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The Economic Implications of Nigeria's Foreign Debt Servicing and Sustainability

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Abstract: Despite extensive literature examining the role foreign debt plays in the growth of the Nigerian economy, seldom do they simultaneously consider the effect of external debt servicing and sustainability. Accordingly, this study examined the impact of external debt servicing and sustainability on the economic growth of Nigeria for the period between 1980 and 2022. The auto-regressive distributed lag (ARDL) model was adopted to measure the effect of the explanatory variables on the dependent variable. Empirically, the study demonstrated that the impact of debt sustainability was insufficient on the economy; notwithstanding being positive in the long run. However, the effects of external debt servicing and foreign debt interest payment were significant and negative on the economy in the short and long run periods. Thus, showing that resources being used to service the debt of the nation, crowd-out funds that could have been used to spur growth of the economy. Conversely, exchange rate significantly and positively impacted the economy, indicating that an improvement in the value of the Naira, will be indicative of an improvement in the economy. Hence, the study recommends amongst others that effective external debt management strategies such as the debt for equity swap programme should be adopted by fiscal authorities in the country.

Keywords: Foreign debt; Debt servicing; Debt sustainability; Economic growth; Nigeria.

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1. INTRODUCTION

External debt is a major source of public receipts and financing capital accumulation in any economy (Adepoju *et al*, 2007, Aladejare, 2021). It is a medium used by countries to bridge their deficits and carry out economic projects that are able to increase the standard of living of the citizenry and promote sustainable growth and development. Hameed *et al*. (2008) stated that external borrowing ought to accelerate economic growth especially when domestic financing is inadequate. External debt also improves total factor productivity through an increase in output which in turn enhances Gross Domestic product (GDP) growth of a nation. The importance of external debt cannot be overemphasized as it is an ardent booster of growth and thus improves living standards thereby alleviating poverty.

It is widely recognized in the international community that excessive foreign indebtedness in most developing countries can impede the economic growth and stability of such countries (Audu, 2004). Developing countries like Nigeria have often contracted large amount of external debts that has led to the growing trade debt arrears at highly concessional interest rates. Gohar and Butt (2012) and Aladejare and Nyiputen (2023) opined that accumulated debt service payments create a lot of problems for countries especially the developing nations reason being that a debt is actually serviced for more than the amount it was acquired and this slows down the growth process in such nations. The inability of the Nigerian economy to meet its debt service payments obligations has resulted in debt overhang or debt service burden that has militated against her growth and development (Audu, 2004). The origin of Nigeria's debt service burden dates back to 1978 after a fall in world oil prices. Prior to this occurrence Nigeria had incurred some minor debts from World Bank in 1958 with a loan of US$28million dollars for railway construction and the Paris Club debtor nations in 1964 from the Italian government with a loan of US$13.1 million for the construction of the Niger dam. The first major borrowing of US$1 billion known as the "Jumbo loan" was in 1978 from the International Capital Market (ICM) (Adesola, 2009).

External borrowing has a significant impact on the growth and investment of a nation so long as such external borrowing is put to productive ventures; up to a point where high levels of external debt servicing sets in and inhibits the growth process of the country, as the focus moves from financing private investment to repayments of debts. This shows that at low levels of debt or lending interest, external debt can exert positive effects on growth but above

particular points or thresholds accumulated debt begins to have a negative impact on growth. Furthermore, Fosu (2007) showed that high debt service payments shift spending away from health, educational and social sectors. This obscures the motive behind external borrowing which is to boost growth and development rather than get drowned in a pool of debt service payments which eats up most of the nation's resources and hinders growth due to high interest payments on external debt.

Nigeria as a developing nation has adopted a number of policies such as the Structural Adjustment Programme (SAP) of 1986 to liberalize her economy and boost Gross Domestic product (GDP) growth. In a bid to ensure the implementation of these policies the government embarked upon massive borrowings from multilateral sources which resulted in a high external debt service burden and by 1992 Nigeria was classified among the heavily indebted poor countries (HIPC) by the World Bank. The continuous increase in the level of external debt service payments has led to huge imbalances in fiscal deficits and budgetary constraints that have militated against the growth of the Nigerian economy. The resultant effect of the debt quagmire in Nigeria could create some unfavourable circumstances such as crowding out of private investment and poor GDP growth.

Were (2001) stated that "Huge external debt does not necessarily imply a slow economic growth; it is a nation's inability to meet its debt service payments fuelled by inadequate knowledge on the nature, structure and magnitude of the debt in question" which constitutes a problem. It is no exaggeration that this is the major challenge faced by the Nigerian economy. In addition, the inability of the Nigerian economy to effectively meet its debt servicing requirements has exposed the nation to a high debt service burden.

The resultant effect of this debt service burden creates additional problems for the nation, particularly the increasing fiscal deficit which is driven by higher levels of debt servicing. This poses a grave threat to the growth of the economy as a large chunk of the nation's hard earned revenue is being eaten up. For instance, Nigeria's external debt outstanding stood at US$28.35 billion in 2001, which was about 59.4% of GDP from US$8.5 billion in 1980; which was about 14.6% of GDP (WDI, 2023). The debt crisis reached its maximum in 2003 when US$2.3 billion was transferred to service Nigeria's external debt.

Developing economies such as Nigeria, with an open economy, have been argued to demand foreign funds for the purpose of fast-tracking their growth

process (Aladejare and Musa, 2024a). This suggests that efficient utilization of such external borrowing can transform the economy and also bring along development. The result could encourage rapid convergence between Nigeria and the developed world. The question then becomes why has external borrowing not accelerated the pace of growth of the Nigerian economy? Moreover, Nigeria entered into a state of economic recession at a period when external debt was very high. Therefore, does it suggest that external borrowings so far have not been used to stimulate the economy?

Furthermore, despite extensive literature examining the role foreign debt plays in the growth and in some instance; the development of the Nigerian economy; seldom do they simultaneously consider the effect of external debt servicing and sustainability. Thus, this study will attempt to bridge this gap in the literature, by in addition to evaluating the impact of external debt on economic growth; also examine the impact of debt sustainability on the growth of the Nigerian economy.

The rest of this research structure reveals Section 2 to contain the reviewed literature; Section 3 the study's data and methodology; Section 4 findings and discussion; and Section 5 the concluding remarks.

2. LITERATURE REVIEW

2.1. Theoretical Review

Several theoretical contributions have been made as regards the subject matter of external debt and economic growth. These theories are of relevance to this study as they serve as a building block to this research work and as such the following theories were discussed; the dual-gap theory, debt overhang theory, crowding-out effect theory, and the dependency theory.

2.1.1. The Dual-Gap Theory

The dual-gap model posits that developing economies face two gaps in their economy which they have to fill. The first gap is that between savings and investments in the economy. A developing country starts off with very low savings, but it has to engage in a big push by investing heavily. In what ways would countries try to fill this gap between savings and investments? There have been debates among economists as arguments have been that developing countries require aid from developed countries. Others divergent views have been that developing countries need to trade in order to gain trade surpluses,

which could then be used to fill the gap (Sridhar, 2016). These arguments led to the second gap which is that between exports and imports. A developing country by definition produces only primary goods, whereas it would require large imports of consumer and capital goods. This shows obviously the presence of cost differential; since most developing countries would necessarily be subjected to current-account deficits (Sridhar, 2016).

Thus, external borrowing becomes a necessity. The most important consideration in contracting external debt is a simple and direct one; signing up for debt from abroad only when the funds can generate higher returns than the cost of funds when invested. It therefore follows that borrowing nations would be enhancing their productivity and national output through the investment facilitated by borrowed funds. The dual-gap concept refers to the function of foreign capital in the economic development process. The role of foreign capital here is that it permits developing countries to invest more than they can save domestically; which is a necessity resulting from deficits in internal savings (McKinnon, 1964).

2.1.2. Debt-Overhang Theory

Debt-overhang occurs when a nation's debt is more than its debt repayment ability. Krugman (1988) explains debt overhang as one whereby the expected repayment amount of debt exceeds the actual amount at which it was contracted. Borensztein (1990) also defined debt overhang as one where the debtor nation benefits very little from the returns on additional investment due to huge debt service obligations. The "debt overhang effect" comes into play when accumulated debt stock discourages investors from investing in the private sector for fear of heavy tax placed on them by government. This is known as tax disincentive. The tax disincentive here implies that because of the high debt and as such huge debt service payments, it is assumed that any future income accrued to potential investors would be taxed heavily by government so as to reduce the amount of debt service and this scares off the investors thereby leading to disinvestment in the overall economy and as such a fall in the rate of growth (Ayadi and Ayadi, 2008).

Furthermore, some researchers have come up with other ways through which external debt may affect economic growth. According to (Borenstein, 1990) external debt affects growth through the credit rationing effect which is a condition faced by countries that are unable to contract new loans based on their previous inability to pay.

2.1.3. The Dependency Theory

Dependency theory states that the poverty of the countries in the periphery is not because they are not integrated or fully integrated into the world system as is often argued by free market economists, but because of how they are integrated into the system. From this standpoint a common school of thought is the bourgeoisie scholars. To them the state of underdevelopment and the constant dependence of less developed countries on developed countries are as a result of their domestic mishaps. They believe this issue can be explained by their lack of close integration, diffusion of capital, low level of technology, poor institutional framework, bad leadership, corruption, mismanagement, etc. (Momoh and Hundeyin, 1999). They see the under-development and dependency of the third world countries as being internally inflicted rather than externally afflicted. To this school of thought, a way out of the problem is for third world countries to seek foreign assistance in terms of aid, loan, investment, etc, and allow undisrupted operations of the Multinational Corporations (MNCs). Due to the underdeveloped nature of most LDC's, they are dependent on the developed nations for virtually everything ranging from technology, aid, technical assistance, to culture, etc. The dependent position of most underdeveloped countries has made them vulnerable to the products of the Western metropolitan countries and Breton Woods institutions (Ajayi, 2000). The dependency theory gives a detailed account of the factors responsible for the position of the developing countries and their constant and continuous reliance on external for their economic growth and development.

Dependency theory advocated an *inward looking* approach to development and an increased role for the state in terms of imposing barriers to trade, making inward investment difficult and promoting nationalisation of key industries. Although still a popular theory, dependency theory has disappeared from the mainstream of economic theory since the collapse of Communism in the early 1990s. The considerable inefficiencies associated with state involvement in the economy and the growth of corruption, have been dramatically exposed in countries that have followed this view of development.

2.5. Empirical Review

The motive behind external debt is to boost economic growth and development of any nation but as a result of future high debt service payments and the challenge of debt sustainability, it poses a serious threat to the economy of that nation. Consequently, economic researchers have sought out to investigate the

implication of external debt servicing and sustainability on the economies of debtor nations and have come up with diverse views.

Ejigayehu (2013) also analyzed the effect of external debt on the economic growth of eight selected heavily indebted African countries (Benin, Ethiopia, Mali, Madagascar, Mozambique, Senegal, Tanzania and Uganda) through the debt overhang and debt crowding out effect with ratio of external debt to gross national income as a proxy for debt overhang and debt service export ratio as a proxy for debt crowding out. The empirical investigation was carried out on a cross-sectional regression model. The concluding result from estimation showed that external debt affects economic growth through debt crowding out rather than debt overhang.

Daud *et al*. (2013) analyzed the contribution of external debt to Malaysia's economic growth. The growth model was tested by applying the Autoregressive Distributed Lag (ARDL) bound test. In addition, the study estimated the existence of the threshold effect in examining the optimal level of external debt. Empirical results from the study reveals that the accumulation of external debt is associated with an increase in Malaysia's economic growth up to an optimal level, and an additional increase of external indebtedness beyond the level was shown to have inversely contributed to the Malaysian economy.

Faraji and Makame (2013) investigated the impact of external debt on the economic growth of Tanzania using time series data on external debt and economic performance covering the period 1990-2010. The findings show that external debt and debt service both have significant impact on GDP growth with the total external debt stock having a positive effect on GDP growth and debt service payment having a negative effect on GDP growth.

In a study conducted by Forgah *et al*. (2014), the tripartite relationship between external debt, domestic investment and economic growth in the Cameroon was examined. The study specifically examined the feedback effect of external debt on economic growth through gross domestic investment; based on a system estimation approach, using Two Stage Least Squares as an estimation technique for a period of 34 years (1980-2013). The results reveal that while domestic investment increases economic growth, external debt retards economic growth in Cameroon, revealing the influence of debt overhang. Conclusion from the study was that external debts adversely affect economic growth.

Babu *et al*. (2014) estimated the effect of external debt as a share of GDP in economic growth in East Africa Community (EAC). Using annual data from

1970-2010, the study employs a panel fixed-effects model which was based on the Solow growth model augmented for debt. The findings suggest a negative significant effect of external debt on GDP per capita growth rate.

In an attempt to unify the dichotomy on debt and growth, Kidochukwu (2014) empirically examined the critical levels of external debt accumulation for Nigeria's sustainable economic growth. The study adopted two variant optimization algorithms namely Gauss-Newton/BHHH, and Marquardt algorithms, respectively, estimated with three variant estimators- Generalized Linear Method (GLM), Least Square (LS) and Maximum Linear-Autoregressive Conditional Heteroscedasticity (ML-ARCH). The research findings showed that the maximum critical level of Nigeria's external debt threshold that ensures a steady state growth converges around 14% to 15%. The estimated growth-augmenting threshold also showed that at the early stage of debt acquisition, its contribution to output growth is rising, but at a decreasing rate, hence the alternating signs between the linear (positive) and nonlinear (negative) debt coefficients.

Ibi and Aganyi (2015) analyse the impact of external debt on economic growth in Nigeria. The variance decomposition and impulse response from Vector Auto-Regression (VAR) was the econometric technique employed to test whether or not External Debt, Ratio of External debt to Exports and other economic control variables stimulate economic growth. Based on the two-stage data processing, the result reveals a weak causation between external debt and economic growth in the Nigerian context. This implies that external debt could not be used to forecast improvement or slowdown in economic growth in Nigeria.

Hassan *et al*. (2015) examined the effect of government debt on economic growth in Nigeria between 1986 and 2013–using the ordinary least square method. The study reveals that the impact of government debt on economic growth for the focal period was insignificant – with external debt which has been enormous over the years contributing minimally to real gross domestic product. The study concludes that, if the course of consistent borrowing is not curbed, the economy will most likely go into recession; resorting to surplus budgeting, and igniting; increases in unemployment, decreases in total investment, falling reserves, increased exchange rate, higher inflation and consequently increased poverty.

Emerenini (2015) offer an in-depth understanding into the economics of debt in Nigeria. The study objectively analyzed the effectiveness of external

debt on economic growth within a span of 1981-2012. Specifically, the broad objective of the study was to evaluate the impact of external debt stock and debt servicing on economic growth. The Engle & Granger Cointegration and Ordinary Least Square (OLS) were employed the study. The result of the analyses showed that rising external debt stock inhibits the pace of economic growth of Nigeria by increasing the cost of its servicing beyond the debt sustainability limit; while external debt servicing was found not to impair economic growth. Furthermore, it was found that external debt stock rises rapidly due to accrued compound interest and loans were secured for dubious projects.

Abdullahi *et al*. (2016) looked at the conceptual analysis of the relationships between external debt and capital formation geared towards a proper assessment and understanding the experiences of Sub-Saharan African (SSA) countries external debts experiences. The study established that debt in general and external debt in particular is a necessary evil that all economies survive with. The study particularly observed that during the five decades of external debt experiences in SSA, all indices have indicated adverse relationships amongst and between all variables of interest in these countries. Most important of the negative consequences being that posed by debt overhang and it's crowding out effects as well as their attendant effects on the economies.

Mbah *et al*. (2016) investigated the impact of external debt on economic growth of Nigeria. Using the ARDL bound testing approach to cointegration and error correction models for the periods 1970–2013; in order to investigate the existence of long-run equilibrium relationship among the variables. Furthermore, the Granger causality test was also used to check for the direction of causality among the variables. The result of the study indicates a long-run relationship among the variables and also reveals that external debt does impact negatively and significantly on output. The finding also established a unidirectional causality between external debt and economic growth.

Oluwapelumi *et al*. (2016) examined the impact of external debt on economic growth in Nigeria from 1980-2014 using the Vector Error Correction model. The empirical findings of the study through the impulse response analysis and variance decomposition revealed that external debt service payment negatively impacts real GDP per capital growth in Nigeria to a significant extent; signalling the existence of the debt overhang impact on economic growth. Furthermore, the Granger Causality/Wald test revealed a unidirectional causation from real GDP to external debt stock and from external debt service payment to real GDP.

In an attempt to ascertain the impact of external debt on economic growth of Nigeria, Nwannebuike *et al*. (2016) adopted the Ex-post facto research design. Data were analysed using Ordinary Least Square method and Error Correction Model. The result of the study revealed that External Debt is positively related to GDP in the short run but a negative relationship at long run. Also a negative relationship was established between debt service stock and GDP while exchange rate had a positive relationship with GDP.

Ugochukwu *et al*. (2016) evaluated the effect of external borrowing and foreign financial aid (foreign grant) in the form of official development assistance (ODA) on the growth of the Nigerian economy over a period of 34 years from 1980 to 2013. The study employed Ordinary Least Square technique (OLS) multiple regression model in determining the causal-effect between the variables under study. The study results show that while external debt has a positive and significant effect on economic growth, foreign aid in conformity with the a priori expectation is positively related to GDP as well but statistically insignificant.

In order to determine the impact of global financial openness on public debt in 37 developing economies, Dong (2020) carried out a study. The study came to the conclusion that emerging countries' internal financial openness reduces their external and overall debt profiles. This is attributable to the substitution impact between the country's available external funding options and its external public indebtedness. On the other hand, because of the substitution effect between external and domestic public indebtedness, financial openness in foreign economies is thought to make external public indebtedness in developing nations worse.

Furthermore, Baba (2020) showed in their study that foreign debt servicing significantly and adversely affects economic growth in Kenya. Also, Muhammad and Abdullahi (2020) used the ARDL approach to investigate the impact of foreign borrowing servicing on economic growth in Nigeria. The study submitted that external debt servicing adversely affects economic prosperity in Nigeria in the long run. In a similar study, Aladejare (2021) showed by adopting the autoregressive distributed lag (ARDL) technique that in the long-term, while imbalances from macroeconomic decisions impacted foreign borrowing, the short-term effects from economic volatility sources were very significant for Nigeria. Also, the study reported a bidirectional association between macroeconomic imbalances and foreign debt. Other factors discovered to have aggravated the external indebtedness of the country

included political instability, unanticipated disease outbreaks, and economic recession.

Akanbi *et al*. (2022) examined the effect of foreign debt servicing on economic prosperity in Nigeria through the application of ARDL method. The study empirically found an insignificant inverse effect of external borrowing servicing on economic growth in the long-run. However, debt sustainability has a significant and positive impact on Nigeria's economic growth. Also, Kpalukwu and Ezekwe (2023) used the error correction mechanism (ECM) to show that multilateral debt service as a significant and negative effect on economic growth in Nigeria.

In a different study, Aladejare (2023a) used the pooled mean group (PMG) method to show that for west African economies, trade and economic integration variables accelerated the growth of foreign debt in the short term, while macroeconomic policy variables had no significant impact, but in the long term, trade and economic integration variables showed a decelerating effect on sovereign foreign indebtedness, while macroeconomic policy variables were shown to have weak significance.

2.6. Empirical Gap

The above literature reviews as proven that extensive studies had been conducted in examining the role foreign debt plays in the growth and in some instance; the development of the country. However, little or no study can be found to have simultaneously examined the effect of external debt servicing and sustainability on the growth of the Nigerian economy. This study will therefore attempt to bridge this gap in the literature.

3. DATA AND METHODOLOGY

3.1. Data

The data for this study is sourced from the World Bank Development Indicators (WDI) from 1980 to 2022. To gauge the impact of external debt servicing and sustainability on economic growth in Nigeria, this study uses time series data on external debt and external debt service payment. Debt sustainability variable is used to capture sustainability of external debt. While foreign interest payment on external debt and nominal exchange rate are used as control variables. Both variables were used as intermediaries because increased variability in their values will aggravate an upward surge in government expenditure, considering

the fact that the country's public spending profile is one of the largest in Africa (Aladejare, 2024).

The estimation technique adopted in this study is the Auto-Regressive Distributive Lag (ARDL) bounds testing approach developed by Pesaran *et al.* (2001). The justification for the selection of this approach is based on the advantages of the ARDL model for simultaneously testing the existence of short and long run relationships. Furthermore, the rate of short run distortions can be determined as well as the time it would take for a long run equilibrium to be restored. This effect is being measured through the cointegrating term in the ARDL model.

3.2. Model Specification

The simple functional form of the study model can be expressed as:

$$RGDP = f(DSUS, XDS, FINT, EXCH) \quad (1)$$

Where:

RGDP = Real Gross Domestic Product used to proxy for economic growth

DSUS = Debt Sustainability $\left(\frac{External\ Debt}{Value\ of\ Export}\right)$

XDS = External Debt Servicing

FINT = Foreign Interest payment on External Debt

EXCH = Nominal Exchange Rate

The functional transformation of equation 1 is given as:

$$lRGDP_t = \alpha_0 + \alpha_1 DSUS_t + \alpha_2 lXDS_t + \alpha_4 lFINT_t + \alpha_4 lEXCH_t + \varepsilon_t \quad (2)$$

where: l= log transformation, α_0 = Constant, α_1 to α_4 are variable parameters, ε_t = white noise error term.

Specifically, the study objectives will be tested by using the following ARDL model of analysis.

$$\begin{aligned}\Delta lRGDP_i = {} & \alpha_0 + \sum_{i=1}^{p} \varphi_i \Delta lRGDP_{t-i} + \sum_{i=1}^{p} \pi_i \Delta lXDBGDP_{t-i} + \sum_{i=1}^{p} \forall_i \Delta DSUS_{t-i} \\ & + \sum_{i=1}^{p} \rho_i \Delta lXDS_{t-i} + \sum_{i=1}^{p} \sigma_i \Delta FINT_{t-i} + \sum_{i=1}^{p} \theta_i \Delta lEXCH_{t-i} + \gamma_1 lXDBGDP_{t-1} \\ & + \gamma_2 DSUS_{t-1} + \gamma_3 lXDS_{t-1} + \gamma_4 FINT_{t-1} + \gamma_5 lEXCH_{t-1} + \omega ecm_{1t-1} \\ & + \varepsilon_t \qquad (Equ. 3)\end{aligned}$$

It should be noted that terms with summation signs represents the error correction relationship. Furthermore, the second part of the equation with γ coefficients relates the long run effect of the explanatory variables to the dependent variable. The symbol Δ indicates short run or difference factor, and ω captures the coefficient used to show the short run speed of adjustment, evaluating return to long run equilibrium after a short run distortion, which can be due to policy effect.

4. EMPIRICAL RESULTS AND DISCUSSIONS

4.1. Unit Root Tests

Before estimating the models in Equation 3, it is imperative to determine the nature of the data to be examined. This is because a prior determination of the stationarity of economic time series is crucial for empirical inferences; since standard econometric methodologies are based on the premise of stationarity in the time series, while they are in the real sense non-stationary (Aladejare, 2022; Ebi and Aladejare, 2022). Thus, as a consequence, the usual statistical tests are likely to be inefficient and the conclusions drawn from econometric methods are likely to be misleading and incorrect (Ebi and Aladejare, 2022). For example, OLS estimation of regressions in the presence of non-stationary variables gives rise to spurious regressions if the variables are not cointegrated (Gujarati, 1995).

Hence, the result of the unit root test in Table 1 contains the Philip-Perron (PP) unit root test which shows that all the variables attain stationary at the first difference level. However, the debt sustainability variable happens to be the only variable that attained stationarity in level from. The mixture of level and difference stationarity of variables, conforms with the adoption of the ARDL approach adopted for this study.

Table 1: PP Stationarity Test on Study Variables

Variable	*Level*			*First difference*		
	With Intercept	*With Intercept & Trend*	*Without Intercept & Trend*	*With Intercept*	*With Intercept & Trend*	*Without Intercept & Trend*
Log (RGDP)	-2.5882	-2.4969	0.7841	-4.6579***	-4.5706***	-4.6795***
DSUS	-2.7427*	-3.4175*	-0.1296	-6.2130***	-6.1036***	-6.2939***
Log (XDS)	-1.8530	-0.9885	1.1285	-5.0293***	-5.4667***	-4.1431***
FINT	-0.6694	-2.7685	-0.5244	-4.7434***	-5.1557***	-4.7860***
Log(EXCH)	-1.4999	-2.8717	-0.1426	-4.5285***	-4.4064***	-4.5988***

Note: *, and *** significant at 10%, and 1% level.
Source: Authors' Estimated Result.

4.2. Bounds Cointegration Determination

After the stationarity state of the variables had been determined, the next procedure is the determination of long-run association between the variables. This involves the use of the bounds approach. Table 3 below shows the long-run association between the variables.

Table 2: Bounds Tests Result for Cointegration

F-Bounds Test		*Null Hypothesis: No levels relationship*		
Test Statistic	*Value*	*Signif.*	*I(0)*	*I(1)*
F-statistic	5.162731	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Note: K= number of variables
Source: Authors' estimated result.

The F-statistic of the bounds test was compared to the upper bounds critical values I(1) as a yardstick to reject the null of no cointegration/levels relationship. Conventionally, if the F-statistic value exceeds the bounds I(1) value, then long-run association or cointegration is present. On the contrary, if the value falls below the bounds I(0) level, then cointegration does not exist. While if it lies in-between the I(0) and I(1) values; then the result is inconclusive. Table 2 result shows the F-statistic value as being above the I(1) bounds value at all levels of significance and suggesting long-run association between the regressors.

4.3. Estimated ARDL results

The next procedure is to present the estimated long-run and short-run effects of the study variables on economic growth. Empirical findings as represented in Table 3 suggest that in the long run, although debt sustainability coefficient is positive, it is insignificantly related to economic growth. Conversely, foreign borrowing servicing has a substantial adverse effect on economic prosperity in the long and short run periods. Similarly, interest payment on external debt is demonstrated to significantly and adversely affect economic growth in the long and short-run periods. On the other hand, while exchange rate has a significant enhancing effect on economic prosperity in the long-run, its short run effect was insignificantly adverse.

Finally, the error correcting mechanism (ECM) is rightly signed (-0.73) and significant. The coefficient of the ECM factor shows that the speed of adjustment from short-run disequilibrium to long-run equilibrium is adequate. The coefficient suggests that in the event of short-run disequilibrium, long-run equilibrium will be restored in approximately sixteen months (i.e., sixteen months) after the disequilibrium.

Three main diagnostic test on the coefficient estimates were conducted. They include the normality, serial correlation, and heteroscedasticity test presented in the lower section of Table 4. The results show that the parameter estimates used in the study model are normally distributed, free from serial correlation and are homoscedastic in nature. These decisions were reached based on the acceptance of the null hypothesis as the probability values for the three test exceeds the 5% significance levels. Thus, this outcome validates the inferences drawn from the estimated coefficients in the model.

Table 3: ARDL Estimated Output

Regressors	*Coefficient*	*Std. Error*	*Prob.*
Constant	20.940	0.311	0.000***
DSUS	0.011	0.010	0.262
LXDS	-0.180	0.028	0.000***
FINT	-0.418	0.147	0.010**
lEXCH	0.838	0.172	0.000***
Δ*lRGDP*(–1)	-2.529	22.808	0.065*
Δ*lXDS*	-0.282	0.075	0.002***
Δ*FINT*	-0.226	0.074	0.008**
Δ*lEXCH*	-0.065	0.040	0.124
ecm(–1)	-0.733	0.107	0.000***
Residual Test			
Normality	0.737		0.692
Serial Correlation	5.523		0.137
Heteroskedasticity	0.701		0.704

Note: *, **, *** represents significance at 10%, 5% and 1% respectively.
Source: Authors' Estimated Result.

4.4. Discussion of findings

Evidence from Table 3 reveals that in the long-run, external debt servicing exerts a significant adverse effect on the economy. This outcome aligns with findings in Kpalukwu and Ezekwe (2023) and Muhammed and Abdullahi (2020) and contradicts the insignificant submission in Akanbi *et al.* (2022) for

Nigeria. Servicing cost of sovereign external borrowing are known to crowd-out funds meant for infrastructure development that could aid growth. Nigeria has benefited adversely from the rise in this cost through weak human capital development indicators including inadequate health and educational facilities, and low income levels (Aladejare *et al.* 2022).

Furthermore, external debt sustainability has an insignificant positive effect on the growth of the economy. However, it contradicts the positive effect of external borrowing servicing on economic growth in Nigeria by Akanbi *et al.* (2022). The implication of this result is that debt sustainability measures have not been adequately harnessed to yield significant benefits for the economy. Similarly, foreign interest payments also show a significant negative effect on the economy. The results confirm that the payment of interest on foreign loans as well as monies for debt servicing obligations, crowd-out scarce funds that could have been used to provide infrastructure for the purpose of growing the economy. Exchange rate in the long-run is revealed to have a significant positive effect on the growth of the economy. Which could translate to mean, improvement in the currency (i.e., Naira appreciation) can aid the improvement of the economy, through cheaper input cost. The ripple effect of lower input cost is increase in domestic output, reduction in unemployment, and higher income (Aladejare and Musa, 2024b).

4.5. Granger causality output

Table 5 below captures the significant Granger causality results as observed from the causality test conducted. The Granger causality result reveals that economic growth Granger causes foreign interest rate without any reverse causality. This shows that improvement of the economy, is important for the country to be able to pay the supposed interest on foreign loans. Thus, the more attractive the Nigerian economy to domestic and foreign investors, the higher the guaranty of investments needed to boost economic growth (Zubair and Aladejare, 2017). Higher economic prosperity will translate to more revenue for the government through tax, permits and rents. Hence, the ability of the government to payoff interest on its foreign loans is enhanced (Aladejare, 2023b). Similarly, exchange rate Granger causes economic growth, implying that changes in the exchange rate can significantly impact the performance of the economy. However, debt sustainability and servicing, do not significantly Granger cause improvement in the country's economy.

Table 5: Granger Causality Result

Null hypothesis	*Obs.*	*F-statistic*	*Prob.*
Log(RGDP) does not Granger cause (DSUS) (DSUS) does not Granger cause log(RGDP)	42	1.146 1.723	0.197 0.332
Log(RGDP) does not Granger cause log(XDS) Log(XDS) does not Granger cause log(RGDP)	42	0.501 0.918	0.611 0.411
Log(RGDP) does not Granger cause FINT FINT does not Granger cause log(DSUS)	42	3.127 0.474	0.059* 0.627
Log(RGDP) does not Granger cause log(EXCH) Log(EXCH) does not Granger cause log(RGDP)	42	1.830 4.637	0.179 0.012**

Source: Authors' Estimated Result.

5. CONCLUSIONS AND RECOMMENDATIONS

This study examined the impact of external debt servicing and sustainability on the economic growth of Nigeria for the period 1980 to 2022. The auto-regressive distributive lag (ARDL) model was adopted to measure the effect of the explanatory variables in the study model on the dependent variable RGDP. The Granger causality result was used to reveal the direction of causation between the variables. Thus, the study found that the impact of debt sustainability was insufficient on the economy; notwithstanding being positive in the long run. However, the effects of external debt servicing and foreign interest payment on external debt were significant and negative on the economy in the short and long run periods. The implication of the result is that resources being used to service the debt of the nation, crowd-out funds that could have been used to spur growth of the economy. Conversely, exchange rate significantly and positively impacted the economy in both the short and long-run periods, indicating that an improvement in the value of the Naira, will be indicative of an improvement in the economy.

Hence, the study recommends that policy makers should endeavour to manage the country's external borrowings appropriately. External debt should not be sourced for recurrent spending, rather it should strictly be sourced for infrastructure advancement of the country. Further, effective external debt management strategies such as the debt for equity swap programme should be adopted by fiscal authorities in the country. This would help ensure a reduction in the debt service burden of the country; since repayment of both principal and interests on the debts will be re-invested back into the local economy, thus, creating a chain-investment effect.

It is also imperative that the government, apart from maintaining a stable political terrain, should also ensure the presence of effective institutions to encourage more efficient utilisation of free financial resources as these are some of the criteria considered in the disbursement of foreign aid by donor governments. The Fiscal Responsibility Act of 2007 which restricts government spending from rising above 3 percent of the country's GDP, should be strictly adhered to for proper tracking of the growth in external debt.

Nevertheless, the constrain of this study is its inability to access sub-national data for a robust analysis of the impact of external borrowing servicing and sustainability on sub-national economic growth. Consequently, future studies can explore this limitation for a more comprehensive analysis of the subject matter.

Statements and Declarations

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Disclosure of potential conflict of interest

The authors have no competing interests to declare relevant to this article's content.

Research involving human participants and or animals

This study article does not contain any study with human participants or animals performed by the author.

Data Availability Statement

The data supporting the study's findings are available from the corresponding author upon reasonable request.

Consent to participate

Not applicable.

Consent to publish

Not applicable.

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