

Public Debt and Economic Growth in Nigeria: An Empirical Analysis (1986-2024)

Hassan, Mohammed Nezifi; Salihu H. Muhammed-Gani; and Osekweyi Joel Odonye

Nasarawa State University, Keffi.

Corresponding author: hass24u2013@gmail.com

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Abstract

This study examines the impact of public debt on Nigeria's economic growth from 1986 to 2024, focusing on real GDP growth, domestic debt, external debt, domestic debt servicing, and external debt servicing. Using the Autoregressive Distributed Lag (ARDL) approach, annual time series data were obtained from the Central Bank of Nigeria, International Monetary Fund, and World Bank. Findings reveal that domestic and external debts have significant positive long-run effects on growth, indicating their role in financing productive investments and infrastructure. Conversely, domestic debt servicing and external debt servicing exert significant negative impacts, with external servicing posing a greater constraint on fiscal space and long-term development. In the short run, new borrowing supports growth, while servicing obligations slightly reduce output. Granger causality analysis shows bidirectional causality between domestic debt and growth, and unidirectional effects from external debt and both servicing components to growth. Diagnostic and stability tests confirm the robustness of the model. The study concludes that prudently managed borrowing targeted at high-return projects can enhance growth, but rising servicing costs—especially external—erode these gains. Policy recommendations include restructuring domestic debt portfolios, prioritizing concessional external loans, strengthening legislative oversight on borrowing thresholds, ensuring domestic debt issuance does not crowd out private investment, and enforcing transparency and accountability in project execution. These measures are essential for sustaining the growth benefits of debt while mitigating long-term fiscal risks.

Keywords: Public Debt, Domestic Debt, External Debt, Debt Servicing, Economic Growth, Nigeria.

Introduction

Public debt plays a critical role in supporting economic growth when strategically utilised for infrastructure development and macroeconomic stability. Globally, well-managed public debt enables governments to respond effectively to economic downturns and external shocks. Recent studies confirm that carefully structured debt policies enhance fiscal flexibility and sustain long-term economic stability (Urakin, 2024; Shobande & Ogbeifun, 2025). The International Monetary Fund (IMF, 2023) reported a global decline in public debt-to-GDP from 100% in 2020 to 92% in 2022, largely due to robust GDP growth.

However, projections indicate a renewed upward trend from 2023, driven by rising debt servicing costs and exchange rate challenges.

In Africa, the fiscal impact of rising debt is more severe, reflecting structural vulnerabilities, limited fiscal buffers, and susceptibility to external shocks. The African Development Bank (AfDB, 2020) observed that the continent's average debt-to-GDP ratio rose from 35% in 2012 to 60% in 2019, with the COVID-19 pandemic intensifying this trajectory. Countries such as Zambia and Kenya have experienced heightened debt servicing pressures, diverting resources from essential development projects (World Bank, 2022).

Nigeria mirrors these trends, with total public debt rising sharply from 12.6% of GDP in 2015 to 35% in 2019, driven by declining oil revenues, currency depreciation, and expanded borrowing (IMF, 2023). Historical episodes such as the Structural Adjustment Programme (SAP) of the mid-1980s, the Paris Club debt relief of 2005–2006, and the Economic Recovery and Growth Plan (ERGP) of 2017–2020 illustrate shifting debt management strategies over time. Despite these interventions, the burden of servicing external and domestic debts continues to constrain fiscal space, limiting investments in critical sectors like healthcare, education, and infrastructure (UNCTAD, 2023; Adegbite & Bello, 2024).

Empirical evidence on Nigeria's debt–growth nexus presents mixed outcomes. Moderate debt levels have been found to stimulate growth by financing productive investments (Akinola & Okoye, 2024), while excessive debt servicing obligations can crowd out private investment and erode growth prospects (Kpalukwu & Ezekwe, 2023). More recent studies also underscore the influence of governance quality, corruption, and debt composition on growth outcomes (Ogunleye & Ijaiya, 2025).

This study focuses on the period 1986–2024, a timeframe that captures Nigeria's major debt policy episodes—from the post-SAP reforms, through debt relief and restructuring initiatives, to contemporary borrowing patterns in response to oil price shocks and fiscal deficits. By disaggregating debt into domestic and external components, alongside their respective servicing obligations, the research aims to provide a nuanced understanding of how different debt instruments influence Nigeria's economic growth. The findings will offer evidence-based insights to guide sustainable debt management and fiscal policy design.

Statement of the Research Problem

Public debt remains a critical concern globally, with significant implications for economic stability and growth. Although the global debt-to-GDP ratio declined from 100% in 2020 to 92% in 2022—driven by post-pandemic GDP recovery and reduced fiscal stimuli (IMF, 2023)—debt sustainability concerns persist due to escalating servicing costs, currency volatility, and persistent fiscal deficits. In advanced economies such as the United States and Japan, debt ratios exceeding 120% and 260% of GDP, respectively, highlight the urgency for effective debt management (World Bank, 2023).

In Nigeria, the challenge is more acute. Debt servicing consumed over 90% of government revenues in 2022, severely constraining fiscal space for critical sectors such as education, healthcare, and infrastructure (CBN, 2023). Heavy reliance on external debt instruments,

including Eurobonds, heightens vulnerability to exchange rate shocks and global financial market volatility (DMO, 2022). Despite notable policy initiatives—including the 2005 Paris Club debt relief, the Fiscal Responsibility Act of 2007, and more recent strategies under the Economic Recovery and Growth Plan (ERGP)—the debt burden has continued to rise, reflecting structural economic weaknesses, low domestic revenue mobilisation, and over-dependence on oil exports.

Against this backdrop, there is a pressing need for an evidence-based assessment of how different categories of debt—domestic and external—and their servicing obligations influence Nigeria's economic growth. This study therefore examines the period 1986–2024, covering major policy episodes and shifts in debt composition, to generate insights that can guide sustainable debt management and safeguard long-term fiscal stability.

The specific objectives are to:

- i. examine the relationship between domestic public debt and Nigeria's economic growth:
- ii. assess the impact of external public debt on Nigeria's economic growth:
- iii. investigate the impact of domestic debt servicing on Nigeria's economic growth
- iv. analyze the impact of external debt servicing on Nigeria's economic growth

Literature Review

Conceptual, Theoretical and Empirical Review

Domestic Debt

Domestic debt refers to the financial obligations that a government owes to creditors within its own borders (Ergen & Güzhan, 2022). It can be denominated in either local or foreign currencies but is issued under the legal framework of the issuing country and subject to domestic laws and regulations (Erce et al., 2022). Domestic debt instruments are typically issued under domestic jurisdiction and are primarily held by domestic creditors, though foreign investors can also participate (Erce et al., 2022; Fir, 2020).

In Nigeria, domestic debt largely consists of naira-denominated instruments such as Treasury bills, FGN bonds, and Sukuk, held mainly by local banks, pension funds, and other institutional investors. Such borrowing reduces reliance on foreign debt and funds national development programs (Fujita, 2023; Bahr et al., 2020). Domestic debt can serve as a catalyst for economic growth and as a buffer during financial crises, particularly when it adheres to prudent and ethical financial management (Furqani et al., 2023). African experiences, such as Ghana's Domestic Debt Exchange Programme (DDEP), underscore how domestic debt can become a focus of restructuring during periods of fiscal stress, with implications for banking sector stability and investment flows.

External Debt

External debt encompasses a nation's financial obligations to foreign entities—governments, international institutions, and private creditors—often denominated in

foreign currencies (Bunevich et al., 2020; Ogbonna et al., 2021). It arises from borrowing funds externally to finance developmental projects or bridge budget gaps (Cline in Ogbonna et al., 2021). Omotor (2021) notes that such debt reflects the borrowing history and repayment profile of a country, affecting economic stability, currency dynamics, and international credit standing.

Mijiyawa (2022) defines external debt as the outstanding liabilities owed to non-resident stakeholders, including both public and private borrowings. For developing economies such as Nigeria, prudent external debt management is essential for maintaining external balance, ensuring debt sustainability, and preserving macroeconomic stability amid global uncertainties. Mahara and Dhakal (2020) and Alwi et al. (2020) emphasize that external debt, when effectively managed, can finance budget deficits and promote growth, but excessive reliance may lead to currency risk and vulnerability to external shocks. Comparisons with Zambia's external debt restructuring highlight the risks of rising foreign-currency obligations in African contexts.

Domestic Debt Servicing

Domestic debt servicing refers to the process of repaying interest and principal on obligations borrowed from domestic sources such as individuals, financial institutions, and the central bank (Okeke et al., 2022). This typically involves regular payments arising from instruments like Treasury bills and bonds. Olusegun et al. (2021) frame it as a fiscal management tool for addressing past budget deficits, while Yusuf and Mohd (2021) stress that timely repayments maintain the government's credibility and investor confidence. Tawiah and Gyapong (2023) highlight that effective domestic debt servicing sustains the government's debt portfolio and helps preserve macroeconomic stability.

External Debt Servicing

External debt servicing is the repayment of principal and interest to foreign creditors, and is a critical aspect of fiscal policy in developing countries (Chien et al., 2022). Misunderstandings about its effects can obscure its economic implications (Didia & Ayokunle, 2020). It involves regular payments to service loans, bonds, and other obligations, with the World Bank (2021) noting its potential impact on a country's balance of payments. Mahmud and Ogwuzebe (2021) stress that both principal and interest repayments must be managed effectively to avoid debt distress (Anyanwu, 2020). Ogbonna et al. (2021) draw attention to the distinction between principal and interest payments in assessing debt sustainability. Poorly managed external debt servicing can trigger financial instability, while sound management supports economic resilience (Lyamzina & Harbinska-Rudenko, 2022). Lessons from African economies such as Ghana and Zambia show that surges in external debt service obligations can precipitate restructuring efforts, underscoring the need for proactive fiscal planning in Nigeria's context.

Theoretical Framework**Debt Sustainability Theory**

Debt Sustainability Theory is a framework used in economics to assess whether a country's level of debt is sustainable over the long term (Bandiera & Tsiropoulos, 2020). The theory was propounded by Ferrarin et al. (2012) and provides policymakers and analysts with tools to evaluate a country's ability to meet its debt obligations without compromising its economic stability. It considers various economic, fiscal, and external factors to determine debt sustainability (Joy & Panda, 2021).

Debt Sustainability Theory focuses on a country's ability to meet its current and future debt repayment obligations without jeopardizing economic growth or resorting to debt rescheduling programs (Laskaridis, 2021). The theory analyzes public debt determinants and examines its sustainability over specific periods. It is guided by Bohn's sustainability framework, which explores public debt sustainability across nations and the role of political-economic variables in influencing debt levels. The theory incorporates several assumptions that underpin its analysis. First, it assumes that a country's debt-to-GDP ratio is a critical indicator of its debt capacity, with sustainable debt levels requiring economic output sufficient to service debt obligations. Second, it presumes that fiscal policy adjustments, such as increased taxation or reduced government spending, are feasible for maintaining debt sustainability. Third, the theory assumes that external factors, including global economic conditions and exchange rate stability, significantly influence a country's debt repayment ability. Lastly, it presupposes that debt sustainability is dynamic and sensitive to changes in fiscal policies, economic growth rates, and interest rates.

According to Bandiera and Tsiropoulos (2020), several key components form the basis of Debt Sustainability Theory. The debt-to-GDP ratio is a primary indicator, as it provides a measure of a country's debt relative to its economic output. A high debt-to-GDP ratio can signal potential difficulties in generating sufficient economic output to service debt. Debt service ratios are also critical, assessing the proportion of government revenue allocated to paying interest and principal.

Criticism of Debt Sustainability Theory arises from various perspectives. Grosu et al. (2022) argue that the theory may not adequately account for the instability of public debt over specific periods, as revealed by empirical studies. Additionally, Ahmed (2022) criticizes the theory for not clearly defining a threshold for public debt sustainability, which must consider not only the size of public debt but also its impact on inequality. Moreover, the theory's reliance on assumptions about debt management is problematic in a stochastic economy, where economic conditions are unpredictable. These criticisms underscore the need for a more comprehensive and flexible approach when applying the theory.

Debt Sustainability Theory is applied in public debt management by evaluating the impact of debt on economic growth and capital formation, examining sustainability across different countries, and exploring the relationship between debt levels and sustainable national development. It also considers political-economic variables such as election years,

government coalitions, ideology, and unemployment rates, which can significantly influence public debt sustainability.

A mathematical model commonly used in debt sustainability analysis is based on the government budget constraint:

$$\Delta b_t = (r - g) b_t - p_t$$

where:

Δ is the change in the debt-to-GDP ratio at time t ,

r is the effective interest rate on debt,

g is the real GDP growth rate,

b_t is the debt-to-GDP ratio from the previous period,

p_t is the primary fiscal balance as a percentage of GDP.

This model shows that debt sustainability depends on the relationship between the interest rate and economic growth, as well as the government's primary fiscal balance. If the interest rate exceeds the growth rate ($r > g$), a country must maintain a primary surplus ($p_t > 0$) to stabilize or reduce its debt-to-GDP ratio. Conversely, if the growth rate exceeds the interest rate ($r < g$), a country can maintain debt sustainability even with a primary deficit.

Neoclassical Growth Theory

The Neoclassical Growth Theory, developed by Robert Solow and Trevor Swan in 1956, is a cornerstone of modern economic thought. Their foundational work was presented in two seminal papers: Solow's "A Contribution to the Theory of Economic Growth" and Swan's "Economic Growth and Capital Accumulation." Together, these contributions introduced the Solow-Swan model, which emphasizes the critical roles of capital accumulation, technological progress, and labor in driving economic growth. A key innovation of Solow's model was the introduction of exogenous technological progress as a determinant of long-run growth. Swan complemented this by emphasizing the importance of savings and investment rates in influencing growth, as well as the role of international trade.

The Neoclassical Growth Theory is based on several fundamental assumptions that frame its analysis. First, the model assumes diminishing returns to capital and labor, implying that as more capital is added, holding other factors constant, the incremental output will decrease. Second, the theory posits that technological progress is exogenous, meaning it occurs independently of economic factors and policy decisions. Third, the model operates under the assumption of perfect competition, where markets function efficiently, and factors of production are paid according to their marginal product. Fourth, it assumes that savings are a fixed proportion of income, leading to a steady-state level of capital where investment equals depreciation. Lastly, the model assumes closed or open economies with the possibility of trade and capital flows, acknowledging the influence of global economic integration on growth dynamics.

The Solow-Swan model provides a framework for analyzing the impact of public debt on economic growth. Public debt influences savings and investment rates, which are pivotal in the model. High levels of public debt can crowd out private investment by increasing

interest rates, reducing the availability of funds for private sector borrowing (Barro, 1990). This dampens capital accumulation, a critical driver of growth. Furthermore, public debt can necessitate future tax increases to service the debt, lowering disposable income and private savings, further constraining investment (Afonso & Jalles, 2013). Public debt also has implications for productivity and technological progress. Excessive debt can lead to fiscal imbalances, reducing public investment in areas such as education, infrastructure, and R&D, which are essential for long-term productivity growth (Milesi-Ferretti & Perotti, 1999). Additionally, high public debt levels can destabilize economies by increasing the risk of sovereign default, elevating borrowing costs, and triggering capital flight, all of which undermine economic growth (Reinhart & Rogoff, 2010).

Despite its contributions, the Neoclassical Growth Theory faces criticism. Its assumption of exogenous technological change has been challenged by Romer (1990), who advocates for endogenous technological progress driven by innovation and R&D. The convergence hypothesis, which suggests that poorer economies should grow faster than richer ones, is shown to be conditional on factors like institutional quality and policy environments (Barro & Sala-i-Martin, 1995). Additionally, the model's emphasis on capital and labor neglects the significant roles of human capital and institutions. Mankiw, Romer, and Weil (1992) highlight the importance of education and skills, while Acemoglu, Johnson, and Robinson (2001) underscore the impact of institutions. The model also overlooks short-term economic fluctuations, a limitation addressed by Aghion and Howitt (2009) through Schumpeterian growth dynamics. Recent empirical studies by Hanushek and Woessmann (2020) and Rodrik, Subramanian, and Trebbi (2004) further emphasize the importance of human capital and institutional quality in driving economic performance. The mathematical representation of the Solow-Swan model centers on the production function:

$$Y = A(t) K^{\alpha} L^{1-\alpha}$$

where:

Y is total output,

A(t) represents technology, which grows exogenously over time,

K is capital stock,

L is labour,

α is the output elasticity of capital (with $0 < \alpha < 1$).

Capital accumulation is given by:

$$\dot{K} = sY - \delta K$$

where:

$\dot{K}$ is the change in capital stock,

s is the savings rate,

δ is the depreciation rate.

At steady-state, the growth rate of output is driven solely by the growth rate of technology and labour:

$$gY = gA + gL$$

This model demonstrates how public debt, by affecting savings and investment, influences capital accumulation and ultimately economic growth. It also highlights the crucial role of technological progress as the primary driver of long-term growth. The framework underscores the importance of prudent public debt management to ensure sustained economic expansion.

This study applies Debt Sustainability Theory and Neoclassical Growth Theory to explain how public debt influences economic growth. The empirical model includes only variables measured in the study, ensuring a direct alignment between theory and data. Debt Sustainability Theory suggests that when public debt rises beyond the country's repayment capacity, it can undermine macroeconomic stability and growth. In this context, domestic debt as a percentage of GDP represents the portion of total debt that draws on local financial markets; excessive levels may crowd out private investment and strain domestic credit availability, potentially reducing growth. External debt as a percentage of GDP represents obligations to non-residents; high levels may expose the economy to exchange rate and refinancing risks, thereby affecting growth. Domestic debt service, measured as a percentage of government revenue, reflects the share of fiscal resources used to meet interest and principal payments on domestic debt; high levels may divert funds from productive public investment. External debt service, measured as a percentage of government revenue or exports, captures the fiscal burden of servicing foreign debt; high levels may cause balance-of-payments pressures and reduce resources for growth-enhancing expenditures. Debt sustainability declines—and economic growth slows—when either debt stock (domestic or external) or debt service ratios rise beyond manageable levels relative to the country's repayment capacity.

The Neoclassical Growth Theory (Solow-Swan model) highlights capital accumulation, savings, and labor productivity as drivers of growth. Public debt influences these through its effect on investment and fiscal policy. High domestic borrowing can raise domestic interest rates, crowding out private investment, thus reducing capital accumulation. While external debt can provide capital for investment, excessive reliance may lead to debt overhang, where future debt service obligations discourage both domestic and foreign investment. High domestic debt service obligations reduce government capacity to invest in infrastructure, education, and technology, all of which are critical for productivity growth. High external debt servicing can lead to reduced foreign reserves, higher vulnerability to shocks, and constrained public investment, thereby lowering growth potential. Optimal and well-managed debt, whether domestic or external, can enhance capital formation, but high debt service obligations crowd out growth-enhancing expenditures.

Table 2.1: Summary Table – Linking Theories to Study Variables

Theoretical Construct	Study Variable	Expected Relationship with Growth	Theory
Debt sustainability capacity	Domestic Debt (% of GDP)	Negative at high levels	Debt Sustainability Theory / Neoclassical Growth Theory
Debt sustainability capacity	External Debt (% of GDP)	Negative at high levels	Debt Sustainability Theory / Neoclassical Growth Theory
Fiscal burden of debt	Domestic Debt Service (% of revenue)	Negative	Debt Sustainability Theory
Fiscal burden of debt	External Debt Service (% of revenue or exports)	Negative	Debt Sustainability Theory

Source: Researcher's Compilation, 2025

Empirical Review

Amu, et al. (2025) examined the relationships between public debts and economic development in Nigeria. The specific objectives were to assess the effects of public debt on economic growth rate, aggregate demands, sectoral compositions and to find out if there exists any threshold relationship between debt accumulation and economic development in Nigeria. An ex-post facto research design was adopted in the study. With the aid of E-view statistical package, varied econometric analyses such as Johansen Cointegration test was conducted. Outcome of the study indicates that there exists a significant threshold relationship of between 50 and 60 percent for external debt, while a 15–17 percent threshold was established for domestic debt and debt accumulation in Nigeria. The study also reveals that external and domestic debts both have significant and largely negative impact on economic growth and development in Nigeria. The study therefore recommends that there is need for government at various levels in Nigeria to strive to reduce debt accumulation, especially in the long run by expanding her tax drag nets where necessary for overall and effective public financial management.

Ashakah, et al. (2025) investigated the impact of external debt, and debt service on economic growth in the ECOWAS sub-region during the period 1990 to 2022. The study analyzed a panel data set using the fixed and random effect models. The results of the panel data unit root test confirmed that the variables in the specified model were integrated in different orders. The panel co-integration tests indicated that a long-run relationship existed among the variables in the specified debt-growth model. The results of the model estimation revealed that external debt negatively and significantly impacted economic growth at the 1% level during the period of the study. The results further revealed that debt service negatively impacted economic growth, but failed the significance test at the 5% level. The paper recommended that countries in the ECOWAS sub-region should reduce external debt accumulation, and efficiently use revenue generated from external debt to boost economic growth.

Nuhu (2025) investigated the impact of debt service on poverty reduction efforts in Nigeria. To achieve this objective, Vector Autoregressive technique was employed on time series data for the period 1986 to 2023. Findings from the paper revealed that debt service, debt stock and exchange rate had positive and insignificant impact on poverty in Nigeria. The paper recommended among other policies that government should channel all borrowed funds into productive activities that are investment yielding to accommodate more unemployed people to reduce the incidence of poverty. In addition, the government should endeavor to cut down their rate of borrowing for recurrent spending to reduce the amount of accumulated debt stock in the country. All leakages from the government coffers should be blocked to ensure transparency in the execution of capital projects in the country where investors can leverage on for growth and development.

Oyeoka, et al. (2024) ascertained the effect of public external debt on economic development in Nigeria for the period of 1981 to 2023. The multiple regression technique of analysis was employed and the data for the variables such as nominal gross domestic product, total external debt, multilateral debt and bilateral debt were sourced from Central Bank of Nigeria Statistical Bulletin. The Johansen cointegration test revealed a long run relationship among the variables and the result of the multiple regression carried out however showed that total external debt has negative but significant impact on economic development, while multilateral debt has positive and significant effect on economic development. Similarly, bilateral debt has positive but insignificant effect on economic development. Based on the findings of the study, the study recommends that government should monitor and efficiently utilize the funds borrowed from external sources for capital projects, as this would accelerate the development of Nigeria economy.

Onuoha (2025) interrogated the mediation role of public spending in domestic debt and economic growth nexus, drawing on debt overhang theory and the Keynesian view. The study deployed a time series data (from 1981 to 2020) set drawn from the 2021 Central Bank of Nigeria (CBN) statistical bulletin. The mediation effect of public spending was tested by performing structural equation modeling after pre-estimation Augmented Dickey-Fuller unit root test. Overall, the study outcomes indicate that domestic debt and public spending have significant positive effects on economic growth. Additionally, the study finds public spending to partially mediate domestic debt and economic growth nexus.

Ejinkonye, et al. (2025) assessed the effect of domestic debt and external debt on gross domestic product in Nigeria. The data for the period 1981 to 2023 was obtained from CBN bulletin 2023, while ex-post facto research design was adopted. The data was analyzed using descriptive statistics and multiple regression. The independent variables were: domestic debt and external debt, while the dependent variable was gross domestic product (GDP). The hypotheses were tested at 5% significance level. The study adopted the Neo-classical debt theory by Williams et al., (1900). Domestic debt had positive and significant effect on GDP, while external debt had negative but significant effect on GDP. The probability (F-statistic) was 0.000000 while adjusted R² value was 0.837757. Conclusion: The public debt variables contribute to economic growth in Nigeria. The government

should ensure that borrowed funds are applied in productive sectors of the economy. The government should have plans for repayment of borrowed funds and interest.

Ogonegbu and Kagwaini (2025) examined the impact of external debt on Nigeria's economic growth between 2010 and 2022. Emphasis is given to rising debt levels from commercial sources (Eurobonds) and bilateral loans (China), which particularly impact economic performance and the country's long-term viability. Debt overhang theory was adopted, while an Auto-Regressive Distributed Lag (ARDL) model was employed utilizing quarterly time-series data. The research examines the relationship between external debt levels and GDP growth, with the exchange rate, inflation and Federal government capital expenditure as control variables. The findings highlighted that while external debt can occasionally stimulate economic growth by financing infrastructure and other developmental projects, the rising costs of debt servicing significantly strain fiscal resources, corroborate the debt overhang theory, and could potentially impede long-term economic growth by consuming a substantial portion of the national budget and limiting public investment.

Ikwuo, et al. (2024) examined the effect of public debt on economic development in Nigeria spanning from 2000 to 2023 with emphasis on the effect of domestic debt (DDEBT), bilateral debt (BDEBT), multilateral debt (MDEBT) and debt servicing (DEBSERV). The research adopted ex-post facto research design. Secondary data were collected from Debt Management Office (DMO), Central Bank of Nigeria Statistical Bulletin, United Nations Development Programme (UNDP) and National Bureau of Statistics (NBS). The econometric technique of multiple regression analysis, Augmented Dickey Fuller (ADF), Unit Root Test, Johansen Co-integration Test and Error Correction Model (ECM) were employed in the data analysis. The co-integration test showed that long-run equilibrium relationship exists among the variables. The findings from the data analysis showed that domestic debt has negative and insignificant effect on economic growth in Nigeria. Bilateral debt has 233 positive and non-significant effect on economic growth in Nigeria. Multilateral debt has negative and non-significant effect on economic growth in Nigeria while debt servicing has a positive and non-significant effect on economic growth in Nigeria. The implication of the findings is that proper and judicious use of public debt affects positively on economic development in Nigeria. Based on the findings, the study therefore recommends that government should reduce the level of domestic debt accumulation. Government should acquire more bilateral loans that should be channeled into viable projects with high return on investment. Government should avoid acquiring multilateral loans because of their negative effect on the development of Nigerian economy. Debt servicing requirement should not be allowed to increase above the debt stock by regularly servicing the loan.

Elkhalfi, et al. (2024) empirically examines the impact of external debt on economic growth in emerging economies from 1990 to 2022, considering the effects of globalization. Using a deductive methodology that combines a comprehensive literature review with

econometric analysis, particularly a fixed-effects panel model, the results reveal a nonlinear relationship between external debt and economic growth. Although an increase in the stock of external debt initially stimulates growth, excessive debt accumulation leads to diminishing returns and negative effects on growth. These results underscore the importance of prudent debt management, especially in the context of globalization, where emerging economies are more exposed to external shocks.

Dawood, et al. (2024) investigated the impact of total and disaggregated external debt on economic growth, across 32 Asian developing economies (ADE) from 1995 to 2020. The study applied the generalized method of moments (GMM) and dynamic common correlated estimator (DCCE) with interaction terms of institutional quality and macroeconomic policy to address the non-linearity, across-country heterogeneity, cross-sectional dependence and endogeneity. The empirical results indicate that total external debt and its types initially harm economic growth, except for commercial creditors' debt, which has positive effects. Short-term, private, and multilateral debt show weaker negative associations compared to long-term, public, and bilateral debt. Incorporating interaction terms in non-linear models reveal a shift from negative to positive impacts, highlighting the importance of robust institutional quality and stable macroeconomic policy in mitigating adverse debt effects. Our findings underline the necessity of tailored policies accounting for specific impacts of different debt types on economic growth. Moreover, highlight the significance of institutional quality and macroeconomic policy standards to manage risks, optimize debt management practices, adjust fiscal policies, and foster sustainable economic growth. Future research should further investigate the broad impact of domestic debt in conjunction with external debt across different countries, time periods, and methodological approaches

Edward and Chizuru (2024) investigated the nexus between public debt and development of the Nigerian economy for the period 1990-2021. Treasury bills outstanding, treasury bonds outstanding, multilateral debt and bilateral debt were the classes of public debt considered while human development index (HDI) was used as a surrogate to measure the performance of the Nigerian economy. Data for the study were secondarily sourced from the statistical bulletin of the CBN (Central Bank of Nigeria), 2021 edition and the World Bank. The sourced data were exposed to descriptive analysis, unit root/stationarity test, ARDL and ECM estimations, co-integration analysis, and diagnostic tests which basically tested for the presence of autocorrelation, multicollinearity and heteroscedasticity. Amongst of other things, results revealed that in the short and long run, treasury bills, treasury bonds and bilateral debts have positive effects on HDI in Nigeria while only multilateral debts have a negative influence on HD in the country. However, none of these components of public debt has a significant relationship with human development index in Nigeria for the period considered. On this premise, it was deduced that there has been a positive but insignificant nexus between public debt and economic development in Nigerian over time. Hence the suggestion that to make public debt contribute significantly to the economic development in Nigerian, there is need to ensure that the country comes

up with strong laws that will deter public office holders from embezzling public funds and as well punishes those who venture into such acts decisively. Thus, the onus lies with the country's legislators to enact appropriate laws as it is done in other countries and as well strengthen the legislative arm of government to enable them punish law breakers at all times.

Gaps in Empirical Literature

From the foregoing empirical review, several gaps in the literature were evident. Firstly, most previous studies largely focused on the general relationship between public debt and economic development without disaggregating domestic and external debt into their respective servicing components; consequently, they rarely considered the distinct effects of domestic debt servicing and external debt servicing on economic growth. Secondly, many studies employed datasets that ended before 2024 and, therefore, did not capture the recent dynamics in Nigeria's debt structure, particularly the growing reliance on commercial loans and Eurobonds. Furthermore, although a few studies such as Onuoha (2025) and Ejinkonye et al. (2025) addressed the mediation of public spending or the contribution of borrowed funds to growth, they did not specifically account for the differentiated impacts of servicing obligations on fiscal sustainability and long-term economic performance. In addition, while several studies, including Amu et al. (2025) and Oyeoka et al. (2024), identified threshold levels for debt accumulation and highlighted negative growth effects, there was limited exploration of how servicing costs themselves constrained productive investment. Moreover, most existing research adopted varied econometric methods but lacked a comprehensive model that simultaneously evaluated domestic debt, external debt, and their respective servicing burdens within a single empirical framework over an extended period.

Therefore, these gaps collectively justified the present study on *Public Debt and Economic Growth in Nigeria: An Empirical Analysis (1986–2024)*, as it addressed the need to disaggregate and empirically analyse both domestic and external public debts alongside their servicing components within one integrated framework. By covering a longer time frame up to 2024, the study consequently provided a more contemporary and holistic insight into the debt–growth nexus. In addition, by examining the relationship between domestic public debt and economic growth, assessing the impact of external public debt, and investigating both domestic and external debt servicing, the study thus offered a more nuanced and policy-relevant understanding of how Nigeria's debt structure influenced her economic growth trajectory.

Methodology

Research Design

The study employed an ex post facto research design to examine the relationship between public debt and economic growth in Nigeria over the period 1986–2024. This design was

appropriate because it allowed investigation of existing historical data without manipulation of the variables under study. As Kerlinger and Rint (cited in Snyder, 2019) observe, ex post facto research traces present conditions back to possible causal factors using pre-existing data collected for non-research purposes. This approach ensured access to reliable secondary data while reducing both cost and time of research implementation.

Model for the Study

The study utilised the Autoregressive Distributed Lag (ARDL) modelling framework developed by Pesaran and Shin (1999) and Pesaran et al. (2001). The ARDL model was adopted because it is suitable for small sample sizes, accommodates variables integrated of mixed orders $I(0)$ and $I(1)$, and is capable of estimating both short-run dynamics and long-run equilibrium relationships in a single framework. Compared to alternative time-series techniques such as Johansen cointegration or Fully Modified OLS (FMOLS), ARDL offers the advantage of providing unbiased long-run estimates even when some variables are endogenous, as well as allowing for different lag lengths across regressors (Shrestha & Bhatta, 2017). Furthermore, it integrates an Error Correction Model (ECM) to capture the speed of adjustment to long-run equilibrium, thereby avoiding spurious regression results in the presence of non-stationary data. The general ARDL ($p, q_1, q_2, \dots, q_k$) form is expressed as:

$$\Delta Y_t = \delta_{oi} + \sum_{i=1}^k \alpha_1 \Delta Y_{t-1} + \sum_{i=1}^k \alpha_2 \Delta X_{t-1} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + V_{it} \dots \dots \dots (3.1)$$

Where K is the ARDL model maximum lag order. F- statistic was carried out on the joint null hypothesis that the coefficients of the lagged variables are zero. $(\delta_1 - \delta_2)$ corresponds to the long run relationship, while $(\alpha_1 - \alpha_2)$ represents the short run dynamics of the models.

Model Specification

Building on Matthew and Mordecai (2016) model as stated in its functional form in (3.2):

$$PCGDP = f(EXD, DD, GDI, INT, INFLA) \dots \dots \dots (3.2)$$

Where:

PCGDP = Per capita Gross Domestic Product

EXD = External Debt

DD = Domestic Debt

GDI = Gross Domestic Investment

INT = Interest Rate

INFLA = Inflation Rate

Equation (3.2) was modified in the current study by incorporating new variables to accommodate the need of the current study. The additional variables are Domestic Debt Servicing, (DDS), External Debt Servicing (EDS) and real GDP growth. Thus, the implicit form of the model for this study is:

$$RGDPG_t = f(DMD_t, ETD, DDS_t, EDS_t) \dots \dots \dots (3.3)$$

Upon linearizing the implicit model in (3.3) gives an explicit model (3.4)

$$RGDPG_t = \beta_0 + \beta_1 DMD_t + \beta_2 ETD_t + \beta_3 DDS_t + \beta_4 EDS_t + \mu_t \dots \dots \dots (3.4)$$

Where:

RGDPt = Real Gross Domestic Product at time t

DMDt = Domestic Debt at time t

ETDt = External Debt at time t

DDSt = Domestic Debt Service Cost at time t

EDSt = External Debt Service at time t

μ_t = Stochastic error term

Equation (3.4) is the linear model for this study since it incorporated all the variables of interest. However, as highlighted by Samuel (2023), time series data often exhibit non-stationarity, which can compromise the long-run properties of the series and lead to unreliable results (Nepal et al., 2023). Non-stationarity in time series data can stem from trends, cycles, random walks, or a combination of these elements (Klieštík et al., 2022). To address the issue of non-stationarity, it was crucial to ensure that the data used in the analysis were stationary to avoid spurious outcomes (Samuel, 2023). Consequently, equation (3.14) was inappropriate and was likely to produce spurious result. Hence, the specification of Autoregressive Distributive Lag Model (ARDL) version, its bound cointegration and the ARDL-ECM specifications became necessary as stated thus:

$$RGDPG_t = \beta_0 + \sum_{i=1}^p \beta_1 RGDPG_{t-1} + \sum_{j=0}^{q1} \beta_2 DMD_{t-j} + \sum_{k=0}^{q2} \beta_3 ETD_{t-k} + \sum_{l=0}^{q3} \beta_4 DDS_{t-l} + \sum_{j=0}^{q4} \beta_5 EDS_{t-j} + \mu_t \dots \dots \dots (3.5)$$

Equation (3.5) is the ARDL version of equation (3.4). The ARDL Bounds Test model specification equation is stated thus:

$$RGDPG_t = \beta_0 + \sum_{i=1}^p \beta_1 RGDPG_{t-1} + \sum_{j=0}^{q1} \beta_2 DMD_{t-j} + \sum_{k=0}^{q2} \beta_3 ETD_{t-k} + \sum_{l=0}^{q3} \beta_4 DDS_{t-l} + \sum_{j=0}^{q4} \beta_5 EDS_{t-j} + \beta_6 \Delta RGDPG_{t-1} + \beta_7 \Delta DMD_{t-1} + \beta_8 \Delta ETD_{t-1} + \beta_9 \Delta DDS_{t-1} + \beta_{10} \Delta EDS_{t-1} + \mu_t \dots \dots \dots (3.6)$$

Equation (3.6) is the ARDL bound test specification (Cointegration) of equation (3.5).

The ARDL – ECM specification of equation (3.15) is shown thus:

$$\Delta RGDPG_t = \beta_0 + \sum_{i=1}^p \beta_1 RGDPG_{t-i} + \sum_{j=0}^{q1} \beta_2 DMD_{t-j} + \sum_{k=0}^{q2} \beta_3 ETD_{t-k} + \sum_{l=0}^{q3} \beta_4 DDS_{t-l} + \sum_{j=0}^{q4} \beta_5 EDS_{t-j} + \delta\mu_{t-1} + \varepsilon_t \dots \dots \dots eq (3.14)$$

Where $\delta\mu_{t-1}$ is the error correction term

The econometric representation integrates these variables within an Autoregressive Distributed Lag (ARDL) framework to capture both short-run dynamics and long-run equilibrium relationships.

Data and Sources

Annual time-series data from 1986 to 2024 were sourced from the Central Bank of Nigeria Statistical Bulletin (2023), the IMF database, and the World Bank's World Economic Outlook. These data comprised GDP growth and all public debt indicators relevant to the study.

Estimation Techniques

The ARDL model (Pesaran & Shin, 1999; Pesaran et al., 2001) was adopted for its suitability in handling variables integrated of order $I(0)$ and $I(1)$. Optimal lag lengths were selected using the Akaike and Bayesian Information Criteria. The ARDL bounds testing approach was employed to establish cointegration, and an Error Correction Model (ECM) was derived to estimate the speed of adjustment to long-run equilibrium. Granger causality tests were performed to determine the direction of relationships.

Diagnostic and Post-Estimation Tests

To ensure model validity, several diagnostic tests were conducted. The Breusch–Godfrey LM test checked for serial correlation, while the White test addressed heteroscedasticity. Structural stability was examined using the CUSUM test. These tests confirmed that the estimated relationships were robust, free from specification errors, and stable over the study period.

Data Limitations

While the data were sourced from reputable institutions, some limitations exist. Data for 2024 are based on provisional estimates rather than finalised figures, which may be revised in subsequent statistical releases. Additionally, measurement errors and methodological revisions by data providers could slightly affect comparability across years. Despite these limitations, the selected sources are widely recognised for reliability in macroeconomic research, and the robustness checks applied in the study help to mitigate potential biases.

Data Analysis and Discussion

Descriptive Statistic

Table 4.1: Descriptive Statistic Results

	RGDPG	DMD	ETD	DDS	EDS
Mean	4.106842	7948.541	5813.756	706.8762	2625.125
Median	3.530000	1448.115	1142.091	201.8200	2002.385
Maximum	15.33000	74375.92	70290.00	4286.085	7200.000
Minimum	-2.040000	116.1900	41.45240	6.180000	428.0400
Std. Dev.	3.809490	15431.20	12917.91	1057.582	1568.713
Skewness	0.562930	3.208005	3.841796	1.932082	1.185706
Kurtosis	3.557133	13.16776	18.38306	6.246290	4.091029
Jarque-Bera	2.498430	228.8684	468.1537	40.32775	10.78873
Probability	0.286730	0.103855	0.19646717	0.7496083	0.2045420
Sum	156.0600	302044.6	220922.7	26861.29	99754.76
Sum Sq. Dev.	536.9518	8.81E+09	6.17E+09	41383744	91051830
Observations	38	38	38	38	38

Source: Author's Computation using e-view 12, July, 2025

Table 4.1 presents the descriptive statistics for Nigeria's macroeconomic and debt indicators (1986–2024). Real GDP growth (RGDPG) averaged 4.11% with moderate variability (SD = 3.81), a mild right skew (0.56), and no significant deviation from normality (Jarque–Bera $p = 0.29$).

Domestic debt (DMD) and external debt (ETD) showed sharp increases in recent years, with means of ₦7,948.54 billion and ₦5,813.76 billion respectively, high dispersion (SD = ₦15,431.20 billion; ₦12,917.91 billion), strong positive skewness (3.21; 3.84) and high kurtosis, reflecting heavy recent borrowing.

Domestic debt service (DDS) averaged ₦706.88 billion, while external debt service (EDS) averaged \$2,625.13 million, both with rising peaks and positively skewed distributions, indicating mounting repayment pressures. Jarque–Bera probabilities for all variables exceeded 0.05, confirming approximate normality. Overall, the data highlight rapid debt expansion and rising servicing burdens, underscoring growing fiscal pressures and the relevance of the subsequent econometric analysis.

Table 4.2: Optimal Lag Selection Criteria Result

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1746.207	NA	3.61e+44	125.3005	125.6811	125.4169
1	-1401.270	468.1285*	8.41e+35*	105.2336*	108.6593*	106.2809*

Source: Author's Computation using e-view 12, July., 2025

Table 4.2 shows the optimal lag selection criteria for the VAR model. Among the criteria reported (LR, FPE, AIC, SC, and HQ), the Akaike Information Criterion (AIC) was used for

decision-making. The minimum AIC value (105.2336) occurred at lag 1, indicating the best balance between fit and parsimony. Accordingly, a lag length of one was selected as optimal, meaning each variable is regressed on one lag of itself and of the other endogenous variables.

Table 4.3: Unit Root (Augmented Dicker Fuller – ADF) Test Results

S/N	Variable	t-cal	t-tab @5%	p-value	Order of Integration	Decision
1	RGDPG	-6.961326	-2.963972	0.0000	I(0)	Stationary @level
2	DMD	3.237708	-3.536601	1.0000	NIL	Not Stationary @ level
3	ETD	3.485161	-3.536601	1.0000	NIL	Not Stationarity @level
4	DDS	3.046107	-3.533083	1.0000	NIL	Not Stationarity @level
5	EDS	-3.313657	-2.945842	0.0216	I(0)	Stationarity @level
S/N	Variable	t-cal	t-tab @5%	p-value	Order of Integration	Decision
1	RGDPG					
2	DMD	4.31289	-3.540328	0.0001	I(1)	Stationary @ 1st Difference
3	ETD	-4.48709	-3.536601	0.0000	I(1)	Stationary @ 1st Difference
4	DDS	-4.324982	-3.536601	0.0010	I(1)	Stationary @ 1st Difference
5	EDS					

Source: Author's Computation using e-view 12, July., 2025

Table 4.3 presents the Augmented Dickey–Fuller (ADF) unit root test results, which assessed the stationarity properties of the variables. Stationarity is a prerequisite for time-series modelling and for establishing valid co-integration relationships. The ADF test was conducted at level and at first difference to determine each variable's order of integration. At level, only real GDP growth (RGDPG) and external debt service (EDS) were stationary, with t-statistics of -6.9613 ($p = 0.0000$) and -3.3137 ($p = 0.0216$) respectively, confirming their integration at order zero, $I(0)$. In contrast, domestic debt (DMD), external debt (ETD), and domestic debt service (DDS) were non-stationary at level, with positive t-statistics and p-values of 1.0000, indicating the presence of unit roots.

When differenced once, these non-stationary variables became stationary: DMD ($t = -4.3129$, $p = 0.0001$), ETD ($t = -4.4871$, $p = 0.0000$), and DDS ($t = -4.3250$, $p = 0.0010$) all achieved stationarity at first difference, confirming their integration at order one, $I(1)$. Crucially, none of the variables was integrated at order two, $I(2)$, thus satisfying the key requirement for employing the ARDL framework. The dataset therefore contained a valid

mix of $I(0)$ and $I(1)$ variables, confirming the suitability of the ARDL model for analysing both short-run dynamics and long-run relationships.

Table 4.4: ARDL Cointegration (Bound) Test Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	$I(0)$	$I(1)$
			Asymptotic: n=1000	
F-statistic	3.994929	10%	2.38	3.45
K	7	5%	2.69	3.83
		2.5%	2.98	4.16
		1%	3.31	4.63
Actual Sample Size	37		Finite Sample: n=40	
		10%	2.668	3.92
		5%	3.121	4.564
		1%	4.31	5.965
			Finite Sample: n=35	
		10%	2.729	3.985
		5%	3.251	4.64
		1%	4.459	6.206
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	$I(0)$	$I(1)$
t-statistic	-5.274409	10%	-3.13	-4.53
		5%	-3.41	-4.85
		2.5%	-3.65	-5.14
		1%	-3.96	-5.49

Source: Author's Computation using e-view 12, July, 2025

Table 4.4 reports the ARDL bounds test results assessing the presence of a long-run relationship among the variables. The null hypothesis of no levels relationship was tested using the F-statistic and t-statistic. The calculated F-statistic (3.9949) exceeded the 5% upper bound critical value ($I(1) = 3.83$) for $k = 7$, leading to rejection of the null hypothesis and indicating cointegration. Likewise, the t-statistic (-5.2744) was more extreme than the 5% upper bound (-4.85), further confirming a long-run relationship. In summary, both statistics consistently supported the existence of cointegration among the variables. This

validated the application of the ARDL framework for estimating long-run coefficients and an error correction model, confirming that the macroeconomic and debt variables move together over time despite differing integration orders.

Table 4.5: Long Run ARDL Estimated Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DMD	0.201161	0.056231	3.577404	0.0357
ETD	0.052137	0.009058	5.755906	0.0033
DDS	-0.021464	0.008507	-2.523097	0.0184
EDS	-0.200327	0.050469	-3.969307	0.0015

Source: Author's Computation using e-view 12, July, 2025

Table 4.5 presents the long-run ARDL estimates linking debt variables to Nigeria's real GDP growth (1986–2024). Domestic debt (DMD) showed a positive and significant effect on growth (coefficient = 0.2012, $p = 0.0357$), indicating that domestic borrowing, when well-managed, supported productive investments and long-term expansion. External debt (ETD) also had a positive and highly significant impact (0.0521, $p = 0.0033$), suggesting that external borrowing, likely for infrastructure and development projects, contributed to sustained growth. Conversely, domestic debt service (DDS) exerted a negative and significant effect (-0.0215 , $p = 0.0184$), implying that high repayment costs reduced fiscal space for growth-enhancing spending. External debt service (EDS) also had a strong negative impact (-0.2003 , $p = 0.0015$), reflecting the drain of foreign exchange and reduced resources for productive use.

In summary, Long-run ARDL estimates (Table 4.6) indicated that DMD (0.2012) and ETD (0.0521) had positive and significant impacts on RGDPG. Economically, a 1% increase in domestic debt was associated with a 20% increase in GDP growth, while a 1% rise in external debt was linked to a 5% increase in growth, suggesting that both debt sources supported productive investment when managed prudently. Domestic Debt Service(DDS) (-0.0215) and External Debt Service (EDS) (-0.2003) had negative and significant effects, with the latter being economically large— a 1% increase in external debt service reduced growth by 20%, highlighting the heavy foreign exchange burden of servicing external liabilities.

Table 4.6: Short Run ARDL Estimated Results with Error Correction

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.14421	5.187150	-6.004108	0.0000
@TREND	1.924409	0.316584	6.078660	0.0000
D(ETD)	0.000754	0.000160	4.723673	0.0001
D(DDS)	-0.005896	0.003193	-1.846391	0.0767
D(DMD)	0.020754	0.002160	9.608333	0.0001
D(EDS)	-0.105896	0.023193	-4.565860	0.0967

CointEq(-1)*	-0.815450	0.092895	-8.778190	0.0000
R-squared	0.551347	Mean dependent var		0.119730
Adjusted R-squared	0.495265	S.D. dependent var		4.274325
F-statistic	9.831149	Durbin-Watson stat		2.115467
Prob(F-statistic)	0.000026			

Source: Author's Computation using e-view 12, July, 2025

Table 4.6 presents the short-run ARDL estimates with an error correction term. Domestic debt (D(DMD)) had a positive and highly significant effect on growth (0.0208, $p = 0.0001$), indicating that a 1% increase in domestic borrowing boosted short-term output by just 2%. External debt (D(ETD)) also showed a positive and significant impact (0.00075, $p = 0.0001$), suggesting that short-term inflows from external borrowing supported immediate growth by almost 0.075%. Domestic debt service (D(DDS)) had a negative effect (-0.0059), suggesting that a 1% increase in domestic service in the short term resulted to decrease in real GDP by about 0.6%, which is not significant at 5% ($p = 0.0767$), while external debt service (D(EDS)) was also negative (-0.1059) but not significant ($p = 0.0967$), meaning a 1% increase in external debt service in the short run resulted in growth output by about 11%, both implying that repayment obligations tended to reduce growth though not strongly in the short run. The error correction term (CointEq(-1)) was negative and highly significant (-0.8155, $p = 0.0000$), indicating that about 81.6% of any disequilibrium was corrected each period, confirming a stable long-run relationship. Overall, the short-run results show that fresh borrowing (domestic and external) supported immediate growth, while servicing costs slightly constrained it, and the economy adjusted quickly back to long-run equilibrium.

Table 4.7: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.	Decisions	Remarks
DMD does not Granger Cause RGDPG	37	0.35196	0.0059	Reject	Bi-directional
RGDPG does not Granger Cause DMD		0.28296	0.0055	Reject	
ETD does not Granger Cause RGDPG	37	0.00136	0.0086	Reject	Unidirectional
RGDPG does not Granger Cause ETD		0.24290	0.7858	Accept	
DDS does not Granger Cause RGDPG	37	0.53582	0.0059	Reject	Unidirectional
RGDPG does not Granger Cause DDS		0.05906	0.9428	Accept	
EDS does not Granger Cause RGDPG	37	0.16939	0.0450	Reject	Unidirectional
RGDPG does not Granger Cause EDS		1.37856	0.2680	Accept	

Source: Author's Computation using e-view 12, July, 2025

Table 4.7 shows the Granger causality results linking debt indicators and real GDP growth (RGDPG) for 1986–2024. A bi-directional causality was found between domestic debt (DMD) and RGDPG, as both null hypotheses were rejected ($p = 0.0059$; $p = 0.0055$) at 5%. This indicates that domestic borrowing influences growth, and growth also shapes domestic borrowing patterns. For external debt (ETD), causality was unidirectional from ETD to RGDPG ($p = 0.0086$), while growth did not significantly affect ETD ($p = 0.7858$) at 5%. Domestic debt service (DDS) also showed unidirectional causality to RGDPG ($p = 0.0059$), with no reverse effect ($p = 0.9428$). Similarly, external debt service (EDS) exhibited unidirectional causality to RGDPG ($p = 0.0450$), with no evidence of reverse causation ($p = 0.2680$). In summary, domestic debt and growth influenced each other, while external debt and both debt-service indicators significantly predicted future GDP growth without reciprocal effects. These results highlight that Nigeria's growth path is strongly shaped by its borrowing and servicing strategies, underscoring the need for prudent debt management and efficient use of borrowed funds.

Table 4.8: Serial Correlation Test Result

Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.490614	Prob. F(2,23)	0.6185
Obs*R-squared	1.513909	Prob. Chi-Square(2)	0.4691

Source: Author's Computation using e-view 12, April, 2025

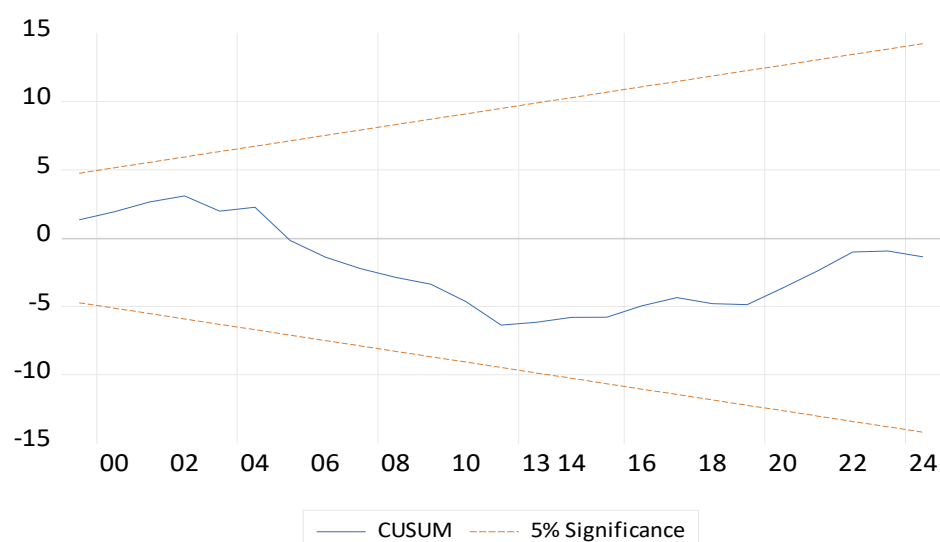
Table 4.8 presents the Breusch–Godfrey serial correlation LM test results. Both the -statistic (0.4906, $p = 0.6185$) and the Chi-Square statistic (1.5139, $p = 0.4691$) had p-values well above 0.05 (5%), so the null hypothesis of no serial correlation could not be rejected. This confirms that the model's residuals are free from autocorrelation, ensuring that the ARDL estimates are reliable, the coefficients are efficient, and the reported standard errors and inferences remain valid.

Table 4.9: Heteroskedasticity Test Result

Null hypothesis: Homoskedasticity			
F-statistic	0.261664	Prob. F(11,25)	0.9879
Obs*R-squared	3.820078	Prob. Chi-Square(11)	0.9749
Scaled explained SS	3.253527	Prob. Chi-Square(11)	0.9869

Source: Author's Computation using e-view 12, July, 2025

Table 4.9 shows the heteroskedasticity test results. The F-statistic (0.2617, $p = 0.9879$), Obs*R-squared ($p = 0.9749$), and Scaled Explained SS ($p = 0.9869$) all returned p-values far above 0.05. This confirms no evidence of heteroskedasticity, meaning the residuals have constant variance and the model's estimates and inferences are statistically reliable.



Source: Author's Computation using e-view 12, July, 2025

Fig 4.2: Cusum Test Result

The CUSUM test chart provided a graphical assessment of the model's stability by evaluating whether the cumulative sum of recursive residuals stayed within the 5% significance bounds marked by two dashed lines. The results showed that the CUSUM line remained well within these bounds throughout the sample period, never crossing or approaching the limits, indicating that the model's parameters were stable over time. This confirmed that the model consistently captured the relationships among variables without structural breaks, and the stability implied that the estimated coefficients were reliable for inference and forecasting, adding robustness to the model's overall performance.

Discussion of Findings

The long run ARDL results revealed that domestic public debt exerted a positive and statistically significant effect on real GDP growth in Nigeria, indicating that domestic borrowing, when efficiently allocated, can finance productive investments and stimulate economic expansion. This finding is consistent with Onuoha (2025), who reported that domestic debt and public spending positively influenced growth, and with Ejinkonye et al. (2025), who found that domestic debt significantly contributed to GDP in Nigeria. The short run results confirmed this positive relationship, with increases in domestic borrowing yielding immediate growth effects, likely due to the prompt financing of infrastructure, social programmes, and other capital projects. The Granger causality analysis further revealed a bidirectional relationship between domestic debt and growth, underscoring their mutually reinforcing nature: growth creates fiscal capacity for borrowing, while borrowing provides resources to sustain growth.

External public debt also showed a positive and highly significant long run impact on growth. This suggests that Nigeria's external borrowing during the study period may have been channelled substantially into infrastructure development, power sector reforms, transport networks, and other projects that enhanced productive capacity. This interpretation aligns with Oyeoka et al. (2024), who found that multilateral and bilateral components of external debt positively contributed to economic development. However, the finding contrasts with the negative effects reported by Ashakah et al. (2025) and Amu et al. (2025), who examined the ECOWAS sub-region and Nigeria respectively, and concluded that excessive external borrowing often hampers growth when funds are misallocated, siphoned through corruption, or diverted to recurrent expenditure. This divergence highlights that the growth impact of external debt depends critically on governance quality, absorptive capacity, and the extent to which loans are channelled into projects with high economic returns. In the short run, external borrowing also contributed positively to growth, while Granger causality results indicated a unidirectional relationship from external debt to growth—implying that the scale and terms of borrowing influence economic performance, but growth patterns did not significantly affect external borrowing decisions in the period studied.

Domestic debt servicing exhibited a negative and significant long run effect on GDP growth, reflecting the fiscal crowding-out effect whereby high repayment obligations limit the fiscal space available for growth-enhancing investment in infrastructure, health, and education. This aligns with Amu et al. (2025), who cautioned that domestic debt beyond sustainable thresholds can hinder growth, and with Onuoha (2025), who noted that the benefits of domestic debt are contingent upon prudent management. In the short run, the effect was also negative though marginally significant, suggesting that while the immediate fiscal burden is felt, its full growth-constraining impact manifests over time. The unidirectional Granger causality from domestic debt service to growth underscores the structural nature of this constraint—servicing costs erode fiscal flexibility regardless of short-term growth fluctuations.

External debt servicing had the largest adverse effect among the debt variables, with a strong negative and significant long run impact. A 1% rise in external servicing reduced growth by approximately 0.20%, illustrating the heavy foreign exchange drain and opportunity cost of meeting external obligations. This corroborates Ogonegbu and Kagwaini (2025), who found that rising external debt servicing costs strain fiscal resources, and supports Ashakah et al. (2025), who observed negative effects of debt service on growth in the ECOWAS region. In the short run, the effect was negative but statistically insignificant, suggesting that the immediate macroeconomic drag is less visible than the persistent long-run burden. Granger causality results showed a unidirectional effect from external debt service to growth, reinforcing the conclusion that heavy foreign obligations directly constrain economic performance over time.

Beyond the main estimations, diagnostic and post-estimation tests confirmed the robustness of the ARDL model. The mixture of $I(0)$ and $I(1)$ variables satisfied the

integration requirements, and the bounds test confirmed long run equilibrium among variables. The error correction term indicated rapid adjustment to equilibrium (81.6% per period). No evidence of serial correlation or heteroskedasticity was detected, and the CUSUM stability test confirmed parameter stability over the study period, indicating that the relationships captured were not undermined by structural breaks. The choice of a single optimal lag ensured a parsimonious and well-fitted model.

However, the findings should be interpreted with certain limitations in mind. First, while the model captures key debt and growth dynamics, potential omitted variables—such as governance quality, corruption control, global commodity price shocks, and exchange rate volatility—could also influence the debt-growth relationship. Second, the study did not explicitly control for structural breaks caused by major policy shifts, such as debt relief initiatives or oil price collapses, which could alter the effectiveness of borrowing. Third, endogeneity concerns remain possible despite the inclusion of lagged terms, particularly if unobserved shocks simultaneously influence borrowing and growth.

From a policy perspective, the results imply that both domestic and external borrowing can support growth if effectively channelled into high-return projects and managed under sustainable frameworks. However, the persistent negative effects of debt servicing—especially external—highlight the need for comprehensive debt sustainability strategies that go beyond fiscal growth objectives to encompass repayment capacity, exchange rate stability, and foreign reserve adequacy. Strengthening institutional capacity to evaluate, monitor, and transparently report on debt-financed projects is essential. Moreover, diversifying revenue sources, enhancing domestic revenue mobilisation, and pursuing concessional external financing terms could help balance the growth benefits of borrowing with the fiscal risks of repayment. In the broader context of fiscal sustainability, Nigeria's debt strategy should integrate macroeconomic stability objectives, ensuring that debt accumulation today does not undermine the country's long-term economic resilience.

Conclusion and Recommendations

Conclusion

This study set out to examine the effects of domestic debt, external debt, domestic debt servicing, and external debt servicing on Nigeria's economic growth between 1986 and 2024, addressing the research objectives of determining the short- and long-run impacts of each debt component and exploring their causal relationships with growth. The findings confirm that public debt, when effectively harnessed, has played an important role in supporting Nigeria's economic expansion. Specifically, domestic debt significantly and positively influenced real GDP growth in both the short and long run, while external debt also exerted a positive and significant effect over the same horizons, reflecting their contributions to productive investments and infrastructure development. Conversely, both domestic and external debt servicing had significant negative long-run impacts on growth,

with external debt servicing exerting the most constraining effect by draining fiscal space and foreign exchange reserves needed for development.

These results highlight the dual-edged nature of public debt: while borrowing has growth-enhancing potential, excessive and poorly managed servicing obligations erode the benefits and threaten fiscal stability. Achieving sustainable growth therefore depends on prudent debt acquisition, efficient utilisation of borrowed funds, and sustainable debt servicing strategies.

The study is not without limitations. First, while the model captures the core debt-growth relationship, it does not fully account for the influence of governance quality, corruption control, and political stability, which may mediate the effectiveness of debt utilisation. Second, external shocks—such as oil price volatility or global financial crises—were not explicitly modelled but could have influenced the debt-growth nexus during the study period. Future research could address these limitations by incorporating governance and institutional quality indicators, modelling the effects of external shocks, and extending the analysis to sectoral growth impacts of public debt in Nigeria.

Recommendations

- i. **To the Debt Management Office (DMO):** Sustain domestic borrowing given its positive impact on growth, but ensure it is undertaken at manageable costs and tied strictly to high-return, revenue-generating projects. Borrowing plans should include transparent project appraisals, with all contracts and disbursements published in publicly accessible formats to strengthen accountability. Domestic debt portfolios should be restructured where possible to lengthen maturities, minimise refinancing risks, and reduce servicing costs.
- ii. **To the Federal Ministry of Finance:** Maintain external borrowing as part of Nigeria's financing strategy but prioritise concessional loans over expensive commercial instruments. All external borrowing should be tied to productive, foreign exchange-earning projects, with robust anti-corruption safeguards in procurement and project execution. Loan agreements and repayment schedules should be disclosed publicly to promote transparency and build public trust.
- iii. **To the National Assembly:** Strengthen legislative oversight by ensuring that approval for new borrowing is contingent upon project-linked plans, feasibility studies, and independent cost-benefit analyses. Borrowing and servicing strategies must be consistent with the Fiscal Responsibility Act and sustainable debt thresholds. The Assembly should mandate periodic public reporting on the utilisation of borrowed funds and enforce penalties for misappropriation.
- iv. **To the Central Bank of Nigeria (CBN):** Coordinate with the DMO to ensure that domestic debt issuance does not crowd out private sector borrowing. Maintain stable interest rates that keep debt instruments attractive but affordable for government servicing. Promote financial market reforms that increase competition

and transparency in the domestic debt market, thereby improving efficiency and lowering borrowing costs.

- v. **To project-implementing ministries and agencies (MDAs):** Given that debt contributes positively to growth only when well utilised, all projects financed through borrowing must undergo rigorous selection processes free from political interference. Independent monitoring and evaluation frameworks should be institutionalised, with progress reports made publicly available. Clear anti-corruption measures—such as open contracting, digital procurement platforms, and civil society participation in oversight—should be embedded in all stages of project implementation.

By explicitly linking debt strategies to productivity-enhancing investments, enforcing transparency and anti-corruption measures, and aligning borrowing with fiscal sustainability objectives, Nigeria can consolidate the growth benefits of public debt while mitigating the fiscal and economic risks associated with heavy servicing burdens.

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