



Government Debt and Economic Performance in Developing Economies: Evidence from Nigeria

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Date of Submission: 02-08-2024

Date of Acceptance: 12-08-2024

Abstract

This study investigated the relationship between public debt and economic performance in Nigeria for the period 1986 to 2022. It also examined the channels through which public debt affect economic growth. The study used time series data including public debt, economic growth, population growth, exchange rate and trade openness which were obtained from the World Bank Development Indicator and CBN Statistical Bulletin. Descriptive statistics, autoregressive distributed lag (ARDL) and dynamic ordinary least square (DOLS) techniques were used to analysis the relationship among the variables. The study found that government debts have upward trend. More so, ARDL estimates showed that the marginal effect of government debt on economic growth is deleterious. Findings also showed a non-linear impact of debt on growth with a turning point of 7% and revealed that the channels through which public debt affect economic growth were public investment, private saving, and real interest rates. The study concluded that increasing government debt slows economic growth and therefore recommend that the policy makers should ensure efficient utilization of government loan from by allocating fund for infrastructure investments to support sustained growth in gross value added output and thereby promote economic growth.

Keywords: Public debt, economic performance, debt channel, ARDL

I. INTRODUCTION

Achieving economic growth and other macroeconomic objectives is the concerned of both developed and developing countries. One of the core arguments in literature is that no government

is financially buoyant to achieve these goals without sourcing for aids either in terms of loan, foreign direct invest, etc. This idea has driven many nations to international and local financial institutions to seek for loan. Public debt is the main source of financing government stated goals and other identified objectives which is incurred when there is shortage of funds in order to complement the limited available resources. Both the developed and developing countries embrace public debt as a means of funding macroeconomic goals, since the difference between governments' receipt and spending might not equal to zero annually.

Nigeria as one of the naturally endowed countries in the world with more than 89 natural resources documented as of today is one of the most indebted countries in the sub-Sahara African countries and the 2nd most debt in 2019 after South Africa. The first external loan Nigeria took was in 1958 in order to drive the national towards development before independence in 1960. Udeh, Ugwu and Onwuka (2016) reveal that the sum of US\$28 million was borrowed in 1958, by Nigeria from World Bank to finance railway construction. Between 1958 and 1977, the Nigerian government acquired very little foreign debt since it was primarily confessional debt from bilateral and multilateral sources, which has a longer repayment horizon. and lower interest rates that constitutes about 78.5% of the total debt stock (Opara, Nzotta & Kanu 2021). Meanwhile, the country debt soar high starting from late 1970s. The collapse in oil price in 1978 coupled with the need for government at federal level to achieve her social and political objectives brought the need for more loans at both domestic and external level (Falade, 2021; Onogbosele & Ben, 2016). As at 1981, the country's domestic debt and external debt were 11.9 billion naira and 2.33 billion naira respectively, representing 8.0% of GDP and 1.6%



of GDP (Central Bank Statistical, Bulletin 2019). From 1981-1990, the country's debts were 334.25 billion naira for domestic and 866.71 billion for external, indicating 13.0% of GDP and 36.54% of GDP respectively. Thus, Nigeria's debt stock from 1981-1990 stood at 1,214.49 billion naira presenting 48.0% of GDP. Sulaiman, and Azeez, (2012) attribute high increase in borrowing during the period to the unfavorable balance of payment, need for foreign currency and the need to finance the widening deficit gap in the budget.

The need to borrowing is the concept of the neoclassical economic with the fundamental reasons that lack of saving and investment couple, with the need to increase capital accumulation and steady state level of output per capita in an economy encourage continuous deficit spending. Countries with inadequate savings, budget deficits, low government revenue and low levels of investment approach the debt market (Al-Kharusi & Ada, 2018; Gohar & Butt, 2012). Nigeria as a country lack saving culture. Evidence of this is seen in the country's constitution that stipulates the amount to share among federal, state and local governments without stating the amount to save. Also, the overall economic performance of the country is not encouraging when compare with development and growth in other sub-Sahara African countries like South Africa and Rwanda (IMF 2021). Abdulkarim and Saidatulakmal (2021) reveal that growing budgetary deficits and the need to sustain growth path of the economy encourage the government to progressively accumulated massive debts from external and internal sources. The Nigeria debt steadily moved from \$4.6 billion in 1980 to \$18.6 billion in 1986 and it increased to \$32.9 billion in 1990, between 1995 to 1999 her debt stock was \$32.584 billion (DMO 19986-2004) couple with a fall in her foreign reserves from the initial \$10 billion in 1980 to \$3.9 billion in 1981 and to a little over \$1 billion in 1986 (CBN, 1990).

After the debt relief of 2006, successive governments have taken the country's debt to another dimension with debt increasing progressively for instance, between 2011 to 2015 the Country's debt has increased from # 6.17 trillion to #9.8 trillion. With regard to Adeniyi, *et al.* (2018), the country is majorly overwhelmed by severe budget crisis with the problem to repay loan obtained from within and outside. This is attributed to current budget that is often financed by both domestic and external loan. The issue of borrowing is not limited to federal government alone but with state inclusive due to fall in oil revenue and low internal generated revenue. As at December 2023, the country's debt stock was # 87.91 trillion (DMO, 2023). The continuous increase in debt has increase the debt servicing over the past years. For instance, 22.0% and 25.2% of the entire budget in 2016 and 2019 were assigned to debt servicing in each of the years respectively. Despite the country's loan for infrastructural needs, the country is still considered as one of the lowest country with per capita income in the world, poor basic amenities, poor infrastructural facilities, extreme poverty, etc. Also, the country's economy was plunged into recession between 2016 and 2017 which is one of the evidence of poor management of loan obtained. The high rate of loan in Nigeria has called for concern on the issue of loan subduing growth due to the country current fiscal deficits, fall in oil price in the world market, debt services, unemployment and unstable nature of some macroeconomic indices like inflation, interest rate, etc.

Unlike previous studies on Nigeria, this study look beyond examination of the nexus between public debt and economics growth, by investigating the relationship public debt and economic growth in a non-linear framework and also test whether private saving, public investment, total factor productivity and sovereign long term interest rate are channels through which public debt may influence economic growth.

II. DATA AND METHOD

Model Specification

The study adopted and modified Checherita and Rother (2010) model as presented its autoregressive distributed lagged (ARDL) specification as equation (1):

$$\begin{aligned} \Delta \text{GDPPC} = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \text{GDPPC}_{t-i} + \sum_{i=0}^p \beta_2 \Delta \text{PDGDP}_{t-i} + \sum_{i=0}^p \beta_3 \Delta \text{POPG}_{t-i} + \sum_{i=0}^p \beta_4 \Delta \text{TOP}_{t-i} \\ & + \sum_{i=0}^p \beta_5 \Delta \text{REER}_{t-i} + \omega_1 \text{GDPPC}_{t-1} + \omega_2 \text{PDGDP}_{t-1} + \omega_3 \text{POPG}_{t-1} + \omega_4 \text{TOP}_{t-1} + \omega_5 \text{REER}_{t-1} \\ & + vt \end{aligned}$$

Where: $\omega_1 - \omega_5$ are the long run multipliers and vt is the white noise error.



Where;
 GDPPC = growth of GDP per capita
 PDGDP = Public debt (% of GDP)
 POPG = Population growth rate (%)
 REER = Real exchange rate
 TOP = Trade openness (% of GDP)

In order to achieve the second objective, the study follows Checherita and Rother (2010) in stating the model for channels through which government debt affects economic growth;

Channel of Private Saving

$$PSR = \alpha_0 + \alpha_1 PDGDP^2 + \alpha_2 PDEbT + \alpha_3 POPG + \alpha_4 REER + \alpha_5 TOP + \pi \dots \dots (3.6)$$

Channel Public Investment

$$GFCF = \alpha_0 + \alpha_1 PDGDP^2 + \alpha_2 PDEbT + \alpha_3 POPG + \alpha_4 REER + \alpha_5 TOP + \pi \dots \dots (3)$$

Channel Total Factor Productivity (TFP)

$$TFP = \alpha_0 + \alpha_1 PDGDP^2 + \alpha_2 PDEbT + \alpha_3 POPG + \alpha_4 REER + \alpha_5 TOP + \pi \dots \dots (4)$$

Channel of Interest Rate

$$INTR = \alpha_0 + \alpha_1 PDGDP^2 + \alpha_2 PDEbT + \alpha_3 POPG + \alpha_4 REER + \alpha_5 TOP + \pi \dots \dots (5)$$

All variables as defined in equation (1) and PDGDP² represents the square of government debt variable. Data employed are sourced from Central Bank of Nigeria Statistical bulletin. Augmented Dickey Fuller (ADF), the Phillip Peron unit root test, Bound Co-integration test, descriptive statistics (Graph), auto-regressive distributed lag (ARDL), and dynamic ordinary least square (DOLS) were pre-testing and estimation method employed. The study also performed some diagnostics tests such as heteroscedasticity test, serial correlation test, normality and model stability tests.

III. RESULTS AND DISCUSSION

Unit Root Tests

In order to ascertain the order of integration, the paper started by applying the Augmented DickeyFuller (ADF) and Phillips Perron (PP) unit root tests. The lag length determination for the ADF test is based on the Schwarz Information Criterion (SIC), while the PP test uses the Bartlett kernel for its spectral estimation and the Newey-West method for its bandwidth determination. The ADF and PP tests suggest that GDP per capita, population growth rate, real exchange rate and total factor productivity variables are each integrated at levels while others become stationary after first difference.

Table 1. Unit Root Tests Results

variable	Augmented Dickey-Fuller (ADF) Test			Philips-Perron (PP) Test		
	Level	1st Difference	Status	Level	1st Difference	Status
GDPPC	4.215902***		I(0)	5.275540***		I(0)
PDGDP	1.362531	4.029378***	I(1)	1.778589	4.065078***	I(1)
POPG	2.954021**		I(0)	0.925645	4.510991***	I(1)
REER	3.915911***		I(0)	4.278104***		I(0)
TOP	0.034806	6.164807***	I(1)	0.245980	6.254228***	I(1)
PSR	1.917555	5.529351***	I(1)	1.578722	6.145889***	I(1)



GFCF	2.040789	4.084275***	I(1)	1.495509	3.181162***	I(1)
TFP	4.035823***		I(0)	3.948043***		I(0)
Critical values	Level	Ist Difference	Critical values	Level	Ist Difference	
1%	-3.5461	-3.5482	1%	-3.5461	-3.5482	
5%	-2.9117	-2.9126	5%	-2.9117	-2.9126	
10%	-2.5936	-2.5940	10%	-2.5936	-2.5940	

Source: Author's computation from the data extracted from CBN statistical bulletin and WDI (1986 – 2022).

Table 2: ARDL Bounds Test for Cointegration Results

Test Statistic	Value	k
F-statistic	4.973542	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

The results of ARDL bounds test revealed that F-test is 4.973542. The value of the estimated Fstatistic of the model has exceeded the upper bound at the 1% level of significance. It was apparent from the results that there exists a long-run relationship among the variables. This implies that the series are related and even if there are shocks in the short-run, which may affect the movement in the individual series, they would converge with time (in the long run).

This is an indication that the variables are cointegrated and there is a presence of significant long-run relationships among the variables

Lag Order Selection

Since unit root tests have been applied, the next step is selection of the lag order to be used for the ARDL approach as developed by Pesaran *et al.* (2001). The Table 3 below shows the Var Lag Order Selection Criteria for the ARDL

Table 3: Lag Length Selection for External Debt Sustainability (1981-2018)

Lag	LogL	LR	FPE	AIC	SC	HQ
1	-547.6131	NA	94845462	35.37049	37.00305*	35.91980
2	-509.8507	48.06127	1.03e+08	35.26368	38.52878	36.36229
3	-437.1681	66.07503*	19983737*	33.04049*	37.93815	34.68841*

* indicates lag order selected by the criterion

Table 3 shows the optimal lag length of the selected variables in the model; since the calculation of ARDL bounds is sensitive in the selection of the lag length. The finding revealed

that majority of the criteria indicators selected optimal lag length of 3; therefore, the study selected optimal lag of three.



Trend Analysis

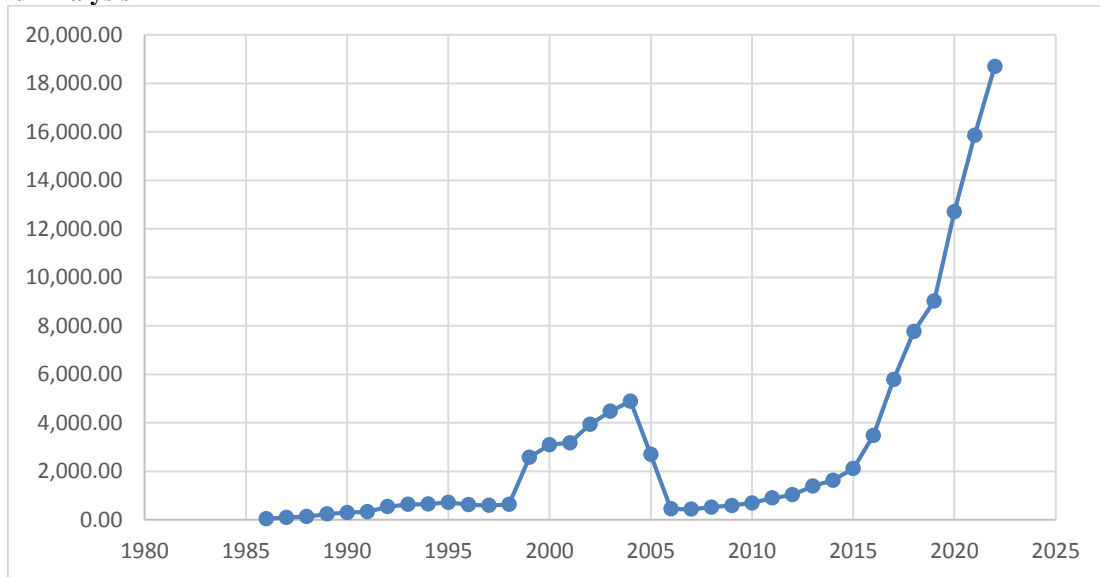


Figure 4.3.1A: Trend of External Debt(in billion Naira), 1986-2022

Source: Author Computation (2024)

The Figure 4.3.1A above shows the trend analysis of Nigerian external debt from 1986- 2022. In 1986, external debt was 41.45 billion naira. This suggests that external debt within this period was considered low. However, in 1987, it was 100.79 billion naira; therefore, representing an additional increase of 59.34 billion naira in external debt when compared with that of previous year of 1986. The rationale for such may be attributed to Structural Adjustment Programme adopted then. As a result of SAP then, the country's external debt was within the rate of hundred units with the highest ever recorded debt was in 1997 with a value of 716.87 billion naira, from 1988-1998. Also, in 1999, the country's external debt operated within the thousand units. For instance, from the initial value of 633.02 billion naira in 1998 moved to 2,577.32 billion naira in 1999. From 2000-2004, the country's external debt increased more than additional 70.0 billion naira. A new era came in 2005 during the time of

president Olusegun Obasanjo. During this period, external debt from the initial value of 2,695.07 billion naira in 2005, reduced to 451.46 billion naira. Hence, suggesting 2,243.61 billion-naira reduction in external debt. The rationale for such drastically decline in external debt may be attributed to debt relief worth \$18 billion granted to Nigeria by the Paris Club in a deal completed on April 21, 2006, when Nigeria made its final payment and its books were cleared of any Paris Club debt. Going by this, Nigeria's external debt drastically fell to 451.46 billion naira.

Furthermore, from 2007-2011, the country's external debt was within the hundred units, with the highest ever recorded debt in 2011, with a value of 896.85 billion naira. Lastly, ever since 2012-2022, external debt has skyrocketed and was within the rate of thousand units, with the highest value stood at 18,700 billion in 2022.

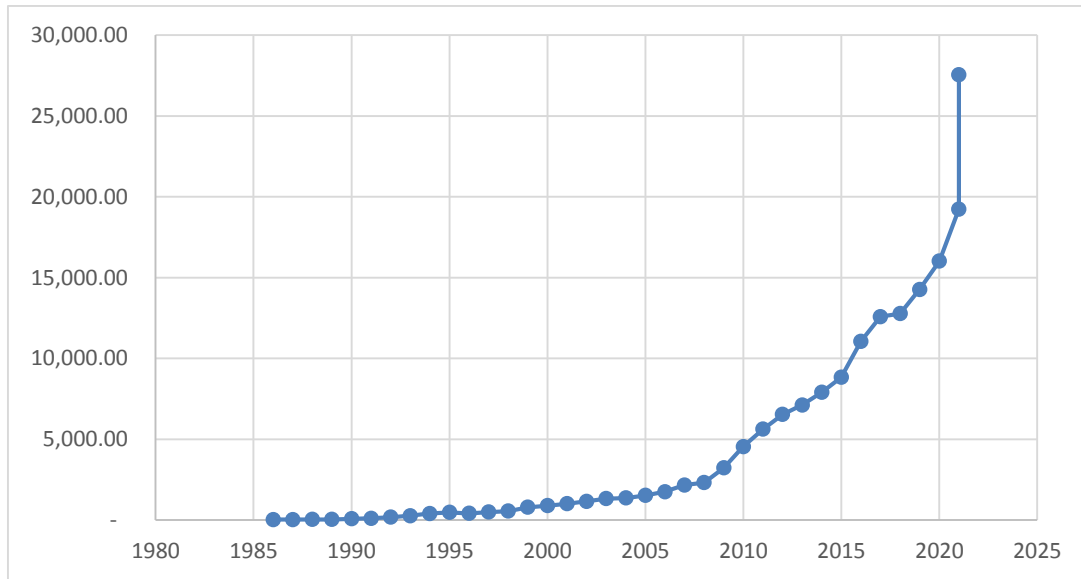


Figure 4.3.1B: Trend of Domestic Debt(in billion Naira), 1986-2022

Source: Author Computation (2024)

The Figure 4.2.2B above shows the trend analysis of Nigerian domestic debt from 1986-2022. Nigeria's domestic debt in 1986 was 28.44 billion Naira; while that of 1987 stood at 36.79 billion naira. From 1988-1995, domestic product increased more by 127.6% with a value of 477.73

billion naira in 1995. However, there was a decline in its value in 1996 to 419.98 billion naira. Ever since then, Nigeria domestic debt trend has remained highly increase in value. with the country's external debt showing high proportional value from 2010-2022.

Table :ARDL Result

Dependent Variable: GDPPC				
Method: Autoregressive Distributed Lags ARDL(2, 3, 3, 3, 3, 2, 3)				
$R^2=0.982662$; $Adjusted R^2 =0.928480$; $Prob.(F-statistic)= 0.000122$				
Short Run Estimate				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPPC(-1))	-0.17801	0.08871	-2.00655	0.0797
D(PDGDP)	-33.88703	23.51489	-1.44108	0.1875
D(PDGDP (-1))	67.46436	16.65998	4.04948	0.0037
D(PDGDP (-2))	-48.78561	18.15141	-2.68770	0.0276
D(PDGDP ²)	2.078343	1.40073	1.48374	0.1762
D(PDGDP ² (-1))	-4.92771	1.16203	-4.24059	0.0028
D(PDGDP ² (-2))	3.83681	1.15314	3.32725	0.0104
D(POPG)	-2.51099	15.71747	-0.15975	0.8770
D(POPG(-1))	-390.59653	183.74423	-2.12576	0.0662
D(POPG(-2))	437.76732	96.82386	4.52127	0.0019
D(REER)	-0.00877	0.01700	-0.51610	0.6197
D(REER(-1))	-0.07243	0.02294	-3.15721	0.0135
D(REER(-2))	0.07314	0.01334	5.48131	0.0006
D(TOP)	0.01640	0.00844	1.94243	0.0880
D(TOP(-1))	0.01544	0.00981	1.57416	0.1541
D(PSR)	-0.17951	0.09246	-1.94144	0.0881
D(PSR(-1))	-0.54498	0.07093	-7.68334	0.0001



D(PSR(-2))	-0.25913	0.06821	-3.79882	0.0052
CointEq(-1)	-1.40893	0.13102	-10.75345	0.0000
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNDEBT	-27.86250	7.97824	-3.49231	0.0082
LNDEBT ²	2.02441	0.43143	4.69226	0.0016
POPG	18.23807	8.62306	2.11503	0.0673
REER	0.00643	0.01274	0.50484	0.6273
TOP	-0.01052	0.00475	-2.21502	0.0576
PSR	0.54328	0.12587	4.31593	0.0026
C	27.36094	54.79671	0.49931	0.6310

Source: Author's Computation (2024)

The results of the short-run analysis in Table 4 indicate that public debt donot have immediate impact on economic growth in the current period. However, there is a positive net effect of debt on economic growth after a year of such injection into the economy. The results of the long-run analysis appeared contrary to that of short-run estimations as tothe relationship between public debt and growth. The negative coefficient of -27.86250 of the linear term suggest that public debt is deleterious to Nigerian economy while

positive coefficient of 2.02441 of the quadratic term shows that the deleterious effect of debt is moderated at higher debt level. These results are statistically significant and 1 percent level. On the included control variables, private saving rate has significant effect on economy growth at 1 percent level while trade openness and population growth are significant at 10 percent level. The result show that trade openness has negative impact on economic growth. This might be due to the primary nature of Nigeria's export.

Table 5 Results from different diagnostic tests

Harvey		Breusch-Godfrey		Ramsey		Jarque-Bera	
F-Stat.	Sig.	F-Stat.	Sig.	F-Stat.	Sig.	F-Stat.	Sig.
2.272169	0.1147	2.642549	0.1610	0.031075	0.8651	3.878228	0.143823

Table 5shows the results of different diagnostic tests. To check the heteroscedasticity of the residuals of the ARDL model, we used the Harvey test, and for the serial correlation check, we used the Breusch-Godfrey test. The results on these two tests revealed that the residuals obtained from the model were homoscedastic and uncorrelated. For the normality test, the study utilized the Jarque-Bera test, which showed that the residuals of the test employed were normally distributed while the result of Ramsey RESET test suggested that the model is well specified.

The estimated form of the regression model reported in Table 4 is given below;
 $GDPPC = 27.36094 - 27.86250LNPDGDP + 2.02441LNPDGDP^2 + 18.23807POPG + 0.00643REER - 0.01052TOP + 0.54328PSR$

This result is at variance the hypothesis that high public debt is detrimental to economic growth after the turning point (threshold) that is why the sign of

the quadratic term is positive.

Focusing first on the total effect of public debt on growth, the coefficients reported in Table 5 advocate that debt has a negative impact on economic activity in Nigeria. In fact, a 1% increase in public debt will bring about on average 25.83% point increase in per capita GDP growth. However if we look into the marginal effect of debt activity on the economy, the conclusion is more contrasted. Consequences of change of public debt on economic growth in Nigeria can be demonstrated from the estimated regression by expressing growth as a function of public debt. So, in order to derive the marginal impact of debt on growth when it changes by one unit, we differentiate growth with respect to debt as depict below;

$$\frac{\partial GDPPC}{\partial PDGDP} = -27.86250 + 4.04882LNPDGDP$$

This equation posits that a given change in public debt size has different effects on economic



growth depending on the value of public debt and the threshold level. Since the squared term increases in value faster than the linear term, it follows that the presence of positive effect from public debt will eventually outweigh the negative effect, thereby leading to rise in economic growth as the debt level increases.

The study, thus, calculated the marginal effects of debt on growth at the minimum, mean

and maximum index value of public debt of the sampled period and it is reported in Table 6 shows that if public debt rises by 4.2469% point, on average economic growth will fall by 10% point and an increase of 7.9614% point in debt will raise growth by 4.18%. Thus, a change in public debt beyond the threshold of 6.89% is growth enhancing while public debt is only detrimental to growth at rate below the threshold.

Table 6. Marginal Effect of Public Debt on Economic Development

	Evaluated at			
	Min	Mean	Max	Threshold Value
Index value of public debt (%)	4.2469	7.9614	10.06	6.89%
Marginal effect of public debt	-10.66	4.18	12.87	

4.3.3

Channel of Transmission

Another important issues considered in the study relates to the channels through which public debt is likely to have an impact on the economic growth rate. The study investigate the impact of debt on: (i) private saving (gross fixed capital formation) rate; (ii) public investment (gross fixed capital formation) rate; (iii) total factor productivity (TFP); and (iv) real interest rates. The channel of transmission

variables are also assumed to depend on population growth rate, real exchange rate, trade openness and private saving rate. The results are presented in Tables 7-10. The study found some evidence for the channels of private saving, public investment, TFP, and interest rates. For the first three channels – private saving, public investment and TFP – a non-linear relationship (concave) also predominates across the various models used.

Private Saving Channel

Table 7. Dynamic Ordinary Least Squares (dependent variable - PSR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PDGDP	-0.248334	0.050907	-4.878134	0.0000**
PDGDP ²	0.393628	0.087293	4.509261	0.0001**
POPG	15.94745	22.68320	0.703051	0.4874
REER	-0.032804	0.021877	-1.499476	0.1442
TOP	-2.29E-05	0.018633	-0.001231	0.9990
C	19.32821	57.70713	0.334936	0.7400
R-squared	0.793946			
Adjusted R-squared	0.759604			

** indicates statistically significant at the 0.05 and 0.1 level

Source: Author Computation (2024)

Public Investment Channel

Table 8 Dynamic Ordinary Least Squares (dependent variable - GFCE)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PDGDP	-0.235365	0.024976	-9.423701	0.0000**
PDGDP ²	0.471819	0.042827	11.01680	0.0000**
POPG	8.741084	11.12867	0.785456	0.4383
REER	0.012332	0.010733	1.148954	0.2597
TOP	-0.025083	0.009142	-2.743873	0.0101**



C	26.73737	28.31186	0.944388	0.3525
R-squared	0.940459			
Adjusted R-squared	0.930535			

*** indicates statistically significant at the 0.05 and 0.1 level*

Source: Author Computation (2024)

Total Factor Productivity Channel

Table 9. Dynamic Ordinary Least Squares (dependent variable - TFP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PDGDP	-0.010461	0.022824	-0.458331	0.6501
PDGDP ²	-0.038796	0.039772	-0.975474	0.3374
POPG	-3.780052	10.77285	-0.350887	0.7282
REER	-0.023621	0.011494	-2.055049	0.0490**
TOP	0.018671	0.008228	2.269203	0.0309**
C	15.76750	27.51249	0.573103	0.5710
R-squared	0.940459			
Adjusted R-squared	0.930535			

*** indicates statistically significant at the 0.05 and 0.1 level*

Source: :Author Computation (2024)

Interest Rates Channel

Table 10. Dynamic Ordinary Least Squares (dependent variable - INT)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PDGDP	-0.460015	0.160001	-2.875080	0.0005**
PDGDP ²	1.150014	5.920015	0.194259	0.8621
POPG	0.845012	0.154012	5.486663	0.0000**
REER	0.145511	0.041115	3.539122	0.0000**
TOP	-1.690015	0.269915	-6.261290	0.0000**
C	-2.150001	1.920012	-1.119790	0.5611
R-squared	0.761211			
Adjusted R-squared	0.500121			

*** indicates statistically significant at the 0.05 and 0.1 level*

Source: Author Computation (2024)

The results of the models show a highly statistically significant non-linear relationship between the public debt and the per-capita GDP growth rate for Nigeria in the sampled period. There is evidence of upward trend in the level of Nigeria's debt portfolio especially since year 2015 and that trend has not abated. This might be in the attempt of government to close the infrastructural deficit of the country and the need to meet some critical social need of the citizenry in light of large population that fall below international poverty line.

The debt-to-GDP turning point of this convex relationship (U-shape) is roughly 7%. This means that, public debt-to-GDP ratios below the threshold would have a negative effect on economic growth while public debt ratios above the

threshold would have a positive effect on growth. The study found with non-linear model framework, for both short and long runs model, the annual change in the debt-to-GDP ratio is highly statistically significant and negatively associated with the economic growth rate. In other words, public debt has deleterious effect on economic growth in Nigeria. One of the plausible reasons for the detrimental effect might be that significant part of the borrowing is spent on consumption and transfer rather than investments that are capable of engendering productivity, creating employment opportunities and payback the incurred debts. Institutional factors, such corruption and public sector inefficiency might also explain the observed relationship. The implications of such factors are gross wastage of public fund on projects that promote personal or group interest rather than for



its social and economic viability. The finding of this study is in line with Mduduzi (2019) and Saungweme and Odhiambo (2019), Ssempala *et al.* (2020) and Liston (2020), which posited a significant and negative nexus between debt and growth.

From a policy perspective, a negative impact of public debt on economic growth strengthens the arguments for ambitious debt reduction through fiscal consolidation. Although beyond threshold turning point suggest a positive impact of debt on growth, targeting a higher debt level to support growth is not a desirable policy option. In the current economic environment of Nigeria in which more than 80 percent of federal government revenue is used for debt servicing, swiftly implementing ambitious strategies for debt reduction is strategic to repositioning of the economy. If policy makers let high debt-gdpratio linger for fear that fiscal consolidation measures will be unpopular with populace (voters), this will undermine growth prospects and thus will put an additional burden on fiscal sustainability in Nigeria.

The channels through which public debt is found to have an impact on the economic growth rate are: (i) private saving; (ii) public investment; and (iii) real interest rates. For the first two channels – private saving and public investment – a non-linear relationship was established in the models. As regards the channel of interest rates, a strong and robust linear impact is evidenced. The level of the public debt ratio not found to be significant for total factor productivity in the sample.

IV. CONCLUDING REMARKS

The study found that both domestic and external debts have upward trend. More so, ARDL estimates showed a significant and indirect relationship between public debt, public debt squared, exchange rate and economic growth. This suggested that when borrowed funds are not effectively used, it adversely affects the aggregate output and causes exchange rate appreciation. Findings also showed a non-linear impact of debt on growth with a turning point of 7%. This implies that debt beyond 7% of GDP is growth enhancing for Nigeria. Also, the channels through which public debt affect economic growth were found to be public investment, private saving, and real interest rates.

Overall, a robust conclusion of the study is that public debt is, on average, harmful for growth in our sample. The additional evidence in this

analysis is those three channels, private saving, public investment and interest rates, may point to a more detrimental impact of the public debt stock on growth. In other words, the study concluded that increasing government debt slows economic growth. The path through which public debt affects economic growth is to convert public debt into public

The study therefore recommends that the government policy makers should ensure swift implementation of strategies that will lead to debt reduction so as to strategically reposition the economy. Moreso, policy maker as a matter of policy, embrace fiscal discipline such that borrowings will be utilized significantly on infrastructure investments to support sustained growth in gross value added output and thereby promote economic growth.

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