# EXTERNAL DEBT BURDEN AND ECONOMIC GROWTH IN NIGERIA

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## ABSTRACT
This study investigates the impact of external debt burden on economic growth in Nigeria over the period 1996Q1 to 2022Q4, utilizing the Autoregressive Distributed Lag (ARDL) modelling approach. The analysis incorporates key variables such as gross domestic product (GDP), external debt (EXD), gross fixed capital formation (GFCF), human capital index (HCI), trade openness (TOP), exchange rate (EXR), and institutional quality (INQ). While external debt does not exhibit a significant short-term influence on GDP growth, the results reveal a positive and significant impact of factors like GFCF, HCI, TOP, and INQ on economic expansion in the short run. Conversely, the long-run analysis indicates that external debt exerts an insignificant effect on GDP growth, while GFCF and TOP emerge as significant positive drivers, and EXR displays a negative relationship. These findings challenge the applicability of the Debt Overhang Theory in the Nigerian context and underscore the importance of prudent debt management strategies, investment promotion, trade diversification, exchange rate stability, and institutional quality enhancement for fostering sustainable economic growth in Nigeria. Based on these findings, the study recommends that policymakers prioritize strategic debt management, investment in productive sectors, promotion of trade openness, maintenance of exchange rate stability, and strengthening of institutional frameworks to optimize the utilization of external debt and spur long-term economic growth.

Keywords: External Debt, Economic Growth, ARDL, Debt Overhang, Institutional Quality.
JEL Classification: F34, O11, O16, O47

## 1. INTRODUCTION
Nigeria, like many developing countries, has grappled with the burden of external debt over the years. External debt refers to the portion of a country's debt that is owed to non-resident creditors, including foreign governments, international financial institutions, and other entities outside the country's borders (Aladejare, 2023;). While external borrowing can provide much-needed resources for economic development, excessive debt levels can impede growth and undermine economic stability (Harsono et al., 2024; Dawood et al., 2023; Ghanem, 2023). According to the data from the Central Bank of Nigeria (CBN), Nigeria's external debt stock has been on an upward trajectory, rising from ₦298.61 billion in 1990 to ₦18,702.25 billion in 2022. Although investments in funding are crucial for economic growth (Maximillian et al., 2023; Dan'asabeet al., 2023; Ikubor et al., 2022), their magnitude profoundly shapes the economy. This substantial increase in external debt has sparked concerns about its potential impact on the country's economic growth (Oluwo et al., 2023).

Several empirical studies have examined the relationship between external debt and economic growth in Nigeria, with varying findings. Chukwu (2023) found no significant impact of

external debt on economic growth, while Manyo et al. (2023) and Odey et al. (2023) reported a significant negative association between external debt and growth. Uji (2023) and Adefabi (2023) also highlighted the adverse effects of external debt stock and servicing on Nigeria's economic growth, emphasizing the importance of considering exchange rate fluctuations and structural breaks in the analysis. On the other hand, Babatunde et al. (2023) and Ugwuanyi and Odinakachukwu (2023) found that external debt negatively affected economic growth in the short term but positively influenced it in the long term, suggesting a potential role for external borrowing in bridging resource gaps and stimulating growth. Ariyibi et al. (2023) and Eze et al. (2023) provided further support for the dual gap theory, indicating that external debt can potentially enhance economic growth if utilized effectively. The conflicting findings from these empirical studies underscore the complexity of the relationship between external debt and economic growth, and the need for a comprehensive analysis that accounts for various factors and potential non-linearities.

Additionally, despite the potential benefits of external borrowing, excessive debt levels can create a significant burden, diverting resources away from productive investments and hindering economic growth. Nigeria's rising external debt stock and the potential consequences for its economic performance have become a pressing concern, warranting a thorough examination of the impact of external debt on the country's economic growth. The primary objective of this study is to determine the impact of external debt burden on economic growth in Nigeria, considering various factors and potential non-linearities in the relationship. By analyzing the data and employing appropriate empirical methodologies, the study's core objective is to provide insights into the impact of external debt on Nigeria's economic development and inform policy decisions regarding sustainable debt management strategies. The study is organized into sections- it begins with an introductory section, followed by a comprehensive literature review encompassing both theoretical and empirical literature. Subsequently, the methodology is presented, followed by the presentation of results and discussion of findings. Finally, the study concludes with conclusion and policy recommendations.

## 2. LITERATURE REVIEW

### 2.1. Theoretical Literature

**2.1.1. Debt Overhang Theory:** The Debt Overhang Theory, proposed by Paul Krugman and Jeffrey Sachs in the late 1980s amid the debt crisis in developing nations, posits that excessive external debt discourages investment and economic growth as investors anticipate future returns being taxed to repay the debt (Krugman, 1988; Sachs, 1989). A strength is its explanation for sluggish growth in heavily indebted countries despite structural adjustment programs, but a weakness is overlooking factors like political stability and market conditions that influence investment decisions (Pattillo et al., 2002). The theory is highly relevant to Nigeria's significant external debt burden, because the theory will elucidate how debt dampened investment and growth.

**2.1.2. Dual-Gap Theory:** The Dual-Gap Theory, developed by Hollis B. Chenery and Alan M. Strout in the 1960s, identifies savings-investment and foreign exchange gaps hindering growth in developing countries (Chenery & Strout, 1966). It suggests external financing like debt can bridge these gaps and promote growth, but excessive debt exacerbates the foreign exchange gap (Bacha, 1990). A strength is recognizing developing nations' constraints, but a weakness is oversimplifying dynamics and overlooking factors like institutions and human capital. Relevant to Nigeria, the analysis provides a theoretical literature to assess how debt

could bridge gaps but also risks unsustainable debt levels, requiring examination of Nigeria's debt, investment, and foreign exchange interplay.

**2.1.3. Solow Growth Theory:** The Solow Growth Theory, developed by Robert Solow in the 1950s, examines how capital accumulation through investment and technological progress drive economic growth, while considering diminishing returns to labour (Solow, 1956; Romer, 1994). A strength is its analytical insights, but weaknesses include treating technological progress as exogenous and overlooking human capital and institutions. Relevant to Nigeria, the model provides a framework to analyze how external debt financing could contribute to capital accumulation and growth.

**2.2 Empirical Literature**

Chukwu (2023) investigated the influence of external debt on economic growth in Nigeria from 1981 to 2020. Employing multiple regression analysis, the study examined real gross domestic product as the dependent variable, with external debt, exchange rate, inflation rate, and domestic debt as independent variables. The findings suggest that external debt does not significantly impact economic growth in Nigeria, rendering it an insignificant factor in determining growth. Moreover, the results indicate a negative relationship between external debt and economic growth. Granger causality testing also reveals no causal relationship between external debt and economic growth in Nigeria.

Manyo et al. (2023) assessed the impact of government debt on Nigerian economic growth from 1990 to 2021. The study focused on analyzing the relationships between external debt, domestic debt, exchange rate, and economic growth. Utilizing ordinary least square multiple regression and correlation matrix analyses, the findings indicated a significant negative association between external debt and economic growth. Conversely, both exchange rate and domestic debt were found to have positive and significant effects on Nigeria's economic growth.

Odey et al. (2023) examined the impact of external debt burden on Nigeria's economic growth from 1981 to 2022. The study utilized gross domestic product as the dependent variable, and external debt, debt service payment, exchange rate, and inflation rate as explanatory variables. Employing bound testing and Autoregressive Distributed Lag model estimation techniques, the analysis revealed that both external debt and debt service payment exerted significant negative effects on Nigeria's economic growth.

Uji (2023) analyzed the influence of external debt stock and exchange rate fluctuations on Nigeria's economic growth from 1981 to 2021. Employing structural VAR, the study examined real gross domestic product as a measure of economic growth, external debt stock, external debt servicing, and exchange rate volatility. Results indicated that external debt stock and servicing had a noteworthy adverse effect on Nigeria's economic growth, while exchange rate fluctuations exhibited a positive impact. Furthermore, the analysis of transmission effects highlighted that external debt stock negatively affected economic growth through exchange rate volatilities.

Adefabi (2023) assessed the impact of external debt on economic growth in Nigeria, considering structural breaks in the relationship. Annual data from 1981 to 2020 were gathered from global databases and analyzed using the dynamic ordinary least squares (DOLS) estimator on the variables of GDP, external debt, gross fixed capital formation, human capital index, trade openness, and real effective exchange rate. The findings revealed that external debt exerts a growth-inhibiting influence on the Nigerian economy, emphasizing the significance of structural breaks in understanding this relationship.

Babatunde et al. (2023) examined the relationship between public debt, poverty, and economic growth in Nigeria from 1981 to 2019. Utilizing the ARDL model and Granger causality test on an annual tie series dataset of Real Gross Domestic Product, external debt, domestic debt, government expenditure, national savings, inflation rate, interest rate, population growth rate, and per capita income, the study revealed that external debt negatively affected the Nigerian economy in the short term but positively impacted it in the long term. Moreover, there was evidence of one-way causality from external debt to economic growth. On the other hand, domestic debt had a negative effect on both short and long-term economic performance in Nigeria, with unidirectional causality established from domestic debt to economic growth.

Ugwuanyi and Odinakachukwu (2023) explored the influence of public debt on the Nigerian economy between 1987 and 2020. Employing multiple regression on an annual time series dataset comprising GDP, external debt, and domestic debt, the study uncovered that external debt had a detrimental effect on Nigeria's economic growth, whereas domestic debt positively influenced it.

Ariyibi et al. (2023) employed the ARDL model to analyze annual time series data spanning from 1983 to 2019, investigating the impact of foreign debts on Nigeria's infrastructural development. The study's variables include annual expenditure that is government spend on infrastructure (INFRA), amount received from Multilateral Financial Institutions (BMFI), amount received from Bilateral Financial Institutions (BBFI), trade openness (OPN), and Foreign Direct Investment (FDI). The ARDL long-run coefficient indicates that BMFI and BBFI have both negative and positive, yet insignificant and significant effects on INFRA in Nigeria, respectively. Additionally, the control variables of FDI and TOPEN demonstrate significant positive and negative effects on INFRA in Nigeria. These findings support the dual gap theory's assertion that external debt can potentially enhance economic growth.

Eze et al. (2023) examined the impact of public debt on Nigeria's economic growth from 2004 to 2021. Employing multiple regression with variables including GDP, public debt, interest rate, exchange rate, and inflation rate, the study revealed a negative association between public debt and economic growth. Conversely, the exchange rate showed a positive relationship with economic growth, while interest rate did not significantly affect economic growth in Nigeria. The findings suggest that public debts are essential for bridging internal resource gaps and stimulating the economy.

Udeaja and Audu (2023) explored the asymmetric relationship between external debt and foreign capital flows on economic growth in Nigeria using the non-linear autoregressive distributed lag (NARDL) methodology. Covering the period from 1990 to 2021, the study utilized quarterly data on real economic growth (RGDPGR), external debt (EXTD), crude oil price (COP), foreign direct investment (FDI), and foreign portfolio investment. The estimated long-run parameters for positive and negative shocks of external debt were found to be -1.08 and 3.09, respectively. The results indicated that a one percent increase in external debt leads to a 1.08 decrease in real GDP growth, while a one percent decrease in external debt results in a 3.08 increase in economic growth. This suggests that the impact of real GDP growth differs between positive and negative values of external debt, with a larger reaction to negative values.

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Ale et al. (2023) investigated the impact of external debt on economic growth spanning from 1980 to 2020, focusing on a panel dataset comprising five South Asian nations. The study employed variables including real GDP, external debt as a percentage of gross national income, capital formation as a percentage of GDP, FDI as a percentage of GDP, and population growth rate. To analyze the short-run dynamic relationship between external debt and economic growth, the Cross-Sectional Dependence Autoregressive Distributed Lag (CS-ARDL) technique was utilized. Results revealed a significant negative correlation between external debt and economic growth in South Asia, both in the long and short term.

Shah et al. (2023) investigated the collective impact of financial development (FD) and external debts (EXD) on economic growth (EG) in emerging countries, focusing on the debt overhang theory by Krugman and the Debt-Laffer curve. Utilizing annual data from 1980 to 2019 sourced from the "World Development Indicators" (WDI), the study included variables such as external debts (EXD), financial development (FD), trade openness, inflation, capital formation, debt servicing, population growth, and economic growth. The Autoregressive Distributed Lag (ARDL) model was employed to estimate the long-run relationships among the variables, while the pool mean group (PMG) model was used to determine the effect of EXD on EG. Results revealed a significant negative association between external debt (EXD) and GDP growth, while a positive and significant relationship was found between financial development (FD) and EXD in the long run. Similarly, debt servicing, trade openness, and inflation exhibited significant negative relationships with GDP growth, while population growth and gross capital formation showed significant positive correlations with GDP growth in the long run.

Kanbi et al. (2022) examined the relationship between external debt payments and economic growth in Nigeria spanning from 1981 to 2020, utilizing the Auto-Regressive Distributed Lags (ARDL) model for analysis. The study incorporated various variables including total external debt, debt servicing, debt service as a percentage of exports, external reserves relative to debt, budget deficit, population growth rate as a proxy for human capital, and gross fixed capital formation as a proxy for investment. The ARDL bound test confirmed co-integration. Although not statistically significant, the findings suggested a negative association between external debt payments and economic growth, indicating a potential resource depletion effect. The study also observed a positive but insignificant correlation between external debt stock and growth, as well as between external reserves-to-debt ratio and growth. Additionally, it noted a positive relationship between debt service and export ratio with growth.

Despite numerous studies examining the relationship between external debt and economic growth in Nigeria, none have addressed the crucial factor of institutional quality. Notably, Adefabi (2023) provided a comprehensive analysis but overlooked institutional quality. Institutional quality with regard to issues such as control of corruption and institutional vulnerabilities significantly affects how external funds are utilized within Nigeria. This gap highlights the need to understand how institutional quality influences debt utilization and economic growth. This study aims to fill this gap by integrating institutional quality into the analysis; by doing so, it seeks to provide insights into the impact of corruption vulnerabilities on the utilization of external funds and subsequent economic growth in Nigeria. This understanding is vital for policymakers in crafting effective strategies for sustainable economic growth.

## 3. METHODOLOGY

### 3.1 Theoretical Framework

**Debt Overhang Theory:** The Debt Overhang Theory provides a compelling theoretical framework for analyzing the impact of external debt burden on economic growth in Nigeria. This theory, propounded by Paul Krugman in 1988 and later expanded by Sachs in 1989, posits that a country's excessive debt burden can impede economic growth by discouraging domestic and foreign investment.The Debt Overhang Theory stands out as an appropriate choice for this study for several reasons. First, it directly addresses the relationship between debt and economic growth, aligning perfectly with the study's objective. Second, the theory's emphasis on investment as a crucial determinant of growth is particularly relevant in the Nigerian context, where investment has been a significant driver of economic development.In applying the Debt Overhang Theory to this study, a comprehensive analysis will be undertaken, dissecting the theory's components and their relevance to the Nigerian economy. The theory posits that when a country's external debt reaches unsustainable levels, it creates a disincentive for potential investors due to the expectation of higher future taxes or outright debt repudiation (Krugman, 1988; Sachs, 1989). This, in turn, dampens investment, hindering economic growth. To analyze this theory's applicability, the study will assess Nigeria's external debt burden and its potential impact on economic growth. This will involve examining key variables such as Gross Domestic Product, External Debt, Gross Fixed Capital Formation, Human Capital Index, Trade Openness, Exchange Rate, and Institutional Quality.Specifically, the study will examine the impact of External Debt on GDP, which serves as a proxy for economic growth. According to the Debt Overhang Theory, excessive external debt should impede economic growth by discouraging investment (Krugman, 1988; Sachs, 1989).To provide a comprehensive analysis, the study will also consider control variables such as Human Capital Index, Trade Openness, Exchange Rate, and Institutional Quality, which may influence the relationship between external debt and economic growth (Uji, 2023; Kanbi et al., 2022).By meticulously dissecting the Debt Overhang Theory, the study aims to provide valuable insights into the impact of Nigeria's external debt burden on economic growth, contributing to the broader understanding of debt sustainability and economic development in the country.

### 3.2. Nature and Sources of Data

The study utilized secondary data, specifically quarterly time series data covering the period 1996Q:1-2022:Q4. Gross Domestic Product, external debt, gross fixed capital formation, trade openness, and exchange rate where obtained from the 2023 Annual CBN Bulletin; while data on human capital index, and institutional quality where obtained from the 2023 World Bank Database. Additionally, because quarterly data for some variables (external debt, gross fixed capital formation, human capital index, and, institutional quality) were not accessible, the study employed numerical methods to create quarterly series, using standard techniques available in EVIEWS.

### 3.3. Estimation Technique

To carry out the study's main objective of examining the impact of external debt on economic growth in Nigeria, the Autoregressive Distributed Lag (ARDL) model was employed. Introduced by Pesaran et al. (2001), this model allows for the analysis of relationships among economic variables within a single-equation time-series framework. Distinguished by its autoregressive nature, the ARDL model incorporates lagged dependent variables and successive lag independent variables, providing advantages such as robust performance with small sample sizes, simultaneous assessment of short-run and long-run relations, unbiased estimates for long-run effects, valid t-tests even with endogenous regressors, and testing variables regardless of their difference order. The ARDL method involves four steps; conducting stationarity tests, checking for co-integration through bounds testing, estimating

long-run relationship coefficients using criteria like AIC, SBC, or LR, and estimating short-run dynamic coefficients. Finally, the model's stability is tested using CUSUM and CUSUMSQ tests. The ARDL model is written as;

$$Y_t = \alpha_0 + \varphi_t Y_{t-1} + \beta_t X_{t-1} + \varepsilon_t \quad 1$$

where, $Y_{t-1}$ and $X_{t-1}$ are time series variables, $\varepsilon_t$ is the vector of the stochastic error term. Generally, the model can also be defined as ARDL (p, q) the p and q are lag of the parameter which forms the Equation (3.2);

$$y_t = \alpha_0 + \sum_{i=0}^{p} \varphi_i y_{t-1} + \sum_{j=0}^{q} \beta_j x_{t-1} + \varepsilon_t \quad 2$$

### 3.4. Model Specification

This study adapted the model of Adefabi (2023). While Adefabi (2023) used the variables of GDP, external debt, gross fixed capital formation, human capital index, trade openness, and exchange rate; this study differed by incorporating institutional quality in addition to Adefabi (2023) modelling. As such the study models economic growth as a function of external debt, gross fixed capital formation, human capital index, trade openness, and institutional quality. The functional and econometric forms of the models are given in Equations below:

*GDP=f(EXD,GFCF,HCI,TOP,EXR,INQ)*

$$LnGDP_t = \alpha_0 + \alpha_1 LnEXD_t + \alpha_2 LnGFCF_t + \alpha_3 LnHCI_t + \alpha_4 LnTOP_t + \alpha_5 LnEXR_t + \alpha_6 LnINQ_t + \varepsilon_t \quad 3$$

***Apriori* Expectation:** *GFCF, HCI, TOP, INQ > 0, EXD, EXR < 0.*

where, $\alpha_0$ is the intercept; $\alpha_1 - \alpha_6$ are the coefficients of the variables; $\varepsilon_t$ represents the error term; all the variables are presented in their lo forms, *GDP* represents economic growth, *GFCF* stands for gross fixed capital formation, *HCI* represents the human capital index (proxied by the Index of Human Capital per Person for Nigeria), *TOP* represents trade openness (proxied by the values of Trade-to-GDP Ratio), *EXR* stands for exchange rate, while, *INQ* represents institutional quality (proxied by government effectiveness in percentile rank). The variable selection is well-justified and comprehensive, aiming to capture the impact of external debt burden on economic growth in Nigeria while accounting for other relevant factors. GDP serves as the appropriate measure of economic growth as the dependent variable. External debt (*EXD*) is the primary variable of interest. Gross fixed capital formation (*GFCF*) represents investment, a crucial driver of growth. The human capital index (*HCI*) captures the role of human capital in promoting growth. Trade openness (*TOP*), proxied by the Trade-to-GDP ratio, accounts for the potential impact of international trade. The exchange rate (*EXR*) is included due to its influence on trade and debt servicing. Institutional quality (*INQ*), proxied by government effectiveness, captures the effect of governance on economic performance and debt utilization.

### 3.5. Estimation Procedure.

The study commences with a pre-estimation test for stationarity using the Augmented Dickey-Fuller (ADF) test. Subsequently, the ARDL estimation procedures are conducted; following this, post-estimation tests are performed to validate the ARDL estimates. These tests include the Breusch-Godfrey LM test for assessing residual autocorrelation and CUSUM/CUSUMSQ plots for evaluating structural stability.

## 4. RESULTS AND DISCUSSION OF FINDINGS

### 4.1. Unit Root Test

Table 1: *ADF Unit Root Test Results*

| Variable | ADF Stat. | Order of Integration |
|---|---|---|
| *GDP* | -5.177915 (-3.456319) | 1(1) |
| *EXD* | -3.642793 (-3.452764) | 1(1) |
| *GFCF* | -5.467586 (-3.454471) | 1(0) |
| *HCI* | -4.890380 (-3.458326) | 1(1) |
| *TOP* | -6.367339 (-3.456319) | 1(0) |
| *REXR* | -3.990767 (-3.452764) | 1(1) |
| *INQ* | -3.854928 (-3.454471) | 1(0) |

Figures in parenthesis represents the critical values at the 5% level.
Source: *Authors' computation using E-views.*

The ADF results on Table 4.2 shows the statistic for each variable, along with the critical values at the 5% significance level in parentheses, and the inferred order of integration. The ADF unit root test suggests that most of the variables in the study are stationary after differencing once (1(1)), except for *GFCF*, *TOP*, and *INQ* which is stationary at the level (1(0)). The differing orders of integration makse the ARDL model suitable.

### 4.2. ARDL Estimation

#### 4.2.1. ARDL Bounds Test

Table 2: *ARDL Bound Test Result*

| **F-Bounds Test** | | **Null Hypothesis: No levels relationship** | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| F-statistic | 5.150611 | 10% | 1.99 | 2.94 |
| K | 6 | 5% | 2.27 | 3.28 |
| | | 2.5% | 2.55 | 3.61 |
| | | 1% | 2.88 | 3.99 |

Source: *Authors' Computation using E-views.*

The calculated F-statistic of 5.15 surpasses the upper bound critical values at the 1%, 5%, and 10% significance levels, conclusively indicating the presence of cointegration. This indicates a consistent long-term association among the variables.

#### 4.2.3. ARDL Short and Long-Run Estimation

Table 3: *Short-Run Coefficient Estimates*
Dependent Variable: D(LNGNP)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| *D(LNGDP(-1))* | 0.590351 | 0.069945 | 8.440212 | 0.0000 |
| *D(LNEXD)* | 0.020366 | 0.029469 | 0.691094 | 0.4914 |
| *D(LNEXD(-1))* | 0.023238 | 0.030466 | 0.762736 | 0.4477 |
| *D(LNGFCF)* | 0.158687 | 0.048091 | 3.299726 | 0.0014 |
| *D(LNGFCF(-1))* | 0.131601 | 0.048240 | 2.728059 | 0.0077 |
| *D(LNHCI)* | 0.447026 | 0.066865 | 6.685495 | 0.0000 |
| *D(LNHCI(-1))* | 0.275933 | 0.078671 | 3.507406 | 0.0007 |
| *D(LNTOP)* | 0.383625 | 0.059501 | 6.447364 | 0.0000 |
| *D(LNTOP(-1))* | -0.179928 | 0.067441 | -2.667911 | 0.0091 |

| | | | | |
|---|---|---|---|---|
| *D(LNEXR)* | 0.033605 | 0.013120 | 2.561399 | 0.0122 |
| *D(LNEXR(-1))* | -0.029946 | 0.015287 | -1.958889 | 0.0534 |
| *D(LNINQ)* | 0.077342 | 0.019026 | 4.064947 | 0.0001 |
| *D(LNINQ(-1))* | -0.059947 | 0.020169 | -2.972235 | 0.0038 |
| CointEq(-1)* | -0.045904 | 0.010638 | -4.315294 | 0.0000 |
| R-squared | 0.892151 | | | |
| Adjusted R-squared | 0.876912 | | | |

Source: *Authors' Computation using E-views.*

Table 4: *ARDL Long-run Coefficient Estimates*
Dependent Variable: D(LNGNP)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| *C* | 3.400601 | 2.545785 | 1.335777 | 0.1852 |
| *LNEXD* | 0.029709 | 0.112053 | 0.265131 | 0.7916 |
| *LNGFCF* | 0.323040 | 0.094251 | 3.427463 | 0.0009 |
| *LNHCI* | 1.051545 | 1.825882 | 0.575911 | 0.5662 |
| *LNTOP* | 0.588150 | 0.166214 | 3.538508 | 0.0007 |
| *LNEXR* | -0.324416 | 0.151150 | -2.146313 | 0.0347 |
| *LNINQ* | -0.209153 | 0.188295 | -1.110775 | 0.2698 |

Source: *Authors' Computation using E-views.*

The ARDL short-run estimation results demonstrate the significant impact of various factors on Nigeria's GDP growth. Notably, past GDP growth exhibits a positive influence with a coefficient of 0.590351 and a significant probability value of 0.0000. Conversely, external debt and its lagged values do not show a significant short-term effect on GDP growth, with coefficients of 0.020366 (probability value: 0.4914) and 0.023238 (probability value: 0.4477) respectively. However, increases in gross fixed capital formation significantly contribute to GDP growth, with coefficients of 0.158687 (probability value: 0.0014) and 0.131601 (probability value: 0.0077) for the current and lagged periods respectively. Similarly, improvements in the human capital index (coefficient: 0.447026, probability value: 0.0000), trade openness (coefficient: 0.383625, probability value: 0.0000), and institutional quality (coefficient: 0.077342, probability value: 0.0001) significantly enhance GDP growth. Notably, the lagged effect of trade openness, with a coefficient of -0.179928 and a probability value of 0.0091, demonstrates a negative short-term impact. Exchange rate fluctuations also play a role, with coefficients of 0.033605 (probability value: 0.0122) and -0.029946 (probability value: 0.0534) for the current and lagged periods respectively, indicating a mixed short-term effect on GDP growth. The coefficient associated with "CointEq(-1)" is -0.045904, with a probability value of 0.0000, indicating that it is statistically significant. This negative coefficient suggests that deviations from the long-run equilibrium are corrected in the short run. Additionally, the model's high explanatory power, with an R-squared of 0.892151 and an adjusted R-squared of 0.876912, suggests that approximately 89.2% of the variability in GDP growth is accounted for by the included variables, even after adjusting for the number of independent variables.

The ARDL long-run estimation results shed light on the sustained relationships among the variables concerning the impact of external debt burden on economic growth in Nigeria. External debt (LNEXD) does not show a significant long-term effect on GDP growth, with a coefficient of 0.029709 and a probability value of 0.7916. However, gross fixed capital formation (LNGFCF) has a positive and significant impact on GDP growth in the long run, with a coefficient of 0.323040 and a probability value of 0.0009. Conversely, the human capital index (LNHCI) mirroring Oluwo et al. (2023) does not exhibit a significant long-term effect on GDP growth in this model, with a coefficient of 1.051545 and a probability value of 0.5662. Trade openness (LNTOP) positively influences GDP growth in the long run, with a coefficient

of 0.588150 and a probability value of 0.0007. Exchange rate fluctuations (LNEXR) demonstrate a significant negative long-term relationship with GDP growth, with a coefficient of -0.324416 and a probability value of 0.0347. However, institutional quality (LNINQ) does not show a significant long-term impact on GDP growth, with a coefficient of -0.209153 and a probability value of 0.2698.

Comparing these findings with existing empirical literature reveals both consistencies and divergences. Studies by Chukwu (2023) and Odey et al. (2023) similarly find that external debt has limited or adverse effects on economic growth in Nigeria, aligning with the insignificant coefficients observed in this study. On the other hand, the positive impact of gross fixed capital formation on long-term GDP growth echoes findings from Manyo et al. (2023) and Ariyibi et al. (2023), highlighting the critical role of investment in driving economic expansion. The significance of trade openness in fostering economic growth resonates with research by Ugwuanyi and Odinakachukwu (2023) and Ale et al. (2023), who also underscore its positive effects on national economies. Additionally, the negative relationship between exchange rate fluctuations and long-term GDP growth corroborates findings by Uji (2023) and Shah et al. (2023), reflecting the challenges posed by exchange rate volatility on economic stability.

### 4.2.4. ARDL Post-Estimation Tests

#### 4.2.4.1. Serial Correlation Test Result

Table 4.9:Breusch-Godfrey Serial Correlation LM Test Result

| | | | |
|---|---|---|---|
| F-statistic | 1.570500 | Prob. F(2,96) | 0.2132 |
| Obs*R-squared | 3.485036 | Prob. Chi-Square(2) | 0.1751 |

Source: Authors' *computation using E-views.*

The Breusch-Godfrey LM test was conducted to evaluate serial correlation. Results indicate that both the F-statistic and Chi-Square probabilities exceed the 5% significance level, suggesting inadequate evidence to reject the null hypothesis, which indicates no serial correlation in the ARDL residuals. This test verifies the absence of problematic autocorrelation issues within the model.

#### 4.2.4.2. The ARDL Stability Test Result

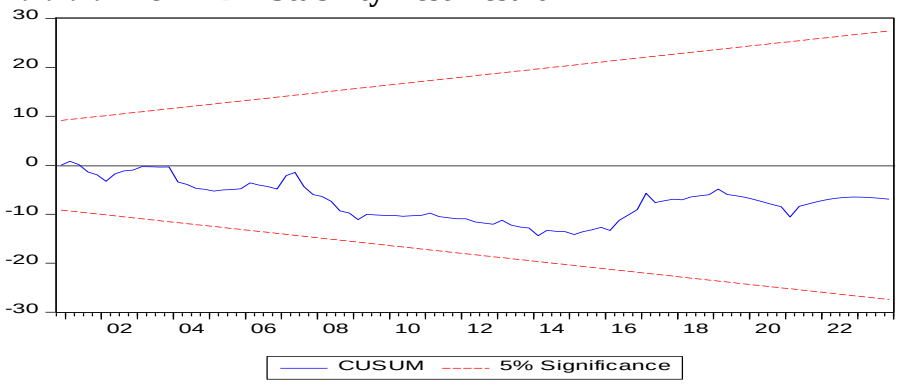

Figure 4.1: *CUSUM*

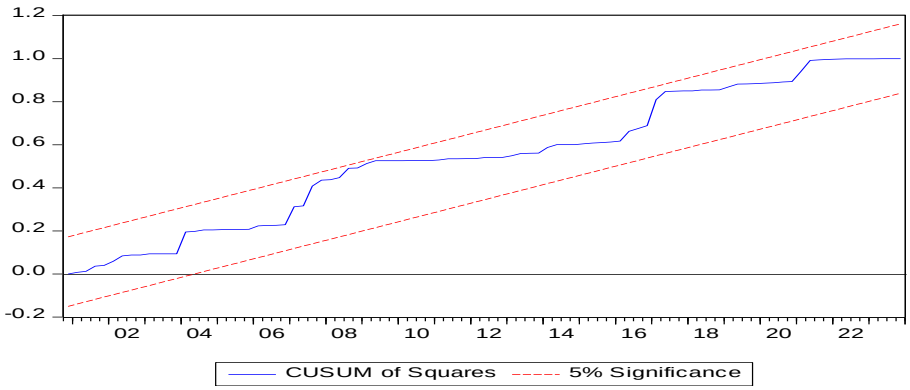


Figure 4.2: *CUSUMSQ*

The CUSUM and CUSUMSQ plots depicted in Figures 4.1 and 4.2 displayed statistics remaining within the confines of the two straight lines. This indicates the stability of the residuals derived from the ARDL model across time. As the graphs did not intersect the critical thresholds, it suggests the coefficients within the model remain constant and the estimated relationships are dependable. The stability assessments validate the structural integrity of the parameter estimates, affirming the reliability of the modeled relationships.

## 5. CONCLUSION AND POLICY RECOMMENDATIONS

In conclusion, the ARDL estimations offer significant insights into the relationship between external debt burden and economic growth in Nigeria. The results highlight the impact of external debt on both short-term and long-term economic growth trajectories. In the short run, while external debt may not exhibit a significant influence, its management remains critical for maintaining stability and fostering conducive conditions for growth; conversely, in the long run, the study suggests that external debt may not significantly contribute to economic growth, emphasizing the need for prudent debt management strategies to mitigate potential adverse effects- these invalidate the Debt Overhang Theory. Similarly, While the short-run analysis indicates the importance of factors such as gross fixed capital formation, human capital index, trade openness, and institutional quality in driving GDP growth, the long-run analysis highlights the limited impact of external debt and the significance of investment and trade openness in fostering sustainable economic expansion. These findings underscore the complex nature of Nigeria's economic dynamics and emphasize the need for targeted policy interventions to address key challenges and leverage opportunities for growth.

Based on the findings, the study's recommendations call for the Debt Management Office and Federal Ministry of Finance to prioritize strategic debt management and enhance transparency; the Federal Ministry of Industry, Trade and Investment to implement policies promoting investment in productive sectors; the Nigerian Export Promotion Council and same ministry to develop robust trade diversification strategies; the Central Bank of Nigeria to maintain exchange rate stability through prudent policies; the Federal Ministry of Education and National Universities Commission to invest in human capital development by strengthening educational institutions; and the Federal Ministry of Justice, Economic and Financial Crimes Commission, and Independent Corrupt Practices Commission to strengthen institutional frameworks and enforce anti-corruption measures to improve governance and resource utilization. Addressing these targeted recommendations to relevant agencies and personalities provides clear roles for policymakers in fostering sustainable economic growth through prudent debt management, investment, trade, stable exchange rates, human capital, and institutional quality.

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