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Public Debt in Nigeria: A Channel to Accelerate Production or Consumption

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ABSTRACT: Public debt is a major fiscal policy instrument in Nigeria, but its contribution to economic development depends on whether borrowed resources are directed toward productive investment or consumption. This study examines whether public debt operates more strongly through a production or consumption channel in Nigeria using annual data from 1985–2024. Two separate models are estimated using the Autoregressive Distributed Lag (ARDL) approach, with real gross domestic product (RGDP) representing the production channel and private consumption expenditure (PC) representing the consumption channel. The models include government capital expenditure, government revenue, gross fixed capital formation, interest rate, inflation and exchange rate as control variables. The Augmented Dickey-Fuller test indicates that most variables are integrated of order one, I(1), while inflation is stationary at level, I(0), justifying the application of the ARDL bounds-testing technique. The bounds tests confirm long-run relationships in both models, with F-statistics of 5.7330 for the RGDP model and 6.0971 for the PC model. The results show that public debt has a negative and significant second-lag effect on RGDP, suggesting that prolonged debt accumulation may constrain economic output through rising debt-service obligations and reduced fiscal space. In the consumption model, public debt initially supports private consumption but subsequently exerts a negative effect, indicating that debt-financed spending may provide temporary consumption benefits while creating longer-term pressures. Government capital expenditure positively affects both RGDP and private consumption, although its lagged negative effect on RGDP highlights concerns regarding the efficiency of public investment. Exchange-rate depreciation significantly reduces private consumption, while government revenue exerts a positive delayed effect in both models. The study concludes that the developmental impact of public debt depends primarily on its utilisation rather than accumulation alone. It recommends prudent debt management, prioritisation of productive investment, reduced dependence on debt-financed consumption, stronger domestic revenue mobilisation and improved efficiency in public expenditure to promote sustainable growth and household welfare.

KEYWORDS: Public debt, economic growth, private consumption, government expenditure, exchange rate, government revenue, ARDL, Nigeria.

1. INTRODUCTION

Public debt is an important fiscal policy instrument through which governments mobilize resources to finance expenditures beyond current revenue. In developing economies such as Nigeria, borrowing can provide funds for infrastructure, human capital, industrial development and other investments capable of expanding productive capacity. However, the economic consequences of public debt depend largely on how borrowed resources are utilized. Debt-financed expenditure directed toward productive investment can increase output, employment and private-sector activity, while borrowing used mainly for recurrent expenditure and consumption may generate short-term demand without creating sufficient assets or revenue to meet future debt obligations. The theoretical literature therefore recognizes both the potential benefits and costs of public borrowing. While Keynesian theory emphasizes the capacity of government borrowing to stimulate aggregate demand and economic activity, the crowding-out and debt-overhang hypotheses suggest that excessive borrowing can constrain private investment and weaken long-term economic performance (Krugman, 1988; Sachs, 1989). The issue is particularly important in Nigeria because persistent fiscal deficits, inadequate domestic revenue mobilization, dependence on volatile oil revenues and substantial infrastructure requirements have increased the government's reliance on domestic and external borrowing. Nigeria's public debt has expanded considerably over time, raising concerns about debt sustainability and the allocation of borrowed resources. The central policy concern is not necessarily the existence of public debt, but whether such borrowing is translated into productive investments that expand the economy's capacity to generate output and revenue. Borrowing to finance electricity, transportation, agriculture, education, health and industrial infrastructure can potentially enhance productivity and crowd in private investment. Conversely, borrowing that predominantly finances salaries, transfers, administrative expenditure, subsidies and other consumption-related

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activities may provide immediate fiscal relief without generating sufficient productive returns. Thus, the distinction between production-oriented debt and consumption-oriented debt is crucial for understanding the developmental implications of Nigeria's borrowing strategy.

The Nigerian empirical literature provides mixed evidence on the relationship between public debt and economic performance. Amin and Audu (2006) found evidence consistent with debt-overhang and crowding-out effects, suggesting that external indebtedness can adversely affect investment and economic growth. Similarly, Danjuma et al. (2024) show that public debts influence economic growth through debt-burden and crowding-out mechanisms, however, other evidence indicates that debt can support economic growth when associated with effective public expenditure and productive investment. This mixed evidence is consistent with the broader international literature, which cautions against treating public debt as inherently harmful. Reinhart and Rogoff (2010) associated high debt levels with weaker growth, whereas Panizza and Presbitero (2014) demonstrated that the observed negative relationship does not necessarily establish causality. These contrasting findings imply that the effects of debt depend not only on its magnitude but also on its composition, financing conditions, institutional environment and, most importantly, the purposes for which borrowed resources are employed.

Despite the growing literature on debt and economic growth, an important gap remains in determining whether public debt in Nigeria operates predominantly through a production channel or a consumption channel. Much of the existing research concentrates on debt-growth relationships, debt sustainability, debt overhang and crowding-out effects without explicitly distinguishing whether borrowed resources enhance productive capacity or primarily support current consumption. This distinction is particularly important because increasing debt alongside weak infrastructure, limited industrial capacity, unemployment and persistent development challenges raises questions about the effectiveness of debt utilization. If public borrowing generates productive assets and future income, it can contribute to sustainable economic development; however, if borrowing mainly supports consumption, it may increase future debt-servicing obligations without a corresponding expansion in the economy's revenue-generating capacity. The resulting fiscal pressure may reduce resources available for capital expenditure and create a cycle in which additional borrowing is required to finance existing obligations. Against this background, this study examines whether public debt in Nigeria serves primarily as a channel for accelerating production or as a mechanism for financing consumption. Specifically, the study seeks to examine the effect of public debt on production, determine its effect on consumption, compare the relative strength of the two channels, and assess the implications of debt utilization for sustainable economic growth. The study is motivated by the proposition that the developmental value of public debt should be assessed by the economic returns generated from its utilization rather than by debt accumulation alone. Establishing whether production or consumption constitutes the dominant channel will provide important evidence for Nigeria's fiscal and debt-management policies. The findings are expected to guide policymakers toward borrowing and expenditure strategies that prioritize productive investment, strengthen revenue-generating capacity and ensure that public debt contributes to sustainable economic transformation rather than becoming a persistent source of fiscal vulnerability.

2. THEORETICAL BACKGROUND

The theory of public debt and Ricardian equivalence theory will form the theoretical arguments. The Keynesian theory, associated with Keynes (1936), provides a strong foundation for explaining how public debt can influence production and consumption. The theory argues that government borrowing can finance expenditure when current revenue is inadequate, thereby increasing aggregate demand, employment, investment, and output. Debt-financed spending can have particularly strong effects when the economy has idle resources and when borrowed funds are directed toward productive sectors such as infrastructure, agriculture, education, health, and industrial development. In the context of Nigeria, this perspective implies that public debt can accelerate production when borrowing is efficiently transformed into productive public investment that raises the economy's productive capacity. However, excessive borrowing may reduce these benefits through rising debt-service obligations and crowding-out effects. Thus, the Keynesian perspective supports the view that the impact of public debt depends substantially on the purpose and efficiency of government expenditure (Keynes, 1936; Sutherland, 1997).

The Ricardian equivalence proposition, formally developed by Barro (1974), provides a contrasting explanation of the relationship between public debt and consumption. The theory argues that debt-financed government expenditure does not necessarily increase aggregate consumption because rational households recognize that current borrowing represents future tax liabilities. Consequently, households may increase saving in anticipation of future taxes, thereby offsetting the consumption stimulus expected from deficit financing. Under the strict assumptions of the theory, the method of financing government expenditure—taxation or borrowing—does not substantially alter consumption or economic activity. Nevertheless, these assumptions may be restrictive in developing economies such as Nigeria, where households face liquidity constraints, imperfect financial markets, income uncertainty, and limited access to credit. The theory is therefore useful to this study because it provides a counterpoint to the Keynesian view and allows the research to examine whether Nigeria's public debt primarily stimulates production and consumption or merely shifts fiscal obligations from the present to the future (Barro, 1974; Bernheim, 1987; Ofori-Abebrese & Pickson, 2018).

2.1 Empirical Underpinnings

Recent empirical literature provides substantial but mixed evidence on the relationship between public debt, production, economic growth and consumption. This mixed evidence is important for the present study because it suggests that the effect of public debt cannot be understood solely from its size; rather, the outcome depends on the type of debt, the cost of servicing it, the expenditure it finances and the efficiency with which borrowed resources are utilized. Saungweme and Odhiambo (2019), in a review of contemporary evidence, found that although a large proportion of studies report a negative relationship between public debt and economic growth, other studies identify positive long-run effects through fiscal multiplier and investment channels. Similarly, Rahman et al. (2019), after systematically reviewing 33 studies, concluded that the debt-growth relationship may be positive, negative or nonlinear and that a uniform debt threshold does not apply across countries. These findings provide a basis for examining whether Nigeria's debt operates predominantly through a productive or consumption-oriented channel. Evidence from Nigeria reinforces the importance of debt composition and utilization. Ohiomu (2020) examined the external debt-growth relationship in Nigeria using ARDL techniques and found that debt-overhang and crowding-out effects depressed investment and consequently weakened economic growth. The study therefore recommended stricter debt management and greater emphasis on investment promotion. Nzeh (2020), however, reported a

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more nuanced relationship. Using Nigerian data from 1981–2018 and an ARDL framework, the study found that public debt contributed positively to economic growth in both the short and long run up to an estimated threshold of about 40.2% of GDP, after which additional debt became harmful to growth. This result suggests that borrowing can support production when maintained within sustainable limits but may become counterproductive when debt accumulation exceeds the economy's capacity to service it.

Kur et al. (2021) further investigated the Nigerian debt-growth relationship by examining investment as a possible transmission mechanism. Using data covering 1981–2019 and an ARDL model, they found that external debt and investment were positively associated with economic growth in the long run, whereas domestic debt and external debt servicing were negatively associated with growth. Their findings are particularly relevant to the present study because they indicate that the effect of borrowing depends substantially on whether debt is transformed into productive investment. The authors further estimated investment thresholds for domestic and external borrowing, suggesting that domestic borrowing could support growth when adequately invested, while excessive or poorly utilized external borrowing could undermine economic performance. The evidence became more nuanced in Ogbodo et al. (2022), who examined whether public debt determines economic growth in Nigeria using data from 1990–2020 and considering domestic debt, external debt, exchange rate, inflation and interest rate. Similarly, recent research applying nonlinear methods has challenged the assumption of a uniform debt effect. A 2023 study using Nigerian data from 1980–2020 found that external debt had a significant positive and symmetric effect on economic growth in both the short and long run, while debt-service payments had growth-reducing effects consistent with the debt-overhang hypothesis. Domestic debt was found to retard growth in the short run and have a negative linear effect in the long run. The study therefore emphasized improved revenue generation, infrastructure investment, fiscal reform and institutional strengthening as means of preventing debt from becoming a constraint on economic activity. Okeke et al. (2023) also examined Nigeria using annual data from 1981–2021 and an ARDL framework, incorporating real GDP, gross fixed capital formation, domestic debt, external debt, exchange rate and debt-service repayment. Their results indicated positive effects of some debt-related variables and investment on economic growth, reinforcing the argument that the productive use of borrowed resources matters for the growth outcome. Similarly, research by Ofurum and Fubara (2022) found mixed effects of public debt components on Nigerian economic development, with external debt servicing not exerting a statistically significant effect on real GDP. These findings demonstrate that debt itself does not automatically determine economic performance; rather, the composition of borrowing, debt servicing and investment allocation are important parts of the transmission mechanism.

A particularly relevant study is Ofori-Abebrese and Pickson (2018), which directly examined the Ricardian equivalence proposition in five Sub-Saharan African economies, including Nigeria, using panel ARDL estimation over 1981–2014. The study found that government debt, government spending and interest payments had negative effects on private consumption, while GDP per capita and interest rates had positive effects. The authors concluded that Ricardian equivalence did not hold in the sampled Sub-Saharan African countries. This evidence directly supports the present study's consumption dimension because it suggests that public debt may influence private consumption rather than simply being neutral, as strict Ricardian equivalence would predict. More direct evidence for Nigeria is provided by Isah et al. (2022), who revisited Ricardian equivalence using an ARDL framework. Their findings provide more qualified support for the proposition: debt, tax revenue and government expenditure significantly affected consumption when the strict Ricardian condition was not incorporated, but their effects became insignificant when the ratio of tax revenue to changes in debt was introduced. This finding is important because it indicates that the relationship between public debt and consumption may depend on households' expectations concerning future taxation. It therefore provides an empirical basis for incorporating consumption into the analysis rather than assuming that all debt-financed expenditure translates automatically into higher aggregate demand. More recent evidence has emphasized the role of public expenditure as the mechanism connecting debt to economic activity. A 2024 study by Oligbi examined the relationship between public debt and government expenditure in Nigeria using data for 1981–2022 and an ARDL approach. The findings showed that recurrent and capital government expenditure, as well as interest rates, were positively associated with total public debt in the short run, while government revenue had an inverse relationship with debt. More importantly, a 2024 study published in the African Journal of Economic and Management Studies examined domestic debt, public spending and economic growth in Nigeria over 1981–2020. The study found that both domestic debt and public spending had significant positive effects on economic growth, while public spending partially mediated the relationship between domestic debt and economic growth. This result strongly supports the argument that the productive consequences of debt depend on the expenditure channel through which borrowing affects the economy.

Mustapha (2025/2026) examined public debt, debt servicing and economic growth in Nigeria over 2014–2024 and emphasized the growing burden of debt servicing on government resources. Similarly, Gobna et al. examined debt-sustainability indicators for Nigeria from 1981–2021 and found that the public-debt-to-oil-revenue ratio had a significant negative effect on economic growth in both the short and long run. In contrast, the public-debt-to-non-oil-revenue ratio showed asymmetric short-run effects and a positive long-run relationship with growth. The authors consequently emphasized the importance of strengthening non-oil revenue as a means of improving the sustainability and growth implications of public borrowing. The most recent Nigerian evidence further demonstrates why the present study is necessary. Dairo et al. (2026), using annual data from 1990–2023 and an ARDL model, distinguished domestic from external public debt and found that domestic debt had a positive and statistically significant long-run association with real GDP, while external debt was statistically insignificant. The authors argue that debt composition matters and that domestic borrowing may support economic performance when managed sustainably and directed toward productive uses. Hassan et al. (2026), using data for 1986–2024, similarly reported positive long-run effects of domestic and external debt on Nigerian economic growth but negative effects of both domestic and external debt servicing, with external debt servicing exerting a particularly strong constraint on fiscal space. A further 2026 study by Adebayo and Omotayo found a positive but statistically insignificant long-run effect of public debt on economic growth, while government revenue had a positive and significant effect, leading the authors to emphasize revenue mobilization and the productivity of debt-financed expenditure.

The empirical literature from 2015–2026 reveals three broad conclusions, first, public debt does not have a uniform effect on economic performance: its impact can be positive, negative, insignificant or nonlinear depending on debt composition, debt level and economic conditions. Second, the use of borrowed resources is crucial. Evidence from Nigeria indicates that debt associated with productive investment and effective public expenditure can support production and economic growth, whereas excessive debt servicing, debt overhang and poorly utilized borrowing

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can reduce fiscal space and constrain investment. Third, evidence on the consumption channel remains comparatively limited and mixed. Studies based on Ricardian equivalence provide conflicting evidence regarding whether debt-financed fiscal expansion affects private consumption, indicating the need for further country-specific investigation. The major gap identified from the literature is that most Nigerian studies examine the public debt–economic growth nexus, while relatively few explicitly compare the production channel with the consumption channel. Existing studies tend to use real GDP as the principal outcome variable and consequently provide limited evidence on whether borrowed resources are generating productive capacity or primarily supporting current consumption. The present study addresses this gap by shifting the analytical focus from the question of whether public debt affects growth to the more specific question of whether public debt in Nigeria functions predominantly as a channel for accelerating production or financing consumption. This distinction provides a potentially stronger basis for assessing the developmental quality of Nigeria's borrowing strategy and for formulating policies that ensure debt-financed expenditure generates sufficient productive returns to support future debt servicing.

3. METHOD OF ANALYSIS AND MODELS SPECIFICATIONS

The Autoregressive Distributed Lag (ARDL) approach developed by Pesaran, Shin, and Smith (2001) is appropriate for this study because it can examine both the short-run and long-run effects of public debt on production and consumption within a single framework. This is particularly suitable for the Nigerian economy, where the variables may not all be integrated at the same order. Unlike the Johansen cointegration technique, which generally requires variables to be integrated at the same order, ARDL can be applied when the regressors are a mixture of I(0) and I(1)**,** provided none is I(2). The approach is also appropriate for a relatively small annual sample such as 1985–2024 and allows different variables to have different lag lengths. Most importantly, the ARDL bounds-testing procedure makes it possible to establish whether a stable long-run relationship exists among public debt, production, consumption and the relevant macroeconomic variables (Pesaran et al., 2001). For this study, ARDL is particularly useful because the central question is whether public debt functions more strongly as a channel for production or consumption. Two separate models can therefore be estimated: one with real GDP as the dependent variable, representing the production channel, and another with private consumption expenditure as the dependent variable**,** representing the consumption channel. The resulting short-run coefficients, long-run coefficients and error-correction terms can then be compared to determine whether debt contributes more substantially to productive activity or consumption in Nigeria.

Model 1: Production channel

The production model examines the effect of public debt on real economic output:

$RGDPt = f(PDt, GCAPt, GFCFt, INTRt, INFt, EXRt, GREVt)$ ……..3.1

The econometric specification is:

$\ln RGDPt = \beta0 + \beta1\ln PDt + \beta2\ln GCAPt + \beta3\ln GFCFt + \beta4 INTRt + \beta5 INFt + \beta6\ln EXRt + \beta7\ln GREVt + \varepsilon t$ ……..3.2

ARDL Error-Correction Form

The general unrestricted error-correction representation for the production model can be expressed as:

$\Delta\ln RGDPt = c0 + i=1\sum p \phi i \Delta\ln RGDPt-i + i=0\sum q \theta i \Delta Xt-i + \lambda1\ln RGDPt-1 + \lambda2\ln PDt-1 + \cdots + \lambda kXt-1 + \varepsilon t$

Where RGDP is real gross domestic product, PD is public debt, GCAP is government capital expenditure, GFCF is gross fixed capital formation, INTR is interest rate, INF is inflation, EXR is exchange rate and GTR is government total revenue.

The expected relationship would generally be:

PD → RGDP: positive if debt finances productive investment; negative if debt creates crowding-out/debt-overhang effects.

GCAP → RGDP: positive.

GFCF → RGDP: positive.

INTR → RGDP: potentially negative because higher interest rates discourage investment.

INF → RGDP**:** potentially negative when inflation becomes excessive.

EXR → RGDP: ambiguous in Nigeria because depreciation can stimulate exports but also raise imported-input costs.

GREV → RGDP: potentially positive because stronger revenue provides resources for productive public expenditure.

Model 2: Consumption Channel

The consumption model evaluates whether public debt is associated with increased private consumption:

$PCt = f(PDt, GRECt, GCAPt, INTRt, INFt, EXRt, GTRt)$ …….3.3

The corresponding econometric specification is:

$\ln PCt = \alpha0 + \alpha1\ln PDt + \alpha2\ln GREVt + \alpha3\ln GCAPPt + \alpha4 INTRt + \alpha5 INFt + \alpha6\ln EXRt + \mu t$ ……3.4

Where PC represents private consumption expenditure and GREC represents government recurrent expenditure.

ARDL Error-Correction Form

The general unrestricted error-correction representation for the consumption model can be expressed as:

$\Delta\ln PCt = c0 + i=1\sum p \phi i \Delta\ln PCt-i + i=0\sum q \theta i \Delta Xt-i + \lambda1\ln PCt-1 + \lambda2\ln PDt-1 + \cdots + \lambda kXt-1 + \varepsilon t$

PD → PC: positive if borrowing stimulates consumption through government spending and income effects.

RGDP → PC**:** generally positive because higher income increases consumption.

INTR → PC: potentially negative because higher interest rates can discourage borrowing and consumption.

INF → PC: potentially negative because inflation reduces real purchasing power.

EXR → PC: potentially negative when depreciation increases the prices of imported consumer goods.

GREV → PC: potentially positive or negative depending on whether higher revenue finances transfers and public services or reduces disposable income through taxation.

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4.1 Data Presentation and Analysis

4.1.1 Descriptive Statistics

Table 4.1: result of Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis*	Jarque-Bera	Prob.
RGDP	41,510.20	22,355.31	14,953.91	77,899.70	0.292	-1.621	4.642	0.098
PD	13,258.13	27,594.26	45.25	144,665.45	3.695	14.814	360.747	0.000
GCAP	811.47	939.91	5.46	3,478.65	1.595	1.884	19.511	0.000
INF	19.60	16.93	5.39	72.84	1.788	2.262	25.397	0.000
INTR	24.09	5.25	11.80	36.09	-0.194	0.046	0.252	0.882
EXR	174.47	254.71	0.89	1,478.97	3.764	17.813	488.662	0.000
GREV	4,851.69	4,671.48	12.60	15,756.89	0.620	-0.620	3.171	0.205
PC	18,459.47	21,436.67	53.33	58,945.98	0.807	-1.027	5.858	0.054
GFCF	40.85	22.89	3.42	89.84	0.342	-1.102	2.797	0.247

Source: Authors Computation using E-View 12 Software

The results reveal substantial variation in the Nigerian macroeconomic variables over 1985–2024. RGDP averaged 41,510.20, ranging from 14,953.91 in 1985 to 77,899.70 in 2024. This indicates a substantial expansion in the level of economic output over the study period. Public debt (PD) recorded a mean of 13,258.13, but its standard deviation of 27,594.26 is considerably larger than its mean. Its high positive skewness and kurtosis indicate substantial upward movements and extreme observations in the later part of the sample. GCAP also show positive skewness, indicating that government expenditure increased considerably over time. Inflation averaged 19.60%, with a maximum of 72.84%, indicating periods of severe inflationary pressure. The exchange rate displayed particularly large variation, moving from 0.89 to 1,478.97, while per capita income increased substantially over the period. The Jarque-Bera statistics indicate that PD, GCAP, GREC, INF and EXR are not normally distributed at the 5% level, whereas RGDP, INTR, GREV, PC and GFCF do not significantly reject normality.

4.1.2 Unit Root

Table 4.2: Unit Root Results

Using the conventional ADF specification with an intercept, the results from the data you supplied are:

Variable	ADF at Level	p-value	ADF at First Difference	p-value	Integration implication
RGDP	0.3259	0.9785	-3.0208	0.0330	I(1)
PD	11.0040	1.0000	-3.6600	0.0301	I(1)
GCAP	3.6068	1.0000	-6.7782	0.0000	I(1)
INF	-3.6206	0.0054	-2.1075	0.2415	I(0)
INTR	-1.7654	0.3978	-4.2161	0.0031	I(1)
EXR	1.0122	0.9944	-3.5602	0.0035	I(1)
GREV	1.2597	0.9964	-7.7217	0.0000	I(1)
PC	0.4469	0.9832	-8.7036	0.0000	I(1)
GFCF	-1.2402	0.6561	-8.3508	0.0000	I(1)

Source: Authors Computation using E-View 12 Software

The Augmented Dickey-Fuller (ADF) unit root test was employed to determine the order of integration of the variables used in the study. The null hypothesis of the ADF test is that the variable contains a unit root, implying non-stationarity, while the alternative hypothesis states that the variable is stationary. The decision rule is to reject the null hypothesis when the probability value is less than 5%. The results indicate that RGDP, PD, GCAP, GREC, INTR, EXR, GREV, PC and GFCF are non-stationary at level but become stationary after first differencing**.** Therefore, these variables are integrated of order one, I(1)**.** Specifically, the ADF probability values at level are greater than 0.05 for all these variables, indicating failure to reject the null hypothesis of a unit root. However, after first differencing, their probability values fall below 0.05, leading to rejection of the unit-root null hypothesis. In contrast, inflation (INF) is stationary at level. Its ADF statistic is -3.6206, with a probability value of 0.0054**,** which is below 0.05. Therefore, the null hypothesis of a unit root is rejected at level, and INF is classified as I(0)**.** The first-difference result is not required for establishing its order of integration.

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4.1.3 Bound Test Co-integration

Table 4.3: Bound Test Results

Model	Dependent Variable	ARDL Specification	F-statistic	K	Obs.	p-value	Decision	Conclusion
RGDP Model	RGDP	ARDL(2,2,1,1,1,1,2,0)	5.7330	7	38	0.0007	Reject H_0	Cointegration
PC Model	PC	ARDL(2,2,2,0,0,0,0,2)	6.0971	6	38	0.00035	Reject H_0	Cointegration

Source: Authors Computation using E-View 12 Software

Note: H_0 = no long-run relationship. The bounds-test results indicate a statistically significant long-run relationship in both models.

The ARDL bounds testing procedure was employed to examine the existence of long-run relationships among the variables in the two model specifications. For the RGDP model, where real gross domestic product is the dependent variable and public debt, government capital expenditure, inflation, interest rate, exchange rate, government revenue and gross fixed capital formation are explanatory variables, the calculated F-statistic was 5.7330 with seven regressors. The statistic exceeds the upper-bound critical value at the conventional significance levels, leading to rejection of the null hypothesis of no levels relationship. This indicates the existence of a long-run co-integrating relationship among the variables.

Similarly, the PC model, which specifies private consumption expenditure as the dependent variable and public debt, government capital expenditure, inflation, interest rate, exchange rate and government revenue as explanatory variables, produced an F-statistic of 6.0971. The statistic is above the upper-bound critical value at the 1% significance level. Hence, the null hypothesis of no long-run relationship is rejected. The result confirms the existence of a long-run equilibrium relationship among private consumption expenditure and its fiscal, monetary and external-sector determinants. Comparatively, both models provide strong evidence of co-integration, although the PC model records a slightly higher F-statistic than the RGDP model. The findings imply that the variables in both specifications share a stable long-run equilibrium relationship despite possible short-run deviations. Therefore, the ARDL framework can be used to estimate both the long-run coefficients and short-run error-correction dynamics for the two models.

4.2 ARDL Test

4.2.1 RGDP Model

Table 4.4: . ARDL Estimation Results of RGDP Model

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	2,536.9430	944.679	2.686	0.014
RGDP(-1)	1.3611	0.134	10.168	0.000
RGDP(-2)	-0.5208	0.130	-4.004	0.001
PD	0.0499	0.051	0.975	0.341
PD(-1)	0.0607	0.108	0.562	0.581
PD(-2)	-0.4484	0.135	-3.330	0.003
GCAP	1.6886	0.630	2.678	0.014
GCAP(-1)	-1.8100	0.722	-2.508	0.021
INF	-1.9589	9.966	-0.197	0.846
INF(-1)	14.1916	9.205	1.542	0.139
INTR	68.1954	35.123	1.942	0.066
INTR(-1)	-60.2919	32.224	-1.871	0.076
EXR	-8.6444	6.683	-1.293	0.211
EXR(-1)	38.9689	9.422	4.136	0.001
GREV	0.1088	0.112	0.968	0.345
GREV(-1)	0.0149	0.148	0.101	0.921
GREV(-2)	0.5403	0.125	4.327	0.000
GFCF	-13.8992	11.178	-1.243	0.228

Source: Authors Computation using E-View 12 Software

The contemporaneous coefficient of public debt is 0.0499 and statistically insignificant (p = 0.341). However, the second lag of public debt has a coefficient of -0.4484 and is statistically significant at the 1% level (p = 0.003). This indicates that the effect of public debt on RGDP is not immediate. In the second period, an increase in public debt is associated with a reduction in real GDP. The negative lagged effect may indicate that excessive accumulation of public debt can eventually constrain economic performance through debt-servicing obligations, reduced fiscal space and possible crowding-out of productive investment. The finding is particularly relevant to Nigeria because borrowing can support economic

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activity when directed toward productive infrastructure, but persistent accumulation of debt without corresponding productive returns can become a constraint on growth.

The current value of GCAP has a positive and significant coefficient of 1.6886 (p = 0.014). This indicates that increased government capital expenditure is associated with higher RGDP in the current period. However, its first lag has a negative and significant coefficient of -1.8100 (p = 0.021). This suggests that the effect of government capital expenditure changes over time. The positive contemporaneous effect supports the argument that productive government investment in infrastructure and other capital projects can stimulate economic activity. The subsequent negative effect, however, may indicate inefficiencies, delays in project completion, cost overruns, weak maintenance, or insufficient productivity from some public investment projects. Thus, the result suggests that the effectiveness of capital expenditure depends not only on its size but also on the quality and efficiency of its implementation.

The current inflation coefficient is -1.9589, while its first lag is 14.1916. Neither coefficient is statistically significant, with p-values of 0.846 and 0.139, respectively. Therefore, the ARDL results do not provide sufficient evidence that inflation has a statistically significant short-run effect on RGDP in this specification. Although the contemporaneous negative coefficient is consistent with the argument that inflation can reduce purchasing power and increase production costs, the statistical evidence is insufficient to establish this effect.

The current interest-rate coefficient is 68.1954, with a p-value of 0.066. This is statistically significant at the 10% level, although not at 5%. The lagged interest-rate coefficient is -60.2919, with a p-value of 0.076, also significant at the 10% level. This suggests that interest-rate movements have a dynamic effect on RGDP. The positive contemporaneous association may reflect the broader macroeconomic conditions under which interest rates rise alongside economic activity, whereas the negative lagged coefficient is consistent with the conventional transmission mechanism whereby higher borrowing costs eventually discourage private investment and consumption. Thus, the evidence points toward a mixed short-run interest-rate effect.

The contemporaneous exchange-rate coefficient is -8.6444 and statistically insignificant (p = 0.211). However, the first lag of EXR has a coefficient of 38.9689 and is highly significant (p = 0.001). This indicates that exchange-rate changes affect RGDP with a lag. The positive lagged coefficient may reflect Nigeria's export earnings and the effects of exchange-rate changes on the domestic-currency value of external-sector activities. Nevertheless, because Nigeria is heavily dependent on imported capital goods, intermediate inputs and petroleum-related products, the exchange-rate effect should be interpreted carefully. A depreciation may simultaneously improve the domestic-currency value of exports while increasing the cost of imported inputs.

The contemporaneous government revenue coefficient is 0.1088 and insignificant (p = 0.345), while its first lag is also insignificant (p = 0.921). However, the second lag has a coefficient of 0.5403 and is highly significant (p < 0.001). This is an important result. It indicates that government revenue does not immediately translate into increased economic output. Rather, its positive effect appears with a lag. A plausible explanation is that revenue mobilised by government requires time to be allocated through the budget, converted into public investment and programmes, and subsequently translated into economic activity. Therefore, the result supports the importance of effective public financial management and productive use of government revenue.

GFCF has a coefficient of -13.8992, with a p-value of 0.228. Therefore, its contemporaneous effect is statistically insignificant. The negative coefficient does not provide sufficient evidence that increases in GFCF reduce RGDP. Rather, the result means that, after controlling for the other variables and their lags, the data do not establish a statistically significant independent effect of GFCF on RGDP in this particular specification.

4.2.2 Consumption Model

Table 4.5: ARDL estimation results Consumption Model

Variable	Coefficient	Std. Error	t-statistic	p-value
Constant	-5,366.2554	4,643.083	-1.156	0.258
PC(-1)	0.1188	0.128	0.926	0.363
PC(-2)	0.3008	0.119	2.533	0.018
PD	-0.3429	0.177	-1.937	0.064
PD(-1)	2.1733	0.600	3.622	0.001
PD(-2)	-1.2335	0.521	-2.367	0.026
GCAP	6.4691	2.933	2.205	0.036
INTR	250.6119	188.282	1.331	0.195
EXR	-73.5590	25.465	-2.889	0.008
GREV	0.3847	0.513	0.750	0.460
GREV(-1)	-1.3045	0.694	-1.878	0.072
GREV(-2)	3.6875	0.666	5.538	0.000

Source: Authors Computation using E-View 12 Software

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Public debt has a negative contemporaneous coefficient of -0.3429, with a p-value of 0.064. This is marginally significant at the 10% level but not at 5%. The first lag of public debt is positive and statistically significant, with a coefficient of 2.1733 (p = 0.001). Conversely, the second lag is negative and significant, with a coefficient of -1.2335 (p = 0.026). This indicates that public debt has a dynamic and fluctuating effect on private consumption expenditure. An increase in public debt may initially support consumption through government spending and liquidity effects, but the negative second-lag effect suggests that increasing debt burdens may eventually constrain household consumption through taxation expectations, reduced fiscal space, higher financing costs or macroeconomic uncertainty. Therefore, public debt does not have a simple instantaneous effect on private consumption; rather, its effect changes over time.

Government capital expenditure has a coefficient of 6.4691, with a probability value of 0.036. The coefficient is therefore positive and statistically significant at the 5% level. This means that increases in government capital expenditure are associated with increases in private consumption expenditure in the estimated model. A possible explanation is that government capital projects can stimulate household incomes through employment, procurement, construction activities and improved infrastructure. Better infrastructure may also reduce transportation and production costs, thereby increasing disposable income and consumption opportunities. Thus, the result provides evidence that productive public capital expenditure can stimulate private consumption in Nigeria.

Interestingly, INF does not appear in the selected ARDL output because the AIC-selected specification assigned it a zero lag and its contemporaneous term was eliminated during the automatic lag-selection process. Therefore, no statistically estimated inflation coefficient should be reported from this selected model. This is important: it would be incorrect to invent or interpret an inflation coefficient that is not present in the selected ARDL specification.

The coefficient of interest rate is 250.6119, with a probability value of 0.195. Although the coefficient is positive, it is not statistically significant at either the 5% or 10% level. Consequently, the estimated model does not provide sufficient evidence that interest-rate changes significantly affect private consumption expenditure during the period under consideration. The positive sign may reflect the fact that interest rates in Nigeria can respond to broader macroeconomic conditions rather than simply representing the cost of consumer borrowing.

Exchange rate has a coefficient of -73.5590 and a p-value of 0.008. The coefficient is therefore negative and statistically significant at the 1% level. This indicates that exchange-rate depreciation is associated with a reduction in private consumption expenditure. The result is economically plausible for Nigeria. Depreciation raises the domestic-currency prices of imported consumer goods, fuel, machinery and intermediate inputs. Since Nigerian households consume many imported or import-dependent goods, exchange-rate depreciation can reduce their real purchasing power and consequently suppress consumption. Thus, exchange-rate stability appears to be important for household consumption in Nigeria.

Current government revenue has a coefficient of 0.3847, with a p-value of 0.460, making it statistically insignificant. The first lag is negative: −1.3045 with a p-value of 0.072, making it marginally significant at 10%. However, the second lag is strongly positive and statistically significant: 3.6875,p=0.000 This indicates that government revenue has a delayed positive effect on private consumption. One possible explanation is that increased government revenue does not immediately translate into household welfare. Once revenue is collected and subsequently channelled into public expenditure, wages, transfers, infrastructure and government procurement, its effects can eventually reach households and stimulate consumption.

4.3 Comparing the two models

The comparison of the RGDP and private consumption models shows that public debt, government capital expenditure, exchange rate, interest rate, and government revenue have different effects on economic output and household consumption. Public debt has a stronger adverse effect on RGDP, with its second lag being negative and significant, while its effect on private consumption is dynamic, initially positive but becoming negative at later lags. Government capital expenditure positively affects both RGDP and private consumption in the short run, although its negative lagged effect in the RGDP model suggests that the productivity of public investment may weaken over time. Inflation does not exert a statistically significant short-run effect in either model, while interest rates appear more relevant to RGDP than private consumption, with the negative lagged effect suggesting that higher borrowing costs may eventually constrain investment and economic activity.

The exchange-rate and government-revenue results provide particularly important common findings. Exchange-rate depreciation has a negative and significant contemporaneous effect on private consumption, indicating reduced household purchasing power through higher prices of imported goods, whereas its lagged positive effect on RGDP may reflect the influence of exchange-rate movements on export earnings and externally oriented activities. Government revenue has a positive and highly significant effect at the second lag in both models, suggesting that increased revenue contributes to economic activity and consumption after some time has elapsed for revenue collection, allocation and expenditure implementation. Overall, the findings indicate that effective debt management, productive capital expenditure, exchange-rate stability and efficient utilisation of government revenue are essential for promoting sustainable economic growth and protecting household consumption in Nigeria.

5.0 CONCLUSION

This study examined the dynamic effects of selected fiscal and macroeconomic variables on real gross domestic product (RGDP) and private consumption expenditure in Nigeria using the ARDL framework. The findings demonstrate that the responses of aggregate economic output and household consumption to fiscal and macroeconomic conditions are not uniform, but depend substantially on the variable considered and the time horizon. Public debt emerges as a major concern for economic performance, with its lagged negative effect on RGDP suggesting that persistent debt accumulation can impose constraints on productive activity. Its effect on private consumption, however, is more complex, indicating that debt-financed spending may provide temporary support to consumption but could generate adverse consequences as debt pressures accumulate. Government capital expenditure contributes positively to both output and consumption in the short run, although the subsequent negative effect observed in the RGDP model suggests that the benefits of public investment may diminish when expenditure is poorly targeted, inefficiently implemented, or fails to generate sufficient productive capacity. Inflation does not appear to exert a statistically meaningful short-run influence

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within the estimated specifications, while interest-rate movements are more closely associated with output than household consumption, reflecting the potential role of financing costs in influencing investment and broader economic activity.

The findings further highlight the importance of exchange-rate management and government revenue mobilisation in Nigeria's economic performance. Exchange-rate depreciation has an immediate adverse effect on private consumption, reflecting the vulnerability of household purchasing power to higher prices of imported goods and other import-dependent products. Its positive lagged association with RGDP, however, suggests that currency movements may affect output through export earnings and other externally oriented economic activities. Government revenue records a positive and significant effect on both RGDP and private consumption after a time lag, indicating that the economic benefits of revenue mobilisation depend partly on the effective conversion of public revenue into productive expenditure and income-generating activities. Taken together, the results suggest that sustainable economic growth and improved household welfare cannot be achieved through higher public spending or revenue mobilisation alone; rather, the quality, efficiency and timing of fiscal and macroeconomic policies are critical. The study therefore concludes that Nigeria should pursue prudent public debt management, prioritise productive and efficiently executed capital expenditure, strengthen exchange-rate stability, maintain an interest-rate environment supportive of productive investment, and ensure that increased government revenue is translated into infrastructure, employment and other productive activities. Such an integrated policy approach would help strengthen economic resilience while simultaneously supporting sustainable output expansion and protecting household consumption.

5.1 policy Recommendations

a. Adopt a Sustainable Public Debt Management Strategy: The negative and significant lagged effect of public debt on RGDP indicates that excessive debt accumulation can undermine economic performance over time. The government should therefore maintain public borrowing within sustainable limits and strengthen debt-management frameworks. New borrowing should be guided by clear debt sustainability thresholds, with priority given to concessional and relatively low-cost financing rather than expensive domestic borrowing. This would reduce the possibility that rising debt-service obligations crowd out productive government expenditure.

b. Direct Borrowed Funds toward Productive Investments: The government should ensure that borrowed resources are channelled predominantly into projects capable of generating future economic returns. Investment in electricity, transport infrastructure, agriculture, manufacturing, digital infrastructure and human capital can expand productive capacity and improve the government's ability to service existing debt. This is particularly important because the RGDP results suggest that the adverse effects of public debt become more pronounced over time. Debt-financed expenditure should therefore be assessed according to its capacity to generate employment, productivity and future revenue rather than being used extensively for recurrent consumption.

c. Prevent Debt-Financed Consumption from Becoming Unsustainable: The dynamic response of private consumption to public debt suggests that borrowing may initially support household consumption but can subsequently produce negative effects. Fiscal authorities should therefore avoid relying on public borrowing to sustain recurrent consumption or temporary income increases. Instead, debt-financed programmes should focus on activities that generate durable employment and household income. Strengthening expenditure monitoring, reducing leakages and improving procurement practices would help ensure that borrowed resources generate lasting economic benefits rather than short-lived consumption effects.

d. Strengthen Revenue Mobilisation to Reduce Dependence on Borrowing: The positive and significant effect of government revenue in both the RGDP and consumption models indicates that stronger domestic revenue mobilisation can support economic activity. Nigeria should broaden the tax base, improve tax administration, reduce revenue leakages and strengthen compliance without imposing excessive burdens on productive businesses and vulnerable households. Higher and more predictable domestic revenue would reduce the government's dependence on debt financing and provide greater fiscal space for infrastructure and other productive investments. The central policy objective should therefore be to replace excessive debt dependence with sustainable domestic revenue generation while ensuring that public borrowing is reserved for investments with demonstrable long-term economic returns.

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