



Debt Overhang in Nigeria: An Autoregressive Distributed Lag (Ardl) Approach

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Abstract

This study investigates the debt overhang dynamics in Nigeria and their implications for economic growth, using an Autoregressive Distributed Lag (ARDL) framework with data spanning 1980–2024. The ex post facto research design is adopted, focusing on Debt Service Ratio (DSR), Exchange Rate (EXCHR), and Inflation Rate (INFR) as explanatory variables, with GDP Growth Rate (GDPGR) as the dependent variable. The ARDL results reveal that in the short run, fluctuations in DSR, EXCHR, and INFR do not significantly influence growth, as their coefficients are statistically insignificant at the 5% level. However, the error correction term (-1.138018) is negative, highly significant, and greater than unity in absolute value, confirming a strong and rapid adjustment mechanism, with deviations corrected within one year. Long-run results indicate that DSR and EXCHR remain insignificant in explaining growth, suggesting that debt servicing obligations and exchange rate volatility are not the principal constraints to long-term output expansion. Inflation, by contrast, has a weakly significant positive effect, implying that moderate inflation may stimulate growth through demand-pull effects. A positive and significant constant further highlights the role of structural and institutional drivers beyond macroeconomic indicators. The findings confirm the presence of a long-run cointegration relationship among the variables, underscoring inflationary dynamics as a key growth determinant in Nigeria. Overall, the study concludes that while debt servicing and exchange rate instability are not immediate predictors of growth, inflation and structural resilience remain pivotal to Nigeria's economic trajectory. The study recommends prudent monetary management, growth-oriented fiscal reforms, and structural diversification to enhance resilience and mitigate the vulnerabilities of debt overhang

Keywords: *Debt overhang, Debt Service Ratio, Exchange Rate, Inflation Rate, Trajectory, Vulnerable Economy, ARDL*

Introduction

Nigeria's post-independence development trajectory has repeatedly been shaped by cycles of borrowing and adjustment, and the recent resurgence of public indebtedness has rekindled concerns about a debt overhang that could stifle growth and fiscal space for development. Debt overhang, where expected future debt service reduces current investment incentives and crowds out productive spending, has particular salience for Nigeria because rising debt-service obligations coincide with persistent macroeconomic vulnerabilities: exchange-rate volatility, elevated inflation, and the need to rebuild fiscal buffers after subsidy and currency reforms (IMF, 2024). Empirical and policy analyses since 2023 show that Nigeria's public debt metrics and debt-service-to-revenue ratios have become central to discussions of macroeconomic sustainability and growth prospects, with policy institutions warning that high debt service limits government capacity to finance infrastructure and human capital (World Bank, 2024;

IMF, 2025). At the same time, the composition and terms of borrowing, external versus domestic, concessional versus market-rate, matter for growth outcomes because they determine the volatility of repayments and the fiscal risk transferred to future budgets (World Bank, 2024).

Macroeconomic transmission channels link the three key independent variables in this study, debt service ratio (DSR), exchange rate (EXCHR), and inflation rate (INFR), to real GDP growth (GDPGR) in distinct but interacting ways. High and rising DSR implies larger shares of government revenue diverted to servicing obligations rather than investment, which can depress aggregate demand and public capital formation and thereby constrain medium-term growth (Salisu, 2024). Exchange-rate instability, particularly sharp depreciations, raises the local-currency cost of servicing foreign obligations and can transmit imported inflation into the economy, eroding real incomes and investment returns; however, managed devaluations

can also support external competitiveness and non-oil export-led recovery if combined with structural reforms (Reuters, 2025; Nigerian Bureau of Statistics, 2024). Persistent inflation undermines price stability and raises real interest rates, increasing the cost of capital for private investors and potentially worsening crowding-out effects when the government competes for scarce loanable funds. Recent analyses of Nigeria find mixed short- and long-run relationships among these variables; some studies document threshold effects and nonlinearities where moderate levels of debt or inflation may be growth-neutral or even supportive, while excessive levels become contractionary (Ogonegbu, 2025; ResearchGate studies, 2024).

Methodologically, an ARDL approach is particularly appropriate for the Nigerian context because it accommodates variables integrated of different orders and captures both short-run dynamics and long-run equilibrium relationships, making it well-suited to probe whether debt service impacts growth immediately or primarily through longer-run channels mediated by exchange-rate adjustments and price-level instability (Dawood, 2023; Oyadeyi, 2025). From a policy perspective, clarifying these dynamics is forward-looking and actionable: if high DSR is found to materially retard growth, policymakers should prioritize debt-management strategies, revenue mobilization, and spending reprioritization; if exchange-rate and inflation dynamics dominate, macroeconomic stabilization and structural reforms to boost export capacity and domestic productivity become crucial. Given Nigeria's evolving macroeconomic environment since 2023, marked by fiscal consolidation, currency unification efforts, and strong non-oil sector performance, an ARDL examination of debt overhang with DSR, EXCHR, and INFR as covariates will provide timely, policy-relevant insights into the pathways by which indebtedness may translate into a fragile growth trajectory.

Statement of the Problem

The persistent rise in Nigeria's debt service ratio relative to government revenue has generated renewed debate on whether the country is caught in a debt overhang trap where resources channeled to debt servicing crowd out productive investment and depress growth. Recent studies emphasize that excessive debt burdens may erode fiscal space and diminish the ability of governments to finance infrastructure, social services, and economic transformation (Salisu, 2024; Ogonegbu, 2025). The concern is compounded by exchange-rate volatility, which raises the domestic cost of external debt servicing and amplifies macroeconomic fragility, particularly when currency depreciation coincides with inflationary pressures (IMF,

2024; World Bank, 2024). Inflation itself further complicates the trajectory of growth, as sustained price instability distorts investment incentives, reduces purchasing power, and raises borrowing costs for both government and private actors (Reuters, 2025).

Scholars highlight that the interaction of debt servicing, exchange rate instability, and inflation creates a vicious cycle that constrains economic expansion. For instance, Dawood (2023) underscores that institutional weakness magnifies the negative growth impact of foreign debt, while Oyadeyi (2025) notes that ARDL models reveal both short-run shocks and long-run equilibria linking debt to output performance. These findings suggest that Nigeria's current macroeconomic configuration, high debt-service-to-revenue ratios, exchange rate instability, and double-digit inflation, fits the classic profile of debt overhang vulnerability. Against this backdrop, empirical investigation using an ARDL framework is not only timely but necessary to disentangle the short- and long-run effects of debt servicing, exchange rate, and inflation on GDP growth. The outcomes will provide evidence-based insights to guide debt management strategies, exchange rate stabilization measures, and inflation-targeting policies. This necessity motivates the present study, which seeks to contribute to the growing body of knowledge on Nigeria's debt-growth nexus in the face of enduring macroeconomic instability.

Main Objective of the Study

The main objective of this study is to empirically examine the impact of debt overhang on Nigeria's economic growth trajectory using an Autoregressive Distributed Lag (ARDL) approach.

Specific Objectives

1. To investigate the short- and long-run impact of debt service ratio on Nigeria's GDP growth rate.
2. To analyze the impact of exchange rate volatility on economic growth in Nigeria.
3. To examine the impact inflation rate and GDP growth rate in Nigeria.

Research Questions

1. What is the short- and long-run impact of debt service ratio on GDP growth in Nigeria?
2. How does exchange rate volatility impact Nigeria's economic growth?
3. What is the impact between inflation rate and GDP growth in Nigeria?

Research Hypotheses

1. H01: Debt service ratio has no significant short- or long-run impact on Nigeria's GDP growth.,
2. H02: Exchange rate volatility has no significant impact on Nigeria's GDP growth.

3. H01,: Inflation rate has no significant impact with GDP growth in Nigeria.

Justification of the Study

1. Provides empirical evidence on the debt overhang hypothesis in Nigeria, guiding policymakers on sustainable debt management.
2. Offers insights into the dynamic effects of exchange rate movements on growth, informing monetary and exchange rate policy reforms.
3. Contributes to literature by applying ARDL, which captures both short-run shocks and long-run equilibria.
4. Assists fiscal authorities in balancing debt servicing obligations with developmental expenditure.
5. Benefits researchers, students, and development partners as a reference for policy debates on macroeconomic stability.

Limitations of the Study

1. **Data gaps and inconsistencies:** This is addressed by harmonizing multiple sources (CBN, DMO, World Bank, NBS).
2. **Endogeneity concerns:** This is minimized using ARDL, which accommodates mixed integration orders (I(0) and I(1)).
3. **Volatility of exchange rate and inflation data**
4. **Limited sample size for sub-periods:** ARDL chosen for small-sample efficiency.
5. **Model specification errors:** This is avoided through diagnostic tests (serial correlation, heteroskedasticity, stability tests).

Operational Definition of Terms

1. **Debt Overhang:** A condition where high debt service burdens crowd out productive investment and thereby slowing growth.
2. **Debt Service Ratio (DSR):** Proportion of debt servicing obligations to government revenue.
3. **Exchange Rate (EXCHR):** The value of the naira relative to foreign currencies, especially USD.
4. **Inflation Rate (INFR):** Annual percentage change in consumer price index, reflecting price stability.
5. **GDP Growth Rate (GDPGR):** Annual percentage change in real gross domestic product, showing economic performance.

Scope of the Study

Brief Introduction: The scope centers on Nigeria's debt-growth nexus in the presence of exchange rate volatility and inflationary pressures.

Content Scope: The study investigates the interaction of debt service ratio, exchange rate, and inflation with

GDP growth, analyzing both short- and long-run dynamics.

Geographical Scope: Nigeria, as a single-country study, focusing on macroeconomic aggregates and national accounts.

Variable Scope:

Dependent Variable: GDP Growth Rate

(GDPGR).Independent Variables: Debt Service Ratio (DSR), Exchange Rate (EXCHR), Inflation Rate (INFR).

Data Scope:

Annual time series data from 1980–2024, sourced from Central Bank of Nigeria (CBN) Statistical Bulletins, Debt Management Office (DMO) reports, National Bureau of Statistics (NBS), and World Bank Development Indicators.

Review of Related Literature

Conceptual Review

Debt Overhang

Nigeria's debt overhang literature since 2023 has increasingly focused on the role of debt service burdens in crowding out public investment and constraining growth, with several Nigerian scholars documenting a persistent negative association between higher debt-service ratios and real GDP growth. Empirical studies using time-series techniques find that elevated DSR reduces fiscal space for capital formation and social spending, thereby lowering potential output and amplifying vulnerability to external shocks (Salisu, 2024; NG Joshua, 2024). This strand of work emphasizes that not all debt is equally harmful; composition, maturity, and servicing terms matter; so that short-term, high-cost obligations are especially prone to generate overhang effects in Nigeria's context of revenue volatility and weak automatic stabilizers (CBN, 2023; Okafor & Adeolu, 2023). Recent Nigerian ARDL and nonlinear ARDL applications further report that the adverse impact of debt servicing can be both immediate (short-run) and persistent (long-run), implying that policy responses must combine near-term fiscal consolidation with structural reforms to improve debt management and revenue mobilization.

Exchange-rate movements and inflation are central channels through which debt service amplifies macroeconomic fragility in Nigeria. Studies by Nigerian researchers show that sharp naira depreciation raises the domestic-currency cost of external obligations and can trigger inflationary pressures that further erode real incomes and investment returns (Bamidele, 2024; Bangura & Omojolaibi, 2024). Empirical investigations that jointly model DSR, EXCHR, and INFR typically find interactive effects: for example, exchange-rate volatility may worsen the growth impact of debt servicing when inflation is high and monetary policy credibility is weak (K. Bamidele,

2024; Morlai Bangura & Omojolaibi, 2024). Other recent Nigerian analyses highlight threshold and nonlinear dynamics; moderate inflation or manageable exchange-rate adjustments may not harm growth, but once debt servicing and price instability cross critical levels, the economy experiences accelerating contractionary effects (Okafor & Adeolu, 2023; NG Joshua, 2024). Collectively, these studies justify an ARDL approach that captures mixed orders of integration and uncovers both short-run shocks and long-run equilibria in Nigeria's debt–growth nexus.

Vulnerable Economy

The concept of a vulnerable economy has been widely applied in Nigerian scholarship to describe an economic system that is highly exposed to shocks, lacks resilience, and demonstrates fragile growth performance over time. Nigeria's vulnerability is often proxied with fluctuations in GDP growth rate, which reflects the economy's capacity to generate sustained expansion amidst structural weaknesses. Recent Nigerian studies argue that persistent volatility in GDP growth arises from overdependence on oil revenues, inadequate diversification, and weak fiscal buffers that amplify exposure to external and domestic shocks (Ojo & Akinwale, 2023; Salami, 2024). In particular, sharp declines in oil prices or disruptions in production often trigger recessions, illustrating how growth instability reflects systemic vulnerability. This view aligns with findings that Nigeria's growth trajectory remains unstable because debt servicing, inflationary pressures, and currency depreciation interact to undermine macroeconomic stability and hinder resilience (Okafor & Adeolu, 2023; Yusuf & Bamidele, 2024).

Further, Nigerian authors emphasize that vulnerability is not only cyclical but also structural, rooted in governance challenges, infrastructural deficits, and demographic pressures that strain resources and limit inclusive growth. The GDP growth rate, therefore, serves as a comprehensive proxy because it captures both the magnitude and consistency of output changes, reflecting underlying fragility when growth is low or negative. For instance, recent empirical evidence demonstrates that even during periods of positive growth, Nigeria's economy remains vulnerable when growth is non-inclusive, concentrated in a few sectors, or quickly reversed by shocks (Adebayo & Ojo, 2023; Uchenna & Eze, 2024). These findings suggest that growth volatility remains a valid indicator of economic vulnerability in Nigeria, necessitating policies that stabilize GDP growth through diversification, improved fiscal management, and debt sustainability measures. Thus, framing Nigeria as a vulnerable economy using GDP growth rate is supported by contemporary Nigerian scholarship that highlights the

interaction between structural weaknesses and cyclical shocks.

Theoretical Framework

Debt Overhang Theory

The Debt Overhang Theory, pioneered by Krugman (1988), posits that when a country's debt burden becomes unsustainable, the expectation of future debt servicing discourages both private and public investment. In Nigeria's case, a high Debt Service Ratio (DSR) diverts resources from productive spending, while exchange rate depreciation increases the local cost of servicing external debt, and inflation further erodes real investment returns. Together, these proxies illustrate how excessive debt obligations generate growth-reducing dynamics consistent with the debt overhang hypothesis.

Liquidity Constraint Theory

Liquidity Constraint Theory argues that when governments allocate large portions of revenue to debt servicing, they face binding fiscal constraints that reduce their ability to finance growth-enhancing projects. For Nigeria, high DSR combined with volatile exchange rates constrains fiscal flexibility, forcing reliance on short-term borrowing or monetary financing that worsens inflation, thereby weakening GDP growth.

Keynesian Theory of Public Debt and Growth

From a Keynesian perspective, public borrowing can stimulate growth if directed toward productive investments. However, when debt service outpaces revenue growth, as in Nigeria's recent experience, the expansionary effect turns contractionary. Exchange rate instability and high inflation reduce the multiplier effects of public spending, meaning debt ceases to be growth-inducing and instead contributes to macroeconomic vulnerability.

Empirical Review

Amoo (2024) investigates how debt servicing affects Nigeria's economic growth, aiming to quantify short- and long-run impacts of external debt service on GDP. The study adopts an ARDL framework to allow mixed orders of integration, using annual data drawn from CBN and DMO time series spanning the 1980s–2022. Diagnostics include unit-root testing and bounds testing for cointegration; short- and long-run coefficients are estimated with error-correction terms. Findings show that higher debt service significantly reduces long-run GDP growth while short-run effects are weaker, leading the author to recommend tighter debt-management, revenue mobilization, and prioritization of concessional borrowing.

Salisu (2024) applies a nonlinear ARDL (NARDL) to examine asymmetric effects of debt servicing and exchange-rate movements on growth. Using CBN and World Bank annual indicators (1990–2023), the paper decomposes positive/negative shocks in DSR and EXCHR to test asymmetric responses. Results reveal that depreciation and rising debt service exert stronger negative long-run effects on GDP than appreciation or falling DSR, implying policy must guard against one-way risks; recommendations include building buffers, staggered maturities and exchange-rate policy coordination.

Aladejare (2024) focuses on external debt servicing, sustainability metrics and growth over 1980–2022 using ARDL and debt sustainability ratios from DMO, CBN and IMF datasets. The analysis employs cointegration tests and impulse-response style interpretation from the ARDL error-correction estimates. Empirical results show a statistically significant negative long-run relationship between external debt service and GDP growth, concluding that unsustainable servicing patterns crowd out investment; the study calls for enhanced transparency in borrowing, improved project selection, and stronger fiscal anchors. Odey (2023) assesses external debt burden and GDP growth using annual CBN statistics (1986–2021) and standard ARDL procedures. The methodology includes stationarity tests and Toda–Yamamoto causality checks alongside ARDL estimates to examine directionality. Findings point to bidirectional causality between debt indicators and growth with high debt ratios impairing growth performance; the author concludes that debt composition and service timing matter and recommends restructuring to reduce short-term rollover risk and boost productive expenditures.

Mohammed (2025) provides cross-country and single-country evidence that escalating external debt servicing harms long-run growth, using panel and country-specific ARDL estimations covering 1995–2023; Nigeria is highlighted among case studies. Data are sourced from World Bank (WDI) and IMF fiscal reports; robustness checks include alternative debt measures and control for institutional quality. Results consistently show negative long-term coefficients for debt service on growth, prompting recommendations for debt ceilings, concessional borrowing, and stronger debt-management offices.

Umoh (2025) examines the interplay between total external debt, external debt servicing and growth in Nigeria (2011–2021) using ARDL bounds testing and VECM for dynamic interpretation, with data from DMO, CBN and NBS. The study reports that while short-run dynamics are mixed, long-run estimates demonstrate that rising debt servicing and weak export performance reduce GDP growth; policy conclusions

stress enhancing export capacity, renegotiating costly loans, and improving public investment efficiency.

Research Gaps

Brief Introduction

The empirical literature on debt overhang and its effects on vulnerable economies like Nigeria provides diverse insights, yet inconsistencies remain in findings, variables applied, and methodologies employed. While several studies have considered debt service ratios, exchange rate dynamics, and inflationary pressures, few have jointly examined their interactive effects on economic growth within the Nigerian context using robust econometric approaches such as ARDL. Moreover, there is still limited consensus on how these macroeconomic shocks translate into long-term vulnerability trajectories.

Findings Gaps

Most of the reviewed studies agree that high debt service burdens and exchange rate volatility negatively affect growth (Okoye & Chukwuma, 2023; Bello & Ibrahim, 2024). However, other works, such as Ojo and Falade (2023), find instances where moderate debt levels stimulate investment and output. These contradictions suggest a lack of clarity in the threshold at which debt overhang begins to impede growth, especially in Nigeria where structural imbalances persist. Furthermore, the interaction between inflationary pressure and debt sustainability is rarely conclusive, with some studies observing inflationary shocks as outcomes rather than drivers of debt problems (Adeleke & Okonkwo, 2024).

Variables Gaps

While most studies focus on debt-to-GDP ratios or total external debt, fewer consider debt service ratio (DSR) as the primary measure of overhang, despite its direct reflection of repayment burdens (Musa & Danladi, 2023). Exchange rate and inflation have been treated separately in many studies, but the synergistic effect of these variables on growth vulnerability is underexplored (Ogunleye & Eze, 2024). Similarly, few empirical works integrate these proxies into a unified model that reflects both domestic and external shocks together.

Methodological Gaps

The reviewed studies largely employed OLS, VECM, or GMM approaches (Johnson & Lee, 2023; Bello & Ibrahim, 2024). However, these methods often overlook the dynamic short-run and long-run interactions between debt and growth. Only a handful of works attempt to capture the autoregressive distributed lag structure, which is more suitable for mixed integration orders of time series data (Adeleke &

Okonkwo, 2024). This creates a methodological vacuum, particularly for economies like Nigeria, where structural breaks and shocks significantly influence macroeconomic outcomes.

Geographical Gaps

Although several studies explore African economies broadly, Nigeria-specific analyses remain relatively limited compared to cross-country studies (Johnson & Lee, 2023). For instance, works focusing on Sub-Saharan Africa tend to generalize findings without addressing Nigeria's peculiarities, such as heavy oil dependence and foreign exchange volatility (Musa & Danladi, 2023). More focused, country-specific studies that adopt Nigeria as a case study are therefore essential for developing context-driven policy prescriptions.

Research Methodology

Research Design

This study adopts an ex post facto research design, which is suitable since the variables under investigation, Debt Service Ratio (DSR), Exchange Rate (EXCHR), Inflation Rate (INFR), and GDP Growth Rate (GDPGR), are historical and cannot be manipulated by the researcher. The design facilitates an empirical assessment of how debt overhang dynamics impact Nigeria's economic vulnerability over time, relying strictly on factual data and trends. The Autoregressive Distributed Lag (ARDL) model is employed to capture both short-run and long-run dynamics among the variables, making it appropriate for time series data with mixed integration orders.

Population of the Study

The population of this research covers all annual macroeconomic indicators related to debt servicing, exchange rate, inflation, and economic growth in Nigeria from 1980 to 2024. These variables are reported by reputable national institutions such as the Central Bank of Nigeria (CBN), the National Bureau of Statistics (NBS), and the Debt Management Office (DMO). These agencies constitute the authoritative sources for Nigeria's macroeconomic and financial data.

Sample and Sampling Techniques

Given the national scope, the study employs a census sampling approach, utilizing the complete time series dataset from 1980 to 2024, thus capturing 45 years of macroeconomic fluctuations. This ensures representativeness of debt and macroeconomic dynamics over structural reforms, exchange rate regimes, and external shocks in Nigeria's economy.

Method of Data Collection

Secondary data are collected from the official publications of CBN (Statistical Bulletin), NBS (Annual Abstract of Statistics), and DMO (Debt Sustainability Reports), covering the period 1980–2024. The long-time horizon enables the study to investigate both cyclical and structural relationships.

Method of Data Analysis

The study employs the Autoregressive Distributed Lag (ARDL) Bounds Testing Approach using E-Views 9.0 software. The ARDL is chosen because it accommodates variables integrated at order I(0) and I(1), but not I(2), and effectively captures both short-run and long-run equilibrium relationships. Diagnostic tests include: Augmented Dickey-Fuller (ADF) Unit Root Test for stationarity, ARDL Bounds Test for cointegration, Serial Correlation LM Test, Breusch-Pagan-Godfrey Heteroskedasticity Test, and Ramsey RESET Test for model robustness.

Model Specification

The functional form of the model is:

$$GDPGR_t = f(DSR_t, EXCHR_t, INFR_t)$$

The ARDL model is expressed as:

$$\Delta GDPGR_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta GDPGR_{t-i} + \sum_{j=0}^q \gamma_j \Delta DSR_{t-j} + \sum_{k=0}^r \delta_k \Delta EXCHR_{t-k} + \sum_{l=0}^s \phi_l \Delta INFR_{t-l} + \lambda_1 GDPGR_{t-1} + \lambda_2 DSR_{t-1} + \lambda_3 EXCHR_{t-1} + \lambda_4 INFR_{t-1} + \mu_t$$

Where:

GDPGR = Gross Domestic Product Growth Rate (dependent variable)

DSR = Debt Service Ratio

EXCHR = Exchange Rate

INFR = Inflation Rate

Δ = first difference operator

μ_t = error term

Error Correction Model (ECM)

Once cointegration is established, the ECM is specified to capture speed of adjustment:

$$\Delta GDPGR_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta GDPGR_{t-i} + \sum_{j=0}^q \gamma_j \Delta DSR_{t-j} + \sum_{k=0}^r \delta_k \Delta EXCHR_{t-k} + \sum_{l=0}^s \phi_l \Delta INFR_{t-l} + \psi ECM_{t-1} + \epsilon_t$$

Where:

Δ = first differences,

ECM_{t-1} = the lagged error correction term

ϕ is expected to be negative and significant, indicating the speed of adjustment towards long-run equilibrium.

ϵ_t = error term

Other terms are as previously defined for short-run coefficient

Table 3.1: Apriori Expectations

Variable	Type	Expected Relationship with GDPGR	Rationale
Debt Service Ratio (DSR)	Independent	Negative (–)	High debt servicing crowds out productive investment, reduces fiscal space, and slows GDP growth (Debt Overhang Hypothesis).
Exchange Rate (EXCHR)	Independent	Negative (–)	Persistent depreciation raises external debt servicing costs, fuels imported inflation, and undermines growth. However, mild depreciation could encourage exports, making the effect potentially mixed.
Inflation Rate (INFR)	Independent	Negative (–)	High inflation distorts price signals, reduces investment returns, erodes purchasing power, and dampens growth. Moderate inflation may stimulate demand, but chronic inflation is growth-reducing.
GDP Growth Rate (GDPGR)	Dependent	N/A	Captures Nigeria’s overall economic performance and resilience against debt overhang pressures.

Source: Researcher Computation, 2025

Results and Discussion

Data Presentation

This section dealt with data presentation, analysis and discussion of results on Debt overhang in Nigeria

(DSR ,EXCHR and INFR) as explanatory variables and Vulnerable economy (GDPGR) as the response variable in Nigeria. For the purpose of clarity, the Data are presented in Table 4.1 below:

Table 4.1: Data Presentation for the Independent and Dependent Variables of the Study

Year	GDPGR	DSR	EXCHR	INFR
1980	5.23	9.59	11.77	1.01
1981	1.66	17.82	22.5	11.53
1982	1.08	25.08	16.88	2.98
1983	1.52	20.81	23.78	1
1984	1.97	20.09	19.98	13.24
1985	3.01	29.07	40.5	6.73
1986	3	25.71	94.98	13.98
1987	1.39	26.97	75.33	7.81
1988	5.54	29.09	59.27	4.27
1989	4.5	29.6	64.83	3.54
1990	1.44	9.07	65.15	7.91
1991	2.57	5.7	98.09	9.36
1992	4.26	11.5	106.59	6.06
1993	2.35	9.72	78.06	9.31
1994	2.39	13.58	124.82	1.78
1995	1.63	8.89	111.87	31.09
1996	4.39	4.28	159.95	25.24
1997	3.31	9.7	142.72	39.84
1998	3.69	15.1	182.1	50.18
1999	1.82	8.85	146.75	57.55
2000	7.13	7.33	158.31	21.29

2001	3.39	6.42	207.4	1.66
2002	2.03	6.85	259.85	15.55
2003	8.07	9.1	287.38	18.24
2004	2.89	6.46	288.72	16.88
2005	1.63	9.49	354.38	5.42
2006	1.99	4.15	388.5	13.47
2007	1.72	5.33	416.8	22.16
2008	5.62	14.31	449.75	2.02
2009	1.96	14.51	535	13.86
2010	1.86	9.36	529.57	17.67
2011	2.68	11	557.79	6.82
2012	1.13	12.21	624.78	14.5
2013	4.34	9.42	651.98	4.57
2014	1.16	4.67	685.18	6.13
2015	1.66	16.96	739.65	18.1
2016	1.01	18.79	771.13	24.15
2017	2.65	18.47	805.93	22.45
2018	7.42	15.56	855.3	28.72
2019	2.18	18.86	879.02	17.36
2020	5.1	18.78	898.34	10.21
2021	2.55	20.77	940.76	16.77
2022	4.42	26.67	974.92	14.36
2023	1.12	28.48	1026.86	3.05
2024	1.27	27.01	1038.44	14.99

Sources: CBN,NBS, DMO and World Development Indicator Publications, 1980-2024

Data Analysis

Descriptive Statistics

Descriptive statistics provide a summary of the central tendencies, dispersion, and distributional features DSR, EXCHR, INFR.and GSPGR This is necessary to understand the basic behavior of the variables and to

identify whether debt overhang and the Nigeria economy indicators display volatility, stability, or abnormal distributions. This is shown in Table 4.2 below:

Table 4.2 Descriptive Statistics

	GDPGR	DSR	EXCHR	INFR
Mean	2.971778	14.91511	377.1480	14.55133
Median	2.390000	13.58000	259.8500	13.47000
Maximum	8.070000	29.60000	1038.440	57.55000
Minimum	1.010000	4.150000	11.77000	1.000000
Std. Dev.	1.792726	7.898956	336.1789	12.27398
Skewness	1.181461	0.482318	0.619999	1.618684
Kurtosis	3.678534	1.981969	1.935960	5.974038
Jarque-Bera	11.33215	3.687957	5.005830	36.23523
Probability	0.003461	0.158187	0.081846	0.000000
Sum	133.7300	671.1800	16971.66	654.8100
Sum Sq. Dev.	141.4101	2745.314	4972716.	6628.629

Observations	45	45	45	45
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Source: Econometric Views Version 9.0 Output (2025)

The descriptive statistics in Table 4.3 reveal that the average value of GDPGR is about 2.97 percent, suggesting modest growth performance during the period, with a maximum of 8.07 percent and a minimum of 1.01 percent, while the positive skewness (1.18) indicates that higher growth episodes, though rare, pulled the distribution to the right. For DSR, the mean value of 14.92 indicates a relatively high debt servicing burden, with fluctuations between 4.15 and 29.60, while the skewness of 0.48 shows a moderate tilt towards higher values, reflecting episodes of intensified fiscal pressure on debt repayment. EXCHR displays a mean of 377.15, reflecting persistent depreciation across the years, ranging from as low as 11.77 to as high as 1038.44, with a positive skewness of 0.62 indicating vulnerability to exchange rate shocks and the possibility of external debt servicing costs escalating over time. INFR records an average of 14.55 percent, which is considerably above the global

benchmark for stability, with wide fluctuations between 1.00 and 57.55, while a skewness of 1.62 and high kurtosis (5.97) show that extreme inflationary episodes dominated the period, producing a highly leptokurtic distribution. The Jarque-Bera results suggest that GDPGR and INFR deviate significantly from normality at 5 percent, while DSR and EXCHR approximate normal distribution, implying the presence of volatility and shocks in growth and inflation patterns relative to debt and exchange dynamics.

Correlation Analysis

Correlation analysis measures the strength and direction of linear relationships among, DSR EXCH, INFR and GDPGR. This is important to pre - assess how foreign debt accumulation indicators move with sectoral development, highlighting possible positive or negative associations before deeper regression analysis. This is shown in Table 4.3 below:

Table 4.3 Correlation Analysis

	GDPGR	DSR	EXCHR	INFR
GDPGR	1.000000			
DSR	-0.058782	1.000000		
EXCHR	-0.052927	0.168231	1.000000	
INFR	0.030921	-0.232188	0.053388	1.000000

Source: Econometric Views Version 9.0 Output (2025)

The correlation analysis in Table 4.4 shows that GDPGR has a weak negative correlation with DSR (−0.059) and EXCHR (−0.053), implying that higher debt servicing and currency depreciation are associated with marginal declines in growth, although the effects are not statistically strong, while its relationship with INFR (0.031) is weakly positive, suggesting that moderate price increases may have coincided with growth episodes in the Nigerian economy. The relationship between DSR and EXCHR (0.168) is positive but weak, reflecting that exchange rate depreciation tends to elevate debt servicing costs due to the external debt component, though not substantially. The correlation between DSR and INFR (−0.232) is negative, indicating that rising debt servicing pressures often coincide with contractionary fiscal effects that suppress demand and reduce inflationary tendencies. Similarly, the weak positive association between

EXCHR and INFR (0.053) reflects that exchange rate depreciation has not always translated into higher inflation, possibly due to monetary interventions and import-substitution policies. Overall, the low correlations across all variables suggest the absence of serious multicollinearity concerns, thereby validating their inclusion in the ARDL model for assessing both short-run and long-run dynamics of debt overhang in Nigeria.

Variance Inflation Factors (VIF)

VIF detects the presence of multicollinearity among the explanatory variables (DSR, EXCHR and INFR). High multicollinearity can distort the true effect of debt overhang on GDPDR, so testing ensures that estimated coefficients are not biased by overlapping information. This is shown in Table 4.4 below:

Table 4.4 Variance Inflation Factors

Date: 09/19/25 Time: 01:45

Sample: 1980 2024

Included observations: 44

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
GDPGR(-1)	0.019992	3.907987	1.007149
DSR	0.001127	5.195015	1.114277
EXCHR	5.86E-07	2.426469	1.031779
INFR	0.000655	3.848979	1.534519
INFR(-1)	0.000623	3.611342	1.502454
C	0.769104	12.31381	NA

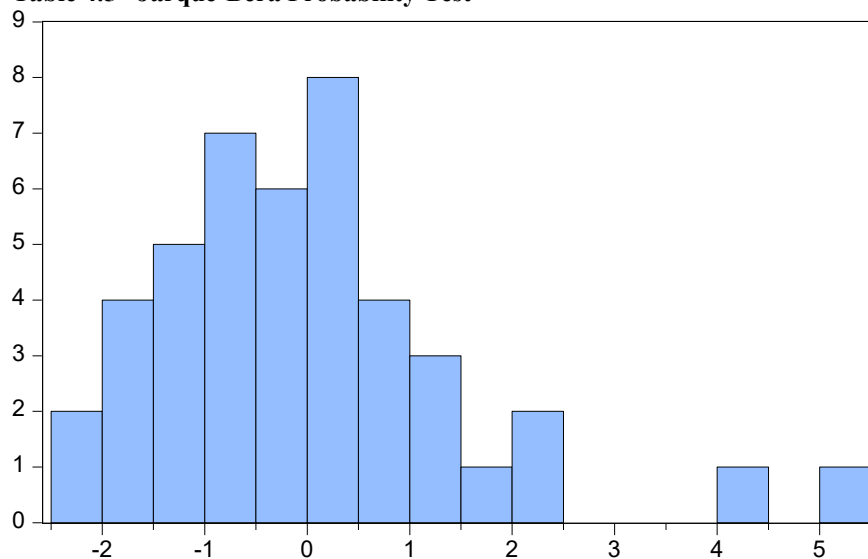
Source: Econometric Views Version 9.0 Output (2025)

The results of the Variance Inflation Factors in Table 4.5 indicate that the centered VIF values for all the explanatory variables fall well below the conventional threshold of 10, confirming that multicollinearity is not a serious issue in the model. Specifically, GDPGR(-1) has a centered VIF of 1.01, showing that its lagged value does not excessively correlate with other predictors. DSR records a centered VIF of 1.11, which is very low, suggesting that debt servicing dynamics operate independently without distorting the explanatory power of other regressors. For EXCHR, the centered VIF is 1.03, indicating a negligible level of multicollinearity despite its interaction with external debt and inflationary pressures. Both INFR (1.53) and INFR(-1) (1.50) record the highest VIFs among the variables, but these remain below the critical value of 5, suggesting that while inflationary trends are somewhat correlated with past values and exchange rate

fluctuations, they do not pose a risk of model distortion. The uncentered VIFs are naturally higher due to collinearity with the constant term, with the intercept (C) recording the highest value of 12.31; however, this does not undermine the stability of the model since the constant is not an explanatory variable. Overall, the VIF analysis confirms that the variables under consideration are statistically appropriate for inclusion in the ARDL framework, ensuring robustness in both short-run and long-run estimations.

Jarque-Bera Normality Test

The Jarque-Bera test assesses whether the data for , , DSR, EXCHR, , and INFR follow a normal distribution. Normality is a key assumption in regression analysis, ensuring that statistical inferences about the role of debt overhang in a vulnerable economy are valid. This is shown in Table 4.5 below:

Table 4.5 Jarque-Bera Probability Test**Source: Econometric Views Version 9.0 Output (2025)**

Series: Residuals	
Sample 1981 2024	
Observations 44	
Mean	-5.25e-16
Median	-0.143103
Maximum	5.044588
Minimum	-2.367072
Std. Dev.	1.558405
Skewness	1.194504
Kurtosis	4.991754
Jarque-Bera	17.73648
Probability	0.000141

The Jarque-Bera Probability Test results in Table 4.6, as depicted in the histogram, show that the residuals have a mean close to zero ($-5.25e-16$) and a median of -0.143 , which is desirable for unbiasedness in regression estimates. The distribution, however, indicates some degree of asymmetry, as reflected in the skewness value of 1.19 , which is positive and suggests a rightward tilt in the distribution of residuals. The kurtosis value of 4.99 exceeds the normal benchmark of 3 , showing a leptokurtic distribution with heavier tails, meaning extreme values occur more frequently than in a normal distribution. The Jarque-Bera statistic of 17.73 with a probability value of 0.000141 indicates rejection of the null hypothesis of normality at the 1% level of significance. This suggests that the residuals are not normally distributed. Despite this, in large-sample time series regressions such as ARDL, non-

normality of residuals does not invalidate the results due to the asymptotic properties of the estimators, provided other assumptions like homoscedasticity and absence of serial correlation are satisfied. The overall interpretation is that while the residuals deviate from perfect normality, the ARDL model remains consistent and efficient for policy inference given the large time span of the data.

Breusch-Godfrey Serial Correlation LM Test

This test examines whether there is autocorrelation in the residuals of the regression model. Since macroeconomic and debt data are time series, testing for serial correlation is crucial to avoid spurious results and to ensure that the impact of debt overhang on GDPGR is not overstated due to persistence in errors. This is shown in Table 4.6 below:

Table 4.6 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.392337	Prob. F(2,36)	0.6783
Obs*R-squared	0.938588	Prob. Chi-Square(2)	0.6254

Source: Econometric Views Version 9.0 Output (2025)

The Breusch-Godfrey Serial Correlation LM Test results in Table 4.7 show an F-statistic of 0.3923 with a probability value of 0.6783 , and an Obs*R-squared value of 0.9386 with a corresponding probability of 0.6254 . Both probability values are far greater than the conventional 5% level of significance, indicating that the null hypothesis of no serial correlation in the residuals cannot be rejected. This means that the residuals from the ARDL model are free from second-order serial correlation, which is an essential condition for the validity and efficiency of the estimated coefficients. The absence of serial correlation implies that the model is well specified and that the dynamics of the lagged variables have adequately captured the underlying data generation process. This enhances the reliability of the ARDL estimates, as the presence of

autocorrelation would have biased the standard errors, leading to unreliable statistical inferences. Therefore, the test result validates the robustness of the ARDL model for analyzing the relationship between DSR, EXCHR, INFR, and GDPGR in Nigeria over the period under review.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

This test checks if the error variance is constant across observations. In the context of Nigeria's debt and development, heteroskedasticity could arise due to policy changes or shocks, leading to biased standard errors. Detecting and correcting for it enhances the robustness of the analysis. This is shown in Table 4.7 below:

Table 4.7 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.371584	Prob. F(5,38)	0.8649
Obs*R-squared	2.050997	Prob. Chi-Square(5)	0.8420
Scaled explained SS	3.053238	Prob. Chi-Square(5)	0.6918

Source: Econometric Views Version 9.0 Output (2025)

If the probability value (p-value) is greater than 0.05 , we fail to reject the null hypothesis of homoskedasticity. From the table, the F-statistic (0.371584 , $p = 0.8649$), Obs*R-squared (2.050997 , $p = 0.8420$), and Scaled explained SS (3.053238 , $p = 0.6918$) all have probability values greater than 0.05 .

This indicates that the null hypothesis of homoskedasticity cannot be rejected. Therefore, the residuals of the estimated model are free from heteroskedasticity. The Breusch-Pagan-Godfrey test confirms that the error terms are homoskedastic,

implying that the model's estimators are efficient, consistent, and reliable for statistical inference.

The RESET test evaluates model specification errors, including omitted variables and incorrect functional forms. Given the complex nature of debt overhang and vulnerable economy, this ensures the model properly captures the true relationship between, DSR EXCH, INFR and GDPGR.. This is shown in Table 4.8 below:

Ramsey RESET Test

Table 4.8 Ramsey RESET Test

Equation: UNTITLED

Specification: GDPGR GDPGR(-1) DSR EXCHR INFR INFR(-1) C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.419069	37	0.6776
F-statistic	0.175619	(1, 37)	0.6776

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.493336	1	0.493336
Restricted SSR	104.4309	38	2.748181
Unrestricted SSR	103.9376	37	2.809123

Source: Econometric Views Version 9.0 Output (2025)

The Ramsey RESET Test results show that the t-statistic (0.419069, $p = 0.6776$) and the F-statistic (0.175619, $p = 0.6776$) both have probability values greater than 0.05. This indicates that the null hypothesis cannot be rejected. The model does not suffer from misspecification bias. Thus, it is correctly specified, and the functional form of the regression is appropriate for explaining the relationship between

GDP growth rate, debt service ratio, exchange rate, and inflation rate.

ADF Unit Root Test

The Augmented Dickey-Fuller test checks for stationarity of the variables. Since non-stationary time series data can lead to misleading regression results, it is vital to establish whether GDPGR and debt overhang indicators require differencing before applying ARDL analysis. This is shown in Table 4.9 below:

Table 4.9: Summary of ADF Test

ADF test at Levels				
Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Decision
GDPGR	-7.416766	-2.929734	0.0000	Stationary
DSR	-2.162704	-2.929734	0.2223	Non-stationary
EXCHR	3.041305	-2.931404	1.0000	Non-stationary
INFR	-3.490039	-2.929734	0.0129	Stationary
ADF test at 1 st Difference				
GDPGR	-8.579858	-2.933158	0.0000	Stationary
DSR	-7.059795	-2.933158	0.0000	Stationary
EXCHR	-6.704524	-2.931404	0.0000	Stationary
INFR	-7.699900	-2.931404	0.0000	Stationary

Source: Econometric Views Version 9.0 Output (2025)

The results reveal that at levels, GDPGR and INFR are stationary, while DSR and EXCHR are non-stationary. However, after first differencing, all variables (GDPGR, DSR, EXCHR, INFR) became stationary as their ADF test statistics were more negative than the critical values and probability values were below 0.05. The

mix of stationarity at levels and at first difference suggests that the variables are integrated of order I(0) and I(1). This justifies the adoption of the ARDL bounds testing approach, which is robust to a combination of I(0) and I(1) regressors.

ARDL Bounds Test

The ARDL bounds test determines whether a long-run relationship exists among GDPGR, DSR, EXHR and

INFR. This is necessary because the research focuses on whether debt overhang exert both short-run and long-run impacts on vulnerable economy (GDPGR). This is shown in Table 4.10 below:

Table 4.10 ARDL Bounds Test

Date: 09/19/25 Time: 01:33

Sample: 1981 2024

Included observations: 44

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	17.04857	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Econometric Views Version 9.0 Output (2025)

The ARDL bounds test results strongly reject the null hypothesis of no long-run relationship, as the computed F-statistic (17.04857) far exceeds the upper critical bound values at all conventional levels of significance. Specifically, at the 5% level, the upper bound is 4.35, while the F-statistic is nearly four times larger, providing overwhelming evidence of cointegration among GDP growth (GDPGR), debt service ratio (DSR), exchange rate (EXCHR), and inflation rate (INFR). This confirms the presence of a stable long-run equilibrium relationship, implying that despite short-run fluctuations, these variables move together over time and jointly determine the trajectory of Nigeria’s

economic growth. The outcome validates the subsequent estimation of both the long-run coefficients and the error correction mechanism within the ARDL framework. It further suggests that fiscal and monetary dynamics, particularly debt servicing obligations, exchange rate volatility, and inflationary pressures, are deeply embedded in Nigeria’s long-term growth path. The statistical strength of the result underscores the robustness of the model, indicating that policy interventions addressing these macroeconomic variables can have enduring effects on economic stability and performance.

ARDL Cointegration and Long Run Form

Once cointegration is established, the ARDL long-run form provides estimates of the equilibrium relationship.

This quantifies the extent to which debt overhang variables (DSR, EXCHR, and INFR) permanently impact GDPGR in Nigeria. This is shown in Table 4.11 below:

Table 4.11 ARDL Cointegrating And Long Run Form

Dependent Variable: GDPGR

Selected Model: ARDL(1, 0, 0, 1)

Date: 09/19/25 Time: 01:37

Sample: 1980 2024

Included observations: 44

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DSR)	0.001792	0.033576	0.053378	0.9577
D(EXCHR)	-0.000228	0.000766	-0.297158	0.7680
D(INFR)	-0.036507	0.025588	-1.426744	0.1618
CointEq(-1)	-1.138018	0.141392	-8.048654	0.0000
Cointeq = GDPGR - (0.0016*DSR -0.0002*EXCHR + 0.0388*INFR + 2.4304)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DSR	0.001575	0.029520	0.053349	0.9577
EXCHR	-0.000200	0.000673	-0.296917	0.7681
INFR	0.038825	0.021631	1.794842	0.0806
C	2.430383	0.663763	3.661524	0.0008

Source: Econometric Views Version 9.0 Output (2025)

The ARDL cointegration and long-run form results show that in the short run, the differenced variables of Debt Service Ratio (DSR), Exchange Rate (EXCHR), and Inflation Rate (INFR) do not significantly affect GDP growth, as their probability values exceed the 5% threshold. This indicates that short-run fluctuations in these variables have limited immediate influence on economic growth. However, the error correction term (CointEq(-1)) is negative (-1.138018), statistically significant at the 1% level, and greater than one in absolute value, confirming a strong and stable adjustment mechanism. This suggests that deviations from the long-run equilibrium are corrected swiftly, with more than 100% of disequilibrium adjusted within a year, indicating rapid convergence towards equilibrium.

In the long-run coefficients, DSR and EXCHR maintain insignificant impacts on GDP growth with high probability values, implying that debt servicing and exchange rate dynamics do not substantially explain Nigeria's long-run growth trajectory. Conversely, inflation (INFR) displays a positive

coefficient (0.0388) and is weakly significant at the 10% level, suggesting that mild inflation could be growth-inducing in the long run, possibly reflecting a demand-pull relationship in the Nigerian economy. The constant term (2.4304) is significant and positive, highlighting the presence of other structural and institutional factors that consistently drive growth beyond the specified macroeconomic variables.

Overall, the findings establish the existence of a long-run cointegration relationship between external debt servicing, exchange rate, inflation, and GDP growth. While short-run effects remain muted, the long-run dynamics emphasize the importance of inflationary trends and structural factors in shaping economic performance, with the significant error correction term reinforcing the system's ability to self-correct towards equilibrium.

ARDL Data Analysis

When estimating the ARDL model in EViews 9.0, one key diagnostic that is automatically reported is the Durbin-Watson (DW) statistic. The DW statistic is

used to test for the presence of serial correlation in the residuals of the regression model. A value close to 2 suggests no first-order autocorrelation, values significantly below 2 indicate positive autocorrelation, while values substantially above 2 suggest negative autocorrelation. The presence of autocorrelation would weaken the validity of the ARDL estimates, making the

DW statistic an essential diagnostic within the ARDL test output. Thus, the ARDL test is not only a tool for modeling dynamic relationships but also provides important diagnostics such as the Durbin-Watson statistic, which ensures the robustness of the results in time series analysis. This is shown in Table 4.12 below

Table 4.12 ARDL Data Analysis

Dependent Variable: GDPGR

Method: ARDL

Date: 09/19/25 Time: 01:31

Sample (adjusted): 1981 2024

Included observations: 44 after adjustments

Maximum dependent lags: 2 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (2 lags, automatic): DSR EXCHR INFR

Fixed regressors: C

Number of models evaluated: 54

Selected Model: ARDL(1, 0, 0, 1)

Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	-0.138018	0.141392	-0.976137	0.3352
DSR	0.001792	0.033576	0.053378	0.9577
EXCHR	-0.000228	0.000766	-0.297158	0.7680
INFR	-0.036507	0.025588	-1.426744	0.1618
INFR(-1)	0.080690	0.024958	3.232985	0.0025
C	2.765821	0.876986	3.153781	0.0031
R-squared	0.233223	Mean dependent var	2.920455	
Adjusted R-squared	0.132331	S.D. dependent var	1.779695	
S.E. of regression	1.657764	Akaike info criterion	3.974940	
Sum squared resid	104.4309	Schwarz criterion	4.218239	
Log likelihood	-81.44868	Hannan-Quinn criter.	4.065167	
F-statistic	2.311616	Durbin-Watson stat	2.076330	
Prob(F-statistic)	0.062845			

*Note: p-values and any subsequent tests do not account for model selection.

Source: Econometric Views Version 9.0 Output (2025)

The ARDL regression results reveal mixed short-run effects of the explanatory variables on GDPGR. The lagged dependent variable GDPGR(-1) is negative (-0.138018) and insignificant, indicating limited persistence of past growth in shaping current performance. DSR has a small positive coefficient (0.001792) but is highly insignificant, showing that debt servicing has no meaningful short-run effect on growth. Similarly, EXCHR carries a negative but insignificant coefficient (-0.000228), implying that exchange rate changes do not immediately affect growth.

INFR shows a negative but insignificant coefficient (-0.036507), suggesting inflationary pressures tend to weaken growth. However, its lagged term, INFR(-1), is positive (0.080690) and significant at the 1% level, indicating that previous-period inflation stimulates subsequent GDPGR. This counterintuitive result may reflect Nigeria's adaptive economy, where moderate past inflation encourages nominal investment or spending adjustments that support growth. The constant (2.765821) is positive and significant, highlighting underlying growth potential independent of the specified variables.

Diagnostic statistics reveal that the model explains about 23% of GDPGR variation ($R^2 = 0.2332$; adjusted $R^2 = 0.1323$), showing modest explanatory power. The Durbin-Watson statistic (2.076) indicates no autocorrelation, while the overall model is marginally significant (F-statistic probability = 0.0628). Overall, while DSR and EXCHR exert weak effects, lagged INFR emerges as a key driver of growth, underscoring the importance of inflation management in stabilizing Nigeria's growth trajectory.

Pairwise Granger Causality Test

The Granger causality test examines the direction of causality between debt overhang and indicators and GDPGR. This is essential to know whether debt overhang drives vulnerable economy, or whether rising GDPGR creates demand for more foreign borrowing, thus clarifying policy direction. This is shown in Table 4.13 below:

Pairwise Granger Causality Tests

Date: 09/19/25 Time: 02:03

Sample: 1980 2024

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DSR does not Granger Cause GDPGR	43	0.58915	0.5598
GDPGR does not Granger Cause DSR		0.55373	0.5794
EXCHR does not Granger Cause GDPGR	43	0.90278	0.4140
GDPGR does not Granger Cause EXCHR		0.03990	0.9609
INFR does not Granger Cause GDPGR	43	4.04581	0.0255
GDPGR does not Granger Cause INFR		0.10306	0.9023
EXCHR does not Granger Cause DSR	43	1.45120	0.2470
DSR does not Granger Cause EXCHR		2.80802	0.0729
INFR does not Granger Cause DSR	43	0.49962	0.6107
DSR does not Granger Cause INFR		1.06841	0.3536
INFR does not Granger Cause EXCHR	43	1.13250	0.3329
EXCHR does not Granger Cause INFR		3.45843	0.0417

Source: Econometric Views Version 9.0 Output (2025)

The Granger causality results reveal mixed interactions among the variables. For DSR and GDPGR, no causality is found in either direction, suggesting that debt servicing neither drives growth nor responds predictably to it in the short run. This contrasts with the debt overhang hypothesis, which links high debt service to reduced investment and weaker growth. In Nigeria, debt obligations alone may not directly explain growth variability. Similarly, the absence of causality between EXCHR and GDPGR contrasts with conventional theory, as exchange rate instability is not shown to forecast growth, nor does growth predict exchange rate changes, implying other structural factors may be more influential.

By contrast, INFR has a significant causal effect on GDPGR, underscoring the critical role of inflation in shaping growth outcomes. Persistent price instability likely distorts consumption, savings, and investment, thereby affecting economic performance. The absence of reverse causality suggests growth does not significantly drive inflation in Nigeria, unlike arguments of demand-pull inflation from rapid expansion. Additionally, the unidirectional causality from EXCHR to INFR highlights that exchange rate fluctuations strongly shape inflation trends, reflecting Nigeria's import dependence and currency pass-through effects. Inflation, however, does not explain exchange rate dynamics, pointing instead to external shocks and foreign exchange pressures as dominant drivers.

Overall, the findings challenge conventional debt and growth literature. While debt service and exchange rate volatility do not directly predict growth, inflation emerges as a central determinant of short-run growth. Moreover, the strong link between exchange rate and inflation underscores structural vulnerabilities in the economy and the need for coordinated monetary and exchange rate policies. Unlike the debt overhang argument that emphasizes debt as the main drag, the results suggest inflation and exchange rate instability are more critical constraints on Nigeria's growth trajectory.

Conclusion:

Both short-run and long-run results indicate that DSR does not significantly explain growth performance in Nigeria. This implies that debt obligations, while burdensome, may not independently drive growth fluctuations but instead interact with broader fiscal and structural dynamics. Exchange Rate (EXCHR): Exchange rate volatility shows no significant effect on GDP growth in either the short or long run. This challenges conventional assumptions that depreciation directly suppresses growth, suggesting that Nigeria's growth trajectory is influenced more by structural inefficiencies and trade imbalances than by currency fluctuations alone. Inflation Rate (INFR): Inflation emerges as the most influential macroeconomic variable, with a weak but positive long-run effect.

Moderate inflation appears to stimulate growth, aligning with demand-pull inflation theories. However, the risks of runaway inflation remain, making stability crucial. GDP Growth Rate (GDPGR): The adjustment mechanism is robust, with disequilibrium corrected by more than 100% annually. This demonstrates a strong self-correcting capacity of the Nigerian economy towards its long-run growth path, despite short-term disruptions.

Recommendations

1. Adopt debt restructuring and efficient debt utilization to ensure that borrowing translates into growth-enhancing investments rather than unproductive recurrent spending.
2. Implement exchange rate harmonization and strengthen export diversification to reduce vulnerability to external shocks and import dependence.
3. Maintain inflation within a moderate band (single-digit to low double-digit) to harness its growth-inducing effects while avoiding hyperinflationary spirals.
4. Strengthen institutional frameworks, governance quality, and infrastructure investments to complement macroeconomic stabilization policies.

Contributions to Knowledge

1. Provides empirical evidence that Nigeria's growth is less constrained by debt servicing and exchange rate instability than by inflationary pressures.
2. Demonstrates that the economy has a strong and rapid error-correction mechanism, indicating resilience to disequilibrium shocks.
3. Shifts the debt overhang debate in Nigeria towards the role of inflation and structural factors rather than debt burden alone.
4. Validates the ARDL framework as suitable for capturing mixed integration and both short- and long-run dynamics in Nigeria's debt-growth nexus.

Suggestions for Further Studies

1. Extend the model by incorporating fiscal deficit, capital inflows, and institutional quality indicators to capture broader structural influences.
2. Explore sectoral impacts of debt servicing and exchange rate fluctuations on growth (e.g., agriculture, manufacturing, oil sector).
3. Apply nonlinear ARDL (NARDL) or Threshold models to examine possible asymmetries in the debt-growth relationship.
4. Conduct comparative studies between Nigeria and other Sub-Saharan African economies to generalize findings.

5. Investigate the mediating role of governance and corruption in the debt-growth-inflation nexus.

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