

Dynamics Of Domestic Debt And The Growth Of Nigeria's Economy

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Abstract

This study examines the dynamics of domestic debt and economic growth in Nigeria over the period 1981-2016. To achieve the objective of the study, annual time series data on Gross Domestic Product (GDP) at current prices, domestic debt outstanding on Treasury Bills (TRB), Treasury Certificates (TRC) and Development Stock were collected from the publications of the Central Bank of Nigeria and analyzed using the Johansen co-integration and Autoregressive Distributed Lag (ARDL) models. The result of Johansen co-integration suggests that the variables have a long-run equilibrium relationship. The ARDL model reveals that most of the variables that are statistically significant have negative impact on GDP. Only TRC has a positive impact on GDP. It is therefore recommended that the government should reduce the level of domestic debt it raises over time because of its negative impact on economic growth process in Nigeria.

Keywords: Domestic Debt, ARDL, GDP

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Introduction

One of the fiscal policy instruments used by most governments to finance budget deficit has been debt (domestic or external). Domestic debts are the debt owed by the government to her citizens or indigenous business firms. In Nigeria, domestic debt constitutes all the money-raising instruments issued by Federal government and denominated in Nigeria's local currency (Naira). It consists mainly of Treasury Bills, Treasury Certificate, Bonds and Federal Government Development Stocks. As noted by Akusiyimu (1995), government creates domestic debt through corporate and personal savings either directly or indirectly. The direct method involves issue of government bonds, securities and other forms of debt instruments in the open market, and individuals and firms who purchase these securities exchange part of their unconsumed income or savings for a claim on the government. That is, individuals, organizations or corporate firms holding any one or all of these debt instruments are creditors to the government.

Although, economic theories suggest that reasonable level of borrowing by the Federal Government is likely to enhance economic growth, however, findings from empirical studies are divided on the impact of domestic debt on economic growth. Some studies such as Krueger (1986) and Jayaraman (2008), revealed the existence of a positive relationship between debt and economic prosperity. This hinges on the assumption that when loan is converted into capital it promotes domestic savings and investment and stimulates economic growth. Other studies have contested these views on the basis that the cost of servicing domestic debt may drain government resources and may also crowd-out funding for social and capital expenditures.

Furthermore, Queientin (1984); Sanusi, (1988) and Ngerebo & Agundu-A (2010) noted that indebtedness amounts to a problem, if a country could not afford to repay its debt. This can result from the cost of debt servicing which includes the repayment of principal and interest due on the loan, faulty domestic policies which ranges from project financing mismatch, inappropriate monetary and fiscal policies, and misapplication of the borrowed funds to generate funds that can easily repay the indebtedness as and when due.

However, empirical evidence by Gbosi (1998), Ajayi (1989), Adofu and Abula (2010) and Ngerebo-A (2014), in separate studies, justified the Nigeria's domestic borrowing (debt) on the basis that it makes the country escape the dangers associated with external borrowings. Also, it supplements the internal savings for productive activities through infrastructural development as well as management of other macroeconomic conditions of the country.

Available data from the National Bureau of Statistics (2015) indicated that the ratio of domestic debt to gross domestic product (GDP) in Nigeria has been on the increase since the turn of 1999. It stood at 13.38 percent in 2000, rises to 14.96 percent in 2002, fell to 9.44 percent in 2006 and increased again to 13.02 percent in 2009. In 2011, domestic debt was 15.03 percent of GDP, which rise to 16.12dper cent of GDP in 2013. The ratio of domestic debt to gross domestic product (GDP) Nigeria was well above 17 per cent by the end of 2014.

Despite the continuous rise in domestic debt, appreciable growth and development has not been recorded in Nigeria. The economy is still characterized by low standard of living, high unemployment rates and double digit inflation. It is against this backdrop that this study assessed the relationship between domestic debt and economic growth in Nigeria.

2. Literature Review

2.1 Conceptual Review

Oshadami (2006) described domestic debt as debt instruments issued by the Federal Government and denominated in local currency. He added that in principle, State and Local Governments could also issue debt instruments, but limited in their ability to issue such. Debt instruments in Nigeria consist of Nigerian Treasury Certificate, Federal Government Development Stocks and Treasury Bonds and Ways and Means Advances. Of all the debt instruments, Treasury Bills, Treasury Certificates and Development Stocks are marketable and negotiable while Treasury Bonds, ways and means advances are not marketable but held solely by the Central Bank of Nigeria.

Odozi (1996) opined that domestic debt is the gross liability of government. It consists of all financial resources available to the Federal, State and Local Government lent to her by the citizens and corporate firms within the country. Such resources (domestic debt) are managed by the Central Bank of Nigeria (CBN) on behalf of the Federal Government is charged with the responsibility for managing the domestic public debt.

Central Bank of Nigeria (2012) defined domestic debt as the part of the total government debt in a country that is owed to lenders within the country. It is raised to complement the external debt. Domestic debts are sourced through the commercial banks and other financial institutions in the country.

Ministry of Finance (2001) described domestic debt as the amount of money raised by the government in local currency and from its own residents. Generally it consists of two categories – the bank borrowing and the non-bank borrowing. Bank borrowing is made up of advances to the government by the central Bank. The non-banking on the other hand referred to borrowing by the government directly from the general public.

Zagnet (2013) posited that domestic debt, also known as national debt consists of liabilities that a country's citizen and government owe. It includes treasury note, bonds, bills and commercial papers. James, Symon, Aquilars and Mose (2015) opined that domestic public debt is mainly debt owed to holders of Government securities such as Treasury Bills and Treasury Bonds. Governments usually borrow by issuing securities, government bonds and bills. Governments borrow for two reasons namely: when the projected revenue targets short of the projected expenditure and to pay off maturing loans (Ponzi games) which is typical with domestic debt.

2.2 Theoretical Literature

2.2.1 Ricardian equivalence Theory of Debt

In the Ricardian view, government debt is considered equivalent to future taxes. According to the Ricardian equivalence proposition, consumers are forward looking and so internalize the government's budget constraint when making their consumption decisions. So a debt-financed tax cut does not produce aggregate wealth effects. The increase in government debt does not affect consumption and hence, it does not change aggregate demand. The rational consumer facing current deficits saves for future rise in taxes and consequently total savings in the economy are not affected. A decrease in government dis-saving is matched by increase in private savings. In view of unchanged total savings, investment and interest rates are also

unaffected and so is the national income. This theorem is used as an argument against tax cuts and spending increases aimed to boost aggregate demand.

2.2.3 The Keynesian theory

The Keynes view fiscal policy as the best policy that brings about growth in any economy since it acts in the interest of the general public.

According to Keynes, when the government embarks on domestic borrowing to finance its expenditure, unemployed funds are withdrawn from the private pockets and as such the consumption level of the private individuals is unaffected. This funds when injected back into the economy by the government leads to a multiple increase in aggregate demand causing an increase in output and employment. Hence, public domestic borrowing can be used to influence macroeconomic performance of the economy. On the other hand, the indirect effect of domestic borrowing is its effect on investment.

The transmission mechanism through which domestic borrowing affects growth is its reduction in the amount of loanable funds, which puts an upward pressure on the rate of interest. With the assumption that investment is a function of interest rate and the relationship is negative, a higher rate of interest crowds out (reduce) private investment. This reduction in private investment has been called the partial crowding out of deficit financing. It is partial because the amount of crowding out of private investment is less than the amount of government debt issue. The reduction in private investment results to a fall in aggregate demand, output and employment.

2.3 Empirical Literature

Putnoi and Mutuku (2013) studied the impact of domestic debt on economic growth of Kenya over the period 2000-2010 using the Engel-Granger residual and Johanson VAR cointegration. Their findings revealed that domestic debt markets play an increasingly important role in supporting economic growth. They find that domestic debt expansion has a positive long-run and significant effect on economic growth.

Sheikh et al. (2010) investigated the impact of domestic debt on economic growth of Pakistan for the period 1972-2009 by applying ordinary least squares (OLS) technique. The study finds that domestic debt favourably affects economic growth in Pakistan implying that the funds generated through domestic borrowing have been used partially to finance those expenditures of government that contribute to growth of GDP. The principle is that domestic as well as external debt should be spent for long-term development purposes. Another reason for the positive relationship between domestic debt and economic growth in Pakistan may be that domestic debt is marketable.

Maana et al. (2008) explored the impact of domestic debt on Kenya's economy covering the period 1996 to 2007 using a modified Barro growth regression model. The study established that domestic debt expansion had a positive but not significant effect on economic growth during the period. However, the study found no evidence that the growth in domestic debt crowds-out private sector lending in Kenya.

Abbas and Christensen (2007) analysed optimal domestic debt levels in low-income countries and emerging markets between the period 1975-2004 using Granger Causality Regression

model and found that moderate levels of marketable domestic debt as a percentage of GDP have significant positive effects on economic growth. The study also provided evidence that debt levels exceeding 35 percent of total bank deposits have negative impact on economic growth.

Adoufu and Abula (2010) examine the effect of domestic debt on the Nigerian economy during the period 1986-2005 using OLS technique. The findings reveal that domestic debt negatively affected the growth of the economy and recommends that the government should introduce efforts to resolve the outstanding domestic debt.

Onyeiwu (2012) studied the relationship between domestic debt and economic growth in Nigeria. The Ordinary Least Squares Method (OLS), Error Correction and parsimonious models are used to analyze quarterly data between 1994 and 2008. His result shows that the domestic debt holding of government is far above a healthy threshold of 35 percent of bank deposit as the average over the period of study is 114.98 percent of bank deposit presenting evidence of crowding out of private investments. The study also revealed that the level of debt has negative effect on economic growth. He suggested that the government should maintain a debt- bank deposit ratio below 35 percent, resort to increase use of tax revenue to finance its projects and divest itself of all projects the private sector can handle.

Ngerebo-A (2014) investigated the relationship between domestic debt and the poverty of Nigeria from 1986-2012) using the Ordinary Least Square Technique, Vector Auto regression (VAR), Cointegration and Granger Causality Approaches. Using Johansen Cointegration technique, estimated results revealed that there is a long-run relationship between poverty {measured by real gross domestic product (RGDP), per capita gross domestic product (GDPPC), and basic secondary school enrolment} and domestic debt in Nigeria. The study equally reveals that the domestic debt coefficient has positive impact on bank credit and this impact is highly significant. Such credit provides place for rural development project so as to reverse the chaotic trend of urbanization, industrialization, and create lucrative market advancement in the country's manufacturing sector, thereby, improving the welfare of the citizens.

James, Symon, Aquilars and Mose (2015) empirically explores the effect of domestic debt, as a share of Gross Domestic Product (GDP), on economic growth in the East Africa Community (EAC) over the period 1990-2010. The study used the Solow growth model augmented for debt. Levin-Lin-Chu test (LLC) was used to investigate the properties of the data with respect to Unit roots. The Hausman specification test was used to select the panel fixed-effects model, which was corrected for heteroscedasticity. The results show that domestic debt has a positive significant effect on per capita GDP growth rate in the EAC. The policy implication is to promote sustainable levels of domestic borrowing to enhance growth.

Methodology

3.1 Sources and Method of Data Collection

The study used annual time series secondary data collected from the published Statistical Bulletin (2015) of the Central Bank of Nigeria (CBN). The data covers the period 198 -2014 for the entire variable. The variables on which data were collected are gross domestic product

(GDP) at current prices, domestic debt outstanding on treasury bills (TRB), treasury certificates (TRC) and development stock (DST). GDP, the dependent variable was used as proxy for economic growth in Nigeria.

Model Specification

This study adopted the autoregressive distributed lag model (ARDL) also called unrestricted error correction model (UECM). The model was developed by Pesaran (2001) and employed by Akinboade et al (2008). The ARDL is an improvement on the traditional Error Correction Model (ECM) which is the process of reconciling the long-run and short-run equilibrium relationship of a time series as earlier revealed by the cointegration test. The model is stated as follows:

$$\Delta \text{GDP}_t = \alpha_0 + \sum_{i=1}^n [\alpha_1 \Delta \text{GDP}_{t-i} + \alpha_2 \text{TRB}_{t-i} + \alpha_3 \Delta \text{TRC}_{t-i} + \alpha_4 \Delta \text{DST}_{t-i}] + \mu e_t \quad (1)$$

Where;

Δ = difference operator

e_t = error correction term

α_0 = vector of the intercept

α_j = vector of the partial slopes ($j = 1, 2, \dots, 4$).

n = maximum lag length

Other variables are as defined earlier.

If long run relationship exists, short run behavior is investigated using error correction method (ECM) as given below

$$\Delta \text{GDP}_t = \alpha_0 + \sum_{i=1}^n [\alpha_1 \Delta \text{GDP}_{t-i} + \alpha_2 \text{TRB}_{t-i} + \alpha_3 \Delta \text{TRC}_{t-i} + \alpha_4 \Delta \text{DST}_{t-i}] + \delta \text{ECM}_{t-1} + \varepsilon(t) \quad (2)$$

3.3.1 Augmented Dickey-Fuller and Phillips-Peron Tests of Stationarity

The augmented Dickey-Fuller (ADF) test was carried out to test for the existence of a unit root in the time series. The ADF test is conducted on individual variables and stated in three possible forms. The forms are model without intercept and trend, model with intercept but no trend and model with intercept and trend. The ADF and PP equations are specified as shown below:

$$\Delta Y_t = Y_t + \beta_i \quad (3)$$

$$\Delta Y_t = \beta_0 + \beta + e_{2i} \quad (4)$$

$$\Delta Y_t = \gamma_0 + \gamma_1 t + \beta_i + e_{3i} \quad (5)$$

Where;

e_i = (GDP, EXD, DLC, DPC, and REX) representing the variables used for the unit root test.

The equation (3.2) represents random walk model without intercept and no trend; equation (3.3) represents random walk model with intercept but no trend tile equation (3.4) represents random walk model with intercept and trend. One of the standard conditions required for the implementation of the ADF unit root test is that both the null and alternative hypotheses must be stated and tested. Therefore, we state the hypothesis as follows:

$H_0: \beta = 1$, the presence of a unit root using either equation (3), (4) or (5).

$H_1: \beta \neq 1$, the absence of unit root using either of equation (3), (4) or (5).

3.4.2 Co-integration Test

This study adopted the Johansen multivariate co-integration test to investigate the long relationship between monetary policy variables (interest rate, exchange rate, asset prices) and the variable of macroeconomic instability (inflation) as a system of interdependent equations. The relationship between the variables will be based on a VAR model of order p expressed as:

$$Y_t = A_t Y_{t-1} + \dots + A_p Y_{t-1} + B_t \gamma + e_t \dots \quad (11)$$

Where;

Y_t = dimensional vector of non-stationary $I(1)$ variable

$\gamma = \gamma$ – dimensional vector of deterministic variable

e_t = stochastic error residual.

Results and Discussions

Table 4.1 Unit Root Test of Stationarity

Variables	ADF			PP	Levels	PP 1st	Difference
	ADF 1st	Difference	Remarks				
GDP	3.332[2]*	-	3.332[2]*	-		I(0)	
TRB	-2.335[2]	2.591[2]*	-2.469[2]		2.077[2]*		I(1)
TRC	-1.529[2]	4.474[2]*	-1.811[2]		4.474[2]*		I(1)

DST 0.829[2]* - 0.022[2]* - I(0)
 ADF Critical value = -2.951 PP Critical value
 = - 2.954

* indicates significant at 5%

[2] Indicates that a maximum lag length of 2 was included in the tests.

Source: Computed by the researcher using E-view 9

Table 4.1 shows the result of Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests conducted to ascertain the stationarity status of the data. For both ADF and PP at levels, GDP and DST are stationary since their calculated are greater than the critical values at 5%. However, TRB and TRC are stationary only at first difference. Hence, the variables GDP and DST are integrated of order zero [I(0)] while the variables TRB and TRC could be said to be integrated of order one [I(1)]. This condition is necessary for the ARDL model used in the study. Thus, the presence of a unit root in the series suggests that it is necessary to test for co-integration.

Table 4.2 lag selection for Co-integration Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-753.7687	NA	4.35e+15	47.36055	47.54376	47.42128
1	-600.8905	257.9820	8.47e+11	38.80566	39.72174	39.10931
2	-572.7690	40.42464*	4.18e+11*	38.04807*	39.69702*	38.59465*
3	-559.2192	16.09045	5.59e+11	38.20120	40.58302	38.99071

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Computed by the researcher using E-view 9

Before carrying out the co-integration test, it is necessary to determine the appropriate lag length for the test. The optimal length of lag selection for the co-integration test, based on the five information criteria, is reported in Table 4.2. From the table, all the five information criteria, suggest that a lag length of two is optimal for the test. Consequently, this study used a lag length of one for the test of co-integration ranks and for the subsequent diagnostic tests.

Table 4.3: Bound F- Test for Co-integration

Null Hypothesis: No Co-integration

Variables

F- values		
Remarks		
D(GDP)	2.987*	co-integration
D(TRC)	5.413*	co-integration
D(DST)	1.150	No co-integration
D(TRB)	1.196	No co-integration
Pesaran Critical values:	Lower bound	Upper bound
	1.70	2.83 (10%)
	3.79	4.85 (5%)
	4.94	5.01 (1%)

* denotes existence two co-integrating vectors at 5% in the endogenous variables D (GDP) and D (TRC)

Source: Author's Computation using E-views 9 software

Table 4.3 above shows the result of the bound test for co-integration using unrestricted intercept without trend. The entire variables were, each, changed to dependent variable in order to compute the F-statistic for the respective joint significance in the ARDL model. The results show that co-integration exists when GDP and TRC are employed as the dependent variables. This follows from the fact that the computed F-value of 2.987 and 5.413 for GDP and TRC are higher than the lower and upper bound limits at 10% and 1% respectively. On

the other hand, no long-run relationship is found when other variables (TRB and DST) are employed as the dependent variable as their computed F-values are both lower than all the lower and upper bound values at 1 percent, 5 percent and 10 percent levels of significance. Therefore, it could be concluded that there are two co-integrating equations in the system, suggesting the variables have a long-run equilibrium relationship..

4.4 Estimated Long-run Coefficients for Co-Integrating Vectors

Dependent variable: RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11795.94	3872.285	3.046248	0.0057
DST(-1)	-2997.087	1012.636	-2.959689	0.0070
TRB(-1)	-10.23890	6.276217	-1.831380	0.0864
TRC(-1)	25.36571	76.17289	0.333002	0.7421
GDP(-1)	0.206264	0.173402	1.819514	0.0876
R-squared	0.675			

Adjusted R squared 0.547

F-statistic 357.8

Source: Author's Computation using E-views 9 software

Table 4.4 above presents the results of long run co integrating vector coefficients of the model, where GDP is used as the dependent variable. The results indicate that the estimated coefficients of long-run for all the variables have the correct expected signs. Similarly, all the coefficients are individually statistically significant except treasury certificate (TRC) and are also jointly significant as revealed by a high F-value. While GDP and TRB are significant at 10 percent, DST is significant at 1 percent. Also, the estimated coefficient of determination is as high as about 68 percent. Hence, the model is robust and has a strong forecasting power.

Table 4.5 Estimated Short-run Autoregressive Distributed lag Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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GDP(-1)	0.741925	0.172030	4.312764	0.0003
GDP(-2)	0.447337	0.220737	2.026561	0.0545
DST	-0.782093	0.449829	-1.738645	0.0955
DST(-1)	0.137654	0.762894	1.804373	0.0843
DST(-2)	-0.915480	0.474942	-1.927561	0.0663
TRB	1.641838	7.789456	0.210777	0.8349
TRB(-1)	0.123586	0.126497	0.976992	0.3387
TRB(-2)	-0.239960	0.941926	-2.547553	0.0180
TRC	0.475159	0.081684	5.817050	0.0000
C	12315.07	4001.988	3.077239	0.0053
ECT(-1)	-0.434	0.201	-2.159	0.039

Diagnostics Tests	Statistic (s)	p-values
R- square	0.988	
D-W	2.159	
ARCH		
Wald Test	0.412	
	33.57	0.813
	0.000	
Jaque-bera	0.569	0.752

Source: Author's estimation using Eviews 9

The table 4.4 shows the result of the estimated short-run ARDL model otherwise referred to as the unrestricted error correction model (UECM). From the table 4.4, all the variables, except TRB, TRB (-1) and TRBC are statistically significant either at 1%, 5% or 10% level of probability. The impact on current GDP of a unit change in GDP during the previous first and second years were positive and were about 74% and 45% respectively. These results conformed to the apriori expectation.

DST and DST(-2) have negative but significant impact on GDP while DST(-1) has a positive impact. A unit increase in DST and DST(-2) increase GDP by about 78 percent and 92 percent respectively while a unit increase in DST(-1) increases GDP by about 14 percent. Similarly, TRB and TRB(-1) has a positive but insignificant impact on GDP while TRB(-2) has negative but significant impact. A unit increase in TRB (-1) decreases GDP by about 24 percent.

However, the impact of TRC on GDP is positive and highly significant. A unit increase in TRC increases GDP by about 47 percent.

The Error Correction Coefficient (ECT) indicates the speed of adjustment with which equilibrium is restored in the dynamic model. The ECT coefficient shows how quickly the variables of the study converge to equilibrium and it should have a statistically significant coefficient with a negative sign. The coefficient of the lagged error-correction term in table 4.5 is about -0.43 and significant at five percent level with expected negative sign, which confirms the result of the bounds test for co integration. This implies that about 43% of disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year.

The diagnostic statistics reported in table 4.4 suggest that the data fit the model fairly well. The R-square of the model show that about 98 percent of the variation in dependent variable (GDP) is explained by the combined effects of all the explanatory variables used in the study, suggesting that only 2% variation in GDP is accounted for by other factors not included in the model.

From the table 4.4, since the Durbin–Watson (D-W) value of 2.2 is closer to the value 2 than to the value 0, there is evidence of absence of autocorrelation in the data set. Furthermore, the probabilities of the F-statistic and chi-square for ARCH test are as high as 0.412 and 0.813 respectively, implying that the series data are homoscedastic rather than heteroskedastic. In other word, the series is not suffering the problem of heteroscedasticity.

Conclusions and Recommendation

5.1 Conclusion

This study examined the relationship between domestic debt and economic growth in Nigeria for the period 1981-2015. Using annual time series data collected from the Central Bank of Nigeria statistical bulletin, 2015 on gross domestic product (GDP), treasury bills (TRB), development stocks (DST), and treasury certificates (TRC), findings from the study revealed mixed results. TRB and DST for the various lags were found to be negatively related to GDP while TRC was positively related to it. This suggests that domestic debt has both positive and negative impact on the Nigerian economy at different periods, however, its negative impact is much more higher over the period of investigation.

5.2 Recommendations

Based on the findings of the study, it is recommended that if it becomes necessary for the government to acquire domestic debt to finance budget deficit, it should be funds majorly through treasury certificates (TRC). This is because, as shown in table 4.5, TRC has a highly significant positive impact on economic growth o the study period. Also, the government should reduce the level of domestic debt it raises over time because of its negative impact on economic growth process in Nigeria. Finally, if embarking on budget deficit becomes necessary, then effort must be directed towards improving the revenue base of the country through tax reforms rather than resorting to domestic loan.

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