

## **Mounting Domestic Debt and Debt Servicing Debacle: *Implications for Economic Growth in Nigeria***

**Isiwu George Duhu, Ph.D**

*Senior Lecturer, Department of Economics,  
Enugu State University of Science and Technology (ESUT),  
Enugu State, Nigeria*

**OJIYA, Emmanuel Ameh**

*Lecturer, Department of Economics,  
Federal University Wukari, Taraba State  
(Corresponding Author)*

**Email: [ojivaenoch2000@gmail.com](mailto:ojivaenoch2000@gmail.com)**

**AMADI, Uchechukwu**

*Lecturer, Department of Economics,  
Federal University Wukari, Taraba State*

### **Abstract**

*This study is an empirical investigation on Mounting Domestic Debt and Debt Servicing Debacle: Implications for Economic Growth in Nigeria. It adopted ARDL regression approach and secondary data sourced from Central Bank of Nigeria (CBN) statistical bulletin, Debt Management Office (DMO) and World Bank Development Indicators (WBDI) database were used. Variables employed include GDP growth rate, debt servicing, domestic debt, external reserve and exchange rate among others. The finding indicates that domestic debt burden had an adverse effect on the nation growth prospect. Furthermore, high level of domestic debt, slowing economic growth and spiraling debt servicing challenges lead to devaluation of the nation's currency. The following recommendations were made for policy implementation by the managers of the economy. Government should strive to finance budget deficit by improving on the present revenue base rather than resorting to domestic borrowing. This can be achieved by improving its revenue sources and efficient pursuit of tax reforms; secondly, government over-reliance on a single commodity (crude oil) to run its affairs can be catastrophic in times of negative shocks in the global oil market. Therefore the much touted diversification of our productive base into potential revenue yielding sectors such as agriculture, manufacturing, service sector and solid minerals development will go a long way in enhancing our revenue sources. Government therefore is advised to put in more efforts towards achieving this laudable goal.*

**Keywords:** Domestic Debt; Economic Growth; External Reserve; ARDL, Causality.

## Introduction:

The gap between revenue and expenditure creates the need for borrowings. Individuals, organizations and governments (federal, state and local governments) borrow to fill this gap. The CBN (2010) defines public debt (domestic and external) as a stock of liabilities with different tenure, accumulated by government operations in the past and scheduled to be fully repaid by government in the future. Public debt owed by the government and their agencies to residents of the country is domestic public debt, while that owed to residents of another country is foreign or external public debt. Anyanwokoro (2004) distinguishes public debt from national debt, which, as a component of public debt, is the total outstanding contractual obligations of the main stream government at various levels, exclusive of debts of government-owned institutions, agencies or parastatals. The outstanding payments on contractual obligations of the three tiers of government, namely, federal, state and local government, public corporations and parastatals make up the public debt of a country.

Nigerian governments borrow domestically through the financial markets by issuing treasury bills, federal government bonds, treasury certificates, promissory notes, treasury bonds, and development stocks. As these sources do not usually yield the desired amount of fund needed to take care of multiple government activities, governments turn to external sources, classified by the DMO into multilateral, bilateral, and commercial sources (CBN, 2010). The CBN breaks these sources into multilateral, Paris Club, London Club, promissory notes and others. However, of greater concern is the stock of the country's mounting domestic debt. The World Bank has warned Nigeria to check its rising domestic debt, saying it could cause harm to its economy. Nigeria's domestic debt is about \$21.8 billion (about N3 trillion). It was stated that besides the needed checks on Nigeria's foreign debt, the country would also need to focus attention on issues relating to debt servicing and debts accumulation within the country. In the view of the former World Bank Managing Director, Okonjo Iweala,

*Any time we talk about debt in Nigeria, people start shouting about external debt. The external debt is very low. Nigeria has to pay attention to domestic debt and stop accumulating it. They think because it is domestic, it cannot come and harm the economy, which is not true. If you accumulate lots of domestic debt, you start clouding out the private sector when the public sector enters in all the time to borrow. It is not only external debt that leads to choking off economic growth and clouding out the private sector. We have exited the debt trap; we owed \$30 billion to the Paris club at that time. That has been taken care of, so, we have exited those who are saying that external debt is the problem. She said that Nigeria government has been supporting the Ministry of Finance to have a fiscally prudent approach to the management of the country's resources. The excess crude account has been depleted, a lot of spending is going on, the budget need to be managed in a tighter fashion, we have to rein in our fiscal deficit which according to what I have been told is approaching six per cent of Gross Domestic Product (GDP). You know we need to bring it back to three per cent.*

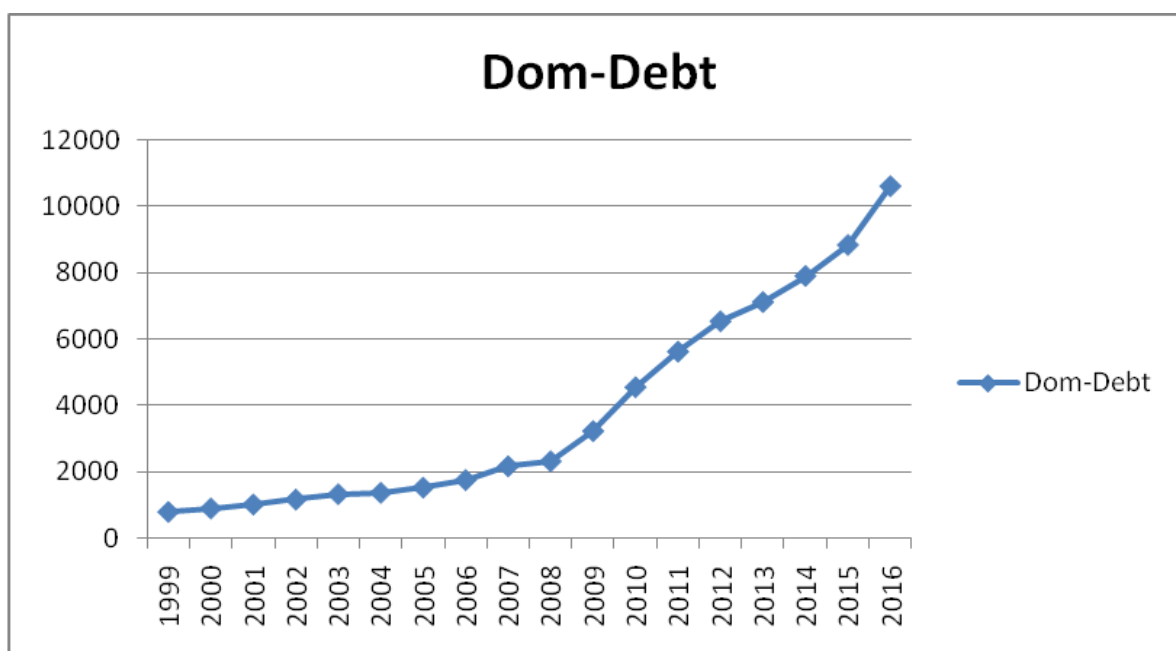
*<https://www.proshareng.com/news/Nigeria%20Economy/World-Bank-cautions-Nigeria-over-rising-domestic-debt/12272>*

### Statement of the Problem

Nigeria, like most other less developed countries (LOCs) has been classified by the World Bank among the severely indebted low income countries since 1992. The nation inability to meet all its debt service payment constitutes one of the serious obstacles to the inflow of external resources into the economy. The accumulation of debt service arrears which is being compounded with penalty interest has not permitted reduction in the debt stock, despite the fact that government has been servicing its external debt annually (World Bank 2015). From month to month, year to year, it is becoming more glaring that Nigeria's negative economic outlook is worsening. Its troubled economy is entering more uncertain times as the national debt has spiraled to N12 trillion (\$65 billion). This is almost N1 trillion higher than the N11.24trn figure for 2015. The N12trn, made up of both external and domestic debts, is 13 percent of the nation's Gross Domestic Product (GDP). The debt owed by the 36 states and the Federal Capital Territory constitutes 33 percent of the external debt and 16 percent of the total domestic debt, while the Federal Government accounts for the balance (Debt Management Office (DMO), 2016)

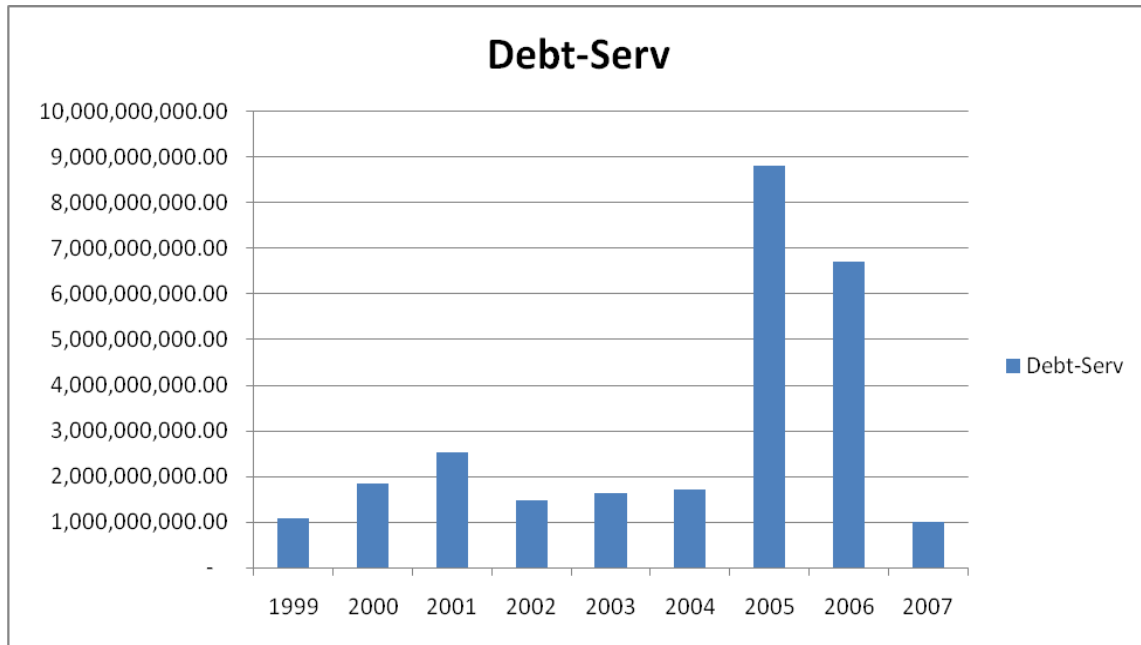
Similarly, the International Monetary Fund (IMF) has raised concerns over Nigeria's rising debt portfolio, warning that the cost of servicing the country's debt could rise to 35 per cent of revenues in the next four years. According to the 2015 budget, the government will be spending 26 per cent of the entire N3.6 trillion budget on servicing debt. The cost of servicing debt has been on the increase in the past three years and the proposed increase in debt service expenditure is 32.4 per cent compared to the 20.3 per cent increase in the 2014 budget estimate. The IMF in its latest staff report on Nigeria stated that the extent of the debt servicing burden means that prudent management of debt should remain a policy priority. While the overall debt burden would remain contained under stress, the interest burden would increase further by an additional four per cent of revenues bringing the total burden to around 40 per cent of revenues. Consequently, to ensure sufficient space to finance desired investment, the authorities should continue to follow a prudent approach to borrowing, remain vigilant to the trade-offs between cost and risk, and ensure the proceeds from borrowing is managed to secure the maximum return on investment (International Monetary Fund (IMF), 2015)

Figure 1: Trend in Nigeria's Domestic Debt from 1999 to 2016



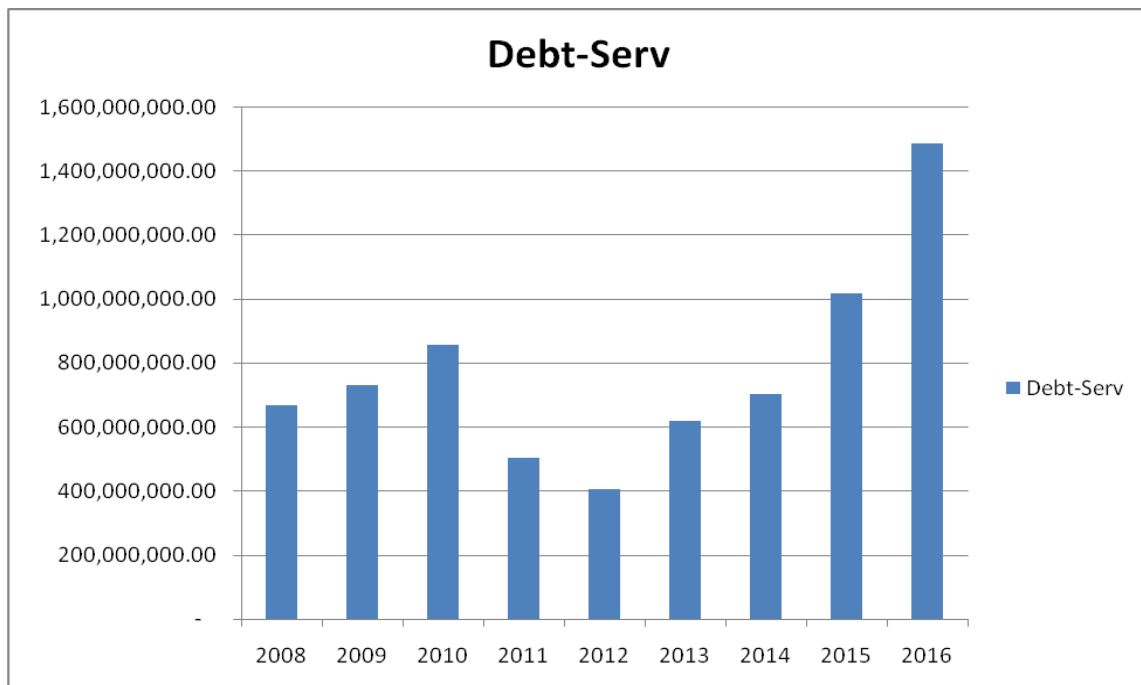
Source: Author’s computation from Ms-Excel (2007)

Figure 2: Trend in Nigeria’s Debt Servicing from 1999 to 2007 (President Olusegun Obasanjo era)



Source: Author’s computation from Ms-Excel (2007)

Figure 3: Trend in Nigeria’s Debt Servicing from 2008 to 2016 (President Musa Yar’adua, Goodluck Jonathan and Muhammadu Buhari era)



Source: Author's computation from Ms-Excel (2007)

Pattillo (2015) expressed concern that notwithstanding the recession challenges for Nigeria, the rising level of public debt needs to be checked. In her view, while the debt profile is rising alongside inflation, it is getting more complicated with the rise in the cost of the servicing, which is about 45 per cent of the country's estimated revenue. In addition, Financial Watch (2017) states that Nigeria is in danger of accumulating more debt if the \$2.3 billion loan from World Bank and Chinese EXIM Bank to fund key infrastructure projects in the 2017 budget sails through as expected; currently the country is owing an estimated debt of over \$57.3 billion. It is in the light of these glaring concerns raised by international financial institutions and other global watch-dogs that this paper seeks to examine the impact of mounting domestic debt and debt servicing debacle: implications for economic growth in Nigeria with the use of econometric techniques. The study is deliberately designed to cover the period 1999 – 2016, a seventeen years period for specific emphasis on the Fourth Republic democratic dispensation.

### **Objectives of the Study:**

The main objective of this study is to empirically examine the mounting domestic debt and debt servicing debacle: implication for economic growth in Nigeria. Specifically, the study shall test the longrun and shortrun dynamics among the series in the model as well as examine the causal relationship between domestic debt and external reserves in Nigeria using Autoregressive Distributed Lags (ARDL) Bounds testing approach with Pairwise Granger Causality Test

### **Study Hypotheses:**

- (i) Domestic debt and debt servicing has no significant impact on the Nigerian economy
- (ii) There is no causal links between external reserve and domestic debt in Nigeria

The remainder of this study is organised as follows: Section two is dedicated to literature review, section three is study methodology, data and variables used and method of data analysis are described. In section four, results are presented and discussed, while section five is summary, conclusions and policy recommendations.

### **Literature Review**

No country lives in isolation and no economy is self sufficient. This leads to countries depending on each other on social, political and economic grounds. Due to inadequacy of resources, countries are often faced with budget deficit. Hence, governments borrow to fill the vacuum created by the fiscal gaps in the proposed expenditure and expected revenue within a fiscal period. Whenever tax revenue is limited and government does not want to compromise macroeconomic stability by printing more money, then debt option becomes the only available avenue that the government can explore to provide infrastructures for the citizenry (Ogunmuyiwa, 2011) cited in Shehu and Aliyu (2013).

### **Theoretical Framework**

Economists in their quest to examine the phenomenon of public debt and debt servicing in developing countries have come up with three main alternative hypotheses to shed light on these concepts. These hypotheses include the dual-gap analysis, debt overhand theory and the liquidity constraint hypothesis. This study adopts the debt overhang theory and the liquidity constraint hypothesis because they better explained the debt situation of most developing countries.

**Debt Overhang Theory:** Debt overhang refers to a situation where the debt stock of a nation exceeds its future capacity to repay it. Such a country's debt stock exceeds its ability to repay. The economy thus gets to

a bad shape and will continue to decline, because it results in less money spent on education, infrastructures and health. According to the debt overhang theory, when countries have higher external debt to GDP ratio, they may find relatively less funds available to provide an environment conducive for business and promote investment, which further deteriorate the current level of economic growth.

**The Liquidity Constraint Hypothesis:** This theory holds that increases in external debt servicing leaves less avenues for developing countries to service their debt, and that therefore, affect their ability to borrow further from external resources, putting pressure on domestic borrowing and leading to crowding out effect. Crowding out occurs when increased government borrowing, a kind of expansionary fiscal policy, reduces investment spending.

## Methodology

### Variables and Data Sources

The variable is made up of annual time series data on gross domestic product growth rate (Gdp-Grt), a proxy for economic growth, domestic debt (Dom-Debt), debt servicing (Debt-Serv), external reserve (Ext-Rsv) and exchange rate (Excr) respectively. Exchange rate is added to serve as control variable to avoid the problem of omitted variable bias in the model so as to get a more realistic model. A control variable is a variable that is held constant in order to assess or clarify the relationship between two other variables. The data ranges from 1999 to 2016, a period of seventeen (17) years. See below a table defining variables and data sources:

S/N	Variable	Definition	Source of Data
1	Economic Growth ( <i>Gdp-Grt</i> )	The GDP growth rate measures how fast the economy is growing. It does this by comparing one quarter of the country's economic output (gross domestic product) to the last.	World Bank Development Indicators (WDI)
2	Domestic Debt ( <i>Dom-Debt</i> )	Domestic Debt is the amount of money raised by the Government, in local currency and from its own residents. Generally, domestic debt consists of two categories, which are Bank and Non-Bank borrowing.	Debt Management Office (DMO)
3	Debt Servicing ( <i>Debt-Serv</i> )	<b>Debt Servicing:</b> Debt servicing is the ability of a debtor nation to continue to repay the principal and interest components of an outstanding loan as and when due. In Nigeria, the proportion of interest payments in total debt service has been high in absolute terms and it is still on the increase. Interest payments constitute a major cause of concern in the country's debt servicing difficulties.	Debt Management Office (DMO)



4	External Reserve ( <i>Ext-Rsv</i> )	<b>Foreign-exchange reserves</b> (also called <b>forex reserves</b> or <b>FX reserves</b> ) is money or other assets held by a central bank or other monetary authority so that it can pay if need be its liabilities, such as the currency issued by the central bank, as well as the various bank reserves deposited with the central bank by the government and other financial institutions. Reserves are held in one or more reserve currency, mostly the United States dollar and to a lesser extent the Japanese yen.	World Bank Development Indicators (WDI)
5	Exchange rate ( <i>Excr</i> )	An exchange rate is the current market price for which one currency can be exchanged for another. If the U.S. exchange rate for the Nigerian Naira N400, this means that 1 American Dollar can be exchanged for 400 Nigerian Naira.	World Bank Development Indicators (WDI)

Source: World Bank (2016); DMO (2016)

### Method of Data Analysis

The study adopts various econometric techniques of analysis to answer the objectives earlier stated in section one. The Econometric Software of E-view 9.0 is used in estimating the model. The Augmented Dickey-Fuller and Bounds Test (ARDL approach) to cointegration would be employed as a test of stationarity and long-run relationship of the time series data. The long run and short-run relationship among the variables in the model through an autoregressive distributed lag method.

### Augmented Dickey Fuller Stationarity Test

For the purpose of avoiding the situation of generating spurious results as unit root is normally associated with majority of time series data, the study started by conducting the unit root test on the annual data for the variables (gross domestic product, domestic debt, debt servicing and external reserve) The Augmented Dickey Fuller (ADF) test of stationarity is adopted to determine the underlying properties of the process that generated the time series, that is, whether the variables of interest have unit root or not.

### Cointegration Test

A cointegration test is one sure way of establishing the presence or absence of such a long-term relationship. Economically speaking, two or more variables will be cointegrated if they have a long-run or an equilibrium relationship between or among them (Gujarati, 2004:822). The Autoregressive Distributed Lag (ARDL) Bounds Testing approach shall be employed to test for cointegration among the series used in the model.

### Estimation Techniques and ARDL Modelling Approach

The method of estimation employed for this study is based on Auto-regressive Distributed Lag (ARDL) Model approach and Error Correction Mechanism (ECM) model. The ARDL modeling approach popularized by Pesaran and Pesaran (1997), Pesaran and Smith (1998), Pesaran and Shin (1999), and Pesaran et al. (2001) has numerous advantages. The main advantage of this approach lies in the fact that it can be applied irrespective of whether the variables are I(0) or I(1) and that none of the variables is stationary at 1(2) and beyond (Pesaran and Pesaran 1997, pp.302- 303). Another advantage of this approach

is that the model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modelling framework (Laurenceson and Chai 2003, p.28). Moreover, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation (Banerjee et al. 1993, p.51).

The ECM integrates the short-run dynamics with the long-run equilibrium without losing long-run information. It is also argued that using the ARDL approach avoids problems resulting from non-stationary time series data (Laurenceson and Chai 2003, p.28). This study illustrates the ARDL modelling approach by considering the following equation:

$$\text{Ln}(\text{GDP}) = \lambda_0 + \lambda_1 \text{Ln}(\text{Dom-Debt}) + \lambda_2 \text{Ln}(\text{Debt-Serv}) + \lambda_3 \text{Ln}(\text{Ex-Rsv}) + \lambda_4 \text{Ln}(\text{Excr}) + \mu_t \quad \text{..(eqn 1)}$$

Where

GDP-Grt	=	Gross Domestic Product growth rate
Dom-Debt	=	Domestic Debt
Debt-Serv	=	Debt Servicing
Ex-Rsv	=	External Reserve
Excr	=	Exchange Rate
Ln	=	The natural log
$\mu_t$	=	Stochastic error term

Moreover,  $\lambda_0, \lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5$  are the respective parameters.

The equation of ARDL is as follows:

$$\Delta \text{Ln}(\text{GDP-Grt})_t = \beta_0 + \beta_1 \text{Ln}(\text{GDP-Grt})_{t-1} + \beta_2 \text{Ln}(\text{Dom-Debt})_{t-1} + \beta_3 \text{Ln}(\text{Debt-Serv})_{t-1} + \beta_4 \text{Ln}(\text{Ex-Rsv})_{t-1} + \beta_5 \text{Ln}(\text{Excr})_{t-1} +$$

$$\sum_{i=1}^n \alpha_1 \text{Dom-Debt}_{t-i} + \sum_{i=1}^n \alpha_2 \text{Debt-Serv}_{t-i} + \sum_{i=1}^n \alpha_3 \text{Ex-Rsv}_{t-i} + \sum_{i=1}^n \alpha_4 \text{Excr}_{t-i} + \mu_t \quad \text{... (eqtn 2)}$$

where:

The null and alternative hypotheses are as follows:

$$H_0: \lambda_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 \quad (\text{No long run relationship exist})$$

Against the alternative hypothesis:

$$H_0: \lambda_0 \neq \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \quad (\text{Long run relationship exist})$$

The ARDL approach to cointegration involves three stages. In the first stage, the hypothesis that cointegration is absent is tested. More specifically, the null hypothesis is that the coefficients of lagged regressors (in levels) in the underlying ARDL error correction model are jointly equal to zero. The null hypothesis is defined by:  $H_0: \lambda_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4$  (No long run relationship exist) and it is tested against the alternative hypothesis that  $\beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4$  (Long run relationship exist).

The ARDL approach uses the F-test to determine the presence (or not) of a cointegrating relationship between variables, although the asymptotic distribution of the F-statistic in this context is not standardized without taking account of whether the variables are I(0) or I(1). The critical values of this distribution are given in Pesaran and Pesaran (1997), and Pesaran et al. (2001). Two sets of values are presented in the form of a table. The first set assumes that all the variables are I(1), while the second set assumes that all the values are I(0). This makes it possible for the variables to be stationary and first-order integrated. If the value of the calculated F-statistic is higher than the highest value of this region, the null hypothesis is rejected, thus indicating the presence of cointegration between variables without taking account of whether they are I(1) or



I(0). If the value of the F-statistic falls below this region, the null hypothesis of no cointegration cannot be rejected, whereas an F-value lying within the region implies that the result of the test is indeterminate.

If the existence of a long-term relationship between the variables is borne out, the second stage in the analysis consists in estimating the short- and long-term parameters, using the ARDL approach. Once the long-term relationship between the variables is determined, then the estimates of the long-term ARDL can be obtained. If a long-term relationship between the variables exists, then there also exists an error-correction representation. Consequently, the error correction model is estimated in the third step; it indicates the speed of adjustment to long-term equilibrium following a short-term shock.

A general error-correction representation of equation is formulated as follows:

$$\Delta \ln(\text{Gdp\_Grt})_t = \beta_0 +$$

$$\sum_{i=1}^n \alpha_1 \Delta \text{Dom-Debt}_{t-i} + \sum_{i=1}^n \theta_2 \Delta \text{Debt-Serv}_{t-i} + \sum_{i=1}^n \delta_3 \Delta \text{Ex-Rsv}_{t-i} + \sum_{i=1}^n \beta_4 \Delta \text{Excr}_{t-i} + \varphi_1 \text{ECM}_{1t-1} + \mu_t \quad \dots (\text{eqn } 3)$$

Where

$\varphi$  = Speed or rate of adjustment;  $\alpha_1$ ,  $\theta_2$ ,  $\delta_3$ ,  $\beta_4$ , represents the coefficients of the variables respectively;  $\Delta$  is the difference operator,  $n$  is the lag length of the variables;  $ect_{t-1}$  denotes the residual from the cointegration equation (the error correction term), and  $\mu_t$  is the uncorrelated white noise residuals.

### A priori Expectation:

An a priori expectation is a theoretical statement or criteria set by economic theory. Ordinarily, on a priori, some parameters in the model such as domestic debt will be positive, that is, if borrowed funds is judiciously utilized to grow the economy, otherwise an inverse relationship is expected between domestic debt and gross domestic product growth rate. Debt servicing is expected to come out with a negative sign since it is a leakage to the economy. On the other hand, it is expected that external reserve will come out with a positive result all things being equal. Finally, exchange rate can have either a positive or negative impact on the growth rate of the country within the period studied.

## Empirical Results

### Data presentation

This study is to examine the impact of non-oil exports on the Nigerian economy for the period 1980-2015. The variables being studied include Gross Domestic Product (growth rate) expressed in percentage, Domestic Debt and Debt Servicing expressed in billions of local currency unit (i.e. Nigerian Naira) with External reserve expressed in billions of US while exchange rate is expressed in percentage. Below is the data presentation.

Table 1: Presentation of Data and Variables for the study

YEAR	GDP_GRT	DOM_DEB DEBT_SER		EX_RSV	EXCR
		T	V		
1999	0.5	794.81	1.07E+09	63709.20	92.33810
2000	5.3	898.25	1.85E+09	91089.20	101.6973
2001	4.4	1016.98	2.52E+09	123329.83	111.2313
2002	3.8	1166.00	1.48E+09	103104.08	120.5782
2003	10.4	1329.74	1.63E+09	91701.66	129.2224
2004	33.7	1370.32	1.71E+09	144753.06	132.8880
2005	3.4	1525.91	8.81E+09	291849.31	131.2743

2006	8.2	1753.26	6.71E+09	449473.06	128.6517
2007	6.8	2169.63	1.01E+09	544731.68	125.8081
2008	6.3	2320.31	6.69E+08	701674.60	118.5460
2009	6.9	3228.92	7.33E+08	536428.19	148.9017
2010	7.8	4551.82	8.59E+08	448268.46	150.2980
2011	4.9	5622.70	5.03E+08	390963.35	153.8616
2012	4.3	6537.40	4.07E+08	457105.92	157.4994
2013	5.4	7118.80	6.21E+08	547355.43	157.3112
2014	6.3	7903.90	7.03E+08	446643.99	158.5526
2015	2.7	8836.80	1.02E+09	357665.80	192.4405
2016	-1.3	10606.20	1.49E+09	285418.42	230.1210

Source: World Bank Development Indicators (WDI) and Debt Management Office (DMO), 2015 and internet sources (2016)

### Time Series Properties

When autoregressive distributed lag modelling technique is employed for a study, it becomes imperative that a test for the stationarity of all the variables in the model is carried out to determine the order of integration of each variable before carrying out Bounds testing. This is a necessary step to ensure that variables are not second-order stationary (i.e., I(2)) so as to avoid fallacious results. According to Ouattara (2006), the calculated F-statistics which Pesaran et al. (2001) provide are not valid in the presence of I(2) variables, since the bounds tests are based on the assumption that variables are either I(0) or I(1). Consequently, the use of unit root tests in the ARDL procedure may still be needed to make sure that none of the variables is integrated of order 2 or beyond. The results from the ADF unit root tests are hereunder tabulated:

Table 2: Augmented Dickey Fuller Unit Root Test Extracts for the Variables in the Model

#### ADF test result for $D(DLOG(GDP))$

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.775834	0.0000
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Source: Author's Computation using E-views

#### ADF test result for $D(DLOG(DOM\_DEBT))$

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.709555	0.0025
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Source: Author's Computation using E-views

**ADF test result for  $D(DLOG(DEBT\_SERV))$** 

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.841314	0.0145
Test critical values: 1% level	-4.057910	
5% level	-3.119910	
10% level	-2.701103	

Source: Author's Computation using E-views

**ADF test result for  $D(DLOG(EX\_RSV))$** 

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.383863	0.0290
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Source: Author's Computation using E-views

**ADF test result for  $D(DLOG(EXCR))$** 

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.812403	0.0004
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Source: Author's Computation using E-views

The results from Augmented Dickey Fuller (ADF) test reveals that the series gross domestic product growth rate, domestic debt, debt servicing, external reserve and exchange rate all failed to attained stationarity at their level form but became stationarity when the first difference was taken. To confirm stationarity, the Augmented Dickey Fuller test statistic in absolute value must be greater than the test critical value at 5% significance level. Furthermore, the probability value accepted for judging stationarity of a variable is between 1-5% significance level. From the above extracts it is clear that the ADF test statistic for all the variables under reference are greater than their test critical values at 5% just as the probability values all revolve around 1 – 5% significance level, hence we can safely concluded that the series GDP-GRT, Dom-Debt, Debt-Serv, Ex-Rsv and Excr are all first difference stationarity variables. Having determined that the orders of integration of the variables retained in the model are either I(0) or I(1) but not I(2), we can then confidently apply the ARDL bounds tests to test the longrun relationship of the variables in the model..

**The ARDL Bounds Testing**

Now, we apply the cointegration test developed by Pesaran et al. (2001) to determine the existence (or not) of a long-term relationship between the variables. Since the dataset is relatively small, we choose a lag

length of one. The cointegration test results are reported in Table 3. From the ARDL Bounds Testing, the calculated F-statistics of the Wald Test reveals a figure of 4.979707, a value that is greater than the higher and lower bounds of the 95 percent critical value interval (2.56 – 3.49). This implies the rejection of the null hypothesis that no long-run relationship exists between the variables and thus concluding that there is evidence of a unique long run cointegrating relationship between the series gross domestic product growth rate, domestic debt, debt servicing, external reserve and exchange rate respectively between 1999–2016.

**Table 3: Cointegration Test using ARDL Bounds Testing Approach**

Test Statistic	Value	K
F-Statistic	5.789947	4
<b>Critical Value Bounds</b>		
<i>Significance</i>	<i>I(0) Lower Bounds</i>	<i>I(1) Upper Bounds</i>
5%	2.56**	3.49
1%	3.29	4.37
10%	2.2	3.09

Notes: The critical values are taken from Pesaran and Pesaran (1997: 478) with five regressors.

\*\* denote rejecting the null at 5% level of significance.

Source: Author's Computation Using E-views 9

### Estimation of the long-run and short-run results

After proving the existence of a long-run relationship between the variables of the model, the second step of the methodology consists in searching for the short- and long-term coefficient estimates of the model. Table 4 and 5 present the estimates of long run and short run results respectively. For brevity and conciseness, only the error correction (ECM) term is presented under the short-run section. The explanatory power of the regression model with an adjusted r-squared of ninety-seven percent is impressive. This indicates that ninety-seven percent of the variation in gross domestic product-growth rate (i.e. economic growth) is explained by the independent variables domestic debt, debt servicing, external reserve and exchange rate. The remaining three percent is explained by variables outside this model. The Adjusted  $R^2$  of seventy-eight is close to the  $R^2$  value of ninety-seven, meaning that the model is fit and useful for making generalization within this period. The Durbin Watson statistic shows evidence of no first order serial autocorrelation in the model given that its value is 2.8.

**Table 4:  
ARDL Longrun Coefficients**

Variable	Coefficient	Standard Error	T-statistic	Prob. value
Dependent Variable	225.199380	628.028809	0.358581	0.7542
Dlog(Dom-Debt)	-0.059962	12.021153	-0.004988	0.9965
Dlog(Debt-Serv)	-1.489566	7.171080	-0.207718	0.8547
Dlog(Ex-Rsv)	5.959630	18.343206	0.324405	0.7764
Dlog(Excr)	-51.939548	148.268890	-0.350306	0.7596

**Table 5: Shortrun Error Correction Model output**

Variable	Coefficient	Standard Error	T-Statistic	Prob. Value
ECM(-1)	-0.530641	0.077664	-6.832567	0.0208

**Source:** Author's Computation Using E-views 9

The output from the longrun autoregressive distributed lag above is quite revealing and call for urgent policy review on the part of our policymakers. The coefficients of domestic debt and debt servicing as expected a priori, came out with negative signs but not statistically significant. The result reveals that in the long run, a billion naira increase in domestic debt lead to about 6 billion naira drop in economic growth in Nigeria. The drain on economic growth arising from debt servicing is even more frightening and needs to be quickly looked into. The coefficient of foreign reserve came out with a positive sign in line with economic a priori expectation, that a country's external reserve is supposed to be favourably related to economic growth. The result reveals that in the long run, a billion dollar increase in the country's external reserves leads to 5.959630 billion dollar increases in economic growth. Exchange rate has a negative relationship as well as statistically significant in relation with GDP growth rate thus confirming our a priori expectation. The implication of the sign of this coefficient is that the rate at which naira is being converted to a key currency (US dollar) is not favourable for debt servicing for Nigeria and will contribute more towards deteriorating her growth. The nation is suffering heavy debt burden because the naira is not competing well in the international market. This is because Nigeria as a nation has little apart from crude oil product to exchange in the international market to gain forex which will strengthen her currency.

The coefficient of most importance in the shortrun estimate is the ECM coefficient. The statistical value of the lagged error correction model (ECM) is significant at 5% level with the expected negative sign. The ECM coefficient is -0.530641 which indicates approximately 53% of the previous year's disequilibrium in economic growth (GDP-Grt). This shows the speed at which the model converges to equilibrium. In this study, the negative value of the ECM coefficient (-0.530641) confirms that there is disequilibrium in the short-run which the set of variables in the model are trying to correct in the long-run. The magnitude of the ECM coefficient implies that nearly 53% of any disequilibrium in economic growth (GDP-Grt) is corrected by the exogenous variables within the period of over ten years. The adjustment speed is very slow. This long period of convergence calls for concern. It implies that Nigeria is in a debt-trap and it would take this long period for the disequilibrium caused by the exogenous variables - domestic debt, debt servicing, exchange rate etc to be corrected. This long path to restoration of equilibrium is worrisome as the adverse effects from the distortion caused by rising debt profile and the associated cost of servicing this debt couple with fast declining foreign reserve and a depreciating local currency are reasons to worry about.

### Post Estimation Analyses

This section examines the usefulness, robustness and reliability of the estimated models by conducting diagnostic tests. Basic diagnostic tests such as serial correlation test, heteroscedasticity test and normality test were conducted. The results are shown in Table 6 below:-

**Table 6: Post Estimation Analysis**

S/N	Test	F-Statistic	P-Value	Decision
1	Breusch-Godfrey Serial Correlation LM Test	2.162991	0.3801	Rejected
2	Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.935494	0.6283	Rejected
3	Jarque-Bera Test result of normality	0.542575	0.762397	Accepted

**Source:** Author's Computation Using E-views 9

From the Breusch-Godfrey Serial Correlation LM Test results, the hypothesis of zero autocorrelation in the residuals was not rejected. This was because the probability value of 0.3801 is greater than 5%. Therefore, the Breusch-Godfrey serial correlation LM test did not reveal serial correlation problems for the model. This confirms the earlier Durbin-Watson statistic result. Also, Breusch-Pagan test was conducted to test for heteroskedasticity. The result shows probability of 0.6283 which is in excess of 0.05. This leads to the rejection of the presence of heteroscedasticity in the residuals thus concluding that the residuals are homoscedastic. It can therefore be deduced that the model is valid and useful for policy making without re-specification.

The Jarque-Bera test result of normality is as shown below. The result revealed that the residuals of the data are normally distributed. The null hypothesis of normality of the residuals of the data is accepted at 76 per cent confidence level as indicated by the probability value of 0.762397 and Jarque-Bera value of 0.542575 which is greater than zero.

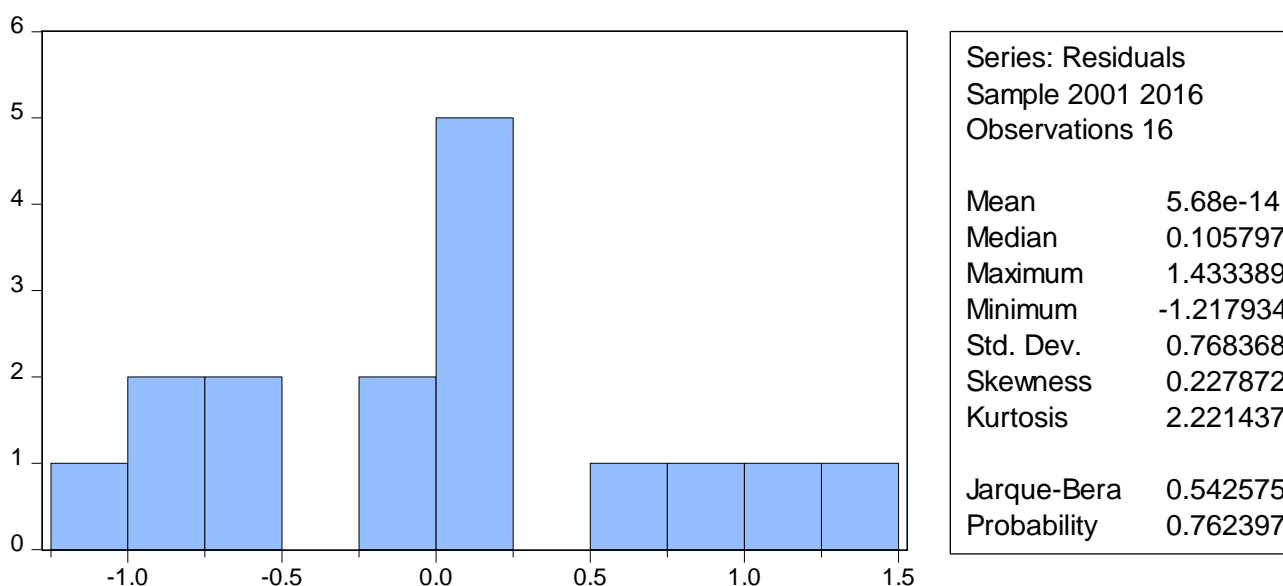


Figure 4: Jarque-Bera (Normality) Test result

### Stability Test-Plot of CUSUM



The plots of the stability test results (CUSUM) of the ARDL model is as shown below. The CUSUM plotted against the critical bound of the 5 % significance level show that the model is stable over time for the CUSUM as shown below. That is, the model is within the bound.

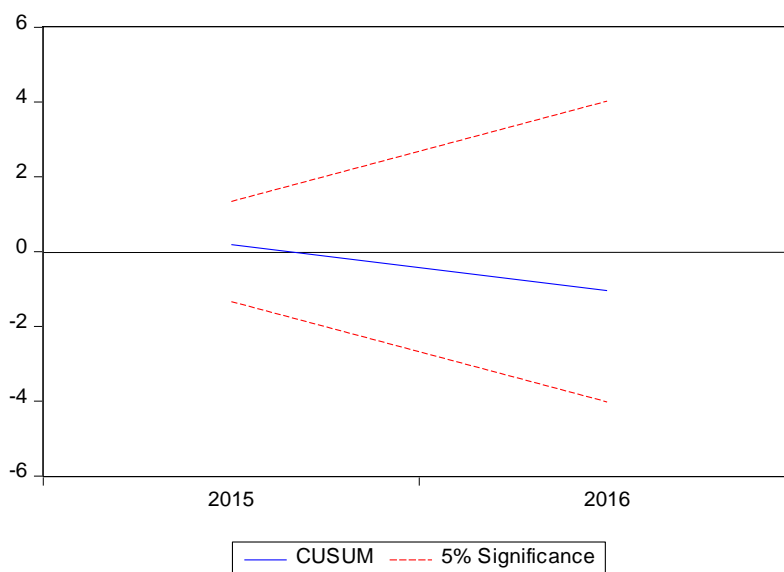


Figure 5: CUSUM Plot

### Granger Causality Test

The granger causality test is conducted to be able to achieve the second objective of this study, to examine the causal relationship between external reserve and domestic debt in Nigeria. The extract from the Pairwise granger causality test obtained from Eviews 9.0 is presented in Table 7 below.

	F-Statistic	P-value
EX_RSV does not Granger Cause DOM_DEBT	3.36607	0.0724
DOM_DEBT does not Granger Cause EX_RSV	1.85533	0.2022

Source: Author's computation using E-views

The results of the granger causality test as presented in table 7 above showed that there is a uni-directional causal relationship between external reserve and domestic debt in Nigeria within the period of study.

### Restatement of Hypotheses:

- (i) Domestic debt has no significant impact on the Nigerian economy.
- (ii) There is no causal links between external reserve and domestic debt in Nigeria.

To conclude on the first hypothesis, t-statistic and p-values for the coefficient shall be used. From the longrun output in table 4, the t-statistic of -0.004988 and an insignificant p-value of 99% indicates the acceptance of the null hypothesis that domestic debt has no significant impact on economic growth in Nigeria between 1999 – 2016. Similarly, the causal flow from external reserve to domestic debt reveals that our depleting foreign reserve is the reason for the mounting domestic debt during these periods.

**Summary, Conclusion and Recommendation**

The public sector, comprising of all organizations not privately owned and operated, but established, run and financed by the government on behalf of the public, like the private sector, requires fund for its numerous activities which go beyond its internal revenue generation capacity. The public sector must of necessity borrow to fill the gap between its receipts and expenditure. Public sector debt, both domestic and external, is a stock of liabilities with different tenures accumulated by government operations in the past and scheduled to be fully repaid by government in the future. Debt can bring serious distress to both individuals and nations. It can emanate from the inability of a nation to manage her resources well. The problems created by Nigeria's debt became clear in 1981, due to the decline in the international oil price and the lapses in domestic policies in the 1970s and early 1980s. The policies of the 1970s and early 1980s led to structural changes in the pattern of production and consumption of goods and services. They effectively tied the economy to the vicissitudes of the international oil market. The increases in debt happened when developments in the oil market, instability in agricultural commodity prices, adverse terms of trade and high real interest rates altogether made debt and debt servicing obligations of the country unsustainable.

It is in the light of the foregoing that this study empirically examines the impact of mounting domestic debt and debt servicing debacle: implications for economic growth in Nigeria. The study covers the period 1999 – 2016, a seventeen years period for specific emphasis on the Fourth Republic democratic dispensation. Variables adopted for the model were all stationary with the ARDL bounds testing revealing the evidence of a unique long run equilibrium relationship among the series in the model. Empirical evidence from the longrun results shows that on a priori, domestic debt, debt servicing and exchange rate were all inversely related to economic growth with external reserve showing a positive effect on the endogenous variable. There is also an evidence of a unidirectional causality from external reserve to domestic debt within the period under reference.

In conclusion, the long-run regression output indicates that domestic debt has no significant impact on economic growth in Nigeria between 1999 – 2016. This means funds so borrowed within the period under reference were not judiciously applied towards developing the various sectors of the economy, hence the debilitating growth records the country is experiencing. Similarly, the unidirectional causality running from the core variables (domestic debt and external reserves) reveals that the depletion or fall in the nation's foreign reserve is responsible for the fast rising domestic debt profile in Nigeria. In recent years the Nigerian economy had suffered great pains because of the drastic decline in her external reserve occasioned by so many factors, amongst which is the decline in crude oil prices, which is the only viable commodity that contributes to the growth of the country's foreign reserves. Secondly, our leader, because of their unbridled greed and avarice occasionally draws from these reserves to satisfy their corrupt tendencies. Nigeria as a country is yet to produce leaders with a culture of prudent managers of resources. Successive governments in Nigeria have not shown enough political will in management of our common wealth. To get to the Nigeria of our dream cannot be achieved by wishful thinking. It is only attainable by discipline and an in-built spirit of patriotism and love for our continuous economic survival.

There is no running away. A debtor must always pay his debts personally or, at death, through his estate. This same principle applies to a nation. The following recommendations are therefore proffered for policy implementation by the managers of our economy:

- (i) Government should strive to finance budget deficit by improving on the present revenue base rather than resorting to domestic borrowing. This can be achieved by improving its revenue sources and efficient pursuit of tax reforms. Tax administration agencies need to be made functional through

employment of qualified personnel, staff training, provision of equipment and necessary facilities and overall conducive working environment;

- (ii) Government over reliance on a single commodity (crude oil) to run its affairs can be catastrophic in times of negative shocks in the global market. Therefore the much touted diversification of our productive base into potential revenue yielding sectors such as agriculture, manufacturing, service sector and solid minerals development will go a long way in enhancing our revenue sources; hence the government is advised to put in more efforts towards achieving this laudable goal.
- (iii) The rise in domestic debt profile in Nigeria is attributed to government extra budgetary activities, which most often are not used for the intended project. Fiscal discipline is therefore required to curb the excess in our budget. Commitment to budget should be encouraged for fiscal discipline on the part of the government and its agencies.
- (iv) The place of corruption in our public life has reached an alarming dimension. Most often, borrowed funds are either misapplied or embezzled with little or nothing on ground to show for. It is only when monies borrowed are invested that returns on investment can be used in repaying such loans. In this regard, government effort at curbing corruption should be doubled. The various anti-corruption agencies like EFCC and ICPC should show patriotism by going all-out after all corrupt politicians and unscrupulous bureaucrats in our public service,
- (v) The government and the Debt Management Office (DMO) should draw up guidelines to limit the growth of future domestic debt. Public borrowing should be within manageable limit so as not to crowd out the private sector which is the engine room of growth. Similarly, debts service ratio must not exceed a manageable percentage of our budget.

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