

An Empirical Analysis of Domestic Debt, Foreign Debt and Economic Growth Nexus in Nigeria (1970-2014)

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Abstract

This paper investigated the relationship between foreign debt, domestic debt and economic growth in Nigeria based on annual data for the period 1970-2014 using Augmented Dickey Fuller test, Phillips Perron test, Johansen Cointegration test and Ordinary Least Square Regression Analysis via Microsoft 7.1 econometric software. The overall results show that foreign debt shows a statistically significant positive relationship with economic growth proxied by real gross domestic product in Nigeria. The result further revealed that a one naira increase in foreign debt would bring about 44.92 units increase in economic growth. The results also show that there exists a statistically significant inverse relationship between domestic debt and economic growth. A one naira increase in domestic debt would retard economic growth by 15.92 units. Based on the results, government at various levels should formulate policies aimed at encouraging domestic savings in order to give room for loanable fund to domestic investors; there should be judicious utilization of fund borrowed domestically on productive activities so as to have significant positive contribution to economic growth in the country; and government should sustain the effective and efficient management of foreign borrowed fund presently so as to continue to contribute positively to economic growth. In addition, incentives should be given to potential industrialists in form of favorable fiscal policy by the government in order to encourage them to establish different types of industries that would accelerate economic growth.

Keywords: Foreign debt, domestic debt, economic growth, ordinary least square, unit root, cointegration, Nigeria

Introduction

Several researchers have conducted studies both theoretical and empirical on the relationships among domestic debt, foreign debt and economic growth in developing and advanced countries of the world. Insufficiency of fund on the part of the governments of developing countries to implement various capital projects could be the causal factor of embarking on borrowing both internally and internationally. Most developing countries have been sourcing for finance of their various developmental projects through borrowing from domestic and foreign sources in order to stimulate their rates of economic growth through investment opportunity and to meet consumption obligations of their citizens. This suggests that borrowed fund by governments of developed and developing countries is usually targeted toward stimulating economic growth and development and improving the quality of life of their citizens. Domestic debt and external debt are required in order to finance budget deficit and stimulate economic activities; hence, both domestic debt and external debt are expected to bring about improved economic growth of a nation. It has been revealed empirically that for developing countries to experience rapid and sustained economic growth, some quantum of borrowed fund is inevitable either internally or internationally.

Successive governments in Nigeria over the years have borrowed colossal amount of money from both domestic and foreign sources in order to stimulate economic growth and development and improve the standard of living of her citizenry. In 1970, domestic debt and foreign debt figures were #1091 million and #175 million respectively. These figures rose astronomically to #8215.6 million and #1866.8 million in 1980. This trend continues as domestic debt and foreign debt figures rose to #84,093.1 million and #298,614.4 million in 1990. In 2000, domestic debt figure was #898,253.9 million while foreign debt figure stood at #3097.383.9 million. In 2005, domestic debt figure was #1275,076.6 million while foreign debt figure amounted to #2695,072.2 million. In 2010, domestic debt figure stood at #4700,600 million while foreign debt figure was #723,200.0 million. The aforementioned scenario clearly underscores the fact that both domestic debt and foreign debt figures have been on the increase over the years.

It should however be noted that despite the increase in the amount of borrowed fund both domestically and externally by successive governments in Nigeria, the extent and magnitude of its impact on economic growth and development is undetermined. This paper is motivated by the array of questions begging for answers: Does domestic debt contribute positively or negatively to economic growth and development in Nigeria? What nexus exists between foreign debt and economic growth and development in Nigeria? What are the trends of domestic debt and foreign debt in Nigeria?

Objectives of the Study

The general objective of the study is to empirically examine the nexus among foreign debt, domestic debt and

economic development in Nigeria. The specific objectives are to :

- Investigate the impact of foreign debt on economic growth in Nigeria over the studied period.
- Examine the relationship between domestic debt and economic growth in Nigeria over the studied period.

Study Hypotheses

The hypotheses to be verified by this study are as follows

H₀₁ : There is no statistically significant positive relationship between domestic debt and economic growth and development in Nigeria.

H₀₂ : There is no statistically significant positive correlation between foreign debt and economic growth and development in Nigeria.

Literature Review

Several empirical studies have been conducted on debt-growth relationship in both developed and developing countries. Theoretically, it is expected that the marginal rate of capital should be higher than the world interest rate for developing countries. Then, such countries would benefit from external borrowing (Eaton, 1993). Bauerfreund (1989) showed that the external debt payments obligations reduced investment levels in Turkey in 1985. He asserted that the debt overhang is as a result of both internal and external economic policies. Cohen (1993) estimated an investment equation for a sample of 81 countries over three sub periods using ordinary least square method. The author shows that the level of debt does not explain the slowdown of investment in highly rescheduling developing countries. Afxentious and Serieties (1996) examined the relationship between foreign debt and productivity for 55 countries facing debt service difficulties over the period 1970-1990. The results showed that during the period, the relationship between indebtedness and national productivity is not negative. Fosu (1996) examined the relationship between economic growth and external debt in Sub-Saharan African countries over the period 1970-1986 using ordinary least squares method. The study revealed that direct effect of debt hypothesis shows that GDP is negatively influenced via a diminishing marginal productivity of capital. The study also found that on the average, a high debt country faces about one percent reductions in GDP growth annually. Cunningham (1993) examined the relationship between debt burden and economic growth for 16 heavily indebted nations during the period 1971-1987. The study concluded that the growth of a nation's debt burden had negative effect on economic growth during the studied period. Essien and Onwioduokit (1998) examined the impact of foreign debt on economic growth and they found that the degree of responsiveness of growth to external finance in Nigeria is elastic. By implication, government should only put in place appropriate debt management strategies to enhance economic growth.

Chavin and Kraay (2005) conducted a study on a sample of 62 low-income countries assessed the extent to which debt relief induces government to embark on social spending. They concluded that the marginal benefits of debt relief may not be sure in Africa, Latin America and Asia. Lora and Olivera (2006) examined the crowding out effect of public debt on social services between 1985-2003 and found that the effect comes mostly from stock of debt and not debt service. They posited that loans from multilateral organizations do not ameliorate the adverse consequences of debt on social expenditures. Karagol (2002) investigated the long run and short run relationship between external debt and economic growth for Turkey during 1956-1996 and the Granger causality test result showed a unidirectional causality from debt to economic growth. Aminu and Anono (2012) conducted a study on external debt relationship in Nigeria and found that external debt impacted positively on the growth of the economy within the period under review. And that external debt does not cause GDP, but the flow of causation runs from GDP to external debt. Savvides (1992) employed a Two Stage Limited Dependent Variable model (2SLDV) to measure the impact of debt overhang for 43 Less Developing Countries (LDCS) encountering debt problem. The study concluded that debt overhang and decreasing foreign capital flows have significant negative effect on investment rates. Warner (1992) used ordinary least square estimation technique to measure the size of debt crisis effect on investment for 13 less developed countries over the period 1982-1989. He affirmed that the reasons behind the decline of investment in many heavily indebted countries are declining export prices, high world interest rates and sluggish growth in developed countries.

Mbanasor and Okere (2012) examined the impact of foreign borrowed fund on the growth of the Nigerian economy using ordinary least square estimating tools. The results revealed that external borrowed fund is positively related to economic growth. Hence, government should ensure proper debt management so as to stimulate future growth. Suna (2015) examined the nexus between economic growth and external debt over the period 2003 to 2014 for Turkey using Vector Autoregressive estimating tools. The results revealed a unidirectional causality from economic growth to external debt. Dereje (2010) investigated the impact of foreign borrowed fund on the development of selected eight underdeveloped countries through crowding out effect and debt overhanging for the period 1991 to 2010. The results revealed that inability of the poor African countries in servicing foreign borrowed funds debars them from borrowing internationally and hence resort into domestic borrowing which lead to crowding private investors. Ezenwa (2012) investigated the contribution of foreign

borrowed fund on economic growth in Nigeria for the period 1970 to 2010 using three different estimating tools. The results revealed that foreign borrowed fund is positively related to economic growth.

Ibi and Aganyi (2015) examined the influence of external borrowed fund on the growth of the Nigeria economy using vector auto-regression, impulse response and variance decomposition. The results showed that there is a weak nexus between the foreign borrowed funds and the Nigeria economy suggesting that excessive external borrowed fund may not significantly influence economic performance. Ajayi and Oke (2012) investigated empirically the trend of foreign borrowed fund on the development and growth of the Nigeria economy using least square regression analysis with data source from CBN statistical bulletin. The result revealed a ripple effect flowing between foreign debt burden and the general economy level of income. According to them, excessive foreign borrowed fund bring about reduction in the value of a country currency, reduction in the economical work force, increased level of poverty and generally economic imbalances. Sequel to this, they recommended that borrowed fund should be channeled toward profitable investment whose return will be sufficient enough in paying off the borrowed fund and hence stimulate economic growth.

Data and Methodology

The data used for this study were obtained from Central Bank of Nigeria Annual Report and Statement of Account and Central Bank of Nigeria Statistical Bulletin of various issues (2008, 2012 & 2014). The method that was employed in analyzing the data is simple regression analysis. The domestic debt, foreign debt and inflation are the exogenous or explanatory variables while real gross domestic product is the endogenous or dependent variable.

Model Specification

The regression analysis of Ordinary Least Square Technique (OLS), Augmented Dickey Fuller (ADF) unit root test, Phillips Perron unit root test and Johansen Cointegration test were employed to examine the nexus between domestic debt, foreign debt and economic growth in Nigeria over the period 1970-2014. Specifically, the estimated regression equation is of the following form :

$$RGDP = b_0 + b_1 DDBT + b_2 FDBT + b_3 INFR + U$$

where

RGDP = Real Gross Domestic Product

DDBT= Domestic Debt

FDBT = Foreign Debt

INFR = Inflation Rate

U = Stochastic Error Term

Description of Variables

Real Gross Domestic Product- This is the dependent variable in the model employed to capture economic growth. It represents the monetary worth of all production inputs and service outlets produced in a geographical confine over a particular time frame adjusted for inflation. It is measured in millions Naira. The figures for this were obtained from the Central Bank of Nigeria Statistical Bulletin of various years (2008, 2010 & 2014).

The explanatory or exogenous variables included in the model are :

Domestic Debt- This variable is expected theoretically to exert a positive influence on economic growth. It represents the amount of fund borrowed domestically from various sources by the government to execute various capital projects capable of stimulating economic growth and development.

Foreign Debt- This is the quantum of fund borrowed from paris club of creditors, London club of creditors, multilateral creditors, bilateral and private sector creditors and promissory note creditors. This variable is expected to have a positive correlation with economic growth theoretically.

Inflation Rate- This exogenous variable should exert a negative influence on economic growth theoretically. Persistent increase in the general price level is a disincentive to investment and economic growth stimulation.

Random Variable : This variable takes care of other explanatory variables influencing real gross domestic product (RGDP) which are not included in the model.

Table 1 Stationarity Test

VARIABLES	AUGUMENTED DICKEY FULLER TEST STATISTICS	PHILLIPS-PERRON TEST STATISTICS	ORDER OF INTEGRATION	MAXIMUM NO. OF LAG
RGDP	-8.043876	-8.367053	I(1)	9
DDBT	-6.230483	-6.229797	I(1)	9
FDBT	-6.864956	-8.202360	I(1)	9
INFR	-6.655806	-10.94303	I(1)	9

Source: Author's Computation using E-view 7.1

Unit root tests are conducted for the variables using the Augmented Dickey Fuller test and the Phillips-Perron test and the results are presented in the table 1 above. Note that the Mackinnon (1996) critical values for the Augmented Dickey Fuller test and the Phillips-Perron test estimation at 1%, 5% and 10% significance levels are : -3.592462, -2.931404 and -2.603944 respectively. Stationary (unit root) test conducted for the set of variables enumerated above revealed that all the variables are I(1) variables (Integrated of order 1). That is, they are not stationary at levels but are all stationary at their various first differences.

Table II
 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.591339	70.03498	63.87610	0.0139
At most 1	0.299964	31.55559	42.91525	0.4127
At most 2	0.201996	16.22077	25.87211	0.4750
At most 3	0.140656	6.518197	12.51798	0.3975

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.591339	38.47938	32.11832	0.0073
At most 1	0.299964	15.33482	25.82321	0.6043
At most 2	0.201996	9.702575	19.38704	0.6506
At most 3	0.140656	6.518197	12.51798	0.3975

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

The table above presents the cointegration result for the variables. Here, it is observed that the variables in the equation are cointegrated. The existence of cointegration implies that there is a long-run relationship among the variables in the equation. Trace test and Max-eigenvalue test indicate cointegration at 5% level of significance respectively. Consequent upon this, an ordinary least square regression was estimated because the variables are stationary at their various first differences.

Table III

Dependent Variable: RGDP
 Method: Least Squares
 Date: 05/29/16 Time: 18:10
 Sample: 1970 2014
 Included observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.561574	0.369667	23.16023	0.0000
FDBT	0.449227	0.095833	4.687611	0.0000
DDBT	-0.161892	0.101636	-1.592859	0.1189
INFR	0.004720	0.006938	0.680219	0.5002
R-squared	0.820132	Mean dependent var		12.15562
Adjusted R-squared	0.806971	S.D. dependent var		1.684246
S.E. of regression	0.739974	Akaike info criterion		2.320283
Sum squared resid	22.45001	Schwarz criterion		2.480876
Log likelihood	-48.20638	Hannan-Quinn criter.		2.380151
F-statistic	62.31514	Durbin-Watson stat		1.868891
Prob(F-statistic)	0.000000			

Table IV Presentation of Regression Result
 Dependent Variable : RGDP

Sample : 1970-2014

Variables	Estimated Coefficient	T-Value	Apriori Expectation	Inference
Constant term	8.561574	23.16023	$b_0 > 0$	Correct sign and significant
FDBT	0.449227	4.687611	$b_1 > 0$	Correct sign and significant
DDBT	-0.161892	-1.592859	$b_2 < 0$	Incorrect sign and significant
INFR	0.004720	0.680219	$b_3 > 0$	Incorrect sign and insignificant
Significant at 5%		$R^2 = 0.80$		DW = 1.8

Source : Author's Computation, 2016

Empirical Findings

The short run result in table III shows that there is a positive relationship between foreign debt and economic growth in the Nigerian economy, given the coefficient of 0.449277, which is statistically significant with a t-value of 4.687611. This can be interpreted as a one naira increase in foreign debt would bring about 44.92 units increase in real gross domestic product. This implies that foreign debt is a significant factor that can transform the growth of an economy. When a country uses its foreign borrowed fund on investment in productive sector, there will be significant improvement in her real gross domestic product (RGDP). From the estimated result, there is an inverse relationship between domestic debt and economic growth in Nigeria, given the coefficient of -0.161892 which is statistically significant with a t-value of - 1.592859. This suggests that a one naira increase in domestic debt would bring about 15.92 units reduction in real gross domestic product. The coefficient of Inflation in the estimated regression equation is 0.004720 which is statistically significant with a t-value of 0.680219. This implies that a one unit rise in inflation rate would increase real gross domestic product by 68.02 units. This negates the apriori theoretical expectation that there is an inverse relationship between inflation rate and real gross domestic product.

The coefficient of determination (R^2) indicates that over 82 percent changes in the real gross domestic product are explained by Foreign debt (FDBT), Domestic debt (DDBT) and Inflation (INFR) taken together. This is a nice fit as the unexplained variation is just 18 percent. The remaining 18 percent could be attributed to some other forces affecting real gross domestic product outside this model. The Adjusted coefficient of Determination (R^2) is 0.80 and this shows that 80 percent variation in Real Gross Domestic Product (RGDP) is caused by variations in Foreign debt (FDBT), Domestic debt (DDBT) and Inflation (INFR). This model as specified is statistically significant given its F-test to be 62.31514. The F-statistic value of 62.31514 is high enough, this shows the overall significance of the model and this indicates that collectively, all the explanatory variables are important determinants of economic growth.

The value of Durbin-Watson is 1.868891 for the model. This falls within the determinate region and this implies that the model is free from autocorrelation problem. Since foreign debt exerts a statistically

significant positive relationship with economic growth in the model, thus, null hypothesis is rejected which states that there is no significant positive relationship between foreign debt and economic growth in Nigeria. But, domestic debt have statistically significant inverse relationship with economic growth in the model, thus, the null hypothesis is accepted which states that there is no significant positive relationship between domestic debt and economic growth in Nigeria.

Conclusion and Recommendations

This paper investigated the growth implications of foreign debt and domestic debt in Nigeria. Empirical analysis was conducted by applying the multiple regression of the ordinary least square technique to the annual data on the Nigerian economy for the period 1970-2014. The model was found to be significant and most of its estimates are as expected. The study found that foreign debt have sustained impact on real gross domestic product. The findings show a positive relationship between foreign debt and real gross domestic product which is in conformity with apriori expectation. The study further revealed that there is an inverse relationship between domestic debt and real gross domestic product which is contrary to apriori expectation.

Based on the estimated results, the following recommendations are made :

- Government at various levels should formulate policies aimed at encouraging domestic savings in order to give room for loanable fund to domestic investors which can spur economic growth.
- There should be judicious utilization of fund borrowed domestically on productive activities so as to have significant positive contribution on economic growth in the country.
- Government should sustain the effective and efficient management of foreign borrowed fund presently so as to continue to contribute positively to economic growth.
- Incentives should be given to potential industrialists both local and foreign inform of favorable fiscal policy in order to encourage them to establish various types of industries that would stimulate economic growth.

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