



# Dynamic Effects of Fiscal Sustainability on Economic Growth: Evidence From Nigeria

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## Abstract

This study investigates the dynamic effects of fiscal sustainability on economic growth in Nigeria, employing a comprehensive analysis of various macroeconomic variables. Utilizing the Nonlinear Autoregressive Distributed Lag (NARDL) model, the research assesses the relationship between external debt, domestic debt, debt to revenue ratio, and economic growth. The NARDL model enables the examination of both short- and long-term impacts. The findings reveal a statistically significant negative association between external debt and economic growth, indicating that an increase in external debt leads to a decline in economic growth in both the short and long terms. In contrast, domestic debt demonstrates a positive and statistically significant correlation with long-term economic growth. The study further explores the impact of the debt to revenue ratio on economic growth, finding statistically significant coefficients in both the long-run and error correction models. This implies that changes in the debt to revenue ratio significantly affect Nigeria's economic growth over the examined period. The implications of a high debt to revenue ratio on economic growth are discussed, emphasizing the importance of sound fiscal management practices. The study suggests urgent measures to minimize borrowing, reduce fiscal deficits, and prevent extravagant expenditures. These recommendations underscore the significance of strategic fiscal management for sustaining economic growth in Nigeria.

**Key Words:** Fiscal Sustainability, Economic Growth, Nigeria.

## I. Introduction

Globally, there is a need for enduring financial policies to support government budgets and foster economic advancement. Typically,

governments are compelled to either raise taxes or secure domestic or international loans when tax revenues fall short of projected expenditures (Olushola, Beyai & Anagbado, 2023). Fiscal sustainability denotes a government's capacity to maintain its public finances in a credible and functional state over an extended period. Governments must engage in ongoing strategic planning for future revenues, environmental considerations, and socioeconomic developments to adjust their budgets in a manner that ensures prolonged fiscal sustainability (Odhiambo & Olushola, 2018). The potential for economic growth diminishes when funds are redirected from profitable projects due to escalating debt levels, which adversely affect government fiscal conditions and may lead to a detrimental cycle of mounting debt. A sustainable fiscal strategy is one that can be consistently implemented over an extended duration without necessitating significant alterations to tax and spending patterns (Manescu & Elva, 2020; Utile & Olushola, 2023).

To enhance transparency in the administration of financial resources and address public deficit and debt concerns, it is imperative to bolster fiscal discipline in managing public finances. The sustainability of Nigeria's public finances, the effectiveness of fiscal control, and a robust institutional framework are pivotal factors influencing the country's capacity to achieve the Sustainable Development Goals (SDGs). Fiscal responsibility primarily revolves around the laws, rules, and practices governing the creation, approval, implementation, and monitoring of fiscal policy. Three crucial concepts integral to this focus are numerical fiscal laws, independent fiscal institutions, and medium-term budgetary frameworks (Olushola, Odhiambo & Beyai, 2016).

The challenge of mounting public debt and its adverse impact on the economy, especially



when it surpasses per capita growth, poses a significant hurdle for emerging economies like Nigeria. Following a period of debt overhang in Nigeria between 2003 and 2007, the nation actively pursued debt cancellation, resulting in a reduction of foreign debt to USD 3.4 billion in 2007 (Adedoyin, Babalola, Otekunri & Adeoti, 2016), equivalent to N438.89 billion in the local currency (CBN Statistical Bulletin, 2018). Subsequent administrations resumed borrowing, leading to an increase in Nigeria's external debt profile from N438.89 billion in 2007 to N15,855.23 billion in 2021 (CBN, 2022).

According to the Debt Management Office (DMO, 2022), the 2021 public debt sustainability analysis indicates that Nigeria's debt profile carries a moderate risk and is susceptible to certain shocks, including market perception, the proportion of debt held by non-residents, and debt denominated in foreign currencies, posing potential threats to medium-term debt sustainability. Risks associated with market perception, measured by Bond Spread, surpassed the early warning threshold of 200 basis points but remained below the upper early warning threshold of 600 basis points, standing at 315 basis points. The exposure of the Total Public Debt profile to foreign exchange risk increased with the issuance of USD 4.0 billion in Eurobonds in 2021. Alongside heightened vulnerabilities in short-term debt and increased debt payment costs from CBN financing, the debt profile faces risks linked to oil price volatility. The study aims to assess the impact of the debt service to revenue ratio on economic growth in Nigeria.

## II. Literature Review

### 2.1 Concept of Fiscal Sustainability

Fiscal sustainability is the capability of a government to uphold its fiscal policies and meet financial obligations over an extended period without jeopardizing economic stability. It entails the prudent management of government finances to ensure ongoing fiscal health, avoiding persistent budget deficits and unsustainable levels of debt accumulation.

Governments aim for a delicate equilibrium between revenues and expenditures, steering clear of prolonged budget deficits that could result in excessive debt. The careful monitoring and management of government debt are pivotal for fiscal sustainability, as an excess of debt can lead to higher interest payments, potentially crowding out essential public expenditures. A robust and growing economy contributes to fiscal sustainability by generating increased tax revenues, alleviating the relative burden of debt. Governments also need the capacity to respond to economic shocks or unforeseen events, necessitating flexibility in implementing counter-cyclical fiscal policies for adjustments during economic downturns.

Structural reforms in key areas such as taxation, public spending, and pension systems can enhance fiscal sustainability by boosting efficiency and curbing long-term liabilities. The maintenance of public and financial market trust is paramount. A lack of confidence can result in heightened borrowing costs and impede the government's effective financial management. Achieving fiscal sustainability demands a delicate equilibrium between short-term policy objectives and long-term financial stability. Informed decisions regarding revenue generation, expenditure priorities, and debt management are essential to ensure that government finances remain sustainable, safeguarding the economic well-being of both present and future generations (Ekor, Orekoya, Musa & Damisah, 2021).

### 2.2 Economic Growth

Economic growth signifies an expansion in an economy's production capacity over a specific period, and it can be measured in nominal or real (adjusted for inflation) terms. The Gross Domestic Product (GDP) is the primary metric for gauging economic growth as it encompasses the entire economic output of a country. Economic growth is characterized by an increase in a nation's physical output over an extended duration (Adam, 2015). GDP, which is the ratio of a nation's output in



goods and services to the growth rate of its population, serves as a key indicator of economic growth. A country is considered to experience economic growth when the real output of goods and services expands at a faster pace than its population growth (Adam, 2015). Economic growth entails the gradual augmentation of a nation's wealth and economy over time (Nyoni, 1998).

One of the crucial multiplier effects of economic growth is the creation of wealth and developmental opportunities. Economic growth involves an increase in the production of economic goods and services over different time intervals (Hunt, 2007). It is propelled by the four factors of production: Land, Labor, Capital, and Materials (Hunt, 2007). Economic growth is also reflected in the rise of national output, income, and expenditure (Soludo, 2003). The advantages of economic growth for a nation include an enhanced standard of living for its citizens, higher real incomes, and an increased ability for the government to allocate more resources for infrastructure development, such as healthcare and education.

Traditionally, the measurement of aggregate economic growth revolves around metrics like Gross National Product (GNP) or Gross Domestic Product (GDP), although alternative indicators are occasionally utilized. A growing economy is characterized by the increased production of goods and services in each successive time period. This broader perspective implies an elevation in the standard of living for the populace and a reduction in income inequality (Abdulsalam and Abdullahi, 2018). Intensive growth, which results from a more efficient use of inputs like labour productivity, physical capital, energy, or materials, contributes to economic growth. On the other hand, extensive growth pertains to GDP growth solely driven by increases in the number of available inputs, such as population growth or territorial expansion.

The "rate of economic growth" specifically refers to the geometric annual growth rate in GDP between the initial and final years over a specific period. This growth rate signifies the trend in the average level of GDP during the period, essentially smoothing out fluctuations around this trend (Angela, 2019). Atinafu (2020) emphasizes that economic growth is the foundation for increased prosperity, stemming from the accumulation of more capital and innovations, leading to technical progress. This concept aligns with the Solow (1956) growth model, which views economic growth in terms of the overall expansion

of GDP resulting from factors like population growth, technical progress, and investment.

Kimberly (2007) provides a definition of economic growth as the increase in what an economy produces compared to the past. This definition underscores the idea that economic growth is reflected in increased business profitability and rising stock values. As organizations become more profitable, they gain capital for investment and expansion, leading to the creation of more job opportunities and an increase in income. This, in turn, results in higher consumer spending on goods and services, contributing to robust economic growth. Classical economists view growth as linked to an increase in the rate of investment, emphasizing the positive relationship between a higher rate of profit and long-term growth (Abdulsalam and Abdullahi, 2018).

Hunt (2007) defines economic growth as the process by which national income or output experiences sustained growth per capita. Growth occurs when an economy's productive capacity increases, allowing for the production of more goods and services. In this study, economic growth is conceptualized as an augmentation of a country's productive capacity and an increase in per capita income. The expenditure approach components of economic growth include private consumption, investment, government expenditure, and net exports. Private consumption refers to the monetary value of consumer goods and services purchased by households and non-profit institutions for current use. Investment encompasses additions to the physical stock of capital, including the construction of machinery, housing, factories, and offices. Government expenditure reflects spending on goods and services, including purchases of intermediate goods, wages, and salaries. It is essential to exclude transfer payments to avoid double counting, as the consumption or investment by recipients is already accounted for in private consumption and investment.

In economic systems, per capita growth is a measure that indicates the amount of money earned per person in a given nation or geographic region (Stephen & Obah, 2017). This metric is valuable for evaluating the average income of individuals in an area and assessing the standard of living and overall quality of life of the population. Per capita growth is calculated by dividing a country's national income by its total population, considering every individual, including newborns, as a member of the population (Ekpe, 2020). Unlike measurements like household income or family income, which aggregate individuals based



on residence or relationships, per capita growth offers a more individualized perspective.

It's important to note that per capita growth does not account for inflation, which reflects the rate at which prices increase over time. Additionally, international comparisons based on per capita growth might be affected by differences in the cost of living, as exchange rates are not factored into the calculation. Critics argue for adjusting per capita growth for purchasing power parity (PPP) to provide a more accurate comparison across countries. Some economies also engage in bartering and non-monetary activities, which are not considered in per capita income calculations (Hanna, 2018).

Per capita growth has limitations as it does not include individual savings or wealth. Furthermore, it may not capture the overall welfare of the population, as factors like work conditions, education levels, health benefits, and hours worked are not considered in the calculation. Therefore, while per capita income is a useful metric, it should be used in conjunction with other income measurements, such as median income, regional income disparities, and the percentage of residents living in poverty (Cohen, 2003). Per capita income provides a snapshot of the average earnings per individual within a specific national economy, offering insights into the standard of living and economic well-being of the citizens.

### 2.3 Theoretical Framework: Debt Overhang

#### Theory

This study adopts the Debt Overhang theory as its theoretical framework, initially proposed by Stewart C. Myers in 1977 within the context of corporate finance. The theory addresses situations where entities, whether corporations, governments, or families, accumulate excessive debt, making it challenging to secure additional funding, even for high-quality investments with positive net present value (NPV). In the corporate context, if a company has substantial existing debt, equity holders may be reluctant to support new projects, as the majority of the returns would be claimed by existing debt holders. This reluctance stems from the burden of accumulated debt, leading to a negative NPV for new projects (Myers, 1977).

The term "debt overhang" has also been applied to sovereign governments, particularly in developing countries, describing a scenario where a nation's debt exceeds its foreseeable repayment capacity. This concept has significant implications for the relationship between a country's foreign

debt and its economic growth. Krugman (1988) emphasized that debt overhang occurs when the expected repayment on foreign loans falls short of the debt's nominal value. In this situation, as a country's foreign debt surpasses its repayment capability, the projected debt service increases with rising output levels. Consequently, a substantial portion of domestic profits is effectively claimed by incumbent foreign lenders, inhibiting both local and international entrepreneurs from reinvesting and hindering economic development. The Debt Overhang theory, as articulated by Krugman (1988), focuses on the adverse effects of foreign debt on physical capital investment, particularly in low-income countries. The theory highlights how a significant external debt burden can impede a government's ability to implement necessary structural and fiscal changes essential for sustained economic growth.

The presence of a significant public debt burden introduces uncertainty, creating obstacles for investments and economic growth. As the scale of public debt increases, uncertainty arises regarding the government's strategies to fulfill its debt service obligations, which, in turn, negatively affects investment. The anticipation that the government might raise taxes to meet its growing debt commitments accompanies the expansion of external debt (Pehnelt and Freytag, 2009).

Excessive debt levels also pose the risk of capital flight, especially when private investors are apprehensive about potential currency depreciation and/or tax hikes intended to cover the escalating debt (Myers, 1977). Theoretical research suggests a nuanced relationship between foreign debt, investment, and growth, indicating a favorable impact up to a certain threshold, beyond which it turns negative. Myers (1977) conceptualizes this relationship as a form of "Laffer curve" concerning the face value of external debt and investment. According to this perspective, as cumulative debt surpasses a certain threshold, the expected returns begin to decline due to the adverse effects previously mentioned. Essentially, the relationship follows a trajectory resembling a "Laffer curve," where the positive impacts of capital accumulation on economic activity are outweighed by the negative effects when debt levels cross a critical threshold. This notion implies that, beyond a certain point, the face value of debt becomes counterproductive, leading to a decline in the expected benefits, mirroring the dynamics of a Laffer curve in the context of foreign debt and economic growth.





## 2.5 Empirical Review

Several empirical studies have been conducted to examine how fiscal sustainability affect economic growth. The research used various analytical techniques that produced a range of results.

Ring, Abdullah, Osman, Hamdan, Hwang, Mohamad, Hassan, and Khalid (2021) conducted a comprehensive study examining the Impact of External Debt burden on Economic Growth with a focus on the Role of Institutional Quality. The research utilized GMM panel data analysis, encompassing twenty-three countries as samples, spanning the years 2011 to 2014. The study explored the relationship between external debt and economic growth, considering institutional quality as a moderator. The countries were categorized into low and high governance groups for the analysis. The findings highlighted the significant role of institutional quality as a moderator in the relationship between external debt and economic growth across both low and high governance country samples. The study underscored the importance of good governance practices, emphasizing indicators such as voice and accountability for low governance countries and regulatory quality for high governance countries. These governance indicators played a crucial role in mitigating the negative impact of external debt on economic growth. The research emphasized the need for prudent debt management and appropriate policy prescriptions to effectively handle external debt. The results were presented separately for low and high governance countries, offering a nuanced understanding of the relationship between external debt, institutional quality, and economic growth. Overall, the study recommended the adoption of sound policies to navigate the challenges associated with external debt, making it a valuable and timely contribution to the field. The employed methodology was considered suitable for the research objectives.

Ekor, Orekoya, Musa, and Damisah (2021) conducted a study titled "Does external debt impair economic growth in Nigeria?" The research utilized data from the World Bank's World Development Indicators (WDI) spanning the period between 1976 and 2008. While the data may be considered outdated, the study focused on this timeframe to assess the impact of foreign debt on the Nigerian economy, particularly during the years of significant debt accumulation and the period following the Paris Club debt settlement in 2006. The study employed a dynamic variation of the auto-regressive distributed lag model to empirically

contribute to the national debate on the effects of foreign debt on the Nigerian economy. The key finding of the research indicated that the accumulation of external debt and the associated service payments had negative consequences on the economy in the long run. The policy implication derived from this outcome suggested that the government should exercise diligence and prioritize concessionary external finance. Additionally, any external borrowings should be directed toward programs and initiatives aimed at enhancing the country's economic growth and development. However, it's important to note that the study has limitations, including its lack of comprehensiveness and the use of outdated data, which may not provide a comprehensive and up-to-date basis for policymaking and analysis.

Adubofour, Mangudhla, and Dadzie (2021) conducted a study to examine the impact of external debt on economic growth in Ghana. The research utilized time-series data covering the period from 1991 to 2019 and employed the Prais-Winsten Regression technique for analysis. The key findings of the study indicated a statistically significant adverse relationship between external debt and economic growth in Ghana. The report further asserted that Ghana's inflation regime had a substantial impact on the country's economic growth. Moreover, the study confirmed a link between foreign direct investment (FDI) and economic growth in Ghana. The findings demonstrated a significant and direct association between FDI in Ghana and the country's economic growth. The research also highlighted that an increase in export volumes in Ghana would lead to higher economic growth. Additionally, the availability of electric power was identified as a factor that boosts economic growth by enhancing manufacturing. The study also revealed statistically significant correlations between other control factors and Ghana's economic growth, such as the exchange rate and government consumption spending. Importantly, the study conducted a Granger causality test, revealing no causal relationship between external debt and economic development in Ghana. The conclusion of the study discussed its contribution to the literature and identified limitations that could guide future research. While the study is commendable and comprehensive, it's essential to note that its scope is limited to Ghana.

Manamba and William (2021) conducted a comprehensive study examining the effect of external debt on economic growth and public investment in Africa, covering 45 African countries



over the period from 1990 to 2017. The research also investigated the impact of foreign debt and debt service payments on public investment, with consequential effects on GDP. The study employed Fixed Effects (FE) and Random Effects (RE) Panel Data Models for Inferential Analysis, and the Hausman test was utilized to select the best model. The fixed effects regression model was considered suitable for the growth model, while the random effects model was applied for the public investment study. The primary findings from the preferred models indicated that relatively low levels of the external debt-to-GDP ratio positively affected African economic growth and public investment. Conversely, high amounts of external debt were found to potentially impede both economic development and public investment. Additionally, the study highlighted that the debt service-to-export ratio had a negative impact on public investment, contributing to weaker economic growth. The practical and managerial implications drawn from the research suggest that African countries need to implement effective and efficient external debt management policies that facilitate timely repayment, considering the burden of external debt and debt payments as significant factors hindering sufficient finances for public expenditures and growth. Moreover, the study recommended adopting an export-driven-growth strategy, emphasizing that growth activities should be financed through increased export revenues. Policies promoting exports, maintaining a stable exchange rate, and optimizing the labour force were identified as measures that could lead to enhanced economic growth. The study is commendable, well-researched, and provides valuable insights for policymakers in African countries.

Mkadmi, Bakari, and Othmani (2021) conducted a study focusing on the effects of domestic investments and tax revenues on economic growth in Tunisia, covering the period from 1976 to 2018. The research employed co-integration analysis and the Vector Error Correction Model as its foundational methodologies. The empirical findings of the study revealed that tax revenues have a positive impact on economic growth over the long term, while domestic investment exhibits a negative effect. Additionally, the results indicated that domestic investment and economic expansion positively influence tax receipts. However, tax income and economic growth were found to have no long-term impact on domestic investment. The study concluded that both the tax revenue strategy policy

and the domestic investment strategy policy in Tunisia are deemed unsafe for promoting economic growth. Therefore, the research emphasizes the need for prompt intervention to address the identified issues and prevent further deterioration of the economic situation.

Mutiu, Abdulfatai, Adedeji, and Rasheed (2020) conducted a study investigating the effect of external debt and investment on economic performance in 26 Sub-Saharan African (SSA) countries over the period 1999 to 2014. The research utilized the system General Method of Moments (GMM) for panel data analysis. The estimated results of the study revealed several key findings. External debt was found to have a negative growth effect, while investment had a positive growth effect. Additionally, the interaction between foreign debt and investment yielded a negative outcome. Inflation was associated with a negative growth effect, while trade openness had a favourable impact on growth. The study also identified positive and statistically significant growth impacts for inflation and external debt, trade openness and external debt, and crisis and external debt. Furthermore, the non-linear effect of external debt was found to be favourable. The analysis suggested that factors such as inflation, financial crises, and the interplay between external debt and financial crises had a negative impact on growth, while trade openness had an ambiguous impact. The study recommended that countries carefully assess their debt levels when raising funds for investment to avoid future debt crises. Additionally, the efficient utilization of external debt resources was highlighted as crucial for SSA nations to prevent the crowding-out effect.

Jimmy's (2020) study focused on "Intertemporal Government Budget Constraint: Debts and Economic Growth in Ethiopia from 1990–2018." The research aimed to investigate the effects of external debt and external debt servicing on economic growth in Ethiopia. Data from the World Bank and the United Nations were utilized for the analysis. The study employed the Intertemporal government budget constraint model, linear logarithmic functions (chosen for better regression results), annual time series data, and the generalized least squares technique. The key findings of the research suggested that, overall, increases in external debt contributed to economic growth in Ethiopia during the sample period. Additionally, it was observed that external debt servicing had a negative impact on economic growth in the country. The study's recommendations included advocating for the



Ethiopian government to maintain sustainable levels of external debt to stimulate economic growth, while cautioning against excessive borrowing that could lead to challenges in debt servicing (such as debt overhang). Furthermore, the government was advised to prioritize an export growth plan over increasing external borrowing as a more effective strategy for promoting economic growth in Ethiopia. The research is well-conducted, and the analytical techniques employed demonstrate a sophisticated approach to understanding the relationship between external debt, debt servicing, and economic growth in Ethiopia.

Benjamin, Alexander, Godswill, and Ofe (2020) examined "Dynamic Relations between Public External Debt and Economic Growth in African Countries: A Curse or Blessing", exploring the relationship between external debt and economic growth in 43 African nations from 2001 to 2018. Using the Johansen Cointegration test and sys GMM analysis with data from the World Bank and IMF, the study found evidence of a long-run equilibrium relationship between external debt and economic growth. However, beyond a certain threshold, the short-run dynamics converged to a negative impact of external debt on African economic growth in the long run. The study emphasized the need for policymakers to ensure proper use of external debt and the importance of monitoring frameworks for efficient fund utilization. Overall, the research provides valuable insights for informed decision-making and future planning.

The study conducted by Nora and Ubong (2020) investigates the impact of external debt on Nigerian economic growth using annual time data from 1981 to 2019. The researchers employed the Augmented Dickey-Fuller test, ARDL Bounds test for cointegration, and Error Correction Model (ECM) to analyze the short-run and long-run relationships. The ARDL Bounds test indicated a long-run link between economic growth and explanatory factors. The study disaggregated the effect of external debt into debt burden, debt overhang, and debt crowding out effect. Results showed that debt burden had a positive but insignificant impact on economic growth, suggesting that foreign debt can stimulate growth. However, debt overhang and debt crowding out effect had a significant negative impact. The Error Correction Model corrected 72.4 percent of short-run disequilibrium annually. The model demonstrated a high goodness of fit, explaining 87.50% of overall fluctuations in economic growth.

The paper recommends channeling external debt through proper investment channels to mitigate negative consequences. While the study is well-researched, its scope is limited to Nigeria.

In Atinafu's (2020) study on the External Debt-Growth nexus in the Ethiopian economy, the research aims to explore the impact of public external debt and its servicing on economic growth. Employing an Auto Regressive Distributive Lag (ARDL) model, the analysis covers Ethiopian data from 1970 to 2017, incorporating variables such as public external debt, debt servicing, human capital, physical capital, trade openness, labor force, and policy changes. The study, grounded in the augmented Solow and endogenous growth models, reveals that a high stock of public external debt significantly and negatively affects economic growth in the long run, supporting the concepts of "Debt overhang" and the "Conventional perspective." Conversely, public external debt servicing exhibits a negative but insignificant impact on economic growth, providing little evidence for the "crowding out" effect. The study also identifies a negative influence of human capital on real GDP in the long run, while physical capital exerts a considerable positive impact. Labor force and trade openness play minor roles in understanding the Ethiopian economy. The research recommends improvements in public external debt management policies, advocating for investments in productive sectors, structural changes, public sector reform, tax reform, and reduced reliance on external borrowing through economic diversification for increased domestic revenue. The study is comprehensive, utilizes sophisticated methodology, and offers updated information relevant for policymaking and forecasting.

In the study conducted by Berhanu and Ersumo (2020) on the impact of public external debt on economic growth in Ethiopia, the researchers employed the Autoregressive Distributed Lag (ARDL) approach to cointegration, utilizing time series annual data spanning from 1983 to 2018. The study focused on the yearly GDP growth rate as the dependent variable and examined various explanatory variables, including public external debt stock to GDP (PEDSGD), debt service stock to GDP (DSSGD), and debt service stock to export (DSSEXP). Additionally, macroeconomic variables such as trade openness (TRD), inflation rate (INFL), and public expenditure to GDP ratio (NEXPGD) were considered. The analysis utilized bound testing for long-run co-integration and Error



Correction Model (ECM) for short-run dynamics. The study identified long-run co-integration, with the error correction term indicating a speed of 60.96 percent for the disequilibrium to return to long-term equilibrium in the present year. The findings highlighted that PEDSGD and DSSGD exerted a significant negative impact on Ethiopia's economic growth in both the long and short run. Moreover, DSSEXP demonstrated a negative and significant short-run crowding-out effect of public external debt. The negative value and statistical significance of DSSGD suggested an overburdened status of the country's public external debt, possibly due to poor management or inefficient allocation of borrowed funds. The study recommended a proper allocation of foreign debt for economic investment and the implementation of an effective debt management policy by the government. The research is comprehensive, employs a suitable methodology, and provides updated insights.

In the study by Okoye, Modebe, Erin, and Evbuomwan (2020) on the impact of external debt on economic growth in Nigeria, the researchers investigated whether external borrowings, along with key variables such as currency rate, gross fixed capital formation, and inflation rate, have contributed to the expansion of the Nigerian economy. The ordinary least squares approach was employed to estimate the model's parameters, and the generalized least squares technique was utilized to enhance the robustness of the results. The findings revealed a substantial positive correlation between economic growth and the explanatory factors of external debt, exchange rate, and inflation rate. Conversely, a negative association was identified between economic growth and gross fixed capital formation. Both ordinary and generalized least squares regression estimates demonstrated that external debt, exchange rate, and inflation rate exerted a significant positive impact on economic growth. However, gross fixed capital formation was found to have a non-significant negative effect on economic growth. The study concluded that Nigeria's external debt has significantly contributed to economic growth, suggesting that the government should utilize external borrowing to supplement domestic financial resources for achieving rapid economic growth and development. The research is comprehensive, the results are relevant for policy-making and forecasting, and the methodology employed is sophisticated.

In Ekpe's (2020) study on the impact of external debt on economic growth in Nigeria, secondary sourced time series data from 1975 to

2018 was analyzed. The Auto Regressive Distributed Lag method, Bounds test, and Granger causality test were employed as analytical techniques, with the dual gap theory serving as the framework. The study found that external debt has a positive but insignificant relationship with GDP. Additionally, the ratio of external debt to export exhibited a negative and statistically significant link with GDP. The exchange rate was identified to have a positive and significant association with GDP, while the inflation rate and interest rate showed a negative and insignificant relationship with GDP. A long-run relationship between external debt and economic growth in Nigeria was established, and the error correction test indicated a 67 percent annual correction of economic growth displacement from its equilibrium value due to variations in external debt and other independent variables. Granger causality test results suggested that external debt does not have a causal relationship with Nigerian economic growth. The study recommended diversifying the country's export base to increase export earnings, promoting industrialization to reduce import dependency, and leveraging a higher exchange rate to enhance foreign market appeal and boost foreign exchange earnings. The research is comprehensive, and the applied techniques are sophisticated in obtaining meaningful results.

### III. Methodology

#### 3.1 Data and Data Sources

The study used time series data from relevant data documenting agencies and departments within the scope of the study. Time series data regarding variables of interest were collected from the Central Bank of Nigeria (CBN) Statistical Bulletin, the National Bureau of statistics (NBS), Debt Management Office (DMO), as well as the World Bank data repository (World Development Indicators).

#### 3.2 Model Specification

The model's structural equation is adapted to resemble that of Pesaran et al. (2001) and Toda-Yamamoto (1995) to align with the analytical framework of Nonlinear Autoregressive Distributed Lag (NARDL) model. The exploration of non-stationarity alongside nonlinearity has gained prominence in recent econometric research. This acknowledgment stems from the understanding that asymmetry is widespread and potentially inherent in the structure of the Nigerian economy.





The NARDL model offers three advantageous features. Firstly, conducting one-step estimation of the Error Correction Model (ECM) is likely to enhance the model's performance in small samples, especially regarding the power of cointegration tests. Secondly, the capability to simultaneously estimate both long- and short-run asymmetries in a computationally simple and manageable manner demonstrates the flexibility of our modeling approach. Additionally, our technique provides a straightforward method for testing symmetry restrictions in both the long and short run. Finally, employing asymmetric dynamic multipliers offers an intuitive and computationally straightforward way to evaluate the transition between the short and long run, a result with significant theoretical appeal.

$$RGDP_t = \theta + \beta_1 EXTDEBT_t + \beta_2 DOMDEBT_t + \beta_3 GFCF_t + \beta_4 DEBT/Rev_t + \beta_5 DOP_t + \beta_3 EXR_t + \varepsilon_t \text{-----} \text{-----} 3.1$$

Where:

RGDP = Real gross domestic product

DOMDEBT = Domestic Debt

EXTDEBT = External Debt

DOP = Degree of Trade Openness

EXR = Exchange Rate

DI = Domestic Investments

DEBT/Revenue = Debt to revenue ratio

$\varepsilon_t$  = Residual, fulfills the usual (CLRM) assumptions about the error.

Degree of Trade Openness (DOP) and exchange rates (EXR) are control variables included to ensure the robustness of the model, considering the peculiar structure of the Nigerian economy.

Equation 3.1 is transformed in the basic form of NARDL regression model thus:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \dots + \beta_k y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \dots + \alpha_q x_{t-q} + \varepsilon_t \text{-----} 3.2$$

Therefore,

$$RGDP_t = \beta_0 + \beta_1 RGDP_{t-1} + \dots + RGDP_{t-p} + \sigma_0 DOMDEBT_t + \sigma_1 DOMDEBT_{t-1} + \dots + \sigma_q DOMDEBT_{t-q} + \vartheta_0 EXTDEBT_t + \vartheta_1 EXTDEBT_{t-1} + \dots + \vartheta_{q_2} EXTDEBT_{t-q_2} + \gamma_0 DI_t + \gamma_1 DI_{t-1} + \dots + \gamma_{q_3} DI_{t-q_3} + \rho_0 \frac{DEBT}{REVENUE_t} + \rho_1 \frac{DEBT}{REVENUE_{t-1}} + \dots + \rho_{q_4} \frac{DEBT}{REVENUE_{t-q_4}} + \lambda_0 DOP_t + \lambda_1 DOP_{t-1} + \dots + \lambda_{q_5} DOP_{t-q_5} + \pi_0 EXR_t + \pi_1 EXR_{t-1} + \dots + \pi_{q_6} EXR_{t-q_6} + \varepsilon_t \text{-----} 3.3$$

The NARDL procedure consists of two stages. The first stage shows the presence of the long run relationship between variables of interest. The second stage involves the evaluation of the short run or error correction form of the model. The test statistic is a joint test of the null hypothesis that the coefficients in equation (3.3) equal zero, which is testing whether the lagged level of variables RGDP and the regressors are jointly insignificant against the alternative hypothesis. The rejection of the null hypothesis implies the existence of the long run relationship among the variables.

While most Error Correction Models discuss dynamic adjustment in terms of the percentage of corrected disequilibrium error in each period, the NARDL approach elucidates the nature of this dynamic adjustment. It maps the gradual movement of the scrutinized process from the initial equilibrium through the shock and towards the new equilibrium.

This study focused on the case in which  $x_t$  is decomposed into  $x^+$  and  $x^-$  around a threshold of zero, thereby distinguishing between positive and negative effects.

The model specification for the study is as follows:



### 3.4 Methods of Data Analysis

This research employs fundamental statistical tools, such as basic descriptive statistics, and adopts the Nonlinear Autoregressive Distributed Lag (NARDL) modeling process as the primary analytical technique. The study aims to explore potential asymmetry in the relationship between key variables. The NARDL model is chosen for its unique capability to address both short- and long-run asymmetry, providing a robust approach to the study's subject matter. This modeling technique allows for the examination of relationships displaying long-run asymmetry, short-run asymmetry, or a combination of both.

The NARDL technique incorporates dynamic error correction, linked to asymmetric long-run cointegrating regression. Initially popularized by Hendry (1967) and later expanded by Pesaran and Shin (1999) and Pesaran et al. (2001), this approach encompasses both I(0) and I(1) variables, distinguishing it from the conventional Ordinary Least Squares (OLS) method. The adoption of the NARDL analytical approach yields several advantages. The NARDL model is favored over alternative methods due to its effectiveness in handling changes in variables beyond the current time frame. It demonstrates higher efficiency on small sample sizes compared to the often-failing OLS method. Furthermore, NARDL exhibits the advantage of self-healing collinearity solutions through the use of polynomial lag length. The NARDL analytical approach emerges as a comprehensive and advantageous method for investigating asymmetry in economic relationships, effectively addressing the specific challenges posed by the study's subject matter.

## IV. Data Analysis and Discussion of Results

### 4.1 Descriptive Statistics of Selected Variables

Table 4.1: Descriptive Statistics

Descriptive Statistics	RGDP	DOMDEBT	EXTDEBT	DEBT_REVENUE	DI	DOP	EXR
Mean	40977.53	4091.274	2631.597	2.562409	9047.405	34.35777	123.0894
Median	34889.00	1350.005	806.8600	2.262708	4284.975	34.32022	123.4000
Maximum	73382.77	19242.56	15855.23	6.558244	58293.95	53.27796	399.9600
Minimum	17180.55	28.44000	41.45000	0.361473	108.8700	9.135846	2.020000
Std. Dev.	20345.32	5326.781	3622.141	1.702815	12784.77	10.69048	109.2162
Skewness	0.400464	1.360275	2.182985	0.596926	2.325750	-0.322777	0.854806
Kurtosis	1.528951	3.697677	7.481612	2.423211	8.373787	2.580779	3.004773
Jarque-Bera	4.208205	11.83222	58.71981	2.636953	75.77107	0.888730	4.384190

Source: Author's Computation

This section shows the descriptive statistics and trend analysis of the variables used for regression analysis. The descriptive statistical indicators of interest include the arithmetic mean, the maximum value, minimum value, the standard deviation, as well as the standard error. The descriptive statistics provide the basic insights into the variables of interest as a basic precursor to the rigorous bivariate and multivariate analysis carried out in subsequent sections of this study.

Table 4.1 is showing the descriptive statistics regarding real gross domestic product, domestic debt, external debt, debt to revenue ratio, domestic investments, degree of trade openness, as well as exchange rates. The mean value of real gross domestic product (RGDP) is 40977.53 for the periods under consideration, with maximum and minimum values of 73382.77 and 17180.55 respectively. The standard deviation of real gross domestic product is 20345.32 during the same period. The mean value of domestic debt



(DOMDEBT) is 4091.274, with maximum and minimum values of 19242.56 and 28.44000 respectively. Also, the associated standard deviation of domestic debt in Nigeria during the periods under consideration is 5326.781. The mean value of external debt in Nigeria (EXTDEBT) is 2631.597, with maximum and minimum values of 15855.23 and 41.45000 respectively. The accompanying standard deviation of external debt is 3622.141 during the same period. The mean value of Nigeria's debt to revenue ratio (DEBT\_REVENUE) during the periods under consideration is 2.562409, with maximum and minimum values of 6.558244 and 0.361473 respectively. The standard deviation of debt to revenue ratio during the period under consideration is 1.702815. The mean value of Nigeria's domestic investments (DI) during the periods under consideration is 9047.405, with maximum and minimum values of 58293.95 and 0108.8700 respectively. The standard deviation of domestic investments during the period under consideration is 12784.77. The mean value of the degree of trade

openness (DOP) during the periods under consideration is 34.35777, with maximum and minimum values of 53.27796 and 9.135846 respectively. The standard deviation of trade openness during the period under consideration is 10.69048. The mean value of Nigeria's exchange rates (EXR) during the periods under consideration is 123.0894, with maximum and minimum values of 399.9600 and 2.020000 respectively. The standard deviation of exchange rates during the period under consideration is 109.2162.

The descriptive statistics of variables of interest for this study provide a basic insight into the basic statistical properties of the variables before the application of more rigorous analytical tools and estimation technique.

#### 4.2 Trend Analysis of Selected Variables

The trends of all the variables considered for analysis from 1986 to 2021 are examined with a view to deciphering their statistical properties and the appropriate analytical tools for their examination.

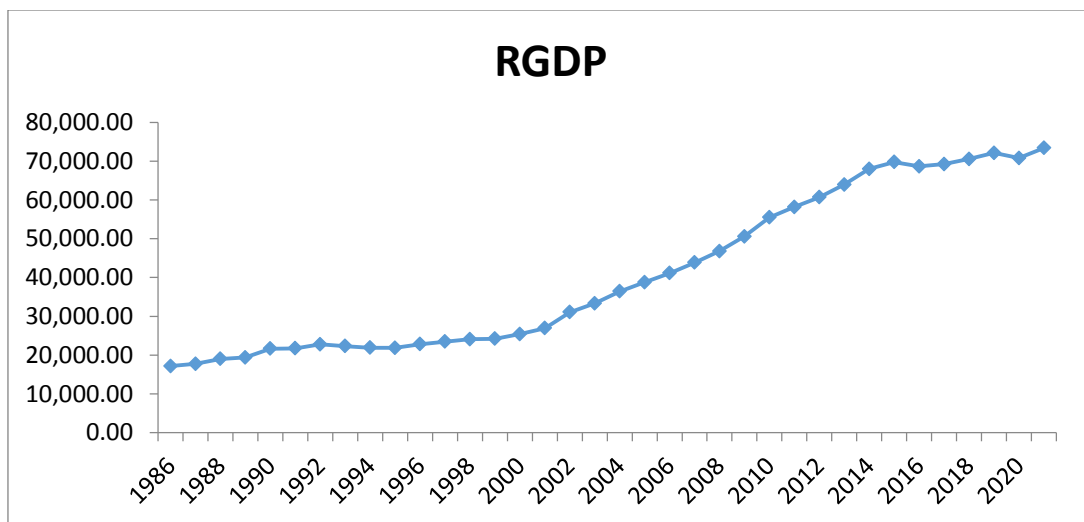


Figure 4.1: Trend of RGDP (1986-2021)

Source: Author's Computation, 2023.

The trend trajectory depicted in Figure 4.1 illustrates the movement of Real Gross Domestic Product (RGDP) in Nigeria from 1986 to 2021. The figure highlights the fluctuations and patterns observed in the RGDP over this period, which have important implications for the choice of analytical tools and the interactions between variables considered in the regression analysis. From 1986 to 2003, RGDP shows a relatively stable upward pattern. This indicates a consistent growth in the value of goods and services produced in Nigeria

during this period. The steady upward trajectory suggests a positive trend in economic output and reflects a period of relative stability and growth in the Nigerian economy. However, from 2004 to 2015, the movement patterns of RGDP exhibit greater variability. During this period, there are fluctuations in economic growth, with some years experiencing higher growth rates while others witnessing a slight decline. This indicates a period of increased volatility and fluctuations in the Nigerian economy. The slight decline observed



during this period may be attributed to various factors such as global economic conditions,

changes in government policies, or internal economic challenges.

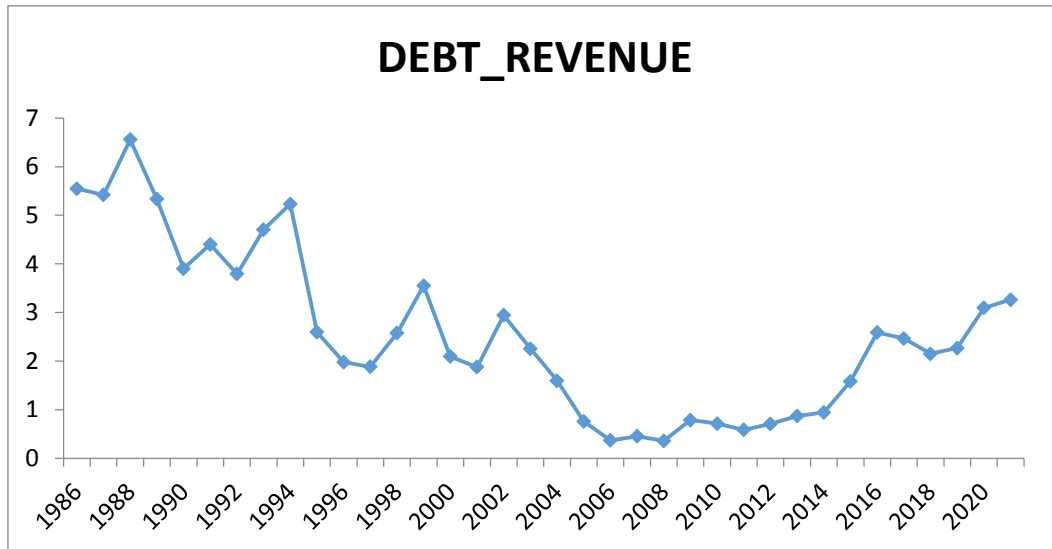


Figure 4.2: Trend values of debt to revenue ratio (1986-2021).

Source: Author's Computation, 2023.

Figure 4.2 illustrates the trend trajectory of the debt to revenue ratio in Nigeria, shedding light on the relationship between the country's debt burden and its revenue generation capacity. Analysing this trend provides insights into the stability and sustainability of Nigeria's fiscal position over time. From 1986 to 2006, the data shows a downward trajectory in the debt to revenue ratio. This indicates that Nigeria was able to reduce its debt burden relative to its revenue generation during this period. The declining trend suggests that the country was making progress in managing its debt obligations and improving its fiscal position. This achievement could be attributed to various factors, including favourable economic conditions, prudent fiscal policies, and increased revenue diversification. By examining the trend trajectory of the debt to revenue ratio and its implications through regression analysis, policymakers can make informed decisions to maintain a sustainable fiscal position, ensure debt affordability, and foster economic stability. This

analysis serves as a valuable tool in designing appropriate fiscal policies and debt management strategies that promote long-term fiscal sustainability and support Nigeria's economic growth and development goals.

#### 4.4 Unit Root Test

The decision rule for the unit root test is that when the absolute value Augmented Dickey-Fuller (ADF) t-statistics is greater than the critical value at 5% level of significance, and the probability value (p-value) corresponding to the test statistic is less than 0.05, we reject the null hypothesis of unit root, indicating that the time series data under consideration is stationary. However, if the p-value is greater than 0.05, we do not reject the null hypothesis that the time series data has a unit root, implying that the time series data regarding the variable under consideration is not stationary.

Table 4.2: Summary of Unit Root Tests

Variable	ADF-Statistics	5% Critical Value	P-Value	Order Of Integration
RGDP	-3.718291	-3.562882	0.0360	1(0)
DOMDEBT	-4.775101	-4.443649	0.0191	1(0)
EXTDEBT	-4.301527	-2.951125	0.0018	1(1)





DEBT_REVENUE	-5.951974	-3.548490	0.0001	1(1)
DI	-7.282177	-4.859812	0.01	1(1)
EXR	-3.908831	-2.951125	0.0050	1(1)
DOP	-7.577776	-3.548490	0.0000	1(1)

Source: Author's computation  
computation

The outcome of the test of stationarity is consistent with the theoretical postulation that the time series data regarding most economic variables are usually not stationary at level but become

stationary after first differencing. Since the variables are not stationary at level, it is imperative to examine the variables for Cointegration.

#### 4.5 Test of Cointegration and Long Run Form of the Model

**Table 4.3: Auto-Regressive Distributed Lag Bounds Test**

Statistics	Values	Significance Levels	1(0) Lower Critical Bound Value	1(1) Upper Critical Bound Value
F-Statistics	6.792955	10%	1.8	2.8
		5%	2.04	2.08
		2.5%	2.24	3.35
		1%	2.5	3.68

Source: Author's Computation based on output from E-VIEWS version 10 Software.

The decision rule by Pesaran, Smith and Shin (2001) states that if the F-statistics is greater than the upper critical bound [I(1)] value at the chosen level of significance, we reject the null hypothesis which states that there is no Cointegration and accept the alternative hypothesis that there is Cointegration. However, if the F-statistics is less than the lower critical bound value [I(0)] at the chosen level of significance, we cannot reject the null hypothesis, implying that there is no Cointegration.

From the results of ARDL Bounds test of Cointegration presented in table 4.3, the F-statistics

is 6.792955, which is greater than the upper critical bound value of 2.08 at 5% level of significance. Hence, we reject the null hypothesis that there is no Cointegration at 5% level of significance and accept the alternative hypothesis that there is Cointegration at 5% level of significance. This implies that there is a long run relationship among the variables under consideration. Since Cointegration has been established, we shall proceed to estimate the long run form of the model as well as the Error Correction Model which measures the speed of adjustments between short run and long run equilibrium.

##### 4.5.1 Long Run Cointegrating Form

**Table 4.4: Long Run Form of the NARDL Model  
Dependent Variable: RGDP**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DOMDEBT_POS	10.98339	4.494089	2.443964	0.0326
DOMDEBT_NEG	185.7426	148.1107	1.254080	0.2358
EXTDEBT_POS	20.48766	13.73614	1.491514	0.1639
EXTDEBT_NEG	-2.929661	1.513554	-1.935617	0.0790
DEBT_REVENUE_POS	28918.85	19960.53	1.448802	0.1753
DEBT_REVENUE_NEG	10871.68	8272.125	1.314255	0.2155



DI	-4.138134	2.836896	-1.458684	0.1726
DOP	606.7703	416.1161	1.458176	0.1727
EXR	-1053.267	676.7909	-1.556266	0.1479
C	-7313.708	17758.98	-0.411832	0.6884

Source: Author's Computation based on output from E-VIEWS10 software.

After establishing the presence of long run relationship between the variables under consideration, the long run form of the nonlinear autoregressive distributed lag (ARDL) model is presented in table 4.4. The long run form of the nonlinear ARDL model measures the impact of both positive and negative changes in the explanatory variables on the dependent variable.

Based on the results of the long run model presented in table 4.4, the estimated long run coefficient of domestic debt indicates that a positive change in domestic debt exerts a positive and statistically significant effect on economic growth in Nigeria. With a positive change in domestic debt, the P-value corresponding to the t-statistic is 0.0326 which is less than 0.05, implying that that the coefficient of positive change in domestic debt is statistically significant at 5% level of significance. This outcome indicates that a positive change in Nigeria's domestic debt stock exerts a significant impact on economic growth in the long run. Hence, an increase in Nigeria's

domestic debt will result in an average change in economic growth by 10.98339 units, holding external debt, domestic investments, degree of trade openness and exchange rates constant. However, the results of the nonlinear ARDL model presented in Table 4.4 shows that a negative change in domestic debt does not exert any significant effect on Nigeria's economic growth in the long run. The p-value corresponding to the t-statistic is 0.2358 which is greater than 0.05, indicating a non-rejection of the null hypothesis that the estimated coefficient of a negative change in domestic debt is not statistically significant at 5% level of significance. Consequently, a negative change in domestic debt has no significant effect on economic growth in Nigeria in the long run.

#### 4.6 Error Correction Model (ECM)

The error correction model is examined to evaluate the short run dynamics between the dependent and independent variables and its speed of adjustment to equilibrium. Its results are presented as follows:

**Table 4.5: Error Correction Model  
Dependent Variable: D(RGDP)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DOMDEBT_POS)	-1.800468	0.452993	-3.974606	0.0022
D(DOMDEBT_POS(-1))	2.731568	0.449950	6.070829	0.0001
D(EXTDEBT_POS)	-2.303959	0.421373	-5.467738	0.0002
D(EXTDEBT_NEG)	2.183076	0.358933	6.082120	0.0001
D(DEBT_REVENUE_POS)	-2373.193	531.9601	-4.461224	0.0010
D(DEBT_REVENUE_POS(-1))	2879.654	434.1419	6.632977	0.0000
D(DI)	1.248625	0.121799	10.25151	0.0000
D(DOP)	-178.4907	22.42979	-7.957752	0.0000
D(DOP(-1))	-63.23925	17.93275	-3.526468	0.0047
D(EXR)	73.53943	16.81662	4.373022	0.0011
D(EXR(-1))	-47.78554	10.15338	-4.706367	0.0006
CointEq(-1)	-0.235692	0.019734	-11.94370	0.0000
R-squared	0.859883	Mean dependent var		1647.033



Adjusted R-squared	0.786489	S.D. dependent var	1558.270
S.E. of regression	720.0342	Akaike info criterion	16.27176
Sum squared resid	10887435	Schwarz criterion	16.81595
Log likelihood	-256.4841	Hannan-Quinn criter.	16.45486
Durbin-Watson stat	2.477144		

Source: Author's Computation based on output from E-VIEWS10 software.

The short-run form of the nonlinear autoregressive distributed lag model coefficients are represented as the first differenced variables. From the results of estimated Error Correction Model presented Table 4.5, the estimated coefficient of a positive change in domestic debt is statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0022 which is less than 0.05, implying a rejection of the null hypothesis that the estimated coefficient of a positive change in domestic debt is not statistically significant at 5% level of significance. Also, the error correction model estimates show that the estimated lagged coefficient of a positive change in domestic debt is statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0001 which is less than 0.05, implying a rejection of the null hypothesis that the estimated lagged coefficient of a positive change in domestic debt is not statistically significant at 5% level of significance. This implies that both the current and lagged coefficients of a positive change in domestic debt are both statistically significant. The results show that domestic debt has a negative and significant impact on economic growth in the short run.

The results of the error correction model presented in Table 4.5 show that the estimated coefficient of a positive change in external debt is statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0002 which is less than 0.05, implying a rejection of the null hypothesis that the estimated coefficient of a positive change in domestic external is not statistically significant at 5% level of significance. Also, the error correction model estimates show that the estimated coefficient of a negative change in external debt is statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0001 which is less than 0.05, implying a rejection of the null hypothesis that the estimated coefficient of a negative change in external debt is not statistically significant at 5% level of significance. This implies that the coefficients of both positive and negative change in

external debt are statistically significant. The results show that external debt has a significant impact on economic growth in the short run. There are also delays in the transmission of the effects of external debt to economic growth in the short run.

The results of the error correction model presented in Table 4.5 show that the estimated coefficient of a positive change in debt to revenue ratio is also statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0010 which is less than 0.05, implying a rejection of the null hypothesis that the estimated coefficient of a positive change in debt to revenue ratio is not statistically significant at 5% level of significance. Also, the error correction model estimates show that the estimated lagged coefficient of a positive change in debt to revenue ratio is statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0000 which is less than 0.05, implying a rejection of the null hypothesis that the estimated lagged coefficient of a positive change in debt to revenue ratio is not statistically significant at 5% level of significance. This implies that both the current and lagged coefficients of a positive change in debt to revenue ratio are statistically significant. The results show that debt to revenue ratio has a significant impact on economic growth in the short run.

The results of the error correction model presented in Table 4.5 show that the estimated coefficient of domestic investments is also statistically significant at 5% level of significance. The p-value corresponding to the t-statistic is 0.0000 which is less than 0.05, implying a rejection of the null hypothesis that the estimated coefficient of domestic investments is not statistically significant at 5% level of significance. Hence, domestic investments has a significant impact on Nigeria's economic growth in the short run.

From the results of the error correction model presented in Table 4.5, the error correction term is negative and statistically significant at the 5% level of significance. This outcome is consistent with theoretical expectations regarding



the estimated coefficient of error correction term. The estimated ECM coefficient (-0.235692) measures the speed of adjustment towards an equilibrium relationship. It indicates that about 23% of the disparity between short run and long run equilibrium is adjusted each period. This also implies a long run causal relationship among the variables under consideration.

In testing the hypothesis of the study regarding debt to revenue ratio and economic growth in Nigeria, the estimated regression result and the test of significance for each individual parameter in the specified long run and error correction models reveal that the estimated regression coefficients of debt to revenue ratio in the long run model and the error correction model are statistically significant. In the long run form of the nonlinear autoregressive distributed lag model, the estimated coefficient of a negative change in debt to revenue ratio is statistically significant at 5% level of significance. In the error correction model, the estimated coefficients of both positive and negative change in debt to revenue ratio are statistically significant at 5% level of significance. Hence, we reject the null hypothesis that debt to revenue ratio has no significant impact on economic growth in Nigeria and accept the alternative hypothesis that debt to revenue ratio has a significant impact on economic growth in Nigeria during the period under review. The outcome of the test of hypothesis provides an empirical basis for understanding the relationship between debt to revenue ratio and economic growth in the Nigerian economy.

#### 4.9 Discussion of Findings

The results of the long run model shows that the estimated long run coefficient of debt to revenue ratio does not exert any significant effect on economic growth in Nigeria. This outcome indicates that an increase in Nigeria's debt to revenue ratio does not exert any significant impact on economic growth in the long run. Also, the results of the nonlinear ARDL model shows that a negative change in Nigeria's debt to revenue ratio does not exerts a statistically significant effect on Nigeria's economic growth in the long run. However, both positive and negative change in debt to revenue ration are statistically significant in the error correction model. While an increase in external debt is growth retarding in the short run, a reduction in external debt is growth enhancing in the short run. The results of the long-run model in this study indicate a negative and statistically insignificant relationship between domestic

investments and economic growth in Nigeria. This suggests that, over the long term, changes in domestic investments do not have a significant impact on the country's overall economic growth. However, the findings from the error correction model reveal a contrasting result in the short run. According to this model, domestic investments have a positive and statistically significant effect on economic growth in Nigeria.

The short-run impact of domestic investments on economic growth implies that in the immediate term, an increase in domestic investments can contribute to positive economic outcomes. This suggests that higher levels of domestic investment activity can stimulate economic growth, potentially leading to increased employment opportunities, improved productivity, and overall economic development. These findings highlight the importance of promoting and encouraging domestic investment in the Nigerian economy. However, the study also highlights that the positive influence of domestic investments on economic growth is not sustained over the long run. This finding indicates the presence of exogenous macroeconomic shocks that hinder the optimal level of domestic investment in the Nigerian economy. These shocks may include factors such as policy instability, fluctuating global economic conditions, or other external events that impact the investment climate. The prevalence of such shocks may explain why the positive effects of domestic investments on economic growth diminish over time.

The implications of these findings for the Nigerian policy environment are significant. They emphasize the need for policymakers to address the underlying factors that contribute to the prevalence of exogenous shocks and uncertainties that hinder optimal domestic investment. It suggests that efforts should be made to create a stable and conducive policy environment that encourages sustained domestic investment and fosters economic growth in the long run. Furthermore, the findings of this study underscore the importance of achieving fiscal sustainability and optimizing productivity in the Nigerian economy. They suggest that policymakers should consider implementing measures that enhance the stability of the macroeconomic environment, improve policy consistency, and address factors that discourage domestic investment. By doing so, the Nigerian government can create an enabling environment that promotes long-term economic growth and development.





It is important to acknowledge that this study's findings are specific to the Nigerian context, and caution should be exercised when generalizing them to other countries or regions. Additionally, the study focused primarily on the relationship between domestic investments and economic growth, and other factors such as governance, infrastructure, and institutional quality were not explicitly considered. Future research could delve deeper into these areas to gain a more comprehensive understanding of the dynamics at play.

### V. Summary and Conclusions

The primary objective of this study was to thoroughly analyse the impact of fiscal sustainability on Nigeria's aggregate economic growth. Several macroeconomic variables were taken into account and carefully researched in order to accomplish this. These factors were chosen based on their importance and applicability to the economic situation in Nigeria. The empirical results of the nonlinear autoregressive distributed lag (NARDL) model's application shed light on the relationship between Nigeria's external debt and economic growth. The NARDL model makes it possible to analyse the long- and short-term impacts of external debt on the Nigerian economy. The analysis's findings show that Nigeria's economy is negatively impacted by external debt, and this effect is statistically significant. This suggests that, both in the short and long terms, an increase in external debt is linked to a decline in economic growth. According to the estimated regression results and the significance tests carried out for each individual parameter in both the long run and error correction models, the study's findings offer significant new insights into the effect of domestic debt on economic growth in Nigeria. The calculated regression coefficient of domestic debt is discovered to be statistically significant in the long run model of the nonlinear autoregressive distributed lag (NARDL) analysis. This implies that changes in domestic debt affect Nigeria's economic growth significantly and long-term. In more detail, the computed coefficient shows a long-term positive correlation between domestic debt and economic growth, which is statistically significant at a 5% level of significance.

The study's conclusions provided insight into the connection between Nigeria's economic growth and the debt to revenue ratio. With regard to both the long run and error correction models, the estimated regression findings and the

significance tests carried out for each individual parameter offer important insights into how the debt to revenue ratio affects economic growth. The findings show that the predicted debt to revenue ratio regression coefficients are statistically significant in both the long run model and the error correction model. This suggests that throughout the period under consideration, Nigeria's economic growth was significantly impacted by the debt to revenue ratio. The computed regression coefficients' statistical significance suggests that changes in the debt to revenue ratio have an important and long-lasting effect on Nigeria's economic growth. The debt to revenue ratio, which reflects the ratio of debt to revenue creation, is a crucial sign of a nation's economic health and sustainability. A higher debt to revenue ratio indicates a heavier debt load and possible management challenges. Given the strong correlation between the debt to revenue ratio and economic growth, Nigeria's economic growth may be constrained by a high debt to revenue ratio. When a sizable amount of income is used to pay off debt, less money is available for infrastructure improvement, profitable investments, and other vital activities that support economic growth. The results of the study's test of hypotheses offer an empirical foundation for understanding how the debt-to-revenue ratio affects economic growth in the Nigerian economy. The findings underline the significance of sound fiscal management, including strategies and practises for managing debt that prioritise debt sustainability and income growth.

Based on the findings of the study from the empirical investigation, the following policy recommendations are made:

- i. As a matter of urgency and importance, the government should implement fiscal management measures aimed at minimising borrowing and capable of decreasing fiscal deficits, which frequently lead to extra budgetary expenses with uncertain viability and considerable portions of transfer payments. For instance, authorities should make sure that extravagant and unjustified expenditure ideas do not make it into the government's total budget proposals.
- ii. In order to lessen dependency on foreign borrowing, the study's findings recommend policies that encourage domestic resource mobilisation and investment. Promoting local investment and fostering an advantageous business climate will boost economic expansion and lessen the damaging consequences of Nigeria's external debt.
- iii. The findings highlight the significance of strong debt management strategies and legislative



initiatives that successfully make use of domestic debt to stimulate economic expansion and advance long-term prosperity.

iv. Policymakers should concentrate on methods to increase revenue mobilisation, such as increasing tax collection processes, eliminating leakages, and diversifying income sources, in order to ensure sustainable economic growth. A high debt to revenue ratio can hinder economic growth, however managing and reducing the debt load through strategies including debt consolidation, debt restructuring, and negotiating more favourable borrowing conditions can help.

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