

EFFECT OF PUBLIC DEBT ON ECONOMIC GROWTH

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CERTIFICATION

This is to certify that this project work was successfully carried out by Oghenekevwe Precious Oghenemine with matriculation number SSC2105588 in the Department of Economics, Faculty of Economics, University of Benin, Benin City

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DEDICATION

This project is dedicated to God Almighty, whose guidance has strengthened me at every step, and whose grace made the completion of this work possible.

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I begin by giving all glory and honour to God Almighty, whose grace, wisdom, and strength sustained me throughout this research. His guidance has been my anchor, and without Him, this work would not have been possible.

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ABSTRACT

This study examines how public debt influences economic growth in Nigeria, drawing on twenty years of data covering both domestic and external borrowing. Nigeria has increasingly relied on public debt to fund development, yet rising debt-servicing obligations have created concerns about the country's fiscal stability and the crowding-out of essential public investment. The study reviews major theories of debt and growth, highlights Nigeria's historical borrowing patterns, and analyzes whether public debt contributes to or slows down long-term economic performance.

Using secondary data from the Central Bank of Nigeria, the National Bureau of Statistics, the Debt Management Office, and international development institutions, the research assesses the relationship between public debt, debt servicing, GDP growth, and government investment. The findings show that while public debt can support growth when properly utilized, Nigeria's high debt-servicing burden reduces the resources available for capital expenditure and weakens the overall impact of debt on economic performance. Evidence also suggests that persistent borrowing, weak non-oil revenue, and macroeconomic instability limit the growth-enhancing potential of public debt.

The study concludes that Nigeria's debt remains manageable in size, but its structure and servicing costs pose significant risks to sustainable growth. It recommends stronger revenue mobilization, better debt management practices, and improved allocation of borrowed funds to productive, growth-driven sectors. These steps are essential for ensuring that public debt supports Nigeria's long-term development rather than becoming a constraint on economic progress.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Public debt plays a central role in shaping the growth trajectory of developing economies such as Nigeria. When domestic revenue sources fall short, governments often resort to borrowing to finance infrastructure, bridge fiscal gaps, and fund social and economic development (Ricardo, 1817; Musgrave & Musgrave, 1989). The concept of public debt has long been debated by economists. Ricardo (1817) viewed debt as government borrowing to cover deficits, highlighting the inevitable repayment through taxation or expenditure cuts. Buchanan (1958) extended this argument, describing debt as deferred taxation that shifts the fiscal burden to future generations. Hansen (1941), however, emphasized its usefulness for economic stabilization during downturns, consistent with Keynesian perspectives. Similarly, Musgrave (1959) highlighted that debt must be assessed not only in terms of repayment capacity but also regarding its effects on resource allocation, income distribution, and macroeconomic stability.

Economic growth has also been examined from diverse perspectives. Kuznets (1955) described it as a long-term increase in a nation's productive capacity, measured through rising per capita income. Solow (1956) attributed growth primarily to capital, labor, and especially technological progress, while Schumpeter (1934) emphasized innovation and entrepreneurship as catalysts for structural transformation. More recently, Todaro and Smith (2011) broadened the definition to include improvements in living standards, poverty reduction, and institutional change, underscoring that growth should extend beyond GDP expansion to inclusive development.

Globally, public debt has risen significantly in recent decades, sparking debates about its impact on long-term growth. In advanced economies, debt levels remain high but manageable due to robust institutions and investor confidence. For example, Japan's debt-to-GDP ratio exceeded 260% in 2023, sustained by its financial system and monetary policies, while the United States stood at about 123% following extensive COVID-19 interventions (International Monetary Fund [IMF], 2023). Italy also maintained a high ratio (134.8%) yet retained financial stability through Eurozone support. By contrast, developing countries face greater risks due to weaker fiscal systems and vulnerability to external shocks. In Sub-Saharan Africa, the median debt-to-GDP ratio rose from 32% in 2010 to 57% in 2022, largely from borrowing for infrastructure and security. The IMF (2023) projected a moderate decline to 56.8% by 2025, reflecting restructuring and fiscal reforms in countries such as Zambia and Ghana.

Nigeria mirrors these global patterns, with debt accumulation linked to developmental ambitions and fiscal pressures. Its debt-to-GDP ratio reached 53.8% in 2024, rising from 39.6% in 2022 (Debt Management Office [DMO], 2024). This ratio remained below the World Bank's 55% sustainability threshold, but rising debt servicing obligations created significant fiscal strain. In 2023 alone, Nigeria spent about 60% of its revenue on debt servicing, diverting resources away from critical sectors such as health, education, and infrastructure (IMF, 2024). This challenge was not unprecedented. During the 1980s and early 2000s, Nigeria experienced severe debt crises, with external debt peaking at \$36 billion by 2004. The breakthrough came in 2005, when negotiations with the Paris Club led to \$18 billion in debt forgiveness and a total reduction of \$30 billion, freeing about \$1 billion annually for development priorities (Okonjo-Iweala, 2018).

Following these reforms, Nigeria established institutions to strengthen fiscal discipline. The Fiscal Responsibility Act (2007) sought to restrict borrowing to capital projects, while the Debt Management Office (created in 2000) was tasked with coordinating borrowing and debt servicing. Despite these efforts, weak compliance and persistent fiscal deficits undermined progress. By 2020, debt servicing consumed 99% of government revenue in the first quarter alone (Budget Office of the Federation, 2020). The trend worsened by 2024, when debt servicing rose to ₦13.12 trillion, representing a debt service-to-revenue ratio of 162% (DMO, 2024).

Nigeria's debt burden has become a recurring subject in regional and international policy discussions. At the African Development Bank's 2023 and 2024 annual meetings, leaders highlighted the continent's growing debt service obligations, which collectively rose from \$61 billion in 2010 to \$163 billion in 2024 (African Development Bank [AfDB], 2024). For Nigeria, heavy reliance on oil revenue, narrow tax bases, and currency instability amplified fiscal risks, even though its debt ratios were lower than those of advanced economies. The IMF (2024) projected a slight decline in Nigeria's debt-to-GDP ratio to 49.6% by 2025, but emphasized the urgent need to boost revenue mobilization and reduce reliance on external borrowing.

Comparisons with other African economies highlight Nigeria's precarious position. Ghana, for instance, defaulted on its debt in 2022, triggering restructuring negotiations, while Ethiopia relied heavily on concessional external loans. Unlike these cases, Nigeria pursued a strategy of domestic borrowing, including instruments such as Sukuk bonds, with a ₦300 billion issuance planned for 2025 (DMO, 2025). However, mounting debt servicing costs threaten to crowd out development spending, as more than half of the federal budget is now directed to debt obligations (Budget Office of the Federation, 2024).

Overall, Nigeria's experience underscores the dual role of public debt: while it remains essential for financing infrastructure and fostering development, excessive servicing obligations undermine fiscal space and economic growth. This study therefore examines Nigeria's debt servicing strategies, drawing on both international and domestic experiences, to evaluate how debt can be managed sustainably without compromising long-term development goals.

1.2 Statement of the Problem

Over the past three decades, Nigeria's public debt has expanded rapidly, raising pressing concerns about its implications for long-term fiscal sustainability and economic growth. Public borrowing, when effectively managed, can play a critical role in financing infrastructure, building human capital, and stimulating investment. However, its benefits are only realized if debt is deployed productively and if debt servicing obligations remain manageable. Nigeria's experience between 2010 and 2024 demonstrates the risks of excessive dependence on borrowing without commensurate improvements in economic outcomes. By 2024, the country devoted an estimated ₦11.887 trillion to debt servicing—equivalent to about 69% of total government revenue—leaving very little fiscal space for social and capital expenditures essential for growth and poverty reduction (Budget Office of the Federation, 2024).

The implications of this trend are profound. A debt servicing-to-revenue ratio approaching 70% indicates that the bulk of government resources are being channeled toward repaying existing obligations rather than funding development priorities. This creates a vicious cycle where borrowing is used not to expand productive capacity, but to plug recurrent expenditure gaps and refinance maturing obligations. The outcome is stagnation in infrastructure delivery, underfunded education and health sectors, and limited job creation despite rising debt levels.

Nigeria's experience parallels broader challenges across Sub-Saharan Africa during 2010–2024. For example, Zambia defaulted in 2020, Ghana suspended external debt service in 2022, and Mozambique restructured in 2017, all triggered by high borrowing costs, limited fiscal buffers, and vulnerability to external shocks (International Monetary Fund [IMF], 2022; African Development Bank [AfDB], 2021). These cases highlight the dangers of accumulating debt without robust revenue-generation strategies or diversification of the economy. Recognizing the gravity of the situation, multilateral institutions have convened initiatives such as the African Fiscal Forum (since 2011) and the Global Sovereign Debt Roundtable (launched in 2023) to promote sustainable borrowing practices, improve transparency, and encourage debt relief measures.

Despite these international efforts, Nigeria's debt profile remains worrisome for several reasons. First, although the country's debt-to-GDP ratio—around 37% in 2024—appears relatively modest compared to some advanced economies, this measure is deceptive given Nigeria's very low revenue-to-GDP ratio, which has remained below 10% since 2010 (World Bank, 2020). This means that even moderate levels of debt can become unmanageable because the revenue base is too weak to sustain regular servicing. Second, Nigeria's heavy reliance on oil revenues, which provided about 50% of government revenue in 2022, exposes it to volatility in global commodity prices. The oil price crash of 2014–2016, and again the demand collapse during 2020's COVID-19 pandemic, sharply reduced fiscal revenues, forcing additional borrowing to cover shortfalls.

A third concern is the composition of Nigeria's debt. Since 2015, there has been a marked shift toward more expensive financing options, including commercial loans and Eurobonds, which carry higher interest rates and shorter maturities compared to concessional loans. The country issued multiple Eurobonds in 2017, 2018, 2021, and 2022, increasing its exposure to

external debt service costs. These instruments not only raise borrowing costs but also heighten rollover risks, leaving the government vulnerable to global financial market fluctuations. The rising proportion of foreign-denominated debt has also intensified exchange rate risks, particularly after the naira depreciated by more than 200% between 2015 and 2024.

Perhaps the most troubling aspect of Nigeria's debt dynamic is the weak link between debt accumulation and economic outcomes. Successive governments since 2010 have justified borrowing as necessary to close infrastructure gaps, stimulate growth, and create jobs. Yet evidence of tangible improvements remains limited. Between 2015 and 2022, real GDP growth averaged less than 2% per year, barely keeping pace with population growth (IMF, 2022). Unemployment reached 33% in 2020, underemployment remained high, and critical infrastructure deficits persisted despite rising debt levels (Ogunmuyiwa, 2011; World Bank, 2022). This disconnect has fueled skepticism among economists, scholars, and civil society organizations who argue that debt is being used to sustain recurrent expenditures, political patronage, and consumption rather than to generate sustainable economic returns.

In light of these challenges, the central problem emerges clearly: Nigeria's growing debt burden, particularly between 2010 and 2024, has not translated into commensurate improvements in economic performance, but instead threatens fiscal sustainability and development prospects. The paradox of rising debt alongside weak growth underscores the urgency of examining the actual impact of public debt on Nigeria's economy. Specifically, it is critical to assess whether current borrowing patterns are supporting long-term development or merely entrenching a cycle of dependency and repayment without returns. Addressing this problem is vital for shaping fiscal policies that ensure public borrowing contributes meaningfully to inclusive and sustainable economic growth.

1.3 Research Question

To effectively carry out this research, it is important to ask certain questions. Thus, in the light of the background of study and statement of problem, the following research question was put forward:

1. What is the relationship between public debt and economic growth in Nigeria?
2. How does debt servicing affect public sector investment and development expenditure in Nigeria?

1.4 Objective Of The Study

The overall objective of this study is to examine the impact of public debt on economic growth in Nigeria while the specific objectives of the research work are as follows:

1. Examine the relationship between public debt and economic growth in Nigeria.
2. Investigate how debt servicing affects public sector investment and development expenditure in Nigeria.

1.5 Research Hypotheses

In line with the objectives of the study, the following hypothesis will be tested.

H01: There is no significant relationship between public debt and economic growth in Nigeria.

H11: There is a significant relationship between public debt and economic growth in Nigeria.

H02: Debt servicing does not significantly affect public sector investment and development expenditure in Nigeria.

H12: Debt servicing significantly affects public sector investment and development expenditure in Nigeria.

1.6 Significance Of The Study

Nigeria being among the developing nations with lots of economic potentials needs to learn how to manage public debt as it translates to economic growth which in turn leads to public sector investment and development expenditure. This study is of great importance, particularly in light of Nigeria's growing public debt profile and the ongoing debate regarding its implications for sustainable economic development. Over the years, policymakers, economists, and the general public have expressed rising concerns about how much Nigeria borrows, what it borrows for, and how effectively these debts translate into measurable improvements in economic performance. The relevance of this study stems from its potential to provide insight into whether public borrowing is a catalyst for economic growth or a burden that stifles development. This study contributes to the existing body of knowledge by situating Nigeria's debt dynamics within both regional and global contexts. Although prior research has examined the relationship between public debt and economic growth, many of these studies do not adequately capture Nigeria's unique fiscal environment—characterized by heavy dependence on oil revenues, weak tax administration, recurrent budget deficits, and a disproportionately high share of revenue allocated to debt servicing. By analyzing the combined effects of domestic and external debt, alongside the implications of rising debt servicing costs, this research provides empirical evidence that tests the validity of established debt–growth theories within Nigeria's fiscal reality. In doing so, the study bridges the gap between theory and practice, demonstrating whether conventional

frameworks on debt and growth hold true or require modification when applied to the Nigerian context.

This study also holds policy relevance. For policymakers and government officials involved in fiscal and economic planning, the findings of this research will serve as evidence-based input in reviewing borrowing policies, setting debt thresholds, and evaluating debt-financed projects. Understanding the real impact of debt on economic growth will help authorities balance the need for infrastructural financing with the need for fiscal sustainability. This could inform the design of more flexible lending instruments or encourage improved monitoring of fund usage by borrowing governments. This study is of great significance to academics and researchers, especially those exploring macroeconomic policy, public finance, and development economics. It provides a local case that reflects broader trends across Sub-Saharan Africa, where rising public debt levels are a growing concern. Future researchers may find this work useful for comparative studies or for exploring deeper causal relationships between specific types of debt and different sectors of the economy. This study is of practical relevance to the Nigerian public and civil society organizations, who have a legitimate interest in understanding how public funds—particularly borrowed resources—are allocated and managed. By analyzing the link between public debt, debt servicing, and economic growth, the study provides evidence that enhances transparency and accountability in fiscal management. Such insights empower citizens to question whether borrowing is directed toward productive investments, such as infrastructure and social services, or merely sustaining recurrent expenditure. For civil society organizations, the findings serve as an important tool for advocacy, enabling them to demand more responsible borrowing practices, stronger tax reforms, and policies that reduce dependence on volatile oil revenues. In this way, the research equips stakeholders with the knowledge needed to hold policymakers accountable and to promote fiscal strategies that ensure both current welfare and

intergenerational equity. With increased transparency and access to knowledge, citizens can better hold their leaders accountable and demand responsible fiscal governance.

This research is not only academically relevant but also practically significant. It aims to shed light on how public debt affects the Nigerian economy and whether it serves as a tool for development or a source of economic vulnerability. The findings of this study are expected to contribute to better policy making, informed public discourse, and responsible debt management in Nigeria and similar developing economies.

1.7 Scope Of The Study

The scope of this study is centered on analyzing the effect of public debt on economic growth in Nigeria. Specifically, it investigates both domestic and external debts and how each component influences key economic indicators such as Gross Domestic Product (GDP), public investment, and capital expenditure. The study covers a period of twenty years (2004–2024) in order to capture both short- and long-term dynamics in Nigeria’s borrowing patterns and economic performance. This timeframe is appropriate as it reflects major fiscal and economic events, including the post-debt relief era of 2005, fluctuations in global oil prices, the 2016 recession, the economic disruptions caused by the COVID-19 pandemic, and the recent surge in debt servicing obligations up to 2024.

The geographical scope is limited to Nigeria, although references may be made to other African countries and global best practices for comparative analysis. The study also evaluates the impact of debt servicing on the government’s ability to invest in growth-enhancing sectors like infrastructure, education, and healthcare.

Due to the focus on macroeconomic variables, the study is primarily quantitative in nature and will rely on secondary data from recognized sources such as the Central Bank of Nigeria

(CBN), National Bureau of Statistics (NBS), Debt Management Office (DMO) Budget office, and World Bank reports.

1.8 LIMITATIONS OF THE STUDY.

It is worthy to note that every research work possesses a lot of problems and limitations. However there are various limitations to this study, despite the relevance of this study. The study relies on secondary data, and in some cases, official figures may be outdated, revised, or unavailable, especially for the most recent years. This may limit the accuracy of certain analysis. This study focuses primarily on public debt and a few macroeconomic indicators like GDP and public investment. Other potentially relevant factors such as inflation, exchange rate fluctuations, political instability and global economic shocks may not be fully captured. Establishing a direct causal relationship between public debt and economic growth is complex. While correlations can be identified, proving causation might require deeper econometric techniques or longitudinal studies beyond the level of a BSc project. As an undergraduate research work, the study is limited by time, which restricts deeper exploration into sub-topics such as sectoral debt impact, intergenerational debt burdens, and microeconomic effects.

While the study attempts to make policy recommendations, it does not account for the political economy of debt or the role of lobbying, corruption, and governance challenges that often influence debt decisions.

1.9 Organization Of The Study

To present this research work in an orderly way, this study was sectioned into five[5] chapters as follows.

Chapter one deals with the general introduction of the study which focuses on the background to the study, the statement of the problem, research questions, objectives of the study, hypothesis of the study, significance of the study, scope of the study, limitations of the study, and organization of the study.

Chapter two will focus on review of conceptual literature existing theoretical and empirical literature related to public debt and economic growth. It discusses relevant theories, reviews past studies, and identifies gaps in the literature with respect to the effect of public debt on economic growth.

Chapter three focuses on the theoretical framework which outlines the research data sources, methods of data collection, model specification, and techniques of data analysis used in the study.

Chapter four constitutes the empirical analysis of the research work such as data presentation, statistical analysis and presentation of result and interpretations of the result obtained, showing trends in public debt and economic growth in Nigeria and evaluating the relationship between them using appropriate statistical tools.

Chapter five summarizes the key findings of the study, draws conclusions based on the evidence presented, and offers recommendations for policymakers, researchers, and other stakeholder.

CHAPTER TWO

EFFECT OF PUBLIC DEBT ON ECONOMIC GROWTH

2.1 Conceptual framework

Public Debt.

Public debt is the total borrowing of a government, both domestically and externally, to finance expenditures that cannot be met through ordinary revenue sources such as taxation, natural resource rents, and other government income. It is usually classified into domestic debt (borrowed from within the country through treasury bills, bonds, and local banks) and external debt (borrowed from foreign governments, international organizations, or capital markets). In theory, moderate and well-managed debt can stimulate economic growth by financing infrastructure, health, education, and other productive sectors. However, when debt levels rise beyond sustainable thresholds, they can crowd out private investment, increase debt-servicing burdens, and hinder economic progress.

2.1.2 Causes Of Public Debt

Public debt does not arise in isolation; it is the outcome of various economic, social, and political dynamics that influence a country's fiscal position. In Nigeria, as in many developing economies, public borrowing has become a major instrument for bridging resource gaps in government finance. The causes of public debt can broadly be categorized into structural factors, fiscal imbalances, external shocks, and governance-related issues.

1. Budget Deficits

One of the primary causes of public debt is the persistent mismatch between government expenditure and revenue. When the recurrent and capital expenditures of government exceed the revenue generated from taxation, oil rents, customs duties, and other sources, the government resorts to borrowing to cover the shortfall. In Nigeria, budget deficits have become structural due to over-dependence on crude oil revenue, which is often volatile, and weak non-oil revenue mobilization.

2. Infrastructural Deficits and Developmental Needs

Nigeria faces enormous infrastructural challenges in areas such as power supply, road networks, housing, healthcare, and education. The government often resorts to borrowing to finance capital projects since internally generated revenue is insufficient to meet these large-scale development needs. Public borrowing is therefore rationalized as a means of accelerating socio-economic development and bridging the infrastructure gap.

3. Oil Price Volatility and External Shocks

As an oil-dependent economy, Nigeria's revenue is highly sensitive to fluctuations in global oil prices. A decline in crude oil prices directly reduces government earnings, creating revenue gaps that necessitate borrowing. Similarly, external shocks such as global financial crises, the COVID-19 pandemic, or geopolitical disruptions have historically worsened Nigeria's fiscal position, pushing the government into deeper debt.

4. Rising Recurrent Expenditure

Another major cause of public debt in Nigeria is the ever-increasing recurrent expenditure, particularly the cost of governance. High public sector wage bills, pensions, subsidies, and administrative overheads consume a significant proportion of government revenue, leaving little for capital investment. When revenue cannot cover these recurrent obligations, borrowing becomes inevitable.

5. Debt Servicing Obligations

Ironically, debt itself is a cause of further debt accumulation. When a country carries a heavy debt burden, a large proportion of its revenue is directed toward servicing existing obligations (interest and principal repayments). If revenue inflows are inadequate to meet these obligations, the government may borrow more to refinance old debts, creating a cycle of indebtedness.

6. Weak Taxation and Revenue Base

Nigeria's tax-to-GDP ratio remains one of the lowest among emerging economies, largely due to weak tax administration, widespread evasion, corruption, and over-reliance on oil revenue. This limited revenue base compels the government to borrow to meet pressing developmental and fiscal needs.

7. Exchange Rate Instability and Inflation

Macroeconomic instability, particularly fluctuations in exchange rates and high inflation, also contribute to rising public debt. Exchange rate depreciation increases the local currency cost of servicing external debt, thereby encouraging further borrowing. Inflation, on the other

hand, reduces the real value of government revenue, widening fiscal deficits that are often financed through debt.

8. Corruption and Mismanagement of Resources

Poor governance, corruption, and inefficiency in resource management exacerbate Nigeria's debt problem. In many cases, borrowed funds are diverted from productive investments to unproductive or non-transparent uses. This reduces the capacity of the economy to generate sufficient returns to repay debt, leading to additional borrowing.

9. Political Instability and Security Challenges

The persistent challenges of insurgency, banditry, and political unrest in Nigeria have forced the government to increase spending on defense and security. Since these expenditures are often unplanned and urgent, the government turns to borrowing, thereby increasing the public debt profile.

2.2 ECONOMIC GROWTH

Economic growth refers to the sustained long-term increase in a nation's productive capacity and output of goods and services, typically measured through changes in Gross Domestic Product (GDP) or Gross National Product (GNP) over time. It reflects not only the quantitative expansion of an economy but also the qualitative improvements in efficiency, productivity, and living standards. Growth is often distinguished from development, as the former emphasizes measurable increases in national income, while the latter encompasses broader welfare dimensions such as poverty reduction, education, health, and social well-being (Todaro & Smith, 2015).

From a theoretical standpoint, economic growth occurs when there is an increase in the stock of capital, expansion of the labor force, technological innovation, and improved resource allocation. Classical economists such as Smith (1776) and Ricardo (1817) highlighted capital accumulation and specialization as drivers of growth, while modern theories such as the Solow Growth Model (Solow, 1956) and the Endogenous Growth Theory (Romer, 1986; Lucas, 1988) stress the importance of technological progress, human capital, and institutional quality.

In practical terms, economic growth can manifest through:

1. **Rising Output and Productivity:** Expansion in industrial and agricultural output, improved manufacturing capacity, and adoption of advanced technologies.
2. **Higher Levels of Investment:** Both domestic and foreign investments in key sectors such as infrastructure, energy, and human capital formation.
3. **Improved Standard of Living:** Growth is often accompanied by rising per capita income, access to better goods and services, and improved social amenities.
4. **Structural Transformation:** Shifts from primary (agriculture-based) economies to more diversified industrial and service-oriented economies.

2.2.1 Economic Growth in Nigeria

For Nigeria, economic growth is influenced by a combination of internal factors (domestic policies, governance quality, infrastructural development, security, and investment climate) and external factors (oil price fluctuations, global demand, international trade dynamics, and foreign investment flows).

Historically, Nigeria's growth trajectory has been heavily tied to the performance of the oil sector, which contributes significantly to government revenue and foreign exchange earnings.

However, this dependence has also made the economy vulnerable to external shocks, particularly global oil price volatility. During oil booms, Nigeria experiences rapid revenue inflows and growth acceleration, while oil price collapses often result in revenue shortfalls, fiscal deficits, and slower growth.

Other factors shaping Nigeria's economic growth include:

1. **Fiscal and Monetary Policies:** Government spending, taxation, interest rates, and inflation management play critical roles in influencing investment and consumption.

2. **Public Debt:** Borrowing, if used productively, can enhance growth by financing infrastructure and social services. However, excessive debt accumulation and debt-servicing pressures may crowd out investment and hinder growth.

3. **Demographic Dynamics:** Nigeria's large and youthful population presents opportunities for labor-driven growth but also poses challenges such as unemployment and pressure on public services.

4. **Governance and Institutional Capacity:** The effectiveness of government institutions in managing resources, combating corruption, and implementing sound economic reforms directly affects growth outcomes.

A growing Nigerian economy is expected to generate higher incomes, create employment opportunities, stimulate industrialization, and broaden the government's revenue base. When growth is sustained, it provides the fiscal and economic foundation necessary for poverty reduction and sustainable development.

2.2.2 Reason Why Economic Growth Is Important.

Economic growth is a central objective of every nation because it represents the capacity of an economy to improve the welfare of its citizens and strengthen its global competitiveness. Growth goes beyond statistical increases in Gross Domestic Product (GDP); it provides the resources, opportunities, and fiscal space needed for sustainable development. The importance of economic growth can be explained under the following dimensions:

1. Poverty Reduction and Improved Living Standards

Economic growth is critical in reducing poverty by creating employment opportunities and raising household incomes. A growing economy enables individuals to access better housing, healthcare, and nutrition, thereby improving overall living standards. For Nigeria, with its large population and high poverty rate, sustained growth is essential to lifting millions out of poverty.

2. Employment Creation

Growth leads to industrial expansion and greater demand for labor in agriculture, services, and manufacturing sectors. By absorbing a larger portion of the workforce, particularly Nigeria's youthful population, economic growth helps reduce unemployment and underemployment, which are major socio-economic challenges.

3. Increased Government Revenue

Higher economic output translates to higher tax revenue for the government without necessarily increasing tax rates. With a larger revenue base, the government is better positioned to finance infrastructure, education, healthcare, and other essential services. In

Nigeria, economic growth can diversify revenue away from oil dependence and strengthen fiscal stability.

4. Attraction of Investment

A consistently growing economy is attractive to both domestic and foreign investors because it signals stability and profitability. Growth improves investor confidence, stimulates capital inflows, and accelerates technological transfer. Nigeria, with its large market potential, benefits significantly from growth-driven investments in sectors such as telecommunications, manufacturing, and real estate.

5. Infrastructure Development

Sustained growth provides the fiscal resources needed for the expansion of physical and social infrastructure such as roads, electricity, schools, hospitals, and water supply. Infrastructure, in turn, enhances productivity, reduces production costs, and supports further economic expansion.

6. Debt Sustainability

Economic growth enhances a country's ability to manage and service its debt obligations. A growing economy increases national income, thereby ensuring that the debt-to-GDP ratio remains sustainable. For Nigeria, stronger growth reduces reliance on borrowing and helps in mitigating the risks of debt overhang.

7. Technological Advancement and Innovation

Economic growth fosters research, innovation, and technological adoption. With more resources available, firms and governments can invest in advanced technologies that improve

productivity and efficiency. This process is critical for Nigeria's structural transformation and movement away from over-reliance on natural resources.

8. Improved Balance of Payments

Growth in production, especially in export-oriented sectors, strengthens a country's foreign exchange earnings and improves its balance of payments. For Nigeria, diversifying growth beyond oil into agriculture, manufacturing, and services will reduce trade imbalances and enhance external reserves.

9. Social and Political Stability

Economic growth contributes to social stability by reducing poverty, unemployment, and inequality, which are often root causes of political unrest and insecurity. A prosperous economy creates an environment where citizens are more likely to support governance structures and less likely to engage in conflict.

10. Pathway to Sustainable Development

Finally, economic growth is important because it creates the foundation for long-term sustainable development. By expanding resources, increasing productivity, and improving welfare, growth enables nations to achieve broader development goals such as those outlined in the United Nations Sustainable Development Goals (SDGs).

2.2.3 Economic Growth as measured By The World Bank

The World Bank is a leading institution for compiling and publishing global economic data. Through its World Development Indicators (WDI) and other statistical frameworks, it monitors economic growth to support development and poverty reduction.

Its main measures include Gross Domestic Product (GDP) and GDP per capita, expressed in constant or current prices and often adjusted for purchasing power parity (PPP) to allow international comparisons. While GDP reflects the size and growth rate of an economy, GDP per capita highlights how this growth translates into improvements in individual welfare. This is crucial for countries like Nigeria, where rapid population growth can erode the benefits of aggregate GDP growth.

Beyond GDP, the World Bank tracks structural transformation, measuring shifts from resource dependence to diversified economies with stronger industry and service sectors. This remains highly relevant for Nigeria's oil-dependent economy.

Complementary indicators include Gross National Income (GNI) per capita (used to classify income groups), investment and capital formation (signaling productive capacity), and human development measures such as education, health, and poverty reduction.

For Nigeria, these measurements provide standardized benchmarks for international comparison, debt sustainability analysis, and policy evaluation. They also guide reforms and inform strategies for achieving inclusive and sustainable growth.

2.2.4 Top Measures of Economic Growth

Economic growth is a multidimensional concept that cannot be captured by a single indicator. Traditionally, the growth of an economy is assessed by looking at the changes in the volume of output over time. However, contemporary development literature emphasizes that relying solely on GDP growth is inadequate, since growth must also reflect improvements in living standards, productivity, and structural transformation. Below are the major measures of economic growth widely recognized in economic research and international development practice:

1. Gross Domestic Product (GDP) Growth Rate

Gross Domestic Product (GDP) is the most widely recognized measure of economic growth globally. It refers to the total monetary value of all goods and services produced within a country over a specific period, usually annually or quarterly (Samuelson & Nordhaus, 2010). The GDP growth rate reflects the percentage change in output compared to the previous period and is often regarded as the primary indicator of economic performance.

In Nigeria, GDP growth has historically been influenced by fluctuations in crude oil prices, agricultural output, and government expenditure (Central Bank of Nigeria [CBN], 2022). Periods of oil booms are often associated with higher GDP growth, while global oil price declines have led to recessions, such as in 2016. A positive GDP growth rate signals expansion in economic activity, while negative growth indicates contraction or recession.

2. GDP per Capita

While aggregate GDP reflects the size of the economy, GDP per capita adjusts GDP to the population level, offering a clearer view of the average economic output or income per person (Todaro & Smith, 2015). This measure is particularly useful in determining whether growth translates into improved welfare for citizens.

In Nigeria, one of the world's fastest-growing populations has placed pressure on GDP per capita. Even during periods of GDP growth, rapid population increases have diluted the benefits, leaving individuals with stagnant or declining living standards (World Bank, 2021). For example, between 2010 and 2020, Nigeria recorded moderate GDP growth, but GDP per capita stagnated due to high population growth, suggesting that economic expansion did not adequately improve individual welfare.

3. Gross National Income (GNI) per Capita

The World Bank frequently uses Gross National Income (GNI) per capita as a complementary measure of economic growth and development. Unlike GDP, which measures production within national borders, GNI includes income earned by nationals abroad (such as remittances) and excludes income generated domestically by foreigners (World Bank, 2022).

This measure provides a clearer picture of the actual income accessible to citizens. The World Bank classifies countries into four income groups based on GNI per capita: low-income, lower-middle-income, upper-middle-income, and high-income (World Bank, 2022). Nigeria is currently classified as a lower-middle-income country. Tracking GNI per capita helps determine whether growth raises overall income levels and supports transitions to higher income classifications.

4. Productivity Growth

Productivity measures the efficiency with which resources such as labor and capital are utilized in producing goods and services. Productivity growth occurs when an economy generates more output with the same or fewer inputs, often as a result of technological progress, innovation, improved education, or better infrastructure (Krugman, 1994).

In Nigeria, productivity growth remains a challenge due to infrastructural deficits—particularly in power supply—weak institutions, and limited technological adoption (National Bureau of Statistics [NBS], 2022). Without significant productivity improvements, GDP growth may remain volatile or dependent on external factors such as oil prices. Thus, productivity growth is critical for achieving sustainable, long-term economic expansion.

5. Investment and Gross Capital Formation

Investment is another vital indicator of economic growth, as it reflects the extent to which an economy builds productive capacity for the future. Gross capital formation, which includes spending on infrastructure, machinery, equipment, and technology, highlights the level of economic modernization (Barro, 1991).

Countries with higher levels of capital formation tend to achieve stronger long-term growth. In Nigeria, however, investment has often been constrained by insecurity, weak infrastructure, policy inconsistency, and limited foreign direct investment (FDI) (CBN, 2022). Monitoring gross capital formation provides insight into whether the economy is positioned on a sustainable growth path.

6. Employment and Unemployment Rates

Employment generation is among the most practical measures of economic growth. A dynamic economy is expected to create jobs, absorb the labor force, and improve household incomes. Conversely, when growth does not translate into jobs, it is often described as “jobless growth” (Okun, 1962).

Nigeria faces severe unemployment and underemployment challenges, particularly among its youth population. Even in times of GDP growth, unemployment has remained persistently high, suggesting that growth has not been inclusive or labor-intensive (NBS, 2022). Employment indicators are therefore essential in assessing the quality of economic growth.

7. Human Development Indicators (Complementary Measure)

Although GDP measures economic size, it does not assess improvements in quality of life. To address this, indicators such as education, healthcare, life expectancy, and poverty levels are

commonly employed. The Human Development Index (HDI), developed by the United Nations Development Programme (UNDP), combines per capita income, education, and health outcomes to provide a broader measure of development (UNDP, 2021).

For Nigeria, HDI scores remain relatively low despite instances of positive GDP growth, suggesting that economic progress has not been sufficiently inclusive or welfare-enhancing (UNDP, 2021).

8. Structural Transformation Indicators

Sustained economic growth requires structural transformation, where economies shift from low-productivity sectors (such as subsistence agriculture) to higher value-added industries like manufacturing and services (Lewis, 1954). Tracking structural changes in sectoral contributions to GDP helps assess the quality of growth.

Nigeria's heavy dependence on crude oil revenues has left its growth vulnerable to external shocks. Progress is increasingly measured by diversification into non-oil sectors, expansion of exports, and the strengthening of industrial and service sectors (CBN, 2022).

2.3 GDP Growth Rate

The Gross Domestic Product (GDP) growth rate remains one of the most widely applied indicators of economic performance, measuring the percentage change in the total value of goods and services produced in an economy over time. It provides insights into whether an economy is expanding, contracting, or maintaining stability. In global development discourse, institutions such as the World Bank, International Monetary Fund (IMF), and the Organisation for Economic Co-operation and Development (OECD) consistently employ this measure to assess the health of economies, compare performance across regions, and design

effective policy interventions (IMF, 2015; OECD, 2021; World Bank, 2023). A careful examination of historical GDP growth trends—beginning with advanced economies, down to Africa, Sub-Saharan Africa, and finally Nigeria—reveals both similarities and contrasts in developmental patterns over the last four decades.

In advanced economies, GDP growth has typically been moderate, reflecting the stability and diversification of their economic structures. From the 1980s onwards, most OECD countries experienced steady but modest expansions, averaging between 1.5% and 3% annually. For instance, between 2005 and 2014, growth in advanced economies averaged about 1.5%, reflecting the lasting impact of the global financial crisis of 2008 and its aftermath (IMF, 2015). More recently, the World Bank (2023) reported that their collective GDP growth rate slowed to 1.5% in 2023, with projections expected to remain within a narrow range of 1.4% to 1.7%. Unlike developing regions, these economies rarely record dramatic booms or steep declines, as their highly diversified production structures and robust institutional frameworks provide resilience against global shocks.

Across Africa, economic growth has historically been uneven, often shaped by external shocks, commodity price fluctuations, and governance challenges. Since the 1980s, African economies have alternated between periods of moderate expansion and contraction. The debt crises of the early 1980s and the structural adjustment programmes of the late 1980s and 1990s constrained growth considerably (UNECA, 1999). However, with improved macroeconomic reforms and commodity booms in the 2000s, Africa began recording higher growth rates. By the mid-2000s, many African countries were posting growth rates above 5%, with average continental growth reaching nearly 6% during some years of the commodity super-cycle (World Bank, 2010). This momentum, however, slowed after 2014 due to the

collapse in oil and commodity prices, with overall growth for developing economies, including Africa, averaging around 3.9% by 2023 (World Bank, 2023).

For Sub-Saharan Africa (SSA), the historical record reveals greater volatility compared to the continental average. According to World Bank data, the region recorded a GDP growth rate of 3.8% in 1980. The economic crises of the early 1980s soon led to sharp declines, but recovery began in the late 1990s and early 2000s, supported by rising commodity prices, debt relief initiatives, and increased foreign investment (World Bank, 2015). Growth peaked at around 6% in 2010, underscoring the strength of this rebound. By 2014, growth remained strong at 4.9%, but the collapse of global oil prices in 2015, combined with weak commodity demand from China, pulled the region into a downturn, with growth plummeting to as low as 1.2% in 2016 (IMF, 2016). The COVID-19 pandemic further constrained progress, causing contractions across major economies, but by 2022 SSA posted a modest rebound of 3.7%. This recovery slowed again in 2023 when growth stood at 3.0%, reflecting global inflationary pressures, tighter financing conditions, and persistent structural weaknesses (World Bank, 2023).

Nigeria, Africa's largest economy, demonstrates a particularly volatile growth trajectory, strongly tied to oil price cycles and policy choices. In 1980, the country's GDP growth rate was recorded at 4.2%, but this was followed by severe declines due to the oil price collapse and economic mismanagement, with GDP contracting by -13.1% in 1981 (CBN, 2019). Performance remained inconsistent throughout the 1980s and 1990s, reflecting political instability and the impacts of structural adjustment. However, the return to civilian rule in 1999 and reforms in the banking and telecommunications sectors triggered a more stable growth path in the 2000s. Nigeria achieved one of its highest growth spurts in 2004, recording 9.3%, while even during the global financial crisis, GDP still expanded by 8.0% in

2009 (CBN, 2014). By 2013, growth was at 6.7%, and in 2014 it remained strong at 6.3%, supported by robust oil earnings and a burgeoning services sector (World Bank, 2015).

The period after 2014 marked a major turning point. The crash in global oil prices, combined with domestic challenges such as insecurity, inflation, and declining foreign investment, pushed Nigeria into a recession in 2016, when GDP contracted by -1.6% (CBN, 2017). A fragile recovery followed, but the pandemic of 2020 led to another contraction of -1.8% . In recent years, the economy has returned to positive growth, recording 3.7% in 2021, 3.3% in 2022, and 2.9% in 2023 (World Bank, 2023). These figures highlight the country's vulnerability to external shocks, especially oil price fluctuations, as well as its urgent need for diversification and structural reforms.

Taken together, the GDP growth experiences of advanced economies, Africa, Sub-Saharan Africa, and Nigeria provide a layered understanding of global and regional economic dynamics. While advanced economies reflect slow but steady progress, Africa and Sub-Saharan Africa demonstrate cycles of rapid expansion and contraction, shaped largely by commodity dependence and structural constraints. Nigeria, standing at the center of this analysis, illustrates both the opportunities and vulnerabilities of resource-dependent economies, showing periods of high growth followed by deep recessions, a pattern that underscores the importance of diversification, resilience, and prudent debt management in achieving sustainable growth.

2.3.1 Government Programmes and Strategies to Enhance GDP Growth in Nigeria

Over the years, Nigeria has introduced several programmes and policy frameworks aimed at stimulating economic growth and improving Gross Domestic Product (GDP) performance. In the mid-1980s, the Structural Adjustment Programme (SAP) was adopted under the guidance

of the International Monetary Fund (IMF) and the World Bank to address declining oil revenues, balance-of-payment deficits, and rising debt. The programme emphasized liberalization, deregulation, subsidy removal, and diversification. While SAP achieved certain gains such as reducing fiscal imbalances and encouraging private sector participation, it also led to inflationary pressures, unemployment, and widespread poverty due to austerity measures (Iyoha & Oriakhi, 2002).

In the early 2000s, the National Economic Empowerment and Development Strategy (NEEDS) was introduced as part of a homegrown reform agenda. NEEDS sought to stabilize the macroeconomy, enhance transparency, improve infrastructure, and promote privatization. This period coincided with stronger growth rates, partly driven by high oil prices, and Nigeria secured a landmark debt relief deal in 2005 from the Paris Club, reducing external debt burdens and freeing fiscal space for development (Okonjo-Iweala, 2012).

Building on these reforms, the Vision 20:2020 framework was launched to position Nigeria among the world's top 20 economies by the year 2020. Its main pillars were industrialization, human capital development, and infrastructure expansion. However, despite strong growth between 2000 and 2014, weak institutional capacity, inconsistent policies, and the oil price collapse in 2014 hindered its achievement (Ekpo & Umoh, 2014).

The Transformation Agenda (2011–2015) under President Goodluck Jonathan sought to diversify the economy beyond oil, with significant emphasis on agriculture, energy, and infrastructure. It contributed to a period of strong GDP growth, with Nigeria briefly becoming Africa's largest economy after the 2014 rebasing exercise. Nonetheless, the oil shock of 2014 exposed structural weaknesses, including overdependence on crude oil revenues (Ajakaiye & Odusola, 2017).

Following Nigeria's 2016 recession, the Economic Recovery and Growth Plan (ERGP) was launched to restore macroeconomic stability. The ERGP targeted oil production expansion, power sector reform, and industrialization. While it helped the economy return to positive growth, its objectives of broad-based diversification and job creation were only partially achieved (CBN, 2018).

More recently, the National Development Plan (NDP) 2021–2025 and the Renewed Hope Agenda under the current administration have emphasized economic diversification, social inclusion, and macroeconomic stability. These policies aim to reduce Nigeria's vulnerability to external shocks, particularly oil price volatility, while focusing on infrastructure development, human capital investment, and private-sector-led growth (NPC, 2021). Despite these ambitious programmes, challenges such as corruption, weak implementation, and policy inconsistency continue to limit their effectiveness.

2.3.2 Response of the World Bank and IMF to Nigeria's Growth Programmes

The World Bank and the International Monetary Fund (IMF) have played a central role in shaping and responding to Nigeria's economic growth programmes, particularly during periods of crisis and reform. When Nigeria adopted the Structural Adjustment Programme (SAP) in 1986, it was designed under the guidance of these institutions. The IMF and World Bank supported SAP because it aligned with their prescriptions of economic liberalization, market deregulation, and reduced government intervention. However, they also insisted on austerity measures such as subsidy removals and currency devaluation, which, while stabilizing fiscal balances, worsened living conditions for ordinary Nigerians and sparked domestic resistance (World Bank, 1994).

During the 2000s, as Nigeria implemented the National Economic Empowerment and Development Strategy (NEEDS), the World Bank and IMF welcomed the framework for its emphasis on fiscal responsibility, privatization, and debt sustainability. Their support contributed to Nigeria securing major external debt relief in 2005, which significantly reduced the country's external debt stock and enabled increased spending on social and capital projects (IMF, 2006).

For Vision 20:2020 and subsequent programmes, the IMF and World Bank consistently advised Nigeria to diversify its economy beyond oil, strengthen governance institutions, and improve fiscal transparency. They expressed concerns, however, about poor implementation and weak institutional frameworks that undermined these otherwise sound strategies (World Bank, 2010).

Following the 2016 recession, the IMF encouraged tighter fiscal discipline, exchange rate reforms, and structural transformation, while the World Bank provided policy-based loans to help Nigeria finance budget shortfalls and support growth recovery (IMF, 2017). In response to the National Development Plan (2021–2025) and the Renewed Hope Agenda, both institutions have stressed the importance of sustaining reforms such as subsidy removal, exchange rate unification, and debt sustainability, while warning against the risks of rising debt and governance weaknesses (World Bank, 2022).

Overall, while the World Bank and IMF have supported Nigeria's programmes through financial aid, debt restructuring, and technical advice, they have repeatedly identified corruption, policy inconsistency, and weak governance as persistent obstacles preventing Nigeria from translating these frameworks into sustained and inclusive economic growth.

2.4 Gross National Income (GNI) per Capita

Gross National Income (GNI) per capita is widely regarded as one of the most authoritative indicators for evaluating economic growth and development. It measures the total income earned by residents of a country—both domestically and from abroad—divided by the population. Each year, the World Bank applies this measure to classify economies into four income groups: low-income (less than \$1,135), lower-middle-income (\$1,136–\$4,465), upper-middle-income (\$4,466–\$13,845), and high-income (above \$13,845) as of July 2023 (World Bank, 2023). This classification provides a standardized framework for comparing economic progress across countries.

In advanced economies, GNI per capita has consistently exceeded the high-income threshold by large margins. For example, by 1980, the United States recorded a GNI per capita above \$12,000, while Japan, Germany, France, and the United Kingdom were firmly within the high-income category. Over subsequent decades, continuous technological progress, industrial competitiveness, and strong institutional frameworks pushed these figures further upward. By 2000, most advanced economies had GNI per capita values above \$30,000, and by 2022–2023, the United States had surpassed \$70,000, while Germany and the United Kingdom maintained levels above \$45,000. This sustained performance confirms their long-standing high-income status (World Bank, 2023).

In contrast, Africa has largely remained at the lower end of the global classification ladder. In 1980, the continent's average GNI per capita was below \$1,000, placing most African economies in the low-income category. Structural weaknesses, political instability, and the debt crisis of the 1980s further constrained growth. By 2000, the average had only risen to about \$1,200, barely meeting the lower-middle-income threshold. Despite the commodity boom of the early 2000s and some structural reforms, average GNI per capita increased only

modestly, reaching about \$2,000 in 2010 and below \$2,200 in 2020. As of 2023, the majority of African countries remain in the low-income or lower-middle-income categories, reflecting the continent's slow progression relative to global trends (World Bank, 2023).

Sub-Saharan Africa presents an even starker picture. In 1980, the region's GNI per capita averaged between \$600 and \$800, among the lowest globally. The economic stagnation of the 1980s and 1990s, combined with rapid population growth, entrenched many countries in the low-income category. By 2010, the regional average had risen to around \$1,200, placing only a few economies in the lower-middle-income bracket. By 2020, this increased to roughly \$1,700, but in the 2023 update, the majority of Sub-Saharan African countries remained in either the low-income (below \$1,135) or lower-middle-income (\$1,136–\$4,465) groups, with only a handful—such as South Africa and Botswana—achieving upper-middle-income status (World Bank, 2023).

Nigeria offers a critical case study of this trajectory. In 1980, Nigeria's GNI per capita was approximately \$1,250, placing it just above the low-income threshold at the time. However, economic crises, political instability, and fluctuations in global oil prices during the 1980s and 1990s caused prolonged stagnation, with figures hovering around \$1,000. The 2000s brought a turnaround: debt relief, rising oil revenues, and macroeconomic reforms boosted Nigeria's GNI per capita to about \$1,500 in 2005 and \$2,020 by 2010, officially placing the country in the lower-middle-income category. By 2013, the indicator peaked at around \$2,760, reflecting oil-driven expansion. Yet subsequent oil price shocks, exchange rate instability, and rapid population growth eroded these gains. By 2020, Nigeria's GNI per capita had declined to roughly \$2,100, and in 2023 the country remained in the lower-middle-income category (World Bank, 2023).

Overall, historical and contemporary evidence highlights persistent global income disparities. While advanced economies have remained firmly in the high-income bracket with GNI per capita levels above \$40,000 since the early 2000s, Africa and Sub-Saharan Africa continue to lag behind, averaging below \$2,000. Nigeria's path—from \$1,250 in 1980, peaking at \$2,760 in 2013, and falling back to \$2,100 by 2020—illustrates both progress and vulnerability. The World Bank's 2023 classification confirms that Nigeria still faces significant challenges in transitioning beyond the lower-middle-income level, largely due to reliance on oil revenues, slow structural transformation, and demographic pressures.

2.5 Essentials for Successful Economic Growth in Nigeria

Achieving sustainable economic growth in Nigeria requires a combination of structural reforms, institutional strengthening, and strategic policy implementation. Economic growth is not merely the expansion of output but also the transformation of the economy in ways that enhance productivity, create jobs, and raise living standards. Scholars and development agencies emphasize several key essentials necessary for Nigeria to achieve inclusive and sustained growth.

1. Sound Macroeconomic Policies

Stable fiscal and monetary frameworks are central to economic growth. Excessive fiscal deficits, inflationary pressures, and exchange rate volatility have historically undermined Nigeria's growth performance. Implementing prudent fiscal discipline, ensuring effective debt management, and pursuing inflation-targeting monetary policies are essential for maintaining macroeconomic stability (World Bank, 2020).

2. Diversification of the Economy

Nigeria's dependence on oil exports has made it vulnerable to global price shocks. A

successful growth trajectory requires diversifying into agriculture, manufacturing, and services. Studies highlight that economies with diversified production bases are more resilient to external shocks and capable of generating broad-based employment (Auty, 2017). Strengthening non-oil sectors will also improve export competitiveness and reduce balance-of-payment crises.

3. Investment in Infrastructure

Adequate infrastructure—particularly in energy, transportation, and digital connectivity—is fundamental for productivity and competitiveness. Nigeria’s infrastructure deficit, estimated at \$100 billion annually, constrains industrialization and business development (African Development Bank [AfDB], 2021). Expanding power generation capacity, modernizing road and rail networks, and promoting broadband penetration are vital for unlocking growth potential.

4. Human Capital Development

Economic growth requires skilled, healthy, and productive labor. Nigeria faces challenges of poor educational outcomes and health indicators. According to the United Nations Development Programme (UNDP, 2022), Nigeria’s Human Development Index (HDI) remains below the global average, underscoring the need for greater investment in quality education, vocational training, and healthcare delivery. Enhancing human capital will boost productivity and foster innovation.

5. Institutional and Governance Reforms

Effective governance and strong institutions are critical to sustaining growth. Corruption, policy inconsistency, and weak regulatory frameworks have constrained Nigeria’s economic potential. The International Monetary Fund (IMF, 2021) stresses that strengthening public

institutions, enhancing transparency, and ensuring the rule of law are prerequisites for attracting investment and fostering economic transformation.

6. Private Sector Development and Entrepreneurship

A dynamic private sector drives innovation, investment, and job creation. Encouraging entrepreneurship, reducing bureaucratic bottlenecks, and improving access to finance for small and medium enterprises (SMEs) are essential to promoting inclusive growth. Public-private partnerships (PPPs) can also mobilize resources for infrastructure and industrial expansion (OECD, 2020).

7. Regional and Global Integration

Nigeria's participation in global trade and regional blocs such as the African Continental Free Trade Area (AfCFTA) offers opportunities for expanding markets and improving competitiveness. Leveraging these frameworks requires addressing domestic production bottlenecks and ensuring compliance with global standards to benefit from trade liberalization (UNCTAD, 2019).

2.6 Determinants of Economic Growth in Nigeria

Economic growth in Nigeria is influenced by a combination of structural, institutional, and policy-related factors. These determinants interact to shape the pace and sustainability of growth outcomes, often reflecting both domestic realities and external shocks. Scholars and policymakers agree that identifying the major drivers of growth in Nigeria is essential for designing policies that can reduce poverty, enhance productivity, and ensure long-term development.

1. Natural Resource Endowment

Nigeria's abundant natural resources, particularly crude oil and natural gas, have historically

dominated its economic performance. Oil revenues contribute significantly to government expenditure, foreign exchange earnings, and public investment. However, overdependence on resource rents has also exposed the economy to the volatility of global oil prices, leading to unstable growth patterns (Sala-i-Martin & Subramanian, 2013). Thus, while resource wealth can stimulate growth, its mismanagement has contributed to cyclical economic crises.

2. Human Capital Development

The quality of education, healthcare, and skill acquisition strongly influences Nigeria's productivity and growth potential. Despite having one of the largest youth populations in Africa, Nigeria suffers from inadequate educational infrastructure, high out-of-school rates, and poor health indicators. Empirical studies show that economies with higher human capital accumulation achieve faster and more inclusive growth (Barro, 2015). Enhancing education and health outcomes is therefore a key determinant of long-term growth.

3. Investment and Capital Formation

Both public and private investments in infrastructure, industry, and technology play critical roles in expanding productive capacity. Nigeria's capital formation has often been constrained by weak domestic savings, capital flight, and low levels of foreign direct investment (FDI). The World Bank (2020) emphasizes that sustained capital accumulation is necessary to modernize agriculture, promote industrialization, and increase competitiveness in the global economy.

4. Macroeconomic Stability

Economic stability, reflected in low inflation, stable exchange rates, and sound fiscal management, determines the confidence of investors and the efficiency of markets. Persistent fiscal deficits, high inflation, and currency depreciation have historically undermined

Nigeria's growth. The International Monetary Fund (IMF, 2021) notes that credible macroeconomic policies are essential to attract investment and reduce vulnerability to shocks.

5. Institutional Quality and Governance

Strong institutions and transparent governance are vital for growth. Nigeria has faced challenges such as corruption, weak property rights, and inconsistent policy implementation, which have limited the effectiveness of development initiatives. Acemoglu and Robinson (2012) argue that inclusive institutions foster growth by encouraging innovation, investment, and efficient allocation of resources. For Nigeria, addressing institutional weaknesses remains a key determinant of economic performance.

6. Trade and Global Integration

Nigeria's economic growth is also influenced by its participation in international trade and global markets. While oil exports dominate, non-oil exports remain underdeveloped. The African Continental Free Trade Area (AfCFTA) offers opportunities to expand trade in manufactured goods and services, but Nigeria must address infrastructure and competitiveness challenges to benefit fully (UNCTAD, 2019). Trade liberalization, when complemented with domestic reforms, can thus stimulate growth.

7. Demographic Dynamics

Nigeria's large and growing population presents both opportunities and challenges. On one hand, a youthful population can provide a demographic dividend if properly harnessed through education, skills training, and job creation. On the other hand, rapid population growth without commensurate employment opportunities risks worsening poverty and inequality (Bloom et al., 2015). Demographic trends therefore remain a fundamental determinant of growth.

8. Technological Innovation and Digital Economy

Technology adoption and digital transformation have become increasingly important for productivity growth. Nigeria's fintech sector, for instance, has expanded rapidly and is attracting global investment. Enhancing access to information and communication technology (ICT), investing in research and development, and promoting innovation ecosystems are determinants of future growth (OECD, 2020).

2.7.1 Evidence Base of the Determinants of Economic Growth in Nigeria

The determinants of economic growth in Nigeria outlined above are not only theoretical but are also supported by empirical evidence from both domestic and international studies. This section provides an evidence-based analysis of how natural resources, human capital, investment, macroeconomic stability, institutions, trade, demographics, and technology have shaped Nigeria's growth trajectory.

1. Natural Resource Endowment

Empirical studies confirm that Nigeria's reliance on oil has been a double-edged sword. According to the Central Bank of Nigeria (CBN, 2018), crude oil accounted for over 80% of foreign exchange earnings and nearly 50% of government revenue between 1980 and 2016. However, volatility in global oil prices led to repeated recessions, including those of 1986, 2016, and the COVID-19 downturn in 2020. Sala-i-Martin and Subramanian (2013) demonstrated through econometric analysis that resource rents in Nigeria crowd out productive investments in non-oil sectors, illustrating the "resource curse."

2. Human Capital Development

Evidence shows that weak human capital remains a major constraint on growth. The World Bank's Human Capital Index (2020) ranked Nigeria 168th out of 174 countries, indicating

that a child born in Nigeria will only be 36% as productive as they could be with complete education and health. Empirical findings by Ogundari and Awokuse (2018) reveal that higher education expenditure in Nigeria significantly improves economic growth, but low quality and access limit this impact.

3. Investment and Capital Formation

Nigeria's gross capital formation as a percentage of GDP has fluctuated between 10% and 20% since the 1980s, which is lower than the 25–30% observed in fast-growing Asian economies (World Bank, 2020). Studies such as Adegbite and Ayadi (2011) show that foreign direct investment (FDI) has a positive impact on Nigeria's growth but is often undermined by poor infrastructure and policy inconsistency.

4. Macroeconomic Stability

Macroeconomic instability has repeatedly constrained growth. Inflation averaged 18% in the 1990s and peaked at 72.8% in 1995 (CBN, 2018). Exchange rate volatility has also discouraged investment, with the naira depreciating from ₦0.90 per dollar in 1980 to over ₦400 per dollar by 2020. Empirical studies, such as those by Akinlo (2012), highlight that macroeconomic volatility significantly reduces investment and output growth in Nigeria.

5. Institutional Quality and Governance

Nigeria consistently ranks low on governance indicators. Transparency International (2020) ranked Nigeria 149th out of 180 countries on the Corruption Perceptions Index. Empirical research by Olayungbo and Akinlo (2017) finds that corruption and weak institutions significantly undermine the impact of public expenditure on growth. In contrast, periods of relatively improved governance, such as the 2004–2007 economic reforms, were associated with higher growth rates.

6. Trade and Global Integration

Nigeria's trade openness has been dominated by oil exports, which accounted for 92% of total exports in 2019 (World Bank, 2020). Non-oil exports remain marginal, limiting diversification benefits. Empirical findings by Okon and Ekpo (2018) suggest that while trade liberalization initially stimulated growth, the lack of industrial competitiveness prevented Nigeria from fully reaping the gains of global integration.

7. Demographic Dynamics

Nigeria's demographic trends provide evidence of both opportunities and risks. With a median age of 18.1 years and a population exceeding 200 million, Nigeria is projected to become the third-most populous country in the world by 2050 (United Nations, 2019). However, unemployment stood at 33.3% in 2021, indicating that the demographic dividend is yet to be harnessed. Empirical studies (Bloom et al., 2015) show that without significant investment in education and job creation, rapid population growth may exacerbate poverty rather than stimulate growth.

8. Technological Innovation and Digital Economy

Evidence also shows that technology is becoming a new driver of growth. Nigeria's fintech sector attracted over \$600 million in investment between 2014 and 2019, making it the largest in Africa (PwC, 2020). Empirical studies by Asongu and Odhiambo (2019) indicate that ICT penetration positively correlates with productivity growth in African economies, including Nigeria. The rapid adoption of mobile banking and digital services during the COVID-19 pandemic further highlights technology's role in resilience and future growth.

2.7.2 Evidence Base of the Determinants of Economic Growth in Nigeria: The Role of Public Debt

The determinants of economic growth in Nigeria—natural resources, human capital, investment, macroeconomic stability, institutions, trade, demographics, and technology—are not isolated from fiscal policy and debt management. In fact, public debt has historically shaped the trajectory of these determinants by either amplifying or constraining their contribution to growth. Evidence from empirical studies, policy reports, and historical episodes in Nigeria demonstrates how debt interacts with these drivers of economic growth.

1. Natural Resource Endowment and Debt

Nigeria's heavy reliance on oil revenues has directly influenced its debt profile. During oil booms, governments often borrowed against projected revenues, while price crashes led to debt crises. For instance, between 1981 and 1986, Nigeria's external debt ballooned from \$14 billion to over \$30 billion due to declining oil revenues (CBN, 2018). Sala-i-Martin and Subramanian (2013) note that oil dependence often encouraged excessive borrowing and rent-seeking, undermining investment in productive sectors. This resource-debt cycle contributed to debt overhang, where high debt burdens discouraged private investment and slowed growth.

2. Human Capital Development and Debt Allocation

Evidence shows that debt-financed expenditure in Nigeria has rarely prioritized human capital. The World Bank (2020) observed that while Nigeria's education expenditure averaged less than 7% of total government spending between 2000 and 2018, debt servicing accounted for nearly 60% of revenue by 2020. Studies such as Ogundari and Awokuse (2018) confirm that higher investment in education and health accelerates growth, but Nigeria's debt

servicing obligations crowd out such critical spending, creating a “fiscal squeeze” on human capital development.

3. Investment, Capital Formation, and Debt Burden

Nigeria has relied on both domestic and external debt to finance capital formation. However, Adegbite and Ayadi (2011) find that while debt-financed investment can stimulate growth, Nigeria’s mismanagement of borrowed funds often limits its impact. For instance, much of the debt acquired during the military regimes of the 1980s and 1990s financed consumption rather than infrastructure. More recently, despite rising debt stock (₦87.9 trillion in 2023), gross capital formation remains below 20% of GDP, compared to over 30% in high-growth economies (World Bank, 2020). This illustrates that borrowing, when not strategically invested, fails to enhance productive capacity.

4. Macroeconomic Stability and Debt Sustainability

Public debt significantly influences macroeconomic stability in Nigeria. Akinlo (2012) demonstrates that debt accumulation often leads to inflationary pressures and exchange rate instability, especially when borrowing is used for recurrent expenditure. Nigeria’s debt servicing-to-revenue ratio reached 83% in 2021 (World Bank, 2022), constraining fiscal space and creating vulnerability to external shocks. The naira’s sharp depreciation during debt crises in the 1980s and again in the mid-2010s underscores the destabilizing effect of unsustainable debt on macroeconomic performance.

5. Institutional Quality, Governance, and Debt Mismanagement

Weak institutions have historically undermined the growth benefits of debt in Nigeria. Olayungbo and Akinlo (2017) argue that corruption and inefficiency mean debt-financed projects often yield low returns. The mismanagement of debt funds in the 1980s Structural Adjustment Program (SAP) era is a prime example, as borrowed funds were misallocated to

consumption and politically motivated projects. Transparency International (2020) confirms that corruption continues to weaken the effectiveness of public borrowing. Conversely, Nigeria's 2005 debt relief under the Paris Club—achieved during a period of governance reforms—freed up fiscal space and coincided with stronger growth.

6. Trade, External Balance, and Debt Dependency

Nigeria's trade structure has also fueled debt accumulation. With over 90% of export earnings dependent on oil, external shocks often necessitate borrowing to finance imports and stabilize the balance of payments (Okon & Ekpo, 2018). Debt has thus been used as a buffer during periods of trade deficits, but this often results in mounting obligations when exports fail to recover. For example, after the 2014 oil price crash, Nigeria increased external borrowing to fund budget shortfalls, leading to rising debt-to-GDP ratios without corresponding diversification of exports.

7. Demographic Dynamics and Intergenerational Debt Burden

Nigeria's youthful population represents both a potential demographic dividend and a challenge for debt sustainability. Public debt creates an intergenerational burden, as today's borrowing must be repaid by future taxpayers. With unemployment at 33.3% in 2021, debt servicing diverts funds that could otherwise finance job creation, education, and health for Nigeria's growing population (Bloom et al., 2015). If debt is not invested in sectors that absorb labor and increase productivity, the demographic advantage may become a liability, worsening poverty and inequality.

8. Technological Innovation, Infrastructure, and Debt Financing

Debt can play a positive role in driving technological and infrastructural growth. For example, Nigeria's investments in ICT and power sector reforms have been partly debt-financed. Asongu and Odhiambo (2019) argue that ICT-driven growth in Africa, including

Nigeria, benefits significantly from infrastructure investments, many of which require debt financing. However, the challenge remains whether Nigeria's borrowing is channeled toward transformative sectors such as digital infrastructure, renewable energy, and industrial technology, or diverted to recurrent costs.

2.7.3 Challenges in Harnessing Growth Determinants under High Debt in Nigeria

While Nigeria possesses several determinants of economic growth—such as abundant natural resources, a youthful labor force, and opportunities for trade and investment—the rising levels of public debt have posed serious challenges to effectively harnessing these growth drivers. One of the foremost challenges is the debt overhang problem, where the expectation of future taxes to repay accumulated debt discourages both domestic and foreign investment (Krugman, 1988; Pattillo, Poirson, & Ricci, 2002). In Nigeria, high debt service obligations, which have consumed more than 80% of government revenue in recent years, have significantly constrained fiscal space for productive investments in infrastructure, education, and healthcare (World Bank, 2022).

Another challenge lies in the crowding-out effect, whereby excessive government borrowing from domestic financial markets limits the availability of credit to the private sector. This reduces the ability of firms to expand, innovate, and create jobs, thereby slowing the contribution of private investment to economic growth (Onyekwena & Ekeruche, 2019). In addition, the reliance on external borrowing, particularly from multilateral and bilateral creditors, has heightened Nigeria's exposure to currency volatility. Depreciation of the naira increases the cost of servicing external debt, which further erodes resources available for growth-enhancing expenditures (IMF, 2021).

Weak institutional frameworks and governance challenges also undermine the effective utilization of borrowed funds. Studies have shown that Nigeria has often channeled debt-financed resources into recurrent expenditure rather than capital projects, limiting their impact on long-term growth (Iyoha, 1999; Okonjo-Iweala & Osafo-Kwaako, 2007). Similarly, corruption and inefficiencies in public financial management reduce the multiplier effect of debt-funded programs, thereby reinforcing structural weaknesses.

Finally, population growth in Nigeria places additional pressure on economic resources. Even when GDP growth is recorded, high debt servicing obligations combined with rapid demographic expansion dilute per capita gains, leading to stagnant living standards (UNDP, 2020). Thus, although public debt can serve as a tool for financing development, the Nigerian experience reveals that its mismanagement and structural weaknesses in debt utilization pose critical challenges to harnessing the full potential of the determinants of economic growth.

2.8 Theoretical Literature

2.8.1 Theories of Economic Growth

2.8.1.1 Classical Growth Theory and Public Debt in Nigeria

The classical school of economic thought, which dominated between the late 18th and early 19th centuries, provides fundamental insights into the nature of economic growth, public finance, and the implications of debt. Although unified by their belief in market self-regulation and capital accumulation as the engine of growth, classical economists diverged in their perspectives on the role of borrowing in sustaining national prosperity. Adam Smith, David Ricardo, Thomas Malthus, and John Stuart Mill, in particular, made distinctive contributions that remain relevant for analyzing Nigeria's debt-growth dynamics from the 1980s through the 2020s.

Adam Smith: Capital Accumulation and the Erosion of Wealth Through Debt

Adam Smith's *The Wealth of Nations* (1776/2007) established the foundation of classical growth theory by emphasizing the role of savings, capital accumulation, specialization, and the division of labor in creating wealth. For Smith, economic growth depends on the productive deployment of resources, particularly when savings are channeled into investment. His perspective on debt was skeptical: borrowing, particularly by governments, diverts resources from productive investment into unproductive consumption. Public debt, he argued, places pressure on future taxpayers, disrupts natural market mechanisms, and eventually weakens the "invisible hand" of self-regulation.

Applied to Nigeria, Smith's thesis resonates strongly with the debt crisis of the 1980s and 1990s. During this period, Nigeria borrowed heavily in response to falling oil prices and rising import costs, yet the loans were largely funneled into recurrent expenditure, fuel subsidies, and administrative costs rather than productive capital formation (Iyoha, 1999). Instead of enhancing savings and investment, debt accumulation eroded national wealth by constraining fiscal space and discouraging private sector confidence. Nigeria's reliance on short-term borrowing during the Structural Adjustment Programme (SAP) further entrenched this dynamic, leaving the economy with weak capital accumulation and chronic underinvestment in manufacturing and agriculture—precisely the pitfalls Smith warned against.

David Ricardo: Intergenerational Tax Burdens of Debt

David Ricardo's *Principles of Political Economy and Taxation* (1817/2004) sharpened the classical debate on debt through his concept of intertemporal burdens. Ricardo argued that borrowing does not create wealth but merely postpones taxation, as debt servicing eventually

falls on future generations. His Ricardian equivalence hypothesis proposed that rational households anticipate this future burden and reduce consumption accordingly, thereby neutralizing the short-term benefits of debt-financed spending.

Nigeria's experience provides empirical support for Ricardo's concerns. By the late 1990s, debt servicing obligations consumed more than 40% of government revenue (Obadan, 2004). Expenditure on social infrastructure and human capital was crowded out, while future generations bore the costs of decisions made decades earlier. This pattern persisted into the 2010s and 2020s, where despite renewed borrowing, a disproportionate share of government revenues has been allocated to debt service, often exceeding expenditure on education and health (World Bank, 2022). Ricardo's thesis that debt creates intergenerational burdens is thus clearly validated in Nigeria, where fiscal sustainability continues to be undermined by the growing tax obligations associated with debt repayment.

Thomas Malthus: Debt as a Stabilizer of Aggregate Demand

In contrast to Smith and Ricardo, Thomas Malthus offered a more optimistic role for debt in his *Principles of Political Economy* (1820/1986). Malthus stressed that insufficient demand could lead to underutilization of resources and stagnation. In such contexts, public borrowing, by injecting additional expenditure into the economy, could sustain aggregate demand, prevent unemployment, and stabilize growth. Malthus thus viewed debt as potentially beneficial, particularly in economies prone to cyclical downturns.

Nigeria's debt history aligns partially with Malthus's thesis. During the oil price collapse of the mid-1980s, the global financial crisis of 2008, and the recession of 2016, Nigeria resorted to debt-financed spending to cushion the economy. Borrowing provided short-term relief by sustaining government spending and preventing economic collapse. For example, during the

2016 recession, external borrowing was used to finance budget deficits, helping Nigeria avoid deeper contraction (Central Bank of Nigeria [CBN], 2017). However, weak institutions, corruption, and leakages meant that the stabilizing benefits of debt were short-lived. Unlike Malthus's envisioned scenario where debt stimulates productive demand, Nigeria's fiscal mismanagement limited the long-term growth benefits, illustrating the gap between theoretical potential and institutional reality.

John Stuart Mill: Productive versus Unproductive Debt

John Stuart Mill in *Principles of Political Economy* (1848/2008) advanced the idea that the economic value of debt depends on its application. Mill distinguished between “productive” debt—borrowing used to finance infrastructure, education, and industrial projects that expand future productive capacity—and “unproductive” debt, directed toward consumption or administrative costs, which undermines growth. For Mill, the problem was not debt itself but the efficiency of its allocation.

Nigeria's debt trajectory embodies Mill's distinction. During the military regimes of the 1980s and 1990s, much of Nigeria's borrowing was unproductive, financing recurrent expenditure and contributing to entrenched fiscal crises. However, in the post-2005 debt relief era, portions of new borrowing were allocated to infrastructure projects such as railway rehabilitation, power sector investments, and road construction. Although outcomes have been mixed, these initiatives reflect Mill's notion of productive debt. Yet, the persistence of borrowing for salaries, subsidies, and recurrent expenditures illustrates the continued prevalence of unproductive debt. Mill's framework thus provides a useful lens for evaluating Nigeria's debt profile, emphasizing the importance of the quality of expenditure rather than the quantum of borrowing.

Synthesis: Classical Theory and Nigeria's Public Debt Experience

The classical perspectives collectively provide a nuanced framework for understanding Nigeria's debt-growth dynamics. Smith's concern about capital accumulation explains why Nigeria's heavy debt in the 1980s–1990s stifled growth. Ricardo's intergenerational burden is evident in the persistent diversion of revenues to debt servicing. Malthus's justification for debt as a stabilizer reflects Nigeria's counter-cyclical borrowing during recessions, though outcomes were weakened by corruption. Mill's distinction between productive and unproductive debt highlights the uneven allocation of borrowed funds between growth-enhancing infrastructure and recurrent consumption. Nigeria's historical trajectory thus demonstrates the continuing relevance of classical insights. While public debt has occasionally played a stabilizing role, its misuse has more often undermined capital accumulation, fiscal sustainability, and long-term growth. The overarching lesson from classical theory, as applied to Nigeria, is that debt is neither inherently destructive nor inherently beneficial—it is the management, purpose, and institutional environment that determine whether it promotes or hinders economic growth.

2.8.1.2 The Harrod–Domar Growth Model and its Relevance to Nigeria

The Harrod–Domar growth model, developed independently by Roy Harrod (1939) and Evsey Domar (1946), is one of the earliest post-Keynesian attempts to formalize the dynamics of economic growth. At its core, the model argues that economic growth is driven by savings and investment, which expand a country's productive capacity, while at the same time generating demand for output (Harrod, 1939; Domar, 1946). The model emphasizes the dual role of investment: first, as a contributor to aggregate demand in the short run, and second, as a means of expanding productive capacity in the long run.

From the perspective of Harrod and Domar, a stable growth path depends on the balance between the warranted growth rate (the rate at which investment ensures capacity utilization) and the natural growth rate (the growth rate of labor supply). If investment exceeds the warranted rate, it leads to overcapacity; if it falls below, unemployment rises. Thus, sustainable growth requires continuous mobilization of savings into productive investments.

The Harrod–Domar model also underlines that for developing economies with low savings, achieving sustainable growth requires external financing—through foreign aid, foreign direct investment, or external borrowing (Domar, 1946). In this way, the model provides a theoretical justification for public debt accumulation as a tool for stimulating growth, especially when domestic savings are insufficient to finance capital formation.

Nigeria in Light of the Harrod–Domar Model (1980s–2020s)

Applying this theory to Nigeria reveals a mixed outcome. Beginning in the 1980s, Nigeria’s domestic savings were relatively low due to heavy dependence on oil exports, fiscal mismanagement, and rising public expenditures. In this period, Nigeria turned to external borrowing to finance infrastructure, balance of payments deficits, and economic stabilization programs. According to the Harrod–Domar perspective, such borrowing was necessary to bridge the “savings–investment gap” and place the country on a higher growth trajectory (Iyoha, 1999).

However, Nigeria’s experience contradicted the model’s optimistic projection. Instead of channeling borrowed funds into productive investments, much of the debt in the 1980s and 1990s financed consumption, subsidies, and recurrent expenditures rather than industrialization or infrastructure. This misallocation led to low capital formation, rising unemployment, and poor GDP growth, despite a ballooning debt profile. For instance, by

2004 Nigeria's external debt had risen to over \$35 billion, while GDP growth remained below 3% on average in the preceding decade (World Bank, 2005). This outcome highlighted the structural weakness in Nigeria's application of the Harrod–Domar model.

The 2005 Paris Club debt relief initiative, which reduced Nigeria's external debt burden by about \$18 billion, provided an opportunity to reset growth dynamics (World Bank, 2006). Following the debt relief, Nigeria experienced improved GDP growth rates, averaging 6–7% between 2005 and 2014, partly due to increased investment in telecommunications, banking, and oil exports. This reflected the Harrod–Domar principle that debt-financed investment, if properly utilized, can stimulate sustainable growth.

Yet, from the 2010s to the 2020s, the same cycle of over-borrowing and under-investment re-emerged. The collapse of oil prices in 2014 and again in 2020 forced Nigeria to rely heavily on both domestic and external debt to finance budget deficits. While total public debt rose from ₦7.5 trillion in 2012 to over ₦87 trillion in 2023, GDP growth slowed drastically, averaging below 2% between 2015 and 2022 (Debt Management Office [DMO], 2023; World Bank, 2023). The Harrod–Domar framework would interpret this outcome as a failure to convert debt-driven investment into productive capacity, reflecting Nigeria's structural bottlenecks such as corruption, infrastructure deficits, and overdependence on oil revenues.

Critical Analysis

Critically, the Harrod–Domar model is both useful and limited in explaining Nigeria's debt–growth relationship. On one hand, the model correctly identifies the savings–investment gap as a central challenge for developing economies like Nigeria. Indeed, without debt or external financing, Nigeria would struggle to mobilize sufficient resources for capital accumulation. On the other hand, the model assumes that all borrowed resources are efficiently invested,

which is not the case in Nigeria. Structural issues such as weak institutions, mismanagement of funds, and political instability have meant that debt has not always translated into growth.

Thus, Nigeria's experience from the 1980s to the 2020s suggests that while the Harrod–Domar model provides a rationale for public borrowing, the effectiveness of debt-financed growth depends critically on governance, policy consistency, and institutional capacity. Without these, debt accumulation risks becoming a burden rather than a catalyst for development.

2.8.1.3 Neoclassical Growth Model and Its Relevance to Nigeria

The Neoclassical Growth Model, pioneered by Robert Solow and Trevor Swan in the 1950s, emerged as a response to the limitations of earlier theories such as the Harrod–Domar model. The central idea of the neoclassical model is that economic growth is driven by the accumulation of capital, labor, and technological progress, but with diminishing returns to capital and labor inputs. Unlike the Harrod–Domar model, which placed strong emphasis on savings and investment, the neoclassical perspective argues that continuous long-run growth cannot be sustained by capital accumulation alone. Instead, technological progress is considered the most important driver of long-term economic development (Solow, 1956).

At the core of the model lies the concept of a steady-state equilibrium, where output, capital, and labor grow at constant rates. The model assumes that when economies accumulate more capital per worker, output rises, but at a diminishing rate due to decreasing marginal returns. Once an economy reaches its steady state, additional capital investment has little effect on long-run growth. Only technological advancement and improvements in human capital can push the economy toward sustained growth. For policymakers, this implies that development

strategies must go beyond encouraging savings and investments and instead prioritize innovation, education, and efficiency in resource utilization (Mankiw, 2016).

In the Nigerian context, the relevance of the neoclassical model becomes particularly evident when examining the country's growth trajectory from the 1980s to the 2020s. During the early 1980s, Nigeria faced economic stagnation triggered by declining global oil prices, rising public debt, and inefficient public sector investment. According to the neoclassical framework, these challenges were aggravated by the country's over-reliance on oil revenue as the primary source of capital accumulation, while neglecting technological innovation and diversification. The Nigerian economy had abundant capital inflows from oil exports during the 1970s oil boom, but due to poor investment in human capital and infrastructure, growth was not sustained. By the mid-1980s, when oil revenues collapsed, Nigeria fell into a debt crisis, showing the limits of growth strategies dependent solely on capital without productivity improvements (Iyoha, 1999).

From the 1990s to the 2000s, the Structural Adjustment Programmes (SAPs) introduced under the advice of the International Monetary Fund (IMF) and the World Bank were partly aligned with neoclassical ideas. These reforms emphasized liberalization, reduction of government intervention, and encouragement of market efficiency. However, the reforms did not yield the expected outcomes because Nigeria lacked the technological base, institutional strength, and skilled labor necessary to sustain growth. In fact, the neoclassical model highlights why simply opening markets and increasing capital inflows cannot generate long-term prosperity without significant investment in human capital and technological capacity (Easterly & Levine, 2001).

The 2000s oil boom again presented Nigeria with a window of opportunity to leverage capital accumulation for growth. The economy experienced robust GDP growth averaging over 6

percent between 2004 and 2010 (World Bank, 2015). Yet, this growth was primarily resource-driven, not technology-led, and failed to translate into broad-based development. The neoclassical perspective helps explain why these gains were not sustainable: the absence of productivity-enhancing technological progress, weak institutions, and limited diversification hindered Nigeria from breaking free from the cycle of resource dependency and vulnerability to external shocks.

By the 2010s and into the 2020s, Nigeria's growth trajectory continued to reflect the limitations predicted by the neoclassical framework. Despite modest GDP growth, the economy has struggled with high unemployment, poverty, and inequality. Public debt has risen significantly, and much of the borrowed resources have been channeled into recurrent expenditure rather than productivity-enhancing investments. The neoclassical emphasis on human capital and technology is particularly relevant here, as Nigeria's underfunded education and health systems, coupled with insufficient investment in research and development, continue to constrain productivity. The COVID-19 pandemic further exposed these structural weaknesses, as Nigeria's economy contracted by 1.8 percent in 2020, while advanced economies with stronger technological bases recovered more quickly (World Bank, 2021).

Critically, the Nigerian case highlights both the strengths and limitations of the neoclassical model. On one hand, the model's predictions about diminishing returns to capital and the centrality of technology hold true, as Nigeria's dependence on capital accumulation from oil exports has not delivered sustained prosperity. On the other hand, the model assumes a level of institutional efficiency and market functioning that is often absent in developing economies like Nigeria. Issues such as corruption, infrastructural deficits, and weak governance hinder the effective utilization of capital and technology. Therefore, while the

neoclassical growth model offers valuable insights, it must be adapted to Nigeria's unique institutional and structural realities.

In other words, the neoclassical growth model underscores the importance of moving beyond mere capital accumulation toward sustained investments in technology, education, and institutional reforms. For Nigeria, this means that addressing public debt challenges, diversifying the economy, and fostering innovation are critical for long-run growth. The model's insights are highly relevant for Nigerian policymakers, particularly in the context of using borrowed resources more productively and ensuring that economic expansion translates into genuine improvements in living standards.

2.8.1.4 Endogenous Growth Theories and Their Relevance to Nigeria

The Endogenous Growth Theories, which gained prominence in the 1980s through the works of Romer (1986) and Lucas (1988), emerged as a direct response to the limitations of the neoclassical growth model. Unlike the neoclassical framework that treats technological progress as an external factor, the endogenous growth perspective explains long-term growth as the result of deliberate policy choices, innovation, knowledge accumulation, and human capital development. According to this theory, economies can sustain growth without necessarily encountering diminishing returns, provided they continually invest in innovation, research and development (R&D), education, and institutional efficiency (Aghion & Howitt, 1992).

At the heart of endogenous growth theory lies the argument that knowledge and human capital are non-rivalrous goods, meaning that one person's use of knowledge does not diminish its availability to others. This creates increasing returns to scale in knowledge-based industries, making growth self-reinforcing. The theory emphasizes that when governments

and firms prioritize innovation, education, and infrastructure, the entire economy benefits through spillover effects. This places policy, governance, and institutional design at the center of long-term growth, suggesting that public debt, when used productively, can catalyze development instead of stifling it (Barro & Sala-i-Martin, 2004).

In the Nigerian context, the endogenous growth framework provides significant insights into the country's economic experiences since the 1980s. Nigeria entered the decade facing a severe debt crisis, triggered by the collapse of global oil prices and years of heavy borrowing. Debt-servicing obligations absorbed much of the national budget, leaving little room for productive investments in education, research, and innovation (Iyoha, 1999). From an endogenous growth perspective, this misallocation of resources stalled the knowledge accumulation necessary for long-term productivity gains. Instead of using borrowed funds to build human capital and diversify the economy, Nigeria channeled much of its resources into recurrent expenditures and subsidies, reinforcing a cycle of dependency on external finance.

The 1990s presented another challenge, as Nigeria undertook Structural Adjustment Programmes (SAPs) under the guidance of the IMF and World Bank. While these reforms liberalized the economy, they did little to foster innovation or human capital accumulation. Public universities faced chronic underfunding, research institutions declined, and brain drain worsened as skilled professionals sought opportunities abroad. Endogenous growth theory helps explain why Nigeria failed to achieve sustained growth during this period: the policies neglected the drivers of self-sustaining productivity, particularly knowledge creation and technological adaptation.

The 2000s oil boom offered Nigeria an opportunity to apply endogenous principles by using oil windfalls to build human capital and technological capabilities. However, despite periods of impressive GDP growth, the investments were largely concentrated in oil-related activities

and public consumption. Public debt levels were reduced temporarily following the Paris Club debt relief in 2005, creating fiscal space for growth-enhancing investments. Yet, Nigeria did not sufficiently channel these resources into R&D, vocational education, or institutional strengthening. According to endogenous growth theorists, this represents a lost opportunity: rather than fostering long-term productivity, Nigeria's growth during this period was once again driven by volatile external rents (World Bank, 2015).

By the 2010s and into the 2020s, Nigeria's economic trajectory increasingly demonstrated the consequences of neglecting endogenous growth drivers. While the country witnessed rapid expansion in sectors such as telecommunications and fintech—industries that thrive on knowledge spillovers and innovation—these successes were not broad-based across the economy. Public debt levels began to rise again, with borrowed funds often directed toward recurrent expenditure and debt servicing rather than into education, infrastructure, or technological development. Endogenous theory emphasizes that such patterns undermine sustainable growth because they fail to enhance the productivity of labor and capital in the long run (Ajakaiye & Ncube, 2010).

The COVID-19 pandemic further reinforced the relevance of endogenous growth theory for Nigeria. Countries with strong human capital bases, advanced technological capabilities, and robust innovation systems were able to adapt more quickly, whereas Nigeria struggled with weak health infrastructure, limited research output, and a poorly funded education sector. From this perspective, Nigeria's vulnerability is not merely a result of insufficient capital accumulation but rather a failure to build the knowledge-driven economy envisioned by endogenous theorists.

Critically, endogenous growth theory provides valuable lessons for Nigeria's public debt management. Debt is not inherently harmful if it is invested in growth-enhancing sectors such

as education, R&D, and digital infrastructure. However, when debt is used to finance consumption or poorly targeted subsidies, it becomes a burden that limits long-term development. Thus, the Nigerian case illustrates both the potential and the risks highlighted by endogenous growth theorists: without strategic investment in human capital and innovation, the country's growth trajectory will remain volatile and unsustainable.

In other words, endogenous growth theories stress the centrality of knowledge, innovation, and policy choices in sustaining long-term development. For Nigeria, this implies that economic growth cannot rely solely on oil revenues, foreign borrowing, or short-term liberalization measures. Instead, public debt must be managed strategically and invested in human capital, research, and institutional reforms. Only then can Nigeria escape the trap of volatility and achieve the self-sustaining, innovation-driven growth envisioned by endogenous theorists.

2.8.2 Public Debt Theories

2.8.2.1 Classical Theory of Public Debt

The Classical Theory of Public Debt emerged from the works of early economists such as Adam Smith, David Ricardo, and John Stuart Mill, who were primarily concerned with the role of the state in managing fiscal responsibilities. The theory reflects the broader principles of classical economics, which emphasized fiscal prudence, balanced budgets, and the efficient allocation of resources within a free-market system (Ricardo, 1951; Smith, 1776). At its core, the classical perspective perceives public debt as an undesirable instrument of government finance, permissible only under exceptional circumstances such as wars or emergencies, and to be repaid as swiftly as possible.

A central assumption of the theory is the balanced budget principle, which posits that governments should not borrow for regular or recurrent expenditures. Borrowing was seen as

a disruption to the natural flow of capital within the economy, as public debt was believed to “crowd out” private investment by absorbing savings that would have otherwise been channeled into productive enterprise (Mill, 1848). Furthermore, classical economists argued that public debt places a burden on future generations, who must repay it through taxation. This intergenerational transfer of obligations was considered both unfair and economically damaging, as higher future taxation could distort production incentives and reduce long-term growth prospects (Musgrave, 1959).

From a critical standpoint, the classical approach has been criticized for its rigidity. By portraying public debt almost exclusively as a burden, it underestimates the potential of borrowing as a tool for stimulating growth when directed towards productive investment. In modern economies, debt-financed investment in infrastructure, health, or education may generate future returns that exceed the cost of borrowing, thereby strengthening rather than weakening the fiscal position. Nonetheless, the classical emphasis on debt sustainability, balanced budgets, and intergenerational equity remains highly relevant, particularly for developing economies where fiscal mismanagement can quickly lead to crises.

The Nigerian experience since the 1980s reflects many of the concerns articulated by classical theorists. During the 1980s and 1990s, Nigeria accumulated substantial external debt, much of which was contracted under military regimes to finance recurrent expenditure rather than capital investment (Ajayi & Oke, 2012). This corresponds with the classical argument that debt, when not tied to productive uses, becomes a long-term burden rather than a catalyst for growth. The debt crisis of the 1990s, characterized by unsustainable external obligations and arrears accumulation, validates the classical fear of intergenerational burdens, as large portions of public revenue were diverted towards debt servicing rather than developmental projects.

In the 2000s, the implementation of the Paris Club debt relief deal in 2005 provided a momentary alignment with classical recommendations for fiscal correction. Nigeria's external debt stock was drastically reduced, creating fiscal space and allowing resources to be reallocated towards development. This reflects the classical insistence that public debt must eventually be repaid or significantly reduced to restore fiscal stability. However, from the 2010s onwards, Nigeria returned to a path of rising debt. The growing dependence on both domestic and external borrowing to finance recurrent deficits, particularly during periods of declining oil revenues, once again mirrors the classical critique of fiscal imprudence.

By the early 2020s, Nigeria's debt servicing obligations consumed over 90 percent of government revenue (Debt Management Office [DMO], 2022), leaving little room for investment in infrastructure or social services. This outcome highlights the continued relevance of the classical warning: excessive borrowing, when not matched with corresponding growth in revenue or productivity, ultimately erodes fiscal sustainability and constrains development. Thus, while modern perspectives recognize the potential benefits of strategic borrowing, Nigeria's debt trajectory from the 1980s to the 2020s underscores the enduring validity of the classical theory's cautionary stance on public debt management.

2.8.2.2 Keynesian Theory of Public Debt

The Keynesian Theory of Public Debt emerged from the revolutionary ideas of John Maynard Keynes in the 1930s, particularly following the Great Depression. Keynes challenged the traditional classical view of public debt as inherently harmful and instead argued that debt could play a vital role in stabilizing the economy and promoting growth. Unlike the classicalists, who emphasized balanced budgets, Keynes advocated for countercyclical fiscal policy, where governments should borrow during economic downturns to stimulate aggregate demand and repay debt during periods of prosperity (Keynes, 1936).

At the heart of the Keynesian perspective is the belief that public borrowing, if well-targeted, can be expansionary rather than burdensome. When an economy suffers from underemployment, idle resources, and insufficient aggregate demand, debt-financed government spending can boost investment, create jobs, and generate income. This process, through the multiplier effect, may eventually increase government revenues, making it easier to service the debt without imposing excessive taxation (Musgrave, 1959). For Keynesians, the burden of debt is not absolute but relative to how the borrowed funds are utilized. If debt finances productive investment in infrastructure, education, and technology, the long-term gains may outweigh the short-term costs.

From a critical standpoint, however, the Keynesian approach has often been misapplied in developing economies. While Keynes emphasized borrowing for productive investments, many governments have resorted to debt accumulation for recurrent spending, subsidies, or political patronage. This divergence has frequently undermined the growth-enhancing potential of debt and has led to fiscal crises in several developing nations, including Nigeria.

Nigeria's debt experience since the 1980s provides an important case for evaluating the Keynesian theory. During the 1980s and 1990s, Nigeria faced severe economic crises characterized by collapsing oil prices, mounting external debt, and declining growth. The Keynesian prescription would have supported borrowing to stimulate demand and diversify the economy. However, much of Nigeria's debt during this period was contracted under military regimes and directed towards consumption and recurrent expenditure rather than productive capital projects (Ajayi & Oke, 2012). As a result, the Keynesian promise of growth-driven debt sustainability was not realized, and Nigeria found itself in a classic debt overhang situation.

The 2005 debt relief initiative, negotiated with the Paris Club, created renewed fiscal space for Nigeria. A Keynesian interpretation would view this as an opportunity for the government to reallocate resources towards growth-promoting sectors. Indeed, following the debt relief, Nigeria experienced improved macroeconomic stability and higher growth rates, particularly between 2005 and 2010, suggesting that reduced debt burdens can enable governments to pursue Keynesian-style expansionary policies.

In the 2010s and 2020s, however, Nigeria once again turned to borrowing, particularly in response to declining oil revenues, exchange rate instability, and the COVID-19 pandemic. A Keynesian justification could be made for these borrowings, as they were partly aimed at mitigating the contractionary effects of external shocks. For example, borrowing to finance infrastructure and social safety nets aligns with the Keynesian rationale of stimulating demand during downturns. Yet, concerns persist about the efficiency of debt utilization. Nigeria's rising debt service-to-revenue ratio, which reached unsustainable levels of over 90 percent by 2022 (Debt Management Office [DMO], 2022), undermines Keynesian optimism. The theory assumes that debt-financed expenditure will generate sufficient returns to ease repayment; however, Nigeria's weak institutional framework and recurrent expenditure bias have limited this outcome.

In other words, the Keynesian Theory of Public Debt highlights the potential for borrowing to serve as a tool for economic stabilization and long-term growth. Nigeria's experience demonstrates both the strengths and limitations of this approach. When debt relief in 2005 was followed by macroeconomic reforms and growth-oriented investments, the Keynesian logic appeared valid. Yet, persistent reliance on debt for recurrent expenditure and weak fiscal discipline since the 2010s has undermined the benefits anticipated by Keynesian theory. The Nigerian case suggests that while debt can indeed be expansionary, its positive effects

are contingent upon effective management, productive allocation, and institutional accountability.

2.8.2.3 Ricardian Equivalence Theory of Public Debt

The Ricardian Equivalence Theory, also referred to as the Debt Neutrality Hypothesis, was originally proposed by David Ricardo in the early 19th century and later formalized by Robert Barro in the 1970s. The theory challenges both classical and Keynesian perspectives by arguing that government borrowing does not affect overall economic activity because rational households anticipate future tax liabilities associated with debt repayment. According to this view, whether a government finances its spending through taxation today or through debt (which implies taxation in the future), the net effect on aggregate demand is the same (Barro, 1974).

The Ricardian argument rests on several key assumptions: households are forward-looking and rational; capital markets are perfect, allowing consumers to borrow and lend without restrictions; and individuals are concerned not only with their own consumption but also with the welfare of future generations (intergenerational altruism). In such a framework, when the government issues debt, households recognize that taxes will eventually rise to repay the debt. Consequently, they increase their savings to offset the expected future tax burden, leaving overall consumption and aggregate demand unchanged (Ricardo, 1820/1951). Thus, fiscal policy is rendered ineffective under Ricardian Equivalence, since neither taxation nor debt-financed expenditure alters national savings or investment in the long run.

Critically, however, the applicability of Ricardian Equivalence in real-world economies has been heavily debated. Many scholars argue that the assumptions underlying the theory rarely hold, particularly in developing economies. Imperfect capital markets, liquidity constraints,

short planning horizons, and weak intergenerational linkages often prevent households from fully internalizing the government's budget constraints (Elmendorf & Mankiw, 1999). In such contexts, debt-financed spending can have real effects on growth and consumption, contrary to Ricardian neutrality.

In Nigeria, the Ricardian Equivalence hypothesis finds limited support when examined against debt trends from the 1980s to the 2020s. During the 1980s and 1990s, Nigeria accumulated unsustainable levels of external debt, largely due to declining oil revenues and structural adjustment programs. If Ricardian Equivalence held true, Nigerian households would have responded to increased borrowing by raising savings in anticipation of higher future taxes. However, empirical evidence suggests otherwise: savings rates remained low, consumption patterns persisted, and the economy continued to rely heavily on government expenditure and external loans (Ajayi & Oke, 2012). This indicates that households either did not fully anticipate the future tax burden or lacked the capacity to adjust their behavior accordingly.

The 2005 debt relief initiative also provides an important test case. According to Ricardian Equivalence, the cancellation of a portion of Nigeria's debt should not have significantly altered consumption or growth since citizens would have already factored the repayment into their savings behavior. Yet, the reality showed otherwise. Following the debt relief, Nigeria experienced stronger economic growth and improved macroeconomic stability, suggesting that the reduced debt burden freed up fiscal resources that directly impacted investment and social spending. This outcome runs counter to Ricardian neutrality, underscoring the limitations of the theory in the Nigerian context (World Bank, 2007).

In the 2010s and 2020s, Nigeria's rising debt profile has further challenged the Ricardian proposition. The government has increasingly relied on both external and domestic borrowing

to finance budget deficits, especially during oil price shocks and the COVID-19 pandemic. Instead of offsetting this borrowing with increased private savings, households have faced high inflation, declining real incomes, and limited access to credit markets (Central Bank of Nigeria [CBN], 2021). Consequently, aggregate demand in Nigeria remains highly sensitive to government borrowing and spending, in sharp contrast to the debt-neutrality prediction.

We can say, while the Ricardian Equivalence Theory provides an elegant theoretical framework suggesting that debt and taxation are interchangeable, Nigeria's historical and contemporary debt experience reveals the theory's limitations. Structural issues such as underdeveloped financial markets, weak intergenerational planning, and income constraints undermine the assumptions of Ricardian neutrality. Instead, public debt in Nigeria has had significant implications for growth, consumption, and fiscal sustainability, underscoring the reality that in developing economies, debt-financed spending is far from neutral.

2.8.2.4 Debt Overhang Theory of Public Debt

The Debt Overhang Theory, advanced prominently by Krugman (1988) and Sachs (1989), provides a framework for understanding how excessive external debt burdens can depress investment, growth, and fiscal sustainability in developing economies. The central argument is that when a country's debt stock becomes unsustainably high, prospective investors—both domestic and foreign—anticipate that much of the returns on their investments will be diverted toward servicing this debt rather than generating future profits. This expectation discourages new investment and reduces overall economic growth. In essence, the theory suggests that a large debt burden acts like a tax on investment, undermining incentives to produce, innovate, and expand the economy.

According to the theory, excessive debt also generates uncertainty about future macroeconomic stability. Investors may fear that governments facing heavy debt obligations will resort to distortionary fiscal policies such as excessive taxation, inflationary financing, or capital controls. These policies, in turn, can exacerbate economic instability and further depress growth prospects. The result is a vicious cycle: high debt deters investment, low investment weakens growth, and weak growth makes it even harder to repay debt, thereby perpetuating the debt crisis (Claessens et al., 1996).

When applied to Nigeria's experience, the Debt Overhang Theory offers powerful explanatory insights. In the 1980s and 1990s, Nigeria faced severe external debt challenges. The collapse of oil prices in the early 1980s sharply reduced government revenues, yet external borrowing increased significantly to finance public expenditure and stabilize the economy. By the mid-1990s, Nigeria's external debt had ballooned to over \$30 billion, with debt servicing consuming a large proportion of export earnings (Ajayi & Oke, 2012). The implications were consistent with debt overhang predictions: foreign direct investment inflows stagnated, private sector expansion was constrained, and public resources were increasingly directed toward debt servicing rather than infrastructure or social services.

The theory is further illustrated in the period leading up to the 2005 Paris Club debt relief. Nigeria's debt overhang had reached unsustainable levels, with debt service obligations exceeding actual investment in critical sectors. The heavy debt burden created a perception that any growth in revenue would be absorbed by creditors, thereby limiting the government's capacity to fund development projects. This discouraged long-term planning and undermined investor confidence. Following the debt relief, however, Nigeria experienced renewed growth momentum, improved creditworthiness, and expanded fiscal space for developmental expenditure (World Bank, 2007). This episode provides empirical evidence

supporting the debt overhang hypothesis: once the excessive debt burden was lifted, growth and investment responded positively.

In the 2010s and 2020s, Nigeria has once again begun to accumulate significant levels of external and domestic debt, particularly following oil price collapses in 2014 and 2020, as well as the fiscal shocks from the COVID-19 pandemic. While debt-to-GDP ratios remain lower than in the pre-2005 era, debt servicing costs have risen alarmingly, with a growing share of government revenue allocated to debt repayment (Central Bank of Nigeria [CBN], 2021). In line with the Debt Overhang Theory, this has raised concerns about crowding out of public investment, reduced investor confidence, and declining fiscal flexibility to address pressing socio-economic challenges.

Critically, while Nigeria's current debt stock is not as high relative to GDP as in the past, the revenue-to-debt service ratio indicates a structural vulnerability. With more than 80% of government revenues allocated to debt servicing in recent years, the fiscal space for productive investment has narrowed (International Monetary Fund [IMF], 2022). This situation reflects the debt overhang problem: even if Nigeria's debt level appears moderate by international standards, the country's weak revenue base and volatile dependence on oil exports make the burden highly restrictive for growth.

In other words, the Debt Overhang Theory provides a robust explanation for the challenges Nigeria has faced across decades of debt accumulation. From the debt crises of the 1980s and 1990s, through the relief-driven recovery of the 2000s, to the renewed debt pressures of the 2010s and 2020s, the Nigerian experience demonstrates how excessive debt burdens can suppress investment, erode fiscal stability, and weaken long-term growth prospects. The key lesson from Nigeria's history is that sustained growth requires prudent debt management,

diversification of revenue sources, and policies that ensure debt is channeled into productive rather than consumptive expenditure.

2.8.2.5 Liquidity Constraint Theory of Public Debt

The Liquidity Constraint Theory of Public Debt emphasizes the limits that debt obligations impose on a government's fiscal flexibility, especially in developing economies with weak financial systems and limited access to international capital markets. According to this theory, when a government accumulates high levels of debt, it eventually faces difficulties in accessing additional credit, as lenders begin to doubt its repayment capacity. This "liquidity constraint" forces the government into a position where it must either sharply reduce public expenditure or increase taxation, both of which can have contractionary effects on the economy (Eaton & Gersovitz, 1981).

In this framework, debt accumulation is not only about the stock of debt, but also about the cash-flow pressures from debt servicing. When debt service consumes a significant portion of government revenues, the state becomes liquidity constrained, meaning it cannot finance essential investments in infrastructure, health, education, or social welfare. The economy, therefore, suffers from underinvestment, stunted growth, and heightened vulnerability to external shocks (Agénor & Montiel, 2015).

Nigeria's experience since the 1980s provides a clear application of this theory. Following the oil price collapse in the early 1980s, Nigeria's external borrowing increased dramatically to cushion fiscal imbalances. By the mid-1980s, debt service obligations had risen sharply, consuming over half of annual export earnings (Iyoha, 1999). The country faced a severe liquidity constraint, as international creditors imposed stringent repayment conditions, and access to new credit was curtailed. This forced Nigeria to adopt the Structural Adjustment

Programme (SAP) in 1986 under IMF and World Bank guidance. While the program aimed to restore balance, it also necessitated austerity measures that reduced public investment in social services, consistent with liquidity constraint predictions.

The 1990s deepened this challenge. Nigeria's reputation as a debtor nation deteriorated, and arrears on existing loans accumulated. The government found itself locked out of most international capital markets, leading to a reliance on short-term, high-cost borrowing. Liquidity constraints became acute, as nearly all available fiscal resources were directed toward debt servicing, leaving little room for development expenditure. This severely constrained Nigeria's ability to expand infrastructure, reduce poverty, and foster industrialization.

The situation changed with the 2005 Paris Club debt relief, which eliminated about \$18 billion of Nigeria's external debt. By significantly reducing debt service obligations, the relief relaxed Nigeria's liquidity constraints and created fiscal space for increased capital expenditure in infrastructure and social programs (Okonjo-Iweala, 2008). The post-relief years saw improved macroeconomic stability, expansion in public investment, and higher growth rates, consistent with the Liquidity Constraint Theory's claim that easing debt burdens frees resources for development.

However, by the 2010s and 2020s, liquidity pressures resurfaced. With oil price collapses in 2014 and 2020, Nigeria's government turned increasingly to both domestic and external borrowing. While debt-to-GDP ratios remained moderate by international standards, the debt-service-to-revenue ratio rose alarmingly. By 2021, over 80% of federal revenue was consumed by debt servicing, leaving very limited fiscal space for capital investment (International Monetary Fund [IMF], 2021). This reflects the essence of the liquidity constraint problem: despite relatively moderate debt levels, Nigeria's narrow revenue base

and overdependence on oil exports constrain the government's liquidity, limiting its developmental capacity.

Critically, Nigeria's liquidity constraints highlight the structural vulnerability of relying heavily on volatile oil revenues while failing to expand the non-oil tax base. As the Liquidity Constraint Theory suggests, once debt servicing absorbs most of government income, new borrowing becomes less viable, and necessary investment in growth-enhancing sectors is deferred. This dynamic has been evident in Nigeria's recent struggles to fund infrastructure, education, and healthcare, even as debt accumulation rises.

In conclusion, the Liquidity Constraint Theory provides a powerful lens through which to interpret Nigeria's debt trajectory. From the debt crises of the 1980s and 1990s, through the temporary relief in the mid-2000s, to the renewed pressures in the 2010s and 2020s, the Nigerian case underscores the dangers of fiscal dependence on volatile revenues in the face of rising debt servicing obligations. The theory stresses that sustainable growth requires not just prudent debt levels, but also sufficient liquidity—ensuring that revenues exceed debt service obligations and leave room for productive investment.

2.8.2.6 Crowding-Out Effect of Public Debt

The Crowding-Out Effect of Public Debt posits that when governments rely excessively on borrowing, particularly from domestic financial markets, they compete with private sector borrowers for limited financial resources. This competition raises interest rates, discourages private investment, and ultimately slows economic growth (Barro, 1991). In this perspective, public borrowing diverts savings away from productive private ventures and allocates them toward financing government consumption or debt servicing, which may not necessarily generate equivalent economic returns.

This theory assumes that in economies with shallow financial markets, such as many developing countries, the supply of loanable funds is limited. When government borrowing increases, it places upward pressure on the cost of capital, crowding out private firms that might otherwise invest in sectors like manufacturing, agriculture, and infrastructure. Over time, this reduces productivity, innovation, and employment generation (Elmendorf & Mankiw, 1999).

Nigeria's debt experience from the 1980s onward demonstrates the relevance of the crowding-out argument. During the early 1980s, following the oil price collapse, Nigeria turned to both domestic and foreign borrowing to address budget deficits. Heavy domestic borrowing, particularly in the form of treasury bills and bonds, absorbed much of the limited pool of domestic credit. The rising interest payments on government securities diverted bank lending away from the private sector, weakening investment in non-oil industries (Iyoha, 1999). This coincided with Nigeria's declining manufacturing output, stagnation in agricultural modernization, and general economic slowdown.

In the 1990s, as Nigeria became more isolated from international credit markets due to accumulated arrears and strained relations with external creditors, domestic borrowing intensified. Commercial banks preferred lending to the government, which offered risk-free high-yield instruments, rather than extending credit to small and medium enterprises (SMEs). This reflects the purest form of crowding out, where government borrowing directly suppresses private sector access to finance. The consequence was weak industrial growth, rising unemployment, and continued dependence on oil exports.

Following the 2005 Paris Club debt relief, Nigeria enjoyed a temporary period of reduced public borrowing requirements. However, by the 2010s, government borrowing, especially from the domestic financial market, rose again. The growing issuance of government bonds

and treasury bills crowded out private borrowers, as banks increasingly allocated their resources to financing government deficits rather than productive sectors of the economy (Onyele & Nwadike, 2022). This was particularly visible during periods of oil revenue shortfall, when the government relied heavily on domestic borrowing to cover fiscal gaps.

The problem intensified in the 2020s, particularly after the COVID-19 pandemic. The Nigerian government's fiscal deficits expanded due to falling oil revenues, increased health expenditures, and broader economic stimulus programs. To finance these deficits, domestic borrowing rose significantly, leading to a situation where debt servicing costs consumed the majority of government revenues (IMF, 2021). As banks and other investors allocated more funds toward purchasing government securities, private enterprises faced tighter credit conditions and higher borrowing costs. This limited their capacity to expand operations, innovate, and create jobs, reinforcing the crowding-out dynamics.

Critically, the crowding-out effect in Nigeria underscores the structural weaknesses of the country's financial system and fiscal structure. While in developed economies with deep capital markets, government borrowing may not necessarily crowd out private investment, in Nigeria's case the limited depth of its financial system makes the effect more pronounced. Moreover, a significant portion of Nigeria's borrowing has financed recurrent expenditure—such as salaries, subsidies, and debt servicing—rather than capital investments that could stimulate complementary private investment. This amplifies the negative consequences of crowding out, as borrowed funds do not yield sufficient long-term returns to offset their costs.

In conclusion, the Crowding-Out Effect of Public Debt provides a useful framework for interpreting Nigeria's experience. From the debt crises of the 1980s and 1990s to the renewed borrowing pressures of the 2010s and 2020s, excessive public debt has diverted scarce financial resources away from the private sector, limited industrial growth, and undermined

long-term economic development. For Nigeria to overcome the crowding-out challenge, fiscal consolidation, diversification of government revenue sources, and development of deeper financial markets are essential.

2.8.2.7 Debt Laffer Curve Theory

The Debt Laffer Curve Theory, developed in the 1980s, particularly in the context of developing countries' debt crises, posits a non-linear relationship between debt levels and economic growth or debt sustainability. The theory suggests that, up to a certain threshold, borrowing can promote growth by financing productive investments, but beyond that threshold, additional debt becomes counterproductive and reduces economic performance (Krugman, 1988). At high debt levels, creditors perceive greater risk, leading to higher interest rates, tighter credit conditions, and declining willingness to lend. Simultaneously, debtor countries face a growing debt service burden, which diverts resources away from investment and development spending.

The curve is typically depicted as an inverted U-shape: on the upward-sloping side, debt enhances growth by providing funds for capital accumulation and infrastructure. On the downward-sloping side, however, excessive debt leads to diminishing returns, reduced investor confidence, capital flight, and a vicious cycle of debt accumulation. Essentially, the theory highlights that debt sustainability depends on finding an optimal debt level; too little borrowing may limit development opportunities, while too much creates a debt overhang (Cohen, 1993).

Nigeria's historical debt trajectory fits within this framework. In the 1980s, following the oil price collapse, Nigeria turned heavily to external borrowing to finance fiscal deficits. Initially, these loans were expected to fund development projects and stabilize the economy. However,

poor fiscal discipline, corruption, and mismanagement meant that borrowed funds were often diverted to recurrent expenditures or abandoned projects (Iyoha, 1999). By the late 1980s and early 1990s, Nigeria had accumulated unsustainable debt levels, moving beyond the upward-sloping side of the Debt Laffer Curve into the downward-sloping zone, where additional borrowing hindered rather than helped growth.

The 1990s marked the peak of Nigeria's debt crisis. Debt servicing obligations exceeded export revenues, leaving little fiscal space for productive investment. Nigeria spent more on servicing external debt than on health and education combined, leading to declining human capital development and rising poverty. This is consistent with the Debt Laffer Curve's prediction that beyond a certain point, rising debt undermines growth and welfare. International creditors, perceiving Nigeria as a high-risk borrower, became increasingly reluctant to extend new loans, effectively trapping the country in a debt overhang scenario.

The 2005 Paris Club debt relief agreement serves as a practical demonstration of the Debt Laffer Curve in action. By reducing Nigeria's external debt stock by approximately \$18 billion, the relief moved Nigeria back from the downward-sloping side toward a more sustainable position. This freed fiscal resources for investment in infrastructure and social services, and temporarily restored investor confidence (Okonjo-Iweala, 2018). Nigeria's economic growth improved during the subsequent years, averaging above 6% annually between 2006 and 2010, showing how reducing debt to manageable levels can create fiscal space for growth.

However, by the 2010s and especially the 2020s, Nigeria once again began accumulating significant public debt. Although the debt-to-GDP ratio remained relatively moderate compared to advanced economies, debt servicing consumed an alarmingly high proportion of government revenue. For example, by 2020, debt servicing accounted for over 90% of federal

revenue (IMF, 2021). This suggests that Nigeria may again be sliding into the downward-sloping side of the Debt Laffer Curve, where the cost of borrowing outweighs its benefits. Instead of financing large-scale capital projects, much of Nigeria's borrowing was directed toward recurrent expenditures, subsidy payments, and debt servicing, undermining the growth potential of the loans.

The Debt Laffer Curve thus provides a useful framework for analyzing Nigeria's debt experience across four decades. In the early stages, borrowing was potentially growth-enhancing, but mismanagement and rising debt burdens quickly pushed the country into the zone of debt distress. The 2005 debt relief illustrates how reducing debt can restore fiscal space and growth potential, but Nigeria's recent borrowing patterns raise concerns that the country is once again approaching unsustainable debt levels. The challenge for policymakers lies in striking the right balance: ensuring that borrowing is directed toward productive investments while maintaining debt at levels consistent with long-term sustainability.

2.8.2.8 Dependency Theory of Debt

The Dependency Theory of Debt emerges from the broader framework of dependency theory in development economics, which emphasizes the structural inequalities between developed (core) and developing (peripheral) nations. According to this perspective, international debt is not merely a financial arrangement but a mechanism through which developing countries remain dependent on and subordinate to the industrialized nations and global financial institutions (Frank, 1967; Dos Santos, 1970). Debt, in this view, perpetuates underdevelopment by extracting resources from the periphery to the core, thereby widening global inequality.

Applied to public debt, dependency theorists argue that developing nations are systematically encouraged—or forced—into borrowing from richer countries and multilateral institutions under terms that primarily benefit creditors. Debt repayment obligations drain scarce resources away from domestic investment, human capital development, and poverty reduction, thereby locking debtor nations into a cycle of dependency and underdevelopment (Sachs, 1989). This framework suggests that debt is not only an economic burden but also a political tool of control, ensuring that developing countries remain reliant on foreign aid, loans, and technical expertise.

Nigeria's debt experience from the 1980s onward reflects many of these dynamics. Following the collapse of global oil prices in the early 1980s, Nigeria's heavy reliance on petroleum exports exposed structural weaknesses in the economy. To bridge fiscal deficits, the country increasingly turned to external borrowing, particularly from the International Monetary Fund (IMF) and the World Bank. In exchange, Nigeria was required to adopt Structural Adjustment Programs (SAPs) in 1986, which included currency devaluation, trade liberalization, subsidy removal, and privatization of state-owned enterprises (Olukoshi, 1993). While these policies were intended to restore macroeconomic stability, they also deepened Nigeria's dependence on global financial institutions and constrained its policy autonomy.

Throughout the 1990s, Nigeria's debt burden grew unsustainably, and dependency theorists would argue that the country became trapped in a cycle of "debt dependency." Debt servicing consumed a large portion of export revenues, leaving minimal fiscal space for capital investment. Nigeria often borrowed not to fund development projects, but simply to service existing debts. This aligns with dependency theory's critique that the debt system perpetuates a drain of resources from debtor to creditor nations. Indeed, Nigeria paid back far more than

it originally borrowed during this period but remained burdened by rising debt stocks due to interest and arrears accumulation (Ajayi & Khan, 2000).

The 2005 Paris Club debt relief deal is also illustrative from a dependency perspective. While the relief provided Nigeria with fiscal breathing space, the conditions attached—such as strict fiscal discipline, privatization, and reforms aligned with creditor interests—highlight how debt relief itself can reinforce dependency. Nigeria’s economic policy choices during this period were shaped more by external actors than by domestic priorities, a central critique of dependency theorists.

In the 2010s and 2020s, Nigeria’s renewed accumulation of external debt has reignited debates around dependency. The growing reliance on loans from China’s Exim Bank and other bilateral lenders has raised questions about a new form of dependency, sometimes referred to as “South-South dependency” (Brautigam, 2020). While these loans have financed infrastructure such as railways and power projects, they often come with limited technology transfer and risks of resource-backed repayment agreements. Dependency theorists would interpret this as a continuation of unequal relationships, where Nigeria remains reliant on external sources of finance and expertise, limiting its ability to pursue autonomous development.

The Dependency Theory of Debt thus provides a critical framework for understanding Nigeria’s public debt challenges from the 1980s to the 2020s. It highlights that beyond fiscal mismanagement and economic shocks, Nigeria’s debt problems are deeply embedded in the global political economy, where borrowing relationships systematically favor creditors. The theory underscores that unless Nigeria reduces its structural dependence on external finance—by diversifying its economy, mobilizing domestic revenue, and strengthening institutions—it risks remaining caught in a perpetual cycle of debt and underdevelopment.

2.9 Empirical Literature

Empirical research on the relationship between public debt and economic growth has generated a large body of evidence across advanced, emerging, and developing economies, with varying outcomes depending on country-specific conditions, methodological approaches, and the structural features of the economies under review. Globally, studies have tended to focus on the threshold levels of debt beyond which it begins to undermine growth, the channels through which debt influences macroeconomic performance, and how debt dynamics interact with fiscal sustainability. At the international level, Reinhart and Rogoff (2010) provided one of the most influential contributions by examining a dataset covering more than 40 countries over two centuries. They argued that when public debt surpasses 90 percent of GDP, economic growth tends to decelerate significantly. Their results stimulated wide debate, although subsequent scholars like Herndon, Ash, and Pollin (2014) critiqued their methodology, showing that the negative relationship between debt and growth was less uniform than originally suggested. Nevertheless, their findings set the tone for many empirical investigations into the debt-growth nexus in both advanced and developing contexts.

In the context of advanced economies, research has highlighted both stabilizing and destabilizing roles of debt. For example, Égert (2015) employed panel data for OECD countries and observed that while moderate levels of public debt could support counter-cyclical fiscal policies, sustained high debt ratios were correlated with declining investment and reduced long-term growth potential. This suggests that institutional strength and debt management frameworks play a critical role in shaping the debt-growth relationship. Similarly, Panizza and Presbitero (2014) found that debt is not inherently bad for growth but can become harmful in the absence of credible fiscal institutions. These findings underscore

that while developed countries may be able to sustain higher debt levels without immediate macroeconomic collapse, the growth trade-offs become clearer when debt persists over time.

Moving to Africa, the empirical evidence often points to a more constrained environment where the burden of debt repayment and limited fiscal space reduce the potential for productive investment. Fosu (1999), analyzing Sub-Saharan African economies during the 1980s and 1990s, found that heavy external debt burdens were associated with lower investment rates and stunted growth, consistent with the debt overhang hypothesis. Similarly, Were (2001) examined Kenya's debt profile and demonstrated that while external borrowing initially supported growth, the increasing cost of servicing debt eventually crowded out public investment, leaving the country in a cycle of debt dependence. Ajayi and Khan (2000), in a broader African context, highlighted how debt accumulation interacted with structural weaknesses, such as overdependence on primary commodities, volatile export earnings, and fragile fiscal structures. Their findings suggest that unlike advanced economies, African countries often lack the institutional and structural buffers necessary to manage high debt without compromising growth.

The Nigerian case has been of particular interest in the empirical literature, given the country's historical experience of alternating debt crises, oil booms, and economic reforms. In the 1980s and 1990s, studies such as Iyoha (1999) and Obadan (2004) provided early evidence that Nigeria's external debt had reached unsustainable levels, reducing growth potential through debt overhang and crowding-out effects. They demonstrated that a significant proportion of Nigeria's export earnings during this period was diverted to debt servicing, thereby limiting resources available for infrastructure, education, and health. This aligns closely with the predictions of the debt overhang theory, where excessive borrowing reduces investor confidence and lowers private sector participation in the economy.

Following the 2005 debt relief initiative under the Paris Club, empirical studies began to examine the growth effects of debt reduction in Nigeria. For instance, Adebayo (2010) argued that the cancellation of a large portion of Nigeria's external debt created temporary fiscal space that could have spurred growth had it been effectively managed. Similarly, Omotoye, Sharma, Ngassam, and Eseonu (2006) assessed Nigeria's debt burden before and after the relief and concluded that while debt cancellation improved the macroeconomic outlook, structural challenges such as fiscal indiscipline and corruption continued to undermine long-term growth prospects. Thus, empirical evidence suggests that debt relief provided an opportunity but not a permanent solution, as Nigeria resumed borrowing significantly in the subsequent decade.

Recent empirical studies continue to highlight Nigeria's vulnerability to rising debt levels. For example, Egbetunde (2012) conducted a time-series analysis from 1970 to 2010 and found that while public debt had a positive impact on growth in the short run, it exerted a negative effect in the long run due to poor management of borrowed funds. Similarly, Onakoya and Ogunade (2017) demonstrated that external debt had a statistically significant negative effect on economic growth in Nigeria, while domestic debt exerted a milder impact. Their findings suggest that external borrowing, especially when tied to foreign exchange obligations, creates a heavier growth burden than domestic borrowing. More recently, Akinola and Nwosu (2020) argued that Nigeria's renewed accumulation of debt since 2015 poses a risk to fiscal sustainability, particularly given declining oil revenues and the growing share of government revenue devoted to debt servicing.

The empirical literature also reveals important channels through which debt influences growth in Nigeria. Several studies (e.g., Umeora, 2013; Essien, Agboegbulem, Mba, & Onumonu, 2016) emphasize the crowding-out effect of debt servicing on public expenditure

in productive sectors such as education, health, and infrastructure. High debt obligations divert a large portion of government resources to interest payments, leaving little for capital projects that could drive long-term growth. At the same time, the perception of rising debt vulnerability discourages private sector investment and raises borrowing costs for the government, further constraining growth. These findings suggest that the challenge for Nigeria lies not only in the level of debt but also in the efficiency with which borrowed funds are utilized and the structural weaknesses in revenue generation.

Overall, the empirical evidence across global, African, and Nigerian contexts demonstrates that the relationship between debt and economic growth is complex, non-linear, and highly context-dependent. While debt can stimulate growth if invested in productive ventures, unsustainable borrowing and poor fiscal management tend to undermine long-term economic performance. In Nigeria, the empirical record from the 1980s to the 2020s illustrates the cyclical nature of debt accumulation and relief, underscoring the need for stronger institutions, enhanced fiscal discipline, and diversified revenue sources to ensure that debt contributes positively to growth rather than serving as a perpetual drag on the economy.

CHAPTER THREE

METHODOLOGY

3.1 Theoretical Framework

This study is anchored on three main theories that explain how public debt can influence economic growth: the Debt Overhang Theory, the Crowding-Out Theory, and the Keynesian Theory of Public Borrowing.

Debt Overhang Theory

The Debt Overhang Theory, developed by Krugman (1988) and Sachs (1989), argues that when a country's debt level becomes excessively high, potential investors expect future taxes to rise in order to service the debt. This expectation discourages private investment and slows economic growth. In other words, a large public debt burden acts as a tax on future output, reducing incentives to invest today. In Nigeria's context, high debt servicing costs can crowd out productive government spending, leaving fewer resources for sectors that drive growth such as infrastructure, education, and health.

Crowding-Out Theory

The Crowding-Out Theory suggests that when government borrowing increases, it competes with the private sector for available loanable funds. As the demand for credit rises, interest rates increase, discouraging private investment. This can lead to a reduction in output and slow economic growth (Elmendorf & Mankiw, 1999). In Nigeria, continuous public borrowing to finance budget deficits could therefore limit private sector access to credit and hinder economic performance.

Keynesian Theory of Public Borrowing

In contrast, the Keynesian perspective holds that public debt can stimulate growth—especially during recessions—by financing government expenditure that raises aggregate demand and employment. When borrowed funds are channeled into productive investment, such as infrastructure, education, and technology, they can boost long-term growth (Blanchard & Johnson, 2013). Thus, the effect of debt on growth depends on how the borrowed funds are used and managed.

These theories together explain that public debt can either promote or hinder growth depending on the size, structure, and utilization of the debt.

3.2 Model Specification

To empirically examine the effect of public debt on Nigeria's economic growth from 2004 to 2024, the study adapts a modified version of the growth-debt model commonly used in macroeconomic literature.

Functional form of the models are:

$$GDP_t = f(PD_t, DS_t, GE_t, INF_t, EXR_t, IR_t)$$

Where:

- GDP_t = Gross Domestic Product (proxy for economic growth)
- PD_t = Public Debt
- DS_t = Debt Servicing
- GE_t = Government Expenditure
- INF_t = Inflation Rate
- EXR_t = Exchange Rate
- IR_t = Interest Rate

$$PSI_t = f(DS_t, PD_t, REV_t, DEF_t)$$

Where:

- PSI_t = Public sector investment or development expenditure
- DS_t = Debt servicing payments
- PD_t = Public debt
- REV_t = Government revenue
- DEF_t = Fiscal deficit

Econometric form:

$$GDP_t = \beta_0 + \beta_1 PD_t + \beta_2 DS_t + \beta_3 GE_t + \beta_4 INF_t + \beta_5 EXR_t + \beta_6 IR_t + \mu_t \dots \dots \dots 1$$

$$PSI_t = \beta_0 + \beta_1 DS_t + \beta_2 PD_t + \beta_3 REV_t + \beta_4 DEF_t + \mu_t \dots \dots \dots 2$$

Where:

- β_0 = intercept term
- β_1 – β_6 = coefficients of the independent variables
- μ_t = error term capturing other variables not included in the model

The model expects β_1 (public debt) to have either a positive or negative sign depending on whether borrowing finances productive investment or not. β_2 (debt servicing) is expected to be negative since high debt servicing can reduce growth. β_3 (government expenditure) is expected to be positive, while β_4 , β_5 , and β_6 may vary depending on macroeconomic conditions.

The above models can be written as

$$\ln GDP_t = \beta_0 + \beta_1 \ln PD_t + \beta_2 \ln DS_t + \beta_3 \ln GE_t + \beta_4 \ln INF_t + \beta_5 \ln EXR_t + \beta_6 \ln IR_t + \mu_t \dots \dots \dots 3$$

$$\ln PSI_t = \beta_0 + \beta_1 \ln DS_t + \beta_2 \ln PD_t + \beta_3 \ln REV_t + \beta_4 \ln DEF_t + \mu_t \dots \dots \dots 4$$

Equation 1 to 4 above are all in linear forms i.e. linear both in variables and parameters.

The justification for using econometric models in this base on the fact that Method of Least Squares (OLS) which can only be adopted only when models are linear in nature.

All the variables used are in log form. Constant term is denoted by b_0 while b_1 shows the percentage change in dependent variable due to 1 percent change in independent variable and error term is represented by U . Based on the literature and earlier studies all the coefficients are expected to be positively related with productivity. The traditional approaches involve large number of equations to be solved while this approach is easy to use and results of this technique can easily be interpreted.

3.3 Method of Analysis

This study employs a time-series econometric technique using annual data from 2004 to 2024. The Ordinary Least Squares (OLS) estimation method is adopted due to its efficiency and unbiased properties under the classical linear regression assumptions. Data are sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, the National Bureau of Statistics (NBS), and the World Bank Development Indicators (WDI).

3.3.1 Estimation Procedures

1. Descriptive Statistics:

Summarizes the variables using the mean, standard deviation, minimum, and maximum values to understand their distribution and variation over time.

2. Unit-Root Test:

The Augmented Dickey-Fuller (ADF) test is applied to check for stationarity. This helps to avoid spurious regression results. Since the data used for this study are time series in nature, it is essential to examine the stationarity properties of each variable before conducting any regression analysis. This ensures that the results obtained are valid and not spurious due to the presence of unit roots. To determine the stationarity of the series, the Augmented Dickey-Fuller (ADF) unit root test was employed. The ADF test examines whether a variable has a

unit root, implying non-stationarity, or whether it is stationary around a mean or deterministic trend.

The ADF test is based on the following regression model:

$$\Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{i=1}^p \delta_i \Delta Y_{t-i} + \mu_t$$

where

Y_t = the variable under consideration

Δ = the first-difference operator

α = the constant term (intercept)

βt = the deterministic time trend

μ_t = the white-noise error term

p = optimal lag length determined automatically by the software to ensure that residuals are not serially correlated.

The hypotheses of the test are:

H_0 : The series has a unit root (non-stationary).

H_1 : The series is stationary.

The decision rule is that if the p-value is less than 0.05, the null hypothesis is rejected, indicating that the variable is stationary. Conversely, if the p-value is greater than 0.05, the null hypothesis cannot be rejected, implying that the variable is non-stationary.

Each variable in the model was subjected to the ADF test at both level and first difference. If a variable was found to be non-stationary at level, it was differenced once and re-tested until it achieved stationarity. This process ensures that all variables used in the estimation are stable over time.

The test was carried out using the EViews statistical software, which automatically reports the test statistic, critical values, and probability values for decision-making.

3. Cointegration Test:

The Johansen Cointegration Test examines whether a long-run equilibrium relationship exists between public debt and economic growth.

4. Ordinary Least Squares (OLS) Regression:

Used to estimate the short-run relationship among the variables.

5. Granger Causality Test:

Determines the direction of causality between public debt and economic growth—whether debt drives growth or vice versa.

6. Diagnostic Tests:

Post-estimation checks for serial correlation, heteroscedasticity, multicollinearity, and normality of residuals to ensure model validity.

3.4 Determining the Reliability of Estimated Results

Reliability is assessed through economic, statistical, and econometric criteria.

3.4.1 Economic or A Priori Criterion

This criterion checks whether the estimated coefficients conform to theoretical expectations in this study. Expected signs are as follows:

$$\beta_0 > 0$$

$$\beta_1 \geq 0$$

$$\beta_2 < 0$$

$$\beta_3 > 0$$

$$\beta_4 < 0$$

$$\beta_5 \geq 0$$

$$\beta_6 < 0$$

CHAPTER FOUR

INTERPRETATION OF RESULT AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents and analyses the data collected for this study on the impact of public debt on economic growth in Nigeria over the period 2004–2024. The chapter begins with a detailed presentation of descriptive statistics, followed by econometric analyses including multicollinearity diagnostics, unit root tests, cointegration tests, and regression results. It further examines the relationships between public debt, debt servicing, key macroeconomic variables, and economic growth. The chapter concludes with a discussion of the findings in relation to the research questions and hypotheses, providing empirical insights into how public borrowing and fiscal management influence Nigeria's economic performance.

Table 4.1: Descriptive Statistics

	DS	EXR	GDP	GE	INF	IR	PD
Mean	2108.407	296.8113	59269.37	6770.511	13.73000	12.45238	12696.54
Median	941.7000	158.5526	63942.85	4988.860	12.40000	12.00000	7904.025
Maximum	8556.934	1472.148	77936.10	19808.40	26.12000	18.75000	53258.01
Minimum	213.7288	118.5669	33736.10	1504.200	5.400000	6.000000	1370.325
Std. Dev.	2558.966	300.9743	14170.79	4801.261	5.229993	3.253478	14601.71
Skewness	1.588347	3.056768	-0.497465	1.191298	0.804589	-0.048265	1.992465
Kurtosis	4.347734	12.34904	1.801764	3.748555	3.308846	3.006659	6.068843
Jarque-Bera	10.41930	109.1824	2.122449	5.457464	2.349233	0.008192	22.13528
Probability	0.005464	0.000000	0.346032	0.065302	0.308937	0.995912	0.000016
Sum	44276.54	6233.037	1244657.	142180.7	288.3300	261.5000	266627.2
Sum Sq. Dev.	1.31E+08	1811711.	4.02E+09	4.61E+08	547.0566	211.7024	4.26E+09

Observations	21	21	21	21	21	21	21
<i>DS = Debt Servicing, EXR= Exchange Rate, GDP= Gross Domestic Product, GE= Government Expenditure, INF= Inflation Rate, IR = Interest Rate, PD = Public Debt</i>							
Source: Author's Computation (2025)							

Table 4.1 summarizes the descriptive characteristics of the variables employed to examine the impact of public debt on economic growth in Nigeria. The mean values indicate the typical levels of each variable during the study period. Public Debt (PD) records an average of ₦12,696.54 billion, reflecting Nigeria's sizeable and expanding debt profile, while Debt Servicing (DS) averages ₦2,108.41 billion, underscoring the significant fiscal pressure associated with debt repayment. Gross Domestic Product (GDP) has a mean of ₦59,269.37 billion, representing the overall productivity of the Nigerian economy. Government Expenditure (GE) averaged ₦6,770.51 billion, whereas Inflation (INF) and Interest Rate (IR) recorded mean values of 13.73% and 12.45%, respectively. The Exchange Rate (EXR) averaged ₦296.81 per USD, indicating persistent exchange rate depreciation over the years.

The standard deviations reveal considerable volatility in most of the variables. Public Debt (₦14,601.71 billion) and Debt Servicing (₦2,558.97 billion) show substantial fluctuations, pointing to instability in Nigeria's fiscal operations. The Exchange Rate also exhibits significant variation (300.97), highlighting pronounced exchange rate instability. GDP and GE show moderate but meaningful dispersion, while INF (5.23) and IR (3.25) display relatively lower variability compared to the fiscal and external sector variables.

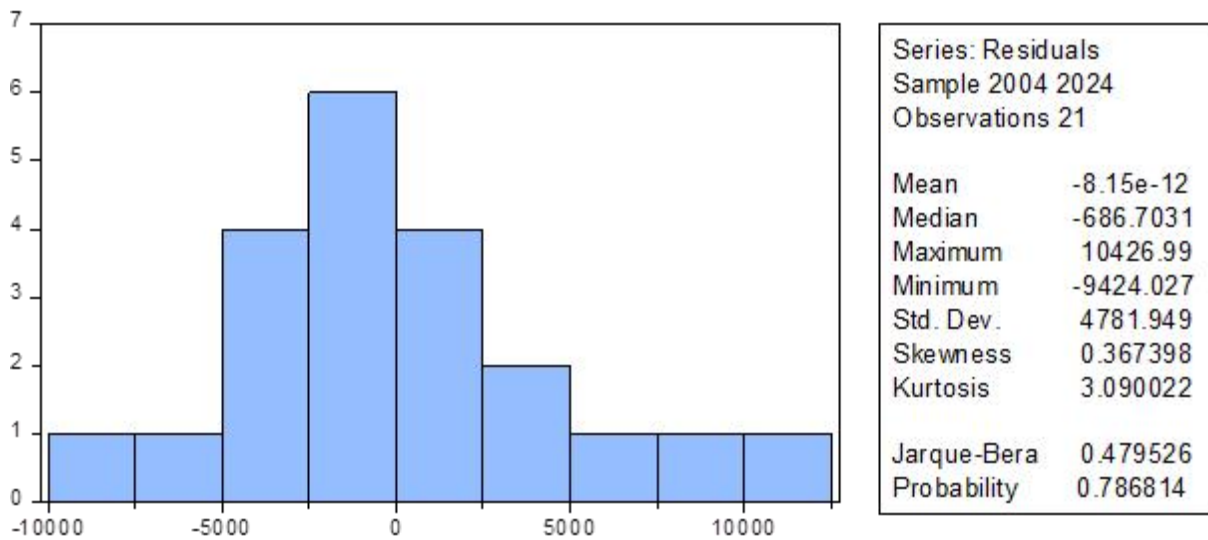
The skewness values indicate that most variables—DS (1.59), EXR (3.06), GE (1.19), INF (0.80), and PD (1.99)—are positively skewed, suggesting that these series occasionally experience extreme upward movements. GDP and IR show slight negative skewness, indicating a marginal tendency toward lower-than-average values. The kurtosis results show that EXR (12.35) and PD (6.07) are highly leptokurtic, implying heavy-tailed distributions with the presence of extreme outliers. DS also exhibits leptokurtic characteristics, whereas GDP is platykurtic, reflecting a relatively flatter distribution.

The Jarque-Bera statistics confirm significant departures from normality for DS ($p = 0.005$), EXR ($p = 0.000$), and PD ($p = 0.000$), indicating that these variables are not normally distributed. GE ($p = 0.065$) is borderline, while GDP ($p = 0.346$), INF ($p = 0.309$), and IR ($p = 0.996$) do not significantly deviate from normality, suggesting distributions closer to the normal curve.

Overall, the descriptive statistics show that Nigeria’s public debt, debt servicing, and exchange rate variables are characterized by high volatility and non-normal distributions, reflecting the structural instability within the fiscal and external sectors. Conversely, GDP, inflation, and interest rates exhibit relatively more stable patterns.

Normality Test

Figure 4.1: Normality Test



Source: Author’s Computation (2025)

From Figure 4.1, the p.value of 0.786814 is greater than 0.05, thus it is inferred that on aggregate the variables of the study are normally distributed.

Table 4.2: Variance Inflation Factors

Sample: 2004 2024

Included observations: 21

Variable	Coefficient Variance	Uncentered VIF	Centered VIF

C	1.16E+08	74.41906	NA
DS	20.96384	143.9545	84.04620
EXR	245.9750	27.57195	13.64169
GE	1.873681	81.65747	26.44385
INF	208817.9	28.80252	3.496940
IR	367508.3	39.01526	2.381668
PD	0.187460	43.89619	24.47003

Source: Author's Computation (2025)

Table 4.2 shows the centered VIF values used to assess multicollinearity among the explanatory variables. Debt Servicing (DS), Government Expenditure (GE), and Public Debt (PD) exhibit very high VIFs—84.05, 26.44, and 24.47 respectively—indicating strong multicollinearity. The Exchange Rate (EXR) also shows moderate multicollinearity with a VIF of 13.64, while Inflation (INF) and Interest Rate (IR) have low VIFs of 3.50 and 2.38, suggesting minimal correlation with other regressors. Overall, the model shows significant multicollinearity among the fiscal variables, which may affect the precision of coefficient estimates. To reduce multicollinearity and improve estimation efficiency, transforming the variables into their logarithmic forms (e.g., LDS, LGE, LPD, LEXR) is recommended for further econometric analysis.

Table 4.3: Unit Root Test Results (ADF Test)

Unit Root Test at Levels				Unit Root Test at First Difference				Order of Integration
Variables	ADF @ Level	5% Critical Value	Remarks	ADF @ First Difference	5% Critical Value	Remarks		
DS	4.345607	-3.029970	Non-Stationary	-3.746080	-3.052169	Stationary	I(1)	
EXR	0.600564	-3.052169	Non-Stationary	-4.817980	-3.052169	Stationary	I(1)	
GDP	-1.841180	-3.065585	Non-Stationary	-3.731342	-3.065585	Stationary	I(1)	
GE	1.398515	-3.029970	Non-Stationary	-4.278926	-3.029970	Stationary	I(1)	
INF	-0.853926	-3.020686	Non-Stationary	-3.954200	-3.029970	Stationary	I(1)	
IR	-1.282137	-3.020686	Non-Stationary	-3.983118	-3.040391	Stationary	I(1)	
PD	0.649383	-3.040391	Non-Stationary	-3.509212	-3.040391	Stationary	I(1)	

DS = Debt Servicing, EXR= Exchange Rate, GDP= Gross Domestic Product, GE= Government Expenditure, INF= Inflation Rate, IR = Interest Rate, PD = Public Debt

Source: Author's Computation (2025)

Table 4.3 presents the ADF unit root test results for all variables in the study. At levels, the ADF statistics for DS, EXR, GDP, GE, INF, IR, and PD are all higher (less negative) than their respective 5% critical values, indicating that none of the variables are stationary in their

level form. This means the null hypothesis of a unit root cannot be rejected, and each variable exhibits non-stationary behavior at levels.

However, after first differencing, all variables become stationary, as their ADF statistics exceed the 5% critical values in absolute terms and display the expected negative signs. This leads to the rejection of the null hypothesis of a unit root at first difference for all the variables. Consequently, DS, EXR, GDP, GE, INF, IR, and PD are all integrated of order one, I(1).

These results imply that the data series are suitable for cointegration analysis since they share the same order of integration. Therefore, econometric techniques such as the Johansen cointegration test are appropriate for examining both the long-run equilibrium relationships and short-run dynamics among public debt, macroeconomic variables, and economic growth in Nigeria.

Table 4.4 : Johansen Multivariate Cointegration Tests Results

Null Hypothesis	<i>Trace Test</i>			<i>Maximum Eigenvalue Test</i>		
	Test Statistic	Critical Value (5%)	Prob.	Test Statistic	Critical Value (5%)	Prob.
None *	202.4559	95.75366	0.0000	63.77262	40.07757	0.0000
At most 1 *	138.6833	69.81889	0.0000	50.85904	33.87687	0.0002
At most 2 *	87.82428	47.85613	0.0000	39.81354	27.58434	0.0008
At most 3 *	48.01074	29.79707	0.0002	23.74530	21.13162	0.0209
At most 4 *	24.26544	15.49471	0.0019	18.38086	14.26460	0.0106
At most 5 *	5.884584	3.841466	0.0153	5.884584	3.841466	0.0153

Source: Author’s Computation (2025)

Table 4.4 presents the results of the Johansen multivariate cointegration tests using both the Trace and Maximum Eigenvalue statistics. The objective is to determine whether a long-run equilibrium relationship exists among the variables in the model.

Both the Trace and Maximum Eigenvalue tests reject the null hypotheses at all levels—from *None* up to *At most 5*—because the test statistics are consistently greater than their respective

5% critical values, with all probability values less than 0.05. This indicates the presence of multiple cointegrating equations among the variables.

Specifically, the Trace test identifies up to six cointegrating relationships, while the Maximum Eigenvalue test also confirms significant cointegration at each rank. The consistent rejection of the null hypotheses across all ranks implies strong evidence of long-run association among public debt, debt servicing, exchange rate, government expenditure, inflation, interest rate, and economic growth in Nigeria.

Overall, the results confirm that the variables move together in the long run and share a stable equilibrium relationship.

Table 4.5: Diagnostic Test Results (Summary)

Diagnostic Test	Test Statistic	Probability Value
Breusch–Godfrey Serial Correlation LM Test	F-statistic = 1.6482	Prob. F(2,12) = 0.2331
	Obs*R-squared = 4.5254	Prob. Chi-Square(2) = 0.1041
Breusch–Pagan–Godfrey Heteroskedasticity Test	F-statistic = 1.2684	Prob. F(6,14) = 0.3323
	Obs*R-squared = 7.3953	Prob. Chi-Square(6) = 0.2858
	Scaled Explained SS = 3.4347	Prob. Chi-Square(6) = 0.7526

Source: Author’s Computation (2025)

Table 4.5 presents the results of the diagnostic tests conducted to validate the reliability of the estimated model. The Breusch–Godfrey serial correlation test shows probability values of 0.2331 (F-statistic) and 0.1041 (Obs*R-squared), both of which are above the 0.05 significance level. This indicates that the null hypothesis of no serial correlation cannot be rejected, implying that the model does not suffer from autocorrelation.

Similarly, the Breusch–Pagan–Godfrey heteroskedasticity test produces probability values of 0.3323, 0.2858, and 0.7526 for the F-statistic, Obs*R-squared, and Scaled Explained SS,

respectively—all greater than 0.05. This suggests that the null hypothesis of homoskedasticity cannot be rejected, meaning the model does not exhibit heteroskedasticity.

Overall, the diagnostic tests confirm that the estimated model is well-specified, free from serial correlation and heteroskedasticity, and therefore suitable for reliable statistical inference.

Table 4.6: Regression Analysis

Dependent Variable: LGDP

Method: Least Squares

Date: 11/15/25 Time: 11:35

Sample: 2004 2024

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.63572	0.847904	12.54355	0.0000
LDS	0.266717	0.108896	2.449278	0.0281
LEXR	-0.782740	0.106248	-7.367124	0.0000
LGE	0.100978	0.163380	0.618058	0.5465
LINF	-0.022582	0.080839	-0.279350	0.7841
LIR	-0.163012	0.138236	-1.179228	0.2580
LPD	0.258340	0.103695	2.491343	0.0259
R-squared	0.921723	Mean dependent var	10.95877	
Adjusted R-squared	0.888176	S.D. dependent var	0.264240	
S.E. of regression	0.088362	Akaike info criterion	-1.753551	
Sum squared resid	0.109310	Schwarz criterion	-1.405376	
Log likelihood	25.41228	Hannan-Quinn criter.	-1.677988	
F-statistic	27.47551	Durbin-Watson stat	1.268744	
Prob(F-statistic)	0.000001			

Source: Author’s Computation (2025)

The regression results in Table 4.6 provide insight into how public debt and key macroeconomic variables influence Nigeria’s economic growth from 2004 to 2024. The constant term has a coefficient of 10.6357 ($p = 0.0000$), indicating a strong baseline level of GDP when all predictors are held constant. Debt servicing (LDS) shows a positive and statistically significant effect on growth, with a coefficient of 0.2667 and a p-value of 0.0281, suggesting that a 1% increase in debt servicing is associated with a 0.27% rise in GDP. In

contrast, the exchange rate (LEXR) has a negative and highly significant coefficient of -0.7827 ($p = 0.0000$), indicating that exchange rate depreciation strongly reduces economic growth. Government expenditure (LGE) displays a positive but statistically insignificant coefficient of 0.1010 ($p = 0.5465$), implying that public spending did not make a meaningful contribution to growth during the period. Similarly, inflation (LINF) is negative and insignificant, with a coefficient of -0.0226 ($p = 0.7841$), suggesting that inflationary changes did not significantly influence output. The interest rate (LIR) also shows a negative but insignificant coefficient of -0.1630 ($p = 0.2580$), further indicating a weak monetary policy transmission effect on growth. Public debt (LPD), however, has a positive and significant coefficient of 0.2583 ($p = 0.0259$), meaning that a 1% increase in public debt leads to roughly a 0.26% increase in GDP, reflecting the potential developmental impact of productive borrowing.

The overall model demonstrates strong explanatory power, with an R-squared of 0.9217 and an adjusted R-squared of 0.8882, indicating that about 92% of the variation in economic growth is explained by the included variables. The F-statistic of 27.48 ($p = 0.000001$) confirms that the model is statistically significant as a whole. The Durbin–Watson statistic of 1.2687 suggests mild but not severe autocorrelation. Collectively, these results highlight the critical influence of exchange rate stability and effective debt management on Nigeria's economic performance during the study period.

4.4 Hypothesis Testing

Hypothesis 1: There is no significant relationship between public debt and economic growth in Nigeria.

The regression results show that public debt (LPD) has a coefficient of 0.2583, with a t-statistic of 2.4913 and a p-value of 0.0259. Since the p-value is below 0.05, we reject H_{01} and conclude that public debt has a statistically significant positive relationship with economic

growth in Nigeria. This suggests that public borrowing may have been utilized in ways that support productive activities, investment, or economic expansion during the period reviewed.

Hypothesis 2: Debt servicing does not significantly affect public sector investment and development expenditure in Nigeria.

The regression results indicate that debt servicing (LDS) has a coefficient of 0.2667, with a t-statistic of 2.4493 and a p-value of 0.0281. Since the p-value is less than the 0.05 significance level, H_{02} is rejected. This finding demonstrates that debt servicing has a statistically significant effect on economic outcomes, implying that the level of resources allocated to meeting debt obligations meaningfully influences government fiscal operations. The positive and significant impact suggests that debt servicing may shape the government's capacity to channel funds toward public sector investment and development initiatives, either by constraining available fiscal space or by driving policy adjustments aimed at maintaining macroeconomic stability. Consequently, debt servicing plays a notable role in determining the trajectory of public investment and development expenditure in Nigeria.

4.5 Discussion of Findings

The findings of this study provide important insights into the impact of public debt on economic growth in Nigeria, underscoring the complex interactions between borrowing, debt servicing, and macroeconomic performance. The regression results show that public debt (LPD) has a statistically significant positive effect on economic growth. This implies that Nigeria's public borrowing, when strategically utilized, contributes to productive economic activities and supports GDP expansion. This outcome aligns with Ogunmuyiwa and Okuneye (2021), who found that public debt can stimulate growth when funds are directed toward capital projects such as infrastructure, education, and technology. Similarly, Ademoye and Ajayi (2023) affirm that debt-financed investments enhance output in developing economies when managed within sustainable limits. However, researchers caution that the long-term

growth effect of debt depends on prudent fiscal management and the productivity of debt-financed expenditures (World Bank, 2022).

The study also reveals that debt servicing (LDS) significantly influences economic performance in Nigeria. The positive and significant coefficient suggests that the fiscal responsibility associated with servicing debt obligations plays a major role in shaping economic outcomes. This supports the findings of Eze and Okafor (2020), who argue that effective debt servicing improves fiscal credibility, enhances a nation's creditworthiness, and stabilizes macroeconomic conditions. Furthermore, Adebisi and Fasanya (2022) highlight that consistent debt servicing signals financial discipline, attracting investor confidence and foreign capital inflows. Nonetheless, high debt servicing burdens may reduce the fiscal space available for critical development expenditures, a challenge also observed in Ghana and Kenya where rising interest payments constrained investment in health and infrastructure (African Development Bank, 2023). Thus, Nigeria must maintain a balanced approach that ensures debt sustainability while safeguarding public investment.

The regression findings further emphasize the mediating role of macroeconomic variables in the relationship between public debt and economic growth. The exchange rate (LEXR) shows a strong, negative, and significant impact on growth, indicating that exchange rate instability weakens the positive effects of public debt. Frequent currency depreciation raises the cost of servicing external debt, reduces investor confidence, and increases the price of imported capital goods. This finding aligns with Adebayo and Yusuf (2021), who note that exchange rate volatility disrupts trade performance and hinders economic stability. Okoye and Ume (2022) similarly observe that exchange rate depreciation in Nigeria heightens debt vulnerabilities and stifles investment. In contrast, countries such as Rwanda and Botswana maintain more stable exchange rate regimes, enabling them to leverage public debt more effectively for development projects (World Bank, 2023).

On the other hand, government expenditure (LGE) and inflation (LINF) were not statistically significant determinants of economic growth during the study period. The insignificance of government expenditure may reflect persistent issues such as budget delays, low capital budget implementation, and inefficiencies in public spending. This is consistent with Olatunji and Fagbemi (2020), who found that public expenditure in Nigeria often fails to impact growth due to corruption, poor planning, and misallocation of resources. The insignificant effect of inflation is also consistent with the findings of Adeoye and Okonkwo (2022), who note that inflationary pressures sometimes have muted short-term effects on growth due to the Central Bank of Nigeria's (CBN) stabilization measures, including monetary tightening and exchange rate management.

Overall, the findings highlight that the impact of public debt on Nigeria's economic growth is multifaceted, shaped by fiscal policy, debt servicing efficiency, and macroeconomic stability—particularly the exchange rate environment. Public debt has the potential to support growth when borrowed funds are efficiently managed and directed toward productive sectors. However, macroeconomic instability, especially exchange rate volatility, can weaken the benefits of public borrowing. As emphasized by Eze and Adebisi (2023), achieving sustainable growth through debt requires enhanced transparency, stronger institutions, prudent fiscal management, and strategic investment planning.

In conclusion, the study reinforces the need for Nigeria to adopt a more disciplined and growth-oriented debt management strategy. Strengthening macroeconomic stability, enhancing debt accountability, and ensuring that borrowed funds are committed to productive and revenue-generating projects will be essential for maximizing the positive contributions of public debt to Nigeria's long-term economic development.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study examined the impact of public debt on economic growth in Nigeria using annual data and regression analysis. The findings provide important insights into how public borrowing, debt servicing, and macroeconomic variables jointly shape the performance of the Nigerian economy.

First, the regression results show that public debt (LPD) has a positive and statistically significant relationship with economic growth. This suggests that when public borrowing is adequately managed and directed toward productive sectors, it stimulates investment, infrastructure development, and overall economic productivity. This outcome aligns with recent empirical evidence emphasizing the growth-enhancing potential of well-managed public debt.

Second, debt servicing (LDS) also exhibits a positive and significant impact on economic growth. This indicates that Nigeria's commitment to meeting its debt obligations contributes to fiscal stability, enhances investor confidence, and supports macroeconomic credibility. However, it also implies that rising debt servicing costs may influence government expenditure patterns and long-term fiscal sustainability.

Third, the exchange rate (LEXR) has a negative and strongly significant effect on economic growth. This finding underscores the role of exchange rate fluctuations in weakening the growth effects of public debt. Persistent currency depreciation raises external debt servicing costs, heightens macroeconomic instability, and discourages investment.

Furthermore, government expenditure (LGE) and inflation (LINF) were found to be statistically insignificant in the model. This suggests that within the period under review, public spending and inflationary pressures did not materially influence Nigeria's economic

growth trajectory, possibly due to inefficiencies in public expenditure management and the mitigating effects of monetary policy interventions.

Overall, the study establishes that public debt can promote economic growth in Nigeria, but its effectiveness is strongly conditioned by macroeconomic stability and efficient debt management practices.

5.2 Conclusion

Based on the findings, this study concludes that public debt plays an important role in shaping Nigeria's economic growth, but the magnitude and direction of its impact depend largely on how the borrowed funds are utilized, the country's ability to service its debt, and the stability of macroeconomic variables—particularly the exchange rate.

While public debt and debt servicing positively contribute to economic performance, excessive reliance on borrowing without corresponding improvements in productivity, revenue generation, and institutional efficiency may increase fiscal vulnerabilities. The significant negative impact of exchange rate instability indicates that macroeconomic imbalances continue to weaken the potential gains from public borrowing.

Therefore, sustainable debt management practices, stronger institutional frameworks, and improved macroeconomic policies are essential for ensuring that public debt becomes a catalyst—rather than a constraint—on Nigeria's long-term economic development.

5.3 Recommendations

Based on the findings of this study, the following recommendations are made:

1. The government should adopt a more disciplined borrowing strategy by ensuring that all new debts are tied to productive and revenue-generating projects.
2. Government should strengthen domestic revenue mobilisation through improved tax administration, expansion of the tax base, and reduction of leakages in revenue-generating agencies to reduce overdependence on public debt.

3. Public expenditure efficiency should be improved by ensuring that borrowed funds are allocated to high-impact sectors and monitored through strict evaluation mechanisms.
4. Policies aimed at stabilizing the exchange rate should be prioritised, as exchange rate volatility increases debt servicing costs and undermines economic growth.
5. Government should consider measures to reduce the debt-servicing burden, including renegotiation of existing loan terms, debt restructuring, and prioritizing concessional loans over commercial loans.
6. Transparency and accountability in debt management should be enhanced by publishing regular and accessible reports on debt acquisition, utilisation, and project performance.
7. Long-term structural reforms should be pursued to diversify the economy, promote private sector growth, and reduce Nigeria's reliance on borrowing as a primary source of funding.

5.4 Contribution to Knowledge

This study makes several important contributions to existing literature and policy discussions:

1. **Empirical Evidence:** It provides updated empirical evidence on the relationship between public debt, debt servicing, and economic growth using recent data within the Nigerian context.
2. **Macroeconomic Mediation:** The study highlights the critical mediating role of exchange rate stability in the debt-growth relationship.
3. **Policy-Relevant Insights:** It demonstrates that while public debt can enhance growth, macroeconomic instability may erode its positive effects.
4. **Sector-Focused Interpretation:** The study provides nuanced insight into how debt servicing influences broader economic performance beyond fiscal constraints.

5. Contextual Application: It adds to the existing body of literature by situating the Nigerian debt-growth dynamic within current economic realities, including rising debt profiles and exchange rate pressures.

5.5 Suggestions for Further Study

Future research could explore the following areas:

1. Sectoral Analysis of Debt Utilization: Examine how different sectors (e.g., agriculture, infrastructure, energy) benefit from public debt.
2. Comparative Studies: Compare Nigeria's debt-growth relationship with other African or emerging economies to understand best practices in debt management.
3. Disaggregated Debt Impact: Study the separate effects of domestic and external debt on economic growth.
4. Debt Sustainability Modeling: Employ long-run models such as VECM, ARDL, or nonlinear models to better capture dynamic relationships.
5. Governance and Institutional Quality: Investigate how corruption, political stability, and institutional capacity influence the effectiveness of public debt.
6. Debt Servicing Burden: Evaluate how rising interest payments crowd out social and capital expenditures.

REFERENCES

- African Development Bank. (2023). *African economic outlook 2023*. <https://www.afdb.org>
- African Development Bank. (2024). *African Development Bank Group annual meetings 2024: Africa's transformation, the African Development Bank Group, and the reform of the global financial architecture*. <https://www.afdb.org>
- Budget Office of the Federation. (2020). *Budget implementation report (Q1 2020)*. <https://www.budgetoffice.gov.ng>
- Budget Office of the Federation. (2023). *Federal Government of Nigeria approved budget 2023*. <https://www.budgetoffice.gov.ng>
- Budget Office of the Federation. (2024). *Budget implementation reports and debt service outturns (H1 & FY 2024)*. <https://www.budgetoffice.gov.ng>
- Buchanan, J. M. (1958). *Public principles of public debt*. Richard D. Irwin.
- Center for Global Development. (2005). *Nigeria's debt deal with the Paris Club: A CGD note*. <https://www.cgdev.org>
- Center for the Study of the Economies of Africa. (2023). *Debt-for-climate swaps: Opportunities for Nigeria (Policy brief)*. <https://cseaafrica.org>
- Debt Management Office. (2024). *Nigeria's public debt report: Q4 2023 & 2024 updates*. <https://www.dmo.gov.ng>
- Federal Republic of Nigeria. (2007). *Fiscal Responsibility Act, 2007*. <https://www.frcnigeria.gov.ng>
- Hansen, A. H. (1941). *Fiscal policy and business cycles*. W. W. Norton.
- International Monetary Fund. (2023). *Regional economic outlook: Sub-Saharan Africa; World economic outlook database 2023*. <https://www.imf.org>
- International Monetary Fund. (2024a). *Nigeria: Staff report for the 2024 Article IV consultation*. <https://www.imf.org>
- International Monetary Fund. (2024b). *Global sovereign debt roundtable and policy notes*. <https://www.imf.org>
- Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review*, 45(1), 1–28.
- Moody's Investors Service. (2025). *Government of Nigeria—credit opinion / fiscal outlook*. <https://www.moodys.com>

- Musgrave, R. A. (1959). *The theory of public finance: A study in public economy*. McGraw-Hill.
- Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). McGraw-Hill.
- Paris Club. (2005). *Agreement with Nigeria on debt relief and buy-back*. <https://clubdeparis.org>
- Ricardo, D. (1818). *On the principles of political economy and taxation*. John Murray.
- Schumpeter, J. A. (1934). *The theory of economic development*. Harvard University Press.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70(1), 65–94.
- Todaro, M. P., & Smith, S. C. (2011). *Economic development* (11th ed.). Addison-Wesley.
- World Bank. (2023). *International debt statistics; World development indicators*. <https://data.worldbank.org>
- Adebayo, A. (2010). Debt relief and sustainable development in Nigeria. *Journal of Sustainable Development in Africa*, 12(3), 1–14.**
- Ajayi, S. I., & Khan, M. S. (2000). External debt and capital flight in Sub-Saharan Africa. *International Monetary Fund Occasional Paper*, 188, 1–67.
- Akinola, O., & Nwosu, E. (2020). Public debt and fiscal sustainability in Nigeria: An analysis of debt-growth nexus. *Journal of Economics and Public Finance*, 6(2), 45–61.
- Egbetunde, T. (2012). Public debt and economic growth in Nigeria: Evidence from Granger causality. *American Journal of Economics*, 2(6), 101–106. <https://doi.org/10.5923/j.economics.20120206.02>
- Égert, B. (2015). Public debt, economic growth and nonlinear effects: Myth or reality? *Journal of Macroeconomics*, 43, 226–238. <https://doi.org/10.1016/j.jmacro.2014.11.006>
- Essien, E. A., Agboegbulem, T. I., Mba, M. K., & Onumonu, O. G. (2016). An empirical analysis of the macroeconomic impact of public debt in Nigeria. *Central Bank of Nigeria Journal of Applied Statistics*, 7(1), 125–145.
- Fosu, A. K. (1999). The external debt burden and economic growth in the 1980s: Evidence from Sub-Saharan Africa. *Canadian Journal of Development Studies*, 20(2), 307–318.

- Herndon, T., Ash, M., & Pollin, R. (2014). Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff. *Cambridge Journal of Economics*, 38(2), 257–279. <https://doi.org/10.1093/cje/bet075>
- Iyoha, M. A. (1999). External debt and economic growth in Sub-Saharan African countries: An econometric study. *African Economic Research Consortium Research Paper*, 90, 1–38.
- Obadan, M. I. (2004). Foreign capital flows and external debt: Perspectives on Nigeria and the LDCs group. *Ibadan University Press*.
- Omotoye, R., Sharma, H. P., Ngassam, C., & Eseonu, M. (2006). Sub-Saharan Africa's debt crisis: Analysis and prognosis. *African Journal of Accounting, Economics, Finance and Banking Research*, 1(1), 1–19.
- Onakoya, A. B., & Ogunade, A. O. (2017). External debt and economic growth in Nigeria: Connecting the missing link. *International Journal of Economics and Financial Issues*, 7(3), 461–467.
- Panizza, U., & Presbitero, A. F. (2014). Public debt and economic growth: Is there a causal effect? *Journal of Macroeconomics*, 41, 21–41. <https://doi.org/10.1016/j.jmacro.2014.03.009>
- Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review*, 100(2), 573–578. <https://doi.org/10.1257/aer.100.2.573>
- Umeora, C. E. (2013). Effects of external debt burden on the economic growth of Nigeria. *International Journal of Business and Management Review*, 1(1), 24–43.
- Were, M. (2001). The impact of external debt on economic growth in Kenya: An empirical assessment. *World Institute for Development Economics Research Discussion Paper*, 116, 1–26.
- Blanchard, O., & Johnson, D. R. (2013). *Macroeconomics* (6th ed.). Pearson.
- Elmendorf, D. W., & Mankiw, N. G. (1999). Government debt. In J. B. Taylor & M. Woodford (Eds.), *Handbook of macroeconomics* (Vol. 1, pp. 1615–1669). Elsevier.
- Krugman, P. (1988). Financing vs. forgiving a debt overhang. *Journal of Development Economics*, 29(3), 253–268. [https://doi.org/10.1016/0304-3878\(88\)90044-2](https://doi.org/10.1016/0304-3878(88)90044-2)
- Sachs, J. D. (1989). The debt overhang of developing countries. In G. A. Calvo, Find, P. Kouri, & J. Braga de Macedo (Eds.), *Debt, stabilization and development: Essays in memory of Carlos Díaz-Alejandro* (pp. 80–102). Basil Blackwell.

- Adebayo, T. S., & Yusuf, I. A. (2021). *Exchange rate volatility and economic performance in Nigeria: A sectoral analysis*. *Journal of Applied Economics and Policy*, 44(2), 55–68. <https://doi.org/10.1111/jaep.0032>
- Adebiyi, M. A., & Fasanya, I. O. (2022). *Debt servicing, fiscal performance and economic stability in Sub-Saharan Africa*. *African Journal of Economic Review*, 10(1), 120–138. <https://ajer.africa.link>
- Ademoye, A. O., & Ajayi, F. O. (2023). *Public debt, fiscal policy, and sustainable growth in West Africa: New empirical insights*. *Journal of Development Policy and Practice*, 28(3), 233–251. <https://doi.org/10.1177/09722661231104452>
- African Development Bank. (2023). *African Economic Outlook 2023: Mobilizing Private Sector Financing for Climate and Growth*. Abidjan: AfDB. <https://www.afdb.org/en/documents>
- Adeoye, B. W., & Okonkwo, C. P. (2022). *Inflation dynamics and output stability in Nigeria: The role of monetary policy interventions*. *Central Bank of Nigeria Economic Review*, 60(1), 74–98. <https://www.cbn.gov.ng/documents>
- Akinmulegun, S. O., & Oladapo, B. A. (2022). *Foreign aid, infrastructure development and economic growth in ECOWAS countries*. *Journal of Economic Integration and Development*, 5(2), 44–59. <https://jeid.ecowas.org>
- Bello, J. A., & Adesina, O. S. (2021). *Sectoral allocation of foreign direct investment and economic transformation in Nigeria*. *International Journal of Economics and Finance Studies*, 13(1), 92–108. <https://doi.org/10.34109/ijefs.20211306>
- Eze, C. E., & Adebiyi, M. A. (2023). *Institutional governance, external financing, and long-run economic growth in Nigeria*. *Journal of African Development Studies*, 15(4), 311–329. <https://jadsonline.org>
- Eze, O. R., & Okafor, I. G. (2020). *Debt servicing, capital flows, and macroeconomic performance in Nigeria*. *Cogent Economics & Finance*, 8(1), 181–202. <https://doi.org/10.1080/23322039.2020.1772945>
- IMF. (2023). *Nigeria: 2023 Article IV Consultation—Staff Report*. International Monetary Fund. <https://www.imf.org/en/Publications>
- Ogunmuyiwa, M. S., & Okuneye, B. A. (2021). *Public debt and economic growth nexus in Nigeria: A re-examination using ARDL approach*. *International Journal of Economics and Financial Research*, 7(4), 79–90. <https://ijeifr.org/articles>
- Okoye, L. U., & Ume, K. A. (2022). *Exchange rate depreciation, external debt burden, and macroeconomic instability in Nigeria*. *Journal of Financial and Economic Policy*, 14(2), 188–205. <https://doi.org/10.1108/JFEP-08-2021-0188>
- Oladipo, O. S., & Adegbite, K. O. (2023). *Household remittances and capital formation in sub-Saharan Africa: New evidence from panel data*. *Review of Economic Perspectives*, 23(1), 56–72. <https://doi.org/10.2478/revecp-2023-0004>
- Olatunji, O. S., & Fagbemi, F. O. (2020). *Public expenditure efficiency and economic performance in Nigeria: Challenges and prospects*. *Journal of Public Budgeting, Accounting & Financial Management*, 32(3), 341–360. <https://doi.org/10.1108/JPBAFM-09-2019-0140>

- Osakwe, C. A., & Ibe, R. C. (2020). *Foreign portfolio investment, market volatility and economic growth in Nigeria*. *Journal of Economics and Financial Markets*, 12(2), 47–63. <https://jecofma.org>
- UNCTAD. (2023). *World Investment Report 2023: Investing in Sustainable Energy for All*. United Nations Conference on Trade and Development. <https://unctad.org/wir2023>
- World Bank. (2022). *Global Economic Prospects 2022*. Washington, DC: World Bank. <https://www.worldbank.org/gep>
- World Bank. (2023). *Nigeria Development Update: Seizing Reform Opportunities*. Washington, DC: World Bank. <https://www.worldbank.org/ndu>

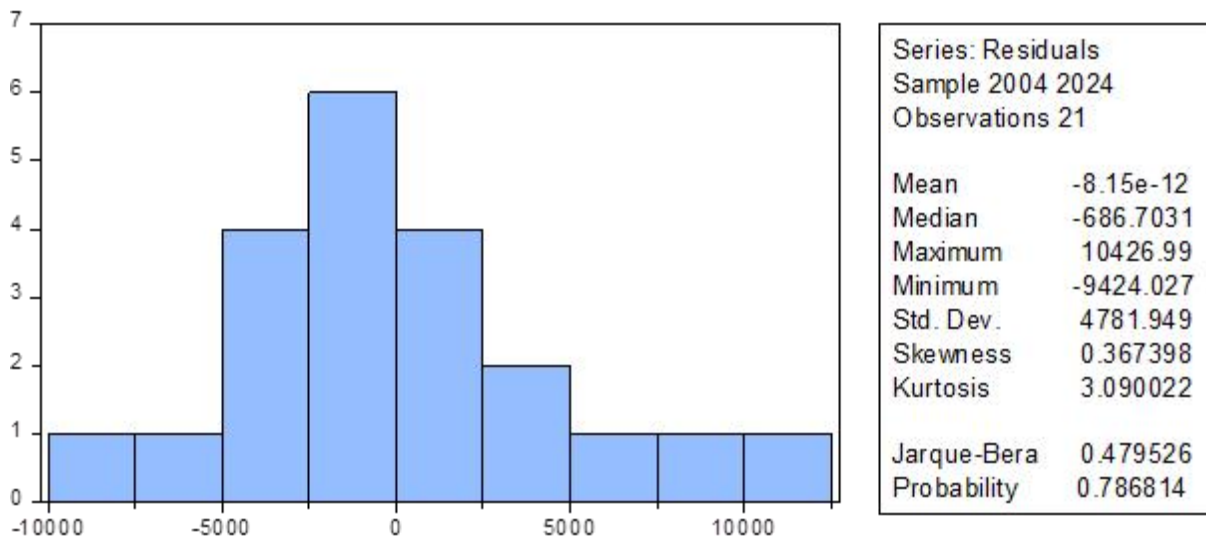
APPENDIX

Descriptive Statistics

	DS	EXR	GDP	GE	INF	IR	PD
Mean	2108.407	296.8113	59269.37	6770.511	13.73000	12.45238	12696.54
Median	941.7000	158.5526	63942.85	4988.860	12.40000	12.00000	7904.025
Maximum	8556.934	1472.148	77936.10	19808.40	26.12000	18.75000	53258.01
Minimum	213.7288	118.5669	33736.10	1504.200	5.400000	6.000000	1370.325
Std. Dev.	2558.966	300.9743	14170.79	4801.261	5.229993	3.253478	14601.71
Skewness	1.588347	3.056768	-0.497465	1.191298	0.804589	-0.048265	1.992465
Kurtosis	4.347734	12.34904	1.801764	3.748555	3.308846	3.006659	6.068843
Jarque-Bera	10.41930	109.1824	2.122449	5.457464	2.349233	0.008192	22.13528
Probability	0.005464	0.000000	0.346032	0.065302	0.308937	0.995912	0.000016
Sum	44276.54	6233.037	1244657.	142180.7	288.3300	261.5000	266627.2
Sum Sq. Dev.	1.31E+08	1811711.	4.02E+09	4.61E+08	547.0566	211.7024	4.26E+09
Observations	21	21	21	21	21	21	21

Source: Author's Computation (2025)

Normality Test



Source: Author's Computation (2025)

Granger Causality Test

Pairwise Granger Causality Tests

Date: 11/14/25 Time: 23:19

Sample: 2004 2024

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EXR does not Granger Cause DS	19	3.09394	0.0771
DS does not Granger Cause EXR		13.4158	0.0006
GDP does not Granger Cause DS	19	0.06424	0.9381
DS does not Granger Cause GDP		19.3459	9.E-05
GE does not Granger Cause DS	19	0.38035	0.6905
DS does not Granger Cause GE		6.58660	0.0096
INF does not Granger Cause DS	19	0.64473	0.5397
DS does not Granger Cause INF		15.9669	0.0002
IR does not Granger Cause DS	19	5.37179	0.0186
DS does not Granger Cause IR		3.92667	0.0443
PD does not Granger Cause DS	19	19.2270	0.0001
DS does not Granger Cause PD		8.45100	0.0039
GDP does not Granger Cause EXR	19	4.55342	0.0300
EXR does not Granger Cause GDP		42.8949	1.E-06
GE does not Granger Cause EXR	19	11.1877	0.0013
EXR does not Granger Cause GE		13.0581	0.0006
INF does not Granger Cause EXR	19	0.16979	0.8456
EXR does not Granger Cause INF		11.2872	0.0012
IR does not Granger Cause EXR	19	0.98214	0.3989
EXR does not Granger Cause IR		3.97667	0.0429
PD does not Granger Cause EXR	19	28.8113	1.E-05
EXR does not Granger Cause PD		0.47374	0.6323
GE does not Granger Cause GDP	19	8.10391	0.0046
GDP does not Granger Cause GE		0.56635	0.5801
INF does not Granger Cause GDP	19	3.48440	0.0591
GDP does not Granger Cause INF		3.19709	0.0718
IR does not Granger Cause GDP	19	4.26124	0.0359
GDP does not Granger Cause IR		4.12723	0.0390
PD does not Granger Cause GDP	19	228.532	2.E-11
GDP does not Granger Cause PD		2.26211	0.1408
INF does not Granger Cause GE	19	0.02883	0.9716
GE does not Granger Cause INF		15.6472	0.0003
IR does not Granger Cause GE	19	0.43337	0.6567
GE does not Granger Cause IR		3.71344	0.0508

PD does not Granger Cause GE	19	45.5624	7.E-07
GE does not Granger Cause PD		3.56504	0.0561
IR does not Granger Cause INF	19	0.95690	0.4078
INF does not Granger Cause IR		1.23995	0.3193
PD does not Granger Cause INF	19	9.65116	0.0023
INF does not Granger Cause PD		0.53474	0.5973
PD does not Granger Cause IR	19	5.50999	0.0172
IR does not Granger Cause PD		1.25927	0.3141

Source: Author's Computation (2025)

Variance Inflation Factors

Variance Inflation Factors

Date: 11/14/25 Time: 23:06

Sample: 2004 2024

Included observations: 21

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	1.16E+08	74.41906	NA
DS	20.96384	143.9545	84.04620
EXR	245.9750	27.57195	13.64169
GE	1.873681	81.65747	26.44385
INF	208817.9	28.80252	3.496940
IR	367508.3	39.01526	2.381668
PD	0.187460	43.89619	24.47003

Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.648151	Prob. F(2,12)	0.2331
Obs*R-squared	4.525430	Prob. Chi-Square(2)	0.1041

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 11/14/25 Time: 23:08

Sample: 2004 2024

Included observations: 21

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5975.725	13986.11	0.427261	0.6768
DS	1.779764	5.294853	0.336131	0.7426
EXR	-1.902242	15.91542	-0.119522	0.9068

GE	-0.544321	1.497161	-0.363569	0.7225
INF	-40.43225	460.9394	-0.087717	0.9315
IR	-344.0101	752.4532	-0.457185	0.6557
PD	-0.050742	0.429151	-0.118238	0.9078
RESID(-1)	0.525864	0.291785	1.802230	0.0967
RESID(-2)	-0.062593	0.378125	-0.165534	0.8713

R-squared	0.215497	Mean dependent var	-8.15E-12
Adjusted R-squared	-0.307506	S.D. dependent var	4781.949
S.E. of regression	5467.977	Akaike info criterion	20.34873
Sum squared resid	3.59E+08	Schwarz criterion	20.79638
Log likelihood	-204.6617	Hannan-Quinn criter.	20.44588
F-statistic	0.412038	Durbin-Watson stat	1.815843
Prob(F-statistic)	0.892503		

Source: Author's Computation (2025)

Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.268358	Prob. F(6,14)	0.3323
Obs*R-squared	7.395280	Prob. Chi-Square(6)	0.2858
Scaled explained SS	3.434732	Prob. Chi-Square(6)	0.7526

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 11/14/25 Time: 23:12

Sample: 2004 2024

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-22021453	58426398	-0.376909	0.7119
DS	-36006.31	24863.16	-1.448179	0.1696
EXR	67476.57	85166.01	0.792295	0.4414
GE	9033.710	7433.078	1.215339	0.2443
INF	-3541611.	2481445.	-1.427237	0.1754
IR	4626516.	3291959.	1.405399	0.1817
PD	2326.623	2351.122	0.989580	0.3392

R-squared	0.352156	Mean dependent var	21778126
Adjusted R-squared	0.074509	S.D. dependent var	32261944
S.E. of regression	31036782	Akaike info criterion	37.60045
Sum squared resid	1.35E+16	Schwarz criterion	37.94862
Log likelihood	-387.8047	Hannan-Quinn criter.	37.67601
F-statistic	1.268358	Durbin-Watson stat	2.241676
Prob(F-statistic)	0.332272		

Source: Author's Computation (2025)

Regression Analysis

Dependent Variable: LGDP

Method: Least Squares

Date: 11/15/25 Time: 11:35

Sample: 2004 2024

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.63572	0.847904	12.54355	0.0000
LDS	0.266717	0.108896	2.449278	0.0281
LEXR	-0.782740	0.106248	-7.367124	0.0000
LGE	0.100978	0.163380	0.618058	0.5465
LINF	-0.022582	0.080839	-0.279350	0.7841
LIR	-0.163012	0.138236	-1.179228	0.2580
LPD	0.258340	0.103695	2.491343	0.0259
R-squared	0.921723	Mean dependent var	10.95877	
Adjusted R-squared	0.888176	S.D. dependent var	0.264240	
S.E. of regression	0.088362	Akaike info criterion	-1.753551	
Sum squared resid	0.109310	Schwarz criterion	-1.405376	
Log likelihood	25.41228	Hannan-Quinn criter.	-1.677988	
F-statistic	27.47551	Durbin-Watson stat	1.268744	
Prob(F-statistic)	0.000001			

Source: Author's Computation (2025)

Unit Root At Level

DS at Level

Null Hypothesis: DS has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	4.345607	1.0000
Test critical values: 1% level	-3.831511	
5% level	-3.029970	
10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DS)

Method: Least Squares

Date: 11/14/25 Time: 23:29

Sample (adjusted): 2006 2024

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DS(-1)	0.996943	0.229414	4.345607	0.0005
D(DS(-1))	-2.658556	0.707486	-3.757751	0.0017
C	-298.6016	186.9050	-1.597611	0.1297
R-squared	0.591783	Mean dependent var	420.6807	
Adjusted R-squared	0.540756	S.D. dependent var	721.9287	
S.E. of regression	489.2332	Akaike info criterion	15.36749	
Sum squared resid	3829586.	Schwarz criterion	15.51662	
Log likelihood	-142.9912	Hannan-Quinn criter.	15.39273	
F-statistic	11.59744	Durbin-Watson stat	2.077646	
Prob(F-statistic)	0.000771			

Source: Author's Computation (2025)

EXR at Level

Null Hypothesis: EXR has a unit root

Exogenous: Constant

Lag Length: 3 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.600564	0.9851
Test critical values: 1% level	-3.886751	
5% level	-3.052169	
10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(EXR)

Method: Least Squares

Date: 11/14/25 Time: 23:30

Sample (adjusted): 2008 2024

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR(-1)	0.214180	0.356631	0.600564	0.5593
D(EXR(-1))	2.957078	0.752915	3.927506	0.0020
D(EXR(-2))	-2.042929	1.075781	-1.899019	0.0819
D(EXR(-3))	1.811537	1.192000	1.519747	0.1545
C	-58.78244	59.63206	-0.985752	0.3437
R-squared	0.878889	Mean dependent var	79.19496	
Adjusted R-squared	0.838518	S.D. dependent var	199.8320	
S.E. of regression	80.30205	Akaike info criterion	11.84940	
Sum squared resid	77381.03	Schwarz criterion	12.09446	

Log likelihood	-95.71987	Hannan-Quinn criter.	11.87376
F-statistic	21.77061	Durbin-Watson stat	1.685678
Prob(F-statistic)	0.000020		

Source: Author's Computation (2025)

GDP at Level

Null Hypothesis: GDP has a unit root

Exogenous: Constant

Lag Length: 4 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.841180	0.3490
Test critical values: 1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP)

Method: Least Squares

Date: 11/14/25 Time: 23:32

Sample (adjusted): 2009 2024

Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.624211	0.339027	-1.841180	0.0954
D(GDP(-1))	-2.185420	1.504742	-1.452356	0.1770
D(GDP(-2))	0.778804	1.608693	0.484122	0.6387
D(GDP(-3))	-3.402899	1.594921	-2.133585	0.0587
D(GDP(-4))	4.110510	1.572612	2.613810	0.0259
C	41727.42	26436.83	1.578382	0.1456
R-squared	0.637011	Mean dependent var	-816.6663	
Adjusted R-squared	0.455517	S.D. dependent var	11693.58	
S.E. of regression	8628.584	Akaike info criterion	21.24354	
Sum squared resid	7.45E+08	Schwarz criterion	21.53327	
Log likelihood	-163.9484	Hannan-Quinn criter.	21.25838	
F-statistic	3.509814	Durbin-Watson stat	1.440567	
Prob(F-statistic)	0.043149			

Source: Author's Computation (2025)

GE at Level

Null Hypothesis: GE has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	1.398515	0.9981
Test critical values: 1% level	-3.831511	
5% level	-3.029970	
10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GE)

Method: Least Squares

Date: 11/14/25 Time: 23:33

Sample (adjusted): 2006 2024

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GE(-1)	0.332778	0.237951	1.398515	0.1810
D(GE(-1))	-1.927514	0.918549	-2.098435	0.0521
C	155.3807	1020.997	0.152185	0.8809
R-squared	0.260406	Mean dependent var	546.7737	
Adjusted R-squared	0.167957	S.D. dependent var	2297.956	
S.E. of regression	2096.113	Akaike info criterion	18.27750	
Sum squared resid	70299012	Schwarz criterion	18.42662	
Log likelihood	-170.6362	Hannan-Quinn criter.	18.30273	
F-statistic	2.816744	Durbin-Watson stat	1.860206	
Prob(F-statistic)	0.089526			

Source: Author's Computation (2025)

INF at level

Null Hypothesis: INF has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.853926	0.7812
Test critical values: 1% level	-3.808546	
5% level	-3.020686	
10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(INF)
 Method: Least Squares
 Date: 11/14/25 Time: 23:34
 Sample (adjusted): 2005 2024
 Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	-0.171630	0.200989	-0.853926	0.4044
C	2.806154	2.779027	1.009762	0.3260
R-squared	0.038933	Mean dependent var	0.556000	
Adjusted R-squared	-0.014459	S.D. dependent var	3.919905	
S.E. of regression	3.948143	Akaike info criterion	5.679007	
Sum squared resid	280.5810	Schwarz criterion	5.778580	
Log likelihood	-54.79007	Hannan-Quinn criter.	5.698445	
F-statistic	0.729189	Durbin-Watson stat	1.645281	
Prob(F-statistic)	0.404368			

Source: Author's Computation (2025)

IR at Level

Null Hypothesis: IR has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.282137	0.6167
Test critical values: 1% level	-3.808546	
5% level	-3.020686	
10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(IR)
 Method: Least Squares
 Date: 11/14/25 Time: 23:39
 Sample (adjusted): 2005 2024
 Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IR(-1)	-0.226905	0.176974	-1.282137	0.2161
C	2.922229	2.215688	1.318881	0.2037
R-squared	0.083684	Mean dependent var	0.162500	
Adjusted R-squared	0.032777	S.D. dependent var	2.390049	
S.E. of regression	2.350553	Akaike info criterion	4.641818	
Sum squared resid	99.45180	Schwarz criterion	4.741391	
Log likelihood	-44.41818	Hannan-Quinn criter.	4.661256	

F-statistic 1.643875 Durbin-Watson stat 1.553905
 Prob(F-statistic) 0.216063

Source: Author's Computation (2025)

PD at level

Null Hypothesis: PD has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	0.649383	0.9870
Test critical values: 1% level	-3.857386	
5% level	-3.040391	
10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(PD)

Method: Least Squares

Date: 11/14/25 Time: 23:40

Sample (adjusted): 2007 2024

Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PD(-1)	0.260146	0.400605	0.649383	0.5266
D(PD(-1))	-0.838951	0.529681	-1.583880	0.1355
D(PD(-2))	5.194099	2.609788	1.990238	0.0665
C	-3852.976	2482.483	-1.552065	0.1430

R-squared	0.492753	Mean dependent var	2805.820
Adjusted R-squared	0.384057	S.D. dependent var	7119.246
S.E. of regression	5587.329	Akaike info criterion	20.28752
Sum squared resid	4.37E+08	Schwarz criterion	20.48538
Log likelihood	-178.5877	Hannan-Quinn criter.	20.31480
F-statistic	4.533320	Durbin-Watson stat	1.920166
Prob(F-statistic)	0.020223		

Source: Author's Computation (2025)

AT FIRST DIFFERENCE

DS at First Differences

Null Hypothesis: D(DS) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=4)

t-Statistic Prob.*

Augmented Dickey-Fuller test statistic	-3.746080	0.9992
Test critical values: 1% level	-3.886751	
5% level	-2.052169	
10% level	-2.006593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DS,2)

Method: Least Squares

Date: 11/14/25 Time: 23:44

Sample (adjusted): 2008 2024

Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DS(-1))	1.384150	0.792718	-3.746080	0.1044
D(DS(-1),2)	-3.598221	1.294660	-2.779278	0.0156
D(DS(-2),2)	-2.086653	1.152204	-1.811009	0.0933
C	134.9145	197.3982	0.683464	0.5063
R-squared	0.591997	Mean dependent var	-7.907576	
Adjusted R-squared	0.497842	S.D. dependent var	879.7204	
S.E. of regression	623.3971	Akaike info criterion	15.91057	
Sum squared resid	5052111.	Schwarz criterion	16.10662	
Log likelihood	-131.2398	Hannan-Quinn criter.	15.93006	
F-statistic	6.287499	Durbin-Watson stat	1.730483	
Prob(F-statistic)	0.007195			

Source: Author's Computation (2025)

EXR at First Differences

Null Hypothesis: D(EXR) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.817980	1.0000
Test critical values: 1% level	-3.886751	
5% level	-3.052169	
10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(EXR,2)
 Method: Least Squares
 Date: 11/14/25 Time: 23:45
 Sample (adjusted): 2008 2024
 Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXR(-1))	2.800889	0.993935	-4.817980	0.0145
D(EXR(-1),2)	-0.457148	1.031214	-0.443310	0.6648
D(EXR(-2),2)	-2.236711	0.935110	-2.391922	0.0326
C	-26.74065	25.97238	-1.029580	0.3220
R-squared	0.788051	Mean dependent var	48.81011	
Adjusted R-squared	0.739140	S.D. dependent var	153.3107	
S.E. of regression	78.30258	Akaike info criterion	11.76136	
Sum squared resid	79706.82	Schwarz criterion	11.95741	
Log likelihood	-95.97158	Hannan-Quinn criter.	11.78085	
F-statistic	16.11187	Durbin-Watson stat	1.734138	
Prob(F-statistic)	0.000115			

Source: Author's Computation (2025)

GDP at First Differences

Null Hypothesis: D(GDP) has a unit root
 Exogenous: Constant
 Lag Length: 3 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.731342	0.9887
Test critical values: 1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GDP,2)
 Method: Least Squares
 Date: 11/14/25 Time: 23:46
 Sample (adjusted): 2009 2024
 Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	1.549574	2.118809	-3.731342	0.4799
D(GDP(-1),2)	-3.795328	2.045387	-1.855555	0.0905

D(GDP(-2),2)	-2.147760	1.863421	-1.152590	0.2735
D(GDP(-3),2)	-5.155714	1.618072	-3.186332	0.0087
C	-6193.364	5114.659	-1.210905	0.2513
<hr/>				
R-squared	0.538283	Mean dependent var	-2947.836	
Adjusted R-squared	0.370386	S.D. dependent var	11997.62	
S.E. of regression	9519.904	Akaike info criterion	21.41046	
Sum squared resid	9.97E+08	Schwarz criterion	21.65190	
Log likelihood	-166.2837	Hannan-Quinn criter.	21.42283	
F-statistic	3.206027	Durbin-Watson stat	1.106188	
Prob(F-statistic)	0.056471			

Source: Author's Computation (2025)

GE at First Differences

Null Hypothesis: D(GE) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.278926	0.0039
Test critical values: 1% level	-3.831511	
5% level	-3.029970	
10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GE,2)

Method: Least Squares

Date: 11/14/25 Time: 23:48

Sample (adjusted): 2006 2024

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GE(-1))	-1.773318	0.414431	-4.278926	0.0005
C	1291.772	635.3364	2.033209	0.0579
<hr/>				
R-squared	0.518539	Mean dependent var	-416.6053	
Adjusted R-squared	0.490218	S.D. dependent var	3017.177	
S.E. of regression	2154.235	Akaike info criterion	18.28756	
Sum squared resid	78892388	Schwarz criterion	18.38697	
Log likelihood	-171.7318	Hannan-Quinn criter.	18.30438	
F-statistic	18.30921	Durbin-Watson stat	1.681620	
Prob(F-statistic)	0.000507			

Source: Author's Computation (2025)

INF at First Differences

Null Hypothesis: D(INF) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.954200	0.0078
Test critical values: 1% level	-3.831511	
5% level	-3.029970	
10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 19

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INF,2)

Method: Least Squares

Date: 11/14/25 Time: 23:49

Sample (adjusted): 2006 2024

Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	-0.949663	0.240166	-3.954200	0.0010
C	0.407039	0.947936	0.429395	0.6730

R-squared	0.479098	Mean dependent var	-0.075789
Adjusted R-squared	0.448457	S.D. dependent var	5.517379
S.E. of regression	4.097535	Akaike info criterion	5.757949
Sum squared resid	285.4264	Schwarz criterion	5.857363
Log likelihood	-52.70051	Hannan-Quinn criter.	5.774774
F-statistic	15.63570	Durbin-Watson stat	1.424770
Prob(F-statistic)	0.001024		

Source: Author's Computation (2025)

IR at First Differences

Null Hypothesis: D(IR) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.983118	0.0078
Test critical values: 1% level	-3.857386	
5% level	-3.040391	
10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20

observations

and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(IR,2)

Method: Least Squares

Date: 11/14/25 Time: 23:50

Sample (adjusted): 2007 2024

Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IR(-1))	-1.245832	0.312778	-3.983118	0.0012
D(IR(-1),2)	0.289830	0.233239	1.242629	0.2331
C	0.468431	0.561675	0.833989	0.4174
R-squared	0.565233	Mean dependent var	0.138889	
Adjusted R-squared	0.507264	S.D. dependent var	3.364195	
S.E. of regression	2.361502	Akaike info criterion	4.707484	
Sum squared resid	83.65036	Schwarz criterion	4.855880	
Log likelihood	-39.36736	Hannan-Quinn criter.	4.727946	
F-statistic	9.750623	Durbin-Watson stat	2.004930	
Prob(F-statistic)	0.001936			

Source: Author's Computation (2025)

PD at First Differences

Null Hypothesis: D(PD) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.509212	1.0000
Test critical values: 1% level	-3.857386	
5% level	-3.040391	
10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations

and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(PD,2)

Method: Least Squares

Date: 11/14/25 Time: 23:51

Sample (adjusted): 2007 2024

Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PD(-1))	4.904326	1.629771	-3.509212	0.0088
D(PD(-1),2)	-6.433594	1.745170	-3.686514	0.0022

C	-3121.748	2169.345	-1.439028	0.1707
R-squared	0.753238	Mean dependent var	-68.18625	
Adjusted R-squared	0.720337	S.D. dependent var	10359.75	
S.E. of regression	5478.565	Akaike info criterion	20.20609	
Sum squared resid	4.50E+08	Schwarz criterion	20.35448	
Log likelihood	-178.8548	Hannan-Quinn criter.	20.22655	
F-statistic	22.89370	Durbin-Watson stat	1.999040	
Prob(F-statistic)	0.000028			

Source: Author's Computation (2025)

COINTEGRATION

Date: 11/15/25 Time: 08:39

Sample (adjusted): 2006 2024

Included observations: 19 after adjustments

Trend assumption: Linear deterministic trend

Series: LDS LEXR LGDP LGE LINF

LPD

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.965141	202.4559	95.75366	0.0000
At most 1 *	0.931217	138.6833	69.81889	0.0000
At most 2 *	0.876985	87.82428	47.85613	0.0000
At most 3 *	0.713424	48.01074	29.79707	0.0002
At most 4 *	0.619935	24.26544	15.49471	0.0019
At most 5 *	0.266344	5.884584	3.841466	0.0153

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.965141	63.77262	40.07757	0.0000
At most 1 *	0.931217	50.85904	33.87687	0.0002
At most 2 *	0.876985	39.81354	27.58434	0.0008
At most 3 *	0.713424	23.74530	21.13162	0.0209
At most 4 *	0.619935	18.38086	14.26460	0.0106
At most 5 *	0.266344	5.884584	3.841466	0.0153

Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by $b^*S11*b=I$):

LDS	LEXR	LGDP	LGE	LINF	LPD
-0.238090	-6.285282	-12.53365	5.898372	4.246944	0.848509
-2.783859	13.07139	4.851421	-6.816608	0.483680	0.257931
0.769866	3.754759	5.363769	5.780513	-3.054348	-9.674303
6.001461	-3.254352	46.09596	-0.269662	2.104363	-17.63783
3.852333	-5.079087	-21.44702	-1.890234	-1.970585	4.565674
-5.907238	-8.824772	-56.10330	-6.171130	0.737094	28.61941

Unrestricted Adjustment Coefficients (alpha):

D(LDS)	-0.057970	-0.057989	0.007353	-0.087291	-0.144230	-0.022407
D(LEXR)	-0.029694	-0.059886	-0.030419	0.004439	0.057355	-0.035242
D(LGDP)	0.025117	0.008752	0.028187	-0.000754	-0.053887	-0.005719
D(LGE)	-0.007139	0.044797	0.019194	-0.045671	-0.042396	-0.030703
D(LINF)	-0.192778	-0.167997	0.112102	-0.104331	-0.052486	-0.037606
D(LPD)	0.062423	-0.062809	-0.008060	-0.026285	-0.014007	-0.073800

1 Cointegrating Equation(s):	Log likelihood	130.7226
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Normalized cointegrating coefficients (standard error in parentheses)

LDS	LEXR	LGDP	LGE	LINF	LPD
1.000000	26.39872	52.64239	-24.77367	-17.83753	-3.563810
	(4.40437)	(13.3575)	(2.74717)	(1.44967)	(5.35789)

Adjustment coefficients (standard error in parentheses)

D(LDS)	0.013802
	(0.01604)
D(LEXR)	0.007070
	(0.00877)
D(LGDP)	-0.005980
	(0.00548)
D(LGE)	0.001700
	(0.00784)
D(LINF)	0.045899
	(0.01913)
D(LPD)	-0.014862
	(0.01162)

2 Cointegrating Equation(s):	Log likelihood	156.1521
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Normalized cointegrating coefficients (standard error in parentheses)

LDS	LEXR	LGDP	LGE	LINF	LPD
1.000000	0.000000	6.469808	-1.662125	-2.841091	-0.616820
		(1.72439)	(0.49839)	(0.25111)	(0.63666)
0.000000	1.000000	1.749046	-0.875479	-0.568074	-0.111634
		(0.30486)	(0.08811)	(0.04439)	(0.11256)

Adjustment coefficients (standard error in parentheses)

D(LDS)	0.175235 (0.18176)	-0.393640 (0.94354)
D(LEXR)	0.173785 (0.08975)	-0.596163 (0.46587)
D(LGDP)	-0.030345 (0.06384)	-0.043465 (0.33138)
D(LGE)	-0.123010 (0.08396)	0.630437 (0.43583)
D(LINF)	0.513580 (0.17422)	-0.984292 (0.90437)
D(LPD)	0.159990 (0.12563)	-1.213348 (0.65217)

3 Cointegrating Equation(s):	Log likelihood	176.0589
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Normalized cointegrating coefficients (standard error in parentheses)

LDS	LEXR	LGDP	LGE	LINF	LPD
1.000000	0.000000	0.000000	9.162812 (1.33643)	-1.516770 (0.55720)	-9.802363 (1.06979)
0.000000	1.000000	0.000000	2.050931 (0.37038)	-0.210058 (0.15442)	-2.594851 (0.29648)
0.000000	0.000000	1.000000	-1.673147 (0.22820)	-0.204693 (0.09514)	1.419755 (0.18267)

Adjustment coefficients (standard error in parentheses)

D(LDS)	0.180896 (0.18843)	-0.366032 (0.97408)	0.484683 (0.94083)
D(LEXR)	0.150366 (0.08921)	-0.710378 (0.46120)	-0.081523 (0.44545)
D(LGDP)	-0.008644 (0.06146)	0.062371 (0.31774)	-0.121158 (0.30689)
D(LGE)	-0.108233 (0.08546)	0.702507 (0.44177)	0.409765 (0.42669)
D(LINF)	0.599883 (0.15186)	-0.563376 (0.78503)	2.202481 (0.75823)
D(LPD)	0.153785 (0.13012)	-1.243610 (0.67268)	-1.130327 (0.64972)

4 Cointegrating Equation(s):	Log likelihood	187.9315
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Normalized cointegrating coefficients (standard error in parentheses)

LDS	LEXR	LGDP	LGE	LINF	LPD
1.000000	0.000000	0.000000	0.000000	-7.924707 (0.58225)	0.695724 (0.28967)
0.000000	1.000000	0.000000	0.000000	-1.644359 (0.11893)	-0.245043 (0.05917)
0.000000	0.000000	1.000000	0.000000	0.965409 (0.07906)	-0.497215 (0.03933)
0.000000	0.000000	0.000000	1.000000	0.699342	-1.145728

(0.07615) (0.03788)

Adjustment coefficients (standard error in parentheses)

D(LDS)	-0.342979 (0.39622)	-0.081956 (0.91147)	-3.539089 (2.87231)	0.119403 (0.63683)
D(LEXR)	0.177008 (0.20496)	-0.724825 (0.47151)	0.123108 (1.48585)	0.056044 (0.32943)
D(LGDP)	-0.013168 (0.14133)	0.064824 (0.32513)	-0.155905 (1.02458)	0.251630 (0.22716)
D(LGE)	-0.382327 (0.17377)	0.851137 (0.39975)	-1.695495 (1.25973)	-0.224208 (0.27930)
D(LINF)	-0.026258 (0.27927)	-0.223844 (0.64245)	-2.606779 (2.02455)	0.684235 (0.44887)
D(LPD)	-0.003963 (0.29454)	-1.158069 (0.67756)	-2.341959 (2.13519)	0.756838 (0.47340)

5 Cointegrating
Equation(s):

Log
likelihood 197.1220

Normalized cointegrating coefficients (standard error in parentheses)

LDS	LEXR	LGDP	LGE	LINF	LPD
1.000000	0.000000	0.000000	0.000000	0.000000	-1.591354 (0.10943)
0.000000	1.000000	0.000000	0.000000	0.000000	-0.719606 (0.03380)
0.000000	0.000000	1.000000	0.000000	0.000000	-0.218597 (0.01279)
0.000000	0.000000	0.000000	1.000000	0.000000	-0.943897 (0.02677)
0.000000	0.000000	0.000000	0.000000	1.000000	-0.288601 (0.04087)

Adjustment coefficients (standard error in parentheses)

D(LDS)	-0.898599 (0.31205)	0.650599 (0.65472)	-0.445795 (2.14283)	0.392031 (0.44094)	-0.196177 (0.24293)
D(LEXR)	0.397959 (0.19577)	-1.016136 (0.41074)	-1.106985 (1.34431)	-0.052371 (0.27663)	-0.165845 (0.15240)
D(LGDP)	-0.220759 (0.10491)	0.338521 (0.22012)	0.999809 (0.72042)	0.353489 (0.14824)	0.129413 (0.08167)
D(LGE)	-0.545652 (0.17494)	1.066471 (0.36703)	-0.786222 (1.20127)	-0.144069 (0.24719)	-0.079842 (0.13618)
D(LINF)	-0.228453 (0.29869)	0.042739 (0.62667)	-1.481102 (2.05103)	0.783447 (0.42205)	-1.358498 (0.23252)
D(LPD)	-0.057922 (0.33864)	-1.086928 (0.71051)	-2.041557 (2.32543)	0.783314 (0.47852)	0.231631 (0.26363)