

POLAC INTERNATIONAL JOURNAL OF ECONOMICS AND MANAGEMENT SCIENCE (PIJEMS)
DEPARTMENT OF ECONOMICS AND MANAGEMENT SCIENCE
NIGERIA POLICE ACADEMY, WUDIL-KANO



AN EMPIRICAL REASSESSMENT OF EXTERNAL DEBT DETERMINANTS IN NIGERIA: ARDL MODELLING APPROACH

Mustapha Muhammad Abdullahi (PhD)

Department of Economics, Umaru Musa Yar'adua
University Katsina, Nigeria

Hussaini Aliyu Jibril

Department of Economics, Umaru Musa Yar'adua
University Katsina, Nigeria

Abstract

The study employs Autoregressive Distributed Lag (ARDL) estimation technique to examine the external debt's determinants in Nigeria. Particularly, it investigates the impact of debt servicing, economic growth, gross domestic savings, and military expenditure on external debt using time series data covering 1981 to 2021. The result reveals the existence of cointegration relationship between external debt and its determinants in the country. Findings in the long run show a positive and statistically significant impact of debt servicing on external debt accumulation in Nigeria. On the contrary, in the short run, an increase in debt servicing obligations correlates with a reduction in the country's external debt levels. Similarly, long-term findings indicate that GDP, gross domestic savings, and military expenditure exert a negative impact on external debt in Nigeria. This suggests that as Nigeria's GDP, gross domestic savings, and military expenditure grow, they consistently contribute to decreasing both long-term and short-term external debt levels. Based on the study's findings, the study recommends the need for prudent management of external debt servicing obligations due to their significant long-run impact. Policy makers should prioritize economic policies that promote sustainable GDP growth to reduce the reliance on external borrowing. Encouraging domestic savings and investment is crucial to decrease dependency on external financing. Additionally, policymakers should carefully evaluate the implications of increases in military expenditure on external debt levels, ensuring that such expenses align with national security needs and are financed strategically.

Keywords: External Debt, Economic Growth, Debt Servicing, Gross Domestic Saving, Military Expenditure.

1. Introduction

External debt is a significant economic phenomenon that has been one of the major concerns for developing countries, including Nigeria. It is the total amount of money that a country owes to foreign creditors, such as governments, international financial institutions, and commercial banks (Dawood et al., 2021). External debt serves a dual role in the realm of economic development. On one hand, it can be a valuable tool that countries utilize to finance essential projects, infrastructure development, and investments that stimulate economic growth and prosperity. In this

context, external debt serves as a means to access funds that may not be readily available domestically, enabling nations to undertake ambitious development initiatives that would otherwise be unattainable (Dunne, et al., 2019). However, the management of external debt is crucial because, on the other hand, it can quickly transform from an enabler of development into a significant economic burden if not handled effectively (Mulugeta, 2020). This shift occurs when the accumulation of debt surpasses a sustainable level or when debt servicing obligations become too onerous for

a nation's financial resources to bear comfortably (Emera & Ogege, 2019).

In Nigeria, the external debt experienced consistent growth, reaching a substantial figure of US\$ 41.11 billion by 2004, at which point the country faced challenges in meeting its debt obligations. To address this issue, the Paris Club, consisting of 15 creditor nations, initiated a debt relief program in 2005 for heavily indebted countries, including Nigeria. Nigeria's debt to the Paris Club amounted to US\$28 billion, which constituted a significant portion of its overall debt burden (85.8%) at that time (DMO, 2005). As a result of this initiative and after making an upfront payment of US\$6 billion in debt arrears, a substantial portion of Nigeria's debt, totaling US\$16.6 billion, was written off. Additionally, the remaining debt of US\$8.2 billion qualified for a buyback arrangement, which resulted in significant savings of US\$2 billion. This strategic approach effectively reduced Nigeria's external debt burden to US\$3.7 billion, equivalent to 2.1% of its GDP, by the year 2006 (DMO, 2020).

However, recent data indicates that Nigeria's external debt has experienced further growth, currently standing at US\$76.21 billion as of 2022, according to the World Bank. These figures reflect a continued upward trend, raising concerns about the sustainability of debt service obligations and introducing a high degree of uncertainty in managing the country's debt.

External debt accumulation in Nigeria is determined by several key factors. Firstly, economic growth plays a significant role. When the economy experiences rapid expansion, there is often a need to borrow funds to finance essential investment projects and sustain growth (Adamu & Rasiah, 2016). Secondly, Nigeria's heavy reliance on oil exports makes it vulnerable to oil price shocks. A decline in oil prices can result in reduced government revenue, prompting an increased reliance on external borrowing to cover budgetary shortfalls (Adamu, 2019). Furthermore, fiscal deficits are another factor contributing to external debt. When government spending surpasses tax revenue, the deficit is typically financed through borrowing, leading to an increase in

external debt (Ademola, 2023). In addition to the factors mentioned, it's important to note that there are several other determinants that can influence the accumulation of external debt in Nigeria. These include domestic savings, military expenditure, government policies, international financial conditions, and global economic trends. Each of these factors can contribute significantly to the country's external debt dynamics and borrowing decisions.

Thus, the objective of this study is to empirically examine the determinants of external debt in Nigeria. After this introduction, the rest of the paper is structured as follows: the second section is on the review of related literature. The third section presents the methodology of the paper. The fourth part presents and discusses the empirical results. The last section summarizes the main findings, conclusion and provides policy recommendations.

2. Literature Review

Several studies have examined the determinants of total government debt in general and external debt in particular using various econometrics techniques. For instance, Dunne et al. (2019) examine the determinants of external debt in Sub-Saharan Africa (SSA) over the period 1960–2016, using dynamic panel methods. The empirical results show a positive impact of military spending on external debt, but with some evidence of heterogeneity across the countries. Furthermore, findings indicate that the positive effect of military expenditure on debt becomes more noticeable in countries that have been affected by conflicts and crises. Similarly, Dawood et al. (2021) used generalized method of moments (GMM) estimation technique to examine the determinants of external debt in 32 Asian developing and transitioning economies for the period 1995–2019. The results show that in both the short- and long-run, economic growth and investment reduce external debt in Asia, whereas exchange rate, trade, and government expenditure increase external debt.

In a country specific study, Gokmenoglu and Rafik (2018) investigate the determinants of Malaysia's

external debt for the period of 1970 to 2013 using Johansen cointegration test, vector error correction model (VECM), and Granger causality test. The findings show that there is a long-run relationship between the variables and the GDP, recurrent and capital expenditure Granger causes external debt. These findings indicate that GDP growth is a solution for the external debt accumulation. Mulugeta (2020) also investigate the major macroeconomic determinants of external debt stock growth in Ethiopia over the period 1981-2018, the study employed the ARDL bound testing approach. The long run model estimation result revealed that per capita GDP growth has a positive effect on the country's external debt stock. The result also revealed that the budget deficit and political instability put a significant upward pressure on the external debt stock growth of the country both in the short run and long run. Similarly, Baniata et al. (2023) examines the macroeconomic determinants of Jordan's external debt. Specifically, the authors examine the impact of foreign direct investment inflows, gross domestic product (GDP), inflation, government spending, and real exchange rate, on the external debt of Jordan from 1980 to 2022. The study utilizes the autoregressive distributed lag (ARDL) bound cointegration econometric model to establish long-run relationships between variables. The results demonstrate an inverse link between foreign direct investment and external debt. Similar patterns are seen with GDP and external debt; government spending shows a direct relationship external debt. Real exchange rate and inflation also impact external debt in Jordan.

In the specific context of Nigeria, Adamu and Rasiah (2016) investigates the determinants of external debt in Nigeria from 1970 to 2013 using Autoregressive Distributed Lag (ARDL) approach. The empirical findings reveal the substantial impact of oil prices and debt service on Nigeria's external debt levels. Additionally, the study provides evidence that both exchange rates and fiscal deficits contribute to the accumulation of external debt. Similarly, using ARDL approach, Sa'ad, et al.(2017) also examine the determinants of external debt burden in Nigeria from

1973 – 2013. Findings from the study reveals that consumer price index and interest rate are negatively correlated with external debt, whereas, gross domestic product (GDP), and money supply (M2) reveals a positive relationship with external debt. In the same vein, Adamu (2019) revisited the drivers of increasing external debt in Nigeria over the period 1970 to 2017 using Johansen cointegration technique. The results confirm that the variables have long run relationship and both long run and short run estimates indicate that oil price and fiscal deficits play a significant role in increasing external debt in Nigeria. The study also found evidence that the dummy variables for exchange rate and debt relief also accelerate the growth of external debt.

Moreover, Okwoche and Nikolaidou (2022) examine the role of conflict, arms imports, and military expenditure as determinants of external, domestic, and total public debt in Nigeria. The authors used the time series data spanning from 1970-2020 and employed ARDL estimation technique. The findings suggest that whereas conflict, arms import, and military spending have statistically positive effects on external debt, they do not have a significant effect on domestic debt. Conflict and arms import have positive effects on gross government debt which is unsurprising given that gross debt includes foreign currency denominated debt. In a more recent study, Ademola (2023) explore the determinants of external debt and analyze how external debt affects Nigeria's economic growth using the data from 1990 to 2020 and employing Johansen cointegration technique. Findings revealed that government expenditure, inflation and exchange rates are salient factors that determine external debts in Nigeria. Similarly, the findings also show that external debt servicing; exchange rate and external debt have significant but adverse effect on economic growth, confirming the debt overhang effect.

An observed gap in these reviewed literatures is that, although many studies examined the determinants of external debt in Nigeria using different econometrics techniques, however, these studies ignored the role of gross domestic savings and military expenditure among

the determinants of external debt accumulation in Nigeria. Hence, this study addresses this research gap using ARDL estimation technique. It specifically investigates the role of debt servicing, economic growth (GDP), gross domestic savings, and military expenditure as factors affecting external debt accumulation in the country.

3. Methodology

3.1 Model Specification and Data Source

Following Ofurum and Fubara (2022) the functional form of the model is specified in equation (1) below:

$$EDEBT_t = f(DEBTS_t, GDP_t, GDS_t, MEXP_t) \quad (1)$$

In equation (1), EDEBT is the total external debt stocks (current US\$); DEBTS is the total debt service on external debt (current US\$); GDP is the proxy of economic growth (constant 2015 US\$); GDS is Gross domestic savings (% of GDP); and MEXP is the military expenditure (% of GDP). The data covers the period of 1981 to 2021 were sourced from the World Development Indicators database of the World Bank (2023).

Taking natural logarithm of equation (1) yields the baseline econometric model as presented in equation $\ln EDEBT_t = \alpha_0 + \alpha_1 DEBTS_t + \alpha_2 \ln GDP_t + \alpha_3 \ln GDS_t + \alpha_4 \ln MEXP_t + \varepsilon_t \quad (2)$.

3.2 Model Estimation Techniques

The methodological approaches employed in this paper are in three steps. The first step involves conducting unit root tests to establish the stationarity property of the data. In this regard, the Augmented Dickey-Fuller (ADF), and the Phillips-Perron (PP) unit root tests were employed. The second step is testing the existence of cointegration (long run) relationship among the variables. In this regard, Autoregressive Distributed Lag (ARDL) bound test approach by Pesaran et al. (2001) was utilized. This method has been frequently applied in previous studies and preferred over other methods of cointegration tests because it does not impose restriction on the integration order of the

variables being I(0) or I(1) and has flexibility to change lag lengths (Pesaran et al., 2001). It also addresses the problems of endogeneity, omitted variables and autocorrelation as well as providing efficient and unbiased estimates and valid t-statistics even with small sample size (Abubakar & Kassim, 2016). Thus, the ARDL model of the study is specified in equation (3):

$$\begin{aligned} \ln EDEBT_{t-1} = & \alpha_0 + \alpha_1 \ln EDEBT_{t-1} + \alpha_2 DEBTS_t + \\ & \alpha_3 \ln GDP_{t-1} + \alpha_4 \ln GDS_{t-1} + \alpha_5 \ln MEXP_{t-1} \\ & + \sum_{i=0}^p \beta_1 \Delta \ln EDEBT_{t-1} + \sum_{i=0}^q \beta_2 \Delta \ln DEBTS_{t-1} + \\ & \sum_{i=0}^r \beta_3 \Delta \ln GDP_{t-1} + \sum_{i=0}^s \beta_4 \Delta \ln GDS_{t-1} + \\ & \sum_{i=0}^t \beta_5 \Delta \ln MEXP_{t-1} + \sum_{i=0}^t \beta_6 \Delta \ln dum_{t-1} + \varepsilon_t \quad (3) \end{aligned}$$

The third step is the estimation of the short-run coefficients of the model. In order to obtain the short-run coefficients, an error correction model (ECM) is estimated and the ARDL specification of the ECM is presented in Equation (4):

$$\begin{aligned} \Delta \ln EDEBT_t = & \alpha_0 + \sum_{i=0}^p \beta_1 \Delta \ln EDEBT_{t-1} + \\ & \sum_{i=0}^q \beta_2 \Delta \ln DEBTS_{t-1} + \sum_{i=0}^r \beta_3 \Delta \ln GDP_{t-1} + \\ & \sum_{i=0}^s \beta_4 \Delta \ln GDS_{t-1} + \sum_{i=0}^t \beta_5 \Delta \ln MEXP_{t-1} + \pi_1 ECT_t + \varepsilon_t \quad (4) \end{aligned}$$

In equation (4), the ECT represents the mechanism through which short-term deviations from equilibrium in the dependent variable are corrected over time. It measures the speed at which the dependent variable adjusts to its long-term equilibrium relationship with the explanatory variables.

4. Results and Discussion

This section presents the empirical findings of this study. It encompasses unit root tests to assess data stationarity, cointegration tests to explore long-term relationships, long-run and short-run coefficient estimates to understand variable dynamics, residual diagnostic tests for model reliability, and model stability tests.

4.1 Unit Root Tests Results

Table 1 displays the results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests.

The findings indicate that lnDEBTS and lnGDP exhibit stationarity at their initial levels [I (0)], whereas lnDEBT, lnGDS, and lnMEXMP possess unit roots at their base levels, signifying non-stationarity.

Nevertheless, following the application of first-order differencing, these variables attain stationarity [I (1)]. Consequently, the null hypothesis suggesting the non-stationarity of the variables was rejected.

Table 1: Results of ADF and PP Unit Root Tests

Variables	Level			First Difference		Status
	ADF	PP		ADF	PP	
lnEDEBT	-1.450	-1.679		-4.599***	-4.534***	I(1)
lnDEBTS	-3.283*	-3.251*		-8.426***	-15.942***	I(0)
lnGDP	-1.887	-3.046***		-3.888**	-3.7488***	I(0)
lnGDS	-2.946	-2.946		-7.942***	-7.928***	I(1)
lnMEXP	-2.171	-1.962		-7.246***	-7.246***	I(1)

Note: Schwarz Information Criterion (SIC) was used to select optimal lag length in the ADF test; ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively.

Based on the results of the unit root tests conducted, it is plausible to conclude that the variables are not integrated of the same order. This justified the selection of ARDL bounds test for cointegration.

4.2 ARDL Cointegration Tests Results

The results of the ARDL bounds test for cointegration reported in table 2 indicate that the computed F-statistics (5.787) is higher than the upper bound at 1% significant level. This implies that there is a cointegration (long-run) relationship among the variables in the model.

Table 2: Results of ARDL Bounds Test for Cointegration

F-Statistic	K	Significance	Lower(bound)	Upper(bound)
		10%	3.03	4.06
5.787***	4	5%	3.47	4.57
		1%	4.4	5.72

Note: *** indicate statistically significant at 1% level and K denotes the number of independent variables in the model. Unrestricted Constant and Unrestricted Trend are included in the test and the optimum lags selected by Schwarz information criterion are ((3, 1, 4, 2, 1).

Having confirming the cointegration (long-run) relationship among the variables in the model, the next step is to estimate the coefficients of the short-run and long-run relationship among the variables.

4.3 Long-run and Short-run Estimated Results

Table 3 reports the results of long-run and short-run estimated coefficients of the model. In the long run, the results indicate a positive and statistically significant relationship between debt servicing (lnDEBTS) and external debt (lnEDEBT) accumulation in Nigeria. More precisely, the long-run coefficient of 0.575 signifies that a 1% increase in external debt servicing is associated with a 0.575% increase in external debt

accumulation in Nigeria over the long term. This implies that when all other factors are held constant, a higher level of debt servicing contributes to a corresponding rise in the external debt of the country. This finding suggests that there is tendency for the accumulation of external debt over time as external debt servicing obligations increase. This result aligns with the findings by previous researchers, namely Emerah and Ogege (2019) and Ofurum and Fubara (2022). These earlier studies also discovered a similar trend, where an increase in debt servicing was associated with a rise in external debt accumulation in the context of Nigeria

Table 3: Results of Long-run and Short-run Estimates

Panel A: Long-run Coefficients - Dependent variable is lnEDEBT				
Regressors	Coefficient	Std. Error	t-Statistic	Prob.
LNDEBTS	0.575***	0.115	5.004	0.000
LNGDP	-1.780***	0.506	-3.518	0.002
LNGDS	-1.141***	0.504	-2.265	0.035
LNMEXP	-0.792***	0.326	-2.428	0.025
Panel B: Short-run Coefficients - Dependent variable is Δ lnEDEBT				
Δ lnEDEBT ₋₁	-0.546***	0.218	-2.509	0.021
Δ lnEDEBT ₋₂	-0.585***	0.137	-4.273	0.000
Δ lnDEBTS	-0.147***	0.041	-3.585	0.002
Δ lnGDP	-1.060*	0.685	-1.547	0.138
Δ lnGDP ₋₁	-0.072	0.651	-0.110	0.913
Δ lnGDP ₋₂	-1.375**	0.640	-2.146	0.044
Δ lnGDP ₋₃	-1.406***	0.611	-2.302	0.032
Δ lnGDS	-0.353***	0.113	-3.118	0.005
Δ lnGDS ₋₁	0.397***	0.121	3.289	0.004
Δ lnMEXP	0.186***	0.091	2.034	0.055
C	-28.114	4.772	-5.891	0.000
ECT _{t-1}	-0.547***	0.093	-5.892	0.000
R ²	0.730			
F-stat	5.409			0.000
D.W-stat	2.288			

Note: Schwarz Information Criterion (SIC) was used to select optimal lag length in the ADF test; ***, ** and * indicate statistical significance at 1%, 5% and 10% respectively.

Conversely, in the short run, the relationship between debt servicing and external debt in Nigeria is negative and statistically significant. The short-run first lag coefficient of -0.147 indicated that a 1% increase in external debt servicing leads to a 0.147% decrease in external debt in Nigeria in the short term. This suggests that, in the short run, an increase in debt servicing obligations is associated with a reduction in the country's external debt levels. This could be due to various short-term factors, such as changes in economic conditions or financial policies, affecting the immediate dynamics of external debt.

Nevertheless, the long-run findings reveal an inverse relationship between GDP and external debt, which also holds true in the short run. In particular, a 1% rise in GDP (lnGDP) leads to a substantial 1.780% reduction in long-term external debt (lnEDEBT) in the Nigerian context. Similarly, when we examine the coefficient associated with the second lag of lnGDP, it signifies that a 1% increase in GDP corresponds to a noteworthy

1.375% decline in short-term external debt (lnEDEBT) in Nigeria. In simpler terms, this means that as the Gross Domestic Product (GDP) of Nigeria grows, it has a consistent effect of decreasing both long-term and short-term external debt levels. This outcome suggests that economic growth, as represented by GDP, plays a significant role in reducing the burden of external debt for the country. It is expected that an increase in GDP would be accompanied by a multiplier effect by increasing domestic saving which will substitute external debt.

Furthermore, the long-term results demonstrate a consistent inverse relationship between Gross Domestic Savings (GDS) and external debt, and this relationship also holds true in the short term. Specifically, a 1% increase in Gross Domestic Savings (lnGDS) results in a substantial 1.141% reduction in long-term external debt (lnEDEBT) in the Nigerian context. Similarly, the short-term coefficient (-0.353) indicates that a 1% growth in GDS corresponds to a 0.353% decline in

short-term external debt (lnEDEBT) in Nigeria. To put it simply, as Nigeria's Gross Domestic Savings (GDS) increases, it consistently contributes to lowering both long-term and short-term external debt levels. This finding underscores the significant role played by Gross Domestic Savings in alleviating the burden of external debt for the country, regardless of the time frame under consideration.

In addition, the long-run result presented in Panel A highlights an inverse relationship between military expenditure (lnMEXP) and external debt (lnEDEBT) in Nigeria. This finding indicates that, over the long term, changes in military expenditure have a notable impact on the country's external debt levels. The result suggests that as military expenditure increases by 1% (lnMEXP), there is a corresponding decrease of 0.792% in long-term external debt (lnEDEBT) in Nigeria. In simpler terms, when the government allocates more funds to military-related expenses, it appears to have a dampening effect on the accumulation of external debt over the long run. The inverse relationship between military expenditure and external debt can be explained by resource allocation decisions. When a government devotes a larger portion of its budget to military expenses, it leaves fewer resources available for other areas, including borrowing for non-military purposes. This prioritization of military spending can lead to a reduction in external borrowing, thereby lowering external debt levels in the long-run.

However, the short-run result presented in Panel B reveals a contrasting relationship between military expenditure (lnMEXP) and external debt (lnEDEBT) in Nigeria compared to the long-run result. In this case, the finding suggests that when military expenditure increases by 1% (lnMEXP), there is a corresponding increase of 0.186% in short-term external debt (lnEDEBT) in Nigeria. In simpler terms, in the short term, higher military spending appears to be associated with an increase in external debt. Short-term increases in military expenditure may necessitate external borrowing to fund these immediate needs. Military spending often involves capital-intensive projects and equipment purchases, which can strain the

government's budget. In such cases, external borrowing might be used as a financing mechanism, resulting in a short-term increase in external debt.

The coefficient of the error correction term (ECT) is a crucial component in cointegration analysis. In this context, the ECT coefficient has a negative sign, indicating that it plays a pivotal role in the adjustment mechanism of the variables within the model. The negative sign is particularly noteworthy as it suggests that there is indeed a long-run cointegration relationship among the variables included in the model. The magnitude of the ECT coefficient, specifically at -0.547, provides valuable insights into the speed of convergence of the variables toward their long-run equilibrium. It implies that approximately 54.7% of any disequilibrium (deviation from the long-run equilibrium) is corrected within a year. This rapid adjustment mechanism signifies that the model is effective in responding to any deviations from the long-run equilibrium, helping to maintain stability over time.

The R-squared (R^2) value of 0.730 indicates the goodness of fit of the model. It represents the proportion of the variance in the dependent variable (external debt) that is explained by the independent variables included in the model. In this case, an R^2 of 0.730 suggests that approximately 73% of the variability in the external debt is accounted for by the model, indicating a strong explanatory power.

The F-statistic tests the overall significance of the model, and with an F-statistic of 5.409, it is highly significant. The associated p-value (0.000) reinforces this significance, indicating that the model as a whole is a strong predictor of the dependent variable. The Durbin-Watson (D.W.) statistic of 2.288 is used to detect the presence of autocorrelation in the residuals. In this case, the D.W. statistic suggests that there is relatively little autocorrelation in the model's residuals, which is desirable for the reliability of the regression analysis.

4.4 Residual Diagnostic and Model Stability Tests Results

The results of residual diagnostic tests reported in table 4 reveal that the model passed all the tests. The findings demonstrate the robustness and reliability of the ARDL-ECM model used in the study. The model passes all the diagnostic tests, indicating that it satisfies

important assumptions, including normality of residuals, absence of serial correlation, homoskedasticity (constant variance), and correct functional form.

Table 4: ARDL-ECM Model Diagnostic Tests

Test Statistic	F-statistic
Normality: Jarque-Bera	0.765[0.682]
Serial Correlation: Breush-Godfrey, F(2,18)	0.571[0.575]
Heteroskedasticity: Breush-Pagan-Godfrey, F(16,20)	1.160[0.372]
Functional Form: Ramsey Reset	0.023[0.881]

Source: Authors computation (2023)

5. Conclusion and Policy Implications

This paper employs the Autoregressive Distributed Lag (ARDL) estimation technique to investigate the determinants of external debt in Nigeria. Specifically, it examines the impact of debt servicing, economic growth (GDP), gross domestic savings, and military expenditure on external debt using time series data spanning from 1981 to 2021. After confirming the mixed order of integration for these variables, the study identifies a cointegration relationship between external debt and its determinants. In the long run, the study reveals that debt servicing has a positive and statistically significant impact on the accumulation of external debt in Nigeria. However, in the short run, an increase in debt servicing obligations is associated with a reduction in the country's external debt levels.

Similarly, the long-term findings indicate that economic growth (GDP), gross domestic savings, and military expenditure exert a negative influence on external debt accumulation in Nigeria, a relationship that holds true in the short run as well. This suggests that as Nigeria's Gross Domestic Product (GDP), gross domestic savings, and military expenditure grow, they consistently contribute to decreasing both long-term and short-term external debt levels. In summary, the results and subsequent discussion lead to the conclusion that these variables play a significant role in alleviating the burden of external debt for Nigeria, regardless of the time frame under consideration.

Based on the findings of this study, the following recommendations can be made to guide policy and decision-making in Nigeria regarding external debt management. First, given the positive and significant long-run effect of debt servicing on external debt accumulation, it is crucial for policymakers to carefully manage external debt servicing obligations. This may involve exploring strategies to reduce the cost of servicing or optimizing debt repayment schedules to minimize the impact on the country's overall external debt burden. Second, the negative impact of economic growth on external debt accumulation, both in the long run and short run, underscores the importance of fostering sustained economic growth. Policymakers should prioritize economic policies that promote GDP growth, which can help mitigate the need for external borrowing. Third, the negative effect of gross domestic savings on external debt levels highlights the significance of encouraging domestic savings and investment. Implementing policies that incentivize savings and channel them into productive sectors of the economy can reduce reliance on external financing. Finally, the findings suggest that military expenditure has a complex relationship with external debt. Policymakers should carefully consider the implications of short-term increases in military spending on external debt levels. It may be prudent to ensure that such expenditures are justified by national security needs and that financing options are evaluated strategically.

References

- Abubakar, A. & Kassim S. (2016). Impact of banking sector development on economic growth: Another look at the evidence from Nigeria. *Journal of Business Management and Social Sciences Research*, 2(4), 47-57.
- Adamu, I. M. (2019). Re-visiting the Drivers for Increasing External Debt. *Journal of Contemporary Issues and Thought*, 9, 40-53.
- Adamu, I. M., & Rasiyah, R. (2016). On the determinants of external debt in Nigeria. Available at SSRN 2865568.
- Ademola, A. O. (2023). External Debt and Nigeria's Economic Growth: Determinants and Implications.
- Baniata, A., Alnawasreh, A., & Nsairat, F. (2023). Determinants OF Jordan's External Debt in the Period 1980–2022 Using ARDL.
- Dawood, M., Baidoo, S. T., & Shah, S. M. R. (2021). An empirical investigation into the determinants of external debt in Asian developing and transitioning economies. *Development Studies Research*, 8(1), 253-263.
- Dickey, D. A. & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49, 1057– 1072
- Dunne, J. P., Nikolaidou, E., & Chiminya, A. (2019). Military spending, conflict and external debt in Sub-Saharan Africa. *Defence and Peace Economics*, 30(4), 462-473.
- Emerah, S. O. O. A. A., & Ogege, S. (2019). External debt, debt servicing and poverty reduction in Nigeria: An empirical analysis. *Journal of Economics and Sustainable Development*, 4(19), 174-179.
- Gokmenoglu, K., & Rafik, R. A. M. (2018). Determinants of external debt: The case of Malaysia. In *Emerging Trends in Banking and Finance: 3rd International Conference on Banking and Finance Perspectives* (pp. 16-33). Springer International Publishing.
- Mulugeta, E. T. (2020). Macroeconomic Determinants of External Debt Accumulation in Ethiopia: An ARDL Bound Testing Approach. *Development*, 4(2), 1-28.
- Ofurum, C. O., & Fubara, S. J. (2022). Public Debt and Economic Development: An Empirical Evidence from Nigeria. *Advances in Social Sciences Research Journal*, 9(7), 462-474.
- Okwoche, P., & Nikolaidou, E. (2022). Determinants of external, domestic, and total public debt in Nigeria: the role of conflict, arms imports, and military expenditure. *Defence and Peace Economics*, 1-16.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16, 289-326.
- Sa'ad, S. A., Umar, A. T., Waziri, S. I., & Maniam, G. S. (2017). External debt burden and its determinants in Nigeria: An ARDL cointegration technique. *Journal of Economics and Sustainable Development*, 8(12), 31-37.