

# Government Expenditure and Public Debt in Nigeria

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## ABSTRACT

The study empirically examines the relationship between public debt and government expenditure in Nigeria from 1981 to 2022. The data which is purely secondary data was obtained from CBN statistical bulletin and world development indicators, 2022. The statistical tools used include, the Augmented dickey fuller (ADF) unit root test, auto regressive distributed lags (ARDL) bound testing approach to cointegration, and the error correction methodologies. The empirical findings revealed that government expenditure (both recurrent and capital), as well as interest rate has a direct positive effect on the total debt stock while total government revenue has a reverse effect on the total debt stock in Nigeria. This shows that all the variables conform to a-priori expectations, significant in the short-run, but statistically insignificant in the long-run. This outcome implies that public debt through government expenditure is a good macroeconomic policy, but more share of government recurrent expenditure, as found in this study, jeopardizes the policy objectives. The study therefore recommends a prudent budgeting approach, a reduction in recurrent expenditure in favour of capital expenditure, diversification of the economy to generate more income sources and revenue and finally, prudent public debt management strategies and efficient government expenditure management frameworks to provide fiscal and debt sustainability and enhance the growth process in Nigeria.

**Keyword:** ARDL, Capital Expenditure, Interest Rate, Public debt, Recurrent Expenditure.

## INTRODUCTION

The nexus between government expenditure and public debt has gained significant attention in economic literature. It has been a subject of intense debate and analysis for policymakers and researchers worldwide. In the Nigerian context, understanding this relationship is of utmost importance due to the country's substantial reliance on public debt to fund government spending. Nigeria, as the largest economy in Africa, has experienced considerable fluctuations in its government expenditure and public debt levels over the years. The Nigerian government, faced with various socio-economic challenges such as infrastructural deficits and poverty alleviation, has increased its expenditure significantly to address these issues. However, this expansionary fiscal policy has also led to mounting public debt. In recent years, Nigeria's public debt has soared, reaching approximately ₦32.92 trillion as of September 2021 (Central Bank of Nigeria, 2021).

Government expenditure patterns in Nigeria have been characterized by a significant share of recurrent expenditures, including salaries, overhead costs, and debt servicing, which often crowd out capital investments. Nigeria has faced challenges in efficiently allocating resources to productive sectors, leading to limited economic diversification and infrastructure development (Ismaila and Usman, 2019; Odusola, 2011). The dominance of recurrent expenditures has contributed to fiscal deficits and increased reliance on borrowing to finance public expenditure (Adeleye and Aworinde, 2017). Nigeria has also experienced a steady increase in its public debt levels over the years. The country's debt profile consists of both external and domestic debt. External debt comprises loans obtained from international financial institutions and

bilateral partnerships, while domestic debt includes borrowings from the domestic market, including government bonds and treasury bills. As of 2021, Nigeria's total public debt stood at about \$88 billion, with external debt accounting for a significant portion (Debt Management Office Nigeria, 2021).

The relationship between government spending and debt accumulation in Nigeria is complex and multifaceted. Empirical studies have shown a positive association between government expenditure and public debt levels in Nigeria. Adeleye and Aworinde (2017) found a long-run positive relationship between government spending and public debt in Nigeria, indicating that increased government expenditure contributes to higher debt levels. The linkages between government spending and debt accumulation in Nigeria can be attributed to several factors. Firstly, the over-reliance on debt financing for recurrent expenditures, such as salaries and debt servicing, has contributed to the accumulation of public debt (Ismaila and Usman, 2019). Secondly, inadequate revenue mobilization and weak fiscal discipline have led to persistent fiscal deficits, necessitating borrowing to finance government expenditure (Oduola, 2011). Moreover, low investment efficiency and limited economic diversification have hindered revenue generation, exacerbating Nigeria's debt burden (Adeleye and Aworinde, 2017).

Nigeria's government expenditure has been characterized by a significant allocation towards recurrent spending, particularly in areas such as personnel costs and overheads. This pattern of expenditure has led to fiscal imbalances and budget deficits, necessitating borrowing to finance government operations and investment projects. As a result, Nigeria's public debt levels have been on the rise, with both domestic and external debt components increasing in recent years, causing concerns about the sustainability of its public finances (Akpan & Effiong, 2020). The country's reliance on debt financing to bridge its budget gaps underscores the importance of examining the relationship between government expenditure patterns and debt accumulation; and its implications on the country's macroeconomic stability, fiscal sustainability, and debt management. The consequences of mismanaging government spending and debt can be severe, affecting economic growth, inflation, interest rates, and the overall financial health of the nation. Therefore, studying this relationship in the Nigerian context is crucial for effective policy formulation and economic planning.

## **LITERATURE REVIEW**

### **Conceptual Review**

Government expenditure refers to the total amount of financial resources utilized by the government to finance its activities, including both recurrent and capital spending (Jones, 2019). It encompasses various sectors such as healthcare, education, infrastructure, defense, and social welfare programs. On the other hand, public debt represents the accumulated borrowing by the government from domestic and foreign lenders to finance budget deficits over time (Soyibo & Aregbeyen, 2017). It includes both external debts owed to foreign creditors and domestic debt owed to local lenders.

### **Factors Influencing Government Expenditure and Public Debt in Developing Countries**

In developing countries like Nigeria, various factors influence government expenditure and public debt. One important factor is political instability and corruption, which can lead to inefficiencies in public spending and increase the likelihood of debt accumulation (Ibrahim and Azeez, 2017). Additionally, economic factors such as inflation, external debt, and fiscal deficits have been found to influence government expenditure and debt levels in developing countries (Bleaney and Francisco, 2005; Shahbaz et al., 2019).

### **Economic Factors Influencing Government Expenditure**

Economic factors play a significant role in shaping government expenditure in Nigeria. One key factor is the

country's dependence on oil revenue. Nigeria is a major oil-producing nation, and fluctuations in global oil prices directly impact government revenue and, consequently, expenditure patterns (Odozi, 2019). When oil prices are high, government revenue increases, leading to higher levels of spending. Conversely, during periods of low oil prices, government expenditure is constrained due to revenue shortfalls. Additionally, economic factors such as inflation and economic growth also influence government expenditure. Inflation erodes the purchasing power of government funds, necessitating increased spending to maintain the same level of services. Economic growth, on the other hand, generates additional resources for the government, allowing for greater expenditure capacity (Isumonah and Akinbobola, 2013).

### **Political and Social Determinants of Government Spending in Nigeria**

Political considerations often influence government spending decisions in Nigeria. Diversion of public resources for political purposes, such as vote-buying or funding political campaigns, can lead to inefficient allocation of funds and increased government expenditure (Owoye et al., 2020). Moreover, pressure from interest groups and political elites can influence spending priorities, resulting in the allocation of funds to sectors that may not necessarily contribute to long-term economic development.

Social factors also shape government spending patterns. Nigeria faces challenges related to poverty, unemployment, and inadequate social infrastructure. As a result, there is pressure on the government to allocate resources toward social welfare programs, education, healthcare, and infrastructure development (Isiwu and Ayoola, 2018).

### **Factors Impacting the Accumulation and Sustainability of Public Debt**

Several factors impact the accumulation and sustainability of public debt in Nigeria. One key factor is the level of revenue mobilization. Insufficient revenue generation hampers the government's ability to meet its expenditure obligations and leads to an increased reliance on borrowing (Ismaila and Usman, 2019). Enhancing revenue collection through tax reforms and improved administration can help reduce the need for excessive borrowing. Economic mismanagement and corruption also contribute to the accumulation of unsustainable debt. Poor fiscal discipline, misallocation of resources, and embezzlement of public funds increase the debt burden in Nigeria (Bakare, 2016). Strengthening governance, accountability, and transparency mechanisms are crucial for sustainable debt management. External factors such as exchange rate fluctuations and changes in global financial conditions impact debt sustainability. Given that a significant portion of Nigeria's debt is denominated in foreign currency, exchange rate depreciation can increase the burden of debt servicing (Adeleye and Aworinde, 2017). Sound macroeconomic policies, including exchange rate management and prudent borrowing practices, are essential for managing external debt.

### **Theoretical Review**

Government deficit financing through domestic and external borrowing might result in increased interest rates, lower disposable income and higher wages all of which reduces the profitability of businesses and by extension private investment. This may consequently discourage or crowd-out private investment and decrease the production level in an economy (Spilioti & Vamvoukas, 2015).

The Keynesian economists maintained that fiscal expansion have the proclivity to increase aggregate demand for private sector goods through the fiscal multiplier, thereby stimulating the growth of private investment. Higher government spending financed by borrowing leads to a fall in private sector saving. This is for two main reasons: First, with expansionary fiscal policy, private sector savers buy government bonds and so have fewer savings to fund private sector investment. Also, higher government borrowing tends to push up interest rates and these higher interest rates crowd-out private investment. Furthermore, by shifting

the tax burden to the future generations, current borrowing crowds out private investment (Gordon & Cosimo, 2018).

The classical economists are of the view that public debt is deleterious to the economy, particularly if public borrowing reduces both the financial discipline of the budget process and the private sector's access to credit. This proposition argued that public debt repayments, mostly foreign, crowds out economic growth by discouraging private investment and deterring potential foreign investors.

However, the Ricardian equivalence hypothesis purports that fiscal stabilization efforts have a neutral impact on economic growth. This hypothesis is based on the presumption that variations in government expenditures and revenues are matched by changes in private savings (Saungweme et al., 2019).

In the monetarist view, the expansion in government expenditures after a relatively short transition period, displace or crowd-out an equivalent magnitude of private expenditures. Businesses compete with government in bond markets for a limited amount of funds. Increasing government expenditure without any improvement in money supply increases production, profit and transaction demand for money (Ogunjimi, 2019). Given a constant money supply, increased transaction demand for money and increased in supply of debt in the market, drive up interest rates. The increase in interest rates reduces business spending and perhaps even government expenditures. The net result of the crowding-out hypothesis is that government sector growth, inevitably, comes at the expense of the private sector of the economy, unless the money supply rises during the process (Khan & Gill, 2014). This crowding out effect impedes the effectiveness of the government to influence the economy through fiscal policies.

## Empirical Review

Eze, & Ukwueni (2023), investigated the extent both external debt and domestic debt impact on economic growth in Nigeria. The study used multiple regression method for adopted while Autoregressive distributed lag (ARDL) model was the main technique used in the analysis. The results of the ARDL model demonstrate that external debt (LEXD) and domestic debt (LDD) have a negative impact on LGDP. However, while external debt reveals a significant effect, domestic debt (LDD) has an insignificant impact on LGDP. Thus, the study recommends that government should discontinue the use of external debt to finance budget deficit in the economy, but look inward through aggressive internal revenue generation as well as embrace economic diversification policies, coupled with a drastic cut down on cost of governance in Nigeria.

Oyewobi, & Falolu (2023), examined the continuously rising public debts as well as increased consumption expenditure despite the quantum of money generated from total tax revenue in the country. The study used public debt as the dependent variable and total tax revenue and consumption expenditure as the independent variable as well as Time series secondary data covering 1992 – 2022. The data was tested for stability diagnostics using the Ramsey Reset Test, subjected to descriptive analysis and hypotheses testing through Ordinary Least Squares (OLS). The result of the study revealed a positive relationship between total tax revenue, consumption expenditure, and public debt. The relationship between consumption expenditure and public debt is statistically significant while the relationship between tax revenue and public debt is statistically non-significant. The study however recommends a decrease in consumption expenditure and an increase in savings to reduce the level of public debt.

Alade (2022), examined the relationship between Nigerian government total revenue, and public expenditure and debts, Ex-post facto research design and time series data for a period from 1984 to 2019 were employed and drawn from the Nigerian Central Bank's statistical bulletins. The data were analysed using both descriptive and Vector error correction (VEC) model granger-causality test, while variance decomposition and impulse response analyses were performed. Findings reveal stationarity of the dataset at

first difference and the data co-integrate based on Johansen Co-integration test. Based on VEC model, the study establishes granger causality between the Nigeria government revenue, and both expenditure and public debt, thereby confirming spend-tax hypothesis and fiscal synchronisation with bidirectional relationship between government revenue and national debt.

Yusuf, Mohd, & McMillan (2021), investigated the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018 and the Autoregressive Distributed Lag technique. Their empirical results showed that external debt constituted an impediment to long-term growth while its short-term effect was growth-enhancing. Domestic debt had a significant positive impact on long-term growth while its short-term effect was negative. In the long term and short term, debt service payments led to growth retardation confirming debt overhang effect. Their findings suggested that the government should direct the borrowed funds to the diversification of the productive base of the economy. This will improve long-term economic growth, expand the revenue base and strengthen the capacity to repay outstanding debts when due.

Awoyemi (2020), examined the responses of public debt to changes in government expenditure in Nigeria. The study applied the Auto-regressive Distributed Lag (ARDL) models over the periods 1995-2018 to analyse the responses of public debt and debt to GDP ratio to the government recurrent and capital expenditure, primary balance as a ratio of GDP and interest rate. The bound cointegration test was conducted to assess the existence of long run relationship among the variables. The empirical results suggest that recurrent and capital expenditure as ratio of GDP as well as primary deficit to GDP are significant determinants of public debt and debt to GDP ratio in Nigeria with expected signs. The study concluded that, the Nigerian economy can reduce public debt and debt to GDP ratio by increasing the capital expenditure.

Jibir, Aluthge, & Ercolano (2019), modelled the determinants of government expenditure in Nigeria. The study uses time series data for Nigeria spanning between 1970 and 2017. The data were analysed using Autoregressive Distributed Lag (ARDL) model. The findings of the study reveal that oil revenue, GDP, population, trade openness, oil price, taxation and inflation are important determinants of the size of Nigeria's government expenditure. The study recommends among others the diversification of the revenue base of the country beyond oil sector, strengthening of fiscal and monetary policies to ensure stability in price level and exchange rate etc.

Okungbowa, Osaretin, Oligbi and Iyoha (2018) test the hypothesis that a debt Laffer curve exists as well as the validity of the debt overhang hypothesis for the Nigerian economy. The existence of a debt Laffer curve suggests that a high and rising external debt stock is inimical to economic growth. While a debt overhang effect demonstrates the potential deleterious effect of external debt on an economy as rising debt militates against economic growth. Using quarterly data for the years 1981 through 2015, this study finds strong empirical evidence for the existence of both a debt overhang effect and a debt Laffer curve for Nigeria. Thus, advises policymakers to make every effort to reduce Nigeria's external debt in order to promote rapid and sustainable economic growth in the years ahead.

Adeleye and Aworinde (2017) explored the relationship between government expenditure and public debt in Nigeria using a vector error correction model (VECM) and found a long-run positive relationship between these variables, indicating that increased government spending led to higher public debt levels.

Uguru (2016) examined the relationship between public debt and government expenditure in Nigeria over the period 1980-2013. Using the ordinary least square regression technique, the study revealed that there is a significant relationship between public debt and government expenditure in Nigeria. It then recommends that the government of Nigeria should make haste to reduce its recurrent expenditure and embark more on capital expenditure so as to meet the Vision 20:2020.

Iyoha, Ighodaro & Oligbi (2016), investigated Nigeria's External Debt Overhang in Nigeria with the use of OLS and the Cochrane –Orcutt method where there are established cases of auto-correlation in the residuals. Their study found that, overall, external debt has not positively contributed to economic growth in Nigeria and that there is no discernable evidence for the existence of a smooth inverted U-shaped debt Laffer curve in Nigeria. In sum, too much external debt is bad for economic growth in Nigeria; hence any externally borrowed funds should be judiciously utilized in order to benefit the economy

Siew-Peng and Yan-Ling (2015) examine the contribution of public debt to the economic growth in Malaysia over the period of 1991 to 2013. Time series data was collected from the DataStream database. Using the Gross Domestic Product (GDP) per capita as a proxy for economic growth, the debt – growth model was estimated and quarterly data was employed. The findings of the study show that the economic growth has a negative association with the public debt. It therefore recommends that the Malaysian government should utilize the fiscal monetary policy efficiently to ameliorate the dependence on public debt so as to meet the vision 2020 goal of a developed economy.

Oni, Aninkan and Akinsanya (2014) investigate the joint effects of capital and recurrent expenditures of government on the economic growth of Nigeria using the ordinary least square method for estimating multiple regression models. The findings show that both variables (capital and recurrent expenditures) have positive effects on economic growth for the period of study (1980-2011). The study recommends diversification of Nigeria revenue base to be less dependent on crude oil.

Oduola (2011) conducted a study examining the determinants of public debt in Nigeria, finding that government expenditure, especially in the form of wasteful recurrent spending, significantly contributed to the accumulation of public debt. Despite the existing research on the nexus between government expenditure and public debt in Nigeria, some gaps remain to be addressed. Firstly, previous Nigerian studies (Adeleye and Aworinde, 2017; Uguru, 2016; Oduola, 2011; Okungbowa, Osaretin, Oligbi and Iyoha, 2018; Oni, Aninkan and Akinsanya, 2014) have adopted the VECM, OLS and VAR estimation techniques which are inadequate in generating consistent and robust coefficient estimates about the study variables, thereby providing a gap in the methodology used. The current study adopted the more advanced ARDL method, which allows for a more robust cointegration relations between a mixture of  $I(0)$  and  $I(1)$  variables that perform exceptionally well with small sample sizes. Through this method, it becomes methodologically possible to deal with model selection, estimation, inference and determine the long- and short-term effects of government expenditure on public debt in Nigeria simultaneously. Additionally, the ARDL method also postulates the speed of adjustment to restore the economy to long-term equilibrium growth path after a shock. This is a key methodological contribution of the study as researchers are often puzzled with the selection of variables for models. Secondly, the current study also uses both fiscal and monetary explanatory variables with relatively longer and high frequency data spanning 42 years than those used in many previous studies. The importance of a longer time series data set in any co-integration analysis cannot be over-emphasized. Also, relying on the findings, this study proffers valuable, pertinent, and practical recommendations for improved policy formulation.

## METHODOLOGY

The statistical tools used for this research includes; descriptive statistics to ascertain the normality of the data set, Augmented Dickey – Fuller (ADF) Unit Roots Test, Auto-Regressive Distributed Lags (ARDL) bounds testing approach to cointegration and the Error Correction Model (ECM). Pesaran et al. (2001) proposed an ARDL/Bounds Testing approach to investigate the existence of cointegration relationship among variables. This study used a time series data covering 1981 – 2022 periods which were obtained from CBN statistical bulletin and world development indicators, 2022. This scope was chosen because the

relevant data are available and the time is sufficient to influence policy decisions in the country.

### Model Specification

The model for the study can be expressed in the functional form as:

$$TPDT = f(RXG, CXG, INT, TRG) \dots \dots \dots (3.1)$$

The econometric form of the model is set explicitly as:

$$TPDT = \beta_0 + \beta_1RXG + \beta_2CXG + \beta_3EXINTR + \beta_4TRG + \mu \dots \dots \dots (3.2)$$

Where; *TPDT* = Total Public Debt (government domestic debt plus external debt);

*RXG* = Recurrent Government Expenditure

*CXG* = Capital Government Expenditure

*INT* = Interest Rate

*TRG* = Total Government Revenue

$\mu$  = Error Term

Apriori Expectation:  $\beta_1 > 0$ ;  $\beta_2 > 0$ ;  $\beta_3 > 0$ ;  $\beta_4 < 0$

$$\begin{aligned} \Delta TPDT = & \beta_0 + \beta_1 \ln TPDT_{t-1} + \beta_2 RXG_{t-1} + \beta_3 CXG_{t-1} + \beta_4 INT_{t-1} + \beta_5 TRG_{t-1} \\ & + \sum_{i=0}^{p^1} \delta_7 \Delta TPDT_{t-1} + \sum_{i=0}^{q^2} \delta_8 \Delta RXG_{t-1} + \sum_{i=0}^{q^3} \delta_9 \Delta CXG_{t-1} + \sum_{i=0}^{q^4} \delta_{10} \Delta INT_{t-1} + \theta ECM_{t-1} \\ & + \mu_t \end{aligned} \quad (3.3)$$

where,  $\Delta$  indicates the differencing in the variables, that is  $\Delta y_t = y_t - y_{t-1}$ . The study applies an autoregressive distributed lag (ARDL) model advanced by Pesaran et al. (2001) to Equation (3.3) to obtain the long-run and short-run effects of the independent variables on agriculture.

## RESULTS PRESENTATION AND ANALYSIS

### Descriptive Statistics

Table 1: Descriptive characteristics of the variables

	TPDT	RXG	CXG	INT	TRG
Mean	6740.283	2505.525	852.9736	17.18984	3952.415
Median	3107.871	638.05	336.3391	17.38	2068.88
Maximum	40912.62	15553.55	6335.585	29.8	12586.53
Minimum	13.5238	4.7508	4.1001	7.75	10.5087
Std. Dev.	9816.273	3993.351	1382.743	4.646753	4168.099
Skewness	2.031677	2.02047	2.471685	0.307545	0.553604

Kurtosis	6.478004	6.114058	8.69363	3.46702	1.783928
Jarque-Bera	50.06289	45.54647	99.49508	1.043777	4.7333
Probability	0	0	0	0.593399	0.093794
Sum	283091.9	105232	35824.89	721.9733	166001.4
Sum Sq. Dev.	3.95E+09	6.54E+08	78391121	885.2847	7.12E+08
Observations	42	42	42	42	42

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Table 4.1 shows the descriptive statistics of the data used in the study. The debt stock per annum in Nigeria ranged from 13.5238 to 40912.62 (in billion naira) with an average of 6740.62b for the period 1981 to 2022. The standard deviation of the debt stock was 9816.273b, greater than the mean. This indicated that the mean value was not a true representation of the series. The skewness value of 2.03, and kurtosis of 6.47, indicates that the public debt data was positively skewed and leptokurtic. The results showed that all variables are positively skewed. While recurrent government expenditure (RXG) and capital government expenditure (CXG) were leptokurtic, interest rate (INT) was mesokurtic and total government revenue (TRG) platykurtic. The Jarque-Bera as well as their respective probabilities indicated that only INT and TRG had distributions close to normal given probabilities > 0.05 and Jarque-Bera value close to zero; while the rest variables had not.

Table 4.2: ARDL Bounds Test for Long-Run relationship

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistics	Value	K
F-statistics	16.45529	4
Critical Value Bounds		
Significance	10 Bound	11 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

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From Table 4.2 the evaluation of the results is based on the critical F-statistic values to the lower and upper bounds as also reported in the results. If at any significance level, the estimated F-value is lower than both the lower test (I0 Bounds) and the upper test (I1 Bounds) values, then there is no cointegration among the variables and the ARDL Model is sufficient. If the estimated F-value lies between the two Bounds values, then the Test is inconclusive and needs a lesser structure of the ECM analysis. However, if the estimated value lies above both Bounds test values, then there is clear cointegration among the variables. Since the computed F-value lies above the lower and upper bounds there is cointegration among the variables, and the Auto Regressive Distributed Lag (ARDL) Models and Vector Error Correction Models (VECM) is appropriate.

Table 4.3: ARDL Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
TPDT(-1)	1.188174	0.176151	6.745191	0



TPDT(-2)	-0.386516	0.170036	-2.273149	0.0382
RXG	1.279156	0.39289	3.255765	0.0053
RXG(-1)	1.956349	0.409016	4.783066	0.0002
RXG(-2)	-1.882111	0.70311	-2.676839	0.0172
RXG(-3)	-4.176196	0.79182	-5.274171	0.0001
RXG(-4)	3.473451	1.023682	3.393095	0.004
CXG	0.554516	0.613404	0.903998	0.3803
CXG(-1)	-5.173636	1.016788	-5.088215	0.0001
CXG(-2)	2.139519	1.246838	1.715956	0.1067
CXG(-3)	5.791733	1.162759	4.981025	0.0002
CXG(-4)	-1.258161	1.146642	-1.097258	0.2898
INT	39.85831	26.75236	1.489899	0.157
INT(-1)	-16.3425	27.25051	-0.599714	0.5576
INT(-2)	-55.7737	27.34167	-2.039879	0.0594
INT(-3)	2.029702	26.88527	0.075495	0.9408
INT(-4)	58.08533	25.49334	2.278451	0.0378
TRG	-0.447917	0.105703	-4.237495	0.0007
TRG(-1)	-0.127813	0.124749	-1.024565	0.3218
TRG(-2)	0.656965	0.144929	4.533022	0.0004
TRG(-3)	0.178815	0.201531	0.887283	0.3889
TRG(-4)	-0.546479	0.166413	-3.28387	0.005
C	-194.6079	512.4064	-0.379792	0.7094
R-squared	0.999158	Mean dependent var		7446.875
Adjusted R-squared	0.997922	S.D. dependent var		10069.38
S.E. of regression	459.0257	Akaike info criterion		15.37708
Sum squared resid	3160569	Schwarz criterion		16.36825
Log likelihood	-269.1645	Hannan-Quinn criter.		15.72973
F-statistic	808.6195	Durbin-Watson stat		1.944993
Prob(F-statistic)	0			

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The ARDL report reveals public debt having effects from its first lag and that of government recurrent expenditure from its first lag and current periods. This confirms that government recurrent expenditure (fiscal policy) does impact on debt both in the current period as well as a year after in Nigeria. However, the best lag selection with the ARDL was: (24444) for public debt (TPDT), recurrent government expenditure (RXG), capital government expenditure (CXG), interest rate (INT), and total government revenue. Moreover, the bounds test showed that there exists a long-run relationship hence we proceed to run the ARDL with a long-run estimate.

Table 4.4: Cointegration and Long-Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TPDT(-1))	0.386516	0.170036	2.273149	0.0382

D(RXG)	1.279156	0.39289	3.255765	0.0053
D(RXG(-1))	1.882111	0.70311	2.676839	0.0172
D(RXG(-2))	4.176196	0.79182	5.274171	0.0001
D(RXG(-3))	-3.473451	1.023682	-3.393095	0.004
D(CXG)	0.554516	0.613404	0.903998	0.3803
D(CXG(-1))	-2.139519	1.246838	-1.715956	0.1067
D(CXG(-2))	-5.791733	1.162759	-4.981025	0.0002
D(CXG(-3))	1.258161	1.146642	1.097258	0.2898
D(INT)	39.858309	26.75236	1.489899	0.157
D(INT(-1))	55.7737	27.34167	2.039879	0.0594
D(INT(-2))	-2.029702	26.885267	-0.075495	0.9408
D(INT(-3))	-58.085325	25.493338	-2.278451	0.0378
D(TRG)	-0.447917	0.105703	-4.237495	0.0007
D(TRG(-1))	-0.656965	0.144929	-4.533022	0.0004
D(TRG(-2))	-0.178815	0.201531	-0.887283	0.3889
D(TRG(-3))	0.546479	0.166413	3.28387	0.005
CointEq(-1)	-0.198342	0.071659	-2.767867	0.0144
$Cointeq = TPDT - (3.2804 * RXG + 10.3557 * CXG + 140.4499 * INT - 1.4441 * TRG - 981.1728)$				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RXG	3.280439	2.698949	1.215451	0.243
CXG	10.355694	5.989553	1.728959	0.1043
INT	140.449896	133.706893	1.050431	0.3101
TRG	-1.444119	0.691985	-2.086922	0.0544
C	-981.172834	2579.084297	-0.380435	0.709

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In the results above, the t-statistics, and the p-values suggest that in the short run, TPDT, as differenced, is significant at first lag with a positive relationship. This implies that an increase in the stock of public debt does not automatically respond to policy changes in the current period, but a year after the increase in the Nigeria context. The government total revenue (TRG) has a significant effect as differenced and third lag. Government recurrent expenditure (RXG) has a positive relationship and significant at zero, first and second lags. While government capital expenditure and interest rate did not show signs of significance in the short run.

The long-run result is quite revealing. It shows that in the long run, all the explanatory variables have a positive relationship with the public debt stock except government total revenue (TRG), which has indirect negative effects. The p-values suggest that none of the selected explanatory variables in the model is statistically significant in explaining the worrisome state of increasing debt stock in Nigeria. This succinctly underlines the ineffectiveness of fiscal policy in regulating the magnitude and direction of the debt stock in the long run

## Model Diagnostic test

Table 7: Ramsey RESET

Ramsey RESET Test			
	Value	df	Probability
t-statistic	1.063446	14	0.3056
F-statistic	1.130918	(1, 14)	0.3056
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	236227.8	1	236227.8
Restricted SSR	3160569	15	210704.6
Unrestricted SSR	2924342	14	208881.5

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To carry out a proper post-estimation diagnosis of the model, the Ramsey RESET test was employed. The decision rule is: If the probability is significant, that is if the p-value is less than 0.05, it means the model has a specification error. Therefore, given the results above, the null hypothesis of no specification error cannot be rejected because the probability values for t and f statistics are greater than 0.05. This shows the model had no specification errors.

## Policy Implications

With the above result, government expenditure (both recurrent and capital), as well as interest rate has a direct positive effect on the total debt stock while total government revenue has a reverse effect on the total debt stock in Nigeria. This shows that all the variables conform to a-priori expectations, significant in the short-run, but statistically insignificant in the long-run. This outcome implies that public debt through government expenditure is a good macroeconomic policy but more share of government recurrent expenditure could jeopardize the policy objectives. In other words, public debt cannot translate to economic growth unless the debt is spent on productive assets rather than consumables. Gana (2002) opines that foreign borrowing is desirable and necessary to accelerate economic growth, provided that they are channelled to increase the productive capacity of the economy and promote economic growth and development.

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

This study used the ARDL bounds testing approach to cointegration to investigate the presence of long-run relationships between government expenditure and public debt in Nigeria from 1981 to 2022. The results show that there is a positive relationship between public debt and government expenditure, meaning that an increase in government expenditure will lead to increase in total debt. Specifically, results reveal that both recurrent and capital expenditures had a positive but statistically insignificant relationship with debt. Also, debt stock reduces as the total government revenue increases, this suggest that the government had deliberately lowered its debt accumulation whenever its revenue increases, by using same to offset part of principal and interest on debt. The Debt stock also increases with higher interest rates.

A major implication of these results is that government borrowing in Nigeria is necessitated by government deficit, a common scenario at both federal and state levels. However, this deficit was occasioned by more and less than necessary recurrent and capital expenditures respectively. It therefore becomes necessary that the government budgeting process needs to be reviewed to ensure allocative efficiency in our budgeting

system, and that borrowing to finance budget deficit must be objectively and realistically implemented. The understanding in this case is that increasing capital expenditure often has significant impact on the output via reduction in primary deficit and higher output could bring down the Debt-GDP ratio. As explained by Taiwo and Agbatogun (2011), capital expenditure among other factors enhances economic growth in Nigeria. Based on these conclusions, the study makes the following recommendations:

1. A prudent budgeting approach that aims to heighten competition for budget resources and, as a result, facilitates the achievement of government fiscal policy objectives within the economy.
2. The Nigerian government should as a matter of urgency reduce its recurrent expenditure in favour of capital expenditure in order to reduce its debt and sustain it.
3. Also, the economy of Nigeria should be diversified in order to generate more sources of revenue. This will definitely reduce the tendency of the government accumulating public debt.
4. Finally, the public debt management strategies and efficient government expenditure management frameworks should be put in place to provide fiscal and debt sustainability that will enhance the growth process in Nigeria.

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