing countries. It allows a country to finance capital and development projects which help her in building production ability and facilitate improved economic growth. However, excessive debt generates serious debt service obligations and a constraint on economic growth, which may become a burden to future generations (Chiang and Moss, 2020).

Before the debt relief in 2006, foreign debt constituted the larger part of the total debt in Nigeria. In the early 1970s, Nigeria's foreign debt was below 1billion dollar; by 1980s, 1990s and 2004 it had raised to 3.4billion, 33billion 36billion dollars respectively (DMO, 2006). The rationale behind the rapid increase in external debt in the 1970's and 1980's was the desire to finance the reconstruction and development projects after Nigeria's civil war of 1967 - 1970. Nigeria as an exporter of crude oil, acquired large revenues from the upward increase in the price of oil in 1970's up to early 1980's, it was regarded as under-borrowed and credit worthy. The sudden breakdown of oil prices in 1982 reduced the revenue based of the country and started to witness difficulties in meeting its debt payment obligation.

Several government reforms to curtail debt albatross in Nigeria have been adopted over the years. Some, among them include debt rescheduling and debt relief of Paris and London clubs in 2005 and 2006. More so, records from Debt Management Office (DMO) and

National Bureau Statistics (NBS) in 2017 revealed that Nigeria's debt profile remained at about $66 billion as at the fourth quarter in 2017; with the external debt and domestic debt accounting for $15 billion and $51 billion respectively. Domestic borrowing has distortionary effects on the economy when excessively done. The alarming rate of internal debt accumulation followed debt relief of 2006 has been a point of concern; most especially the debt service problem.

Public expenditure funding using debt is often the norm in Nigeria. Nigeria's debt portfolio, just like the case of many developing countries, has increased without corresponding increase in GDP growth. Despite the government conscious effort in managing the nation's debt, the issue of debt has been a burden to the Nigerian economy with respect to her large debt services payment and related obligations. Debt burden has depressed investment and economic growth via illiquidity and disincentive effects. Nigeria has been experiencing resource underutilization, high level of poverty and decay of infrastructures (Udo and Antai, (2014); Kalu, Okai, Chukwu and Amadi, 2016). According to Ijeoma (2003), debt inflict hard string on the economy of a nation for a number of reasons; first, the foreign debt could be large relative to what the economy take and this leads to capital flight, disallow investments. Secondly, it could lead to debt burden with its clear problems in underdeveloped economy. In all, external debt, just like capital flight, could create unfavorable macroeconomic environment. Lastly, debt service payments absorb a major part of export earnings, GDP and other revenues that would have been used to provide essential infrastructures to improve the general welfare of the masses.

The civilian administration of Olusegun Obasanjo won the battle for debt relief and this became as an accepted aid because of its expected advantages. In spite of debt relief received by Nigeria, the evidence of rapid economic growth looks dicey (Bakare, 2010). The effect of this relief which ought to be felt in improved foreign exchange earns, investment and economic growth is not in place. The output from education, health and other sectors do not show evidence of improved poverty status. In the light of debt relief given to Nigeria, its total debt continues to increase. This could be ascribed to internal debt which has been issue within the economy which the government did not take seriously. This brings another phase of government debt, which in itself might not be good for the nation.

Public debt has been greatly researched in recent decades. There are three categories of arguments in the literature. Balbir and Atr, (2017) and Adesola, (2019) studied how public debt impact economic growth. The studies indicated a point above which debt become negative to growth of an economy. The second category of past studies in Nigeria showed negative relationship. Studies by Kalu, Okai, Chukwu and Amadi (2016) and Adofu and Abula (2010) revealed that public debt has a negative effect on economic growth. The results showing negative relationship complement the Classical view that public debt slowdown development. The third category in literature sees debt as expansionary fiscal policy which aid investment and produces positive growth as argued by the Keynesians. The Classical economists take a much conservative stand on public borrowing unlike the Keynesians that are flexible toward it (Majumder, 2007). Therefore, increases in public spending stimulate the aggregate demand and employment level.

The conclusion that debt has inverse effect on an economic growth, may inspire nations to see debt as bad and never to be acquire to argument budget deficit. From the perspective of Keynesian, that sees debt as an injection into an economy to stimulate aggregate demand and employment level. Going by Cecchetti and Mohanty and Zampolli, (2011) debt is two-edged sword, it proper usage enhance economic growth up to a point before its retardation on growth. There is need to investigate this point.

From the above, studies have clearly explored the linear effect of public debt on growth with little attention paid to non-linear specification as explained by the debt-laffer curve hypothesis. The study, therefore, intends to investigate the amount of public debt in Nigeria that justifies the intended purpose of stimulating economic growth. The study leans on the works of Ghosh, Kim, Mendoza, Ostry and Qureshi, (2011), Shiamptanis, (2015), and Vdovychenko (2016).

2. Literature Review

The study by Igbodika, Jessie and Andabai,(2016) examined relationship between domestic debt and economic growth in Nigeria using data covering (1987-2014). Ordinary Least Square (OLS) model was used for the estimation. There is a positive significant relationship between gross domestic debt and Gross Domestic Product in Nigeria. The result indicates that interest rate has negative significant relationship with Gross Domestic Product in Nigeria. The coefficient of determination indicates that about 68% of the variations in gross domestic product can be explained by changes in domestic debt variables in Nigeria. Government should maintain a debt bank deposit ratio

below 35 percent and resort to increase in the use of tax revenue to finance its projects. Government should divest itself of all projects which the private sector can control and handle including refining crude oil and transportation but should provide good environment for private sector investors to strengthen the growth.

The effect of domestic debt payments on economic growth in Nigeria was examined by Ugwu (2017). The data are estimated using ordinary least- square (OLS) method of multiple regressions. The finding shows that domestic debt has significant relationship with Gross Domestic Product in Nigeria. The GDP is positive related to domestic debt. Also, there is significant relationship between interest rate and debt service payment on Gross Domestic Product in Nigeria but case of negative relationship is established between the two. A large proportion of gross domestic product can be explained by changes in domestic debt variables.

A study by Ijeoma, (2013) examined the impact of debt on selected macroeconomic indicators in Nigerian economy from 1980 to 2010. Empirical analysis was done using Linear Regression. The study found that Nigeria's external debt stock has a significant effect on her economic growth. It also revealed that there is a significant relationship between Nigeria's Debt service payment and her Gross Fixed Capital Formation. To sustain the economy, government should avoid borrowing as much as possible however since developing countries need to borrow at one time or the other to supplement internal savings. Borrowing then should become an option only when high priority projects are being considered and borrowed funds should be strictly monitored and evaluated to ensure they are used for the purpose for which they are borrowed and government should make policies that will promote industrialization which will in turn attract foreign direct investment.

Ajayi and Oke (2012) analyzed the effect of the external debt burden on economic growth and development of Nigeria. The finding revealed that external debt burden had an adverse effect on the nation income and per capital income of the nation. High level of external debt led to devaluation of the nation currency, increase in retrenchment of workers, continuous industrial strike and poor educational system. Based on the finding the study suggest that debt service obligation should not be allowed to rise than foreign exchange earnings and that the loan contracted should be invested in profitable venture, which will generate a reasonable amount of money for debt servicing and debt repayment.

Olasode and Babatunde (2016) employed Autoregressive Distributed Lag (ADL) model to capture the effect of externals debts on Nigerian economy growth from 1984 to 2012. The existence of long-run relationship between the variables was confirmed by the Johansen Co-integration test. The result from the ordinary least squares method confirms the existence of a dual behaviour as the lag of external debts has positive while external debts of present year posed a negative effect on the performance of the economy. The funds acquired were better used for productive projects compare to the subsequent year where the funds were diverted to private pursed and brought negative impact on Nigerian economic growth.

Kalu, Okai, Chukwu and Amadi, (2016) examined the impact of Debt Service Payment (DSP) on economic growth for the period 1981 to 2013 using empirical evidence from Nigeria. Description analytical tools coupled with ordinary least square regression (OLS) method and the Granger Causality Test were employed. DSP proved to be a positive and significant function of economic growth while the causality tests showed a bi-directional causality running for DSP to GDP and feedback from GDP to DSP. This goes to show that Debt weight evidenced by the quantum of servicing payment by the government limits growth Nigeria and other economies alike.

External debt, servicing and debt relief transmissions in Nigeria was analyzed by Ekperiware and OladejI (2014) with using descriptive and structural VAR to trace out the structural effect of these variables in the Nigerian economy. Also, the study examined the 2005 external debt relief to Nigeria by the London Paris club through descriptive techniques to show how the relief was channeled down to other macroeconomic variables in the economy. The descriptive analysis showed that soon after the debt relief, government expenditure on health and Education improved. Also, the position of the foreign exchange appreciated which cumulated to higher economics growth rate in Nigeria. Results from the structural VAR showed a decomposed shock to exchange rate was absorbed by external debt and external debt service after itself. This shows that external debt and debt servicing affects the country's exchange rate. Decomposed shock from health and education outputs were strongly influenced by external debt servicing. The study concluded that external debt is a crucial variable to developing countries and the trickle-down effect of its components are felt in the Nigerian economy. The authors therefore, recommend good policies to effectively transmit the gains from external borrowing to boost critical infrastructural deficit in the country.

Study by Adesola (2019) examined the implications of debt on economic growth in Nigeria. It discusses how public debts can be managed. The data for the analysis covers from 1990 to 2011 and Ordinary Least Squares Method (OLS) model was used to analyze. The result shows that the debt holding of government far above certain healthy threshold has negative effect on economic growth. The loan becomes debt crisis when such it is mismanaged or not channeled to development-oriented project. The burdens of principal and interest payments drain the nation resources and limit the possible expenditure on other productive resources. It can also lead to capital flight and discourage private investment. Hence, the dramatic growth in the domestic debt /GDP ratio has raised many doubts about fiscal sustainability of the current economic policy.

Chiang and Moss, (2020) examined the empirical issues concerning the structure and composition of domestic debt and its impact on private investment in Nigeria. The study used multiple regression models complied secondary data from 1970 to 2019. The result showed that domestic debt has a significant negative impact on domestic private investment in Nigeria. The domestic debt has a significant negative impact on foreign private investment in Nigeria with exchange rate and debt servicing having positive effect on foreign private investment in Nigeria. The study concluded that domestic debts if unchecked and not well managed will crowds-out private investment in the country.

Angela and Frida, (2016) investigated the influence of the two components of public debt which comprises of internal and external public debt burden on the economy growth in Nigeria using data which covered the periods from 1961 to 2013. The study employed both descriptive research design and Vector Error Correction Estimation (VECM) to determining the impact of public debt accumulation on the long-run economic growth in Nigeria. The empirical results from the study confirmed that public debt has a negative short-run and long-run impact on the Nigerian economic growth. The implication of this current finding is that an accumulation of public debts retards the growth of Nigerian economy. He suggests that policy makers should always strive to ensure that debt-GDP ratio does not go beyond international ratio for debt sustainability in Nigeria to ensure economic growth.

Donatus and Mordecai (2016) examined the role domestic debt play on economic growth of Nigeria. They employed Vector Autoregressive (VAR) method for analysis. The result revealed that domestic debt plays an important role in the growth process of Nigerian economy. The variance decomposition analysis revealed that federal governments of Nigeria bonds exert more pressure on the growth rate of gross domestic product in Nigeria. This was followed by shocks received from treasury bonds, while development stocks and interest rate contributed the least to shocks in gross domestic product. The findings of the impulse response function in support of the variance decomposition analysis showed that economic growth responded positively to shocks in federal government of Nigeria bonds and inversely to shocks in treasury bonds throughout the ten-year period. Meanwhile, the response of gross domestic product to shocks in development stocks and interest rate was unstable.

Nazif (2014) investigated the causality between debt service payments and provision of social services in Nigeria from 1980-2010. Ordinary Least Square (OLS) technique was used for empirical analysis. Total social services spending by the federal government serve as dependent variable, while internal debt, external debt, debt service payments and exchange rate as independent variables. The results show a positive relationship between internal debt, exchange rate and social services provision, while an inverse relationship exist between external debt and social service provision. Increase in domestic debt and exchange rate led to increase in social infrastructural development which aid economic growth in the country.

The effect of debt service payment on economic growth using a time series data of 20 years (1996-2015), was examined by Hope and Eugene (2016). To achieve the research objective data collected were analyzed using unit root, co-integrations and ordinary least square regression. The analysis result revealed a significant long run relationship between real gross domestic product (RGDP) and external debt (EDEBT) and debt service (DEBT) and an insignificant long run relationship between real gross domestic product (RGDP) and domestic debt (DDET). More so, the regression analysis results revealed that external debt and debt servicing has a positive significant effect on economic growth in Nigeria. Real gross domestic product and external debt services exhibit the inelastic relationship which implies a change in external debt has little or no effect on RGDP.

With respect to private investment and domestic debt in Nigeria, Obudah and Tombafa (2013) assessed the effect of interest rate and domestic debt on private equity investment growth in Nigeria covering the

period 1987-2010. Co-integration technique, standard OLS and error correction methods were employed by the authors. The study utilized domestic private equity investment and borrowing. The parsimonious ECM result indicated that the domestic debt and GDP had positive effect on equity investment in Nigeria while monetary policy rate showed a negative effect on equity investment in Nigeria. On the basis of the findings, the authors recommended further expansion in the stock of domestic debt in Nigeria but indicate that the funds from the debt should be used for productive and avoid misappropriation.

Investigating domestic debt crowding-out existence in Nigeria, Apere (2014) studied the nonlinear effect of public debt on private investment in Nigeria over the period 1981-2912. He employed instrumental variable technique of estimation and bootstrapping approach for the computation of normal standard errors for the domestic and external debt turning points. The results confirmed a linear and positive effect of domestic debt on private investment in Nigeria. External debt, on the other hand, showed a U-shape impact on private investment, having it turning point at about 124.69 percent. Private consumption expenditure showed a negative impact on private investment.

3. Methodology

Model Specification

The baseline model of the study is anchored on production function which is specified in this form:

$$Y_t = f(X_t, PUD_t) \quad 1$$

The function is augmented with public debt as input, showing government borrows both home and abroad to stimulate consumption and investment so as to promote economic growth. More so, equation 1 is expressed in an explicit form as:

$$Y_t = \beta_1 + \alpha X_t + \delta PUD_t + \varepsilon_t \quad 2$$

The standard debt-cum growth model in equation 2 is adapted following the work of Partillo, Poirson and Ricci (2011); Balbir and Atri (2014) and many others who also used the same to examine the non-linear impact of public debt on growth.

Where Y_t represents the real gross domestic product (RGDP), X_t stands for set of explanatory variables (like domestic investment, money supply, openness, growth rate of labour force, population), α and δ are slope coefficient, ε_t is the error term which is assumed to iid $(0, \sigma^2)$. Specifically, the study adopted Partillo et al., (2011) which specified debt-growth model in the form;

$$RGDP_t = \beta_1 + \beta_2 INV_t + \beta_3 M2_t + \beta_4 OPN_t + \beta_5 LF_t + \beta_6 PUD_t + \varepsilon_t \quad 3$$

The above model assumed a linear relationship between public debt and economic growth. $RGDP_t$ and PUD_t are Real Gross Domestic Product and Public debt comprises domestic and external debt. INV is the gross domestic investment, M2 as money supply, OPN as index of openness and LF represents growth rate of the labour force.

The linear model in equation 3, the coefficient of PUD can either be negative or positive (because it does not consider diminishing returns). In reality, on the basis of debt laffer curve hypothesis, as debt rises beyond certain point, we expect diminishing return to set in. To depict this, equation 3 can be re-modified in a quadratic form or nonlinear form, as follows:

$$RGDP_t = \beta_1 + \beta_2 INV_t + \beta_3 M2_t + \beta_4 OPN_t + \beta_5 LF_t + \beta_6 PUD_t + \beta_7 PUD_t^2 + \varepsilon_t \quad 4$$

Here, PUD_t^2 represents public debt-squared which makes $\beta_6 > 0$ and $\beta_7 < 0$. This indicates that unlike before it is expected that the response of growth to a change in debt to be positive when debt is zero (that is $\beta_6 > 0$). Also, to achieve diminishing returns, the marginal effect of change in debt must decline as public debt rises (that is, $\beta_7 < 0$). It implies that public debt increases growth at lower levels and when it reaches higher levels, negative impact on growth prevails (Balbir and Atri, 2012).

To evaluate the impact of public debt on economic growth in Nigeria with or without domestic investment, the study followed the works of Partillo et al., (2011); Abbas and Christensen, (2017) which estimated debt-growth model with and without investment variable under the nonlinearity assumptions as follows;

$$RGDP_t = \beta_1 + \beta_2 INV_t + \beta_3 OPN_t + \beta_4 LF_t + \beta_5 INF_t + \beta_6 DeF_t + \beta_7 PUD_t + \beta_8 PUD_t^2 + \varepsilon_t \quad 5$$

and

$$RGDP_t = \beta_1 + \beta_2 INV_t + \beta_3 OPN_t + \beta_4 LF_t + \beta_5 INF_t + \beta_6 DeF_t + \beta_7 PUD_t + \beta_8^* PUD_t^2 + \varepsilon_t (INV = 0) \quad 6$$

Where in equation 5 and 6, $\beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 < 0, \beta_6 < 0, \beta_7 > 0, \beta_8 < 0 \; and \; \beta_8^* < 0$. It is also expected that $\beta_8^* > \beta_8$ significantly.

The study restricts domestic investment in equation (6) by equating INV= 0. This is to depict the importance

of public debt when it is devoted to viable domestic investment and when it is not. Unlike the past studies identified above alters the original nonlinear model by incorporating variables like inflation (INF) and budget deficit (DEF).

For modeling perspective, exclusion of INV in equation (6) will bring about a change in magnitude of β_8^*, the study restrict investment where actually its coefficient may not be zero (Nazif, I. A. (2014).

Estimation Technique

The study employs a technique of Dynamic Ordinary Least Square (DOLS) to actualize the research objective. The non-linear effect of debt on economic growth will also be captured using Dynamic Least Square (DOLS) method on quadratic model in equations 4, 5 and 6. The DOLS works on the assumption that there is co-integration relationship among the variables of interest. It has some special and attractive features. It has the ability to copy with small sample and dynamic source of bias. Also, as a single equation estimation approach, it corrects for possible endogeneity in the model by using lead and lags. DOLS provides robust results when compared to other techniques such as OLS and Maximum Likelihood approach (Stock and Watson, 1983).

To employ DOLS on the model in equation 7, we simply regress RGDP on the explanatory variables in the model, leads and lag of these variables are first differences and constant term using Ordinary Least Square (Gunduz, 2017).

$$Y_t = \beta_0 + \vec{\beta} X + \sum_{j=-q}^{p} \vec{d}_j \Delta X_{t-j} + \upsilon_t \quad 7$$

Where Y_t is dependent variable proxy for RGDP in this study, X is a matrix of explanatory variables, $\vec{\beta}$ stand for co-integrating vector indicating long run cumulative multiplier, p is lead and q is the lag. Lag and lead in DOLS regression work to make its stochastic error term independent of all past shocks in stochastic regressor (Gunduz, 2017).

Data Description and Measurement of Data

Table 1: Description of Variables and Sources

Variables	Symbol	Description And Measurement	Sources
Real Gross Domestic Product	RGDP	This measures the production capacity of the economy. It indicates the overall wellbeing of a nation.	Central of Nigeria (CBN) Statistical Bulletin, 2022
Public debt	PUD	This comprises of domestic and external outstanding loan acquired the by central government in Nigeria.	
Investment	INV	Investment is proxy by the gross fixed capital formation, express by as the ratio for real GDP	
Openness	OPN	It stands for transfer of knowledge and efficient gains that measures the level of economy competitiveness. It is a sum of export and import of a nation express as a ratio of GDP	
Inflation	INF	It is the measure of the consumer price index (CPI). It is the percentage change of price index over time.	
Budget deficit	Def	This measures as the balance of receipt over expenditure and expressed as a ratio of RGDP	
Labour force	POP	The economically active of the population between ages of 15-65.	World Development Indicator (WDI)

4. Results and Analysis

Time Series Nature of the Data

In the use of regression analysis, non-stationary time series data posed some challenges. To prevent the outcome of spurious regression, unit root testing was performed on all the variables used in this study to determine their stationarity properties. From Table 2, it was observed that LRGDP, LINV, LM2, public debt and public debt square (PUD and PUD^2) were stationary at first difference I(1) using Augmented Dickey – Fuller test and Phillip Perron test. Trade openness (OPN) was stationary at first different using Phillip Perron test. Since the application of DOLS requires our variable to be I(1), I(0) or the combination of the I(1) and I(0). The series are all I(1), thus, DOLS was used.

Table 2: Unit Root Test results

	ADF			PP		
Variables	Levels	First Difference	Status	Levels	First Difference	Status
LRGDP	0.032145	-3.339751	I(1)	0.857782	-3.179804	I(1)
	0.9553	0.0205		0.9937	0.0298	
LINV	1.494421	-5.473272	I(1)	-1.49442	-5.462625	I(1)
	0.5250	0.0001		0.5250	0.0001	
PUD	2.380352	-4.243958	I(1)	2.192748	4.25075	I(1)
	0.1542	0.0020		0.2123	0.0020	
PUD^2	-2.28035	-4.243958	I(1)	-2.19275	4.25075	I(1)
	0.1542	0.0020		0.2123	0.0020	
LM2	-1.47462	-2.526489	I(1)	-0.55166	-3.043854	I(1)
	0.5333	0.1186		0.8690	0.0.405	
LPOP	1.428992	0.255323	I(1)	1.733415	0.255323	I(1)
	0.9987	0.9723		0.9995	0.9723	
OPN	-1.83678	-1.947480	I(1)	-1.92813	-5.894548	I(1)
	0.3576	0.3072		0.3162	0.0000	

Source: Author's computation

Note "" means significance at 5% level, ADF= Augmented Dickey – Fuller test, PP = Phillip Perron test. The automatic maximum lag length based on Schwarz information criterion was used.*

Cointegration Test

The results of the unrestricted cointegration rank tests (Trace and Max-Eigen) for the data series used in this study were presented in the Table 3 below. The relevance of the cointegration test statistic is very imperative as; first, it is used to verify if there exists at least one (linear), or nonlinear as the case may be, long run relationship among the variables in the model. More so, it guides on the technique(s) of analysis to be used. Both the Trace and Max-Eigen statistics reported here indicated the existence of at least six cointegraion and five cointegrating vectors among the variable in the study at 5% level of significance. Thus, this shows that there exists long run relationship among the economic growth, public debt, domestic investment and other variable used in this study in Nigeria. The correlation indices also showed this collaboration when correlation coefficients recorded high values for these variables. All these supported the use of Dynamic Ordinary Least Squares (DOLS) model in equation 7 of this work. Therefore, DOLS was applied within the framework of cointegrating vector existing among the variables to produce robust results.

Table 3: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.800195	56.36451	46.23142	0.0031
At most 1 *	0.780079	53.00707	40.07757	0.0011
At most 2 *	0.650329	36.77671	33.87687	0.0219
At most 3	0.483543	23.12674	27.58434	0.1681
At most 4	0.429961	19.67178	21.13162	0.0790
At most 5	0.196600	7.661570	14.26460	0.4141
At most 6	0.148917	5.643589	3.841466	0.0175

Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level

** denotes rejection of the hypothesis at the 0.05 level*

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

Table 4: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.800195	56.36451	46.23142	0.0031
At most 1 *	0.780079	53.00707	40.07757	0.0011
At most 2 *	0.650329	36.77671	33.87687	0.0219
At most 3	0.483543	23.12674	27.58434	0.1681
At most 4	0.429961	19.67178	21.13162	0.0790
At most 5	0.196600	7.661570	14.26460	0.4141
At most 6	0.148917	5.643589	3.841466	0.0175

Max-eigenvalue test indicates 3 cointegratingeqn(s) at the 0.05 level
** denotes rejection of the hypothesis at the 0.05 level*
***MacKinnon-Haug-Michelis (1999) p-values*

Investment as a Channel by which Public Debt Affect Economic Growth in Nigeria

The results of estimation of debt growth-model in equations 5 and 6 are reported below. This represents information on the role of domestic investment as a line between public debt and economic growth.

Table 5: Effect of Public Debt on Economic Growth with Investment in Nigeria

Dependent Variable: LRGDP Regression Result of equation (5)				
Method: Dynamic Ordinary Least Square (DOLS)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
LINV	0.267703	0.072383	3.698429	0.0343
LOPN	-0.086831	0.188362	-0.460982	0.6762
LPOP	-6.524537	6.337844	-1.029457	0.3790
DEF	-0.028737	0.014565	-1.972997	0.1430
INF	0.000870	0.001177	0.739089	0.5134
PUD	0.686015	1.572305	4.371516	0.0221
PUD^2	-0.131455	0.049241	-2.669612	0.0757
R^2 = 0.999896		R^2 Adjusted = 0.998860		

Source: *Author's Computation*

Table 6: Effect of Public Debt on Economic Growth without Investment in Nigeria

Dependent Variable: LRGDP Regression Results of equation (6)				
Method: Dynamic Ordinary Least Square (DOLS)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
LOPN	-0.074886	0.079312	-0.944202	0.3765
LPOP	12.68531	2.386387	5.315699	0.0011
DEF	-0.074656	0.007427	-10.05244	0.0000
INF	0.004378	0.000746	5.872242	0.0006
PUD	0.533405	1.431305	3.521865	0.0005
PUD^2	-0.228847	0.037518	-6.099729	0.0015
R^2 = 0.999745		R^2 Adjusted = 0.998797		

Source: *Author's Computation*

It is important to clarify the behavior of public debt or to consider its effect on domestic investment and thus on economic growth. From tables 5 and 4.6, the estimation of public debt square from the model with domestic investment (model 5) is not significantly different from that of the model 6 which excludes domestic investment. Public debt and public debt square with domestic investment can only explains 0.69 and -0.13 growth Nigeria economy respectively while without domestic investment it explains 0.50 and -0.229 growth of an economy. This implies that only small proportion of the public debt goes into domestic investment. This is because the least squares estimates remained unbiased as the impact of the levels of high public debt square did not produce significant difference on the growth when domestic investment is added and removed from the models (Gunduz, 2017). The result otherwise means there is need for efficient and quality domestic investment rather than the volume of investment in Nigeria to ensure economic growth via public debt acquisition.

Keynes view of public debt states that a large public debt is not a burden on an economy but national asset.

He asserted that the rise in public debt would raise the national production through multiplier effect. He linked public borrowing with deficit financing and authorized government to borrow for all reasons in order to enhanced job opportunity and production. Consumption borrowing was as desirable as borrowing for investment because consumption expenditure induced investment to rise. The study findings are in line with Keynes's perspective of investment as a means of stimulating economic growth via public debt. Nigeria government is needed to put public debt on productive activities.

The above result is consistent with the findings by Abbas and Christensen (2017) on the domestic debt market in LICs and in developing countries and Pattillo et al. (2002) on the external debt in developing countries. The studies revealed that the results of the specification with and without investment as a control variable were not particularly difference from each other in their respective studies. According to them, this thus indicated that the channel of influence of debt in developing countries is through efficiency of investment that works through total factor productivity rather than the volume or the level of investment in those countries.

The outcome produces result that explains that inclusion of both public debt and investment in the growth model relies on investment effectiveness rather than the level of domestic investment. This implies that in the midst of high debt level, efficiency of investment tends to be retarded. This emanates from some thought in the literature that tend to provides more possible explanation for the existence of debt overhang in developing nations. Debt overhang posits that high debt levels depress investment and economic growth by increasing uncertainty. The private investors under uncertain atmosphere prefer the option of waiting or directing their activities to investment with fast returns rather than to long-term, high-risk and irreversible investments (Ugwu, 2017)

More so, the labour force coefficient is positive without investment in negative with investment. This can be explained by the ineffective investment that was done, the investment was not in any way directed towards human capital. Without investment, government engages in empowerment programs that impact positively on the growth of the labour force. The coefficient of trade openness on the other hand shows a negative impact on growth with or without domestic investment. The negative influence can be explained by the rate at of dependence on the imported products by the country with less export. These results are not in line with the studies by Olasode and Babatunde, (2016) and Abbas and Christenen (2017) which validate the expectation that trade openness contributes positively to growth.

The inflation coefficients are positive but insignificant. This conforms to the findings by Igbodika, Jessie and Andabai, (2016) and Abbas and Christensen (2017) that empirically supported that low inflation is a pre-condition for growth. Most of these findings often obtained the relationship between growth and inflation at insignificant levels.

5. Conclusion

It has been demonstrated that the nonlinear relationship between debt and economic growth is a reality. Even, when debt is still contributing to economic growth such country should maintain the optimal level of public debt. Hence, excessive debt acquisition will automatically translate to negative growth and reduce investment. Furthermore, the study concludes that public debt in Nigeria retards economic growth through reduction in the level of investment. This thus indicates the possibility that the current levels of public debt in the country might not have been reducing the volume of growth but have the tendency to create a poorer macroeconomic and uncertain climate for investment and consequently, impact long-term growth negatively. It is therefore suggested that attention should shifted to factors than reduce and make domestic investment inefficient in the country. There should be big push investment into all sectors that serve as engine of growth to the nation. Whenever public debt is acquired, domestic investment must be given priority.

References

Abbas, A. and Christensen, J. (2017). The Role of Domestic Debt Market in Economic Growth: An Empirical investigation for Low-Income Countries and Emerging Markets. *IMF Staff Paper, Vol. 57 (1):* 209-255.

Adesola, W. A. (2019). Debt Servicing and Economic Growth in Nigeria: An Empirical Investigation. *Global Journal of Social Sciences*. 8(2), 1-11.

Adofu, I. and Abula, M. (2010). Domestic Debt and the Nigerian Economy. *Current Research Journal of Economic Theory*. 3(9), 22-26.

Ajayi, L.B. and Oke, M.O. (2012). Effect of External Debt on Economic Growth and Development of Nigeria. *International Journal of Business and Social Science*s. 3(12), 1-8.

Angela, C. N. and Frida, E. N. (2016). Aggregate Public Debt Burden And The Growth Of A

Fragile Economy: The Nigerian Experience. *Journal of Economics and Finance*. 9(2), 46-57.

Bakare, A.S. (2010). Debt Forgiveness and Its Impact on the Growth of Nigerian Economy: An Empirical Study. *Pakistan Journal of Social Sciences*. 7(2) 34-39.

Apere, O.T. (2014). The Impact of Public Debt on Private Investment in Nigeria: Evidence from a Nonlinear Model. *International Journal of Research in Social Sciences. Vol4(2):* 130-138

Balbir, K. and Atri, M. (2017). Debt Sustainability of States in India:An Assessment. *Munich Personal RePEc Archive*. 3(2),1- 38.

Cecchetti, S., Mohanty, M. S and Zampolli, F. (2011). The Real Effects of Debt. *Bank of International Settlement Working Papers*. 352(4), 45-53.

Chiang, E. and Moss, G. (2020). Effect of External Debt on Economic Growth and Development of Nigeria. *International Journal of Business and Social Science*, Vol. 3 No. 12, pp. 297 – 304.

Donatus, O. O and Mordecai D. B. (2016). The Impact of Domestic Debt on Economic Growth in Nigeria. *Asian Research Journal of Arts & Social Sciences*. 12(5), 1-13.

Ekperiware, M. C. and Oladeji, S. I. (2014). External Debt, Servicing and Debt Relief Transmissions In Nigeria. *Journal of Economics and Sustainable Development*. 23(10) 22-55.

Fischer, S. and Easterly, W. (1990). The Economics of the Government Budget Constraint. *The World Bank Research Observer.* 5 (2), 127–142.

Ghosh, A. R., Kim, J. I., Mendoza, E.G., Ostry, J. D., and Qureshi, M. S. (2013). Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advance Economy. *National Bureau of Economic Research*. 15(8), 33-74.

Gunduz, Y. B. (2017). Debt Sustainability in Low-Income Countries: Policies, Institutions, or Shocks? *IMF Working Paper: Institute for Capacity Development*. 5(12), 1-47.

Hope, I. O. and Eugene, O. N. (2016). Effect of Debt Servicing on Economic Growth: Evidence from Nigeria. *International Journal of Academia*. 32(5), 505-540.

Igbodika, M. N., Jessie, C. and Andabai, P. W. (2016). Domestic Debt And The Performance Of Nigeria Economy (1987-2014). *European Journal of Research and Reflection in Management Sciences.* 8(2),1- 9.

Ijeoma, N. B. (2013). An Empirical Analysis of the Impact of Debt on the Nigerian Economy. *An International Journal of Arts and Humanities.* 17(3), 165-191.

Kalu, E. U., Okai, E. D., Chukwu, N. O. and Amadi, I. E. (2016). Debt Servicing And Economic Growth: The Nigerian Experience (1981 To 2013). *Journal of Economics*. 4(4), 1-13.

Majunder, M. (2007). Does Public Borrowing Crowd-Out Private Investment? The Bangladesh Evience. *PAU Working Paper Series: Bangladesh Policy Analysis Unity*. 15(4), 2-26.

Nazif, I. A. (2014). The Impact of Nigeria's Debt Stock and its Servicing on Social Provision. *Developing Country Studies*. 4(10), 1-8.

Obudah, B. and Tombafa, S. (2013). Effects of Interest Rate and Debt on Equity Investment. *America Journal of Humanities and Social Sciences. Vol. 1(2): 31-36.*

Olasode, O.S. and Babatunde, T. S. (2016). External Debts and Economic Growth in Nigeria: An Empirical Study.*Business and Economics Journal*. 8(2), 1-9.

Pattillo, C., Poirson, H. and Ricci, L. (2002). External Debt and Growth. (IMF Working Paper) No. 02/69. Washington DC: International Monetary Fund.

Shiamptanis, C. (2015). Risk Assessment Under A Nonlinear Fiscal Policy Rule. *Economic Inquiry*. 1-17.

Udo, A. B., Antai, A. S. (2014). Opportunity Cost of Nigeria's External Reserves. *Journal of Economics & Finance*. 5(3):21-34.

Ugwu, O. J. (2017). Imperatives of Domestic Debt Payments And Economic Growth: the Nigerian Evidence. *Journal of Economics and Finance.* 10(7), 46-51.

Vdovychenko, A. (2016). Fiscal Policy Reaction Function and Sustainability of Fiscal Policy in Uukraine. *Economics Education and Research Consortium;Working Paper*. 17(1), 1-50.