Public Debt Servicing and Economic Growth in Nigeria: 1999-2023

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Abstract
Nigeria is currently grappling with the global issue of economic growth. This phenomenon is hindered by the challenges of debt and debt servicing. This study examined public debt servicing and economic growth in Nigeria. The study specifically focused on the effect of domestic debt outstanding and public external debt outstanding on the Gross Domestic Product in Nigeria. The study adopted the ex-post facto research design and data obtained from the CBN Statistical Bulletin, spanning from 1999-2023. The unit root test using ADF showed stationarity at 1(0), 1(1), and 1(2). The hypotheses were tested using the Robust Least Squares model. The results showed a significant positive effect of domestic debt outstanding on GDP and; secondly, a significant negative effect of public external debt outstanding on GDP. Based on these, the study recommends that policymakers should consider strategies to increase and optimize domestic borrowing, ensuring that funds are channelled into productive sectors that drive economic growth. There is a need for a more cautious approach to external borrowing. The government should negotiate favourable terms and ensure that borrowed funds are used for projects with high economic returns. Lastly, the Nigerian government should establish a robust debt management framework that balances domestic and external borrowing; to help mitigate the adverse effects of debt on the economy.

Keywords: *Public Debt, Economic Growth, Domestic Debt Outstanding, Public External Debt Outstanding*

1.0 Introduction

Public debt servicing refers to the payments that a country must make to service its debt, including interest payments and repayments of principal (Akanbi, Uwaleke, & Ibrahim, 2022). In Nigeria, public debt servicing has become a significant component of government expenditure (Fasoye & Olayiwola, 2024). The historical trajectory of Nigeria's public debt can be traced back to the period following its independence in 1960. Initially, Nigeria maintained a relatively low level of external debt. However, the oil boom of the 1970s led to increased government spending and subsequent borrowing. This era of fiscal expansion was followed by economic downturns in the 1980s, characterized by falling oil prices, which significantly reduced government revenues. Consequently, Nigeria resorted to borrowing to finance its budget deficits and stabilize the economy (Akanbi, Uwaleke, & Ibrahim, 2022). Thus, the

country experienced substantial growth in public debt over the years due to various factors such as budget deficits, economic crises, and the need for infrastructural development. In the late 80s and early 90s', Nigeria experienced a debt crisis, which culminated in the country becoming one of the most indebted nations in the world.

The accumulation of arrears and the high cost of servicing existing debt obligations placed severe constraints on the country's fiscal resources. This period highlighted the adverse effects of unsustainable debt levels on economic growth and development. Efforts to address the debt crisis included negotiations for debt relief and restructuring, particularly under the auspices of the Paris Club (Adamu & Rasiah, 2016). A significant turning point in Nigeria's debt history occurred in 2005 when the country reached an agreement with the Paris Club for substantial debt relief. This agreement resulted in the cancellation of a large portion of Nigeria's external debt, significantly reducing the debt burden. The debt relief was conditional upon Nigeria implementing a comprehensive economic reform program, which aimed to improve fiscal management, enhance transparency, and promote economic growth (Ndubuisi, 2017). The debt relief of 2005 provided Nigeria with a much-needed fiscal space to reallocate resources towards critical sectors such as infrastructure, health, and education. However, the relief also came with the expectation that Nigeria would maintain prudent fiscal policies to prevent the reaccumulation of unsustainable debt levels.

The post-debt relief period saw an initial reduction in debt servicing costs, allowing the government to channel more funds into development projects (Ezema, Ogujiuba, & Ifionu, 2018).
Despite the debt relief and subsequent efforts to maintain fiscal discipline, Nigeria's public debt began to rise again in the subsequent years. Several factors contributed to this re-emergence of debt accumulation. Firstly, the global financial crisis of 2008 had a significant impact on Nigeria's economy, leading to reduced government revenues and increased borrowing to finance budget deficits. Secondly, the persistent decline in oil prices since 2014 further exacerbated fiscal pressures, as oil revenues constitute a major source of government income (Grace, Ebele, & Augustine, 2019).

In response to these challenges, the Nigerian government increased its reliance on both domestic and external borrowing. Domestic debt, in particular, grew substantially, driven by the need to finance budget deficits and support government spending. The increase in domestic debt servicing costs has placed additional strain on the fiscal resources available for development projects and other critical expenditures (Ogbonna, Okezie, & Ofoegbu, 2021). Chinaemerem and Anayochukwu (2013) defined debt servicing as the consistent payment of loan instalments obtained by a government from either domestic or foreign sources. Researchers in developing economies have shown a growing interest in public debt servicing and economic growth in recent years (Akanbi, Uwaleke, & Ibrahim, 2022; Awan & Qasim, 2020). Public debt servicing in Nigeria has been shown to have a significant impact on economic growth.
On Thursday, October 19, 2023, Cable News and Videos Unlimited reported that the Debt Management Office (DMO) stated that Nigeria's debt service-to-revenue ratio in 2023 is 73.5%, which is considered unsustainable and a threat. The DMO further explained that the high debt-servicing ratio indicates that the revenue generated is insufficient to sustain increased borrowing levels. Previously in 2022, Nigeria's debt service-to-revenue ratio stood at 80.6

percent, significantly surpassing the World Bank's recommended threshold of 22.5 percent for low-income countries such as Nigeria.
Studies have revealed that both domestic and foreign debt servicing negatively affect GDP, hindering economic progress (Ndu, 2024; Kpalukwu & Ezekwe, 2023). While public debt itself may not necessarily impede economic growth, debt servicing has been found to have a crowding-out effect, reducing the resources available for economic expansion
(Fasoye & Olayiwola, 2024). The relationship between debt servicing and economic growth is complex, with findings indicating that managing debt with sincerity is crucial to stimulating economic growth (Ndu, 2024).

Against this backdrop, the specific objectives of the study are:
1. To ascertain the effect of domestic debt outstanding on the Gross Domestic Product in Nigeria.
2. To determine the effect of public external debt outstanding on the Gross Domestic Product in Nigeria.

2.0 Literature Review
2.1 Conceptual Review
2.1.1 Public Debt
Public Debt, also known as government debt, national debt, or sovereign debt, refers to the total amount of money that a government owes to creditors. These creditors can be domestic or international entities, including private individuals, companies, and other governments (Olabode & Usenobong, 2023; Otiko & Iheonkhan, 2022). Public debt is considered a significant indicator of a country's macroeconomic variables and plays a crucial role in shaping its image in international markets (Eke & Akujuobi, 2021). It is also a key factor influencing foreign direct investment flows. Effective management of public debt can enhance economic growth and stability by mobilizing resources at a low borrowing cost and minimizing financial risk exposure (Christabell, 2013). Public debt is a tool used by countries to address deficits and fund economic projects that aim to improve the standard of living and promote sustainable growth and development (Eke & Akujuobi, 2021). Hameed, Ashraf, and Chaudhary (2008) argue that public borrowing can help stimulate economic growth, particularly when domestic financing is insufficient.

Public debt can be categorized into two main types: Domestic Debt and External Debt. John and Segun (2022) examined the correlation between domestic debt and economic growth in Nigeria. The authors posited that developing countries often take on debt to fund their current account deficits. They also argued that this borrowing is aimed at stimulating economic growth and development (Omimakinde & Onifade, 2022). Therefore, several countries, including Nigeria, have been experiencing a significant increase in their domestic debt levels. The debt burden of impoverished countries has been steadily rising, exacerbated by chronic poverty and resulting in sluggish economic growth (Ndu, 2024).

2.1.1.1 Domestic Debt
Domestic debt refers to the amount of money that a country's government owes to its residents or institutions within the country (Ndugbu, Otiwu, & Okafor, 2024). This debt is typically incurred through the issuance of government bonds and treasury bills to fund various projects and expenses.

Domestic debt can have both positive and negative impacts on an economy, depending on how it is managed and used.

Domestic debt in Nigeria has been the subject of extensive research, revealing various insights. Studies have shown that domestic debt positively impacts exchange rate stability in the short run, with treasury bills, treasury bonds, and other sources significantly affecting stability (Ndugbu, Otiwu, & Okafor, 2024). However, there is no long-term relationship between domestic debt and exchange rate stability, and no causal link between the two (Ndugbu, Otiwu, & Okafor, 2024).

Additionally, domestic debt does not significantly impact economic growth in the short run but has a negative effect in the long run, emphasizing the importance of monitoring loan disbursement for growth-enhancing projects (Omimakinde & Onifade, 2022). Furthermore, the relationship between Nigeria's domestic public debt and economic development indicates that debt servicing and state government debts are significantly related to economic development, while federal and state domestic debts impact private sector investment significantly, highlighting the need for cautious borrowing policies to avoid crowding out private investments (Victoria, Mbadike, & Ikechi, 2021).

2.1.1.2 External Debt

External debt refers to the amount of money that a country's government owes to foreign creditors, such as other governments, international financial institutions, or private lenders outside the country (Alagia, 1990). External debt refers to the debt owed by a country to non-residents and is repayable in currency, goods, or services (Lee & Thampapillai, 2016). Countries may incur external debt to finance development projects, infrastructure investments, or to cover budget deficits. Developing countries facing an external debt crisis often struggle with imbalances in their external sector, leading to economic challenges like inflation and insufficient internal savings for productive investments (Alagia, 1990). Studies on external debt treatment in macroeconomic analyses highlight the complexity of quantifying external debt and its impact on economic performance, with mixed results depending on the context (Abdullahi, 2016).

Research focusing on Sub-Saharan Africa, particularly Nigeria and South Africa, reveals that factors like interest rates and external debt service significantly contribute to external debt accumulation, negatively affecting capital formation and economic growth, emphasizing the need for effective debt management policies to enhance capital formation and reduce the burden of debt accumulation (Abdullahi, 2016). Thus, managing external debt is important for ensuring sustainable economic growth. Excessive external debt can lead to economic instability, currency depreciation, and difficulty in meeting debt obligations, while manageable levels of external debt can help finance growth and development.

In their study, Omodero and Alpheaus (2019) concluded that when debt servicing is managed wisely, it enhances the borrowing country's reputation as a creditworthy nation in the eyes of creditor countries and other lending organizations. They suggested that the economy could benefit from the influx of borrowed funds. However, they warned of the risks of becoming overly reliant on foreign loans, which could result in debt overhang.

2.1.1.3 Economic Growth

Economic growth is a multifaceted concept influenced by various factors such as technological progress, institutional quality, and policy design (Rahman, Rayhan, & Sultana, 2023). Economic growth refers to an increase in a country's production of goods and services over

time. It is typically measured as the percentage change in real gross domestic product (GDP), which represents the total value of all goods and services produced within a country's borders (Aghion & Howitt, 2009).

Economic growth is crucial as it results in enhanced living standards, increased income levels, and a decrease in poverty. It enables nations to allocate resources towards infrastructure, healthcare, education, and various social programs that ultimately enhance the well-being of their populations. Todaro and Smith (2006) define economic growth as the continuous process of enhancing the economy's productive capacity over time to achieve higher levels of national output and income. The growth rate is influenced by macroeconomic policies, including taxation, consumption, and investment.

According to Statista (2024), Nigeria experienced fluctuating growth rates, with a significant dip in 2020 (-1.79%) due to the global economic impact of the COVID-19 pandemic. The economy rebounded in 2021 with a growth rate of 3.65%. In 2022, the economy continued recovery with a growth rate of 3.25%. However, from 2023 onwards, growth rates are expected to stabilize around 2.86% to 3.34%, indicating a steady, albeit moderate, economic growth (Statista, 2024). Economic growth in Nigeria is influenced by various factors such as foreign private investment (FPI), capital formation, corruption, public expenditure, and their impact on employment and poverty reduction (Nwagu, Orji, Ejike, & Anthony-Orji, 2023; Uwakaeme, 2015). Studies show that FPI and capital formation significantly determine economic growth in Nigeria, with a long-run equilibrium relationship among these variables (Uwakaeme, 2015). However, corruption poses a challenge to economic growth, with widespread effects on tax collection, public expenditure, and investor confidence (Ekone & Amaghinoyeodiwe, 2020). While economic growth has been sustained, unemployment remains rampant, indicating a disconnect between growth and employment generation (Oloni, 2013).

2.2 Theoretical Framework

2.2.1 Neo-Classical Theory (NCT)

NCT posits that budget deficits under full employment can lead to increased interest rates, which in turn crowd out private investment and hinder capital formation, ultimately affecting economic growth negatively (Lwanga & Mawejje, 2014). This theory suggests that high levels of public debt are detrimental to economic growth due to the adverse effects on the current account balance and overall economic stability.

2.2.2 Endogenous Growth Theory (EGT)

EGT emphasizes the role of internal factors, such as human capital and technological innovation, in driving economic growth (Greiner, 2007). According to this theory, public debt can positively impact economic growth if it is used to finance productive investments that enhance the economy's productive capacity. However, if debt servicing diverts resources away from such investments, it can negatively impact growth.

2.2.2 Debt Overhang Theory (DOT)

The DOT suggests that when a country's debt level becomes too high, the potential returns from new investments are lower than the cost of servicing the existing debt. This situation discourages investment and hampers economic growth (Gordon & Cosim, 2018). Debt overhang, as defined by Krugman (1998), occurs when the expected repayment on external debt is less than the contractual value of the debt. High levels of debt servicing can lead to a

resource drain, reducing the funds available for productive investments and social services. When a nation's debt is projected to surpass its ability to repay in the future, the expected debt service is likely to rise as a function of the country's output level.

2.3 Empirical Review

Several studies have investigated the relationship between public debt servicing and economic growth in Nigeria.

Adamu and Rasiah (2016) found that external debt negatively impacts economic growth despite the 2006 debt relief. Similarly, Abdullahi (2016) investigated the relationship between public debt and capital formation in Nigeria and South Africa over three decades using ARDL and VAR models. The findings revealed a significant, negative effect of external debt on capital formation, with the impact being more pronounced in Nigeria than in South Africa. Ndubuisi (2017) analyzed data from 1985 to 2015 and concluded that debt service payments have a negative effect on growth, with exchange rates and external reserves showing a positive relationship with growth. Egbunike, Emudainohwo, and Gunardi (2018) examined the relationship between government debt and economic performance in Nigeria from 1986 to 2017 using dynamic OLS. The findings revealed a significant relationship between the variables.

Ezema, Ogujiuba, and Ifionu (2018) confirmed that external debt service significantly and negatively impacts economic growth. Akhanolu et al. (2018) examined the effect of public debt on the economic growth of Nigeria using annual data from 1982 to 2017 and a two-stage least square regression technique. The results revealed that external debt had a significant negative impact on growth while internal debt showed a positive impact. Grace, Ebele, and Augustine (2019); and Muhammad and Abdullah (2020) also provided evidence of the harmful effects of external debt servicing on Nigeria’s economic growth. Saungweme and Odhiambo (2020) investigated the relationship between public debt and economic growth in Nigeria. The study showed the existence of a significant relationship in the short and long runs between the variables of interest. Using the ARDL, they reported an optimal debt threshold of 40.2%. Ogbonna, Okezie, and Ofoegbu (2021) concluded that there is a long-run negative relationship between external debt services and economic growth, recommending optimal use of external debt.

Evidence from Other Countries

Studies in other developing countries provide mixed results. Musibau et al. (2018) found a positive relationship between external debt and economic growth in ECOWAS countries. However, Awan and Qasim (2020) reported negative impacts of debt services on Pakistan’s economy. Getinet and Ersumo (2020) observed a negative but not significant relationship in the long run in Ethiopia, while El Aboudi and Khanchaoui (2021) found a significant negative impact in Morocco. Asafo and Matuka (2019) conducted a study on the relationship between external debt and economic growth in Ghana. They utilized co-integration analysis and an error correction methodology to analyze annual time series data from 1970 to 2017. The results of the study revealed that external debt had a positive impact on economic growth in Ghana, both in the short and long terms.

Manik and Khan (2018) studied the relationship between public debt and economic growth in India between 1980 and 2016 using the Granger causality technique. Findings showed that there is no validation of the feedback hypothesis in the short run. Shkolnyk and Koilo (2018)

study the correlation between external debt and economic growth in Ukraine from 2006 to 2016. Utilizing various econometric techniques, the study found that a high level of external debt and macroeconomic instability hindered economic growth. Additionally, the research highlighted that the debt burden faced by Ukraine, similar to other emerging economies, has prevented them from achieving the anticipated economic progress. Akram and Das (2014) examined the consequences of public debt on economic growth and investment in four South Asian countries from 1975 to 2011 using a panel data estimation technique. The results revealed that public external debt, domestic debt, and debt servicing have a negative and significant effect on economic growth and investment.

3.0 Methodology

The ex-post facto research design is utilized to establish a connection between the dependent and independent variables, by analyzing pre-existing secondary data. The data were obtained from the Central Bank of Nigeria Statistical Bulletin, spanning from 1999-2023. This study uses secondary data sourced. The data includes variables such as Gross Domestic Product (GDP), domestic and external debt, inflation rate, and exchange rate. The study conducts a unit root test utilising the Augmented Dickey-Fuller, and, for robustness, the study employs the Robust Least Squares regression technique. Similar to Omodero and Alpheaus (2019), the study also employed inflation and exchange rates as the control variables.

3.1 Model Specification

Our model is specified according to the hypothesis.

RGDP = f (FEDO, PEDO, INFL, EXCR)…….Eq. (1)

The general RLS model can be represented as:

$RGDP_t=\beta_0+\beta_1 FEDO_t+\beta_2 PEDO_t+\beta_3 INFL_t+\beta_4 EXCR_t+\epsilon t$…….Eq. (2)

Where:

RGDP	-	Real Gross Domestic Product
FEDO	-	Federal Government's Domestic Debt Outstanding (₦' Billion)
PEDO	-	Nigeria's Public External Debt Outstanding (₦' Billion)
EXCR	-	Exchange Rate
INFL	-	Inflation Rate
β_0	-	Constant term
β_{1-4}	-	IV Coefficients
ϵt	-	Error term (residuals).

4.0 Data Analysis

4.1 Descriptive Statistics

Table 1: Descriptive analysis of the model variables

	RGDP	FEDO	PEDO	INFL	EXCR
Mean	53132.98	6929.872	4496.115	13.13122	91.03926
Median	56824.85	5087.333	2896.228	12.00000	83.48541
Maximum	74752.42	22210.36	18702.25	23.80000	155.7536
Minimum	25430.42	794.8066	438.8909	6.600000	58.24839
Std. Dev.	17339.65	6376.491	4978.507	4.209509	27.37711

Skewness	-0.304959	0.903940	1.630691	0.754439	1.126444
Kurtosis	1.587070	2.730836	4.743032	3.275711	3.345961
Jarque-Bera	2.368372	3.340882	13.67478	2.352732	5.195195
Probability	0.305995	0.188164	0.001073	0.308397	0.074452
Sum	1275192.	166316.9	107906.8	315.1493	2184.942
Sum Sq. Dev.	6.92E+09	9.35E+08	5.70E+08	407.5592	17238.64
Observations	24	24	24	24	24

Source: E-Views 11

Key: FEDO-Federal Government's Domestic Debt Outstanding (₦' Billion); PEDO-Nigeria's Public External Debt Outstanding (₦' Billion); RGDP-Real Gross Domestic Product; EXCR-Exchange Rate; INFL-Inflation Rate.

The statistical summary provided in Table 1, the mean percentage of RGDP is ₦53,132.98 billion, with a median of ₦56,824.85 billion. The mean FEDO is ₦6,929.872 billion, with a median of ₦5,087.333 billion. The mean PEDO is ₦4,496.115 billion, with a median of ₦2,896.228 billion. The mean inflation rate (INFL) is 13.13122%, with a median of 12.00000%. The mean exchange rate (EXCR) is ₦91.03926, with a median of ₦83.48541. RGDP ranges from ₦25,430.42 billion to ₦74,752.42 billion. FEDO ranges from ₦794.8066 billion to ₦22,210.36 billion. PEDO ranges from ₦438.8909 billion to ₦18,702.25 billion. INFL ranges from 6.6% to 23.8%. EXCR ranges from ₦58.24839 to ₦155.7536. The RGDP has a standard deviation of ₦17,339.65 billion, indicating significant variability. FEDO and PEDO also exhibit high variability with standard deviations of ₦6,376.491 billion and ₦4,978.507 billion, respectively. INFL and EXCR show standard deviations of 4.209509% and ₦27.37711, respectively.

The skewness values indicate that RGDP is slightly left-skewed, while FEDO, PEDO, INFL, and EXCR are right-skewed. The kurtosis values suggest that PEDO is more peaked (leptokurtic) compared to a normal distribution, while the other variables are close to normal or slightly peaked.

4.2 Normality Test

The Jarque-Bera statistic tests whether the data follows a normal distribution. The J-B test values indicate that PEDO is statistically significant at the 1% level (p-value < 0.05), suggesting non-normality. Other variables do not show a significant departure from normality. The p-value of RGDP is 0.305995; since the p-value is greater than 0.05, we fail to reject the null hypothesis. RGDP does not significantly deviate from normality. The p-value of FEDO is 0.188164; since the p-value is greater than 0.05, we fail to reject the null hypothesis. FEDO does not significantly deviate from normality. The p-value of PEDO is 0.001073; Since the p-value is less than 0.05, we reject the null hypothesis. PEDO significantly deviates from normality. The p-value of INFL is 0.308397; since the p-value is greater than 0.05, we fail to reject the null hypothesis. INFL does not significantly deviate from normality. The p-value of EXCR is 0.074452; Since the p-value is slightly above 0.05, we fail to reject the null hypothesis. However, EXCR is close to deviating from normality.

4.3 Correlation Analysis

Table 2: Correlation matrix of the model variables

	RGDP	FEDO	PEDO	INFL	EXCR
RGDP	1				
FEDO	0.8710	1			
PEDO	0.4738	0.8301	1		
INFL	-0.0270	0.2864	0.5111	1	
EXCR	-0.2575	-0.3824	-0.3151	-0.3535	1

Source: E-Views 11

The correlation matrix provides the correlation coefficients between the variables. RGDP had a strong positive correlation with FEDO (0.8710) indicating that as the federal government's domestic debt outstanding increases, RGDP also tends to increase. RGDP had a moderate positive correlation with PEDO (0.4738), suggesting a positive relationship between public external debt and RGDP, though weaker than the correlation with FEDO. RGDP had near-zero negative correlation with INFL (-0.0270). RGDP and EXCR showed a weak negative correlation (-0.2575), suggesting a slight inverse relationship between RGDP and exchange rate.

FEDO showed a strong positive correlation with PEDO (0.8301), indicating that domestic debt and external debt are closely related. FEDO had a weak positive correlation with INFL (0.2864), suggesting a slight positive relationship between domestic debt and the inflation rate. FEDO had a moderate negative correlation with EXCR (-0.3824), indicating an inverse relationship between domestic debt and exchange rate.

PEDO had a moderate positive correlation with INFL (0.5111), suggesting a positive relationship between external debt and inflation rate. PEDO showed a moderate negative correlation with EXCR (-0.3151), indicating an inverse relationship between external debt and exchange rate. INFL had a moderate negative correlation with EXCR (-0.3535), indicating an inverse relationship between the inflation rate and the exchange rate. EXCR (i.e., Exchange Rate) negatively correlated with RGDP (-0.2575), FEDO (-0.3824), PEDO (-0.3151), and INFL (-0.3535).

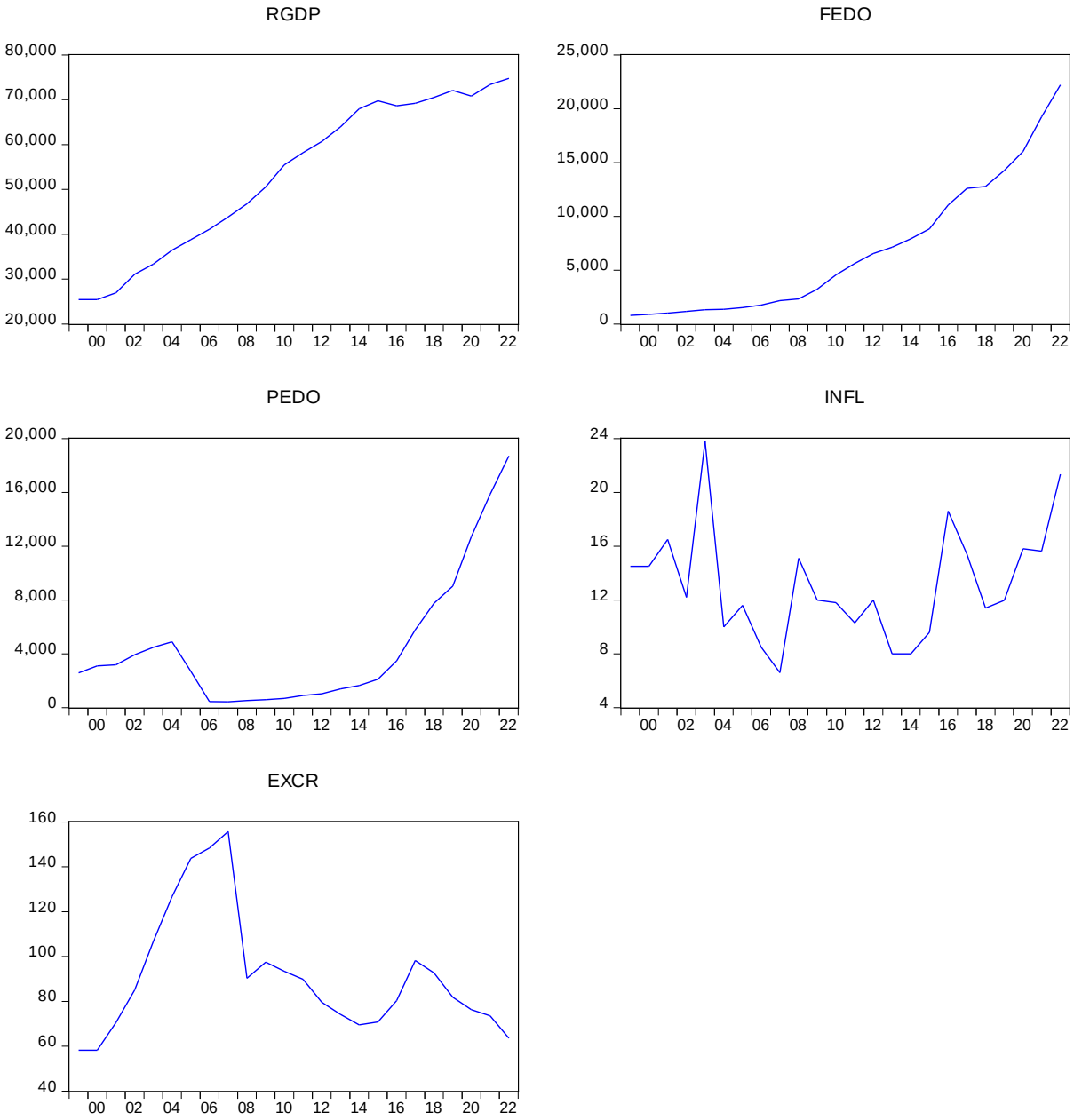

Figure 1: Graphs of the variables in the study
Source: E-Views 11

The line graphs representing various indicators for five variables: Real Gross Domestic Product (RGDP), Federal Government's Domestic Debt Outstanding (FEDO), Nigeria's Public External Debt Outstanding (PEDO), Inflation Rate (INFL), and Exchange Rate (EXCR) over time showed that he RGDP shows a consistent upward trend from 2000 to 2022, indicating steady economic growth over the years. There are no sharp fluctuations, suggesting stable growth with no significant downturns during the observed period.

FEDO has been rising consistently, with a more pronounced increase starting around 2010 and accelerating significantly after 2015. The steep increase in recent years may indicate increased borrowing by the government, possibly to finance budget deficits or development projects.

PEDO remained relatively stable until around 2015, after which it started to increase sharply. The significant rise post-2015 suggests increased reliance on external borrowing, which might be due to various economic factors such as falling oil prices or the need for foreign currency. INFL shows considerable volatility over the period, with spikes around 2004 and 2016-2017. The high volatility in inflation rates indicates periods of economic instability, potentially influenced by external shocks, policy changes, or supply chain disruptions. EXCR shows a sharp increase until around 2004, followed by fluctuations and a general downward trend in recent years. The fluctuations in the exchange rate reflect periods of currency devaluation and adjustments, which could be linked to changes in oil prices, foreign reserves, or economic policies.

4.3 Stationarity Test

A unit root signifies that the data is non-stationary, implying that the statistical characteristics of the series vary over time. The ADF test is an advancement of the original D-F is capable of dealing with more intricate forms of autocorrelation. Table 3 displays the unit root test results for the individual series.

Null Hypothesis (H_0): The variable X has a unit root
Alternate Hypothesis (H_1): The variable X has no unit root

Table 3: ADF test for model variables

Variable	Level	ADF Statistic	Prob*	Second Difference	ADF Statistic	Prob*
FEDO	1(0)	6.551088	1.0000	1(2)	-5.083409	0.0008
PEDO	1(0)	0.501277	0.9827	1(2)	-4.546353	0.0021
RGDP	1(0)	-1.508710	0.5114	1(1)	-3.222254	0.0322
EXCR	1(0)	-1.642866	0.4456	1(1)	-3.956088	0.0066
INFL	1(0)	-3.475044	0.0184			

Source: E-Views 11

Table 3 above summarizes the results of the ADF test for checking the stationarity of various variables. The ADF statistic (6.551088) and p-value (1.0000) indicate that FEDO is not stationary at level. The ADF statistic (-5.083409) and p-value (0.0008) suggest that FEDO is stationary at the second difference, implying it is integrated of order 2, I(2). The ADF statistic (0.501277) and p-value (0.9827) indicate that PEDO is not stationary at level. The ADF statistic (-4.546353) and p-value (0.0021) suggest that PEDO is stationary at the second difference, implying it is integrated of order 2, I(2).

The ADF statistic (-1.508710) and p-value (0.5114) indicate that RGDP is not stationary at level. The ADF statistic (-3.222254) and p-value (0.0322) suggest that RGDP is stationary at the first difference, implying it is integrated of order 1, I(1). The ADF statistic (-1.642866) and p-value (0.4456) indicate that EXCR is not stationary at level. The ADF statistic (-3.956088) and p-value (0.0066) suggest that EXCR is stationary at the first difference, implying it is integrated of order 1, I(1). The ADF statistic (-3.475044) and p-value (0.0184) indicate that INFL is stationary at level, implying it is integrated of order 0, I(0). These results imply that for FEDO and PEDO, two differencing operations are required to achieve stationarity, while for RGDP and EXCR, one differencing operation is sufficient. INFL is already stationary at level, indicating no differencing is necessary for it.

4.4 Test of Hypothesis

Table 4: OLS test for model variables

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	36205.47	5311.960	6.815840	0.0000
FEDO	4.195522	0.249770	16.79754	0.0000
PEDO	-2.618937	0.343436	-7.625701	0.0000
INFL	-317.8317	245.8817	-1.292621	0.1961
EXCR	42.05265	33.68160	1.248535	0.2118

Robust Statistics

R-squared	0.789751	Adjusted R-squared	0.745487
Rw-squared	0.970711	Adjust Rw-squared	0.970711
Akaike info criterion	32.19832	Schwarz criterion	38.86110
Deviance	2.02E+08	Scale	2966.258
Rn-squared statistic	452.3425	Prob(Rn-squared stat.)	0.000000

Source: E-Views 11

The RLS indicate the relationship between the RGDP and various public debt servicing indicators. The R^2 and Adjusted R^2 values indicate that approximately 79% (adjusted to 74.5%) of the variance in RGDP is explained by the model. This is a relatively high proportion, indicating a good fit. The Rw-squared and Adjusted Rw-squared values, derived from robust regression, are extremely high (97%), suggesting a very strong fit when considering robustness. The Rn-squared statistic is highly significant (p-value: 0.000000), reinforcing the robustness of the model.

The results showed that the coefficient of FEDO is 4.195522 is highly significant (p-value: 0.0000). Thus, a 1 billion increase in FEDO is associated with an increase of approximately 4.20 billion in RGDP, ceteris paribus. The coefficient of PEDO is -2.618937 is highly significant (p-value: 0.0000). Thus, a 1 billion increase in PEDO is associated with a decrease of approximately 2.62 billion in RGDP.

Hypothesis One

H_1: There is a significant effect of domestic debt outstanding on the Gross Domestic Product in Nigeria.

FEDO has a significant positive impact on RGDP. This leads to the rejection of the H_0 and acceptance of the H_1.

Hypothesis Two

H_1: There is a significant effect of public external debt outstanding on the Gross Domestic Product in Nigeria.

PEDO has a significant negative impact on RGDP. This leads to the rejection of the H_0 and acceptance of the H_1.

4.5 Discussion of Findings

The first hypothesis posited that there is a significant positive effect of domestic debt outstanding (FEDO) on the Gross Domestic Product (GDP) in Nigeria. The results of the robust least squares regression analysis provide strong evidence supporting this hypothesis. The coefficient for FEDO is 4.195522, with a highly significant p-value of 0.0000. This indicates

that an increase in domestic debt is associated with a substantial positive impact on GDP. This finding aligns with the theoretical expectation that government borrowing for productive investments can stimulate economic growth. In the context of Nigeria, domestic debt may be utilized for infrastructural development, public services, and other critical sectors that enhance economic productivity. The positive coefficient suggests that these investments are yielding returns that contribute positively to the GDP. This is supported by Musibau et al. (2018) who found a positive relationship between external debt and economic growth in ECOWAS countries. Asafo and Matuka (2019) in Ghana using co-integration analysis and an ECM to analyze annual time series data revealed that external debt had a positive impact on economic growth.

However, in contrast, Awan and Qasim (2020) reported negative impacts of debt services on Pakistan's economy. Getinet and Ersumo (2020) find a negative but not significant relationship in the long run in Ethiopia. Akhanolu et al. (2018) using annual data from 1982 to 2017 revealed that internal debt showed a positive impact on growth.

The second hypothesis confirmed that there is a significant negative effect of public external debt outstanding (PEDO) on the GDP in Nigeria. The regression results corroborate this hypothesis, as the coefficient for PEDO is -2.618937, with a highly significant p-value of 0.0000. This indicates that an increase in external debt is associated with a significant negative impact on GDP. This negative relationship can be attributed to several factors. External debt often comes with higher interest rates and stringent repayment terms, which can strain the country's fiscal resources. Additionally, the utilization of external debt might not always be optimal, leading to inefficiencies and misallocation of resources. The negative coefficient underscores the detrimental effect of external debt servicing on economic growth, as substantial portions of government revenue are diverted to debt repayment instead of being invested in productive economic activities.

Conversely, the negative impact of external debt aligns with studies by Adamu and Rasiah (2016), Ndubuisi (2017), and Ezema, Ogujiuba, and Ifionu (2018), which also found that external debt servicing hampers economic growth in Nigeria. The findings are further supported by the broader literature from other developing countries, indicating that the burden of external debt can outweigh its benefits, especially when not managed efficiently. For instance, El Aboudi and Khanchaoui (2021) found a significant negative impact in Morocco. Similarly, Grace, Ebele, and Augustine (2019); and Muhammad and Abdullah (2020) find evidence of the harmful effects of external debt servicing on Nigeria's economic growth. Ogbonna, Okezie, and Ofoegbu (2021) concluded that there is a long-run negative relationship between external debt services and economic growth, recommending the optimal use of external debt. Akhanolu et al. (2018) examined the effect of public debt on the economic growth of Nigeria using annual data from 1982 to 2017 and the 2-stage least square technique. The results revealed that external debt had a significant negative impact on growth.

5.0 Conclusion and Recommendations

The study concludes that public debt servicing shapes economic growth in Nigeria. The econometric result showed that domestic debt outstanding positively affected GDP and public external debt outstanding negatively affected economic growth. This could be because a rapidly growing external debt puts a strain on economic activities, making it difficult to grow. The control variables of exchange and interest rates were non-significant predictors of economic

growth. This suggests that debt factors also play a role in how much a country's GDP grows over time. The findings would inform evidence-based policymaking aimed at promoting economic growth.

Based on this, the study recommends that:

1. Enhanced Domestic Borrowing: Policymakers should consider strategies to increase and optimize domestic borrowing, ensuring that funds are channelled into productive sectors that drive economic growth.
2. Cautious External Borrowing: There is a need for a more cautious approach to external borrowing. The government should negotiate favourable terms and ensure that borrowed funds are used for projects with high economic returns. In addition, establishing a robust debt management framework that balances domestic and external borrowing can help mitigate the adverse effects of debt on the economy.

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