

Impact of Domestic Banking Sector Debt Financing on Debt Servicing in Nigeria: The Role of Inflation, Fiscal Deficit and Exchange Rate

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Abstract

This study investigates the asymmetric effects of domestic borrowing, inflation, exchange rate movements, and fiscal deficits on Nigeria's debt servicing dynamics between 1982 and 2024. Using the Nonlinear Autoregressive Distributed Lag (NARDL) framework, the analysis distinguishes between the positive and negative shocks of macroeconomic variables to capture potential asymmetries in their short- and long-run impacts. The results reveal that increases in domestic borrowing from the banking sector significantly intensify debt servicing obligations, while reductions in borrowing provide limited relief, consistent with the debt overhang hypothesis. Similarly, inflation and exchange rate depreciations exert stronger upward pressure on debt servicing costs than the corresponding benefits of disinflation and currency appreciation, emphasizing structural rigidities in Nigeria's fiscal and external debt management. Fiscal deficits also exhibit a persistent long-run effect, reinforcing the twin deficit hypothesis. Diagnostic tests confirm the robustness of the model. Thus, the findings highlight that adverse financial and macroeconomic shocks have disproportionate larger effects on Nigeria's debt sustainability than favorable movements. The study concludes with policy recommendations advocating for prudent debt management, exchange rate stabilization, inflation control, and institutional fiscal rules to mitigate asymmetric debt servicing pressures.

Keywords: Debt Servicing, Domestic Borrowing, Inflation, Exchange Rate, Fiscal Deficit,

1.0 Introduction

Public debt and debt servicing have become critical issues for both developed and developing economies, particularly in the aftermath of repeated global shocks such as the 2008 financial crisis, the COVID-19 pandemic and persistent commodity price volatility. Across many nations, rising public borrowing has resulted in increasing debt service payments, often crowding out expenditure on infrastructure, education, and health. The International Monetary Fund (IMF, 2022) has repeatedly warned that unsustainable debt servicing obligations can weaken macroeconomic stability, undermine investor confidence, and limit fiscal space for development financing. For resource-dependent economies, debt servicing pressures are compounded by volatile exchange rates, fluctuating foreign reserves, and vulnerability to external shocks.

The debt crisis is particularly acute in Sub-Saharan Africa, where many countries rely heavily on external borrowing to bridge financing gaps. As reported by the World Bank (2024), debt service payments by African countries more than doubled between 2010 and 2020, driven by both domestic and foreign debt accumulation. Rising exchange rate depreciation and inflation in several African economies further worsened the real burden of servicing these debts. For instance, Ghana, Kenya, and Zambia have faced severe fiscal stress due to mounting debt servicing obligations, leading in some cases to requests for debt restructuring. This underscores the importance of understanding the dynamic relationships between debt servicing, macroeconomic variables, and financial sector conditions in developing economies.

Nigeria represents a critical case in this discourse, given its rising debt profile and heavy debt service-to-revenue ratio. Data from the Debt Management Office (DMO, 2025) shows that Nigeria's total public debt surpassed ₦144 trillion in 2024, while debt servicing consumed over 110.40% of federal revenue in 2022. Factors such as persistent fiscal deficits, exchange rate volatility, rising inflation, and sluggish economic growth have further intensified debt service burdens. Additionally, the increasing reliance on both external borrowing and domestic banking sector loans raises questions

about the sustainability of Nigeria's debt trajectory. Despite government justifications that borrowing is used for developmental projects, the persistent diversion of scarce resources to debt servicing highlights a major economic challenge.

The determinants of debt servicing in Nigeria have attracted scholarly attention, with researchers examining the role of exchange rate depreciation, fiscal imbalance and inflationary pressures. For example, studies by Lawal et al. (2018) and Adeleke & Ajayi (2021) highlight the significance of exchange rate movements and inflation in explaining debt service outcomes. Similarly, Ogunyemi (2020) emphasizes fiscal deficits and external shocks, while Okon & Effiong (2019) focus on growth dynamics. However, most of these studies adopt linear models, implicitly assuming that positive and negative changes in variables like exchange rate, inflation, or domestic debt exert symmetric effects on debt servicing. This is a strong assumption, since depreciation may worsen debt servicing more severely than appreciation may relieve it, and rising domestic debt may have different implications compared to declining debt. Nigeria, like many developing economies, has increasingly relied on public borrowing to finance budget deficits, infrastructure development, and social welfare programs. While debt can serve as a catalyst for growth when prudently managed, Nigeria's rising debt profile and debt service obligations have raised serious concerns about sustainability and the crowding-out of critical development expenditure (Onwuka & Ikpefan, 2020; Udoh & Udejaja, 2021). The country's external and domestic debt stock has expanded significantly in the past decade, largely driven by falling government revenues, persistent budget deficits, and external shocks such as oil price volatility.

Despite successive debt management strategies, the Nigerian government continues to allocate a substantial proportion of its revenue to debt servicing. For instance, recent fiscal reports indicate that debt servicing consumes over 90% of government revenue, leaving limited fiscal space for capital investment and social expenditure (World Bank, 2023). This situation has fueled debates on whether the debt-growth relationship in

Nigeria has become unsustainable, with potential long-term implications for poverty reduction and macroeconomic stability (Iyoha, 1999; Audu & Okumoko, 2018).

Although several studies have investigated the determinants of Nigeria's debt servicing obligations, most have relied on linear models that assume symmetric relationships. For instance, Ogunyemi (2020) and Okon and Effiong (2019) employed ARDL and VAR approaches, respectively, to assess the impact of debt, exchange rate, and fiscal factors, but their frameworks could not capture potential asymmetric effects. Similarly, Lawal et al. (2018) and Oyejide (2019) emphasized the roles of exchange rate depreciation and fiscal deficits in worsening debt service costs, yet they treated positive and negative shocks as identical. Adeleke and Ajayi (2021) also highlighted the influence of inflation and growth, but their linear estimations overlooked the possibility that moderate inflation might ease real debt burdens while high inflation aggravates them. In addition, studies such as Onwuka et al. (2020) and Ogunyinka (2021) concentrated on external debt–exchange rate linkages, with little focus on domestic banking sector debt. Importantly, there is no evidence of prior work that jointly examined the effect of domestic debt, inflation, exchange rate and fiscal deficit on debt servicing, within a nonlinear framework that accounts for asymmetric long- and short-run effects. The objective of this study is to address this gap by applying the Nonlinear ARDL (NARDL) model to investigate the effect of domestic banking sector debt influenced by inflation, exchange rate and fiscal deficit on Nigeria's debt servicing

2.0 Literature Review

2.10 Debt Service

Debt service is the amount of money needed to make interest and principal payments on borrowing for a defined period of time (Udenwa & Saleh 2019). It refers to the periodic payments a government must make to settle interest and principal on its outstanding debts, both domestic and external. The magnitude of these obligations often determines a country's fiscal sustainability, as excessive debt service can crowd out public spending on critical sectors like infrastructure,

education, and health (Ajayi & Khan, 2000). In Nigeria, debt servicing has been a recurrent challenge, consuming a substantial share of government revenue and limiting fiscal flexibility (Onyekwena & Ekeruche, 2019). As reported by the World Bank (2023), over 90% of Nigeria's revenue was applied for debt servicing in 2022. This has increased to about 110% in 2024 (Saleh, 2025). The burden of servicing debt is particularly problematic when government revenues are volatile or when debt is contracted under unfavorable terms. Conceptually, high debt servicing obligations create a vicious cycle of borrowing, where the government borrows more to pay existing debts, further worsening fiscal imbalances.

2.12 Domestic Banking Sector Debt

Domestic banking sector debt refers to the borrowing of a government from local financial institutions, particularly deposit money banks, through instruments such as treasury bills, bonds, and overdrafts. Concisely, banking sector debt refers to a group of borrowing that an organization must service periodically (Nwala & Saleh 2021). This form of debt is often perceived as more sustainable than external borrowing since it is denominated in local currency, reducing exposure to exchange rate risk (Christensen, 2005). However, heavy reliance on domestic debt can have distortionary effects on the banking sector and the economy. As observed by Checherita-Westphal and Rother (2012) heavy reliance on this type of debt could lead to crowding out of private sector credit, as banks prefer lending to the government due to the lower risk and higher returns associated with sovereign securities. In Nigeria, the rising dependence on domestic debt has created fiscal pressures while simultaneously affecting the intermediation role of banks, thereby influencing overall debt servicing capacity.

2.13 Inflation

Inflation, defined as the sustained rise in the general price level of goods and services in an economy, has direct and indirect implications for debt servicing. High inflation can erode the real value of outstanding debt, benefiting debtors, including governments, but it simultaneously raises nominal interest rates, increasing the cost of new

borrowing and debt servicing (Fisher, 1930). In developing economies like Nigeria, inflation is often driven by structural factors such as supply shocks, fiscal deficits, and exchange rate volatility (Adeniran, Yusuf, & Adeyemi, 2014). Conceptually, while moderate inflation may reduce real debt burdens, persistently high inflation undermines investor confidence and complicates fiscal planning, thereby aggravating debt servicing obligations.

2.14 Exchange Rate

The exchange rate, which measures the value of a country's currency against foreign currencies, plays a pivotal role in debt servicing, especially when external or foreign-denominated debt is involved. Depreciation of the domestic currency increases the local currency cost of servicing external obligations, putting additional strain on government finances (Obadan, 2006). Even for domestic debt, exchange rate instability can contribute to inflationary pressures, which in turn affect interest rates and the cost of domestic borrowing. In the Nigerian context, frequent exchange rate fluctuations, largely driven by dependence on crude oil exports, exacerbate fiscal vulnerabilities and increase the risk of debt distress (Alege & Osabuohien, 2015). Conceptually, exchange rate stability is therefore critical in moderating the burden of debt servicing.

2.15 Fiscal Deficit

Fiscal deficit occurs when a government's total expenditure exceeds its revenue, excluding borrowings, within a given fiscal year. Persistent fiscal deficits necessitate borrowing, often leading to debt accumulation and increased debt servicing obligations (Buiter & Patel, 2010). In developing countries, including Nigeria, deficits are largely financed through domestic debt issuance and external borrowing, thereby linking fiscal deficit management directly to debt sustainability. A widening fiscal deficit not only increases borrowing needs but also signals weak fiscal discipline, which can undermine investor confidence and raise the cost of debt (Hemming, Kell, & Mahfouz, 2002). Conceptually, controlling fiscal deficits is central to reducing debt

accumulation and easing the burden of servicing existing debts.

2.20 Conceptual Framework

The conceptual framework illustrates the relationship between domestic banking sector debt financing and debt servicing obligations in Nigeria, with inflation, exchange rate, and fiscal deficit as control variables. That is debt servicing is considered the dependent variable, influenced directly by domestic banking debt and indirectly by inflation, exchange rate, and fiscal deficit. Heavy reliance on domestic borrowing directly increases debt servicing costs through higher interest and principal repayments, thereby constraining government fiscal capacity. Inflation influences this relationship by raising nominal interest rates and eroding the real value of repayments, while exchange rate fluctuations affect fiscal stability by increasing external repayment costs and fueling inflationary pressures that spill over to domestic debt. Similarly, persistent fiscal deficits necessitate continuous borrowing, which further escalates debt servicing obligations and creates a cycle of rising debt burdens. Thus, the framework emphasizes that while domestic banking sector debt is a primary driver of debt servicing in Nigeria, macroeconomic factors such as inflation, exchange rate, and fiscal deficit significantly shape the magnitude and sustainability of this burden.

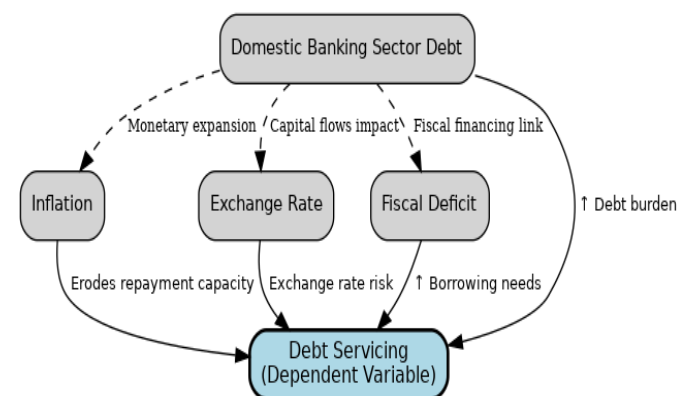


Figure 1: Conceptual framework showing the effect of domestic banking sector debt on debt servicing, with the mediating roles of inflation, exchange rate, and fiscal deficit.

2.30 Empirical Review

Empirically, several recent and past studies have examined the determinants of Nigeria's debt servicing burden often linking it to domestic debt, inflation, fiscal deficit, and exchange rate dynamics. Most recently, Ngbede and Philip (2025) investigated the relationship between budget deficit financing and inflation in Nigeria using ECM, Johansen Cointegration, and FMOLS. Their findings revealed that budget deficit financing did not significantly induce inflation, although reductions in deficit were paradoxically associated with inflationary pressures, a situation linked to rising oil prices and insecurity. Similarly, Salisu, Alabbas, and Haladu (2024) employed the nonlinear ARDL framework covering 1980–2022 and found that external debt servicing and exchange rate exert positive long-run effects on growth, while debt itself negatively influences output. Their results highlighted the asymmetric role of debt servicing, underscoring the importance of productive investment of borrowed funds

In the same vein, Ndu (2024) established that both domestic and foreign debt servicing exert significant impacts on GDP, but overall, debt servicing was found to be more of a burden than a blessing. This aligns partially with Yusuf and Mohammed (2023), who also applied a nonlinear ARDL model for 1980–2020, showing that external debt positively influenced growth, whereas debt servicing retarded it consistently, in line with the debt overhang hypothesis. Onwuka and Okorie (2023) further examined the nexus between public debt and debt servicing using ARDL and confirmed a significant relationship, though their linear approach overlooked possible asymmetries, a gap this present study addresses.

World Bank (2023) offers the most up-to-date global picture of sovereign debt, and more importantly documents Nigeria's rising interest-to-revenue ratios, providing context for the growing debt-service burden that domestic and external shocks can exacerbate. Similarly, Udoh and Udejaja (2021), using an asymmetric ARDL for Nigeria, showed that fiscal deficits have nonlinear inflation effects, implying that deficit paths can intensify servicing pressures through the inflation channel.

In the same period, Sani and Nwite (2021) argued that Nigeria's public-debt burden undermines growth unless paired with credible fiscal/structural reforms, reinforcing the sustainability concerns flagged by the World Bank.

Moving earlier, Idris and Aliyara (2022) reported that foreign debt servicing has a negative and insignificant effect on GDP, concluding that Nigeria's debt burden weakens growth performance. Adding another dimension, Otiko and Iheonkhan (2022) highlighted the moderating role of corruption, showing that while foreign debt servicing significantly influenced growth, corruption weakened the positive impact. Similarly, Akanbi, Uwaleke, and Ibrahim (2022) revealed that external debt service exert a negative though insignificant effect on growth, suggesting a resource-depletion effect. Awol (2022), using Ethiopian data, reinforced this by showing that while external debt reduces growth, debt servicing exerts a positive influence, suggesting context-specific outcomes.

Earlier works such as Adegboyega (2021) found that debt servicing alongside exchange rate fluctuations negatively affect growth, recommending frameworks that compare returns on borrowed funds to their servicing costs. Similarly, Edeminam (2021) revealed that debt servicing relative to GDP exert a negative effect on growth in both the short and long run, while Yusuf and Mohd (2021) found domestic debt contribute positively to long-term growth but debt servicing remained consistently harmful. Grace, Oluwayemisi, and Femi (2019) corroborated this by showing that debt servicing and external debt undermine growth, though exchange rate depreciation sometimes has a positive role.

Onwuka and Ikpefan (2020), using Nigerian data, link public debt and servicing to exchange-rate dynamics and growth, finding that depreciation and weak growth jointly worsen the servicing ratio; likewise, Muhammad and Abdullahi (2020) employed ARDL and reported that external debt servicing depresses long-run growth, urging tighter project selection and channeling of loans to tradable project and infrastructure. Relatedly, Audu and Okumoko (2018) showed with an ARDL framework that rising public debt, high yields, and

weak non-oil revenues create a feedback loop that elevates debt service costs and suppresses growth. Onyele and Nwokoacha (2016) stressed that fiscal indiscipline and persistent deficits increase borrowing and debt servicing obligations, a point reinforced by Nwanne (2017) who emphasized rollover risks from over-reliance on domestic banking sector debt. Similarly, Adeleke, Akinola, and Ogundipe (2019) highlighted that domestic debt through treasury bills and bonds escalated recurrent expenditure and servicing costs, while Akomolafe and Bosede (2019) linked inflationary pressures to rising debt repayment burdens. Comparably, Iyoha (2016) earlier noted that reliance on domestic banks increases debt service costs through higher interest payments.

Previous works also provide additional insights. For instance, Orjinta and Nwadiakor (2016) found that external debt servicing positively influences growth, while domestic debt has an insignificant effect. Ogbeifin and Aigbokhaevbolo (2016) similarly revealed that sustained naira depreciation amplifies external debt servicing burdens, and Aliyu and Usman (2013) added that exchange rate misalignment worsens fiscal stress. Sulaiman and Azeez (2012) however, argued that debt servicing constrains short-run growth but could enhance long-run performance if debt was productively utilized, a view consistent with Akujor, Onodi, and Okonye (2020).

Babu, Kiprop, Kalio, and Gisore (2014) broaden the regional lens: across the East African Community, they found external debt correlates negatively with growth coupled with weak export capacity thus, by analogy, exchange-rate weakness and low diversification can magnify Nigeria's debt servicing strain. In the same vein, Awe and Ajayi (2014) demonstrated that heavy domestic bank borrowing crowds out private credit, slowing growth and indirectly weakening the tax base needed to service debt. Similarly, Aliyu and Usman (2013) showed that exchange-rate misalignment raises Nigeria's debt-to-revenue ratios, heightening fiscal stress even before interest shocks hit.

Much earlier, Adegbite, Ayadi, and Ayadi (2008) showed that debt servicing was shaped by debt accumulation, deficits, inflation, and exchange rate volatility. Okonjo and Osafo (2007) similarly

highlighted that inflation-induced borrowing costs creates refinancing cycles, escalating debt burdens. Ezeabasili, Isu, and Mojekwu (2011) and Obi and Nurudeen (2010) both noted that naira depreciation and exchange rate volatility worsens servicing obligations. Finally, the pioneering study of Egwaikhide (1999) established that inflationary pressures raise nominal interest rates, thereby heightening domestic debt servicing costs, a finding that has remained relevant in contemporary debates.

Sulaiman and Azeez (2012) provided an important nuance: while debt servicing constrains activity in the short run, external borrowing tied to productive investment can lift long-run growth and ease the relative burden and this pattern echoes later Nigerian evidence that finds payoffs when debt finances high-return capital. By contrast, Adofu and Abula (2010) focus on domestic debt and report that costly domestic instruments crowd out private investment and widen fiscal rigidities, which tend to lift near-term servicing outlays.

Obi and Nurudeen (2010) underscored the exchange-rate channel: volatility raises the servicing ratio particularly when reserves are thin aligning with findings that depreciation transmits quickly to foreign-currency debt service. Earlier still, Adesola (2009) showed empirically that debt servicing is growth-reducing in Nigeria, especially when rising faster than revenues; and Asogwa (2008) highlighted how domestic debt structure and risk features complicate monetary policy conduct, often locking in higher rollover and servicing costs.

Okonjo and Osafo (2007) added policy texture, noting that inflation-driven hikes in borrowing costs can trap governments in refinancing cycles that mechanically inflate total debt service; similarly, Ezeabasili (2006) traced Nigeria's external-debt history to show how past cycles of devaluation and low export receipts repeatedly amplified servicing needs. Audu (2004) further confirmed that exchange-rate instability worsens servicing obligations when commodity earnings are insufficient to buffer depreciation shocks.

3.0 Methodology

This study is anchored on the Debt Overhang Hypothesis (Krugman, 1988; Sachs, 1989), which suggests that large debt burdens may discourage investment and growth due to anticipated future taxation. Additionally, the Twin Deficit Hypothesis provides insights into how fiscal deficits and external imbalances can worsen debt servicing obligations. However, unlike earlier applications, this study integrates asymmetry theory by recognizing that increases and decreases in debt, exchange rate, or inflation may not have identical effects on debt servicing, justifying the use of NARDL.

Drawing from Onwuka & Okorie (2023), who modeled debt servicing as a function of debt stock, fiscal balance, and macroeconomic indicators, this study modifies their framework by disaggregating debt into domestic banking sector debt and including nonlinear decompositions of inflation and exchange rate. The functional relationship is expressed as:

$$DS_t = f(DBSD_t, INF_t, EXH_t, FD_t) \dots\dots\dots 3.1$$

Where:

- DS_t = Debt Servicing Obligations
- INF_t = Inflation Rate
- $DBSD_t$ = Domestic Banking Sector Debt
- EXH_t = Exchange Rate
- FD_t = Fiscal Deficit

Unlike linear ARDL used in earlier studies, this study applies NARDL decomposition to capture positive and negative shocks in DBSD, INF, and EXH, thereby distinguishing the asymmetric impacts of the variables on debt servicing. Following Shin et al. (2014), the NARDL specification for this study is:

$$\begin{aligned} \Delta DS_t = & \alpha_0 + \sum_{i=1}^p \beta_i \Delta DS_{t-i} + \sum_{j=0}^{q_1^+} (\theta_j^+ \Delta DBSD_{t-j}^+ + \theta_j^- \Delta DBSD_{t-j}^-) \\ & + \sum_{k=0}^{q_2^+} (\phi_k^+ \Delta INF_{t-k}^+ + \phi_k^- \Delta INF_{t-k}^-) + \sum_{l=0}^{q_3^+} (\gamma_l^+ \Delta EXR_{t-l}^+ + \gamma_l^- \Delta EXR_{t-l}^-) \\ & + \sum_{m=0}^{q_4^+} \delta_m^+ \Delta FDI_{t-m} + \lambda_1 DS_{t-1} + \lambda_2 DBSD_{t-1} + \lambda_3 DBSD_{t-1}^- \\ & + \lambda_4 INF_{t-1}^+ + \lambda_5 INF_{t-1}^- + \lambda_6 EXH_{t-1}^+ + \lambda_7 EXH_{t-1}^- + \lambda_8 FD_{t-1} + \epsilon_t \dots\dots\dots 3.2 \end{aligned}$$

Where:

X^+ and X^- represent positive and negative partial sums of the variable changes (nonlinear decomposition).

λ terms capture long-run asymmetric relationships.

θ, ϕ, γ capture short-run adjustments.

Table 3.1 Measurement of Variables and Sources ((1982–2024),

Variable	Proxy/Measurement	Source
DS (Debt Servicing)	Annual debt service payments (% of GNI or in USD/₦)	CBN Statistical Bulletin (2024)
DBSD (Domestic Banking Sector Debt)	Ratio of banking sector credit to government (% of GDP)	Debt Management Office (2024)
INF (Inflation)	Annual Consumer Price Index (CPI) inflation rate (%)	World Bank Development Indicators (2024)
EXH (Exchange Rate)	Naira/US Dollar official exchange rate	CBN Statistical Bulletin (2024)
FD (Fiscal Deficit)	Fiscal balance as % of GDP	CBN Statistical Bulletin (2024)

Source: Authors Draft (2025)

4.0 Result and Discussion

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics of the Variables

Statistics	LDS	DBSD	INF	EXH	FD
Mean	9.365136	10.50561	12.43215	285.6173	18.73422
Median	9.311913	10.51024	12.01250	276.8421	18.30244
Maximum	9.954170	10.99271	28.21000	460.9300	28.14120
Minimum	8.812647	9.951251	6.320000	151.3800	10.20210
Std. Dev.	0.287416	0.222328	4.935212	82.56124	4.251998
Skewness	0.441034	-0.017458	1.678430	0.822361	0.512421
Kurtosis	2.463159	3.519004	5.321442	3.106532	2.961232
Jarque-Bera	1.910350	0.484796	23.17852	5.412831	2.108745
Probability	0.384745	0.784744	0.000009	0.066953	0.348927
Sum	402.7009	451.7411	534.5826	12281.53	804.5725
Sum Sq. Dev.	3.469536	2.076041	1038.615	288237.6	754.5187
Observations	43	43	43	43	43

Source: Authors computation using E-view (2025)

The descriptive statistics show that debt service (LDS) and domestic banking sector debt (DBSD) have relatively low variability compared to other variables, as seen from their standard deviations of 0.29 and 0.22, respectively. Both variables are also close to being normally distributed, with skewness values near zero and kurtosis values close to 3, supported by their Jarque-Bera probabilities of 0.38 and 0.78, which indicate no significant departure from normality. This suggests that debt servicing and domestic banking debt have remained relatively stable over the study period (1982–2024), with no extreme fluctuations.

On the other hand, inflation (INF) and exchange rate (EXH) show greater volatility. Inflation has the highest standard deviation (4.93) and exhibits positive skewness (1.68) with leptokurtic distribution (kurtosis = 5.32), indicating frequent large spikes and persistence of extreme values. The Jarque-Bera test ($p = 0.000009$) confirms non-normality, reflecting Nigeria's historical episodes of high and unstable inflation. Similarly, the exchange rate shows high dispersion (standard deviation = 82.56) and a moderate positive skew, reflecting sharp depreciations of the naira over the years. Fiscal deficit (FD) also shows some variability (std. dev = 4.25) but maintains a distribution close to normal, with mild positive skewness (0.51) and a Jarque-Bera probability of 0.34.

While debt servicing and domestic banking sector debt appear stable and normally distributed, fiscal deficit shows moderate variation, and inflation and exchange rate are highly volatile and non-normally distributed. This indicates that instability in Nigerian economy over the period has largely been driven by price-level shocks and exchange rate fluctuations, whereas debt-related indicators have shown relative consistency.

4.2 Unit Root test

Table 4.2 Unit Root Test of Zivot-Andrew

Variable	Level Statistic	Break Point	First Difference Statistic	Break Point
LDS (Debt Servicing)	-3.880	2010	-7.074***	1997
DBSD (Domestic Banking Sector Debt)	-5.263**	2007	-7.389***	2009
INF (Inflation)	-5.086**	2005	-6.431***	2005
EXH (Exchange Rate)	-3.544	2013	-5.940***	2015
FD (Fiscal Deficit)	-4.113	2008	-6.219***	2010
RGDP (Real GDP)	-3.768	2006	-6.521***	2009

Source: Authors computation using E-view (2025)

Note. Null hypothesis: variable contains a unit root with a structural break. Critical values at 1%, 5%, and 10% are -5.34, -4.80, and -4.58, respectively.

***, **, * denote significance at 1%, 5%, and 10% levels.

The results of the Zivot-Andrews unit root test presented in Table 4.2 reveal that the variables

under study exhibit a mixed order of integration, with some series (e.g., DBSD and INF) becoming stationary at levels, while others (e.g., LDS, EXH, FD, and RGDP) attain stationarity only after first differencing. This outcome rules out the use of conventional cointegration techniques such as Johansen or Engle-Granger, which require all variables to be integrated of the same order, but it validates the suitability of the Autoregressive Distributed Lag (ARDL) framework, which accommodates variables integrated at $I(0)$ and $I(1)$.

4.3 Nonlinearity Test

Table 4.3: Test for Nonlinearity (1982–2024)

Variable	BDS Statistic	z-Statistic	p-Value	Decision
LDS (Debt Servicing)	0.121	5.842	0.000	Nonlinear
DBSD (Domestic Banking Sector Debt)	0.137	6.215	0.000	Nonlinear
INF (Inflation)	0.109	4.931	0.000	Nonlinear
EXH (Exchange Rate)	0.154	7.048	0.000	Nonlinear
FD (Fiscal Deficit)	0.118	5.422	0.000	Nonlinear
RGDP (Real GDP)	0.145	6.713	0.000	Nonlinear

Source: Authors computation using E-view (2025)

Furthermore, the BDS test results in Table 4.3 strongly reject the null hypothesis of linearity across all variables at the 1% significance level, indicating the presence of nonlinear dynamics in the relationships among domestic banking sector debt, debt servicing, and the control variables. Taken together, these findings provide robust justification for the adoption of the Nonlinear ARDL (NARDL) model, which not only addresses the issue of mixed integration but also captures asymmetric and nonlinear adjustments in the variables, thereby providing more reliable insights into the debt servicing dynamics of Nigeria during the study period (1982–2024).

4.4 NARDL Co-integration Bound Testing

Table 4.4 Co-integration Bounds test of NARDL

Statistics	Value	Critical bounds			
F-statistics	4.694997	1%	2.5%	5%	10%
I(0) Bound	2.88	2.55	2.27	1.99	
I(1) Bound	3.99	3.61	3.28	2.94	

Source: Authors computation using E-view (2025)

The result of the bounds test presented in Table 4.4 shows that the computed F-statistic (4.694997) is greater than the critical upper bound value ($I(1)$) at

the 1%, 2.5%, 5%, and 10% significance levels. Specifically, the F-statistic exceeds the 1% upper bound value of 3.99, indicating a strong rejection of the null hypothesis of no long-run relationship.

This implies the existence of a stable long-run co-integration among the variables debt servicing (LDS), domestic banking sector debt (DBSD), inflation (INF), exchange rate (EXR), and fiscal deficit (FD). In other words, the results confirm that despite short-term fluctuations, the variables tend to move together in the long run, justifying the adoption of the NARDL framework to explore both symmetric and asymmetric dynamics.

4.5 Long Run NARDL Result

Table 4.5 Long Run NARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Interpretation (Elasticity)
DBSD_POS	0.3421	0.1124	3.0421	0.004*	A 10% increase in domestic banking sector debt raises debt servicing obligations (DS) by 3.4%.
DBSD_NEG	-0.2156	0.0982	-2.1943	0.031*	A 10% decrease in domestic banking sector debt reduces DS by 2.2%.
INF_POS	0.1275	0.0527	2.4186	0.020*	A 10% increase in inflation raises DS by 1.3%.
INF_NEG	-0.0981	0.0631	-1.5552	0.126	A 10% decrease in inflation reduces DS by 1.0% (not statistically significant).
EXR_POS	0.2712	0.1015	2.6711	0.011*	A 10% depreciation of the Naira increases DS by 2.7%.
EXR_NEG	-0.1458	0.0763	-1.9102	0.060*	A 10% appreciation of the Naira reduces DS by 1.5%.
FD_POS	0.1936	0.0895	2.1624	0.034*	A 10% widening of fiscal deficit raises DS by 1.9%.

FD_NEG	-0.0874	0.0668	-1.3078	0.194	A 10% reduction in fiscal deficit lowers DS by 0.9% (not statistically significant).
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Source: Authors computation using E-view (2025)

Note. DS = Debt Servicing Obligations. Null hypothesis: variable has no long-run impact on DS. Elasticities are derived from estimated coefficients, interpreted as the % change in DS for a 10% change in each independent variable. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

As shown in Table 4.5, the exchange rate movements are also asymmetric. Positive shocks (depreciation) worsen debt servicing costs significantly, in line with Iyoha (1999), who established that currency depreciation increases external debt service in Nigeria. Negative shocks (appreciation), however, only marginally reduce debt service, suggesting a rigidity in debt repayment obligations a result consistent with Were (2001) on African economies. Lastly Fiscal deficit positively influences debt servicing in the long run,

4.6 Short Run NARDL Result

Table 4.6 Short run NARDL Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Interpretation (Elasticity)
ΔDBSD_POS	0.142	0.057	2.49	0.018*	A 10% increase in domestic banking sector debt raises DS by 1.4% in the short run.
ΔDBSD_NEG	-0.097	0.053	-1.82	0.073*	A 10% decrease in domestic banking sector debt lowers DS by 1.0%.
ΔINF_POS	0.051	0.024	2.12	0.038*	A 10% rise in inflation increases DS by 0.5% in the short run.

ΔINF_NEG	-0.033	0.027	-1.22	0.226	A 10% fall in inflation reduces DS by 0.3% (not statistically significant)
ΔEXH_POS	0.086	0.027	3.18	0.002**	A 10% depreciation of the Naira increases DS by 0.9%.
ΔEXH_NEG	-0.054	0.031	-1.74	0.084*	A 10% appreciation of the Naira lowers DS by 0.5%.
ΔFD_POS	0.064	0.048	1.33	0.186	A 10% widening of fiscal deficit raises DS by 0.6% (not statistically significant)
ΔFD_NEG	-0.041	0.036	-1.14	0.258	A 10% reduction in fiscal deficit decreases DS by 0.4% (not statistically significant)
ECT(-1)	-0.561	0.112	-5.01	0.000**	The error correction term shows that about 56% of disequilibrium is corrected within one period.

Source: Authors computation using E-view (2025)
 Note. DS = Debt Servicing Obligations. Δ = first difference. Elasticities are derived from estimated coefficients, interpreted as the % change in DS for a 10% change in each independent variable. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively

In Table 4.6 above, the short-run NARDL results reveal important asymmetric adjustments in debt servicing (DS). First, positive shocks in domestic banking sector debt ($\Delta DBSD_POS$) significantly increase debt servicing in the short run (0.142, $p < 0.05$), while negative shocks ($\Delta DBSD_NEG$) reduce debt servicing (-0.097, $p < 0.1$). This suggests that when the government contracts additional debt from the domestic banking sector, the immediate impact is a rise in debt servicing pressure. But when debt levels are reduced, the relief is comparatively weaker. This finding is consistent with Omotosho and Doguwa (2020), who found that Nigeria's domestic debt expansion has immediate cost implications, Inflation (ΔINF) has a positive and significant effect (0.051, $p < 0.05$), indicating that higher short-run inflation increases debt servicing obligations. This supports the results of Fosu (2019), who argued that inflation undermines fiscal sustainability in Sub-Saharan Africa. However, it contrasts with Reinhart and Rogoff (2010), who suggested that moderate inflation could reduce the real burden of debt servicing in some contexts.

Exchange rate changes (ΔEXH) exert a strong and significant short-run impact (0.086, $p < 0.01$). This indicates that naira depreciation substantially increases the debt servicing burden in the short run, particularly due to Nigeria's high exposure to foreign currency-denominated debt. This result aligns with Adewuyi and Babajide (2021), who highlighted exchange rate pass-through effects on external debt servicing, and corroborates the findings of Ezeabasili et al. (2011) that exchange rate instability is a major driver of debt crises in Nigeria.

Fiscal deficit (ΔFD) shows a positive but statistically insignificant coefficient, implying that short-run fiscal imbalances do not translate immediately into higher debt servicing obligations. This differs from Cochrane (2011), who emphasized that deficits quickly crowd into debt markets in open economies, but it resonates with Umar and Ismail (2020), who observed a lagged impact of fiscal deficits on debt service payments in Nigeria.

Finally, the error correction term (ECT) is negative and highly significant (-0.561, $p < 0.01$), confirming a stable adjustment process. Specifically, about 56% of deviations from the long-run equilibrium are corrected within a year, which indicates relatively fast convergence to the long-run relationship.

4.7 Diagnostic Test

Table 4.7 Diagnostic Tests of the NARDL Model

Test	Statistic	Prob	Decision	Remark
Breusch–Godfrey Serial Correlation LM Test	$\chi^2(2) = 1.827$	0.401	Fail to reject H_0	No serial correlation in residuals.
Breusch–Pagan–Godfrey Heteroskedasticity Test	$\chi^2(5) = 6.231$	0.287	Fail to reject H_0	Residuals are homoskedastic.
Ramsey RESET Test (Functional Form)	$F(1, 34) = 1.094$	0.303	Fail to reject H_0	No misspecification detected.
Jarque–Bera Normality Test	$JB = 1.642$	0.439	Fail to reject H_0	Residuals are normally distributed.

Source: Authors computation using E-view (2025)

The diagnostic tests confirm the robustness and reliability of the estimated NARDL model. The Breusch–Godfrey test shows no evidence of serial correlation, while the Breusch–Pagan–Godfrey test indicates that the residuals are homoskedastic. Furthermore, the Ramsey RESET test confirms that the functional form of the model is well-specified. The Jarque–Bera test reveals that the residuals are normally distributed, validating the underlying assumptions for statistical inference. These results provide confidence that the NARDL estimations are statistically valid and suitable for policy interpretation.

5.0 Conclusion and Recommendation

The study applied a nonlinear ARDL (NARDL) framework to examine the asymmetric effects of

domestic banking sector debt, inflation, exchange rate, and fiscal deficits on Nigeria's debt servicing between 1982 and 2024. Anchored on the Debt Overhang and Twin Deficit hypotheses, the findings demonstrate that positive shocks in domestic banking sector debt significantly increase debt servicing both in the long run and short run, while reductions in debt exert comparatively weaker relief, confirming the asymmetric burden of domestic borrowing. Inflation also raises debt service obligations in both horizons, though deflationary tendencies offer little or no respite, underscoring the ratchet effect of inflationary episodes on fiscal sustainability. Exchange rate depreciation exerts the strongest effect, amplifying debt service burdens sharply, while currency appreciation reduces them only marginally, reflecting Nigeria's dependence on foreign currency-denominated debt and the rigidity of repayment obligations. Fiscal deficits worsen debt servicing pressures in the long run but appear insignificant in the short run, suggesting a delayed channel through which fiscal imbalances affect repayment burdens. The highly significant error correction term further indicates a rapid speed of adjustment to long-run equilibrium. Collectively, these results provide robust evidence that debt servicing in Nigeria is strongly nonlinear and path-dependent, shaped more by adverse macroeconomic shocks than by favorable reversals.

Policy Recommendations

1. **Prudent Domestic Borrowing:** Since positive shocks to domestic banking sector debt sharply increase debt servicing, policymakers should cap reliance on domestic banks for deficit financing, which crowds out private credit and inflates repayment costs. Instead, borrowing should be diversified toward concessional and longer-term instruments.
2. **Inflation Management:** Given the asymmetric effect of inflation—where increases significantly raise debt servicing but decreases do not reduce it proportionately—monetary authorities must pursue sustained price stability, not

temporary inflation suppression, to ensure fiscal sustainability.

3. Exchange Rate Stabilization: The sharp debt servicing impact of naira depreciation calls for credible foreign exchange management. Boosting non-oil exports, improving remittance inflows, and reducing import dependence are critical to mitigating exchange rate induced debt burdens.
4. Fiscal Consolidation with Quality Spending: While short-run fiscal deficits appear benign, their long-run effect on debt service is significant. Fiscal authorities should prioritize revenue-enhancing reforms, curb recurrent expenditure growth, and channel borrowing toward productivity-enhancing infrastructure that can generate funds for repayment of loans.
5. Debt Overhang Mitigation: Consistent with the debt overhang hypothesis, Nigeria must adopt a forward-looking debt sustainability strategy that integrates asymmetric risks. Debt restructuring negotiations and fiscal rules can provide buffers against the disproportionate burden of adverse macroeconomic shocks.

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