

Sovereign Debt and Sovereign Debt Service Dynamics and Its Burden on the Nigerian Economy

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Abstract

This study examined the dynamic impact of sovereign debt and sovereign debt service on economic growth in Nigeria using annual time series data spanning 1981 to 2019. The study employed the error correction model, vector error correction model and the granger causality test to explain the impact of the relationships. The results revealed that an increase in external debt will lead to an increase in the growth of the Nigerian economy in the short run and a decrease in the economy in long run. The estimated results also revealed that there is an existence of a high significant and positive relationship between domestic debts and the Nigerian economy both in short and long run, while an increase in sovereign debt servicing will reduce the Nigerian GDP in both short and long run. The study found that there is a unidirectional causality running from external debt, domestic debt and sovereign debt servicing to the Nigerian economy. The study recommended that the government of Nigeria should encourage sustainable domestic borrowing and utilize the funds in productive economic activities and minimize external borrowings since it impacts on the economy in the short run is less significant and in the long run, is negatively significant.

Keywords: Sovereign Debt, Debt Service, Nigerian Economy.

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INTRODUCTION

The sustainability of debt dynamics has gained significant importance and has been at the heart of the economic policy debate over the last decade. Government debt in the developing countries rose considerably over the past decades and this trend was generally accompanied by an expansion in the size of governments. Empirical research in this area is key to identify the policy recommendations needed to avoid another economic crisis.

Global debt has reached an all-time high of \$184 trillion in nominal terms, the equivalent of 225 percent of GDP in 2017. On average, the world's debt now exceeds \$86,000 in per capita terms, which is more than 2½ times the average income per-capita (IMF Block, 2019). The stock of debt has risen in many countries. In 2018, Japan had a gross sovereign debt % of GDP of 237.7%, Greece 176.6%, Italy 133.2%, Portugal 117.6%, Singapore, 114.1 Brazil 91.6%, Canada 87.5% and UK 85.6%. While for some of the developing countries, the stock of gross sovereign debt % of GDP are Mauritania 78.5, Cabo Verde 123.5, Egypt 84.9, and Mozambique 108.8. Africa debt as a

region has 57.6% of GDP and SSA amount to 53.1% of GDP (IMF, 2019).

In the view of Rosa (2016); Attapattu and Padmasiri (2018), reasonable borrowing level by developing nations is likely to accelerate their economic growth. When the economic growth of the nations improved, the poverty situation in the economy will positively be affected. For growth to be encouraged, nations at early development stages, borrow to complement the inadequate domestic capital stock and provide more investment opportunities with rates of return higher than that of their counterparts in the developed economies. Thus, if the borrowed funds and ploughed back funds are adequately utilized for productive investments, it results in macroeconomic stability of the economy. Therefore, growth is likely to increase and allow for timely debt repayments.

By implication, a high level of sovereign debt outstanding means high debt servicing due to an increase in the budget deficit, financed by raising public borrowings thereby increasing the level of the nation's public debt. The accumulation of such debt may not only entangle the nation in a debt trap but may also

limit their sovereign fiscal options, which exposes the country to macroeconomic risks such as compressing the social and development spending. As a result, it would compromise the objectives of social and development plan for which the debt was raised (Fan, 2007).

In Nigeria, developmental projects are substantially executed through external funding. Usually, however, the external funding of development projects by the country takes the form of external loans, which has accumulated continuously over time. Even though Nigeria has not been alone in experiencing escalating government domestic indebtedness but in comparison with other Sub-Saharan Africa, Nigeria domestic debt to GDP ratio has been on the high side. It has a record of 29.8% (IMF, 2018). The causal relationship between sovereign debt and economic growth is intrinsic to each country. An escalating domestic debt profile presents serious obstacles to a nation's path to economic growth and development. The cost of servicing the debt may expand beyond the capacity of the economy to cope thereby impacting negatively on the ability to achieve the desired fiscal and monetary policy objectives.

The most significant and the first rising in the sovereign debt of Nigeria occurred in 1987, with the total sovereign debt being N137.58 billion, representing over 96%. Nigeria institution in charge of debt management office (DMO) stated that the domestic debt of the country stood at N14,272.64 billion in 2019, while Nigeria's external debt outstanding stood at ₦9,022.42 billion in 2019 (CBN, 2019). Sovereign debt servicing stood at ₦2,454.07 billion. Nigeria's total debt profile as of December 31, 2019, now stood at N23.295tn. The figure swelled by 13.45 per cent from N20.534tn in 2018 to N23.295tn in 2019. Nigeria's Government debt accounted for 16.1 % of the country's Nominal GDP in Dec 2018, compared with the ratio of 16.2 % in the previous year (CBN, 2018).

Nigeria's debt profile for the past decades has generated much concern among the policymakers, scholars, and economists given the high level of the sovereign debt without corresponding economic growth in the economy. Large debt buildups can eventually lead to diminished economic activity, either by crowding out private capital investment or by forcing an increase in distortive taxes and a decrease in public investment to facilitate repayment. It is important to note that this amount is more than the entire budget allocation for 2018. Similarly, Nigeria's spending on debt servicing in the same period climaxed at 34.02% of the nation's revenue. Public debt of this magnitude imposes added burdens on citizens. With the increasing rate of unemployment and the deplorable state of infrastructure, the impact of debt accumulations becomes a thing of concern. Yet the Nigeria government has seemingly unbounded access to credit

at low-interest rate. These debt levels, however, further compound the tragedy of exposing the economy to external shocks resulting from the external debt overhang thesis (Peter & Ferdinand, 2016).

Against this background, the important research questions that necessitate and steer this study are; Do external debt, domestic debts and debt servicing have effects on economic growth in Nigeria? Is there any causal linkage exist between external debt, domestic debt, debt services and Gross Domestic Product? This study attempts to provide answers to these questions.

The objective of the study is to investigate the short and long-run relationship between sovereign debt and sovereign debt servicing on the economic growth of Nigeria. Also, to analyse the causal linkage between external debt domestic debt and debt services and Gross Domestic Product. Several works exist on the dichotomy in favour of and against public borrowings as a way of driving the economy. Some of this works include Ogiemudia and Ajao (2012), Sulaiman and Azeez (2012), Ajayi and Oke (2012), Muritala (2012), Uma, Eboh and Obidike (2013), etc. As the war becomes fierce between the scholars, the position of the third-party is likened to those who abstain themselves from identifying with either of the school of thoughts, but conceived that public debt is bad; however, countries cannot avoid it. In light of this, sovereign debt was described as a necessary evil. This worry regarding the effective application of fund borrowed either domestically or inter-sovereignly into productive purpose is a major motivation for this study.

2. CLASSIFICATION OF SOVEREIGN DEBTS

Sovereign debt, also known as public debt, government debt, national debt and public interest, contrasts to the annual government budget deficit, which is a flow variable that equals the difference between government receipts and spending in a single year. The debt is a stock variable, measured at a specific point in time, and it is the accumulation of all prior deficits (Bureau of the Public Debt Homepage, 2010).

Sovereign debt can be categorized as internal debt (owed to lenders within the country) and external debt (owed to foreign lenders). Another common division of government debt is by duration until repayment is due. Short term debt is generally considered to be for one year or less, and long term debt is for more than ten years. Medium-term debt falls between these two boundaries. Domestic Debts are debts that originate from within the geographical region of a country, which are contracted through debt instruments such as treasury bills, treasury certificates and treasury bonds. Others are development stocks, FGN bonds and Promissory notes (Mathew & Mordecia, 2016).

External debt is that portion of a country's debt that is acquired from foreign sources such as foreign corporations, government or financial institutions. External debt is that part of the total debt of a country that is owed to creditors outside the country. The debtors can be the government, corporations or private households (Abula & Ben, 2016).

Public debts are classified into various types according to their characteristics. When the public debt literature is analyzed, it is classified into three main groups according to maturity, resources, and voluntariness (Erdem, 2016; Günay Bekar, 2018) (Figure 1):

Public debts according to maturities: short-, medium-, and long-term public debts

- i. Short-term public debts (floating debts) refer to debts up to 1 year. In short-term borrowing, treasury bills and treasury guaranteed bond are used.
- ii. Medium-term public debts refer to debts ranging from 1 to 5 years.
- iii. Long-term public debts refer to debts for more than 5 years. The instrument of long-term borrowing is the government bond. These debts are provided from the capital markets and have a higher interest rate than the interest rate of short-term borrowing. Long-term debts are classified as redeemable debts and irredeemable debts.

Public debts according to sources: internal debts and external debts

- i. Internal borrowing refers to a country's borrowing from own sovereign resources. This borrowing does not affect increasing or decreasing sovereign income.

- ii. External borrowing refers to the resources provided from a foreign country that is repaid with principal and interest at the end of a certain period. External debt has an increasing effect on sovereign income when it is taken and vice versa has a decreasing effect on sovereign income when it is paid.

Public debt as a voluntary basis: voluntary debts and obligatory debts

- i. Voluntary debts refer to the debts that are lent to the state by its own will and desire.
- ii. Obligatory debts refer to the debts which are lent by forcing to take the bonds issued by the government. These debts are applied in times of war, natural disaster, or economic crises. In itself, it is classified as the debts taken by full compulsion, the debts are taken by the threat of force, the debts are taken by creating the necessary savings, and the liabilities taken by the moral coercion.

Productive and unproductive debts are also available. If the debts are used in construction, such as railways, power stations, and irrigation projects, which contribute to the productive capacity of the economy, they denote to productive debts. By this way, productive debts provide a constant flow of income to the state. The state generally pays the interest and principal debt amount from these projects' revenues. If the debts are used in the area such as war, famine relief, social services, etc., which do not contribute to the productive capacity of the economy, they denote to unproductive debts. The state generally pays the interest and principal debt amount from taxes; therefore, these debts are a burden on the society (JMPC. Module 3, 2018) (Figure 1).

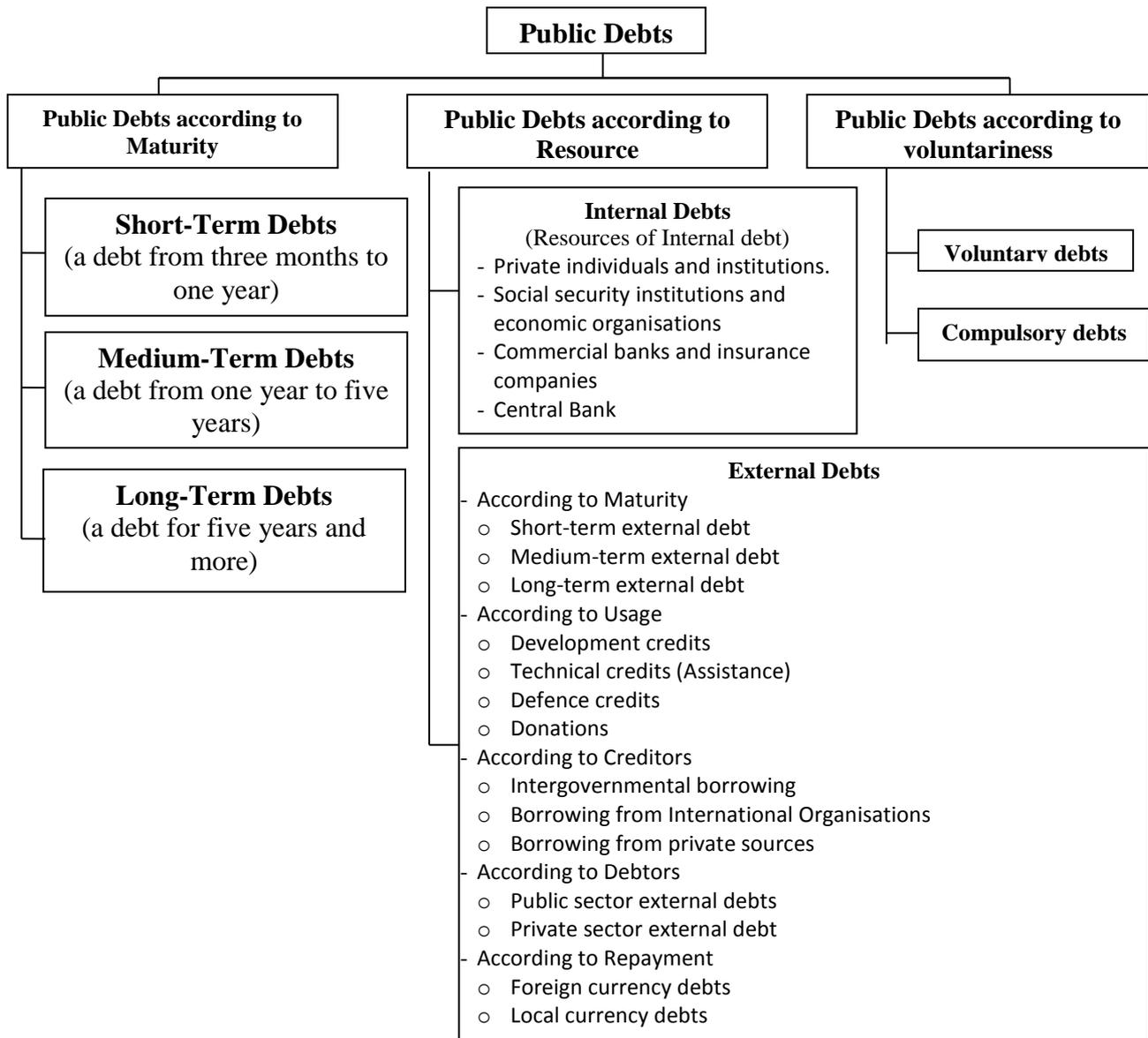


Fig-1: Sibel (2018): Classification of Sovereign debts

3. LITERATURE REVIEW

Modigliani (1961), argued that the sovereign debt is a burden for next generations, which comes in the form of a reduced flow of income from a lower stock of private capital. Apart from a direct crowding-out effect, he also pointed out to the impact on long-term interest rates, possibly in a non-linear form “if the government operation is of sizable proportions it may significantly drive up (long-term) interest rates since the reduction of private capital will tend to increase its marginal product”. Even when the sovereign debt is generated as a counter-cyclical measure and “in spite of the easiest possible monetary policy with the whole structure of interest rates reduced to its lowest feasible level the debt increase will generally not be costless for future generations despite being advantageous to the current generation.

Panagiotis (2018) empirically investigated the nexus between public debt and the determinants of economic growth such as private and government consumptions, investment, trade openness, and population growth in Greece through the applications of unit root tests, and auto-regressive distributed lag (ARDL) model. The results of the ARDL model revealed a long-run relationship between variables. It also showed that private and government consumption, investment and trade openness had positive effects on economic growth; while government debt and population growth had a negative impact on growth.

Gomez-Puig and Sosvilla-Rivero (2018) investigate the debt and growth relationship for 11-euro area countries. By estimating an ARDL regression for each of the eleven countries, the authors show that overall debt hinders growth over the longer-term while in the short-run this impact may be either positive or

negative, depending on the country. Other studies, including Pegkas (2018) and Mhambula and Phiri (2019) use a similar methodology, however, they focussed their analysis on one country only, namely Greece and South Africa respectively. The two studies show that public debt hinders economic growth both over the short- and long-run.

Overall, past empirical studies on the causal link between public debt and economic growth, and between public debt service and economic growth are scarce. According to Donayre and Taivan (2018), the causal relationship between public debt and economic growth is intrinsic to each country. Also, from public debt to economic growth. De Vita et al. (2018) suggest that bidirectional causality between debt and growth is weak at best. While a bi-causal relationship was detected for Austria, results for several European countries were ambiguous.

Lucky and Godday (2017) empirically examined the nexus between the public debts structure and the growth performance of the Nigerian economy for the period 1990-2015 using simple and multiple regression analyses. The variables used in the analysis include gross domestic product, domestic debt, external debt, and total debt. The results of the simple regression total public debt have a positive and significant impact on gross domestic product in Nigeria.

Nassir and Wani (2016) investigated the relationship between public debt and economic growth in Afghanistan for the period 2008-2012 using analysis of variance (ANOVA). The variables employed in the study include the gross domestic product (GDP), government stock, Advances from Commercial banks and external debt. The results showed that government stock, Advances from Commercial banks and external debt have negative and insignificant influence on the gross domestic product (GDP) in Afghanistan.

Similarly, Okwu, Obiwuru, Obiakor, and Oluwalaiye (2016) investigated the effects of domestic debt on economic growth in Nigeria from 1980 to 2015 through the applications of descriptive statistics, unit root test, cointegration test, and error correction model (ECM) in the analysis. The variables used in the investigation were the real gross domestic product, domestic debt stock, domestic debt service expenditure, and average banks' lending rate. The results indicated evidence of the significant and positive impact of external debt service on economic growth while domestic debt service expenditure had a negative and significant impact on the growth of the economy.

Peter and Ferdinand (2016) studied the nexus between debt burden and development tangle in Nigeria for the period 1980-2014 by employing unit root test, cointegration test, and Granger causality test. Real gross domestic product (RGDP), domestic debt, external debt,

domestic debt burden, external debt burden, total debt burden, and total debt/GDP ratio were the variables employed in the study. More so, the Granger Causality results revealed that various debt stocks granger cause the performance of the growth of the Nigerian economy.

Naeem (2015) examined the consequences of public debt for economic growth investment in the Philippines for the period 1975-2010 using the autoregressive distributed lag technique. The results show that public external debt had a negative and significant impact on economic growth and investment, which confirmed the existence of a debt overhang effect. However, the study could not confirm the existence of crowding out hypothesis since debt servicing revealed insignificant relationships with investment and economic growth in the economy. The study also indicated that domestic debt had a negative influence on the investment and positive effect on economic growth.

Precious (2015), examined the effects of both public external and domestic debt on economic growth in Swaziland for the period 1988-2013 by applying unit root test and ordinary least square (OLS) approach. The variables used in the study were real gross domestic product growth rate, external debt, domestic debt, government expenditure, and inflation rate. The study discovered that external debt had insignificant influence on economic growth in Swaziland, while domestic debt had a positive and significant impact on economic growth.

Lof and Malinen (2014) analyse the bidirectional causality effect of these two variables over 20 developed countries from 1954 to 2008. The study rejects the hypothesis of bidirectional causality as results only present robust evidence for a unidirectional causality that runs from debt to growth. Similarly, Gomez-Puig and Sosvilla Rivero (2015) reject the hypothesis of bidirectional causality between debt and growth.

4. THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

4.1 Theoretical Framework

The study relies on the debt overhang hypothesis; this theory provides a new dimension to the growth-debt crisis, and the basis of this theory is that, if the level of a country's borrowing is over and above its capacity to pay, the expectation is that the debt servicing commitments will lead to a drain in the debtor's country output, thereby increasing the country debt burden, i.e. liquidity crisis. According to the debt overhang theory, high debts leads to anticipation of foreign taxation, reduce private sector incentive for savings and investment as well as promote outflow of

capital from the domestic economy (Patillo, Poirson & Ricci, 2002).

This theory purports that the accumulation of a high stock of public debt would lead to a reduction in economic growth and tangle developmental efforts through the channels of reduced public revenue and investment expenditure. It maintains that debt accumulation stimulates growth initially but when it exceeds the debt sustainability threshold, the debt accumulation effect will intensify through liquidity constraint while debt servicing commitment diminish the earnings from exportation within the public sector for expenditure and by this means undermining economic development

The debt overhang theory can be related to the difference between the present value of a country's contractual debt obligations and the expected resource transfers that will be made to service the debt. The overhang theory of heavy debt burden has been most debilitating in many debtor African countries. The debt overhang theory has two effects on the economy namely; "illiquidity effect" and "disincentive effect".

The illiquidity effect of debt overhang results from credit rationing. In this cannot, debt overhang indicates that many countries are restricted and cannot borrow from the international credit market. Therefore, investment in technology and physical infrastructure human capital accumulation etc. which are the high yielding investments in such debtor counties will remain un-exploited.

Credit rationing which arises from debt overhang will crowd out many of such desirable investment. On the other hand, when there is an indication that an increase in the output of a country with a debt definitely brings about an increase in its debt service transfers to foreigners, then we talk about

$$LOGGDP_t = \beta_0 + \beta_1 LOGDOD_t + \beta_2 LOGEXD_t + \beta_3 LOGNDS_t + \mu_t \quad (1)$$

Where, GDP is the Gross Domestic Product at current basic prices (₦, Million), EXD_t is the External Debt; Government debt in foreign exchange at the end of period t, DOD_t , is the Domestic Debt; Government debt in Naira at the end of period t and NDS_t is the Sovereign Debt Servicing at the end of period t. b_0 is constant, $b_1 - b_3$ are slopes and $\mu_t \sim NIID(0,1)$ thus, a white noise stochastic disturbance term and time t is in annually.

Based on the above theoretical consideration, the following provides a summary of the expected relationships between the explanatory variables,

the disincentive effect the debt overhang. This implies that for any country with debt overhang any increase in its output or sovereign income will increase debt service payment to creditors i.e. the higher the output of a country with the debt overhang, the higher the debt service transfers to creditors

Based on the two effects of debt overhang theory, the debt overhang depresses investment on two fronts. Firstly, it discourages debtor government from undertaking adjustments and reform because the accruing benefits which could have been used to aid growth, may be appropriated by foreign creditors in the form of augmented debt service transfers, this is as a result of the disincentive effect of debt overhang. Secondly, it prevents private investment because the requirement to service debt in the future raises taxes, thereby reducing the after-tax returns to investment and this, in turn, reduces the rate of investment and the problem of low investment is compounded by some other economic problems which may emerge as a result of the reduction in investment, thereby exposing the economy to some dangerous situations that keep enslaving it in the vicious cycles of debt overhang.

4.2 Model Specification

From the above theoretical framework, we concentrated on the change that is induced on the growth by a change in the sovereign debt. In particular, we are interested in the influence of these variables (external debt, domestic debt sovereign debt servicing money banks deposits and deposit banks' Lending interest rates) on economic growth. The main objective of this study was to identify and assess the dynamic relationship between sovereign debt and the economic growth in Nigeria.

The econometric specification of this general model expressed in full-log. Thus, the equation in its empirical form is specified below:

Domestic Debt Service (DOD), External Debt (EXD), and Sovereign Debt Service (NDS) and the explained variable (GDP). The sign beneath each variable shows the expected direction of GDP in response to the corresponding explanatory variable. The a-priori assumptions for model in equation (3.2) are: $\beta_1 < 0$; $\beta_2 < 0$; $\beta_3 < 0$. The above sign $\beta < 0$ implies a negative relationship between the real Gross Domestic Products (GDP), Domestic Debt Service (DOD), External Debt (EXD), and Sovereign Debt Service (NDS). Therefore, we expect as the apriori expectation of all the parameters b_1 , b_2 and b_3 to be less zero. Implies a negative relationship between the dependent variable and independent variables. This implies that an increase in these independent variables will lead to a decrease in

GDP. While $\beta_s > 0$ means that there is a positive relationship between the dependent variable and the independent variables, This means that an increase in the independent variables will lead to an increase in GDP and vice-versa.

5. Method of Data Estimation and Sources of Data

5.1. Method of Data Estimation

This study was aimed at investigating the causality and conditional relationship among deposit money banks credits, deposit money banks deposit, Lending rates and economic growth in Nigeria, as well as to construct a model using multivariate. The goal of

$$\Delta \text{LnGDP}_t = + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnEXD}_{t-j} + u_{1t} \quad (2)$$

$$\Delta \text{LnEXD}_t = + \sum_{j=1}^n \beta_{ij} \text{LnEXD}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-j} + u_{2t} \quad (3)$$

$$\Delta \text{LnGDP}_t = + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnDOD}_{t-j} + u_{3t} \quad (4)$$

$$\Delta \text{LnDOD}_t = + \sum_{j=1}^n \beta_{ij} \text{LnDOD}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-j} + u_{4t} \quad (5)$$

$$\Delta \text{LnGDP}_t = + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnNDS}_{t-j} + u_{5t} \quad (6)$$

$$\Delta \text{LnNDS}_t = + \sum_{j=1}^n \beta_{ij} \text{LnNDS}_{t-1} + \sum_{j=1}^n \beta_{ij} \text{LnGDP}_{t-j} + u_{6t} \quad (7)$$

Where i and j is lag lengths

5.2 Nature, Sources and Scope of Data

The study used time series secondary data. The data will be generated in line with the period covered by the study which is 1980-2019, a period of 40. This choice is predicated by the research method adopted for this work and following the purposes and objectives of the study. The study mainly based on the information obtained from the Central Bank of Nigeria Statistical Bulletin and Monetary Policy Review a (CBN, 2019).

this study is achieved in these following steps: first, this study used, Unit Root Test, the Johansen Cointegration Test, The Vector Error Correction Model (VECM) and Granger-Causality Test.

The Granger causality in identifying the direction of the causal relationship Granger because cointegration test does not tell about direction. Granger causality test used past value of a variable X in order to forecast second variable Y and shows the result in a form X ganger cause Y. To establish Granger causality test, we believe that all the explanatory variables are endogenous and therefore correlated with the residuals

6. ANALYSIS AND DISCUSSION OF RESULTS

a) Unit Root Test

In this study, to determine the order of integration, we test for the presence of unit root, using the Augmented Dickey-Fuller (ADF) test statistic, and the summary of the results of the tests are presented in Table 1.

Table-1: Summary of Results of ADF Unit Root Tests

Series	t-Stat	Prob.	Order of Integration	Max Lag	Obs
D(LOGGDP)	-5.4926	0.0004	I(1)	1	37
D(LOGEXD)	-4.5688	0.0043	I(1)	1	37
D(LOGDOD)	-4.6535	0.0035	I(1)	1	37
D(LOGNDS)	-7.7572	0.0000	I(1)	1	37
Test critical values:		1% level	-4.226815		
		5% level	-3.536601		
		10% level	-3.200320		

Source: Authors' Computation.

** Probabilities are computed assuming asymptotic normality

The optimum lags length for the ADF determined by Schwarz Information Criterion (SIC).

From the ADF test statistics, comparing the variables p values levels with the first difference ADF unit root test statistic and various probabilities, the

results show all the included variables were integrated at order one, that is I(1) or they were stationary at first difference. Three variables were statistically significant

at 1%, 5% and 10% critical values in first difference, while LOGGDP was statistically significant at 5% and 10% critical values in first difference. From the results in the above tables' summary, there is an existence of unit root. This implies that all the series are non-stationary at levels. Therefore the null hypothesis ($\rho = 1$) is accepted at levels and the null hypothesis ($\rho = 1$) that the series are non-stationary after the first difference is rejected for all the series.

We, therefore, concluded that the series are of order one I(1). These are MacKinnon critical values for the rejection of the hypothesis of a unit root. The series also displayed 1 cointegrating vector, as suggested by the Trace and Johansen test for cointegration, when

tested with constant and without a trend. This implies that a long run equilibrium exists between the dependent variable (LOGGDP) and the included independent variables.

b) Johansen Cointegration Test

In this study, we carry a co-integration test for the variables in the models using Johansen cointegration test for a single-equation test. The result of co-integration for the variables is shown in Table 2 below. The result shows that there exists one co-integrating equation at 1%, and 5% level of significance. This result indicates that there is a long-run relationship between the dependent and all the independent variables used in both models.

Table-2: Summary of Results of Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)				
H0	Eigenvalue	Trace Statistic	Critical Value 5%	Prob.**
None *	0.573371	54.85543	47.85613	0.0096
At most 1	0.410579	24.18916	29.79707	0.1926
At most 2	0.133067	5.159062	15.49471	0.7917
At most 3	0.000513	0.018484	3.841466	0.8917
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
H0	Eigenvalue	Max-Eigen Statistic	Critical Value 5%	Prob.**
None	0.573371	30.66626	27.58434	0.0195
At most 1	0.410579	19.03010	21.13162	0.0960
At most 2	0.133067	5.140578	14.26460	0.7240
At most 3	0.000513	0.018484	3.841466	0.8917

Authors' Computation

Notes: * Indicates rejection of the hypothesis at the 5% significance level and ** indicates MacKinnon-Haug-Michelis (1999) p-values. Also, the test statistics are based on a model with one (1) lags and a trend (rtrend). The trend (rtrend) model excludes linear trends in the differenced data but could allow for linear trends in the cointegrating equations.

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

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

The result of using Johansen cointegration test for the variables is shown in Table 2. The cointegration rank test (Trace and Maximum Eigenvalue), there is one cointegration equation between the variables at 5% significance level for the Trace and Maximum Eigenvalue respectively, and the null hypothesis of no cointegration rejected. This result indicates that there is a long-run relationship between the dependent and all the independent variables used in both models.

With this evidence, it can be interpreted one variable cointegrated in the long-run. The economic reason behind co-integration analysis is that economic variables do not normally drift far away from each other, and this seems to be the case with the variables concerned in this study as shown in the results above. The estimated long-run equilibrium is given as below in VECM analysis.

c) The Vector Error Correction Model (VECM) Analysis

The result in Table 3, 4 and 5, shows that the coefficients of are partially in line with our apriori

expectation given as $b_0 > 0$, $b_1 < 0$, $b_2 < 0$ and $b_3 < 0$ both in short and long run. The result finds support for all the hypotheses and overall the empirical results displayed total conformation to the previous researches. In this study, the t-statistic is computed as the ratio of an estimated coefficient to its standard error, is used to test the hypothesis that a coefficient is equal to zero.

The VECM long run form has three tables result outputs. The long run, the ECM and short-run results. The long run coefficients part displays the estimates of long-run variables; their standard errors computed their t-statistics, as well as the appropriate p-values. Moreover, just below this table is a line starting with EC. This expression lists the name of the dependent variable minus an expression enclosed in brackets. This is the long run, otherwise known as the error correction equation. Below the EC is the short run coefficients part displays the estimates of short-run variables, their standard errors computed their t-statistics, as well as the appropriate p-values.

d) Analysis Short Run Estimated Results

Table-3: The Short-Run Coefficients with their Standard errors in () & t-statistics in []

Variable	D(LOGGDP)
D(LOGGDP(-1))	0.183086 (0.13905) [1.31669]
D(LOGEXD(-1))	0.119582 (0.05294) [2.25872]
D(LOGDOD(-1))	0.178046 (0.17770) [1.00197]
D(NDS(-1))	-1.40E-06 (3.1E-07) [-4.53321]
C	0.177691 (0.04833) [3.67685]
R-squared	0.786403
Adj. R-squared	0.700804

Source: Authors; Computation

The result in Table 3 finds support for some hypotheses and overall the empirical results displayed the partial conformation to the previous researches. The result shows that the coefficients of are not fully in line with our apriori expectation in the short run. The result shows that only NDS conformed to the short run expectation. A positive coefficient on the difference variable means that the previous change in the explanatory variables affects the current level of explained variable positively and negative sign of the difference variable means the previous change in explanatory variables affects the current level of the explained variable negatively.

In the short run, external debt (EXD) and domestic debt (DOD) are positively influencing GDP. In the estimated regression line above, the value of the constant term is 0.178 which means that holding the value of LOGEXD, LOGDOD and LOGNDS constant, the value of LOGGDP will be increase by 0.178% in the short run.

The results show that the estimated coefficient of external debt (EXD) (0.119), and domestic debt (DOD) (0.178) and sovereign debt servicing (NDS) (-0.0014). All the variables did not conform to a prior expectation all have expected signs in the short run. The result shows that a 1% increase in LOGEXD will increase LOGGDP by 0.119% in the short run, while a 1% increase in LOGDOD will increase LOGGDP by 0.178% in the short run. Also, the result shows that 1% increase in LOGNDS will decrease LOGGDP by 0.0014% in the short run. The result also revealed that in the short run, the past value of LOGGDP (-1) (0.183)

are significantly influencing the current value of LOGGDP.

Table 3 indicates a statistically goodness of fit given that R^2 is 0.78 and Adjusted R^2 , which is a better measure of goodness of fit, is 0.70. This indicates that over 70% variation in our dependent variable is explained by the explanatory variables. The result indicates that the overall model is well fitted as the independent variable explained over 70% Adjusted squared (\bar{R}^2) movement in the dependent variable, strongly suggests less than perfect multicollinearity.

e) Equilibrium-Correction Model (ECM)

Table-4: VECM Error Correction

Error Correction:	D(LOGGDP)
Ect _{t-1}	-0.264273 (0.07159) [-3.69129]

Source: Authors' Computation

Given cointegration, movement in the GDP is estimated using an error correction model because the estimation of GDP model takes place during a period in which there are large fluctuations in explanatory variables. Therefore, there must also be an error correction model (ECM) that describes the short-run dynamics or adjustment of the cointegrated variables towards their equilibrium values. The error correction term (ECT) is used to determine the speed of adjustment of the deviation of the GDP from its equilibrium. The ECM estimation implies that the first difference of LOGGDP is regressed on explanatory variables. Although, the model estimated here is often called an error correction model, technically speaking it is an equilibrium correction mechanism.

Table 4 presents the VECM Error Correction regression with their standard errors and t-values extracted from the estimated ECM. In this view, an error correction model which estimates the speed of adjustment to equilibrium in a cointegrating relationship. That is, the speed of adjustment toward the long-run equilibrium if there is a deviation in the short run. Here, the ECT derived as the levels equation earlier is included among the regressors and is denoted as CointEq. The coefficient associated with this regressor is typically the speed of adjustment to equilibrium in every period. If variables are indeed cointegrated, we typically expect this coefficient to be negative and highly significant. This indicates there is no omitted variable bias.

The coefficient of the lagged error term or equilibrium error correction model (ECM) (-0.2643), is negative and highly significant, confirming that a long-run (cointegrating) relationship exists between the real exchange rate and the set of explanatory variables (see

Table 4). The size of this coefficient implies that adjustment to disequilibria towards long-run equilibrium via the equilibrium correction term is relatively weak, as 26.43% percent of disequilibrium in a given annual is corrected in the following annual.

The implication of this is that it takes about a year to eliminate 26.43% of deviation between the actual and equilibrium GDP as determined by the sovereign debts. It is also shown GDP is slow to adjust back to equilibrium, implying policy ineffectiveness or inflexibility.

f) Analysis of Long-Run Results

The study is also about the post-regression derivation of long-run dynamics of the response to economic growth to its financial determinants. It is an

attempt to derive the long-run relationship between y_t and the k regressors. This long-run analysis procedure begins with the analysis of the VECM model. Under this ECM procedure, the long-run relationship is embedded within the dynamic specification. The estimated long-run equilibrium is given as below:

Table-5: The Long-Run Coefficients with their Standard errors in () & t-statistics in [

Cointegrating Eq:	CoIntEq1
LOGGDP(-1)	1.000000
LOGEXD(-1)	0.028184
	(0.05420)
	[0.51995]
LOGDOD(-1)	-1.222322
	(0.06321)
	[-19.3379]
LOGNDS(-1)	0.182921
	(0.07975)
	[2.29358]
C	0.843629

Source: Author's Computation

The coefficients of a lag 1 of the explanatory variables mean the effect of changes in past years values of explanatory variables results in a change in current values of an explained variable or the current changes in explanatory variables affects values of the explained variable in next periods. This can also be positive or negative.

Table 5 presents the long-run coefficients with their standard errors and t-values extracted from the estimated ECM. Having established the cointegration relationship in Table 2. That shows the steady-state long-run relationship between LOGGDP and LOGEXD, LOGDOD and LOGNDS are solved from or implicit in the estimated error correction equation.

In the estimated regression line above, the value of b_0 (the constant term) is 0.844 which means that holding the value of all the explanatory variables (LOGEXD, LOGDOD and LOGNDS) used constant or with no contribution of these variables to economic growth (GDP), the value of GDP will increase by 0.844% in long run in Nigeria annually. Compare this to the short run, this value is far bigger.

The results reveal that estimated coefficient of external debt (EXD) (-0.028) and sovereign debt servicing (NDS) (-0.183) have the expected signs in the long run, while the domestic debt (DOD) (1.222) have no expected signs in the long run. The variables did not conform to a prior expectation.

The result shows that a 1% increase in LOGEXD will decrease LOGGDP by 0.0028% in the long run, while a 1% increase in LOGNDS will decrease LOGGDP by 0.183% in the long run. Also, the result indicates that 1% increase in LOGDOD will increase LOGGDP by 1.222% in the long run. The result also shows that all the explanatory variables have a positive impact in explaining the economic growth in the long-run. The result shows that though EXD was negative in the long run, it was far less significant compared to short-run behaviour. Domestic debt seems to have positive impacts in the short and long run. Compare both the short (DOD) (0.178) and long (DOD) (1.222) run impacts, the long-run impact is bigger than the short-run impact.

g) Granger Causality Tests Analysis

Table 6 shows the Granger causality test result. The result shows that external debt (EXD) does granger caused GDP, but GDP does not granger caused LOGEXD in Nigeria. We cannot reject the hypothesis that GDP does not granger caused external debt (EXD) in Nigeria. A unidirectional relationship is found for external debt (EXD) and GDP.

Table-6: Short run Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGEXD does not Granger Cause LOGGDP	36	3.13243	0.0857
LOGGDP does not Granger Cause LOGEXD		1.26265	0.2971
LOGDOD does not Granger Cause LOGGDP	36	7.63429	0.0020
LOGGDP does not Granger Cause LOGDOD		1.29570	0.2881
LOGNDS does not Granger Cause LOGGDP	36	6.41856	0.0047
LOGGDP does not Granger Cause LOGNDS		1.92645	0.1627

Source: Authors' Computation

The result equally shows that domestic debt (DOD) does granger caused GDP, while GDP does not granger caused DOD in Nigeria. We can accept the hypothesis that GDP does not granger caused domestic debt and reject the hypothesis domestic debt (DOD) does granger caused GDP. A unidirectional relationship is found for domestic debt and GDP.

The result also, reveals that sovereign debt servicing (NDS) does granger caused GDP, while GDP does not granger caused NDS in Nigeria. We can reject the hypothesis that GDP does granger caused NDS and accept the reject the hypothesis NDS does granger caused GDP. A unidirectional relationship is found for NDS and GDP.

The study found that there is a unidirectional causality running from external debt, domestic debt and sovereign debt servicing to GDP. The result equally shows that all the explanatory variables (EXD, DOD and NDS) do granger caused GDP, while GDP does not granger caused them in Nigeria.

7. CONCLUSION AND POLICY RECOMMENDATIONS

The study was designed to show how domestic debt, external debt and debt service affect economic growth in Nigeria. The findings revealed that domestic debt is an important determinant of economic growth such that an increase in change of domestic debt will spur the economic growth of the nation both in the short and long run. It implies that an increase in domestic debt resulted in increased GDP in Nigeria. This result was not in line with theoretical expectation, showing that domestic debts bring about output growth.

The result also shows that increase in external debt will increase economic growth in the short run and decrease the economy in long run. The estimated result showed the existence of a less statistically significant and negative relationship between external debt and GDP in Nigeria in the long run. The implication is that an increase in external debt resulted in decrease GDP in Nigeria in long run. The result reveals that the increase in sovereign debt servicing will reduce GDP in both the short and long run. The variables did conform to a prior expectation all have expected signs in the short run and the long run. The study also revealed that there is a unidirectional causality running from external debt, domestic debt and sovereign debt servicing to GDP. The result equally shows that all the explanatory variables does granger caused GDP, while GDP does not granger caused them in Nigeria.

This concludes that the simultaneous attainment of sustainable economic growth and external debts appear difficult at the moment and could remain elusive if aggressive measures are not undertaken. The government could play an important role in stimulating

the economy if the resources obtained from the debt relief initiatives are targeted at productive public investments with the resultant crowding-in effects on private investment and social spending for the poor.

The impact of government debt on economic growth remains a controversial issue in both the academic and policy-making fields. The challenge for policymakers is to halt the rising in government debt by keeping a sustainable growth path. Indeed, when government debt is high, this is perceived by investors as being extremely risky, creating difficulties on lending from the markets, leading to austerity fiscal policies, which deepens the recession. On the other hand government, domestic borrowing can be increased to finance growth-enhancing investments, because this study has proved that an increase in change of domestic borrowing will result in an improvement of the nation's economy. The implication of the findings concludes that domestic debt should be invested in the productive sector of the economy and more specifically in the real sector and further productivity gain will be achieved in the improvement on capital project expenditure. The nation still has a space to borrow if that borrowing will be directed to growth spurring projects.

Our results have important policy recommendations on how to ensure prudent investment of public debt in Nigeria. In view of this, the study recommends that the government of Nigeria should encourage sustainable domestic borrowing and utilize the funds in productive economic activities. Since its impact is positive both in long and short run. Also, domestic debt should be invested in productive sectors of the economy and more specifically in the real sector to create employment and reduce poverty incidence in the country. Debt repayment should be done unasked to avoid overhang in terms of compounding both interest and principal to enable the private sector to have access to long term credits to drive the economy. The government should improve more on capital expenditures such as infrastructures since they are the key to growth and will reduce the cost of production and investment. Also, the government should minimize external borrowings since it impacts on the economy in the short run is less significant and in the long run is negatively significant. Importantly, internal debt, efforts should be made to repay past ones, so as to increase the money supply in the economy.

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