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AN INVESTIGATION OF CAUSAL RELATION BETWEEN PUBLIC DEBT AND ECONOMIC GROWTH IN NIGERIA

Joseph Adelanke ADEYOKUNNU,
Azteca University, Faculty of Management, Mexico
josephade@gmail.com

Abstract

Economic growth has been described as sustained increase in per capita national output or net national product over a long period of time. Public debt is the total amount of disbursed funds and contractual liabilities of residents of a country to repay principal and other related obligations to non-residents meanwhile public debt by and large refers to total national debt, also include the debt owed by states, provinces and municipalities/local government. Meanwhile granger causality was employed for this study as the estimator techniques. The data covered the period of 1970 – 2019, sources of data were obtained from Central Bank of Nigeria (CBN) Annual Statistical Bulletin and index mundi. The study concluded that there exists positive significance causal relationship between public debt and economic growth unidirectional coming from the Economic Growth to Public Debt which means that economic growth can be achieved if the Public Debt is increased and he suggested that More ways of achieving economic growth.

***Keywords**: Public Debt, Economic Growth, Central Bank of Nigeria (CBN), GDP.*

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1. Introduction

The suggestion of the Economic theory talks about the reasonable borrowing level by country which is developing because it tends to enhance its economic growth (Pereira and Xu, 2000). Which means when a developing country is willing to mobilize capital resources to fasten the growth of the economic may need to resort to borrowing. To bring about growth in developing countries like Nigeria borrowing is needed so as to augment capital stocks dominance. The benefits of this is that this countries are likely to experience an high rate of return on investment and its opportunities which indicates that the ROE will be greater than that of their counterparts in developed economies. In which this enhance economic growth having potentials in alleviating the country's poverty situation (Amakom, 2003). The process would become crystal when the borrowed funds are successfully implemented and utilized properly so as to have a productive investment which is meant for the macroeconomic instability, whereby when a country experience growth it tends to increase and allow for timely debt repayments but when this is maintained for a stabilized period, the growth will actually affect per capita income positively which is a stepping stone for reducing poverty (Amakom, 2003).

One problem that might disturb achieving macroeconomic stability and sustainable growth in Nigeria seems to be as a result of the Federal Government's borrow (debt) without achieving the purpose and excessive reliance on the banking system, particularly the Central Bank of Nigeria (CBN) to finance the large "ghost" project/budget that results to unsustainable fiscal deficits. Borrowings which are from the central banks give increase to the rate of high-powered money into the system, which might result to serious negative outcome on the stability of the price and exchange rate. The debt problems in Nigeria could be traced to the fall of price of international oil, mono-product economy, misappropriate of funds as well as being consuming economy among others. With these debt problem, the credit facilities dried up in a gradual process, the then minister of finance Dr. Okonjo Eweala do rebasing for the economy to create opportunity for more borrow but resulted to a stall in project (Ajayi, 1989).

Debt problems tend to ensure that there is utilization of resource so as to finance the current and past consumption rather than being used for the execution of the recurrent expenditures such as salaries and likes. With the creation of DMO in August 2000, the Central Bank of Nigeria (CBN) was fused on the responsibility of managing Nigeria's public debt. Meanwhile, the law which was established by the CBN was entrusted with the management of Federal Government and it advance means of having a temporary deficiency in budget revenue which is subjected to a limit and full repayment mainly on annual basis. It means the creation of the DMO brings about a positive development to enhance not only public debt management but also making the monetary policy effective.

About two decades ago, the Nigeria government was indebted with a huge amount of debt and borrowings which came internally with a high level of interest rates accrued with the hope of fastening the level of developments through the higher rate of investments and bring about economics growth. Even with the high level of debt that accrued to the country the level of poverty still remains higher and was different from the initial intention as well as reasons for borrow. This really shows that the level of Nigeria indebtedness has gone beyond reasonable limits.

Statement of the problem

The importance of debt/borrowing is mainly a medium of leveling off the revenue so as to give influence to the direction of the economic activities but the outcome is not appear as expected in Nigeria and this is worthy to focus for debate in literatures. The implemented fiscal policy by policy makers, economists, and scholars in order to maintain macroeconomic stability remain the dominant policy instrument that serve as the most important role in developing economies (Şen & Kaya, 2013). Policy makers are willing to cover the financial gap through public debt so as to achieve macroeconomic stability and promote growth as it belief by Keynesian economist "the state's borrowing doesn't harm when properly spent". Nigeria is the most populated with the largest economy in Africa and also have largest population of poor and vulnerable people in the world despite her vast untapped human and material resources compared to other countries mostly in Africa.

Research Objective

i. The objective of the study is to investigate the causal relation between public debt and economic growth in Nigeria

Research Questions

Base on the above objective, the below relevant question was raised and to be addressed;

i. What are the possible causal relation between public debt and economic growth in Nigeria?

Research Hypothesis

$H_0 1$: there is no significant causal relation between public debt and economic growth in Nigeria

2. Literature Review, Hypothesis Development, and Conceptual Review

This section reviews literature on relevant theories, concept and empirical for the study and major issues on the effect of public debt on economic growth are also reviewed to obtain the model suitable for the study.

2.1. Theoretical Review

Domestic debt might be having positive and negative impacts on economic growth based on the traditional view that explains the tax cut which is mostly financed by the borrows by government that have different effects on the economy. The tax cut is having immediate impact and able to motivate the consumer spending, the consumer higher spending affects the economy both in the short run and long run; In the short run, when the consumer spend higher, it led to the rise in the demand of goods and services which in turn raise the output and employment, that is the rate of marginal propensity to consume will be higher than marginal propensity to save, and in turn increase as the private savings falls short of the government dis-saving. It's in turn increases the real rate of interest rate in the economy and encourage the rate of capital inflow from abroad. But at the long run, when there is higher interest rate, its tends to discourage the investment and bring out the returns on the crowd out private investment; that is a lower domestic savings is also the smaller capital stock while the inflow from abroad results to an increase and a great foreign debt.

Increase in the aggregate demand results to the rate of higher price level that automatically adjusts over time and make the economy returns to a natural rate of output. Lower investment leads to a steady and a very low capital stock of the state and also a lower level of the output. Meanwhile, when considering the overall impact in the long-run period its results to a small and the total output might lower the consumption and reduced economic welfare eventually otherwise referred to as the burden of public debt (Sheikh et al. 2010). The WB and IMF (2001), make use of the public borrowing extensively and this can have a very severe repercussions on the economy, that is public debt service might consume a significant part of government revenues, especially when the domestic debts and rate of interest rates are more than the foreign ones. The rate of interest on the cost of domestic borrowing will automatically rise along with the rate of increases in the outstanding debt stock; most especially when it happens in is shallow financial markets. Public debt financing can also leads to crowding-out of the private investment at the period when issuing the public debt to the governments and have to tap the domestic private savings which would in turn be available to the private sector. This automatically followed with the rate of increase in domestic interest rates; it might adversely affect the private investments due to its flexibilities. (Fischer and Easterly, 1990).

2.2. Conceptual Review

Performance of Public Debt in Nigeria

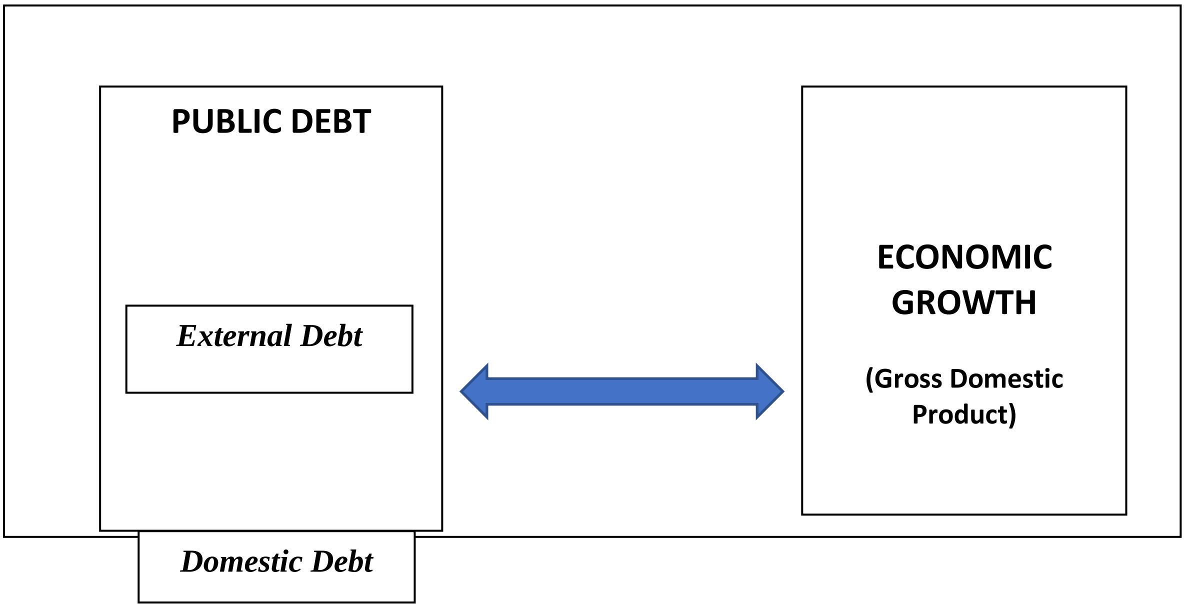
Public debt average the rate of 114.98 percent of bank deposits. In 1994, the percentage of debt on bank deposits was 250 percent in which reduced in a progressive way to 74.94 percent in 2005 and went further low as it reaches 7.62 percent of bank deposits in 2008. This simply explains the finance of recurrent expenditure with debt that wasn't growth induced. But is a reverse situation starting from the year 2007 treasury bills contribution to domestic drastically fell to 26.50 percent and the Treasury bond account 18.80 percent and federal government bonds also amount to 54.67 percent of the domestic debt.

Reason for Rising Public Debt Profile in Nigeria

Meanwhile there are three basic reasons for the advance government public debt (Alison et al 2003). The first is the financing the budget deficit, the implementation of monetary policy while the last is the development of financial sector in Nigeria, There are several models that have been developed in order to explain the changes that occurs in the profile of domestic debt between the 1960s and now (Odozi 1996, Rapu, 2003). These factors majorly include the high budget deficits, low output growth, large Expenditure growth, high inflation rate and narrow revenue base. The operation of fiscal policy of the federal government resulted to a very deficit, averagely about 1.93 percent of the GDP. The failure which was remarkable to the fiscal expansion of the government was when they finance the excess expenditure from the public debt, averagely 114.98 percent of bank deposit. There was a relationship between Cross country and fiscal deficits in which the six of the government debt markets makes confirmation that the countries that have a large number of fiscal deficits must have been issued more government securities in the domestic markets (Mihaljek et al 2002).

Conceptual Framework

Figure 1. Conceptual model showing the relationship between public debt and economic growth in Nigeria.



Keys

\- **Granger Causality**

Source: Researcher, 2022

Empirical Review

Several studies have attempted to investigate external debt in relation to economic growth and development, especially for the developing countries (Seetanah, Radachi and Durbarry, 2007; Ogege and Ekpudu, 2010; Egbetunde, 2 0 1 2; Obiwuru, Okwu and Ekezie, (2013). Researched on the effects of external debt and economic growth in which the literature suggests that the studies which were done on the public debts in relation to economic growth have been relatively scanty for Nigeria. Adofu and Abula (2010) in their researched they showed that domestic debt is having a negative effect on Nigeria economic growth. And they made suggestions that the government should reduce domestic borrowing and increasing revenue through tax reforms.

Onyeiwu (2012) used the OLS with the error correction model to make investigation on the relationship between domestic debt and economic growth. In which the research found out that the holding of the domestic debt stock by the government should be above the healthy threshold and within a bank deposit of 35 per cent, by this there is evidence that the of private investment brings out the addition which is having a negative growth effect for this investment period investment. Aminu, Ahmadu and Hamidu (2013) also make use of the OLS regression analysis techniques to determine the impact of public debt on economic growth in Nigeria. The result shows that the growth of the external debt was gradually reducing its values and potentials in the economy not like the domestic debt which is always enhancing the economic growth. More also The study also found out that there is a bi-directional causation which is between external debt and GDP growth, and there is no causation between the domestic debt and GDP growth, also there is no causation between external and domestic debts. In which he concluded that the sustainable per capita growth can also be attributed to domestic debt which is against external debt.

Obiwuru et al. (2013) employed the time series approach and empirical method in order to ascertain how domestic debt affected the growth of Nigerian economy. With the use of certain economic growth and domestic debt indices such as such as interest rate and credit to the economic, they opine that domestic debt and credit to the economy is having a significant positive effects but the interest rate is having a negative and not significant effect. Furthermore its shows that the causal variables which was model is also having a significant and joint effect. Amassoma (2011) researched on the co-integration between domestic debt and economic growth; he used the co-integration test, and realized there is absence of co-integration between domestic debt and economic growth and states that external debt indicated the presence of co-integration with economic growth. He made use of the VAR model and it brought out that there is a bi-directional causality between domestic debt and economic growth.

Egbetunde (2012) in his research about the direction of the causality of public debt in Nigeria, he used the Granger causality with a VAR model and domestic and external debt variables. He was able to observe the presence co-integrating relationship in a long run model with economic growth. But the model seems to be inadequate, as there is a reliance on the interplay and role of several key economic fiscal variables in the system. Umaru, Hamidu, and Musa (2013) examine the relationship between external debt, domestic debt, and economic growth. They made use of the OLS estimation and the Granger causality test. The results reflects a bi-directional causation which is between the external debt and GDP, more also there happens not to be any causation between domestic debt and GDP and the research also fails to acknowledge any causation between external and domestic debt. They results concluded that there happens to be a negative impact of external debt on GDP and positive impact of domestic debt on economic growth.

3. Research Methodology

Research Design

This study adopts a granger causality approach which is meant to investigate causal relation between public debt and economic growth in Nigeria. The inferential statistics (granger causality) will be use to establish the degree of causal relation between the independent variable and the dependent variables of the study.

Model Specification:

In order to establish the causal relationship between public debt and economic growth in Nigeria, the study formulated the following equation in an implicit form:

The model start its simplified form of non-structural approach as

$EG_{it} = f\ (PD_{it})$, ………………………………………………………….……………..*2*

Where

EG = Economic Growth

PD = Public Debt

The implicit equation above can be rewritten in its explicit form as

$EG_{it} = \alpha_o + \alpha\ PD_{it} + \mu$

Where

μ = Stochastic error

α_0 = Constant parameter

α = co-efficient of the variables

Model Analysis and Methodology

The significance level is set at 95 percent confidence level. This gives for an error of 5 percent.

In order to satisfy objectives which are the examination of the causal relationship between public debt and economic growth in Nigeria, we intend to adopt granger causality (GC). This is because causal result will automatically achieve and robust result will be achieved. This study will utilize secondary data from the Index Mundi data bank. However, because of the need of availability, reliability and accuracy of data, Nigeria bureau of Statics data will as well be considered for the study. The dependent variable of the study will be economic growth (EG) while the independent variables is the public debt (PD).

Estimation Techniques, Sources of Data and Measurements

The objective captured by estimation of equations, but the challenges of model estimation in public debt (PD) as well as economic growth (EG) mainly with granger causality (GC). The two variables (public debt and economic growth) to be used for this study will be sourced from index mundi and NBS for the period under review, as well as other relevant institution (i.e, CBN statistical bulletin, World Development Indicator (WDI), Indexmundi and so on)

Table 3.1. Variables of Interest and Data sources

Variable	**Source**
Public Debt (PD)	Index Mundi, CBN statistical bulletin and NBS
Economic Growth (EG)	Index Mundi, CBN statistical bulletin and NBS

4. Data Presentation and Analysis

This section is used for presentation and analyses the results of the data generated from the secondary data as it was done in various documents consulted. In this section, the initial data analysis, along with editing, screening and gathering of data is discussed. Further discussions on how the data was derived with the years under review and the features are shown under appropriate sub-headings in sections.

Also, discussions on the ordinary least square (OLS) analysis and other pertinent statistical tool (granger causality) used to answer the research questions with the interpretation of the results are presented in sections.

Data screening, Editing and Presentation

The secondary data were retrieved from the statistical bulletin and edited to make sure that only those that relevant were used for data analysis.

Table 4.1 Estimate Result of public debt on Gross domestic Product of Nigeria (PUD) on GDP in Nigeria

Variables	**OLS**	
	coefficient	Probability
(C)Constant	247646.0	0.0000
PUD	1.56E-05	0.0000
R Square	0.529144	
Adjusted R^2	0.519535	
Durbin Watson	0.142782	
F – Statistics	55.06588	
Prob. F – Statistics	0.000000	
No of Observation	49	
Schwarz criteria	24.26512	
Mean Dep. Variable	275185.2	
S.D. Dep Variable	61269.07	
SSR	8.84E+10	

Source: Author's Computation, 2022

The effect of the public debt variables (PUD) on the gross domestic product (GDP) was presented in table 4.1 for comprehensive assessment. In this period, the Durbin Watson shows that autocorrelation and heteroscedasticity were absent during this period with 0.14, though it is a better result. The R-square of 0.529144 depicts that variation in dependent variable (proxy with GDP) was 2% approximately of all variables of interest was gotten for the period.

The effect of each of the exogenous variables on gross domestic product (proxy with GDP) was via their co-efficient. The coefficient of PUD which was 1.56E-05 shows that there was positive but insignificance effect on gross domestic product (GDP) as demonstrated in the probability of 0.0000. Thus, a percentage change in PUD leads to 0% change.

This therefore suggests an area of policy shift for government and policy maker to meet economic diversification strategy to achieve improvement on positive coefficient and probability to be highly significance and not insignificance level. Above all the results show that the exogenous variable (PUD) is positive at the period used for the research and also show positive coefficients in the variables.

Table 4.2 Granger Causality Result Output of External Debt (EXTD) on Economic Growth (RDGP) in Nigeria.

Null Hypothesis	**Obs**	**F. Statistics**	**Prob.**
PUD does not Granger Cause GDP	49	0.55378	0.5787
GDP does not Granger Cause PUD		0.08141	0.9220

Source: Author's computation 2022

Granger Causality Analysis of Public Debt (PUD) on Gross Domestic product (GDP) in Nigeria

The result shows that there is a unidirectional causality running from gross Domestic Product (GDP) to Public Debt (EXTD) which depicted that an increase in gross domestic product (GDP) can be achieved as a result of increasing in Public Debt (PUD).

Descriptive Analysis

The study seeks to empirically investigate between domestic debt and economic growth in Nigeria (granger causality approach). GDP was the dependent variables and was source from the annual and financial report of the central bank while the external debt was sourced from the annual year under review.

Table 4.3 Descriptive Statistics of Empirical Analysis of the gross domestic product, public debt in Nigeria

Variables									
	Min	**Max**	**Mean**	**Median**	**Std.D**	**Prob.**	**Skew**	**Kurt**	**J.Bera**
GDP	199039.0	385349.0	275185.2	279243.0	61269.07	0.119989	0.249749	1.678588	4.240710
PUD	17183000	1.10E+10	1.76E+09	2.68E+08	2.85E+09	0.000000	1.736225	4.938626	33.60938

Source: Author's computation, 2022

Above Table 4.3 shows the results deduced from result Data was obtained from 1970 to 2020. It is crystal clear that different behaviour were recorded in term result gotten, GDP minimum value was 199039.0, maximum value was 385349.0, mean 275185.2, median 279243.0, standard deviation 61269.07 and probability was 0.119989 in which the Skewness, Kurtosis and Jarque-Bera are 0.25, 1.68 and 4.24 respectively.

The Table 4.3 also portrays the value for PUD in relation to minimum value, maximum value, mean, median, standard deviation and probability as 171830001.10E+10, 1.76E+09, 2.68E+08, 2.85E+09 and 0.000000 in which the Skewness, Kurtosis and Jarque-Bera are 1.736225, 4.938626 and 33.60938 respectively.

5. Summary OF Findings, Conclusion and Recommendations

The major findings of this research work are presented in this section. This section also provides a formal conclusion of the findings on the study of the public debt and gross domestic product: an empirical assessment of Nigeria economy. It covers the following issues, implications, recommendations to organisations, the main contributions of the study to the frontier of knowledge, suggestions for further studies and the limitations of the study

Conclusion

This research work was carried out to empirically investigate the relationship between public debt and economic growth in Nigeria (granger causality approach)

. The findings from this study have led to the conclusions reported below.

1. There exists positive but insignificance effect public debt on gross domestic product.
2. The result shows there is causalities which are unidirectional coming from the gross domestic product (GDP) to public debt (PUD) which means that gross domestic product (GDP) can also be achieved if the public debt (PUD) is increased.

3. Above all the results also revealed that the exogenous variable (EXTD) is positive at all the period used for the research and also show positive coefficients and correlations with all the variables

Recommendations to organizations

Based on the findings of this study, the following recommendations are suggested

1. This research suggests that there is an area of shift in policy for government and policy maker so as to have a strategy of economic diversification in achieving improvement on positive coefficient and probability to be highly significance and not insignificance level
2. With the results from the above chapter there is a suggestion that the area of policy shift for the government so as to build their current expected and more operational strategy.
3. To have more gross domestic product (GDP) the government should try and put more and likely pressure on liberating the debt aspects and also having to get more gross domestic product.
4. Other recommendations which are similar to the studies could be carried out in other sectors which are different from the researcher's choice so as to make evaluation

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Appendix 1

Dependent Variable: GDP
Method: Least Squares
Date: 10/06/22 Time: 13:11
Sample: 1970 2020
Included observations: 51

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PUD	1.56E-05	2.11E-06	7.420639	0.0000
C	247646.0	7009.838	35.32835	0.0000

R-squared	0.529144	Mean dependent var	275185.2
Adjusted R-squared	0.519535	S.D. dependent var	61269.07
S.E. of regression	42469.01	Akaike info criterion	24.18936
Sum squared resid	8.84E+10	Schwarz criterion	24.26512
Log likelihood	-614.8288	Hannan-Quinn criter.	24.21831
F-statistic	55.06588	Durbin-Watson stat	0.142782
Prob(F-statistic)	0.000000		

Pairwise Granger Causality Tests
Date: 10/06/22 Time: 13:12
Sample: 1970 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
PUD does not Granger Cause GDP	49	0.55378	0.5787
GDP does not Granger Cause PUD		0.08141	0.9220