

Domestic Debt and the Dynamics of Private Sector Investment: Testing the Crowding-out Hypothesis in Nigeria

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ABSTRACT

This study used time series data spanning the period between 1981 and 2023 to investigate domestic borrowing and crowding out effect in the light of its implication on private sector investment in Nigeria. The study utilised data on gross private domestic investment modelled against domestic debt stock, interest rate, credit to private sector and gross domestic product. Employing the quantitative research methodology, the empirical analysis began with a unit root test of stationarity using the Augmented Dickey-Fuller and Phillip Perron methods- the outcome of which satisfied the adoption of Johansen cointegration and subsequently Vector Error Correction Mechanism. Finding from the study reveals that domestic debt has a positive and statistically significant effect on private sector investment in the long run. The study equally found that interest rates have a significant negative impact on private sector investment in Nigeria, confirming that higher interest rates tend to discourage private investment which highlights the importance of the interest rate channel as a key transmission mechanism through which higher borrowing costs can deter private investment. Additionally, the study found that credit to the private sector has a significant negative effect on private sector investment. The study concluded that, while domestic debt appears to have a positive long-term effect on private investment, this is tempered by the negative effects of interest rates and credit allocation inefficiencies. The study recommended, among others, for policymakers to adopt a long-term strategic debt management plan that maximizes the positive impact of domestic borrowing on private investment.

Keywords: domestic debt, private sector, gross domestic product, crowding out, interest rate

1. INTRODUCTION

Over the years, Nigeria has consistently pursued major macroeconomic objectives such as stable prices, full employment, balance of payments stability, and sustained growth and development. In an attempt to achieve these objectives, the government has often relied heavily on expansionary fiscal policies, which have led to persistent budget deficits and heavy borrowings to bridge the gap. Ekpo et al. (2024) note that long periods of fiscal deficits are usually tied to deliberate government strategies to stimulate economic activities through increased public expenditure, a notion that aligns with Wagner's Law. This is also in line with Keynesian economic thinking which maintains that insufficient government spending could cause economic stagnation and higher unemployment levels. Keynes (1936) and his followers therefore emphasized the necessity of fiscal deficits to counter unemployment and revive economic growth.

According to Atemnkeng et al. (2024), deficit financing refers to efforts made by government to cover the shortfall between revenue and expenditure when revenue is inadequate. Simply put, it means spending more than the income of government in order to inject funds into the economy. After the post-war era, many scholars pointed to shortage of capital as a key factor behind underdevelopment in several countries (Mba et al., 2013). The implication is that higher capital formation supports sustained economic growth, while low accumulation hinders development. As a result, both developed and developing nations have, over time,

placed priority on infrastructural development, good governance, and human capital improvement as ways of boosting investment.

The role of the private sector in driving growth has been strongly emphasized in literature. Makuyana and Odhiambo (2018), among others, observed that private investment plays a greater role compared to public investment in ensuring long-term growth. Avis (2016, p. 16) also highlighted that in developing countries, the private sector accounts for about 90 percent of employment (both formal and informal), supplies essential goods and services, and contributes significantly to tax revenue and capital flow. Similarly, the United Nations Economic Commission for Africa (2020) reported that in low- and middle-income countries, the private sector contributes more than 80 percent of government revenue mainly through income taxes, company taxes, and resource rents. Consequently, many governments have gradually shifted towards policies that encourage private sector participation. Yusuf (2023) noted that there is now a move away from government-led growth to private sector-led growth strategies, evident in the large-scale privatization and commercialization of state-owned enterprises.

Despite these developments, the effect of deficit financing on economic growth has continued to attract debate among scholars and policy makers, with particular concern about the method of financing and its wider implications for the economy. One major issue for Nigeria is domestic borrowing, since it is believed to have the potential of crowding out private investment. Domestic debt refers to debt obtained within the economy, often through the sale of securities and borrowing from the banking system (Grace et al., 2022). Lidemia (2018) outlined some reasons why governments borrow domestically, including the need to cover budget shortfalls, carry out monetary policies through open market operations, and deepen financial markets by supplying tradable instruments.

In Nigeria, fiscal deficits have remained a recurrent feature of budgetary operations, mostly due to poor fiscal discipline. Okoye et al. (2019) observed that successive governments have continually run large fiscal deficits since independence. Historically, Isibor et al. (2018) traced domestic borrowing in Nigeria back to 1958 during the colonial reforms that introduced marketable debt instruments to finance deficits. More recently, Oyewobi and Falolu (2023) identified factors like rising expenditure, slow output growth, inflation, narrow revenue sources, oil shocks, and the country's over-dependence on oil as major reasons for Nigeria's increasing debt.

For many developing countries including Nigeria, commercial bank credit serves as the main source of finance for the private sector. This dependence has raised concerns that government borrowing from banks might limit credit available for businesses. Jato and Nwankwo (2024) stressed that heavy government borrowing may reduce loanable funds for the private sector, thereby raising borrowing costs and discouraging investment. Grace et al. (2022) also pointed out that Nigeria's rising domestic debt stock has raised worries about sustainability, given the short-term nature of most debt instruments and the fact that banks hold a large proportion of government debt. This situation could result in higher interest rates, increased financial costs, and crowding out of private borrowing, with negative effects on growth.

The link between interest rates and investment has also remained a topical issue in both theory and practice. Neoclassical economists argue that interest rate and investment are inversely related—higher interest rates reduce investment by making borrowing costlier. Keynesians, however, maintain that interest rate plays a limited role in influencing investment, arguing instead that future demand expectations and profitability matter more. Empirical works often support the neoclassical view of a negative relationship. For instance,

Brunela et al. (2023) identified interest rate as a major determinant of private investment, while Edame and Okoli (2015) noted that domestic borrowing could lead to higher interest rates, validating the neoclassical crowding out theory. Asogwa and Okeke (2013) also observed that the sale of government securities can reduce funds available to the private sector. Makuyana and Odhiambo (2018) further argued that when government and private sector compete for funds, businesses may be forced to scale down operations, thereby reducing aggregate supply.

Akanbi (2020) explained that domestic debt can crowd out private investment either directly, by reducing available credit (credit channel), or indirectly through higher interest rates (interest rate channel). While some studies (e.g., Jato & Nwankwo, 2024) acknowledged that domestic debt may have positive short-run effects on growth, they also warned of debt overhang in the long run if debt servicing costs outweigh repayment ability. At such a stage, interest payments may exceed the principal, creating negative growth effects. Akanbi (2020) further stressed that the scale of impact depends largely on how much interest rates rise and/or how much private credit falls following increases in domestic debt.

The Nigerian private sector has generally been regarded as underperforming, especially in terms of access to affordable credit. Nwaeze (2017) reported that Nigeria was ranked 168 out of 185 countries in the World Bank Ease of Doing Business index, in which access to credit is a major indicator. Data from Trading Economics show that Nigeria's ease of doing business averaged 143.92 between 2008 and 2019, with the worst ranking of 170 in 2014 and the best of 120 in 2008.

Further statistics from the Central Bank of Nigeria (CBN, 2022) reveal troubling patterns. Private sector investment rose in absolute terms from ₦111.57 billion (80.1% of GDP) in 1981 to ₦232.37 billion (47% of GDP) in 1990, but its share of GDP fell significantly. Between 1991 and 2000, private investment grew from ₦246.1 billion (41.7% of GDP) to ₦1950.8 billion (27.6% of GDP). Similar declines in share of GDP continued into the 2000s and 2010s, despite absolute increases. For instance, from 2001 to 2010, private investment rose from ₦1823.99 billion to ₦6651.79 billion, but its share of GDP dropped from 22.1% to 12.0%. Between 2011 and 2020, a fall from 12.1% to 9.8% was later reversed to 24.9% in 2020, suggesting some recovery. Recently, private investment grew from ₦54,264.7 billion (30.8% of GDP) in 2021 to ₦59,323.1 billion (29.3% of GDP) in 2023. Overall, these figures suggest that while the private sector's absolute investment has risen, its relative contribution to GDP has remained weak, which is worrying for a sector considered crucial for inclusive and sustainable development (UNECA, 2020).

This weak performance has coincided with high unemployment, poverty, and inequality. Analysts often link this to government borrowing. Nwaeze (2017) argued that because the private sector largely depends on personal savings and informal borrowing, government crowding them out through domestic borrowing worsens their access to credit.

From theory, Keynesians view deficit spending as a way to stimulate growth, while neoclassicals warn of higher borrowing costs and crowding out. The puzzle, however, lies in Nigeria's data which sometimes defy both theories. For instance, between 2000 and 2005, domestic debt rose by 69.87%, interest rate dropped slightly from 17.98% to 17.95%, credit to the private sector jumped by 246.62%, and private investment grew by 146.5%. A similar pattern was observed in subsequent years- domestic debt rose sharply but interest rates declined, credit to the private sector increased, and private investment also expanded. Even in the most recent period (2020–2022), domestic debt rose by 38.61%, interest rates remained

almost stable (12.32% to 12.34%), credit to the private sector grew by 34.18%, and private investment rose by 54.4%.

These trends raise contradictions: while theory predicts that domestic debt should raise interest rates and reduce credit, Nigeria's experience shows rising debt alongside falling interest rates, increased private credit, and rising investment. Yet, there is still concern about the sustainability of this pattern.

Empirical works on Nigeria are largely tilted towards finding negative effects of domestic debt on private investment (e.g., Akanbi, 2020; Shetta & Kamaly, 2014; Grace et al., 2022; Eze & Ubaka, 2023; Anoke et al., 2021). However, very few studies have examined whether the crowding out effect in Nigeria occurs mainly through the interest rate channel or the credit channel. This gap is important because it helps determine where policy interventions should focus—on stabilizing rates or expanding credit. In a country like Nigeria, where government heavily influences financial markets and fixes interest rates, the credit channel may be more relevant than the interest channel in explaining how borrowing affects investment. It is against this backdrop that this study investigates the effect of domestic borrowing on private investment in Nigeria, hinged on these objectives, to: investigate the impact of domestic borrowing on private sector investment in Nigeria, determine whether there is a significant impact of interest rate on private investment in Nigeria, and examine whether credit to the private sector significantly affects private investment in Nigeria.

2. Literature review

2.1 Theoretical framework

The Keynesian theory, developed by Keynes in *The General Theory of Employment, Interest and Money* (1936), provides a more flexible explanation of the relationship between domestic debt and private investment than the neoclassical theory. While Keynes acknowledged that government borrowing could raise interest rates and potentially reduce private investment, he rejected the neoclassical assumption that such crowding out is always complete. According to Keynes, the extent of crowding out depends on the prevailing economic conditions, particularly the level of employment and aggregate demand. During periods of recession or underemployment, government borrowing may not crowd out private investment at all because idle resources and excess productive capacity are available in the economy.

A major proposition of the Keynesian framework is that private investment is not determined solely by the interest rate. Keynes argued that investors are influenced more by expectations of future profits, business confidence, and psychological factors which he described as “animal spirits.” This means that even when interest rates rise due to government borrowing, firms may still undertake investment if they anticipate profitable market opportunities. Keynes also maintained that savings are primarily determined by income rather than interest rates. As income increases, households save more; therefore, equilibrium between savings and investment is achieved through changes in income levels rather than through automatic interest rate adjustments, as proposed by the neoclassical loanable funds theory.

Keynes further introduced the concept of liquidity preference, which explains why individuals and firms may choose to hold money in liquid form rather than invest it in productive ventures. During periods of uncertainty, economic agents may prefer cash or short-term deposits, causing savings to remain idle even when interest rates are low. This challenges the neoclassical belief that interest rates always adjust to equilibrate savings and investment. Keynes argued that institutional rigidities, structural bottlenecks, and market imperfections can prevent interest rates from falling sufficiently to stimulate private

investment, thereby leaving the economy trapped in a state of underemployment and weak aggregate demand.

One of the most significant aspects of the Keynesian theory is the multiplier principle. Keynes argued that when an economy is operating below full employment, government expenditure financed through domestic borrowing can increase aggregate demand and national income. The initial government spending generates additional rounds of consumption and investment, leading to a multiplied effect on output and employment. In this context, domestic borrowing can have a crowding-in effect by encouraging private investment through increased market opportunities and improved profit expectations. Therefore, the Keynesian framework suggests that domestic debt does not automatically hinder economic growth; rather, its impact depends on the state of the economy, the purpose of borrowing, and the productive use of the borrowed funds.

2.2 Empirical Review

The reviewed empirical studies generally provide evidence that public debt exerts a negative influence on private investment, particularly in Nigeria. Abubakar and Mamman (2021) found that public debt negatively affects private investment in both the short and long run, with domestic debt exerting a stronger adverse effect than external debt. Their nonlinear analysis, however, revealed mixed results by suggesting asymmetric responses of private investment to domestic debt changes. Similarly, Anoke et al. (2021) reported that both external and domestic debt significantly reduce private investment, while debt servicing had a negative but insignificant effect. Eze and Ubaka (2023) further showed that external debt, external debt servicing, and domestic debt servicing significantly constrain private investment, reinforcing the argument that debt obligations can crowd out productive private sector activities.

A second group of studies found that government borrowing has a negative relationship with private sector credit, although the magnitude of the effect is often weak or statistically insignificant. Grace et al. (2022) observed that new domestic borrowing negatively affects private sector credit in the long run, but the relationship was not statistically significant, implying limited displacement of private lending. Akanbi (2020) similarly found a negative but insignificant relationship between government bond issuance and private sector credit, suggesting that government securities may divert some banking resources away from private lending without causing strong crowding-out effects. In contrast, Shetta and Kamaly (2014) provided stronger evidence from Egypt, showing that government borrowing significantly crowds out private credit, as shocks to public borrowing reduced the availability of credit to the private sector.

Other studies revealed that the effect of domestic debt may vary over time and across institutional contexts. Bilge and Ebrima (2020) found that in The Gambia, domestic debt negatively and significantly affected private investment in the short run, but had a positive though insignificant effect in the long run, indicating that the adverse impact weakens over time. Lidiema (2018) reported similar findings for Kenya, where government borrowing significantly reduced private investment in the short run, while the negative relationship diminished in the long run as the economy adjusted to debt accumulation. Nguyen (2022), using data from 98 developing economies, also confirmed that public debt has the potential to crowd out private investment, but the extent of this effect depends on institutional quality, with stronger governance intensifying the negative impact of debt on private investment.

A smaller body of evidence suggests that domestic debt can support rather than hinder private investment under certain conditions. Wazir and Syed (2023), in their study of Pakistan, found a positive and statistically significant relationship between domestic debt and private investment, implying that domestic borrowing may stimulate investment when accompanied by favourable economic conditions. Likewise, Eze and Ubaka (2023) found that domestic debt had a positive though statistically insignificant effect on private investment in Nigeria, while Bilge and Ebrima (2020) reported a similar positive but insignificant long-run effect in The Gambia. Overall, the reviewed studies indicate that while the predominant finding supports the crowding-out hypothesis, the relationship between domestic debt and private investment is not uniform; it varies according to the composition of debt, debt servicing obligations, macroeconomic conditions, institutional quality, and the time horizon considered.

Despite the existing body of research on the relationship between domestic borrowing and private sector investment in Nigeria, a significant gap remains in the empirical literature. Specifically, the majority of these studies have relied on traditional econometric techniques such as Ordinary Least Squares (OLS), Autoregressive Distributed Lag (ARDL), and standard Vector Autoregression (VAR) models, which may not sufficiently account for the long-run equilibrium relationships among integrated variables. This study addresses these limitations by employing a Vector Error Correction Model (VECM) framework, which is particularly suited for analyzing both short-run dynamics and long-run equilibrium relationships among non-stationary variables that are cointegrated. The VECM approach enables the identification of short-run adjustments toward long-run equilibrium, thus providing more robust insights into the transmission mechanisms through which domestic debt affects private sector investment in Nigeria.

Moreover, none of the existing studies systematically examined the relative effectiveness of interest rate and private sector credit as transmission channels through which domestic debt impacts private investment. Understanding these channels is essential for designing targeted policy interventions. This study fills this gap by investigating how shocks in domestic debt influence interest rates and credit to the private sector, and how these, in turn, affect private investment.

Finally, many of the reviewed studies employ proxies such as credit to the private sector or gross capital formation for measuring private sector investment, both of which have conceptual limitations. Gross capital formation includes government capital expenditure, making it a mixed measure of public and private investment, while credit to the private sector represents only one source of investment funding. To overcome this, the study adopts a more refined proxy for private investment by subtracting government capital expenditure from gross capital formation, thereby isolating private sector investment more accurately.

3. Methodology

3.1 Model specification

Lau, Tan, and Liew (2019) proposed that a simple linear model is appropriate, where private investment is influenced by output, interest rate, private sector credit, and government borrowing. In this study, the model is slightly expanded to include exchange rate and trade openness:

$$\text{GPDI} = f(\text{GDP}, \text{INTR}, \text{CRPS}, \text{DDBT}, \text{EXCR}, \text{TOPN})$$

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Where:

GPGDI = Gross private domestic investment

GDP = Gross domestic product

INTR = Interest rate

CRPS = Credit to private sector

DDBT = Domestic debt

EXCR = Exchange rate

TOPN = Trade openness

The variables are modelled within a VECM framework, since they are I(1) and cointegrated. The general system is:

$$\Delta Y_t = \alpha \beta' Y_{t-1} + \Sigma \Gamma_i \Delta Y_{t-i} + \mu + \varepsilon_t \quad 2$$

With the cointegration relation expressed as:

$$ECM_{t-1} = \beta_0 GPGDI_{t-1} - \beta_1 GDP_{t-1} - \beta_2 INTR_{t-1} - \beta_3 CRPS_{t-1} - \beta_4 DDBT_{t-1} - \beta_5 EXCR_{t-1} - \beta_6 TOPN_{t-1}$$

The differenced form for GPGDI is then:

$$\Delta GPGDI_t = \alpha_1 ECM_{t-1} + \Sigma \gamma_{11,i} \Delta GPGDI_{t-i} + \Sigma \gamma_{12,i} \Delta GDP_{t-i} + \Sigma \gamma_{13,i} \Delta INTR_{t-i} + \Sigma \gamma_{14,i} \Delta CRPS_{t-i} + \Sigma \gamma_{15,i} \Delta DDBT_{t-i} + \Sigma \gamma_{16,i} \Delta EXCR_{t-i} + \Sigma \gamma_{17,i} \Delta TOPN_{t-i} + \varepsilon_{1t} \quad 3$$

3.2 Estimation techniques

Unit Root Test: To confirm the stationarity properties of the variables, both ADF and PP tests were applied. These tests check if the variables have constant mean, variance, and autocovariance.

The ADF regression is:

$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \beta Y_{t-1} + \Sigma \delta_i \Delta Y_{t-i} + \varepsilon_t \quad 4$$

The null hypothesis is that the series is non-stationary. If the ADF statistic is more negative than the critical value, the null is rejected.

The Phillips-Perron test uses the simpler form:

$$Y_t = \alpha_0 + \alpha_{1t} + \beta Y_{t-1} + \varepsilon_t \quad 5$$

The main difference is that PP handles serial correlation non-parametrically, while ADF does so by adding lagged terms.

Vector Error Correction Model (VECM): Since the variables are non-stationary but cointegrated, the VECM is used. It allows estimation of both short-run dynamics and the long-run equilibrium. The general specification is:

$$\Delta Y_t = \Pi Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \dots + \Gamma_{p-1} \Delta Y_{t-p+1} + \mu + \varepsilon_t \quad 6$$

Where $\Pi = \alpha\beta'$ captures long-run relations, Γ_i represent short-run coefficients, μ is constant, and ε_t is error term.

4. Results

4.1 Presentation and Analysis

4.1.1 Unit root test results

The study first and foremost conducted a test of stationarity on the variables employed in the course of the study using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) methods at 5 % level of significance. Table 1 and 2 below contain summaries of the ADF and PP unit root test results respectively at their level and first differences:

Table 1: Augmented Dickey-Fuller (ADF) unit root test result at level and first differences (Trend and Intercept)

Series	ADF T-STAT (LEVEL)	5% critical values	ADF T- STAT (1 st DIFF)	5% critical values	Order of Integration
LDDBT	-1.636994	-3.526609	-4.977155	-3.526609	1(1)
INTR	-3.329001	-3.523623	-6.494397	-3.529758	1(1)
LCRPS	-0.706585	-3.523623	-4.601806	-3.526609	1(1)
LGDP	0.154295	-3.523623	-3.724121	-3.526609	1(1)
LGPDI	-2.077682	-3.523623	-5.170913	-3.526609	1(1)
LEXCR	-2.329690	-3.523623	-7.579654	-3.526609	1(1)
TOPN	-2.456669	-3.523623	-8.604310	-3.526609	1(1)

SOURCE: Researcher's Compilation from E-view 10.0 (2026)

Table 2: Phillips-Perron (PP) unit root test result at level and first differences (Trend and Intercept)

Series	PP T-STAT (LEVEL)	5% critical values	PP T- STAT (1 st DIFF)	5%critical values	Order of Integration
DBT	-1.501484	-3.523623	-4.966825	-3.526609	1(1)
INTR	-3.219160	-3.523623	-10.33125	-3.526609	1(1)
LCRPS	-0.706585	-3.523623	-4.489195	-3.526609	1(1)
LGDP	-0.600489	-3.523623	-3.648381	-3.526609	1(1)
LGPDI	-2.440513	-3.523623	-5.203733	-3.526609	1(1)
LEXCR	-2.310557	-3.523623	-7.504989	-3.526609	1(1)
TOPN	-2.223238	-3.523623	-20.83314	-3.526609	1(1)

Source: Researcher's Compilation from E-view 10.0 (2026)

Information from table 1 above shows that none of the variables was stationary at level, since for each of the series, the absolute value of the calculated Augmented Dickey-Fuller (ADF) statistic was lesser than the critical value at 5 percent level of significance. However, at first difference, it was found that the ADF statistics were greater, for all the variables, than the critical values at 5 percent level of significance. This implies that the variables are difference stationary at order one. From table 2, Phillips-Perron technique was used to crosscheck the ADF results and the PP test results shows that, similar to the ADF result, none of the variables was stationary at level, hence all the variables are difference stationary at order one.

4.1.2 Cointegration Test

Though the individual series were found to be non-stationary, the Johansen cointegration test was conducted to determine whether a linear combination of the non-stationary variables would produce a stationary residual (meaning whether they have long run relationship) and the test result summaries are shown in tables 3 and 4 below:

Table 3: Johansen cointegration test for the series: Trace statistics test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.997236	457.0227	125.6154	0.0001
At most 1 *	0.817832	233.1584	95.75366	0.0000
At most 2 *	0.764789	168.4511	69.81889	0.0000
At most 3 *	0.730516	113.4547	47.85613	0.0000
At most 4 *	0.610375	63.62731	29.79707	0.0000
At most 5 *	0.517849	27.80963	15.49471	0.0004
At most 6	0.002331	0.088678	3.841466	0.7659

Sources: Researchers' compilation from E-view 10 (2026)

Table 4: Johansen cointegration test for the series: Eigen value test

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.997236	223.8643	46.23142	0.0000
At most 1 *	0.817832	64.70732	40.07757	0.0000
At most 2 *	0.764789	54.99636	33.87687	0.0000
At most 3 *	0.730516	49.82740	27.58434	0.0000
At most 4 *	0.610375	35.81768	21.13162	0.0002
At most 5 *	0.517849	27.72095	14.26460	0.0002
At most 6	0.002331	0.088678	3.841466	0.7659

Source: E-Views 10 (2026)

The results of the cointegration test presented in tables 3 and 4 showed evidence of 6 co-integrated equations using both the trace statistics test and the Eigen value test. Specifically, using the trace statistics test, the null hypothesis of no cointegration was rejected in 6 out of the 7 hypothesized equations since the trace statistics are greater than the critical value at 5 percent level of significance in 6 of the hypothesized equations. Similarly, the computed Eigen value is significantly different from zero equally in 6 of the hypothesized equations in table 4. Therefore, there is evidence of long run equilibrium relationship among the variables specified.

4.1.3 Lag selection criteria

Prior to estimating the structural vector autoregression, the study sought to determine the appropriate number of lags to include in the model, using the lag length selection criteria presented in table 5 below:

Table 5: VAR lag Order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-371.6251	NA	0.638655	19.41667	19.71526	19.52380
1	-119.9510	400.0972	2.04e-05	9.023130	11.41183*	9.880176
2	-70.02963	61.44173	2.50e-05	8.975878	13.45470	10.58284
3	15.27174	74.36530*	8.26e-06*	7.114270*	13.68321	9.471147*

Source: E-Views 10 result (2026)

From table above, LR represents likelihood ratio test statistics, FPE represents final prediction error, AIC is an acronym for Akaike information criterion, SC stands for Schwarz information criterion while HQ stands for Hannan-Quinn criterion. As can be seen both, LR, FPE, AIC, and HQ suggested three period lags as the optimal lag length, while SC suggest 1 lag. Therefore, subsequent analysis was carried out using three period lags.

4.1.4: Vector Error Correction Result

The VECM result, alongside the p-value extracted from the system equations, is presented in table 6 below:

Table 6: Vector error correction estimate

Cointegrating Eq:	CointEq1	
LGPD1 (-1)	1.000000	
LGDP (-1)	-0.345130 (0.09494) -[-3.63538]	
INTR(-1)	-0.034794 (0.00699) -[-4.97871]	
LDDBT(-1)	0.896228 (0.10791) -[8.30499]	
LEXCR(-1)	0.096336 (0.03387) -[2.84403]	
TOPN(-1)	0.043377 (0.00390) -[11.1141]	
LCRPS(-1)	-1.314304 (0.11002) -[-11.9457]	
C	-3.070010	
Error Correction:	D(LGPD1)	Prob.
CointEq1	-0.316545	0.0496
D(LGPD1(-1))	0.200600	0.4240
D(LGPD1(-2))	0.034849	0.8706
D(LGDP(-1))	0.733488	0.0910
D(LGDP(-2))	-0.556707	0.1747
D(INTR(-1))	-0.031959	0.0231
D(INTR(-2))	-0.027267	0.0186
D(LDDBT(-1))	-0.009312	0.9715

D(LDDBT(-2))	-0.063291	0.8120
D(LEXCR(-1))	0.111913	0.1645
D(LEXCR(-2))	0.005547	0.9238
D(TOPN(-1))	0.007672	0.2186
D(TOPN(-2))	-0.002493	0.6040
D(LCRPS(-1))	0.129665	0.5426
D(LCRPS(-2))	-0.111258	0.6024
C	0.101787	0.2084
R-squared	0.443488	
Adj. R-squared	0.400545	

Source: Researcher's compilation from E-Views 10 (2026)

From the VEC results above, the first panel shows the coefficients of long run relationship between LGPDI and other variables while the second panel shows the vector error correction mechanism with speed of adjustment. From the long run panel, it was found that LGDP has a coefficient of -0.345130 which implies that gross domestic product has a negative impact on private sector investment. The negative coefficient may reflect the structure of Nigeria's economy, where GDP growth is largely driven by oil revenue and government expenditure rather than private sector productivity. As a result, increases in GDP may not translate into improved investment opportunities for the private sector. With a standard error value of 0.09494 (smaller than $\frac{1}{2}$ of the coefficient estimate), the estimate of LGDP is statistically significant.

Similarly, INTR has a coefficient of -0.034794 implying a negative impact of interest rate on private investment in Nigeria. With a standard error value of 0.00699 (smaller than $\frac{1}{2}$ of the estimated coefficient), the estimate of interest rate is considered statistically significant. With a positive coefficient of 0.896228 in respect of LDDBT and a standard error value of 0.10791 (smaller than $\frac{1}{2}$ of the coefficient estimate), we consider that domestic debt has a positive and statistically significant impact on private investment. Similarly, LEXCR has a positive coefficient of 0.096336 alongside a standard error value of 0.03387 (smaller than $\frac{1}{2}$ of the coefficient estimate) which entails that exchange rate has a positive and statistically significant impact on private sector investment in Nigeria. TOPN on the other hand equally has a coefficient of 0.043377 with a standard error value of 0.00390 (smaller than $\frac{1}{2}$ of the coefficient estimate), indicating a positive and statistically significant impact of trade openness on private sector investment in Nigeria. Lastly, credit to private sector has a negative coefficient of -1.314304 with a standard error value of 0.11002, indicating a negative impact of private sector credit to private sector investment in Nigeria.

The second panel shows that cointegrating equation coefficient (ECM (-1)) coefficient equals -0.316545 indicating that the speed of adjustment from short-run disequilibrium to long-run equilibrium is approximately 32 percent annually. This means that about 32 percent of previous period disequilibrium is corrected by the system annually. The sign of cointegrating coefficient is negative fractional and a p - value of 0.0496 (which is smaller than 0.05) shows that the coefficient is statistically significant. Hence, this upholds the Granger Representative Theorem (GRT) that a negative fractional and statistically significant error correction coefficient is a necessary condition for the variables to be co-integrated.

The above result indicates that the short run coefficient of determination (R^2) is 0.443488 which indicates that the explanatory variables explain about 44 % of the total variations in private investment within the period under consideration.

4.1.5 Diagnostic tests

The validity of the VECM estimate above was tested against serial correlation, heteroscedasticity and normality using VEC Residual Serial Correlation LM, VEC Residual Heteroskedasticity and VEC Residual Normality tests. Their results are presented in table 7, 8 and 9 below:

Table 7: VEC Residual Serial Correlation LM

Null hypothesis: No serial correlation at lag

Lag	LRE* stat	Df	Prob.	Rao F-stat	df	Prob.
1	66.92297	49	0.0452	1.510100	(49, 55.2)	0.0689
2	42.70895	49	0.7247	0.811780	(49, 55.2)	0.7703

SOURCE: E-view 10.0 Output

The VEC Residual Serial Correlation LM test result above shows that the F-statistic value at lag 1 is 1.510100 with a p-value of 0.0689. Since the p-value is greater than the chosen level of significance (0.05), we accept the null hypothesis and conclude that there is no strong evidence of serial correlation in the model. Similarly, the F-statistic value at lag 2 is 0.811780 with a p-value of 0.7703. Since the p-value is greater than the chosen level of significance (0.05), we accept the null hypothesis and conclude that there is no serial correlation in the model at lag 2.

Table 8: VEC Residual Heteroskedasticity Tests (Levels and Squares)

Null hypothesis: The residuals of the estimated VEC model are homoscedastic

Joint test:		
Chi-sq	Df	Prob.
868.5481	840	0.2404

SOURCE: E-view 10.0 Output

The heteroscedasticity test result above shows that the Chi-square statistic is 868.5481 with a p-value of 0.2404. Since the p-value is greater than the chosen level of significance (0.05), we accept the null hypothesis and conclude that there is no evidence of heteroscedasticity in the model.

Table 9: VEC Residual Normality tests

Null hypothesis: The residuals of the estimated VEC model are multivariate normal

Component	Jarque-Bera	Df	Prob.
1	0.101666	2	0.9504
2	1.611977	2	0.4466
3	0.081285	2	0.9602
4	0.162799	2	0.9218
5	0.827057	2	0.6613
6	4.074699	2	0.1304
7	2.890523	2	0.2357
Joint	9.750006	14	0.7802

SOURCE: E-view 10.0 Output

The VEC Residual Normality test result above shows that the joint Jarque-Bera statistic is 9.750006 with a p-value of 0.7802. Since the p-value is greater than the chosen level of significance (0.05), we accept the null hypothesis and conclude that the residuals are normally distributed.

4.2 Testing of Research Hypotheses

Hypothesis one

H₀: There is no significant impact of domestic borrowing on private sector investment in Nigeria.

To test the above null hypothesis against its alternative hypothesis, we consider the estimate of domestic debt from the long run panel of the VECM result presented in table 4. From the VECM result, it is inferred that domestic debt has a positive coefficient of 0.896228 and a standard error value of 0.10791 (smaller than ½ of the coefficient estimate) which entails that domestic debt has a positive and statistically significant impact on private investment. This provides sufficient evidence to reject the null hypothesis and conclude that domestic debt exerts positive impact on private sector investment.

Hypothesis two

H₀: There is no significant relationship between interest rate and private sector investment in Nigeria.

From the long run panel of the VECM estimate, INTR has a coefficient of -0.034794 with a standard error value of 0.00699 (smaller than ½ of the estimated coefficient). This implies an inverse relationship between interest rate and private investment in Nigeria. Hence, we reject the null hypothesis and acceptance of the alternate hypothesis thereby concluding that interest rate has a significant negative impact on gross private domestic investment in Nigeria.

Hypothesis three

H₀: There is no significant relationship between credit to private sector and private sector investment in Nigeria.

From the long run panel of the VECM estimate, credit to private sector has a negative coefficient of -1.314304 with a standard error value of 0.11002, indicating a negative impact of private sector credit to private sector investment in Nigeria. This implies rejection of the null hypothesis and acceptance of the alternate hypothesis thereby concluding that credit to private sector exert a significant negative impact on private sector investment in Nigeria.

The VECM estimate reveals that domestic debt has a positive and statistically significant impact on private sector investment, with a coefficient of 0.896228. This suggests that a 1-unit increase in domestic debt is associated with approximately a 0.90 percent increase in private investment. This finding indicates that, despite traditional concerns about the crowding-out effect, domestic borrowing in the Nigerian context may play a facilitative role in stimulating private investment, particularly through its use in productive government expenditure. This aligns with the Keynesian postulation that government spending - especially when financed through domestic borrowing - can generate a fiscal multiplier effect. That is, increased public spending (such as on infrastructure or public goods) can stimulate aggregate demand and enhance the enabling environment for private sector activities to flourish.

The long-run estimate of interest rate carries a negative coefficient of -0.034794, indicating that interest rate has a significant and negative impact on private sector investment. This suggests that higher interest rates disincentivize private sector borrowing and investment, as they raise the cost of capital. The negative relationship confirms that rising domestic debt may contribute to increased interest rate pressures, which in turn reduce private sector investment - a classical crowding-out effect.

Similarly, credit to the private sector shows a significant negative impact on private investment, with a coefficient of -1.314304. This counterintuitive finding implies that increased credit availability does not necessarily translate into higher private investment. This may reflect issues such as inefficient credit allocation, where financial institutions prioritize non-productive sectors, or broader macroeconomic uncertainties that deter investment regardless of credit availability. Although increased domestic debt may indirectly influence the volume of credit in the economy, it appears that the quality and destination of credit flows are more critical, and current patterns do not favor productive investment in Nigeria.

5. CONCLUSION

While domestic debt appears to have a positive long-term effect on private investment, this is tempered by the negative effects of interest rates and credit allocation inefficiencies. Policymakers in Nigeria should focus on optimizing the use of domestic debt for productive public expenditure, while also addressing the challenges related to interest rates and the efficient allocation of credit to ensure that the full potential of domestic debt in supporting private sector growth is realized. Based on these findings from this study, the following recommendations are made for policy implementation:

1. In respect of the finding that domestic debt has a positive and statistically significant effect on private sector investment in the long run, policymakers should adopt a long-term strategic debt management plan that maximizes the positive impact of domestic borrowing on private investment. This plan should focus on financing productive public spending such as infrastructure and human capital development, which can create an enabling environment for private sector growth.
2. In line with the finding that interest rate has a significant negative impact on private sector investment, the government and the Central Bank of Nigeria (CBN) should work towards maintaining stable and accommodative interest rate policies to mitigate the adverse effects of rising borrowing costs on private investment.
3. In line with the finding that credit to the private sector has a significant negative effect on private sector investment, the government should focus on improving the efficiency of credit allocation by fostering a stronger link between credit supply and productive investment. This can be achieved through the establishment of a credit allocation framework that prioritizes lending to productive sectors such as agriculture, manufacturing, and technology.

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