POLAC INTERNATIONAL JOURNAL OF ECONS & MGT SCIENCE (PIJEMS)
DEPARTMENT OF ECONOMICS & MANAGEMENT SCIENCE NIGERIA POLICE ACADEMY, WUDIL-KANO

EVALUATING THE PRODUCTIVITY EFFECTS OF VALUE-ADDED TAX IN NIGERIA'S MANUFACTURING SECTOR: EVIDENCE FROM ARDL MODELING

Jamilu Ibrahim Magaji Department of Economics, Sa'adu Zungur University, Bauchi State.

Muhammad Rilwanu Umar Department of Economics, Adamu Tafawa Balewa College of Education Kangere, Bauchi State.

Abstract

This study empirically examines the impact of Value-Added Tax (VAT) on productivity within Nigeria's manufacturing sector over the period 1981–2023. Utilizing annual time series data sourced from the Central Bank of Nigeria Statistical Bulletin and the World Development Indicators (2023 edition), the analysis employs the Autoregressive Distributed Lag (ARDL) model to accommodate the mixed order of integration identified through the Augmented Dickey-Fuller (ADF) unit root test. Results reveal that VAT and broad money supply exert statistically significant and positive effects on manufacturing output in both the short and long run, indicating their roles as stimulants of sectoral productivity. Conversely, interest rate and exchange rate are found to have persistent negative effects, suggesting their constraining influence on manufacturing performance. These findings underscore the need for targeted fiscal strategies that enhance the efficiency of VAT utilization, recommending that VAT revenues be strategically invested in industrial infrastructure and productivity-enhancing interventions to strengthen the resilience and output of Nigeria's manufacturing sector.

Keywords: ARDL Modeling, Manufacturing Sector, Productivity, Value-Added-Tax.

1. Introduction:

The manufacturing sector plays a pivotal role in driving economic growth, employment creation, technological innovation, and structural transformation in developing economies (Rodrik, 2013; UNIDO, 2020). In Nigeria, manufacturing is considered a critical pillar for diversifying the economy away from oil dependence and achieving sustainable development. However, despite successive policy interventions aimed at stimulating industrial development, the sector's contribution to GDP and employment has remained suboptimal, marked by persistent underperformance, infrastructural deficits, and macroeconomic instability (CBN, 2023).

Taxation remains a central pillar of modern fiscal governance, particularly in developing economies, where public revenues are often volatile and heavily reliant on natural resource exports. Beyond its primary function of mobilizing revenue for government expenditure, taxation serves as a critical instrument for income redistribution, inflation control, and macroeconomic stability (Greene, 2020; Olaoye, 2022). In contemporary Nigeria, fiscal reforms have increasingly focused on indirect taxation, notably the Value-Added Tax (VAT), as a means of broadening the revenue base and stimulating economic development. Introduced in 1993 and implemented from January 1994, VAT was designed to replace the Sales Tax regime and to align Nigeria's tax system with global best practices (Ajakaiye, 2019; Oraka et al., 2020).

VAT has since evolved into a major source of non-oil revenue for the Nigerian government. According to Izedonmi and Okunbor (2020), VAT collections significantly surpassed projections in the early years, reflecting its robust revenue potential. However, Nigeria's VAT rate—initially set at 5% and only recently increased to 7.5% through the Finance Act of 2020—remains among the lowest globally (Sanni, 2022). While policymakers continue to debate further increases, concerns persist about widening tax coverage and improving compliance, rather than simply raising rates. Globally, VAT has been lauded for its economic efficiency and revenue-generating potential, especially when compared to other forms of indirect taxation (Ebrill et al., 2001; Rias & Amiri-Aghale, 2019).

Parallel to the growth in VAT collections, Nigeria's manufacturing sector has experienced a mixed trajectory. Characterized by volatility, low productivity, and fluctuating contributions to GDP, the sector remains a key focus of development policy. From a 5.5% share of GDP in 1990, the sector's performance fell sharply during the late 1990s and early 2000s, driven by trade liberalization, import surges, and underinvestment in infrastructure. Recent years, however, have seen some recovery, with the sector contributing up to 24.7% of GDP in 2022 (World Development Indicators, 2022), partly as a result of renewed attention to industrial policy and the government's push for import substitution (World Bank, 2020).

Theoretically, VAT can affect manufacturing productivity through various channels. It can influence production costs, consumption patterns, and business investment decisions. If effectively designed and implemented, VAT revenues could be reinvested into critical infrastructure, thereby enhancing industrial productivity. However, in Nigeria, this link remains weak or, at best, ambiguous. Despite the enormous revenue generated through VAT over the years, manufacturers continue to face challenges such as limited access to finance, high energy costs, and macroeconomic instability particularly in the areas of exchange rate and interest rate fluctuations (Okorontah & Odoemena, 2020; Obamuyi et al., 2019). Moreover, weak tax administration and the misapplication of VAT regulations such as unwarranted VAT charges on exempt goods and services have further exacerbated public distrust and constrained private sector productivity (Iorun, 2019).

Despite over three decades of VAT implementation in Nigeria, the anticipated transformation of the manufacturing sector has yet to materialize. The persistent underperformance of the sector raises critical questions about the effectiveness of current fiscal policy instruments in fostering industrial productivity. Although VAT was designed to be a growth-friendly and neutral tax, its real-world implications may diverge in a context where tax administration inefficiencies, infrastructure gaps, and macroeconomic volatility persist.

Moreover, empirical studies on VAT and productivity in Nigeria have often yielded mixed results and are frequently limited by short time horizons or narrow methodological scopes. There is a significant gap in the literature regarding the long-term effects of VAT on manufacturing productivity within a robust econometric framework that accounts for other key macroeconomic variables. Addressing this gap is crucial, not only for evidence-based policymaking but also for advancing theoretical understanding of tax-productivity dynamics in developing economies.

The objective of this study is to examine the effects of value-added tax on manufacturing sector productivity in Nigeria. By addressing these objectives through rigorous empirical analysis, this study contributes to the broader discourse on fiscal policy and industrial performance in Nigeria, offering insights with potential relevance for both academic research and policy formulation. The findings are expected to provide evidence-based insights that can guide tax reform and industrial policy, especially as Nigeria seeks to deepen its non-oil revenue sources and enhance domestic production capacity.

2. Literature Review

2.1 Conceptual Definitions

2.1.1 Concept of Value-Added Tax

Value-added tax (VAT) is a consumption-based indirect tax levied on the incremental value created at each stage of production and distribution, where the tax burden is ultimately borne by final consumers while businesses act as collection intermediaries (Keen & Lockwood, 2010).

The VAT mechanism operates through a credit-invoice system wherein registered firms charge output tax on sales and claim input tax credits on purchases, remitting only the differential to tax authorities, thereby ensuring taxation occurs exclusively on the value added at each transaction stage (Ebrill et al., 2001). This multi-stage collection process distinguishes VAT from traditional sales taxes by creating self-enforcement incentives through the credit mechanism, reducing cascading effects and enhancing revenue efficiency (Cnossen, 2020). The theoretical foundations of VAT rest on optimal taxation principles, particularly its capacity to maintain neutrality across production structures and minimize economic distortions relative to factor taxes (Auerbach & Hines, 2002). From a macroeconomic perspective, VAT represents a significant fiscal instrument in both developing and developed economies, with empirical evidence suggesting its adoption correlates with enhanced tax-to-GDP ratios and improved revenue stability, albeit with regressive distributional implications requiring compensatory policy interventions (Keen, 2013).

2.1.2 Concept of Productivity

Productivity constitutes the fundamental measure of economic efficiency, defined as the ratio of output quantities to input quantities utilized in production processes, reflecting the technological capabilities and organizational effectiveness of economic units (Syverson, 2011). Total factor productivity (TFP), the theoretically preferred measure, captures output generation attributable to factors beyond accumulated inputs of capital and labor, representing technological progress, managerial efficiency, and knowledge spillovers within the production function framework (Solow, 1957). The measurement of productivity encompasses multiple approaches, including labor productivity (output per worker or per hour worked), capital productivity, and multifactor productivity, each serving distinct analytical purposes in evaluating economic performance (OECD, 2001). Contemporary productivity analysis emphasizes the Solow residual's decomposition into identifiable components including innovation, human capital accumulation, resource reallocation, and scale economies acknowledging that measured TFP reflects both genuine technological advancement and measurement errors or omitted quality adjustments (Hulten, 2001). At the macroeconomic level, productivity growth serves as the primary determinant of long-run living standards and sustainable economic expansion, with cross-country productivity differentials explaining substantial portions of income inequality across nations (Hall & Jones, 1999).

2.1.3 Concept of Manufacturing Industry

The manufacturing industry encompasses the systematic transformation of raw materials, components, or substances into new products through mechanical, physical, or chemical processes, typically conducted in factories or processing plants using power-driven machinery and equipment (Kaldor, 1967; United Nations, 2008). Manufacturing represents a distinct sector within the industrial economy, characterized by standardized production processes, economies of scale, and technological intensity that differentiate it from primary (extractive) and tertiary (service) sectors in structural transformation models (Szirmai, 2012). The sector's defining features include material conversion activities, value addition through fabrication and assembly, and the creation of durable and non-durable goods ranging from intermediate inputs to final consumption products, classified systematically under the International Standard Industrial Classification (ISIC) framework (United Nations Statistics Division, 2008). Manufacturing holds particular significance in economic development theory through the Kaldorian paradigm, which posits manufacturing as the "engine of growth" due to its stronger productivity growth dynamics, extensive backward and forward linkages, and capacity for technological spillovers to other sectors (Szirmai & Verspagen, 2015). Contemporary conceptualizations increasingly recognize manufacturing's evolving boundaries, incorporating servicification phenomena wherein manufacturers integrate service activities, and acknowledging advanced manufacturing's emphasis on digital technologies, customization capabilities, and global value chain integration (Brynjolfsson & McAfee, 2014; Dachs et al., 2019).

2.2 Empirical Review

A substantial body of empirical literature has explored the relationship between Value Added Tax (VAT) and various macroeconomic outcomes, including revenue generation, economic growth, inflation, and sectoral performance in Nigeria. Most studies converge on the notion that VAT has a positive and statistically significant effect on economic indicators, particularly government revenue and GDP growth (Olaoye & Edem, 2018; Owolabi & Okwu, 2019; Emmanuel et al., 2020). These findings support the role of VAT as a potent fiscal policy tool, especially in developing economies grappling with revenue volatility.

Several studies have applied diverse econometric models such as ARDL (Ahmed & Bello, 2023; James & Peter, 2024), ECM (Akinola & Adeoye, 2023; Patrick & Suleiman, 2024), and VECM (Ahmed & Bello, 2023), to account for both short- and long-run dynamics. The majority conclude that VAT reforms have positively influenced revenue mobilization without significant inflationary consequences (Musa & Ibrahim, 2023; Olabisi & Mohammed, 2024). Moreover, studies like Usman et al. (2023) and Ogbuagu and Agu (2021) highlight VAT’s role in macroeconomic stability and fiscal sustainability, particularly during oil revenue shocks.

Sector-specific inquiries have revealed mixed outcomes. While VAT has been shown to stimulate non-oil revenue growth (Akinola & Adeoye, 2023), manufacturing sector responses appear more nuanced. For instance, James and Peter (2024) noted limited negative effects of VAT rate increases on manufacturing output. Others have stressed the need for targeted allocation of VAT revenue towards infrastructure (Chinedu et al., 2024) and social services (Benson & Eze, 2024).

Despite these insights, notable gaps remain. Most existing studies focus heavily on aggregate GDP and revenue effects, with limited focus on manufacturing sector productivity as a distinct outcome variable. Few studies isolate VAT’s transmission mechanisms through exchange rates, inflation, or interest rates in the manufacturing context. Additionally, the informal sector’s exclusion from the VAT base (Adeyemi & Funke, 2024) limits the full understanding of VAT's structural impact on economic productivity. Another significant omission is the limited use of structural macroeconomic models or firm-level data to evaluate VAT's sectoral effects beyond descriptive national aggregates.

Therefore, this study contributes to the literature by empirically examining the impact of VAT on manufacturing sector productivity in Nigeria, incorporating dynamic macroeconomic variables, and bridging the gap between tax policy design and sectoral performance. It also integrates a more holistic framework that accounts for both fiscal and monetary interactions, thus offering deeper insights into VAT's real-sector effects.

2.3 Theoretical Review

This study adopts the Keynesian Theory of Taxation for its theoretical underpinning, emphasizing the critical role of fiscal policy particularly taxation in managing aggregate demand and promoting economic stability. From a Keynesian perspective, taxes such as Value Added Tax (VAT) influence consumption, investment, and production costs, thereby affecting overall economic output. In the context of Nigeria's manufacturing sector, VAT can either enhance productivity if revenues are efficiently reinvested in infrastructure and industrial development, or hinder it if it increases production costs without supportive public spending. The theory provides a basis for examining whether Nigeria’s VAT policy aligns with Keynesian principles of economic stimulation and productive public investment, thereby supporting the manufacturing sector as a driver of sustainable growth and diversification.

3. Methodology

3.1 Data and Sources

The study utilized secondary data ranging from 1981 to 2023 obtained from Central Bank of Nigeria (CBN) statistical bulletin, and World development Indicators (WDI); 2023 versions. The variables used are; manufacturing output as the dependent variable; value added tax, broad money supply (M2), interest rate and exchange rate (naira to dollar) as the independent variables.

3.2 Model Specification

Having state the variables under study in section 3.1, the mathematical model could be symbolically expressed as:

$$MO = F\,(VAT, M2, INT, EXR) \text{ ………(1)}$$

Economic relationship is not assumed to be exact. Other variables apart from the ones stated above exist which can influence the dependent variable but are omitted in the model. These factors omitted in the model are considered by introducing the error term (disturbance term) in the model to capture other variables that are no explicitly stated in the model but have effect on the manufacturing output. Hence, the model can be written as:

$$MO = \beta_0 + \beta_1 VAT + \beta_2 M2 + \beta_3 INT + \beta_4\, EXR + \mu \text{…(2)}$$

3.3 Method of Data Analysis

The study utilized the Augmented Dickey Fuller (ADF) unit root test to identify the order of integration of the variables used for the study to select appropriate methodology and avoid spurious regression.

The study employed the autoregressive and distributed lag model (ARDL) proposed by Pesaran, Shin and Smith (2001) to estimate the relationship between the variables. The model is therefore specified in a generalized form to test for cointegration relationship as follows:

$$\Delta \ln MO_t = \beta_0 + \sum_{i=1}^{k} \phi_i \Delta \ln MO_{t-1} + \sum_{i=0}^{k} \varphi_i \Delta \ln VAT_{t-1} + \sum_{i=0}^{k} \lambda_i \Delta \ln M2_{t-1} + \sum_{i=0}^{k} \delta_i \Delta INT_{t-1} +$$

$$\sum_{i0} y_i \Delta EXR_{t-1} + \theta_1 \ln MO_{t-1} + \theta_2 \ln VAT_{t-1} + \theta_3 \ln M2_{t-1} + \theta_4 INT_{t-1} + \theta_5 EXR_{t-1} + \varepsilon_t \text{ .... (3)}$$

The inference here is that, if the computed F-statistic is greater than the upper bound critical value at 5%, there is said to be cointegration. If the computed F-statistic is less than the lower bound critical value at 5%, there is no cointegration. However, if the value of the computed F-statistics lies between the upper and the lower bound critical values, then the inference is said to be inconclusive. Having found the evidence cointegration relationship among the variables, the long-run model is estimated as specified:

$$\ln MO_t = \beta_0 + \sum_{i=1} \varphi_i \ln MO_{t-1} + \sum_{i=0} \varphi_i \ln VAT_{t-1} + \sum_{i=0} \lambda_i \ln M2_{t-1}$$

$$+ \sum_{i=0} \delta_i INT_{t-1} + \sum_{i=0} Y_i EXR_{t-1} + \varepsilon_t \text{ ....(4)}$$

Similarly, the short-run model of the error correction specification is estimated to ascertain the short-run dynamic behavior of the variables in the model as:

$$\Delta \ln MO_t = \beta_0 + \sum_{i=1}^{k} \phi_i \Delta \ln MO_{t-1} + \sum_{i=0}^{k} \varphi_i \Delta \ln VAT_{t-1} + \sum_{i=0}^{k} \lambda_i \Delta \ln M2_{t-1}$$

$$+ \sum_{i=0}^{k} \delta_i \Delta INT_{t-1} + \sum_{ii=0} y_i \Delta EXR_{t-1} \text{ …} + \lambda ECT_{t-1} + £ \text{ ………………..(5)}$$

Where the ECT in equation 5 is specified as:

Lastly, this study diagnosed the model by conducting tests for serial correlation, heteroscedasticity, normality, and functional form.

4. Results and Discussion

Unit root test results are presented on table 1.

Table1:ADF Unit Root Test Result

Variables	Augmented Dickey-Fuller Test Critical Values			ADF Statistics	Prob.	Order of Integration
	1%	5%	10%			
ΔMO	-4.234972	-3.540328	-3.202445	-5.836844	0.0001	I(1)
VAT	-4.309824	-3.574244	-3.221728	-6.066936	0.0001	I(0)
ΔM2	-3.615588	-2.941145	-2.609066	-13.32488	0.0000	I(1)
ΔINT	-3.615588	-2.941145	-2.609066	-13.32488	0.0000	I(1)
ΔEXR	-2.630762	-1.950394	-1.611202	-2.764492	0.0071	I(1)

Source; (Author's computation using E-views 12)

From table 1, it can be seen that MO, M2, INT and EXR are stationary at 1st difference I(1), while VAT is stationary at level I(0).

Before testing for cointegration among the variables, it is paramount to identify the optimum lag length to be used in order to avoid spurious regression. As such, optimal lag selection test was conducted and the result is presented on table 2:

Table 2: Optimal Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	41.940	NA	9.85e-08	-1.944	-1.728	-1.867
1	228.237	313.763	2.05e-11	-10.433	-9.140*	-9.973*
2	251.280	32.746	2.44e-11	-10.330	-7.960	-9.487
3	291.612	46.700*	1.32e-11*	-11.137*	-7.689	-9.910

Source; (Author's computation using E-views 12)

From Table 2, the optimal lag was selected using the Akaike Information Criterion (AIC) and the optimum lag selected is three.

Having selected the optimal lag, the ARDL bounds test was conducted to determine if there is evidence of cointegration among the variables. The result of the bounds testis presented in Table 3.

Table 3: Bounds Test Result

Model	F-statistics	Lag	Level of significance	Bounds critical values Constant(Level) I(0)	I(1)
F(lnMOt |lnVATlnM2tINTtEXRt)	**4.641**	3			
			10%	2.45	3.52
			5%	**2.86**	**4.01**
			2.5% 1%	3.25 3.74	4.49 5.06

Source; (Author's computation using E-views 12)

From table 3, the result shows that the computed F-statistic 4.641 is greater than 4.01 which is the upper bound critical value at 5% significance level. This indicates the presence of strong cointegration relationship among the variables. Sequel to the discovery of cointegration relationship among the variables. The long-run model is estimated and the result is presented on table 4.

Table 4: Estimated Long-Run ARDL Cointegration Results

Dependent Variable, InMO				
Regressors	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
lnVAT	0.284	0.079	3.587	0.001
lnM2	0.412	0.102	4.018	0.000
INT	-0.193	0.057	-3.360	0.002
EXR	-0.267	0.086	-3.076	0.004
C	5.728	0.934	6.130	0.000

Source; (Author's computation using E-views 12)

The long-run results reveal that VAT has a positive and statistically significant effect on manufacturing output in Nigeria, implying that a percentage increase in VAT revenue will lead to 0.28% increase in manufacturing sector performance. The result is similar with previous findings such as: Olaoye & Edem, 2018; Owolabi & Okwu, 2019; Emmanuel et al., 2020. Similarly, Broad money supply (M2) also shows a significant positive coefficient (0.41), indicating that increased liquidity in the economy supports manufacturing growth.

Conversely, interest rate (INT) deficts a significant negative coefficient (-0.19), meaning higher lending rates reduce manufacturing performance, possibly due to higher borrowing costs for industrial firms. Exchange rate (EXR) also has a negative and significant effect (-0.27), implying that naira depreciation raises the cost of imported inputs, thereby reducing output in the manufacturing sector. The constant term is positive and significant, suggesting that other unobserved long-run factors contribute positively to manufacturing sector performance in Nigeria.

After establishing the long-run coefficient, the short-run model is estimated and the result is presented on table 5.

Table 5:Estimated Error Correction (Short-Run) Model Results

Dependent Variable, InMO				
Regressors	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ΔlnVAT	0.128	0.043	2.940	0.005
ΔlnM2	0.076	0.028	2.554	0.015
ΔINT	-0.023	0.010	-2.262	0.029
ΔEXR	-0.094	0.040	-2.309	0.026
CointEq(-1)	-0.413	0.092	-4.467	0.000

Source; (Author's computation using E-views 12)

From table 5, VAT has a positive and statistically significant impact on manufacturing sector performance in the short run at 1% level of significance. This implies that a percentage increase in VAT revenue is associated with about 0.128 increase in manufacturing output in the short run, possibly due to improved fiscal spending capacity that supports manufacturing. This is similar with the findings of (Akinola & Adeoye, 2023; Patrick & Suleiman, 2024); and (Ahmed & Bello, 2023).

Broad money supply (M2) also shows a significant positive relationship with manufacturing output in the short run at 5% significance level, implying that a percentage increase in M2 will result in 0.076 increase in manufacturing output, which suggests that higher liquidity in the economy supports industrial activities.

Interest rate (INT) is negatively and significantly related to manufacturing output in the short run, implying that higher lending rates discourage investment in the sector. Similarly, exchange rate (EXR) has a significant negative effect, indicating that currency depreciation raises the cost of imported inputs for manufacturers. All the short-run results are consistent with their long-run findings.

The coefficient of the error correction term (ECT) is -0.413 and the probability value is 0.000. Hence, the ECT is negative, less than one (in absolute value) and significant, which satisfies the theoretical requirement. This confirms the earlier long run relationship among the series and also shows a fast speed of adjustment towards long run equilibrium to be 41.3% in the first year. This implies that about 41.3% of the short term disequilibrium between the explained and the explanatory variables will converge to equilibrium in the long-run at an average speed. Results of the diagnostic tests are presented on table 6.

Table 6: Diagnostic Test Results

Test Statistics	F(Prob)	Probability
Autocorrelation	F(2,33) = 0.496	0.613
Hetroskedasticity	F(5,35)= 0.929	0.473
Normality	0.468	0.790
Stability	F(2, 33)= 4.193	0.223

Source; (Author’s computation using E-views 12)

The result of the diagnostic tests in table 6 reveals that the model is free from serial correlation, hetroskedasticity, normality and functional form issues. As such, the results from the model could be reliable for prediction and policy recommendation.

As suggested by Chindo et. al (2018), cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests for stability of the model along the studied periods were conducted. It is suggested that for a model to be stable along the sampled period, the residuals line must be within the straight lines of the critical bounds at a 5% significance level. Figure 1 and 2 depict the results, which show that the residual lies within the critical bounds at 5% level of significance. These indicate that the model is reasonably stable.

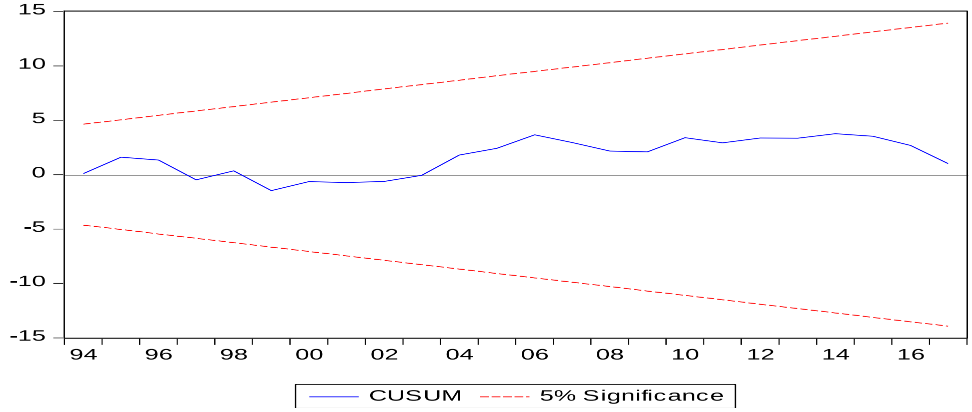

Figure 1: Plot of cumulative sum of recursive residual.
The straight lines represent critical bounds at 5% significance level.

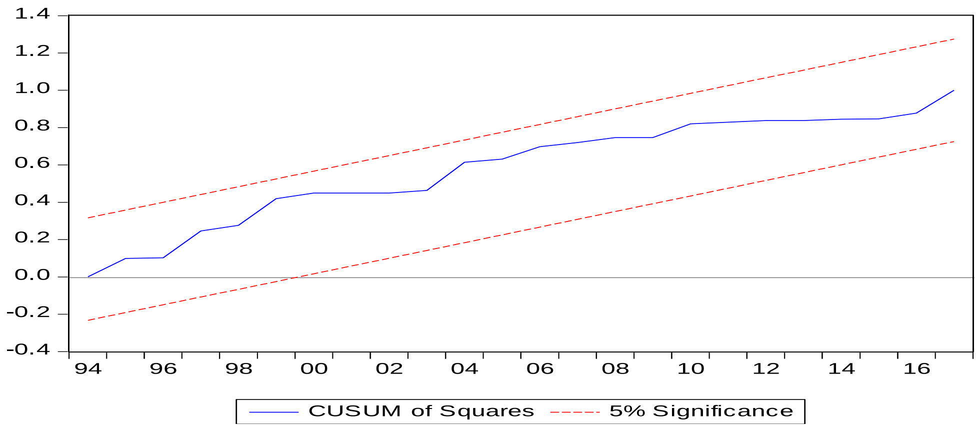

Figure 2: Plot of cumulative sum of squares of recursive residual.
The straight lines represent critical bounds at 5% significance level.

5. Conclusion and Policy Recommendations

The study concludes that VAT positively influences manufacturing sector performance in Nigeria in both the short and long run, suggesting that efficient VAT administration and utilization can enhance industrial growth. Broad money supply also positively contributes to manufacturing output, while higher interest rates and currency depreciation impede sector performance.

Based on the findings, the study recommends that government should strategically invest VAT revenues in industrial infrastructure and productivity-enhancing interventions to strengthen the resilience and output of Nigeria's manufacturing sector.

References

Adebayo, K. (2022). VAT and poverty reduction in Nigeria: Evidence from OLS analysis. Nigerian Journal of Fiscal Studies, 7(2), 33–47.

Adeyemi, T., & Funke, R. (2024). VAT and informal sector taxation in Nigeria: A mixed-methods analysis. Journal of African Taxation, 10(1), 44–61.

Adofu, I., Taiga, U., & Tijani, B. A. (2020). An overview of manufacturing sector development in Nigeria. Journal of Economic Policy and Research, 17(2), 45–60.

Ahmed, B., & Bello, T. (2023). VAT, inflation, and GDP in Nigeria: A VECM approach.

Journal of Developmental Economics Research, 8(1), 20–38.

Ajakaiye, D. O. (2019). The role of VAT in economic development: Lessons for Nigeria. African Journal of Economic Policy, 26(1), 23–39.

Akinola, M., & Adeoye, S. (2023). VAT and non-oil revenue performance in Nigeria. International Journal of Public Finance, 11(2), 88–104.

Auerbach, A. J., & Hines, J. R. (2002). Taxation and economic efficiency. In A. J. Auerbach & M. Feldstein (Eds.), Handbook of public economics (Vol. 3, pp. 1347–1421).

Benson, U., & Eze, I. (2024). VAT and social sector funding in Nigeria: ARDL insights. Review of African Public Finance, 5(1), 59–74.

Brynjolfsson, E., & McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. W. W. Norton & Company.

CBN (2023). Statistical Bulletin. Central Bank of Nigeria.

Central Bank of Nigeria. (2023). Statistical bulletin. https://www.cbn.gov.ng

Chinedu, A., Olamide, P., & Yusuf, M. (2024). VAT and infrastructure financing in Nigeria: A panel data approach. Nigerian Economic Review, 12(2), 102–117.

Cnossen, S. (2020). Mobilizing revenues from value-added tax: A review of the issues and country experience. International Tax and Public Finance, 27(6), 1310–1347.

Dachs, B., Kinkel, S., Jäger, A., & Palcic, I. (2019). Backshoring of production activities in European manufacturing. Journal of Purchasing and Supply Management, 25(3), 100531.

Ebrill, L., Keen, M., Bodin, J. P., & Summers, V. (2001). The modern VAT. International Monetary Fund.

Ebrill, L., Keen, M., Bodin, J.-P., & Summers, V. (2001). The modern VAT. International Monetary Fund.

Emmanuel, E. O. (2020). The challenges and prospects of VAT administration in Nigeria. Nigerian Journal of Public Finance, 5(1), 77–94.

Emmanuel, E., Adebanjo, T., & Yusuf, I. (2020). VAT and economic growth in Nigeria: An ARDL bounds test analysis. Journal of Applied Economic Policy, 6(1), 34–49.

Fakiyesi, O. O. (2021). Manufacturing development and economic growth in Nigeria. Journal of Industrial Economics and Policy, 11(3), 102–118.

Federal Inland Revenue Service. (2022). Annual tax report. https://www.firs.gov.ng

Greene, J. (2019). Principles of taxation and fiscal policy. Oxford University Press.

Greene, J. (2020). Taxation, redistribution, and economic development. International Review of Economics, 67(2), 210–230.

Hall, R. E., & Jones, C. I. (1999). Why do some countries produce so much more output per worker than others? The Quarterly Journal of Economics, 114(1), 83–116.

Hashim, Y. A., & Zarma, A. M. (2018). Exchange rate fluctuations and manufacturing performance in Nigeria. Nigerian Journal of Economic and Financial Review, 5(2), 112–130.

Hulten, C. R. (2001). Total factor productivity: A short biography. In C. R. Hulten, E. R. Dean, & M. J. Harper (Eds.), New developments in productivity analysis (pp. 1–54). University of Chicago Press.

Iorun, J. I. (2019). VAT compliance and perception in Nigeria: Issues and challenges. Journal of Taxation Studies, 13(1), 88–99.

Iorun, J. I. (2022). Tax reforms and revenue generation in Nigeria: A VAT perspective. Journal of African Fiscal Policy, 6(3), 45–60.

Izedonmi, F., & Okunbor, J. A. (2020). Value-added tax and economic growth in Nigeria. European Journal of Business and Management, 12(17), 52–61.

Jalata, G. (2019). The effects of VAT reform on economic performance in Ethiopia. Ethiopian Journal of Economics, 28(1), 33–55.

James, A., & Peter, C. (2024). VAT rate changes and manufacturing output in Nigeria. African Journal of Manufacturing Economics, 3(1), 50–67.

Kaldor, N. (1967). Strategic factors in economic development. Cornell University Press.

Keen, M. (2013). The anatomy of the VAT. National Tax Journal, 66(2), 423–446.

Keen, M., & Lockwood, B. (2010). The value added tax: Its causes and consequences. Journal of Development Economics, 92(2), 138–151.

Lawal, O., & Samuel, T. (2020). VAT, customs duties, and economic performance in Nigeria. International Journal of Fiscal Policy and Trade, 9(2), 77–91.

Michael, O. A. (2020). Fiscal policy and macroeconomic stability in Nigeria: Reassessing the role of VAT. Nigerian Journal of Economic Policy, 27(2), 41–58.

Musa, S., & Ibrahim, K. (2023). VAT reform and fiscal sustainability in Nigeria. Journal of Economic Reforms and Development, 6(1), 22–39.

Nsofo, A., Takson, A., & Ugwuegbe, S. (2021). Exchange rate volatility and the productivity of manufacturing firms in Nigeria. Journal of Applied Economic Analysis, 9(4), 65–78.

Obamuyi, T. M., Olayemi, O. O., & Bamidele, R. O. (2019). Import dependence and the productivity challenge in Nigeria's manufacturing sector. African Development Review, 31(4), 478–490.

OECD. (2001). Measuring productivity: OECD manual. Organization for Economic Co-operation and Development.

Ofishe, R. U. (2019). Challenges of tax administration in Nigeria: VAT as a case study. International Journal of Accounting and Taxation, 7(3), 21–35.

Ogbuagu, C., & Agu, C. (2021). VAT and government revenue in Nigeria: A co-integration analysis. Nigerian Journal of Fiscal Studies, 8(2), 43–58.

Okafor, J., Musa, R., & Bello, T. (2022). VAT and economic growth nexus in Nigeria: FMOLS analysis. African Review of Economic Integration, 7(1), 70–86.

Okolie, A. O., & Afolayan, S. A. (2018). Fiscal policy and economic development in Nigeria. Journal of Contemporary Economics, 12(2), 15–29.

Okonkwo, D., Bello, M., & Hamza, A. (2024). VAT and economic diversification strategy in Nigeria. Journal of Development Policy and Practice, 9(2), 58–75.

Okorontah, C., & Odoemena, D. (2020). Raw material sourcing and manufacturing productivity in Nigeria. Journal of Industrial Research and Development, 18(1), 92–105.

Ola, R., & Ajayi, F. (2023). VAT compliance, tax filing, and economic growth in Nigeria. Journal of African Fiscal Administration, 6(3), 45–61.

Olabisi, F., & Mohammed, A. (2024). VAT and fiscal resilience during oil shocks in Nigeria. International Review of Public Economics, 10(1), 95–111.

Olaoye, C. O. (2017). VAT implementation and public perception in Nigeria. Tax Journal of West Africa, 4(2), 56–74.

Olaoye, C. O. (2022). Fiscal policy and indirect taxation: Implications for economic growth in Nigeria. African Journal of Fiscal Studies, 8(1), 32–49.

Olaoye, C., & Edem, E. (2018). Value-added tax and revenue generation in Nigeria: An OLS approach. West African Journal of Economic Policy, 4(2), 65–79.

Oraka, A. O., Okegbe, T. O., & Ezejiofor, R. A. (2020). Effect of VAT on economic growth in Nigeria. International Journal of Finance and Accounting, 9(1), 8–14.

Owolabi, A., & Okwu, A. (2019). VAT and corporate tax impact on economic growth in Nigeria. Nigerian Journal of Taxation and Development, 5(1), 27–41.

Patrick, T., & Suleiman, G. (2024). VAT, inflation, and consumption patterns in Nigeria. West African Economic Outlook, 11(1), 37–55.

Rias, K., & Amiri-Aghale, H. (2019). Value-added tax and its role in economic development. Global Journal of Fiscal Policy and Economics, 3(1), 101–120.

Rodrik, D. (2013). Unconditional convergence in manufacturing. Quarterly Journal of Economics, 128(1), 165–204.

Rodrik, D. (2013). Unconditional convergence in manufacturing. Quarterly Journal of Economics, 128(1), 165–204.

Sanni, I. A. (2022). VAT reforms and the fiscal sustainability debate in Nigeria. Nigerian Economic Review, 18(1), 66–84.

Solow, R. M. (1957). Technical change and the aggregate production function. The Review of Economics and Statistics, 39(3), 312–320. https://doi.org/10.2307/1926047

Sulaiman, C., and Abdul-Rahim, A. S. (2018) Population Growth and CO2 Emission in Nigeria: A Recursive ARDL Approach.

Syverson, C. (2011). What determines productivity? Journal of Economic Literature, 49(2), 326–365.

Szirmai, A. (2012). Industrialisation as an engine of growth in developing countries, 1950–2005. Structural Change and Economic Dynamics, 23(4), 406–420. https://doi.org/10.1016/j.strueco.2011.01.005

Szirmai, A., & Verspagen, B. (2015). Manufacturing and economic growth in developing countries, 1950–2005. Structural Change and Economic Dynamics, 34, 46–59.

UNIDO (2020). Industrial Development Report 2020. United Nations Industrial Development Organization.

United Nations Industrial Development Organization (UNIDO). (2020). Industrial development report 2020: Industrializing in the digital age. https://www.unido.org/resources-publications

United Nations Statistics Division. (2008). International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4. United Nations.

United Nations. (2008). International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4. United Nations Statistics Division.

Usman, H., Sulaimon, R., & Obinna, E. (2023). VAT and government expenditure effects on economic growth. Journal of Macroeconomic Policy Studies, 7(1), 40–57.

World Bank. (2020). Nigeria development update: Resilience through reforms. https://www.worldbank.org/en/country/nigeria/publication

World Bank. (2022). World development indicators. https://databank.worldbank.org/source/world-development-indicators