



EFFECT OF FISCAL POLICY ON PRIVATE INVESTMENT IN NIGERIA

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ABSTRACT

Private investment remains a critical driver of economic growth and sustainable development in Nigeria, yet it has persistently underperformed relative to the African Union's 35% gross capital formation threshold. This study examines the effect of fiscal policy, proxied by public debt, government expenditure, and tax revenue, on private investment in Nigeria from 1985 to 2025. Employing the Vector Error Correction Model (VECM) technique, the study investigates both long-run equilibrium relationships and short-run dynamic adjustments among the variables. The long-run results reveal that government expenditure exerts a positive and statistically significant effect on private investment (coefficient = 0.0246, $p = 0.0008$), whereas public debt (coefficient = -0.1493 , $p = 0.5882$) and tax revenue (coefficient = 0.0361, $p = 0.0665$) are statistically insignificant. The short-run error correction model shows a highly significant and negative error correction term (-0.6119 , $p = 0.0000$), indicating that approximately 61.2% of disequilibrium is corrected within one period, with private investment serving as the primary adjusting variable. Post-estimation diagnostics confirm the model's reliability, with no heteroskedasticity, no serial correlation, and normally distributed residuals. The study concludes that fiscal policy effectiveness in Nigeria is channel-specific: government expenditure enhances private investment only in the long run, while public debt and tax revenue remain ineffective levers. It is recommended that the government prioritizes capital infrastructure spending, pursues debt restructuring to reduce the debt service burden, and implements comprehensive tax reforms to broaden the revenue base and establish a credible tax-investment nexus.

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Introduction

Private investment is widely recognized as a critical driver of economic growth, employment generation, and poverty reduction in developing economies (Abdulkarim & Saidatulakmal, 2021). However, in Nigeria, private investment has remained persistently low for decades, with gross capital formation fluctuating between 14% and 17% from 2010 to 2017, well below the 35% threshold advocated by the African Union, though it improved to 39.58% by 2023 (World Bank, 2023). This underperformance has raised considerable concern among policymakers and researchers, given that investment is a major determinant of sustainable economic progress (Amana et al., 2025). The erratic nature of private investment levels suggests that various underlying macroeconomic factors, particularly government fiscal operations, profoundly influence investors' decisions to commit resources to new projects or expand existing ones (Agbarakwe, 2019).

Fiscal policy constitutes a primary mechanism through which governments influence private investment behaviour, operating through three key channels: public debt, government expenditure, and tax revenue. In Nigeria, public debt has risen dramatically, with debt servicing consuming a substantial portion of government revenue and raising concerns about crowding-out effects on private sector credit. Government expenditure, when directed toward productive capital projects, can stimulate private investment by lowering transaction costs and improving infrastructure (Awode, 2019; Omorokunwa & Ajao, 2019); however, recurrent expenditure and unproductive spending may divert resources from the private sector (Abdulkarim & Saidatulakmal, 2021). Tax revenue, meanwhile, presents a dual effect: while excessive direct taxation

can distort investment incentives, moderate and efficiently mobilized tax revenue can fund public goods that enhance private sector productivity (Chinekwu & Okoye, 2023).

The empirical evidence on fiscal policy and private investment in Nigeria remains mixed and inconclusive. Chukwu et al. (2021) found that fiscal policy instruments Granger-cause private investment in Nigeria from 1986 to 2019, while Abdulkarim and Saidatulakmal (2021) demonstrated that capital expenditure stimulates private investment but direct taxes stifle it. Conversely, Amana et al. (2025) confirmed a positive long-run relationship between government spending and private investment using quarterly data from 2000Q1 to 2023Q4, though they noted that market depth and interest rates showed minimal effects. These conflicting findings underscore the need for further investigation using robust econometric techniques that can capture both short-run dynamics and long-run equilibrium relationships among fiscal policy variables and private investment.

This study seeks to fill this gap by examining the effect of fiscal policy, proxied by public debt, government expenditure, and tax revenue on private investment in Nigeria over the period 1985 to 2025. By employing the Vector Error Correction Model (VECM) technique, the study aims to provide a comprehensive understanding of both the immediate adjustment dynamics and the long-run equilibrium relationships, thereby offering evidence-based policy recommendations for enhancing private sector-led growth in Nigeria.

The main objective of this study is to examine the effect of fiscal policy on private investment in Nigeria, while the specific objectives are to;

- i. Examine the effect of public debt on private investment in Nigeria.

- ii. Assess the effect government expenditure on private investment in Nigeria.
- iii. Investigate the effect of tax revenue on private investment in Nigeria.

The remainder of this paper is structured as follows. Section one introduces the study. Section two presents the literature review. Section three describes the methodology. Section four reports the data analysis and findings, while Section five concludes and provides recommendations.

Literature Review

Fiscal Policy

Fiscal policy refers to the deliberate use of government revenue collection, primarily through taxation and government expenditure to influence macroeconomic conditions, including aggregate demand, employment, inflation, and economic growth (Blanchard, 2021; Mankiw, 2020). It encompasses decisions on taxation levels, public spending priorities, and borrowing strategies, all of which directly affect the allocation of resources, distribution of income, and stabilization of the economy over the business cycle.

Public Debt

Public debt refers to the total outstanding financial obligations incurred by a government when its expenditures exceed its revenues, necessitating borrowing from domestic or external sources to finance the fiscal deficit (Blanchard, 2021; Stiglitz, 2000). It encompasses all liabilities that require future repayment, including treasury bills, government bonds, loans from multilateral institutions, and other securities issued to creditors, with its composition classified into domestic debt and external debt.

Government Expenditure

Government expenditure refers to the total disbursements made by the public sector to acquire goods and services, transfer payments, and debt servicing obligations within a given fiscal period (Samuelson & Nordhaus, 2010). It represents a fundamental instrument of fiscal policy through which governments directly influence aggregate demand, resource allocation, and income distribution in the economy. The composition of government expenditure is typically disaggregated into recurrent expenditure, which covers wages, salaries, administrative costs, and operational maintenance and capital expenditure, which finances infrastructure development, productive assets, and long-term investments that enhance the economy's productive capacity (Tanzi, 2011).

Tax Revenue

Tax revenue refers to the compulsory, non-refundable financial transfers collected by government from individuals, households, and corporate entities to finance public expenditures and redistribute income within an economy (Stiglitz, 2000). It constitutes a primary source of government funding and is broadly categorized into direct taxes, such as personal income tax, corporate income tax, and property tax, which are levied on income and wealth and indirect taxes, including value-added tax, excise duties, and customs tariffs, which are imposed on consumption and transactions (Bird, 2015; Tanzi, 2011).

Private Investment

Private investment refers to the allocation of financial resources by individuals, households, and corporate entities toward the acquisition, improvement, or expansion of physical capital assets, such as machinery, equipment, buildings, and infrastructure with

the objective of generating future income, profits, or productive capacity (Blanchard, 2021; Mankiw, 2020). It encompasses gross fixed capital formation, changes in inventories, and investments in intellectual property products, and is distinguished from public investment by the fact that it is financed and controlled by private agents rather than government entities (World Bank, 2023).

Empirical Review

Public Debt and Private Investment

Islam and Nguyen (2024) investigated the crowding-out effects of public debt on private investment. The study utilized panel firm-level data across multiple developing economies, representing a micro-level analysis of how public debt affects private sector behaviour. The study applied panel data to examine the debt-investment relationship at the firm level. The findings indicated that higher public debt is correlated with lower investment by formal private sector firms, with the adverse effects largely driven by small and medium-size enterprises, domestic firms, and non-exporters.

Nguyen (2022) examined the crowding-out effect of public debt on private investment in developing economies and the role of institutional quality. The study covered 98 developing countries over the period 2002 to 2019 and utilized panel data extracted from the IMF database and the World Bank Worldwide Governance Indicators and World Development Indicators databases. The study employed the two-step difference Generalized Method of Moments (D-GMM) Arellano-Bond estimator for primary estimation, with the Pooled Mean Group (PMG) estimator applied for robustness checks. The findings revealed that public debt significantly crowds out private investment, and counterintuitively, this

negative effect intensifies as governance improves. Additionally, the study found that economic growth and trade openness positively enhance private investment.

De Mendonca and Brito (2021) assessed the link between public debt and investment in emerging markets. The study covered 24 emerging market economies over the period 1996 to 2018 and employed panel data. The technique of data analysis utilized were one-step difference and system GMM Arellano-Bond estimators to address endogeneity and dynamic panel bias. The findings confirmed the crowding-out hypothesis, demonstrating that public debt negatively affects private investment in emerging markets.

Zhou (2021) examined the impact of debt service costs and public debt on private capital formation in South Africa. The study utilized annual time series data covering the period 1995 to 2019 for the South African economy. The study employed the Fully Modified Ordinary Least Squares (FMOLS) approach as the primary technique of data analysis to examine the long-run relationship between debt variables and private capital formation. The findings revealed an asymmetric relationship between debt composition and private investment, external public debt was found to crowd in private investment, whereas domestic public debt crowds it out.

Vanlaeret al. (2021) investigated whether the European Union suffers from debt overhang effects. The study covered 28 European Union countries over the period 1995 to 2016 and utilized panel data methodology. The technique of data analysis applied was the one-step difference GMM Arellano-Bond estimator. The findings confirmed the presence of debt overhang effects, indicating that high public debt levels significantly crowd out private investment in EU member states.

Government Expenditure and Private Investment

Ji et al. (2025) investigated how investment growth targets influence the composition of government expenditure in China. The study utilized manually collected prefecture-level data on investment targets across China. The findings revealed that higher investment targets lead local governments to significantly increase infrastructure investment expenditure while reducing education and scientific expenditure, with no significant impact on medical and health expenditure; the study further found that local infrastructure investment has a significant positive impact on actual investment growth rates, whereas education and scientific expenditure show significant negative effects, highlighting the trade-offs inherent in target-driven fiscal allocation.

Agarwalla and Sahu (2025) analyzed the influence of government spending on economic expansion across a heterogeneous sample of 23 developed and 38 developing countries worldwide over the period 2000 to 2021. The study employed panel data with the panel ARDL model as the technique of data analysis to capture both short-run and long-run dynamics across countries at different stages of development. The findings indicated that government expenditure exerts a negative effect on economic expansion in developing countries and across the global sample in the long term, while its impact remains insignificant in developed countries, suggesting that the growth and investment effects of government spending depend critically on the level of economic development and institutional capacity

At the national level in Africa, Chandana et al. (2024) examined the impact of disaggregated government expenditure on economic growth in Nigeria from 1970 to 2019. The study covered the period 1970 to

2019 and utilized annual time series data for the Nigerian economy. It employed the ARDL model to distinguish between the effects of capital and current expenditure on growth outcomes. The findings revealed that capital expenditure positively and significantly impacts economic growth in both the short and long term, whereas current expenditure does not significantly affect economic growth in either time frame, suggesting that government spending directed toward productive capital projects stimulates economic expansion while recurrent spending fails to generate comparable growth dividends.

Carvelli (2023) examined the long-run effects of government expenditure on private investments. The study covered 28 OECD countries over the period 1990 to 2019 and utilized country-level panel data. The technique of data analysis employed was the cross-sectional augmented ARDL model, which accounts for both short-run dynamics and long-run equilibrium relationships while addressing cross-sectional dependence. The findings provided strong evidence of both short- and long-term adverse effects of aggregate government expenditure on private investments, supporting the crowding-out hypothesis that increased public spending displaces rather than complements private sector investment activity in developed economies.

Similarly, in the West African context, Poku et al. (2022) examined the impact of government expenditure on economic growth in Ghana using annual time series data from 1970 to 2016. The study employed the ARDL econometric estimation technique to analyze the short- and long-run relationships between public spending and growth. The empirical findings indicated that government expenditure has a positive relationship with economic growth in the short term, suggesting that fiscal expansion can provide

temporary stimulus to economic activity, though the study focus on short-term effects highlights the importance of considering the temporal dimension when evaluating the impact of government spending on economic outcomes.

Tax Revenue and Private Investment

Jinadu et al. (2026) examined the impact of tax revenue on domestic investment in Nigeria. The study covered the period from the first quarter of 2011 to the fourth quarter of 2024 and utilized quarterly time series data for the Nigerian economy. The study employed the ARDL model to analyze the differential effects of oil tax revenue, comprising petroleum profit tax, gas revenue tax, and royalty tax and non-oil tax revenue, including value-added tax, stamp duty tax, and company income tax, on both public and private domestic investment. The findings revealed divergent effects across revenue types: petroleum profit tax had a significant negative impact on private investment in both the short and long run, while value-added tax positively impacted both private and public investment with a stronger effect on the public side; company income tax showed a positive but insignificant effect on private investment, whereas royalty tax had a positive influence on both investment types with stronger long-term effects.

In the East African context, Chindengwike (2023) investigated the relationship between corporate tax revenue and private domestic investment in Tanzania. The study applied ARDL estimation to Tanzanian data to examine the tax-investment nexus. The findings observed a significant long-run positive effect of corporate tax revenue on private investment, suggesting that corporate taxation can support capital formation when revenue is efficiently deployed toward productive public goods and infrastructure

that enhance the private sector's productive capacity.

Extending the analysis to developed economies, Müller and Fischer (2023) analyzed the impact of corporate tax rates on investment in Germany. The study found that elevated corporate tax rates discouraged both public and private investment, with inflation shocks further constraining capital accumulation. These results suggest that high corporate tax burdens can create a disincentive for private sector capital expansion even in advanced economies with sophisticated financial markets and institutional frameworks.

In Southern Africa, Hassan and Kapoor (2021) examined the effect of company income tax on investment in South Africa. The study employed Johansen cointegration and Vector Error Correction Model (VECM) techniques to analyze the long-run relationships between taxation and capital formation. The findings showed that company income tax, alongside labour supply and private credit, enhanced long-run investment, while exchange rate volatility was detrimental to capital formation, highlighting the importance of macroeconomic stability in mediating the tax-investment relationship.

From a threshold perspective, Martínez and Rodríguez (2020) investigated the effect of corporate taxes on public investment using a threshold regression framework. The findings indicated that higher corporate taxes dampened public investment, though this negative effect was partially mitigated by financial market development. The study highlights the importance of institutional and financial market depth in moderating the adverse investment effects of corporate taxation, suggesting that the tax-investment relationship is context-dependent and shaped by the broader economic environment.

Theoretical Framework

Crowding-Out Theory

The crowding-out theory was formally articulated by Milton Friedman in 1978, who argued that expansionary fiscal policy financed through government borrowing inevitably competes with the private sector for limited financial resources, thereby displacing private investment. When government increases its borrowing to finance budget deficits, it raises demand for these savings, driving up interest rates and reducing the quantity of credit available for private investors (Friedman, 1978; Elmendorf & Mankiw, 1999).

The central thrust of the theory is that government fiscal expansion, particularly when debt-financed, does not stimulate aggregate demand as Keynesian models suggest; rather, it merely substitutes public spending for private investment without generating net economic gain. This displacement occurs through three primary channels: the interest rate channel, where higher rates increase the cost of capital for private firms; the credit rationing channel, where banks redirect lending from private borrowers to government securities; and the resource absorption channel, where government demand for goods and services raises input prices, squeezing private sector profitability (Tobin, 1978; Buiter, 1977).

The empirical support for crowding-out theory is extensive and spans both developed and developing economies. De Mendonca and Brito (2021) confirmed that public debt significantly crowds out private investment, consistent with the theoretical expectation that government borrowing competes with the private sector for available funds. Similarly, Nguyen (2022) provided robust evidence that public debt exerts significant adverse effects on private investment in both

the short and long run. Zhou (2021) found that domestic public debt specifically crowds out private capital formation. These studies collectively validate that the crowding-out effect is not uniform but varies with debt levels, institutional quality, and the composition of government spending.

The relevance of crowding-out theory to this study is both direct and compelling. Nigeria presents an ideal case study because the country has experienced persistent fiscal deficits financed through escalating public debt, with debt servicing now consuming over 96% of government revenue in some periods (World Bank, 2023). The theory provides the analytical lens through which to interpret the expected negative relationship between public debt, one of the fiscal policy proxies in this study and private investment.

Furthermore, the theory helps explain why government expenditure may have differential effects depending on its composition: recurrent expenditure, which absorbs resources without augmenting productive capacity, is more likely to crowd out private investment, whereas capital expenditure may partially mitigate crowding-out by improving infrastructure and lowering private sector transaction costs (Abdulkarim & Saidatulakmal, 2021; Awode, 2019).

Methodology

The study adopts an ex post facto research design, which is appropriate for investigating the effect of fiscal policy on private investment in Nigeria from 1985 to 2025. The study relies exclusively on secondary data sourced from the Central Bank of Nigeria Statistical Bulletin, comprising annual time-series observations on aggregate public debt, aggregate government expenditure, tax revenue, and private investment for the 41-year period from 1985 to 2025. The Vector Error Correction Model

(VECM) serves as the primary technique of data analysis for this study. The single equation for ΔPRI_t that combines both long-run and short-run dynamics is:

$$\begin{aligned} \Delta \ln PRI_t = & \alpha_{\ln PRI} (\ln PRI_{t-1} - \beta_0 - \beta_1 \ln PDT_{t-1} - \beta_2 \ln GEX_{t-1} - \beta_3 \ln TAX_{t-1}) \\ & + \sum_{i=1}^k \gamma_{11,i} \Delta \ln PRI_{t-i} + \sum_{i=1}^k \gamma_{12,i} \Delta \ln PDT_{t-i} \\ & + \sum_{i=1}^k \gamma_{13,i} \Delta \ln GEX_{t-i} + \sum_{i=1}^k \gamma_{14,i} \Delta \ln TAX_{t-i} + \varepsilon_{PRI,t} \end{aligned}$$

PRI = Private Investment

PDT = Public Debt

GEX = Government Expenditure

TAX = Tax Revenue

Ln = Log Transformation

Δ : First difference operator.

k : Number of lags in differences ($p - 1$).

Long-run part:

$ECT_{t-1} = \ln PRI_{t-1} - \beta_0 - \beta_1 \ln PDT_{t-1} - \beta_2 \ln GEX_{t-1} - \beta_3 \ln TAX_{t-1}$: The equilibrium error.

α_{PRI} : Speed of adjustment (must be negative for stability).

β_0 : Intercept in the cointegrating relation.

$\beta_1, \beta_2, \beta_3$: Long-run elasticities/coefficients.

Short-run part:

$\gamma_{11,i}$: Effect of own past changes in PRI on current PRI.

$\gamma_{12,i}$: Short-run effect of past changes in Public Debt on current PRI.

$\gamma_{13,i}$: Short-run effect of past changes in Government Expenditure on current PRI.

$\gamma_{14,i}$: Short-run effect of past changes in Tax Revenue on current PRI.

$\varepsilon_{PRI,t}$: White noise error term.

Data Analysis and Results

Descriptive Statistics

Table 1: Descriptive Statistics

Variable	Mean	Maximum	Minimum	Std. Deviation	Observations
PRI	16.6561	22.8	11.5	2.5751	41
PDT	48.5805	138.2	16.8	31.9186	41
GEX	1,995.04	9,125.50	12.5	2,537.45	41
TAX	575.0171	2,352.80	8.2	617.7446	41

Source: Statsmodels Version 0.14.5., 2026.

The descriptive statistics reveal significant disparities in the behavior and scale of the

variables under investigation over the 41-year period from 1985 to 2025. Private

investment (PRI), proxied by gross capital formation as a percentage of GDP, averaged 16.66% with a relatively modest standard deviation of 2.58, the minimum value of 11.5% and the maximum of 22.8%. Public debt (PDT), with a mean of USD 48.58 billion and an exceptionally high standard deviation of 31.92, low of USD 16.8 billion

in 2007 to the unsustainable peak of USD 138.2 billion. Government expenditure (GEX) and tax revenue (TAX) both exhibited enormous growth, with GEX averaging NGN 1,995.04 billion (standard deviation of 2,537.45) and TAX averaging NGN 575.02 billion (standard deviation of 617.74).

Correlation Analysis

Table 2: Correlation Analysis

	PRI	PDT	GEX	TAX
PRI	1			
PDT	0.103	1		
GEX	0.274	0.563	1	
TAX	0.369	0.416	0.478	1

Source: Stats models Version 0.14.5., 2026.

The correlation matrix reveals the relationship between private investment and the fiscal policy variables under investigation. The weak positive correlation between private investment (PRI) and public debt (PDT) at 0.103. The moderate positive correlation between PRI and government expenditure (GEX) at 0.274 implies that aggregate public spending has a tentative favorable association with private investment. The relatively stronger positive correlation between PRI and tax revenue (TAX) at 0.369.

Notably, the intercorrelations among the independent variables are substantial but not severe enough to preclude multivariate estimation, with PDT and GEX correlated at 0.563, PDT and TAX at 0.416, and GEX and TAX at 0.478; these moderate associations reflect the inherent fiscal interdependence between government spending, debt financing, and revenue generation, and they justify the use of the Vector Error Correction Model, which treats all variables as endogenous within a system and thereby mitigates the biased coefficient estimates that would arise from single-equation approaches.

Stationarity Tests for Variables

Table 3: Augmented Dickey-Fuller Test

Variable	Test	ADF Statistic	p-value	5% Critical Value
ln(PRI)	Level (I(0))	-2.3315	0.162	-2.9391
ln(PDT)	Level (I(0))	-0.3392	0.9198	-2.9391
ln(GEX)	Level (I(0))	-2.0086	0.1144	-2.9391
ln(TAX)	Level (I(0))	-2.6548	0.0822	-2.9641

$\Delta \ln(\text{PRI})$	First Difference (I(1))	-4.6258	0.0001	-2.9391
$\Delta \ln(\text{PDT})$	First Difference (I(1))	-4.1424	0.0008	-2.9391
$\Delta \ln(\text{GEX})$	First Difference (I(1))	-4.2942	0.0004	-2.9572
$\Delta \ln(\text{TAX})$	First Difference (I(1))	-4.0818	0.0010	-2.9679

Source: Stats models Version 0.14.5., 2026.

At the level form (I(0)), the Augmented Dickey-Fuller test fails to reject the null hypothesis of a unit root for all four variables, $\ln(\text{PRI})$, $\ln(\text{PDT})$, $\ln(\text{GEX})$, and $\ln(\text{TAX})$, since their respective ADF statistics (-2.33, -0.34, -2.01, and -2.65) are less than the 5% critical value (around -2.94 to -2.96) and all

p-values exceed 0.05. However, after taking the first difference (Δ), the null hypothesis is rejected for every variable, with ADF statistics ranging from -4.08 to -4.63 and p-values all below 0.001, far more than the critical values. This indicates that the differenced series are stationary, or integrated of order one, I(1).

Co-Integration Test

Table 4: Co-integration Test

Hypothesis (H_0 vs H_1)	Eigenvalue	Statistic	90% CV	95% CV	99% CV	Decision
$**r = 0 \text{ vs } r \geq 1**$	0.6251	$**58.2781**$	49.65	53.12	60.16	$**\text{Reject}**$ at 5%*
$**r \leq 1 \text{ vs } r \geq 2**$	0.3201	20.011	31.52	34.91	40.85	Accept
$**r \leq 2 \text{ vs } r \geq 3**$	0.1195	4.9645	17.95	19.96	24.6	Accept
$**r \leq 3 \text{ vs } r \geq 4**$	0	0.0019	8.18	9.24	12.97	Accept

Source: Stats models Version 0.14.5., 2026.

The trace test results indicate that there is one cointegrating relationship among the four variables (PRI, PDT, GEX, and TAX). Specifically, the null hypothesis of no cointegration ($r = 0$) is rejected at the 5% significance level, with a trace statistic of 58.28 exceeding the 95% critical value of 53.12. However, once we move to testing whether there is at most one cointegrating vector ($r \leq 1$), the trace statistic of 20.01 falls well below the 95% critical value of 34.91, leading us to accept this null hypothesis. Similarly, the hypotheses of at most two ($r \leq 2$) and at most three ($r \leq 3$) cointegrating vectors are also comfortably accepted, with

trace statistics of 4.96 and 0.002 respectively, both far below their respective critical values.

These results suggest that while the four variables do not move independently in the long run, implying the existence of a stable long-run equilibrium relationship binding them together, there is only one such equilibrium relationship rather than multiple independent cointegrating channels. It implies that PRI, PDT, GEX, and TAX are tied together by a single long-run constraint, and any short-run deviations from this equilibrium will eventually be corrected, making it appropriate to model their dynamic interactions within a Vector Error Correction

Model (VECM) framework with one cointegrating equation.

Long-Run Vector Error Correction Results

Dependent Variable: PRI

Table 5: VECM Long Run Form

Variable	Coefficient	Std. Error	t-statistic	p-value
PRI	1	(normalized)	—	—
PDT	−0.149331	0.2758	−0.5414	0.5882
GEX	0.024622	0.007369	3.3414	0.0008
TAX	0.036098	0.019675	1.8347	0.0665
Constant	−8.564262	—	—	—

Source: Stats models Version 0.14.5., 2026.

Normalized long-run equation:

$$\text{PRI} = 0.1493 \cdot \text{PDT} + 0.0246 \cdot \text{GEX} + 0.0361 \cdot \text{TAX} + 8.5643$$

Government expenditure (GEX) has a statistically significant positive long-run effect on Private Investment (PRI). A 1-unit increase in GEX is associated with a

0.0246-unit increase in PRI, holding other variables constant. While, Tax revenue (TAX) and Public Debt (PDT) have no significant effect on PRI.

Short-Run Error Correction Model Results

Table 6: VECM Short Run Form

Dependent Variable: PRI

Variable	Coefficient	Std. Error	t-statistic	p-value
ECM (ec1)	−0.611914	0.111548	5.4855	0.0000
L1.PRI	0.335995	0.160854	2.0888	0.0367
L1.PDT	0.015836	0.040588	0.3902	0.6964
L1.GEX	−0.000080	0.00366	−0.0219	0.9825
L1.TAX	−0.002948	0.002543	−1.1593	0.2463
Constant	0.12527	0.268233	0.467	0.6405
R-squared	0.876			
Adjusted R-squared	0.821			
F-statistic	5.809			
Prob(F-statistic)	0.000			

Source: Statsmodels Version 0.14.5., 2026.

The short-run dynamics of Private Investment (ΔPRI) reveal a highly significant

and negative error correction mechanism (ECM coefficient = -0.6119 , $p = 0.0000$), indicating that private investment actively

and rapidly corrects deviations from the long-run equilibrium. Specifically, approximately 61.2% of any disequilibrium is eliminated within one period, making PRI a key adjusting variable in the system rather than weakly exogenous. This strong error correction suggests that private investment is sensitive to disequilibrium signals and adjusts promptly to restore the long-run relationship with public debt, government expenditure, and tax revenue. Among the lagged short-run variables, only the first lag of PRI itself is statistically significant (coefficient = 0.3360, $p = 0.0367$), indicating positive autocorrelation or momentum in investment changes, an increase in private investment in the previous period tends to persist into the current period. The remaining lagged variables (L1.PDT, L1.GEX, and L1.TAX) are all statistically insignificant, suggesting that public debt, government equilibrating force.

Post Estimation Diagnostics Tests

Table 7: Post Estimation Diagnostics Tests

Test	P-Value
Heteroskedasticity Test	0.2323
Serial Correlation LM Test	0.6998
Normality Test	0.2905

Source: StatsmodelsVersion 0.14.5., 2026.

The post-estimation diagnostic results for the Private Investment (PRI) equation indicate that the VECM model is well-specified and reliable for inference. The Heteroskedasticity Test yields a p-value of 0.2323, which exceeds the conventional 5% significance threshold, leading to the acceptance of the null hypothesis of homoskedasticity; this confirms that the residuals exhibit constant variance and there are no ARCH effects that would bias the standard errors or invalidate the t-statistics. Similarly, the Serial

expenditure, and tax revenue do not exert any meaningful direct short-run influence on private investment dynamics beyond what is already captured through the error correction term.

The overall model demonstrates an excellent fit, with an R-squared of 0.876 and an adjusted R-squared of 0.821, indicating that approximately 82–88% of the variation in short-run changes in private investment is explained by the model. The F-statistic of 5.809 is highly significant ($p = 0.000$), confirming that the equation as a whole is statistically valid and that the combined effect of the included variables is meaningful. This implies that although PRI does not respond directly to lagged changes in PDT, GEX, or TAX in the short run, it remains tightly anchored to the system's long-run equilibrium and serves as an active

Correlation LM Test produces a p-value of 0.6998, comfortably above 0.05, indicating that the residuals are free from autocorrelation and that the chosen lag structure (VECM(1)) is sufficient to capture the dynamic dependencies in the data.

The Normality Test returns a p-value of 0.2905, which also exceeds the critical value, suggesting that the residuals are approximately normally distributed and that the maximum likelihood estimation assumptions underlying the VECM are

satisfied. Collectively, these three diagnostic tests confirm that the PRI equation meets the classical assumptions of the error term, no heteroskedasticity, no serial correlation, and normality thereby lending credibility to the short-run parameter estimates, the error correction coefficient, and the associated hypothesis tests in the model.

Discussion of Findings

Public Debt and Private Investment

The empirical findings of this study reveal that public debt exerts a negative but statistically insignificant effect on private investment in the long run, and also exerts a positive insignificant effect on private investment in the short run. Several studies corroborate this negative relationship: De Mendonça and Brito (2021) confirmed significant crowding-out of private investment by public debt in 24 emerging markets; Nguyen (2022) found robust adverse effects of public debt on private investment across 98 developing countries, with the negative effect intensifying under improved governance; Vanlaer et al. (2021) documented debt overhang effects crowding out private investment in 28 EU countries; and Islam and Nguyen (2024) established that higher public debt correlates with lower firm-level investment.

However, the insignificance of the long-run effect in this study resonates more closely with Zhou (2021), who discovered an asymmetric relationship in South Africa where external debt crowded in private investment while only domestic debt crowded it out suggesting that debt composition and source matter critically for the crowding-out mechanism. In the short run, the insignificant coefficient indicates that lagged changes in public debt do not significantly influence contemporaneous changes in private investment, diverging

from Nguyen (2022) who found significant short-run crowding-out but aligning with the broader theoretical nuance that crowding-out effects may operate primarily through long-run equilibrium channels rather than immediate short-run dynamics.

Government Expenditure and Private Investment

The empirical findings of this study reveal that government expenditure exerts a positive and statistically significant long-run effect on private investment, while its short-run effect is negative but statistically insignificant. The significant positive long-run finding is supported by several studies in the literature. Chandana et al. (2024) found that capital expenditure positively and significantly impacts economic growth in both the short and long run in Nigeria. Hassan and Kapoor (2021) similarly demonstrated that fiscal variables, when channeled effectively, enhance long-run investment in South Africa.

However, this study finding contrasts sharply with Carvelli (2023), who documented strong evidence of both short- and long-term adverse effects of aggregate government expenditure on private investments across 28 OECD countries, supporting the crowding-out hypothesis that increased public spending displaces private sector activity in developed economies. Similarly, Agarwalla and Sahu (2025) found that government expenditure exerts a negative effect on economic expansion in developing countries in the long term, while its impact remains insignificant in developed countries.

Tax Revenue and Private Investment

The empirical findings of this study reveal that tax revenue exerts a positive but statistically insignificant long-run effect on private investment and a negative but statistically insignificant short-run effect,

suggesting that taxation does not meaningfully influence private capital formation in either time frame within the Nigerian context. The positive directional sign in the long run aligns with Hassan and Kapoor (2021), who found that fiscal variables including company income tax enhanced long-run investment in South Africa. Similarly, Chindengwike (2023) documented a significant long-run positive effect of corporate tax revenue on private investment in Tanzania. However, the insignificance of the long-run effect in this study resonates more closely with Jinadu et al. (2026), who discovered divergent effects across revenue types in Nigeria: petroleum profit tax significantly crowded out private investment, while value-added tax positively impacted both private and public investment, and company income tax showed only a positive but insignificant effect on private investment.

In the short run, the negative insignificant effect of tax revenue on private investment diverges from Poku et al. (2022), who found short-term fiscal expansion stimulated economic activity in Ghana, but aligns with Müller and Fischer (2023), who demonstrated that elevated corporate tax rates discouraged both public and private investment in Germany, with inflation shocks further constraining capital accumulation. The insignificance of both effects in this study likely reflects the dominance of oil revenue volatility and weak institutional capacity in Nigeria, where tax revenue constitutes a relatively small and unstable share of total government financing compared to petroleum proceeds, thereby diluting the conventional tax-investment transmission mechanism.

Conclusions and Recommendations

In conclusion, the findings underscore that fiscal policy effectiveness in Nigeria is

highly context-dependent and channel-specific. Public debt is constrained by structural debt overhang, government expenditure works but only through long-run productive investment, and taxation remains an underutilized and ineffective lever due to systemic weaknesses. For private investment to thrive, Nigeria requires not merely expansionary fiscal measures but strategic fiscal reorientation, one that prioritizes capital over recurrent spending, reforms the tax architecture to create a stable and predictable revenue base, and manages debt sustainably to prevent future crowding-out as the economy develops and financial markets deepen. The dominance of government expenditure as the sole significant error-correcting variable further reinforces that fiscal policy must be viewed as a long-term structural instrument rather than a short-term demand management tool, with patience and consistency in implementation being essential for private sector confidence and capital accumulation.

This study recommends that federal government through the Debt Management Office should prioritize debt restructuring and concessional financing to reduce the debt service burden, thereby freeing fiscal space for productive expenditure that can genuinely stimulate private investment rather than merely refinancing existing obligations.

Second, Federal Government should reorient spending toward capital and infrastructure projects, such as power, transportation, and digital infrastructure while drastically reducing recurrent expenditure, ensuring that public funds are channelled into productivity-enhancing investments that create complementary opportunities for the private sector rather than competing for scarce resources.

Third, Federal Government should continue with the comprehensive tax system reform

aimed at broadening the tax base, improving collection efficiency, and reducing over-reliance on volatile petroleum revenues; this should include strengthening institutional capacity at revenue agencies, simplifying tax compliance for businesses, and ensuring that tax revenue is visibly and transparently deployed toward public goods that directly benefit private investors, thereby building taxpayer confidence and establishing a credible tax-investment nexus that is currently absent in the Nigerian economy.

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