



Moderating Effect of Private Investment on the Relationship Between Tax Revenue and Economic Growth in Nigeria

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ABSTRACT

This study examined the moderating effect of private investment on the relationship between tax revenue and economic growth in Nigeria using annual time series data from 1994 to 2023. Economic growth was proxied by real GDP (RGDP), while corporate income tax revenue (CITR) and value-added tax revenue (VATR) represented direct and indirect taxes. Private investment (PRIV) was included as both an independent and moderating variable. The Autoregressive Distributed Lag (ARDL) model was employed, supported by unit root and bounds tests, which confirmed a long-run equilibrium relationship among the variables. The long-run results showed that private investment positively strengthened the impact of CITR on economic growth but negatively moderated the effect of VATR. In the short run, CITR, VATR, and private investment had small positive effects on economic growth, while the error correction term indicated a 26.1% speed of adjustment toward equilibrium. Overall, the findings suggest that encouraging private investment enhances the growth benefits of corporate taxation but may reduce the effectiveness of consumption-based taxes, highlighting the need for balanced tax and investment policies.

INTRODUCTION

Economic growth remains a central concern for policymakers in developing regions such as West Africa, where tax mobilization and investment dynamics are often weak and uneven. Tax revenues including corporate income tax (CIT) and value-added tax (VAT) which are essential for financing public services, infrastructure, and government programs that can stimulate growth. However, tax systems may also distort private sector incentives if rates are too high or poorly implemented, potentially dampening economic activity (Nguyen & Darsono, 2022). At the same time, private investment plays a critical role in economic expansion by increasing productive capacity and driving innovation. Because of this dual importance, recent research has investigated not only the direct effects of tax revenue and private investment on growth but also whether private investment moderates the link between tax revenues and economic performance.

Empirical evidence suggests that taxation and investment interact in shaping growth outcomes. In Uganda, both corporate and VAT tax ratios were found to positively influence private investment in the short run, indicating that tax policy can encourage private investment under certain conditions (Babu et al, 2020). This supports the idea that private investment can act as a channel through which tax revenue affects economic growth: when taxes are efficiently collected and used to support a conducive business environment, private firms are more likely to invest, thereby strengthening growth. Similarly, fiscal policy studies in Nigeria have shown that government tax revenue, among other policy variables, significantly explains variations in private investment, implying a link between tax frameworks and private sector capital formation (Chinekwu, 2023).

However, the relationship is not always straightforward. While tax revenue may theoretically fund public goods that enhance productivity and attract private investment, overly burdensome taxation can discourage private sector participation by raising the cost of capital and reducing after-tax returns on investment. Studies in Southeast Asia show that tax revenue can have a negative effect on growth when viewed in isolation, but this effect may be mitigated when investment is taken into account (Nguyen & Darsono, 2022). In other words, private investment can offset some of the negative effects of taxation by providing additional capital and dynamism to the economy. In this context, private investment performs a moderating role by influencing how tax revenue ultimately translates into economic growth.

The moderating role of private investment in the relationship between tax revenue and economic growth can be theoretically grounded in the framework where taxation shapes investment incentives. Tax revenues allocated efficiently to infrastructure, education, or technological advancement can enhance the productivity of private investment, thereby amplifying the positive effects on economic growth (Okosa et al, 2025; Okosa, 2022). Thus, understanding the interplay between taxation and private investment is critical for policymakers seeking to optimize economic development, emphasizing the

need for tax strategies that promote productive private sector engagement alongside public expenditure efficiency (Udensi & Okosa, 2025).

LITERATURE REVIEW

Empirical research affirms that private investment can significantly shape the impact of tax revenue on economic development. For example, when corporate tax revenue is positively linked to private investment, this can generate a virtuous cycle where taxation supports investment, which in turn expands the tax base and GDP. In contrast, where tax revenue does not encourage investment, its contribution to growth may be limited or adverse (Chinekwu, 2023; Nguyen & Darsono, 2022). In West African contexts characterized by relatively shallow financial markets and tax systems, recognizing the moderating role of private investment is critical. Policies that balance efficient tax collection with incentives for private sector investment such as tax breaks for capital formation, improved infrastructure, and investment-friendly regulations which are more likely to yield sustainable economic growth.

The need for a study on the moderating effect of private investment on the relationship between tax revenue and economic growth in Nigeria arises from persistent gaps in understanding how taxation policies translate into real economic outcomes. Existing research confirms that tax revenue significantly affects Nigeria's economic growth, but many studies focus only on the direct effects of taxes on GDP (e.g., corporate, VAT, and other tax streams) without considering how private investment interacts with these effects (Osamor et al., 2021). Although total tax revenue has been shown to increase GDP over broad periods, the specific channels through which taxes influence growth especially through private investment which remain underexplored in the Nigerian context (Muhammad & Ibrahim, 2024).

Moreover, previous findings reveal mixed outcomes: some studies report positive tax-growth linkages, while others show insignificant or even negative associations for certain tax components (Amobi, 2025; Olufemi et al, 2018). This inconsistency highlights a methodological gap where the role of private investment as a moderator which is a factor that could strengthen or weaken the impact of tax revenue on growth and has not been systematically tested. Private investment is essential because it expands productive capacity, drives innovation, and complements public revenue in stimulating growth, yet its interactive effect with tax policy is rarely integrated into empirical models in Nigeria. Addressing this gap could provide clearer policy guidance on how tax systems and investment climates jointly influence growth outcomes.

Research Question

What is the moderating effect of private investment on the impact of selected tax revenue on Nigeria's economic growth?

Objectives of the study

To determine the moderating effect of PRIV on the impact of corporate income tax revenue and value-added tax revenue on Nigeria's economic growth.

METHODOLOGY

The objective of this study is to determine the moderating role of private investment on the impact of selected tax revenue on Nigeria's economic growth. Here, the interest of the estimation is on the moderating effect of private investment on the impact of selected tax revenue variables on Nigeria's economic growth, so the functional form of the equation is stated as:

$$RGDP = f(CITR, VATR, PRIV, PRIV * CITR, PRIV * VATR) \quad 1$$

Adopting the function in econometrics form, the generalized form of the ARDL model is specified below;

$$\begin{aligned} LOGRGDP_t = & \alpha_0 + \sum_{j=1}^z \phi_j LOGRGDP_{t-j} + \sum_{i=0}^x \theta_i CITR_{t-i} + \sum_{k=0}^x \lambda_k LOGVATR_{t-k} \\ & + \sum_{e=0}^x \varphi_e PRIV_{t-e} + \sum_{m=0}^x \delta_m LOGPRIV * CITR_{t-m} \\ & + \sum_{s=0}^x \rho_s LOGPRIV * VATR_{t-s} + \mu_t \end{aligned} \quad 2$$

To perform the bounds test for cointegration, the conditional ARDL model is specified thus;

$$\begin{aligned} \Delta LOGRGDP_t = & \alpha_0 + \beta_j LOGRGDP_{t-j} + \gamma_i CITR_{t-i} + \delta_k LOGVATR_{t-k} \\ & + \omega_e PRIV_{t-e} + \pi_m LOGPRIV * CITR_{t-m} + \sigma_s LOGPRIV * VATR_{t-s} \\ & + \sum_{j=1}^z \phi_j \Delta LOGRGDP_{t-j} + \sum_{i=0}^x \theta_i \Delta CITR_{t-i} + \sum_{k=0}^x \lambda_k \Delta LOGVATR_{t-k} \\ & + \sum_{e=0}^x \varphi_e \Delta LOGPRIV_{t-e} + \sum_{m=0}^x \delta_m \Delta LOGPRIV * CITR_{t-m} \\ & + \sum_{s=0}^x \rho_s \Delta LOGPRIV * VATR_{t-s} + \mu_t \end{aligned} \quad 3$$

The hypotheses for the bounds test, which show that the coefficients of the long-run equation are all equal to zero against the alternative that they are not equal to zero, are stated below;

$$H_0: \beta_j = \gamma_i = \delta_k = \omega_e = \pi_m = \sigma_s = 0$$

$$H_1: \beta_j \neq \gamma_i \neq \delta_k \neq \omega_e \neq \pi_m \neq \sigma_s \neq 0$$

We can only specify the short-run model, which is the ARDL model, if we are unable to reject the null hypothesis (that is, there is no cointegration). The ARDL model is specified thus;

$$\begin{aligned}
 \Delta \text{LOGRGDP}_t = & \alpha_0 + \sum_{j=1}^z \phi_j \Delta \text{LOGRGDP}_{t-j} + \sum_{i=0}^x \theta_i \Delta \text{CITR}_{t-i} \\
 & + \sum_{k=0}^x \lambda_k \Delta \text{LOGVATR}_{t-k} + \sum_{e=0}^x \varphi_e \Delta \text{LOGPRIV}_{t-e} \\
 & + \sum_{m=0}^x \delta_m \Delta \text{LOGPRIV} * \text{CITR}_{t-m} + \sum_{s=0}^x \rho_s \Delta \text{LOGPRIV} * \text{VATR}_{t-s} \\
 & + \mu_t
 \end{aligned} \tag{4}$$

We can specify both the short-run and long-run models, which is the error correction model (ECM), if we can reject the null hypothesis (that is, there is cointegration),

The error correction model (ECM) representation is specified as;

$$\begin{aligned}
 \Delta \text{LOGRGDP}_t = & \alpha_0 + \sum_{j=1}^z \phi_j \Delta \text{LOGRGDP}_{t-j} + \sum_{i=0}^x \theta_i \Delta \text{CITR}_{t-i} \\
 & + \sum_{k=0}^x \lambda_k \Delta \text{LOGVATR}_{t-k} + \sum_{e=0}^x \varphi_e \Delta \text{LOGPRIV}_{t-e} \\
 & + \sum_{m=0}^x \delta_m \Delta \text{LOGPRIV} * \text{CITR}_{t-m} + \sum_{s=0}^x \rho_s \Delta \text{LOGPRIV} * \text{VATR}_{t-s} \\
 & + \gamma \text{ECT}_{t-i} + \mu_t
 \end{aligned} \tag{5}$$

Where LOGPRIV*CITR = the interactive term between private investment and company income tax revenue, LOGPRIV*VATR = the interactive term between private investment and value-added tax revenue. The moderating role of private investment on the impact of selected tax revenue variables on economic growth means that if the coefficient of the interactive parameter is > 0, it denotes that there is a positive interaction. This would simply mean that private investment improves the positive effect of tax revenue on economic growth. Hence, tax revenue and private investment are complementary (they interact). However, if it is < 0, it implies that there is a negative interaction. This means that private investment reduces the positive impact of tax revenue on economic growth. Hence, tax revenue serves as a substitute for impacting economic growth, even when there is low private investment. Therefore, private investment and tax revenue are substitutes (they don't interact).

Corporate income tax is a primary direct tax in Nigeria, tapping into firms' profits. Its inclusion captures how levies on corporate earnings influence aggregate output and have been employed by Edewusi and Ajayi (2019) in an empirical analysis. Value-added tax represents the main indirect tax instrument, levied at each production stage. It funds public expenditure without directly distorting corporate profit margins. Edewusi and Ajayi (2019) also applied the variable for analysis. Private investment drives capital accumulation and technological innovation, directly fueling GDP growth, and

has been employed by Ajakaiye and Fakiyesi (2017). The interaction between private investment and corporate income tax gauges whether investment intensity cushions or exacerbates the tax's growth effects. Prior research has used the variable (Alhassan & Biekpe, 2017; Oladipo & Sanni, 2018). Similarly, the private investment by value-added tax term tests if higher private investment dampens the restrictive effects of the value-added output tax. Studies in Sub-Saharan contexts show that private investors' scale efficiencies can relieve consumption tax burdens (Alhassan & Biekpe, 2018).

Justification

The study focused on understanding the effects of taxation and investment on economic growth, with real gross domestic product (RGDP) serving as the dependent variable. RGDP represents the total value of goods and services produced within an economy and is a widely accepted proxy for economic growth, reflecting the aggregate demand across the four main sectors: household consumption, investment, government expenditure, and net exports (Etim et al., 2021). Measuring RGDP in constant 2015 US dollars allowed for comparability over time, enabling the study to capture trends in national output and revenue growth.

Corporate income tax revenue (CITR) was included as a key independent variable because it captures government earnings from corporate profits, an important source of fiscal revenue. CITR directly influences the government's capacity to invest in infrastructure, social services, and economic development initiatives, which in turn affects national output. The study assumed that higher corporate income tax revenues would positively influence economic growth, consistent with findings by Tweneboah (2019) in Ghana, where corporate taxation was linked to enhanced public investment and development outcomes. For this study, CITR was measured annually in Naira.

Value-added tax revenue (VATR) was also incorporated as an independent variable, representing indirect taxation on consumption. VAT is applied at every stage of production and distribution, making it a critical mechanism for revenue mobilization. Its inclusion aligns with the approach of Aliyu and Mustapha (2020), who highlighted VAT's role in promoting government revenue. Economically, the Laffer theory suggests that increases in VAT can boost economic growth if tax rates are optimal; however, excessive taxation may contract growth. VATR was measured annually in Naira to reflect its impact on economic activity.

Private investment (PRIV) was included as both an independent and a moderating variable. As an independent variable, private investment reflects expenditure on capital goods by businesses and individuals, such as machinery, equipment, and technology, which expands productive capacity and stimulates economic growth. As a moderating variable, it captures the indirect effect of taxation on economic growth by showing how tax revenues first influence investment decisions before impacting overall output. It was measured annually in billions of Naira, emphasizing the scale of private sector contributions to development. The study also incorporated interaction terms to evaluate the indirect effects of tax revenues through investment. This allowed

an assessment of whether private and public investment magnify or mitigate the impact of corporate and VAT revenues on economic growth.

To analyze these relationships, the study employed the Autoregressive Distributed Lag (ARDL) model due to its dynamism and flexibility. Unlike static models or standard VAR approaches, the ARDL framework accommodates both lagged dependent variables and current and lagged explanatory variables, capturing short- and long-run relationships simultaneously. It is particularly effective for variables integrated at different orders ($I(0)$ or $I(1)$), avoiding issues of spurious regression or non-stationarity (Pesaran & Shin, 1998; Pesaran et al., 2001). The ARDL model also performs well with small sample sizes, providing unbiased long-run estimates, and allows for differing lag lengths across variables, aligning with the principle of parsimony by keeping the model both simple and explanatory. Overall, the ARDL approach was justified as the most appropriate method for evaluating the impact of taxation and investment on economic growth in this study.

Evaluation Procedure

The study employed a comprehensive evaluation procedure to ensure the reliability and validity of the econometric analysis. Initially, pre-estimation tests were conducted to examine the statistical properties of the data. Stationarity testing was carried out to determine whether the variables maintained constant statistical characteristics over time. This process ensured that the mean, variance, and autocovariance of each variable did not fluctuate with time, which is crucial for avoiding spurious regression results. The Augmented Dickey-Fuller (ADF) test was used to assess the presence of unit roots in the time series variables. A variable was considered stationary if the absolute value of the ADF statistic exceeded the Mackinnon critical values, thereby confirming that none of the series were integrated at order two, $I(2)$. Stationarity testing allowed for accurate prediction, forecasting, and identification of genuine relationships among variables.

Following stationarity tests, co-integration analysis was conducted to evaluate whether a long-term equilibrium relationship existed among the variables, particularly between tax revenue and investment in Nigeria. Co-integration tests allowed the study to determine whether non-stationary time series could move together over time without diverging, reflecting a sustainable long-run relationship. Both the long-term co-integration test and the F-Bound test were applied. The null hypothesis of no co-integration was rejected if the trace statistic and the Max-Eigen statistic exceeded the 5% critical values, confirming the existence of a stable long-run relationship.

Post-estimation tests were subsequently performed to verify model adequacy. Autocorrelation was assessed using the Breusch-Godfrey serial correlation test to determine whether residuals from different time periods were correlated, which would violate the assumptions of Ordinary Least Squares (OLS) and reduce the efficiency of the estimators. The null hypothesis assumed no serial correlation, and it was rejected if the p-value was below 5%, indicating the presence of autocorrelation.

Heteroskedasticity was evaluated using the Breusch-Pagan-Godfrey test to ensure that the variance of the error term remained constant across observations. The absence of heteroskedasticity, indicated by a chi-square probability greater than 5%, confirmed that the regression coefficients and standard errors were reliable and that statistical inferences would be valid. Multicollinearity among the predictor variables was assessed using a correlation matrix. Variables exhibiting correlations exceeding 0.8 were considered to have multicollinearity, which could inflate confidence intervals and bias parameter estimates. This test ensured that the explanatory variables included in the model provided independent contributions to the regression outcomes.

The stability of the model was evaluated using recursive residual-based tests, specifically the Cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ). The presence of the test line (blue) within the critical bounds (red lines) indicated model stability, whereas deviations beyond these bounds suggested instability and the need for model restructuring. These pre- and post-estimation checks collectively ensured that the ARDL model employed in the study produced consistent, reliable, and robust results suitable for analyzing the long- and short-run dynamics of tax revenues, investment, and economic growth in Nigeria.

Data Source.

The study utilized secondary time series data spanning the period from 1994 to 2023 for all variables of interest. Data were collected from reputable national and international sources, depending on the variable considered. Economic growth was proxied by real gross domestic product (RGDP) measured in billions of dollars and sourced from the World Bank Indicators (WDI). Private and public investments, both measured in billions of Naira (₦), were obtained from the Central Bank of Nigeria (CBN). Direct taxation revenue, represented by corporate income tax, and indirect taxation revenue, measured as value-added tax, were sourced from the Federal Inland Revenue Service and CBN. Real interest rates, expressed as percentages, and labour force participation rates were sourced from WDI, while the balance of trade, measured in millions of Naira, was obtained from WDI. Political stability and the absence of violence or terrorism were estimated using data from the World Governance Indicators (WGI). This compilation ensured that all data used in the analysis were consistent, credible, and relevant for assessing the dynamics of economic growth, investment, taxation, and institutional factors in Nigeria over the 30-year period.

Econometric Software Package

The econometric software package employed for this is EViews, Version 10

RESULT AND DISCUSSION

Descriptive Statistics of the Variables

The study uses time series data from Nigeria spanning a period of thirty years (1994-2023). The variables of interest here include company income tax, value-added tax, real GDP, labour force participation rate, inflation rate, private

investment, public investment, the balance of trade, Political Stability and Absence of Violence/Terrorism, and real interest rate.

Table 1. Descriptive Statistics of the Variables

Variables	Obs.	Mean	Minimum	Maximum	Standard Deviation	Jarque-Bera
CITR	30	784.9362	13.2	4896.47	1018.896	91.09154
PRIV	30	9001.307	6860.444	11445.86	1302.517	1.709214
VATR	30	711.6278	8.2	4358.76	927.3487	78.64376
RGDP	30	3.45E+11	1.55E+11	5.51E+11	1.42E+11	3.095398

Source: Author's Computation, E-View 10.

Table 1 presents the descriptive statistics for the key variables used in the study, summarizing their central tendencies, dispersion, and distributional properties. Corporate income tax revenue (CITR) averaged 784.94 (₦Billion) over the 30-year period, with a minimum of 13.2 and a maximum of 4896.47, showing considerable variation (standard deviation = 1018.90) and a high Jarque-Bera statistic of 91.09, indicating non-normality in its distribution. Private investment (PRIV) had a mean value of 9001.31 (₦Billion), ranging from 6860.44 to 11445.86, with a relatively low standard deviation of 1302.52 and a Jarque-Bera statistic of 1.71, suggesting approximate normality. Value-added tax revenue (VATR) averaged 711.63 (₦Billion), with a minimum of 8.2 and a maximum of 4358.76, and a standard deviation of 927.35, while its Jarque-Bera statistic of 78.64 indicated a skewed distribution. Real gross domestic product (RGDP) recorded an average of 3.45×10^{11} , ranging from 1.55×10^{11} to 5.51×10^{11} , with a standard deviation of 1.42×10^{11} and a Jarque-Bera value of 3.10, suggesting slight deviation from normality. The table highlights that while private investment showed stable distribution, tax revenues exhibited greater variability and non-normality, which may require careful consideration in subsequent econometric modeling.

Unit Root Test

Stationarity is defined as the constancy of statistical characteristics within a time series, such as parameters like mean, variance, and autocorrelation, which remain unchanged over time. This study evaluated stationarity through Augmented Dickey-Fuller (ADF) tests and the Phillips-Perron test conducted on the data to ensure the robustness of the outcome under the following hypothesis. The unit root test is used to determine whether the variables are stationary. Without stationarity, data processing may produce biased results, which in turn lead to unreliable interpretations and conclusions.

Ho: Variable contains a unit root, hence non-stationary.

H1: Variable does not contain a unit root, hence stationary.

Both the original data series and the first-order differenced series are subjected to these tests. If the ADF and Phillips-Perron test statistic values are greater than the critical value at a selected significance level (in absolute terms), the null hypothesis is rejected as part of the selection criterion. Table 2 provides a summary of the ADF and Phillips-Perron unit root test findings, which are available in the Appendix section.

Table 2. Unit Root Results (Augmented Dickey-Fuller and Phillips-Perron Tests)

Variables	Test Statistic for ADF Test	5% Critical Value	Test Statistic for Phillips-Perron Test	5% Critical Value	Order of Integration
CITR	5.592219	-3.004861	4.404907	-2.967767	1(0)
PRIV	-5.530631	-3.580623	-5.446741	-3.574244	1(0)
VATR	5.277427	-3.580623	7.778949	-3.574244	1(0)
RGDP	-3.137843	-2.971853	-3.107169	-2.971853	1(1)

Source: Author's computation (E-views 10)

NA denotes Not Applicable

The summary table 2 discloses that some of the variables are stationary in levels 1(0), like the company income tax, value-added tax, labour force participation rate, private investment, public investment, and real interest rate. Whereas real GDP, the balance of trade, Political Stability, and Absence of Violence/Terrorism are found to be stationary at first difference 1(1). Therefore, having a mixture of 1(0) and 1(1) orders of integration justifies the use of the ARDL estimation technique.

Correlation Analysis

The ordinary correlation matrix provides the opportunity to evaluate the degree of multicollinearity between the series before the estimation is carried out. This only shows the non-existence of multicollinearity within the series. The table below shows the correlation matrix for the various models estimated in this research.

Table 3. Correlation Matrix of the Variables

VARIABLES	RGDP	CITR	VATR	PRIV	PRIV_CITR	PRIV_VATR
RGDP	1.000000					
CITR	0.675883	1.000000				
VATR	0.557843	0.485778	1.000000			
PRIV	0.511744	0.528309	0.589875	1.000000		
PRIV_CITR	0.644370	0.717886	0.680546	0.524110	1.000000	
PRIV_VATR	0.530647	0.708757	0.697736	0.691407	0.687780	1.000000

Test for Cointegration- Bounds Test (Model 3)

Table 4. Bounds Test Result

Test Statistic	Value	K
F-Statistic	13.20279	5
Critical Value Bounds		
Significance	1(0) Bound	1(1) Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Source: Author's computation E-views 10

Decision Rule: We reject the null hypothesis since the test statistic (F-statistic = 13.2028) is greater than the upper bounds at a 5% level of significance [1(1) Bound = 3.38], and consequently conclude that a long-run relationship exists in the model. This test verifies if there exist long-run relationships amongst the related variables of interest.

Estimation and Interpretation for Model 3 (Objective 3)

The third specific objective of the study seeks to determine the interactive role of private investment on the impact of selected tax revenue variables in Nigeria’s economic growth. To achieve the objective, the study adopts the ARDL estimation technique in model 3, having been established to possess a long-run relationship as presented in the summary table 4.4. The estimated long-run coefficients are reported and presented in Table 5 below.

Table 5. Model 3 Estimation Result (Long-run)

Dependent Variable: LOGRGDP						
Variables	Coef.	Std. Error	Prob.	Coef.	Std. Error	Prob.
	ARDL ESTIMATOR			FMOLS ESTIMATOR		
CITR	-0.0003	0.0001	-1.8683	-0.0001*	0.00001	0.0016
LOGVATR	6.5176	3.4125	1.9099	0.9631	1.1237	0.4002
PRIV	0.0006	0.0004	1.6874	0.0001	0.0001	0.5316
LOGPRIV*CITR	0.4280*	0.0876	4.8851	0.4385*	0.0636	0.0000
LOGPRIV*VATR	-6.5618**	3.2242	-2.0351	-1.1052	1.1272	0.3370
C	74.7820**	27.3380	2.7355	30.1749*	9.0451	0.0029

Source: Author’s computation, E-views 10

Note: * denotes significance at 1%, ** denotes significance at 5%

Table 5 disclosed that the estimated outcome of the interactive role of private investment on the impact of company income tax in Nigeria’s economy is positive. The result reveals that a 1% increase in the interactive effect of private investment on the impact of company income tax, on average, increases real output by 0.428 points in the long run. The result indicates that private investment plays an effective role in moderating the effect of company income tax on real output in Nigeria, given that the coefficient value is greater than zero. This implies that an improvement in private investment will increase the effects of company income tax on real output in Nigeria.

A Side-By-Side Comparison of The Long-Run Estimates from the ARDL Model (The Baseline) and the FMOLS Model (Robustness Check)

In assessing the moderating role of private investment, both ARDL and FMOLS agree on a strongly positive and significant interaction between private investment and corporate income tax (0.4280 and 0.4385, respectively; both 1% significant). However, ARDL finds the direct effect of corporate income tax on GDP essentially zero and insignificant (-0.0003, with a probability value > 0.10), whereas FMOLS reports a small but significant negative direct coefficient (-0.0001, with a probability value of 0.01). The interaction between private investment and value-added tax is significantly negative under ARDL (-6.5618, with probability value = 0.042) but becomes statistically insignificant in FMOLS

(-1.1052, with probability value = 0.34). Other terms (value-added tax and private investment) remain insignificant across both methods. Thus, while both estimators concur on the key private investment and corporate income tax synergy, they diverge on the significance and magnitude of VAT-related interactions and direct tax effects.

Table 6. Model Estimation Result (Short-run)

Dependent Variable: LOGRGDP				
Variables	Coefficient	Std. Error	T-Statistic	Prob.
D(CITR)	0.00002**	0.00001	2.1091	0.0501
D(LOGVATR)	0.8251*	0.2640	3.1257	0.0062
D(PRIV)	0.00009**	0.00003	2.7823	0.0128
D(LOGPRIV*CITR)	0.0326	0.0241	1.3560	0.1928
D(LOGPRIV*VATR)	-0.8408*	0.2647	-3.1762	0.0055
CoIntEq(-1)*	-0.2612*	0.0234	-11.1821	0.0000

Source: Author's computation, E-views 10

Note: * denotes significance at 1%, ** denotes significance at 5%

From Table 6, it is observed that the estimates of the current differential values of company income tax, value-added tax, and private investment all have a positive impact on the real output in the country. According to the result, a 1% increase in company income tax in the short run, on average, increases real output by 0.002% in the current period. Similarly, the estimate of value-added tax has about a 0.825-point increase in real output with a unit change in the value-added tax in Nigeria. Also, it is shown from the estimate that a 1% increase in private investment in the short run, on average, increases real output by 0.001 points.

For objective three of the study, the estimated outcome of the analysis reveals that the coefficient of the interacting effect of the private investment and company income tax (logpriv*citr) is positively moderating the impact on real output in Nigeria within the short-run frame. However, in the short run or current period, the interactive terms of private investment and value-added tax are negatively moderating the real output growth in Nigeria. This was inferred from the estimate in Table 6 with a negative coefficient value. The result also shows that the error correction term satisfies a priori expectation as it assumes a value between 0 and 1, which is correctly signed. Its coefficient is approximately 0.261, suggesting that the speed of adjustment from the short run back to the long run if there is disequilibrium in the model is approximately 26.1%.

The descriptive statistics revealed that corporate income tax (CITR) and value-added tax (VATR) exhibited wide dispersion and non-normality, while private investment (PRIV) showed relatively stable distribution. This finding agreed with Obi and Ekwunife (2024), who also reported variability in tax revenue measures affecting growth analysis in Nigeria, indicating complex distributional characteristics that can influence model accuracy (e.g., VAT's skewness). In contrast, some studies found more balanced distributions when focusing on shorter periods or narrower tax measures, suggesting that long

time spans (like 30 years) often capture economic volatility. For stationarity, the presence of variables integrated at both levels (1(0)) and first differences (1(1)) justified the ARDL approach. In a related study, Adesanya et al. (2024) found similar unit root properties and long-run relationships in Nigeria's tax-growth dynamics, underscoring that mixed integration orders are prevalent in fiscal time series data and suitable for bound testing methods. Conversely, some literature using solely first-differenced series reported more uniform stationarity, highlighting the importance of model choice when variables have mixed orders.

The correlation results showed generally positive associations between RGDP, CITR, VATR, and PRIV. This agreed with findings by Dabor et al. (2025), who also documented significant correlations between tax components and GDP in Nigeria, highlighting that tax measures correlate positively with growth proxies despite other systemic challenges. However, other research has indicated weaker or context-specific correlations, suggesting that the strength of these relationships may vary by period and method. The bounds test confirmed a long-run relationship ($F = 13.20$ exceeding critical limits), supporting the coherence of the model's variables in explaining economic growth equilibrium. This is consistent with the co-integration results in Adesanya et al. (2024), who identified long-run connectivity between tax revenue and growth measures in their ARDL framework.

The long-run and interaction estimates showed that private investment positively moderated corporate income tax's influence on economic growth, whereas the interaction with VAT was negative or mixed. Comparable evidence exists in research by Muhammad (2025), which found that tax components can have differing effects on growth depending on context and variable interactions, suggesting that structural factors and investment dynamics shape these relationships. While some literature emphasizes positive tax-growth linkages, divergence in VAT effects underscores the complexity of fiscal policy outcomes in developing economies.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that private investment plays a significant moderating role in shaping the impact of tax revenue on Nigeria's economic growth. Empirical evidence from the ARDL-ECM and FMOLS models indicates that the interaction between private investment and corporate income tax positively influences real output, suggesting that higher levels of private sector investment amplify the growth effects of corporate taxation. In contrast, the interaction between private investment and value-added tax exhibits a negative or mixed effect, highlighting that indirect taxation may constrain growth when coupled with investment. These findings underscore that tax policies cannot be analyzed in isolation; their effectiveness in stimulating economic growth depends on the responsiveness of private investment. The study also confirms a long-run equilibrium relationship among tax revenues, private investment, and economic growth, indicating structural complementarity between fiscal policy and private sector development in Nigeria. The results emphasize the need for policy measures that encourage private investment alongside efficient tax

administration to optimize revenue mobilization and promote sustainable economic growth.

FURTHER STUDY

This research still has limitations so further research on this topic is still needed “Moderating Effect of Private Investment on the Relationship Between Tax Revenue and Economic Growth in Nigeria”.

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