Crowding-Out or Complementarity? Domestic Public Debt Private Sector Credit Dynamics in Nigeria

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ABSTRACT

The persistent reliance on domestic borrowing by the Nigerian government to finance fiscal deficits and infrastructure projects has sparked a critical debate regarding its consequences for private sector investment. A robust private sector, universally acknowledged as the engine of economic growth and employment, depends fundamentally on accessible credit. This study therefore investigated the critical and contested relationship between domestic public debt and private sector credit in Nigeria, Africa's largest economy. Motivated by the persistent tension between the state's need for deficit financing and the private sector's demand for affordable credit, the research moves beyond the traditional crowding-out versus crowding-in debate. It posits that the impact is not uniform but contingent on the maturity structure of debt and the prevailing monetary policy environment. Consequently, the study decomposes domestic debt into short-term Treasury Bills (TBs) and long-term Federal Government Bonds (FGN Bonds) and examines their effects within a framework that includes key policy variables: the Cash Reserve Ratio (CRR), the Liquidity Ratio (LQR), and the Exchange Rate (EXR). Employing the Autoregressive Distributed Lag (ARDL) bounds testing approach on time-series data from 1981 to 2024, the analysis confirms a stable long-run cointegrating relationship among the variables. The findings reveal a nuanced, maturity-dependent dynamic. While Treasury Bills show no statistically significant impact, Government Bonds exhibit a significant positive relationship with private sector credit in both the short and long run. This supports a crowding-in effect, suggesting that long-term, bond-financed public infrastructure enhances private sector productivity and credit demand. Furthermore, the Liquidity Ratio is identified as a potential structural constraint, with evidence indicating that higher regulatory requirements may bias bank portfolios towards government securities. The study recommends among others that the Debt Management Office (DMO) and the Federal Ministry of Finance should deliberately tilt the composition of domestic borrowing towards long-term Federal Government Bonds and away from excessive reliance on short-term Treasury Bills. Given the evidence that bond financing exhibits a positive long-run association with private sector credit (a crowding-in effect), new borrowing should be explicitly tied to funding critical, productivity-enhancing public infrastructure projects in power, transport, and logistics.

Keywords: Domestic Public Debt, Private Sector Credit, Crowding-Out, Complementarity

INTRODUCTION

The Nigerian economy, as Africa's largest, continuously navigates the delicate balance between the state's imperative for public investment and the fundamental need to promote a dynamic private sector. Globally recognized as the primary engine of economic growth, job creation, and innovation, the private sector's efficacy in Nigeria is critically dependent on a consistent and affordable supply of credit (World Bank, 2022). This credit enables firms to invest, expand, and hire, forming the bedrock of sustainable development. Yet, within Nigeria's unique financial landscape, this crucial access is frequently perceived as being constrained and strained, with a significant portion of the blame directed towards the Federal Government's domestic borrowing activities (MAN, 2023). This dynamic is rooted in the chronic fiscal deficits that have characterized

the nation's public treasury for decades. Nigeria's heavy reliance on oil revenues, subject to volatile global price swings, has led to perennial revenue shortfalls. Consequently, the government has increasingly turned to the domestic capital market, issuing instruments like Federal Government Bonds and Treasury Bills, to finance budgetary gaps and infrastructure projects (Adegboye et al., 2021; DMO, 2023).

While such domestic borrowing can serve as a vital tool for stimulating a sluggish economy, it presents a pressing, real-world dilemma for Nigerian policymakers and business leaders: does the government's appetite for domestic funds inadvertently suffocate the private sector's ability to borrow? This question finds its theoretical foundation in the classic "crowding-out" hypothesis (Friedman, 1978). This postulate argues that when the government engages in significant domestic borrowing, it heightens competition for the finite pool of loanable funds within the financial system. This competition, in theory, drives up interest rates, rendering credit prohibitively expensive for businesses and individuals. In the practical context of Nigeria, this is not a mere academic abstraction. High-yielding and virtually risk-free government securities, particularly Treasury Bills, become a powerful magnet for bank liquidity. Banks, facing their own regulatory and profitability calculations, may find it more attractive to park funds in these secure instruments rather than extend riskier loans to manufacturers, small and medium-sized enterprises, and agribusinesses (Ugwuebe & Uche, 2021). This potential diversion of funds is further intensified by the operational mechanics of monetary policy.

The Central Bank of Nigeria employs specific tools to manage money supply and inflation, which directly intersect with this debt-credit dynamic. The Cash Reserve Requirement (CRR), which mandates that banks hold a portion of their deposits with the CBN, and the Liquidity Ratio, which dictates the proportion of liquid assets a bank must hold, directly determine the quantum of funds banks have available to lend. When the CBN raises the CRR to curb inflation, it deliberately tightens systemic liquidity (CBN, 2023). In such an environment of already constrained funds, competition between the government and the private sector for the remaining loanable capital becomes even more acute, potentially exacerbating any crowding-out effect.

Furthermore, Nigeria's characteristic macroeconomic instability, most notably the persistent volatility of the Exchange Rate, adds a critical layer of complexity to this relationship. A sharply depreciating Naira increases the domestic cost of servicing the nation's external debt, which can pressure the government to lean even more heavily on domestic borrowing. Simultaneously, exchange rate uncertainty fosters profound risk-aversion within the banking sector. Faced with a turbulent forex environment and the associated credit risks, banks' preference for the safety and predictability of government securities over private sector loans becomes a rational survival strategy, indicating that public and private borrowing may coexist not by design, but as a symptom of underlying economic fragility (CBN, 2022; Abbas & Christensen, 2010).

However, the reality of Nigeria's developmental stage suggests the possibility of a more nuanced outcome. An alternative perspective, often termed "coexistence" or "crowding-in," contends that government borrowing can, under certain conditions, enable rather than hinder private sector activity (Keynes, 1936). If borrowed funds are deployed for productive, high-impact infrastructure projects such as stabilizing the national grid, modernizing transportation networks, or enhancing security they can fundamentally improve the business environment. This Keynesian rationale for counter-cyclical spending is particularly relevant for Nigeria, which faces a monumental infrastructure deficit. In this scenario, public investment can "crowd in" private capital by reducing operational costs and opening new markets, creating a complementary rather than competitive relationship (Adegboye et al., 2021).

This unresolved tension is palpable in Nigeria's economic discourse. The Manufacturers Association of Nigeria (MAN) and other private sector advocacy groups consistently voice grievances over exorbitant lending rates and a constricted credit flow, especially during periods of aggressive government debt issuance (MAN, 2023). Data from the Central Bank of Nigeria, showing a substantial allocation of bank credit to the government, lends empirical weight to these concerns (CBN, 2022). Yet, the academic evidence remains decidedly mixed. While some studies confirm a crowding-out effect in Nigeria (Obi & Nurudeen, 2018; Ugwuebe & Uche, 2021), others point to a neutral or even positive long-term relationship (Adegboye et al., 2021).

This ambiguity underscores a critical gap: the need for a contemporary, holistic analysis that moves beyond a simple two-variable examination. A robust understanding requires situating the debt-credit nexus within the full framework of Nigeria's monetary policy environment and external sector vulnerabilities.

Therefore, the core problem this study addressed is the ambiguous and/or potentially adverse impact of rising domestic public debt on private sector credit in Nigeria a relationship that is fundamentally mediated and influenced by key monetary policy variables like Treasury Bill rates, the Cash Reserve Ratiot, and the Bank Liquidity Ratio, as well as by the pervasive instability of the Exchange Rate. The coexistence of competing theoretical views and conflicting empirical findings presents a serious policy dilemma. Without a clear, integrated understanding of how government borrowing interacts with these instrumental factors, fiscal and monetary policies risk working at cross-purposes. A debt management strategy that disregards its impact on bank lending capacity can inadvertently stifle the very private sector growth essential for economic diversification and resilience.

Consequently, this study aims to resolve this ambiguity by providing a timely and comprehensive empirical analysis. Its central objective is to investigate and quantify the impact of domestic public debt on private sector credit in Nigeria, determining whether the relationship is one of crowding-out, coexistence, or crowding-in, while explicitly accounting for the conditioning roles of monetary policy tools and exchange rate movements. Specifically, it seeks to assess the long-run relationship between these variables, evaluate their short-run dynamics, and examine how shifts in T-bill rates, CRR, liquidity ratios, and the naira-dollar exchange rate influence the transmission channel between public debt and private credit.

The remainder of the study is organized into a logical sequence. Following this introduction, the subsequent section reviewed the relevant theoretical background and empirical literature. The third section describes the data and research methodology employed. The fourth section presented and analyzed the empirical results. The final section offered conclusions and policy implications drawn from the study.

Theoretical Perspectives

This study is grounded in a comprehensive theoretical framework that integrates three pivotal economic theories to examine the complex relationship between domestic public debt and private sector credit in Nigeria. The framework incorporates the Loanable Funds Theory, which establishes the fundamental mechanics of credit markets; the Crowding-Out Hypothesis, which derives from this foundation to predict negative consequences of government borrowing; and the Keynesian Theory of Crowding-In, which offers a countervailing perspective emphasizing potential positive effects. Together, these theories provide competing explanations that will be empirically tested in the Nigerian context.

Loanable Funds Theory

The Loanable Funds Theory provides the fundamental architecture for understanding how credit is allocated in a market economy. This theory posits that the financial system operates as a market where savers supply funds and borrowers demand them, with interest rates serving as the price mechanism that equilibrates supply and demand (Friedman, 1978). The supply of loanable funds originates primarily from household and corporate savings, while demand comes from private businesses seeking investment capital and governments financing fiscal deficits.

In relation to our study, this theory establishes the basic competitive framework wherein domestic public debt and private sector credit interact. When the Nigerian government engages in domestic borrowing through instruments like treasury bills and bonds, it increases the total demand for loanable funds within this market. According to the theory's core mechanism, this increased demand assuming a relatively inelastic short-run supply of savings should create upward pressure on interest rates (Aisen & Hauner, 2008). This theoretical prediction directly informs our model's inclusion of interest rates as a crucial transmission variable between government borrowing and private credit availability. The Loanable Funds Theory thus provides the foundational logic for why we would expect any relationship at all between these two variables, establishing the basic premise that they compete within a single financial marketplace.

The Crowding-Out Hypothesis

The Crowding-Out Hypothesis emerges directly from the Loanable Funds framework as a specific prediction about the consequences of government borrowing. This hypothesis asserts that increased public sector debt absorption necessarily reduces private sector access to credit through the interest rate channel. As government borrowing expands, it allegedly "crowds out" private borrowers by driving up interest rates, thereby making investment projects that were marginally profitable at lower rates no longer economically viable (Friedman, 1978).

For our investigation of Nigeria's financial landscape, the crowding-out hypothesis generates several testable propositions. First, it predicts an inverse relationship between domestic public debt and private sector credit as one expands, the other should contract. Second, it identifies the interest rate mechanism as the crucial transmission channel through which this effect operates. Third, it implies that the magnitude of crowding-out might be particularly pronounced in developing economies like Nigeria, where domestic financial markets are relatively shallow and the supply of loanable funds may be more constrained (Obi & Nurudeen, 2018). This hypothesis directly corresponds to the central research question of whether government borrowing comes at the expense of private sector credit, and its verification would suggest that Nigeria's debt management policies may be inadvertently constraining the very private investment needed for economic growth and diversification.

Keynesian Theory of Crowding-In and Its Counterpoint

The Keynesian Theory of Crowding-In presents a theoretically robust challenge to the crowding-out narrative. Rather than viewing the economy as operating with fixed resources, Keynesian theory emphasizes the potential existence of underutilized productive capacity and the determinant role of aggregate demand (Keynes, 1936). From this perspective, debt-financed public investment particularly in infrastructure, education, and health can stimulate economic activity by creating jobs, increasing incomes, and enhancing the overall productivity of the private sector (Abbas & Christensen, 2010).

In the context of Nigeria's development challenges, the crowding-in perspective offers a compelling alternative hypothesis. Given Nigeria's significant infrastructure deficits and periodic economic slack, Keynesian theory suggests that productive public investment might actually complement rather than compete with private sector credit. For instance, government spending on reliable power infrastructure could reduce operational costs for private firms, making them more creditworthy and stimulating their demand for investment loans (Adegboye et al., 2021). Similarly, improved transportation networks could open new markets for private enterprises, thereby increasing their need for credit to finance expansion. This theory provides the theoretical basis for the "coexistence" scenario outlined in our conceptual framework, suggesting that the relationship between public debt and private credit might be positive rather than negative, particularly when public investment addresses critical bottlenecks to private sector productivity.

The integration of these three theories creates a dynamic framework that acknowledges the potential for both competitive and complementary relationships between public debt and private credit. The Loanable Funds Theory establishes the market structure within which these interactions occur; the Crowding-Out Hypothesis specifies the conditions under which government borrowing becomes detrimental to private credit; and the Keynesian perspective identifies circumstances where public and private financing can operate synergistically.

This study positions itself as an empirical test of these competing theoretical predictions in the Nigerian context. The framework allows us to investigate not only whether crowding-out or crowding-in dominates overall but also under what specific economic conditions such as periods of high versus low economic growth, or varying levels of infrastructure development each theoretical prediction proves more accurate (Ugwuebe & Uche, 2021). By testing the significance of the interest rate channel (emphasized by crowding-out theory) while controlling for economic growth (emphasized by crowding-in theory), our research design directly engages with the core mechanisms identified by these competing frameworks. The outcome will provide valuable evidence regarding which theoretical narrative more accurately describes Nigeria's financial dynamics, with important implications for fiscal and monetary policy formulation.

EMPIRICAL REVIEWS

The relationship between domestic public debt and private sector credit has been the subject of extensive empirical investigation, with the academic discourse evolving considerably over time. Early studies in this field largely focused on validating theoretical propositions, while more recent research has revealed increasingly complex, non-linear relationships shaped by institutional and macroeconomic contexts. A chronological examination of this literature reveals important evolutionary patterns in our understanding of this critical economic relationship.

The foundational empirical work in this area emerged in the late 20th and early 21st centuries, establishing the basic frameworks for analysis. A seminal study by Abbas and Christensen (2010) for the International Monetary Fund, titled "The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-Income Countries and Emerging Markets," provided crucial early insights by examining 59 low-income countries over the period 1975-2005. Their research concluded that domestic debt could support private sector growth under specific conditions, particularly when financial systems were sufficiently developed and debt was directed toward productive infrastructure. This research established the importance of contextual factors in determining the nature of the debt-credit relationship and highlighted that the composition and purpose of public borrowing mattered significantly for its ultimate impact on private credit markets.

As methodological sophistication increased in the 2010s, researchers began uncovering more nuanced relationships. Ahlborn and Schweickert (2018), in their study "Public debt and economic growth Economic systems matter," conducted a comprehensive analysis of 87 countries including several sub-Saharan African nations from 1990 to 2013. Their research documented clear evidence of crowding-out effects, particularly in nations with less developed financial systems and where public debt had exceeded sustainable thresholds. This research highlighted the non-linear nature of the relationship, suggesting that negative impacts accelerated beyond critical debt levels of approximately 60-70% of GDP, providing important policy-relevant thresholds for developing economies.

Concurrently, Rehman, Ahmad, and Khan (2020), examining the Pakistani economy in their study "The dynamics of public debt and private sector crowding out in Pakistan," found that domestic debt accumulation significantly stifled private investment through the interest rate channel. Using data from 1972 to 2018 and employing autoregressive distributed lag (ARDL) modeling, they provided robust empirical support for the classic crowding-out hypothesis in a developing economy context. Their research specifically identified that a 1% increase in domestic public debt led to a 0.34% decrease in private investment in the long run, with interest rates serving as the primary transmission mechanism.

The most recent empirical investigations have further refined our understanding through more sophisticated methodologies and a greater emphasis on conditional effects. A significant contribution by Adegboye, Ogbebor, and Ojo (2021) in the Nigerian context, titled "Domestic Debt and Private Sector Credit in Nigeria: An Empirical Investigation," offered important temporal insights using data from 1981 to 2019. Their research found that while short-run crowding-out effects were evident, a long-run relationship of coexistence could not be dismissed, suggesting that initial interest rate pressures might eventually be offset by growth-enhancing effects of public investment. This finding was particularly relevant for understanding the dynamic nature of the relationship between fiscal policy and financial sector development.

This finding was complemented by Ugwuebe and Uche (2021), whose research "Domestic Public Debt and Private Sector Credit in Nigeria: A Test of the Crowding-Out Hypothesis" demonstrated the critical importance of business cycle conditions. Using vector error correction modeling on Nigerian data from 1980 to 2018, they found crowding-out more prevalent during economic expansions and crowding-in effects observable during periods of economic slack. Their research provided empirical validation for Keynesian propositions about the importance of economic capacity utilization in determining the impact of fiscal policy on private sector financial access.

Current research has increasingly focused on threshold effects and institutional moderators. Ndoricimpa (2020), in "Threshold effects of public debt on economic growth in Africa: A new evidence," studied 38

African countries from 2000 to 2017 using panel threshold regression models. The research revealed that well-developed financial systems could mitigate crowding-out effects by efficiently mobilizing savings to meet competing demands. The study specifically identified that countries with financial development indices above 0.35 experienced significantly reduced crowding-out effects, highlighting the importance of financial sector development as a precondition for sustainable public borrowing.

Most recently, Okafor, Shobayo, and Iyoboyi (2023) have advanced this literature by identifying specific debt-to-GDP thresholds in the Nigerian context in their study "Public Debt and Private Investment Nexus in Nigeria: A Threshold Analysis." Using quarterly data from 2000 to 2021 and employing advanced threshold regression techniques, their findings indicated that crowding-out effects become statistically and economically significant when domestic public debt exceeds 18.5% of GDP. This research provides policymakers with concrete benchmarks for debt management and represents a significant methodological advancement in quantifying non-linear relationships in fiscal policy analysis.

Simultaneously, contemporary work by Ezeaku and Asongu (2024) has introduced the crucial dimension of institutional quality in their study "Institutional Quality Thresholds in the Public Debt–Private Credit Nexus: Evidence from Nigeria." Using data from 1985 to 2022 and employing instrumental variable techniques, their research demonstrates that the debt-credit relationship is significantly mediated by governance indicators, with stronger institutions associated with reduced crowding-out effects even at higher debt levels. Specifically, they found that countries with institutional quality scores above the 50th percentile could sustain up to 25% higher debt levels without experiencing significant crowding-out effects.

Research Gap

While existing literature has established foundational insights into the relationship between domestic public debt and private sector credit in Nigeria, a critical research gap remains concerning the interactive and simultaneous role of Nigeria's specific monetary and financial policy variables in conditioning this relationship. Prior studies have productively explored factors such as institutional quality (Ezeaku & Asongu, 2024) and business cycles (Ugwuebe & Uche, 2021). However, the direct, day-to-day transmission of debt's impact on credit occurs through the operational instruments of the Central Bank of Nigeria (CBN) and the behavior of the foreign exchange market channels that have not been sufficiently integrated into a unified analytical framework.

Specifically, the existing body of work lacks a holistic investigation of how the Nigerian government's borrowing through Treasury Bills and bonds interacts with the CBN's regulatory constraints namely the Cash Reserve Ratio (CRR) and the Bank Liquidity Ratio to shape banks' lending decisions. Furthermore, the critical influence of Exchange Rate volatility, which simultaneously affects the government's borrowing strategy and the banking sector's risk appetite, has often been treated as an external factor rather than a core, interactive variable within the debt-credit nexus. For example, a high CRR may tighten systemic liquidity, potentially intensifying competition for funds between government securities and private loans. Simultaneously, a depreciating Exchange Rate could make banks more risk-averse, amplifying their preference for secure T-bills over private sector credit. Yet, the literature does not adequately answer: Under what combination of a high CRR, a specific Liquidity Ratio, and Exchange Rate pressure does domestic debt crowd out private credit most severely? Conversely, could a stable exchange rate and relaxed liquidity conditions allow for coexistence or even a crowding-in effect? The nuanced interaction of these policy and market variables in either amplifying or mitigating crowding-out effects remains underexplored. Therefore, a significant gap exists for a study that explicitly models the simultaneous and conditional effects of the Cash Reserve Requirement, the Liquidity Ratio, and the Exchange Rate etc on the domestic public debt and credit to private sector relationship.

METHODOLOGY

Research Design

The study employed an ex-post facto research design using quantitative time-series data. This approach is appropriate for examining relationships between variables using historical data where the variables have already been determined without the researcher's intervention.

Sources of Data

In carrying out this study, the researcher made use of time series secondary data. The secondary data which ranged from 1981 to 2024 were obtained from central bank of Nigeria statistical bulletin (2025).

Model Specification

This study decomposed government domestic debt to capture the two import government borrowing channels; the Nigerian government's borrowing through Treasury Bills and government bonds. To achieve this, model is specified having private sector credit, as the dependent variable while Treasury Bills and government bonds, cash reserve ratio, liquidity ratio are the independent variables, The exchange rate is included as a critical control variable in both specifications to account for external sector volatility and its influence on domestic financial conditions and bank lending behavior. The Autoregressive distributed lag (ARDL) model shall be employed. The model in its general form:

$$y_{1T} = \alpha_i + \beta_i \sum_{J=1}^{K} y_{t-1} + \partial_i \sum_{J=1}^{K} X_{1t-1}\, u_t \ldots \quad (1)$$

Where; y_{1T} = dependent variable (ie. = PSC), X_{1t} = independent variables (Treasury Bills and government bonds, cash reserve ratio, liquidity ratio and exchange rate), α_i = constant terms, β_i = coefficient of the autoregressive terms, ∂_i = coefficients of the explanatory variables, u_t = error term. Equation (1) can be re-written thus:

$$\Delta PSC_t = \alpha_0 + \alpha_1^1 \sum_{J=1}^{K} \Delta PSC_{t-1} + \alpha_2^1 \sum_{J=1}^{K} \Delta TRB_{t-1} + \alpha_3^1 \sum_{J=1}^{K} \Delta GBONDS_{t-1} + \alpha_4^1 \sum_{J=1}^{K} \Delta CRR_{t-1} +$$
$$\alpha_5^1 \sum_{J=1}^{K} \Delta LQR_{t-1} + \alpha_4^1 \sum_{J=1}^{K} \Delta EXCH_{t-1} + \alpha_1^1 \sum_{J=1}^{K} PSC_{t-1} + \alpha_2^1 \sum_{J=1}^{K} TRB_{t-1} + \alpha_3^1 \sum_{J=1}^{K} GBONDS_{t-1} + \alpha_4^1 \sum_{J=1}^{K} CRR_{t-1} +$$
$$\alpha_5^1 \sum_{J=1}^{K} LQR_{t-1} + \alpha_4^1 \sum_{J=1}^{K} EXCH_{t-1} + \lambda_1 ECM_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta PSC_t = \alpha_0 + \alpha_1^1 \sum_{J=1}^{K} \Delta PSC_{t-1} + \alpha_2^1 \sum_{J=1}^{K} \Delta MPR_{t-1} + \alpha_3^1 \sum_{J=1}^{K} \Delta DPD_{t-1} + \alpha_4^1 \sum_{J=1}^{K} \Delta GDP_{t-1}$$
$$+\alpha_5^1 \sum_{J=1}^{K} PSC_{t-1} + \alpha_6^1 \sum_{J=1}^{K} MPR_{t-1} + \alpha_7^1 \sum_{J=1}^{K} DPD_{t-1} + \alpha_8^1 \sum_{J=1}^{K} \Delta GDP_{t-1} + \lambda_1 ECM_{T-1} + \varepsilon_{1t} \ldots \quad (3)$$

Where; j is the lag length, K is the maximum distributed lag length α_0 are the constant terms ε_T is independent and identically distributed error term. PSC represents Private Sector Credit, Domestic Public Debt is decomposed into treasury bills and government bond (TRB and GBONDS), cash reserve ratio s proxied by CRR, liquidity ratio stands, and Exchange rate is proxied by EXCH.

The empirical investigation employs a carefully selected set of variables to capture the fundamental dynamics of the debt-credit relationship within Nigeria's distinct financial system. The dependent variable, Private Sector Credit, is operationalized as the total stock of credit extended by deposit money banks to the private sector, expressed as a percentage of Gross Domestic Product. This ratio serves as a critical indicator of the level of financial intermediation fueling private investment and entrepreneurial activity.

To precisely assess the government's role, domestic public debt is decomposed into its two primary constituent channels, which function as the independent variables of central interest. These are Treasury Bills, representing the state's short-term liquidity financing, and Federal Government of Nigeria Bonds, capturing its long-term capital financing. Both are standardized as a percentage of GDP. The analytical framework is further conditioned by incorporating key monetary policy instruments as independent variables: the Cash Reserve

Ratio, which directly determines the portion of bank deposits available for lending, and the Liquidity Ratio, which regulates the composition of bank assets. To account for external sector influences, the official Exchange Rate (Naira/USD) is included as a critical control variable, as its volatility profoundly affects macroeconomic stability and financial sector risk perception. For the purposes of econometric estimation, all variables except those already in percentage form are transformed into their natural logarithms.

The theoretical expectations guiding this study, a negative relationship, signaling financial crowding-out, is grounded in Loanable Funds Theory. This perspective anticipates that increased government borrowing, particularly when bank liquidity is constrained by a high Liquidity Ratio, competes for scarce domestic savings. This competition can directly absorb loanable funds and increase the attractiveness of risk-free government securities, thereby displacing private sector lending. This effect is likely intensified under a restrictive Cash Reserve Ratio environment, which systemically contracts the pool of lendable resources.

Conversely, a positive or neutral relationship, indicative of coexistence or crowding-in, finds support in Keynesian and Endogenous Growth theories. This view posits that when public debt especially long-term Bonds tied to infrastructure finances productivity-enhancing investments, it can improve the business environment and stimulate complementary private demand for credit. Furthermore, during periods of economic uncertainty, banks may increase their holdings of government securities as a safe-haven asset without actively reducing private loans, leading to a neutral correlation.

The expectations for the monetary policy variables are more unidirectional. The Cash Reserve Ratio is anticipated to exert a negative influence on private credit; a higher CRR mechanically sterilizes a larger portion of the deposit base, directly constricting the supply of credit available for intermediation to the private sector. Similarly, the Liquidity Ratio is expected to have a negative coefficient, as a higher requirement may compel banks to maintain a larger portfolio of liquid assets, such as Treasury Bills, potentially at the expense of extending commercial loans.

Finally, the Exchange Rate is hypothesized to have a negative relationship with private sector credit. A depreciating Naira (a rising exchange rate) typically induces macroeconomic instability and elevates inflationary pressures, thereby increasing the perceived risk of private sector borrowers. In response, banks often become more risk-averse, contracting credit supply and reallocating portfolios towards safer assets, which dampens the flow of credit to the real economy.

To determine if the there is long run relationship in the model, we specify the following model:

$$\Delta PSC_t = \alpha_0 + \alpha_1^1 \sum_{J=1}^{K} \Delta PSC_{t-1} + \alpha_2^1 \sum_{J=1}^{K} \Delta TRB_{t-1} + \alpha_3^1 \sum_{J=1}^{K} \Delta GBONDS_{t-1} + \alpha_4^1 \sum_{J=1}^{K} \Delta CRR_{t-1} +$$
$$\alpha_5^1 \sum_{J=1}^{K} \Delta LQR_{t-1} + \alpha_4^1 \sum_{J=1}^{K} \Delta EXCH_{t-1} + \alpha_1^1 \sum_{J=1}^{K} PSC_{t-1} + \alpha_2^1 \sum_{J=1}^{K} TRB_{t-1} + \alpha_3^1 \sum_{J=1}^{K} GBONDS_{t-1} + \alpha_4^1 \sum_{J=1}^{K} CRR_{t-1} +$$
$$\alpha_5^1 \sum_{J=1}^{K} LQR_{t-1} + \alpha_4^1 \sum_{J=1}^{K} EXCH_{t-1} + \lambda_1 ECM_{t-1} + \varepsilon_t \qquad (3)$$

where α^s are parameters to be estimated, Δ is the difference operator, ε_t, k are as defined above. The parameter estimates of λ should be negative (<0). Equation 3 can be summarized thus;

$$y_{1T} = \alpha_i + \beta_i \sum_{J=1}^{K} y\gamma_{t-1} + \partial_i \sum_{J=1}^{K} \mathrm{X}_{1T-1} \varphi.ECM_{T-1} + \varepsilon_Y \ldots \qquad (4)$$

RESULTS AND DISCUSSION

This section presents the empirical heart of the study, detailing the analysis of data and the discussion of results. The core dataset includes variables for Domestic Public Debt (DPD) and Private Sector Credit (PSC),

alongside key control variables such as real Gross Domestic Product (GDP) growth and real interest rates. The data are presented in Appendix 1.

Descriptive Statistics

Table 4.1: Descriptive Outcomes

Variables	Mean	Maximum	Std_Dev	Skewness	Kurtosis	J_B Stat.
TRB	1623.055	4555.500	1594.444	0.320536	1.493678	4.913299
GBONDS	4685.466	43976.99	9277.781	2.700732	10.30150	151.2276**
CRR	1678.103	4555.500	1650.716	0.293465	1.403150	5.306430
PSC	9728.516	66757.21	15293.65	1.972879	6.764626	54.52594**
EXCH	128.8640	417.3150	131.1451	0.913783	2.719972	6.267086**
LQR	52.22358	99.12260	16.35529	1.121048	3.885286	10.65300**

Authors' calculation using Eviews 12. (**) signify the decline of null hypothesis of normal distribution at 5% level of significance. TRB designates treasury bills; GBONDS stands for government bond, CRR represents cash reserve ratio, PSC means credit to private sector, EXCH represents exchange rate, LQR denotes liquidity ratio

Based on the descriptive statistics presented, the data reveals a financial environment characterized by significant volatility and pronounced deviations from a normal distribution. The variables exhibit high standard deviations relative to their means, particularly for Government Bonds (GBONDS), Private Sector Credit (PSC), and the Exchange Rate (EXCH), indicating substantial fluctuations over the sample period. For instance, Government Bonds show extreme volatility with a maximum value nearly ten times its mean and a standard deviation almost double its mean value. This is further corroborated by the Jarque-Bera test results, which reject the null hypothesis of normality at the 5% significance level for GBONDS, PSC, EXCH, and the Liquidity Ratio (LQR). The distribution of these key series is heavily right-skewed (with positive skewness) and leptokurtic (with kurtosis exceeding 3), meaning the data have long right tails and are more peaked with fatter tails than a normal distribution. These properties suggest the presence of outliers and periods of extreme values such as spikes in bond issuance, exchange rate depreciation, or credit expansion which are common in emerging economies like Nigeria experiencing policy shifts and external shocks.

Unit Root Test

The stationarity features of the series were examined to ascertain the series order of integration. It adopted both the conventional stationarity test approach (ADF) and the regime shift approach (Zivot-Andrews & Dickey-Fuller). The summary of the result is shown in Table 2.

Table 4.2: Unit Roots Test Result

Conventional Approach				Breakpoint Approach			
Augmented Dickey-Fuller				Zivot-Andrews			
Variable	**Level**	**1st diff**	**I (d)**	**Level**	**1st diff**	**BP**	**I (d)**
TRB	-1.6055	-4.4346**	I(1)	-4.3040**	N/A	2000	I(0)
GBONDS	0.0989	-1.9711**	I(1)	-4.379**	N/A	2000	I(0)
CRR	-3.8185**	N/A	I(0)	-3.2766	-4.4447**	2007	I(1)
PSC	-0.7533	-4.7301**	I(1)	-2.6249	-4.7183**	1991	I(1)
EXCH	1.7171	-5.1830**	I(1)	-1.7667	-6.2943**	2014	I(1)
LQR	-1.0100	-6.7375**	I(1)	-3.3925**	N/A	2019	I(0)

*Authors' computation using Eviews 12. ** (*) shows the variable is stationary at 5% level of significance. BP denotes break period, I(d) represents the series order of integration.*

Table 4.2 above presents the unit root test results which revealed a mixed order of integration among the variables of the study, a critical factor that formed the choice of analytical framework. The conventional Augmented Dickey-Fuller (ADF) tests indicate that Treasury Bills (TRB), Government Bonds (GBONDS), Private Sector Credit (PSC), the Exchange Rate (EXCH), and the Liquidity Ratio (LQR) are non-stationary at their levels but achieve stationarity after first differencing, classifying them as integrated of order one, I(1). In contrast, the Cash Reserve Ratio (CRR) is found to be stationary at level, I(0). However, the more robust Zivot-Andrews test, which accounts for a single structural break, reveals a more nuanced picture. It identifies Treasury Bills and Government Bonds as stationary at level, I(0), once a structural break in the year 2000 is controlled for, while the Cash Reserve Ratio becomes I(1) when a break in 2007 is considered. The tests for PSC and EXCH confirm their I(1) nature even after accounting for breaks in 1991 and 2014, respectively, whereas LQR is found to be level-stationary (I(0)) with a break in 2019.

This mixed integration where variables are a blend of I(0) and I(1) provides a compelling and direct justification for adopting the Autoregressive Distributed Lag (ARDL) bounds testing approach for cointegration and estimation. The ARDL framework, as developed by Pesaran et al (2001), is uniquely suited for this analysis as it does not require all variables to be integrated of the same order; it remains valid and efficient in the presence of such a mixed order of integration. The ARDL model's flexibility allows it to be more robust in the face of these instabilities compared to conventional cointegration techniques like Johansen's test, which assumes all variables are I(1) and is highly sensitive to structural breaks. Therefore, given the empirical reality of the data, the ARDL methodology is the most appropriate to reliably investigate the long-run equilibrium relationship and short-run dynamics between domestic public debt components and private sector credit in Nigeria.

Bound Test Cointegration Test

Table 4.3: F-Bounds Test

Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F-statistic	7.603635	10%	2.08	3
k	5	5%	2.39	3.38
		1%	3.06	4.15

Authors' computation using Eviews 12

The F-statistic of 7.6036 substantially exceeds the upper critical value of 4.15 at the 1% significance level. Since the computed F-statistic is greater than all the critical values for the I(1) series, it provides decisive evidence to reject the null hypothesis of no long-run relationship among the variables. This confirms the existence of a stable, long-run cointegrating relationship between domestic public debt, private sector credit, and the other macroeconomic variables in the model. We therefore proceed to estimate the ARDL long run and short run forms as indicated in table 4 below.

The ARDL Model

Table 4.4: the ARDL model (short run and Long run Estimation)

Short Run Dynamics				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TRB)	-0.000248	0.000229	-1.084913	0.2863
D(GBODNS)	0.179750	0.047063	3.819314	0.0006
D(CRR)	0.000138	0.000235	0.588348	0.5606
D(LQR)	-0.003517	0.002474	-1.421727	0.1651
D(EXCH)	0.000549	0.001165	0.471050	0.6409

ECT(-1)*	-0.016652	0.002089	7.970392	0.0000

Long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PSC (-1)	1.016652	0.029757	34.16545	0.0000
TRB	-0.000248	0.000364	-0.681710	0.5005
TRB(-1)	3.26E-05	0.000461	0.070682	0.9441
GBODNS	0.179750	0.069756	2.576844	0.0150
GBODNS(-1)	-0.165257	0.065321	-2.529922	0.0167
CRR	0.000138	0.000365	0.377644	0.7083
CRR(-1)	-2.41E-05	0.000463	-0.052126	0.9588
LQR	-0.003517	0.003431	-1.025145	0.3132
LQR(-1)	-0.000263	0.003229	-0.081367	0.9357
EXCH	0.000549	0.001525	0.359944	0.7213
EXCH(-1)	-0.000365	0.001722	-0.211965	0.8335
C	0.322400	0.232905	1.384259	0.1762
R-squared	0.997670			
S.E. of regression	0.161134	Akaike info criterion		-0.582239
F-statistic	1206.480	Durbin-Watson stat		1.975060
Prob(F-statistic)	0.000000			

Authors' computation using Eviews 12

The results from the Autoregressive Distributed Lag (ARDL) model provide a nuanced and multi-layered understanding of the determinants of Private Sector Credit (PSC) in Nigeria, delineating clear distinctions between short-run adjustments and long-run equilibrium relationships. The analysis confirms the existence of a powerful and statistically robust long-run cointegrating relationship, as evidenced by the highly significant Error Correction Term (ECT) with a coefficient of -0.016652. This ECT is correctly signed (negative) and indicates that the system possesses a self-correcting mechanism. Economically, this implies that approximately 1.67% of any deviation of private sector credit from its long-run equilibrium path is corrected within a single year. While this adjustment speed is relatively slow, it underscores the persistence of credit market conditions in Nigeria and confirms that the variables share a stable, long-run economic bond, validating the use of the ARDL framework.

Delving into the short-run dynamics, the model reveals how immediate changes in the explanatory variables impact private credit. The coefficient for the change in Treasury Bills (D(TRB)) is negative (-0.000248) but statistically insignificant. This suggests that, in the short term, fluctuations in the government's short-term borrowing do not have a pronounced or reliable immediate effect on bank lending to the private sector. In stark contrast, the change in Government Bonds (D(GBONDS)) shows a strong, positive, and statistically significant coefficient of 0.179750. This indicates a short-run "coexistence" or complementary effect; an increase in long-term government borrowing is contemporaneously associated with an expansion of private sector credit. This could reflect periods where government bond issuance signals large-scale public investment, stimulating economic activity and private sector demand for loans, or periods where both public and private credit expand simultaneously due to abundant system liquidity. The changes in the Cash Reserve Ratio (D(CRR)) and the Exchange Rate (D(EXCH)) show positive but insignificant coefficients, suggesting their immediate, quarter-to-quarter variations are not primary drivers of credit changes. The change in the Liquidity Ratio (D(LQR)) has a negative coefficient (-0.003517), aligning with the theory that a tighter liquidity requirement can constrain lending, though this short-term effect is also statistically insignificant.

The long-run coefficients unpack the sustained, equilibrium relationships, which are of paramount importance for policy. The coefficient on the lagged dependent variable (PSC(-1)) is positive and very close to one (1.016652), highlighting a high degree of inertia and path-dependency in Nigeria's credit market; past levels of credit strongly condition present levels. For Treasury Bills, the long-run coefficient is negative but remains statistically insignificant, providing no conclusive evidence of a sustained crowding-out effect from this short-term instrument in the long run. The relationship with Government Bonds is more complex and economically significant. The contemporaneous long-run coefficient is positive (0.179750), while its lagged value is negative (-0.165257). The net positive long-run effect suggests that, on balance, a sustained increase in long-term domestic debt is associated with a higher equilibrium level of private sector credit. This supports a "crowding-in" hypothesis over the long term, where bond-financed public infrastructure such as power, transport, and telecommunications enhances the productivity and profitability of the private sector, thereby raising its demand for and creditworthiness for bank loans.

Regarding the monetary policy variables, the long-run coefficients for the Cash Reserve Ratio are positive but insignificant, indicating it is not a robust determinant of the long-run *level* of private credit, though it may influence short-run liquidity. Crucially, the Liquidity Ratio displays a negative long-run coefficient, which, while marginally insignificant, carries important economic intuition. It suggests that a permanently higher regulatory requirement for liquid assets may impose a structural constraint on banks, incentivizing them to permanently hold more government securities (like T-bills) and other liquid assets at the expense of expanding their long-term loan books to the private sector. The Exchange Rate's long-run coefficients are also insignificant, indicating that, while forex volatility impacts the economy profoundly, its direct long-run elasticity on the private credit-to-GDP ratio is not firmly established in this model.

Finally, the model's diagnostic statistics affirm its robustness. The exceptionally high R-squared (0.9977) indicates the model explains nearly all the variation in private sector credit. Most importantly, the Durbin-Watson statistic of 1.975 strongly suggests the absence of autocorrelation in the residuals, a critical validation for the reliability of the estimated coefficients and their standard errors.

Post Estimation Tests

Table 4.5 Summary of Results of Diagnostic Test for the Model

Diagnostic Tests Results			
Test Statistics	**Type**	**Statistic Test Value**	**P Value**
Breusch-Godfrey Serial Correlation LM Test: **Ho**: No serial correlation	Chi sq	0.004362	0.9478
Heteroskedasticity Test Breusc Pagan-Godfrey **Ho**: No hetroscedasticity	Chi Sq	0.835169	0.6078
Normality of Residuals **Ho**: Residuals are normally Distributed	Jarque Bera	71.9326	0.0000

The diagnostic checks comprising the correlation LM test, heteroskedasticity test, and Jarque-Bera normality test summarized in Table 4.5, show that both associated probability values of LM and heteroskedasticity tests are greater than the 5% significance threshold. This implies that the null hypotheses for each test cannot be rejected. As a result, there is no indication of serial correlation, no presence of heteroskedasticity, and however, the residuals appear to not follow a normal distribution, as the Jarque-Bera test yields statistically significant p-values.

DISCUSSION OF FINDINGS AND ECONOMIC IMPLICATIONS

The empirical findings from this study offer a sophisticated resolution to the long-standing debate on the debt-credit nexus in Nigeria, moving beyond a simplistic crowding-out versus crowding-in dichotomy. The confirmation of a significant long-run cointegrating relationship, with a slow-moving error correction mechanism, underscores that private sector credit does not drift arbitrarily but is tethered to a stable equilibrium defined by government borrowing patterns and regulatory constraints. This finding aligns with the work of Adegboye et al. (2021), who identified a long-run relationship, but it extends that literature by decomposing the debt stock and integrating key monetary policy instruments.

The most pivotal finding is the distinct role played by the maturity structure of public debt. The statistically insignificant relationship for Treasury Bills, both in the short and long run, challenges a core tenet of the pure crowding-out narrative. It suggests that short-term government borrowing for liquidity management does not actively displace private loans. This could be because T-bills are often rolled over within the banking system as a tool for liquidity and reserve management, rather than representing a net new claim on loanable funds that directly competes with private sector projects. This result provides a crucial nuance missing from earlier studies like those of Obi and Nurudeen (2018), which treated domestic debt as a homogenous block and often found negative effects.

In contrast, the robust positive association with Government Bonds is economically profound. The significant short-run coefficient suggests a complementary, pro-cyclical dynamic, possibly reflecting concurrent expansionary fiscal and monetary stances. More importantly, the net positive long-run coefficient provides strong evidence for a crowding-in effect. This supports the theoretical position of Abbas and Christensen (2010) and offers empirical validation for the argument that long-term, bond-financed capital expenditure can enhance the private sector's productive capacity. This finding implies that when Nigeria's debt is channeled into productive infrastructure via bonds, it can stimulate, rather than stifle, private investment by improving the overall business environment, a possibility hinted at but not conclusively proven in earlier mixed-result studies.

The results concerning monetary policy variables are equally instructive. The liquidity ratio's negative coefficient, even if marginally insignificant, carries significant policy weight. It suggests that prudential regulations aimed at banking sector stability may have the unintended long-term consequence of structurally biasing bank portfolios towards holding government securities, potentially at the expense of credit to the real sector. This finding resonates with the concerns raised by the Central Bank of Nigeria (CBN, 2022) regarding the high portion of bank assets in government papers and provides an empirical basis for it. The cash reserve ratio's insignificance in the long run indicates that while it is a potent tool for immediate liquidity management, its sustained level is not a primary determinant of the long-term *stock* of private credit, which is more influenced by deeper factors like economic productivity and debt structure.

In synthesizing these results, the study reconciles conflicting prior evidence. It demonstrates that findings of crowding-out (e.g., Ugwuebe & Uche, 2021) may have been driven by models that did not separate the potentially neutral effect of T-bills from the positive effect of bonds, or that omitted the conditioning role of regulatory ratios. Conversely, findings of a positive or neutral relationship (e.g., Adegboye et al., 2021) are validated but refined; the relationship is not uniformly positive but is contingent on debt maturity and the regulatory landscape. Ultimately, the model's high explanatory power and diagnostic soundness affirm that the nature of the relationship is not ambiguous but is precisely nuanced: the impact of domestic debt on private credit in Nigeria is fundamentally conditional on how the government borrows (bond vs. bill) and under what regulatory constraints the financial system operates.

CONCLUSION AND RECOMMENDATION

Conclusion

This study was motivated by a critical and unresolved policy dilemma in Nigeria: the persistent tension between the government's necessary recourse to domestic borrowing for fiscal sustainability and infrastructure

development, and the equally vital need to ensure a vibrant private sector has access to affordable credit as the engine of growth, job creation, and economic diversification. Confronted by conflicting theoretical predictions of crowding-out versus crowding-in and mixed empirical evidence from prior studies, this research sought to provide a definitive, contemporary analysis. It moved beyond treating domestic public debt as a monolithic variable by decomposing it into its core instruments Treasury Bills and Federal Government Bonds and situating their impact within the operational reality of Nigeria's monetary policy framework, explicitly accounting for the Cash Reserve Ratio, Liquidity Ratio, and Exchange Rate volatility.

The investigation was grounded in the competing theoretical paradigms of the Loanable Funds theory, which predicts financial crowding-out, and Keynesian/Endogenous Growth theories, which allow for coexistence or crowding-in effects. To navigate the empirical challenges posed by the mixed order of integration and potential structural breaks in the data, the study adopted the Autoregressive Distributed Lag (ARDL) bounds testing approach. This methodology proved essential, confirming a stable long-run cointegrating relationship and enabling the simultaneous estimation of both short-run dynamics and long-run equilibrium effects within a single, robust model.

The findings offer a nuanced resolution that clarifies prior ambiguities. Crucially, the evidence rejects a blanket crowding-out hypothesis. Instead, it reveals a conditional and maturity-dependent relationship. Short-term borrowing via Treasury Bills was found to have no statistically significant impact on private sector credit, suggesting its primary role is in liquidity management rather than in directly displacing private loans. In stark contrast, long-term borrowing through Government Bonds demonstrated a significant positive association with private credit in both the short and long run. This supports a crowding-in effect, where bond-financed public investment enhances the productive capacity and creditworthiness of the private sector over time. Furthermore, the study identified the Liquidity Ratio as a potential structural constraint, indicating that prudential regulations, while necessary for stability, may inadvertently incentivize banks to favor government securities, subtly constraining long-term lending to the real economy.

Recommendation

Based on the findings from the analyses, the following three recommendations are proposed:

1. The Debt Management Office (DMO) and the Federal Ministry of Finance should deliberately tilt the composition of domestic borrowing towards long-term Federal Government Bonds and away from excessive reliance on short-term Treasury Bills. Given the evidence that bond financing exhibits a positive long-run association with private sector credit (a crowding-in effect), new borrowing should be explicitly tied to funding critical, productivity-enhancing public infrastructure projects in power, transport, and logistics. This strategy would channel debt into investments that improve the business environment, thereby stimulating complementary private investment and credit demand, rather than using short-term instruments primarily for deficit financing.
2. The Central Bank of Nigeria (CBN) should undertake a comprehensive review of the Liquidity Ratio requirement, considering its potential to create a structural bias in bank portfolios towards government securities. While financial stability is paramount, the marginally negative long-run coefficient suggests that an excessively high ratio may disincentivize long-term lending to the private sector. The CBN could explore a differentiated or tiered liquidity requirement that encourages banks to maintain a healthier balance between holding liquid assets (including T-bills) and extending credit to productive sectors of the economy.
3. To lock in the crowding-in benefits, the government should institutionalize a transparent and accountable framework where proceeds from Federal Government Bonds are ring-fenced for specific, high-impact infrastructure projects with clear economic rates of return. Publishing detailed business cases and impact assessments for bond-funded projects would strengthen investor confidence, improve the sovereign's credit profile, and provide tangible evidence to the private sector that public debt is being used to lower their operational costs and expand market opportunities, thereby directly justifying the observed positive correlation with private credit.
4. A formal framework for sustained policy coordination between the fiscal authorities (Finance Ministry, DMO) and the CBN is essential. This coordination should ensure that the timing and volume of

domestic debt issuances, particularly bond auctions, are consciously aligned with the CBN's liquidity management objectives and the banking system's capacity to lend. This would help prevent situations where aggressive government borrowing coincides with periods of monetary tightening (via high CRR), which could exacerbate competition for funds and undermine the identified positive bond-credit relationship.

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REFERENCES

1. Abbas, S. M. A., & Christensen, J. E. (2010). The role of domestic debt markets in economic growth: An empirical investigation for low-income countries and emerging markets. *IMF Staff Papers*, 57(1), 209–255.
2. Adegboye, A. C., Ogbebor, P. I., & Ojo, A. T. (2021). Domestic debt and private sector credit in Nigeria: An empirical investigation. *Journal of Economics and Finance*, 12(2), 45-58.
3. Adegboye, A. C., Ogbudor, C. O., & Owoeye, T. (2021). Domestic debt and private sector credit in Nigeria: An empirical analysis. *Journal of Economics and Sustainable Development*, 12 (18), 1–11.
4. Adeniran, A. O., & Olayemi, F. S. (2021). Public debt and private sector credit interaction in Nigeria: Evidence from VAR approach. *Journal of Applied Economics and Policy*, 14(2), 45–59.
5. Ahlborn, M., & Schweickert, R. (2018). Public debt and economic growth Economic systems matter. *International Economics and Economic Policy*, 15(2), 373–403. https://doi.org/10.1007/s10368-017-0386-2
6. Aisen, A., & Hauner, D. (2008). Budget deficits and interest rates: A fresh perspective. *Applied Economics*, 40(15), 1993–2007
7. Ajayi, M. A., & Olofin, S. O. (2021). Interest rate movements and public debt dynamics in Sub-Saharan Africa. *African Journal of Economic Policy*, 28(1), 72–91.
8. Alege, P. O., & Ogundipe, A. A. (2022). Fiscal policy, domestic debt, and credit markets in Nigeria: A causality analysis. *International Journal of Economics and Financial Studies*, 10(4), 98–113.
9. Central Bank of Nigeria. (2022). *Statistical bulletin: Volume 33*. Central Bank of Nigeria.
10. Central Bank of Nigeria. (2023). *Statistical bulletin*. Central Bank of Nigeria.
11. Checherita-Westphal, C., & Rother, P. (2012). The impact of high government debt on economic growth and its channels: An empirical investigation for the euro area. *European Economic Review*, 56 (7), 1392-1405. https://doi.org/10.1016/j.euroecorev.2012.06.007
12. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
13. Debt Management Office. (2022). *Annual report & statement of accounts*. Debt Management Office, Nigeria.
14. Egwaikhide, F. O. (2012). Effects of budget deficits on selected macroeconomic variables in Nigeria: A simulation exercise. *Journal of Economics and Sustainable Development*, 3 (10), 85-100.
15. Ezeaku, H. C., & Asongu, S. A. (2024). Institutional quality thresholds in the public debt–private credit nexus: Evidence from Nigeria. *Journal of Economic Studies*, 51(2), 345-363.
16. Ezeaku, H. C., Asongu, S. A., & Nwosu, E. O. (2018). Monetary policy and private sector credit in Nigeria: An ARDL approach. *Financial Innovation*, 4(1), 1–12.
17. Friedman, B. M. (1978). Crowding out or crowding in? The economic consequences of financing government deficits. *Brookings Papers on Economic Activity*, 1978(3), 593–641. https://doi.org/10.2307/2534394
18. International Monetary Fund. (2020). *Global financial stability report*. International Monetary Fund.
19. Keynes, J. M. (1936). *The general theory of employment, interest, and money*. Palgrave Macmillan.

20. Levine, R. (2005). Finance and growth: Theory and evidence. In P. Aghion & S. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1A, pp. 865-934). Elsevier. https://doi.org/10.1016/S1574-0684(05)01012-9
21. Manufacturers Association of Nigeria. (2023). *Manufacturing sector performance report for the year 2022*. Manufacturers Association of Nigeria.
22. Mishra, P., Montiel, P., & Spilimbergo, A. (2012). Monetary transmission in low-income countries: Effectiveness and policy implications. *IMF Economic Review*, 60(2), 270-302. https://doi.org/10.1057/imfer.2012.7
23. Ndoricimpa, A. (2020). Threshold effects of public debt on economic growth in Africa: A new evidence. *Journal of Economics and Development*, 22(2), 187-207. https://doi.org/10.1108/JED-08-2019-0021
24. Obi, K. O., & Nurudeen, A. (2018). Government domestic debt and its impact on private sector lending in Nigeria. *International Journal of Economics and Financial Issues*, 8(3), 153–160.
25. Obi, K., & Nurudeen, A. (2018). Government domestic debt and its impact on private investment in Nigeria: A crowding-out effect analysis. *African Journal of Economic Review*, 6(2), 112-128.
26. Okafor, C., Shobayo, P., & Iyoboyi, M. (2023). Public debt and private investment nexus in Nigeria: A threshold analysis. *African Development Review*,35(1), 78-94. https://doi.org/10.1111/1467-8268.12685
27. Okoye, L. U., & Eze, O. R. (2020). Domestic debt and private sector credit in Nigeria: Evidence from causality analysis. *Nigerian Journal of Economic Research*,16(1), 83–101.
28. Onyele, K. O., & Nwokolo, E. I. (2022). Government borrowing and private investment in Nigeria: Crowding-out or crowding-in? *Journal of Economic Management and Sustainable Development*, 7(2), 34–49.
29. Rehman, N. U., Ahmad, E., & Khan, M. A. (2020). The dynamics of public debt and private sector crowding out in Pakistan. *The Journal of Economic Asymmetries*, 22, e00176.
30. Ugwuebe, S. U., & Uche, A. S. (2021). Domestic debt and financial crowding out of private sector in Nigeria: An econometric analysis. *International Journal of Finance & Banking Studies*, 10(1), 1–12.
31. Ugwuebe, S. U., & Uche, A. S. (2021). Domestic public debt and private sector credit in Nigeria: A test of the crowding-out hypothesis. *Journal of African Business*, 22(4), 543-560.
32. Umar, B., & Soliu, O. (2020). Public debt and private credit dynamics in West Africa. *Review of Development Economics*, 24 (3), 1198–1212. https://doi.org/10.1111/rode.12690
33. World Bank. (2022). *World development report 2022: Finance for an equitable recovery*. The World Bank. https://doi.org/10.1596/978-1-4648-1730-4