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Do Fiscal Policy Shocks Matter for Industrial Growth? Evidence of Asymmetric Impacts on Manufacturing Output in Nigeria.

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Abstract

This study examined the asymmetric impacts of fiscal policy on manufacturing output in Nigeria over the period 1986–2023. Despite sustained fiscal interventions aimed at promoting industrialisation, the manufacturing sector has continued to exhibit weak performance, raising concerns about the effectiveness of fiscal policy in stimulating industrial growth. Guided by the Keynesian Theory of Employment, Interest and Money, the study employed the Nonlinear Autoregressive Distributed Lag (NARDL) model to investigate the short- and long-run asymmetric impacts of government capital expenditure, government recurrent expenditure, public debt, and tax revenue on manufacturing output. The findings reveal that fiscal policy exerts significant asymmetric impacts on manufacturing output. Government capital expenditure and tax revenue exhibited significant long-run asymmetric impacts on manufacturing output, while public debt produced weak positive impacts and government recurrent expenditure remained statistically insignificant. In the short run, reductions in inefficient capital expenditure and improvements in tax revenue were found to stimulate manufacturing sector output. These findings demonstrate that manufacturing output responds differently to positive and negative fiscal policy shocks, suggesting that conventional linear models may obscure important nonlinear relationships. The study contributes to the fiscal policy literature by providing empirical evidence that the effectiveness of fiscal interventions depends not only on their magnitude but also on their direction and composition. The study recommends prioritising productive capital expenditure, strengthening tax administration and revenue mobilisation, improving debt sustainability, and adopting an asymmetric approach to fiscal policy design to enhance manufacturing-led industrial growth in Nigeria.

Keywords: Fiscal Policy, Manufacturing Output, Asymmetric impacts, NARDL, Nigeria

1. Introduction

Manufacturing remains a critical driver of structural transformation, productivity growth, employment creation, and economic diversification across both developed and developing economies. Countries such as China, Germany, South Korea, and the United States have demonstrated that sustained industrial expansion is fundamental to long-term economic competitiveness and technological advancement. Despite the growing prominence of the service sector, manufacturing continues to account for approximately 15.12% of global gross domestic product (GDP) in 2024, underscoring its enduring importance in promoting inclusive and sustainable economic growth (World Bank, 2024).

Fiscal policy has become one of the principal instruments through which governments promote industrial development by stimulating aggregate demand, financing productive infrastructure, and creating an enabling environment for private investment. Government capital expenditure is generally expected to enhance manufacturing output through investments in transport infrastructure, electricity, industrial parks, and technology, thereby lowering production costs and improving productivity. Recent empirical evidence indicates that productive capital expenditure significantly stimulates manufacturing performance, although its effectiveness depends on the quality of project implementation and institutional efficiency (IMF, 2024). Conversely, government recurrent expenditure supports manufacturing indirectly by financing public administration, security, education, and other essential services that facilitate economic activity. However, excessive recurrent expenditure may crowd out productive investment and weaken industrial growth, resulting in mixed empirical outcomes (Effiong et al., 2024; Oguejiofor et al., 2024).

Public debt also plays an important role in financing industrial development where domestic revenues are insufficient. When debt resources are channelled towards productive investment, they can expand infrastructure and stimulate manufacturing activities. However, excessive debt accumulation may increase debt servicing obligations, constrain fiscal space, and crowd out private investment, thereby limiting industrial performance (IMF, 2024). Recent empirical evidence indicates that the structure and composition of taxes significantly influence manufacturing output in Nigeria, with some taxes promoting industrial performance while others impose additional production costs that may constrain manufacturing growth (Eniekezimene et al., 2024). Despite sustained fiscal interventions, Nigeria's manufacturing sector has continued to underperform. Its contribution to GDP declined from approximately 8.24% in 2024 to 8.05% in 2025 (NBS, 2025), reflecting persistent structural challenges, including inadequate infrastructure, high production costs, exchange rate volatility, inflationary pressures, weak institutions, and inefficient fiscal management. These conditions raise important policy concerns regarding the effectiveness of fiscal policy in stimulating industrial development.

Empirical evidence on the fiscal policy–manufacturing relationship in Nigeria remains inconclusive. While several studies report positive effects of government expenditure on manufacturing output (Chukwuka et al., 2023; Oguejiofor et al., 2024; Effiong et al., 2024), others document negative or insignificant effects arising from inefficient public spending, weak governance, and institutional bottlenecks (Aiyedogbon et al., 2023). Likewise, taxation has been found to exert both growth-enhancing and distortionary effects, depending on the tax structure and its implementation (Eniekezimene et al., 2024; Alugbuo et al., 2023). These conflicting findings suggest that fiscal policy effects are context-dependent and may not be adequately captured using conventional linear models.

A major limitation of the existing literature is the widespread assumption that fiscal policy affects manufacturing output symmetrically. In reality, increases and decreases in fiscal policy variables are unlikely to produce equal but opposite effects because of implementation lags, institutional inefficiencies, corruption, and heterogeneous responses by economic agents. Consequently, linear econometric techniques such as Ordinary Least Squares (OLS), Vector Error Correction Models (VECM), and conventional Autoregressive Distributed Lag (ARDL) models may

conceal important nonlinear dynamics and lead to incomplete policy conclusions.

Against this backdrop, this study investigates the asymmetric impacts of fiscal policy on manufacturing output in Nigeria over the period 1986–2023 using the Nonlinear Autoregressive Distributed Lag (NARDL) model. Specifically, the study examines the differential impacts of positive and negative shocks to government capital expenditure, government recurrent expenditure, public debt, and tax revenue on manufacturing output in both the short run and the long run. By explicitly modelling nonlinear fiscal policy transmission, the study contributes to the literature by providing more robust evidence on the effectiveness of fiscal policy in promoting manufacturing-led growth. It offers useful insights for designing targeted fiscal reforms to support Nigeria's industrialisation agenda.

This study makes three key contributions to the literature. First, it extends the fiscal policy–industrial growth literature by explicitly modelling asymmetry in policy transmission. Second, it applies the NARDL framework to distinguish between positive and negative fiscal shocks, thereby providing a more comprehensive understanding of policy impacts. Third, it offers policy-relevant evidence for improving fiscal effectiveness in an oil-dependent developing economy, where inefficient public spending and structural constraints remain persistent challenges.

The remainder of the study is organised as follows: Section 2 reviews relevant literature, Section 3 presents the methodology, Section 4 discusses empirical results, and Section 5 presents the conclusion and recommendations.

2. Literature Review

Theoretical Review

This study is anchored in the Keynesian Theory of Aggregate Demand as developed by Keynes (1936) in *The General Theory of Employment, Interest and Money*. The Keynesian framework posits that economic activity, including manufacturing output, is primarily driven by aggregate demand rather than supply-side forces alone. According to Keynes (1936), government intervention through fiscal policy is necessary to stabilise economic fluctuations by influencing aggregate demand via public expenditure and taxation. Expansionary fiscal policy stimulates consumption, investment, employment, and industrial production, while contractionary fiscal measures may reduce economic activity.

The relevance of the Keynesian framework to manufacturing development has been reinforced in contemporary macroeconomic literature. Blanchard (2019) argues that fiscal policy remains an effective stabilisation tool, particularly during periods of weak private-sector demand, as increases in productive government expenditure generate multiplier effects that stimulate investment and manufacturing activities. Similarly, Auerbach and Gorodnichenko (2012) demonstrate that fiscal multipliers are state-dependent and vary across economic conditions, implying that expansionary and contractionary fiscal policies do not exert identical effects on output. Their findings provide strong theoretical support for the possibility of asymmetric fiscal policy effects on manufacturing performance.

Consistent with modern empirical developments in macroeconomic modelling, particularly the Nonlinear Autoregressive Distributed Lag (NARDL) framework proposed by Shin et al. (2014), the transmission of fiscal policy to manufacturing output is not necessarily linear or symmetric. Instead, positive and

negative fiscal shocks may exert different magnitudes and adjustment speeds in both the short run and the long run. This perspective recognises that economic agents often respond differently to fiscal expansions and contractions due to investment irreversibility, adjustment costs, expectations, and market rigidities.

For instance, increases in government expenditure, particularly capital expenditure, are expected to stimulate aggregate demand, improve infrastructure, lower production costs, and enhance manufacturing output through multiplier effects. Conversely, reductions in government expenditure may contract aggregate demand and industrial production; however, the magnitude of the contraction may differ from the expansionary effect, reflecting asymmetric fiscal transmission. Likewise, tax reductions increase disposable income, encourage private consumption and investment, and stimulate manufacturing activities, whereas tax increases may discourage production and investment decisions, although the adverse effects may not occur proportionately.

Furthermore, fiscal imbalances arising from rising public debt may generate nonlinear effects on manufacturing output through higher borrowing costs, crowding-out of private investment, increased macroeconomic uncertainty, and expectations of future taxation. Conversely, reductions in public debt may improve investor confidence and create fiscal space for productive public investment. These contrasting responses suggest that increases and decreases in public debt may influence manufacturing output differently, thereby reinforcing the need for an asymmetric modelling framework.

Therefore, the Keynesian Theory of Aggregate Demand provides the fundamental theoretical basis for explaining how fiscal policy influences manufacturing output through aggregate demand management. The NARDL framework complements this theory by allowing the decomposition of fiscal policy variables into positive and negative changes, thereby capturing the asymmetric and nonlinear responses of manufacturing output to fiscal policy shocks over time.

Empirical Review

Government Expenditure and Manufacturing Output

Government expenditure has been widely identified as a key fiscal instrument for promoting industrial development through infrastructure provision, increased aggregate demand, and enhanced productive capacity. Empirical evidence from both developed and developing economies, however, presents mixed findings regarding its effectiveness. In the Ghanaian context, Mensah et al. (2016), using the Autoregressive Distributed Lag (ARDL) model for the period 1986–2013, found that government expenditure exerts a significant positive effect on manufacturing output, supporting the Keynesian proposition that expansionary fiscal policy stimulates industrial production through multiplier effects.

Evidence from Nigeria similarly suggests that productive government expenditure can enhance manufacturing performance. Oguejiofor et al. (2024) and Effiong et al. (2024), both employing the ARDL framework, reported that government capital expenditure significantly promotes manufacturing output by improving infrastructure and reducing production constraints. Chukwuka et al. (2023) also documented a positive relationship between government expenditure and manufacturing growth, although they emphasised that the magnitude and statistical significance of this relationship depend on model specification, cointegration properties, and causality structures. Similarly, Arulogun et al. (2024), Edeh and Okia (2024), Ubesie et al.

(2020), Olasehinde and Omolade (2022), and Thankgod and Vivian (2023) generally found positive effects of fiscal expenditure on manufacturing output using OLS and VECM techniques.

Conversely, some studies question the effectiveness of government expenditure in promoting manufacturing growth. Aiyedogbon et al. (2023), applying the Fully Modified Ordinary Least Squares (FMOLS) technique, reported that government capital expenditure negatively affects manufacturing output, attributing the result to inefficient public expenditure management, governance deficiencies, project implementation delays, and poor institutional quality. Likewise, Alugbuo et al. (2023) found that government expenditure exerts negative short-run effects but positive long-run effects on manufacturing output, suggesting that fiscal expenditure impacts are dynamic and sensitive to the time horizon considered.

Taxation and Manufacturing Output

Taxation influences manufacturing performance through its effects on production costs, investment incentives, and government revenue generation. While efficient tax systems provide resources for infrastructure and industrial support, excessive or distortionary taxation may discourage private investment and reduce competitiveness.

Empirical evidence reveals mixed outcomes. Eniekezimene et al. (2024) found that company income tax and import value-added tax significantly reduce manufacturing output in the long run by increasing production costs and lowering profitability. Similarly, Aiyedogbon et al. (2023) reported that tax revenue exerts a negative influence on manufacturing output, reflecting the adverse effects of inefficient tax administration and weak fiscal transmission mechanisms. In contrast, Alugbuo et al. (2023) observed that the impact of tax revenue varies over time, exhibiting nonlinear and specification-dependent effects. These findings suggest that the effectiveness of taxation depends not only on tax rates but also on tax structure, administrative efficiency, and the productive utilisation of tax revenues.

Public Debt and Manufacturing Output

Public debt represents an important source of financing for infrastructure and industrial development, particularly in developing economies where domestic revenue is often inadequate. When borrowed funds are invested efficiently, public debt can enhance manufacturing performance by expanding productive infrastructure and supporting industrial activities. However, excessive debt accumulation may crowd out private investment, increase debt-servicing obligations, and weaken long-term industrial growth.

Although relatively few Nigerian studies examine public debt independently within the manufacturing context, broader fiscal policy studies indicate that its effects are highly dependent on debt sustainability, institutional quality, and the productive allocation of borrowed resources. This suggests that public debt may generate both growth-enhancing and contractionary effects depending on the quality of fiscal management and macroeconomic conditions.

Overall, the empirical literature demonstrates that fiscal policy variables influence manufacturing output through multiple transmission channels, but the magnitude and direction of these effects remain inconsistent across studies. These inconsistencies largely reflect differences in estimation techniques, sample periods, institutional environments, and model specifications. More importantly, most existing studies employ linear econometric approaches such as OLS, FMOLS, VECM, and conventional ARDL models, which assume symmetric responses of manufacturing output to fiscal policy

changes. Consequently, the possibility that positive and negative fiscal shocks exert different short-run and long-run effects has received limited empirical attention, thereby justifying the adoption of the Nonlinear Autoregressive Distributed Lag (NARDL) model in the present study.

Gap in the Study

A critical synthesis of the empirical literature reveals substantial heterogeneity in findings regarding the impact of fiscal policy on manufacturing sector performance. While government expenditure generally exhibits a positive association with manufacturing output, taxation variables frequently produce negative or distortionary effects. These inconsistencies are largely attributable to differences in methodological approaches, data periods, institutional contexts, and variable selection.

A key limitation of the existing literature is the widespread reliance on linear econometric models, including OLS, VECM, and conventional ARDL frameworks. Although these approaches are useful for identifying long-run equilibrium relationships, they impose a restrictive assumption of symmetry in policy transmission, implying that positive and negative shocks have equal magnitude but opposite effects on manufacturing output.

However, from both theoretical and practical perspectives, fiscal policy transmission is unlikely to be symmetric. Increases in government expenditure may stimulate manufacturing output through demand expansion, infrastructure development, and productivity spillovers, whereas reductions in expenditure may not generate proportionate contractions due to adjustment rigidities, consumption smoothing behaviour, and institutional frictions. Similarly, increases in taxation may have stronger adverse effects on investment and production than the positive effects generated by equivalent tax reductions, reflecting nonlinear behavioural responses of firms and investors.

Despite these theoretical considerations, empirical studies on Nigeria's manufacturing sector have largely ignored asymmetric and nonlinear dynamics in fiscal policy transmission. In particular, none of the reviewed studies adopts the Nonlinear Autoregressive Distributed Lag (NARDL) framework, which allows for the decomposition of explanatory variables into positive and negative partial sums and enables the estimation of both short-run and long-run asymmetric effects.

Given the persistent underperformance of the Nigerian manufacturing sector despite sustained fiscal interventions, there is a need for a more flexible econometric framework capable of capturing these nonlinear adjustment dynamics. Accordingly, this study addresses this gap by employing the NARDL approach to investigate the asymmetric effects of fiscal policy and related macroeconomic variables on manufacturing output in Nigeria over the period 1986–2023. This approach is expected to yield more robust, behaviorally consistent, and policy-relevant insights for fiscal and industrial policy formulation.

3. Methodology

Model Specification

Non-Linear Auto-Regressive Distributed Lag (NARDL) Model

To achieve the study's objective, i.e., to determine the long-run and short-run impact of selected fiscal policy variables on manufacturing output in Nigeria, this study employs a Non-Linear Auto-Regressive Distributed Lag (NARDL) model. Because it differs from other approaches in specific ways, the NARDL method was chosen. The model of this study is, however, specified to achieve the objective of the study. For this study, the functional model is thus:

MO= f(GCE, GRE, PDEBT, TAX, INR, EXR, INF, MS) (1)

Equation (2) is the functional form of the model. The stochastic form of the model, which introduces constant, parameters of the variables and the error term, can be expressed as:

$$MO_t = \beta_0 + \beta_1 GCE_t + \beta_2 GRE_t + \beta_3 PDEBT_t + \beta_4 TAX_t + \mu_t \quad (2)$$

Where,

μ_t = stochastic error term which captures other variables that are not included in the model.

β_0 = intercept

$\beta_1, \beta_2 \ldots\ldots \beta$ are the slope of the coefficients

Equation (3) can be transformed into a logarithm to enable the coefficients of the variables to avoid heteroskedasticity and multicollinearity. Though it is debated whether variables expressed as a percentage should be transformed into logarithms or not, this study logged the variables to account for skewness, to linearise the trend in time series variables, and to stabilise variance. Therefore, the transformed model is given as:

$$MO_t = \beta_0 + \beta_1 logGCE_t + \beta_2 logGRE_t + \beta_3 logPDEBT_t + \beta_4\ logTAX_t + \mu_t \quad (3)$$

Where,

Δ is the first difference operator

LOG = Logarithm

To capture asymmetric impacts of fiscal and monetary policy variables, the study follows the Shin et al. (2014) Non-linear Autoregressive Distributed Lag Model NARDL approach. Each explanatory variable is decomposed into positive and negative cumulative sums of changes as follows:

$X_t^+ = \sum \max(\Delta X_j, 0)$, $X_t^- = \sum \min(\Delta X_j, 0)$ (4)

The NARDL model is estimated to ascertain the impact of fiscal policy variables on manufacturing output in Nigeria, as thus:

$$\Delta MO_t = \psi\eta_0 LOGMO_{t-1} + \eta_1^+ LOGCE_{t-1}^+ + \eta_1^- LOGGCE_{t-1}^- + \eta_2^+ LOGGRE_{t-1}^+ + \eta_2^- LOGRE_{t-1}^- + \eta_3^+ LOGPDEBT_{t-1}^+ + \eta_3^- LOGPDEBT_{t-1}^- + \eta_4^+ LOGTAX_{t-1}^+ + \eta_4^- LOGTAX_{t-1}^-\ \sum_{j=1}^{P} \beta_{1j} \Delta \mathrm{MO}_{t-j} + \sum_{j=0}^{P} \beta_{2j}^+ \Delta LOGGCE_{-1}^+ + \sum_{j=0}^{P} \beta_{2j}^- \Delta LOGGCE_{t-1}^- + \sum_{j=0}^{P} \beta_{3j}^+ \Delta LOGGRE_{t-1}^+ + \sum_{j=0}^{P} \beta_{4j}^+ \Delta LOGPDEBT_{t-1}^+ + \sum_{j=0}^{P} \beta_{4j}^- \Delta LOGPDEBT_{t-1}^- + + \sum_{j=0}^{P} \beta_{5j}^+ \Delta LOGTAX_{t-1}^+ + \sum_{j=0}^{P} \beta_{5j}^- \Delta LOGTAX_{t-1}^- + \mu_t \quad (5)$$

The variables included in Equation (5) are justified on both theoretical and empirical grounds as they represent the key fiscal policy instruments through which government influences manufacturing sector output. Manufacturing output (LOGMO) is used as the dependent variable because it reflects the level of industrial production and serves as an indicator of economic diversification and productive capacity. Government capital expenditure (LOGGCE) is included because investment in infrastructure and productive assets enhances industrial productivity and stimulates manufacturing activities. Government recurrent expenditure (LOGGRE) captures spending on wages, administration, and public services, which can stimulate aggregate demand but may also crowd out productive investment if excessive. Public debt (LOGPDEBT) is incorporated because government borrowing can finance infrastructure and industrial development, although excessive debt may constrain growth through higher debt-servicing obligations. Tax revenue (LOGTAX) is included as it finances public expenditure that supports industrial development, while high tax burdens may discourage

investment and increase production costs. Following the nonlinear autoregressive distributed lag (NARDL) framework, each fiscal variable is decomposed into positive and negative changes to capture potential asymmetries, recognising that increases and decreases in fiscal policy instruments may exert different short-run and long-run impacts on manufacturing output.

4. Result Presentation and Analysis

Table 1: Stationarity Test/ Unit Root Test

VARIABLE	ADF STATISTICS	P-VALUE	ORDER OF INTEGRATION
MO	-3.3324	0.0206	I(0)
GCE	-6.8828	0.0000	I(1)
GRE	-8.5504	0.0000	I(1)
PDEBT	-6.8647	0.0000	I(1)
TAX	-5.7073	0.0000	I(1)

Authors' Computation from EViews 10 (2026)

Table 1 above depicts the stationarity levels of the variables under study (Manufacturing output, government capital expenditure, government recurrent expenditure, public debt and tax). The results show a mixed integration of order one (government capital expenditure, government recurrent expenditure, public debt and tax) and levels (manufacturing output). Based on the outcome, the most suitable method or model to employ is the Auto Regressive Distributed Lag (ARDL) Model, as proposed by Pesaran and Shin (1999).

Table 2: Short Run Asymmetry of NARDL with Manufacturing Sector Output (MO) as the dependent Variable

Variable	Coefficient	t-Statistic	Prob.*
LMO(-1)	1.1436	12.5071	0.0000
LMO(-2)	-0.2643	-3.7878	0.0016
LGCE_POS	-0.0404	-1.0658	0.3023
LGCE_POS(-1)	-0.0333	-0.7836	0.4447
LGCE_POS(-2)	-0.0313	-0.9908	0.3365
LGCE_NEG	0.1403	3.4666	0.0032
LGCE_NEG(-1)	0.1113	2.1747	0.0450
LGRE_POS	-0.0237	-0.6794	0.5066
LGRE_NEG	-0.2772	-3.0969	0.0069
LGRE_NEG(-1)	0.6986	7.5442	0.0000
LPDEBT_POS	0.0398	2.2904	0.0359
LPDEBT_NEG	0.0396	3.7253	0.0018
LTAX_POS	0.0341	1.0573	0.3061
LTAX_POS(-1)	0.1519	4.8195	0.0002
LTAX_POS(-2)	0.1000	3.2158	0.0054
LTAX_NEG	-0.0003	-0.0868	0.9319
LTAX_NEG(-1)	-0.0236	-3.8346	0.0015
LTAX_NEG(-2)	0.0109	1.8537	0.0823
CointEq(-1)*	-0.1206	-18.8553	0.0000
			R Squared: 0.99
			Adjusted R:

	0.98
	DW: 1.7

Authors' Computation from EViews 10 (2025)

The short-run dynamics of fiscal policy exhibit notable asymmetric impacts on manufacturing sector output in Nigeria, as revealed by the nonlinear autoregressive distributed lag (NARDL) estimation and two lags were chosen based on lag selection criteria through Akaike Information Criterion, Hannan Quinn, Final Predictor Error and Sequential Modified LR Test Statistics. From the estimates, specifically, positive shocks to government capital expenditure (LGCE_POS) exert a negative but statistically insignificant influence on manufacturing output, with coefficients of -0.0405 (p = 0.3023), -0.0333 (p = 0.4447), and -0.0314 (p = 0.3365) across three lags. This suggests that increases in capital spending may not yield immediate output gains, possibly due to inefficiencies in project execution or delays in implementation. In contrast, negative shocks to capital expenditure (LGCE_NEG) are associated with significant increases in output, evidenced by coefficients of 0.1403 (p = 0.0032) and 0.1113 (p = 0.0450). These findings imply that curtailing poorly allocated capital spending can stimulate short-term manufacturing activity, potentially by improving the efficiency of public resource utilisation.

Similarly, government recurrent expenditure (LGRE) displays asymmetric behaviour in its short-run impact on output. Positive shocks (LGRE_POS) produce an insignificant impact (coefficient = -0.0237, p = 0.5066), indicating limited immediate influence on manufacturing sector output. Conversely, negative shocks (LGRE_NEG) show a dual impact: a current-period negative and significant impact (coefficient = -0.2772, p = 0.0069) followed by a strongly positive and highly significant one-period lagged impact (coefficient = 0.6987, p = 0.0000). This dynamic suggests that while immediate cuts in recurrent expenditure may dampen manufacturing sector output in the short run, they could lead to subsequent improvements, possibly due to improved fiscal discipline or reallocation of resources toward more productive uses.

Public debt dynamics further reinforce the asymmetric nature of fiscal policy impacts. Both positive and negative shocks to public debt (LPDEBT_POS and LPDEBT_NEG) exert statistically significant positive impacts on manufacturing output, with coefficients of 0.0399 (p = 0.0359) and 0.0396 (p = 0.0018), respectively. This indicates that whether debt is accumulated or reduced, it can support short-term manufacturing sector output if accompanied by sound debt management and alignment with productive expenditures.

Taxation (TAX) also demonstrates nonlinear short-run impacts. Positive tax shocks (LTAX_POS) exhibit delayed but statistically significant impacts, with one- and two-period lagged coefficients of 0.1520 (p = 0.0002) and 0.1000 (p = 0.0054), respectively. This suggests that increases in tax revenue may support manufacturing output over time, likely by funding infrastructure development or essential public services. In contrast, negative tax shocks (LTAX_NEG) are more detrimental in the short term, with a significant one-period lagged coefficient of -0.0236 (p = 0.0015), while the contemporaneous and second-lag impacts remain statistically insignificant. These results indicate that tax cuts may constrain manufacturing activity by reducing fiscal space for productive government interventions.

Collectively, these findings confirm the presence of short-run asymmetries in the

impacts of fiscal policy on Nigeria's manufacturing sector. They highlight that the nature and direction of fiscal adjustments are critical in shaping outcomes, with evidence suggesting that targeted expenditure reductions (particularly in inefficient capital and recurrent outlays) alongside prudent tax and debt policies yield more favourable short-term results than indiscriminate fiscal expansions.

The associated Error Correction Model (ECM) results affirm the validity and stability of the estimated model. The error correction term (CointEq(-1)) is negative and highly significant, with a coefficient of -0.120660, t-statistic of -18.85531, and p-value of 0.0000. This confirms the existence of a stable long-run relationship, with approximately 12.1% of any deviation from equilibrium corrected within each period, indicating a moderate speed of adjustment. The R-squared value of 0.99 implies that the model explains 99.99% of the variation in manufacturing output, which, while exceptionally high, is not uncommon in time series analyses involving trending variables. Additionally, the Durbin-Watson statistic of 1.7 is close to the ideal benchmark of 2, suggesting the absence of problematic autocorrelation in the residuals. Overall, the ECM diagnostics reinforce the robustness of the short-run model and its capacity to capture meaningful fiscal dynamics within Nigeria's manufacturing sector.

Table 3: ARDL Bound Test for Cointegration of Fiscal Policy Variables

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	22.75344	10%	1.85	2.85
K	8	5%	2.11	3.15
		2.5%	2.33	3.42
		1%	2.62	3.77

Authors' Computation from EViews 10 (2026)

The table reveals that the bound test of the F-statistic (22.75) is greater than both the lower bound (2.11) and the upper bound (3.15) at 5% critical values. This suggests that the null hypothesis of no co-integration is rejected, thereby confirming the existence of a long-run equilibrium relationship among the variables (government capital expenditure, government recurrent expenditure, public debt, tax and manufacturing output) under study.

Table 4: Long-run NARDL Result: Impact of Fiscal Policy Variables on Manufacturing Sector Output

Variable	Coefficient	t-Statistic	Prob.
LGCE_POS	-0.871760	-3.007104	0.0084
LGCE_NEG	2.085918	2.829466	0.0121
LGRE_POS	-0.196684	-0.615156	0.5471
LGRE_NEG	3.492932	1.685541	0.1113
LPDEBT_POS	0.330393	1.809845	0.0891
LPDEBT_NEG	0.328452	1.941428	0.0700
LTAX_POS	2.371432	3.215656	0.0054
LTAX_NEG	-0.108265	-5.187237	0.0001
C	3.203308	7.612768	0.0000

Authors' Computation from EViews 10 (2026)

The long-run estimates from the NARDL model provide compelling evidence of significant asymmetric impacts of fiscal policy variables on manufacturing sector output in Nigeria. Government capital expenditure (GCE) exhibits clear asymmetry in its long-run impact. Specifically, positive shocks to GCE

produce a negative and statistically significant impact on manufacturing output, with a coefficient of -0.8718 (p = 0.0084). This suggests that increases in capital spending may not necessarily promote manufacturing sector output, potentially due to inefficiencies, poor targeting, or corruption that undermine the effectiveness of such investments. Conversely, negative shocks to GCE are associated with a statistically significant and positive impact on manufacturing output, with a coefficient of 2.0859 (p = 0.0121). This counterintuitive result may reflect a more efficient reallocation of resources or relief from macroeconomic pressures (such as inflation or debt overhang) that typically accompany excessive public capital outlays, thereby enhancing manufacturing performance in the long run.

In contrast, government recurrent expenditure (GRE) does not exhibit statistically significant impacts in either direction. The coefficient for positive changes in GRE is -0.1967 (p = 0.5471), while that for negative changes is 3.4929 (p = 0.1113), both indicating statistical insignificance. These results imply a limited long-run influence of recurrent spending (such as wages, pensions, and overheads) on the productive capacity of the manufacturing sector, possibly because such expenditures are not directly linked to capital formation or manufacturing sector growth.

Public debt (PDEBT) reveals weak but positive asymmetries. Both positive and negative shocks to debt stock yield positive impacts on manufacturing output, with coefficients of 0.3304 (p = 0.0891) and 0.3285 (p = 0.0700), respectively. Though only marginally significant at the 10% level, these findings suggest that debt accumulation and reduction can contribute positively to manufacturing growth, depending on the quality of fiscal governance and the strategic allocation of borrowed funds toward productive investments. The marginal nature of these impacts underscores the importance of managing debt sustainably and channelling it into infrastructure and other growth-enhancing sectors.

Tax revenue (TAX) exhibits the most pronounced asymmetry among the fiscal indicators. Positive shocks to tax revenue have a strong, statistically significant positive impact on manufacturing output, with a coefficient of 2.3714 (p = 0.0054). This highlights the importance of a stable and growing tax base, which likely enhances the government's ability to finance infrastructure projects, support manufacturing sector policies, and maintain macroeconomic stability—all of which are critical for long-term manufacturing development. In contrast, negative shocks to tax revenue significantly impair manufacturing output, with a coefficient of -0.1083 (p = 0.0001). The contractionary impact of reduced tax revenue may stem from diminished fiscal capacity to sustain public investment and service delivery that underpin manufacturing sector output.

The long-run NARDL results reveal important asymmetries in the impact of fiscal policy variables on manufacturing output in Nigeria, consistent with the Keynesian proposition that fiscal tools significantly influence aggregate demand. Notably, capital expenditure exhibits a counterintuitive relationship: positive shocks to government capital expenditure (LGCE_POS) significantly reduce manufacturing output (coefficient = -0.8718, $p = 0.0084$), while negative shocks (LGCE_NEG) significantly increase output (coefficient = 2.0859, $p = 0.0121$). This asymmetry suggests potential inefficiencies, poor project execution, or corruption in capital project implementation, whereby increased spending fails to translate into productive outcomes, while reductions possibly foster

greater resource discipline or stimulate private sector responses.

Government recurrent expenditure, on the other hand, shows no significant long-run impact on manufacturing output (LGRE_POS: $p = 0.5471$; LGRE_NEG: $p = 0.1113$), implying that consumption-oriented spending, such as salaries and administrative costs, lacks the catalytic impact necessary to drive long-term manufacturing sector growth. This finding highlights the limited productivity spillovers of recurrent outlays in Nigeria's fiscal structure.

Public debt, represented by both positive (LPDEBT_POS) and negative (LPDEBT_NEG) shocks, exerts marginally significant positive impacts on manufacturing output (coefficients = 0.3304 and 0.3285; $p = 0.0891$ and 0.0700, respectively). These results imply that debt-financed spending, when moderately applied, may support the manufacturing sector through infrastructure and industrial financing. However, the borderline significance underscores the need for cautious debt accumulation and a strong linkage between borrowing and productivity-enhancing investment.

The results for tax revenue present a noteworthy asymmetry. Positive shocks in tax revenue (LTAX_POS) significantly boost manufacturing output (coefficient = 2.3714, $p = 0.0054$), contrary to conventional expectations that taxation dampens investment. This may reflect improved tax administration or increased fiscal space for infrastructure investment. Conversely, negative tax shocks (LTAX_NEG) strongly reduce output (coefficient = -0.1083, $p = 0.0001$), suggesting that revenue shortfalls constrain public sector support for sector output. These findings highlight the importance of stable and efficient tax systems in underpinning long-run manufacturing sector growth. Collectively, the findings underscore the necessity of distinguishing between the direction of fiscal shocks and adopting nonlinear modelling frameworks to more accurately capture the dynamics of fiscal policy impacts on manufacturing output.

Discussion of Findings

The long-run NARDL results reveal important asymmetries in the impact of fiscal policy variables on manufacturing output in Nigeria, consistent with the Keynesian proposition that fiscal policy influences aggregate demand and, by extension, industrial performance. However, the results also demonstrate that the effects of fiscal policy are nonlinear, with positive and negative fiscal shocks producing significantly different responses in manufacturing output.

The finding that positive shocks to government capital expenditure (LGCE_POS) significantly reduce manufacturing output, while negative shocks (LGCE_NEG) significantly increase it, contradicts the conventional Keynesian expectation that increased public investment stimulates industrial production through multiplier effects. This result is inconsistent with the findings of Mensah et al. (2016), Oguejiofor et al. (2024), Effiong et al. (2024), and Chukwuka et al. (2023), all of whom reported that government capital expenditure positively and significantly promotes manufacturing output by improving infrastructure, increasing productive capacity, and reducing production costs. Nevertheless, the present finding corroborates the study of Aiyedogbon et al. (2023), who found that capital expenditure may adversely affect manufacturing performance due to poor public expenditure management, governance deficiencies, project abandonment, and poor institutional quality. The Nigerian experience provides a plausible explanation for this outcome. Despite consistent increases in capital budget allocations over the years,

implementation rates have remained relatively low, while many infrastructure projects have suffered from delays, cost overruns, and inadequate maintenance. Consequently, higher capital expenditure has not translated into corresponding improvements in electricity supply, transportation networks, logistics, or industrial infrastructure that are critical for manufacturing competitiveness. Conversely, reductions in public capital spending may compel greater fiscal discipline and encourage private sector participation in infrastructure provision through public-private partnerships, thereby explaining the positive effect of negative capital expenditure shocks observed in this study.

Government recurrent expenditure exhibits no significant long-run effect on manufacturing output irrespective of the direction of the shock. This finding contradicts the evidence reported by Oguejiofor et al. (2024) and Effiong et al. (2024), who found recurrent expenditure to exert a positive influence on manufacturing performance. It also differs from the broader findings of Arulogun et al. (2024), Edeh and Okia (2024), Ubesie et al. (2018), Olasehinde and Omalade (2022), and Thankgod and Vivian (2023), who documented positive fiscal policy effects using linear estimation techniques. The insignificance observed in this study suggests that Nigeria's recurrent expenditure, which is largely devoted to wages, overhead costs, debt servicing, and administrative expenses, generates limited productive spillovers capable of stimulating long-run manufacturing growth. Given the persistent dominance of recurrent expenditure in Nigeria's annual budgets, relatively little fiscal space remains for productive capital investments that directly enhance industrial productivity.

The results further reveal that both positive and negative shocks to public debt exert positive but only marginally significant effects on manufacturing output. This finding partially supports the Keynesian argument that debt-financed fiscal expansion can stimulate productive sectors when borrowed resources are invested in infrastructure and industrial development. The positive relationship found in this study suggests that public borrowing can contribute to industrial expansion when channelled towards productive investments. Nevertheless, the weak statistical significance indicates that the benefits of debt accumulation remain uncertain. This finding is particularly relevant in the Nigerian context, where rising public debt has increasingly financed recurrent obligations and debt servicing rather than productive capital projects. Consequently, although debt may create opportunities for industrial expansion, its effectiveness depends largely on the efficiency of debt utilisation and the extent to which borrowed funds support manufacturing-enhancing infrastructure and industrial development.

The asymmetric impact of tax revenue constitutes one of the most striking findings of the study. Positive shocks to tax revenue significantly increase manufacturing output, whereas negative tax shocks significantly reduce manufacturing output. This finding contradicts the conventional supply-side argument and differs from the conclusions of Eniekezimene et al. (2024) and Aiyedogbon et al. (2023), all of whom reported that taxation adversely affects manufacturing output through increased production costs, reduced profitability, and weaker investment incentives. However, the present finding suggests that, within the Nigerian economy, higher tax revenue may not necessarily reflect a heavier tax burden on manufacturers alone but rather improved tax administration, expanded tax compliance, and enhanced revenue mobilisation. Such improvements provide

government with greater fiscal capacity to finance infrastructure, industrial support programmes, and public services that indirectly enhance manufacturing productivity. Conversely, declines in tax revenue constrain government's ability to provide these complementary public goods, thereby depressing manufacturing output. This outcome is particularly relevant in light of Nigeria's ongoing fiscal reforms aimed at broadening the tax base, improving revenue collection, and reducing dependence on oil revenues. Therefore, the growth-enhancing effect appears to emanate from efficient revenue mobilisation and productive utilisation of tax receipts rather than from higher tax rates per se.

Overall, the findings reinforce the argument advanced by Alugbuo et al. (2023) that fiscal policy effects are dynamic and may differ across time horizons and model specifications. More importantly, the results support the broader empirical observation that fiscal policy transmission is highly sensitive to macroeconomic conditions and estimation methodology. Unlike the majority of previous studies, including those employing OLS, FMOLS, VECM, and conventional ARDL techniques, this study utilises the Nonlinear Autoregressive Distributed Lag (NARDL) model, which distinguishes between positive and negative fiscal shocks. The evidence demonstrates that manufacturing output responds asymmetrically to fiscal policy innovations, implying that expansionary and contractionary fiscal measures do not produce equal but opposite effects. Consequently, the findings provide new empirical evidence that linear models may conceal important nonlinear adjustment mechanisms, thereby explaining much of the conflicting evidence reported in the existing literature. The study therefore contributes to the fiscal policy literature by demonstrating that the effectiveness of fiscal policy in promoting manufacturing output in Nigeria depends not only on the magnitude of fiscal interventions but also on the direction of fiscal shocks, the quality of public expenditure management, and the institutional environment within which fiscal policy is implemented. This finding is particularly pertinent given Nigeria's current challenges of fiscal deficits, rising public debt, infrastructure gaps, and ongoing efforts to reposition the manufacturing sector as a key driver of economic diversification.

Table 5: Diagnostic Test

Test	Result	Implication
Fiscal Policy Variables		
Heteroskedasticity: Breusch-Pagan-Godfrey	P=0.1696	This suggests the absence of heteroskedasticity. This means the residuals are homoscedastic.
Serial Correlation Breusch-Godfrey LM	P=0.5272	The P value suggests the absence of serial correlation
Normality: Jarque-Bera	P=0.0955	The normality test of the Jarque-Bera test suggests that the variables under study are normally distributed.

Authors' Computation from EViews 10 (2026)

Stability Cusum Test

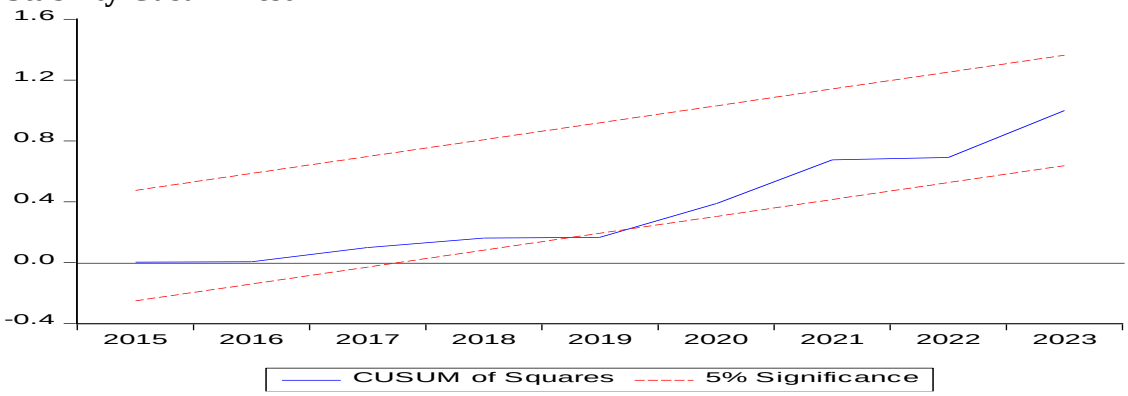

Figure 1 depicts the stability test as shown in the cumulative sum of squares test. It reveals that the model employed in the study is stable because the blue line falls within the five per cent level of significance.

5. Conclusion and Recommendations

This study examined the asymmetric effects of fiscal policy on manufacturing output in Nigeria using the Nonlinear Autoregressive Distributed Lag (NARDL) model over the period 1986–2023. The findings reveal that fiscal policy exerts significant but asymmetric effects on manufacturing performance, indicating that positive and negative changes in fiscal policy variables do not generate proportionate responses in manufacturing output. Government capital expenditure, recurrent expenditure, tax revenue, and public debt influence manufacturing sector output through different transmission channels and with varying magnitudes, suggesting that the effectiveness of fiscal policy depends not only on the size of fiscal interventions but also on their composition, direction, and implementation efficiency. These findings extend the existing literature by demonstrating that linear fiscal policy models may mask important nonlinear relationships and provide further empirical support for the Keynesian proposition that appropriately targeted fiscal interventions can stimulate productive activities and industrial development.

Based on these findings, the following recommendations are as follows:

i) Government capital expenditure should be prioritised toward manufacturing-supportive infrastructure, including reliable electricity supply, transportation networks, industrial parks, and logistics facilities, to improve productive capacity and reduce the cost of production.

ii) Government recurrent expenditure should be restructured towards activities that directly enhance manufacturing competitiveness, such as research and development, technical and vocational training, industrial extension services, trade facilitation, and regulatory efficiency, while reducing expenditure on less productive administrative activities.

iii) Tax policy should focus on broadening the tax base, improving tax administration, reducing compliance costs, and minimising revenue leakages rather than increasing the tax burden on manufacturing firms. Stable and predictable tax policies would encourage investment, enhance productivity, and strengthen government revenue mobilisation.

iv) Public debt should be channelled primarily towards productivity-enhancing infrastructure and industrial development projects capable of generating long-term economic returns. Furthermore, debt management should emphasise sustainability, transparency, and efficient

utilisation of borrowed funds to minimise debt-servicing pressures and avoid crowding out private sector investment.

v) Fiscal authorities should recognise that expansionary and contractionary fiscal measures do not generate equal impacts on manufacturing output. Consequently, fiscal policy design should adopt an asymmetric approach by evaluating the likely impacts of both increases and decreases in government capital and recurrent expenditure, taxation, and public debt before implementation. This would improve policy effectiveness and minimise unintended consequences for the manufacturing sector.

References

Adebiyi, O. R., Folarin, E. M., & Olurinola, I. O. (2022). Impact of bank credit on the manufacturing sector in Nigeria. *Lapai International Journal of Administration*, 5(1), 121–142.

Akinyemi, K. A., Ogbuji, I. A., & Adedokun, S. A. (2018). Manufacturing sector performance in Africa: The role of monetary policy instruments. *Business and Economic Quarterly*, 3(2), 27–35.

Alfa, Y., & Alexander, A. A. (2024). Insecurity and food price inflation in the post-COVID-19 era in Nigeria. *Journal of Economic and Social Research (JESR)*, 10(1), 106–114.

Alugbuo, J. C., Eze, E., & Uzuegbu, J. C. (2023). Fiscal policy, automatic stabilisers, and manufacturing sector performance in Nigeria. *Nigerian Journal of Management Sciences, 24*(2), 239–250.

Arulogun, O. O., Aruwaji, A. M., Adekeye, E. S., & Peters, F. F. (2024). Impact of fiscal policy variables and oil price shocks on sectoral output growth in Nigeria: Evidence from vector error correction model. *International Journal of Economics and Financial Management (IJEFM)*, 9(6), 85–97.

Auerbach, A. J., & Gorodnichenko, Y. (2012). Measuring the output responses to fiscal policy. *American Economic Journal: Economic Policy*, 4(2), 1–27. https://doi.org/10.1257/pol.4.2.1

Aiyedogbon, J. O., Monday, O. G., & Ezie, O. (2023). *The effect of fiscal policy on manufacturing sector output in Nigeria*. International Journal of Research and Innovation in Social Science, 7(9), 1712–1722. https://doi.org/10.47772/IJRISS.2023.71038

Barnichon, R., & Matthes, C. (2017). Understanding the size of the government spending multiplier: It's in the sign. *Federal Reserve Bank of San Francisco Working Paper*, 2017-16. https://doi.org/10.24148/wp2017-16

Black, J. (2013). *Dictionary of economics*. Oxford University Press.

Blanchard, O. (2019). *Macroeconomics* (8th ed.). Pearson.

Buari, A. A., Alexander, S. B., & Alfa, A. B. (2020). Fiscal policy and manufacturing sector performance in Nigeria. *Journal of Economics and Sustainable Development*, 11(14), 112–124.

Central Bank of Nigeria (CBN). (2021). *Statistical bulletin 2021*. https://www.cbn.gov.ng/documents/statbulletin.asp

Chidinma, A. L., Ude, D. K., & Ogunjobi, J. O. (2018). Public expenditure and industrial sector growth in Nigeria. *International Journal of Economics and Financial Issues*, 8(4), 252–259.

Chukwuka, M. S., Nwokoye, E. S., Madueke, C. M., Ozor, J. N., Onugha, C. B., & London, O. A. (2023). *Nigeria's fiscal policy response and the manufacturing sector growth: Empirical review*. Journal of Economic Studies, 20(1), 297–309.

Edeh, S. U., & Okia, R. (2024). Fiscal policy and manufacturing sector output in Nigeria. *International Journal of Public Administration (IJOPAD)*, 3(2), 1–18.

Effiong, U. E., Ukere, I. J., & Ekpe, J. P. (2024). Fiscal policy, interest rate and the manufacturing sector performance in Nigeria. World Journal of Advanced Research and Reviews, 21(3), 2514–2533. https://doi.org/10.30574/wjarr.2024.21.3.0962

Eniekezimene, A. F., Wodu, E., & Anda-Owei, J. P. (2024). Selected taxes and manufacturing sector output in Nigeria. *Asian Journal of Economics, Finance and Management*, 6(1), 88–100.

Fatukasi, B. (2012). Determinants of inflation in Nigeria: An empirical analysis. *International Journal of Economics and Finance*, 3(6), 23–39.

International Monetary Fund. (2024). *Fiscal monitor: Putting a lid on public debt*. International Monetary Fund. https://www.imf.org

Jhingan, M. L. (2012). *Principles of economics*. Vrinda Publications (P) Ltd.

Keynes, J. M. (1937). The general theory of employment. *The Quarterly Journal of Economics*, 51(2), 209–223. https://doi.org/10.2307/1882087

Keynes, J. M. (1936). *The general theory of employment, interest and money*. Macmillan.

Kilian, L., & Vigfusson, R. J. (2011). Nonlinearities in the oil price-output relationship. *Macroeconomic Dynamics*, 15(S3), 337–363. https://doi.org/10.1017/S1365100511000045

Lunsford, K. G. (2017). Productivity growth and real interest rates in the long run. [Working Paper]. Federal Reserve Bank.

Manaresi, F., & Pierri, N. (2019). Credit supply and productivity growth. *Journal of Political Economy*, 127(2), 531–582. https://doi.org/10.1086/701030

Mensah, F., Ofori-Aberere, G., & Pickson, R. B. (2016). Empirical analysis of the relationship between industrial performance and macroeconomic factors in Ghana. *British Journal of Economics, Management and Trade*, 13(4), 1–11.

National Bureau of Statistics (NBS). (2022). *Annual abstract of statistics*. https://www.nigerianstat.gov.ng

National Bureau of Statistics (NBS). (2022). *National accounts statistics: GDP by economic activity Q4 2021*. https://www.nigerianstat.gov.ng

National Bureau of Statistics. (2025). *Nigerian gross domestic product report (Q1 2025)*. National Bureau of Statistics. https://www.nigerianstat.gov.ng

Oguejiofor, U. H., Obansa, S. A. J., Ihuoma, A., & Olushola, T. (2024). The dynamics of fiscal policy measures on manufacturing sector growth: Evidence from the Nigerian economy. *International Journal of Research in Social Science and Humanities (IJRSS)*, *5*(5), 14–35. https://doi.org/10.47505/IJRSS.2024.5.2

Ogunjobi, J. O., Omodero, C. O., & Akinlabi, B. H. (2024). Government expenditure and industrial performance in Nigeria: A sectoral analysis. *Journal of Development and Policy Studies*, 16(1), 95–113.

Oladipo, O. S., Adegbite, T. A., & Ayodele, M. A. (2019). Effects of monetary policy on industrial output in Nigeria. *African Journal of Economic Policy*, 26(2), 45–60.

Oladipo, O. S., Akomolafe, K. J., & Olayemi, A. A. (2019). Exchange rate volatility and manufacturing performance in Nigeria. *Nigerian Journal of Economic and Social Studies*, 61(3), 145–160.

Olasehinde, T. J., & Omolade, A. (2022). Fiscal policy shocks and industrial sector growth in Nigeria. *Fuoye Journal of Accounting and Management*, 5(2), 182–195.

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. In S. Strom (Ed.), *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium* (pp. 371–413). Cambridge University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326. https://doi.org/10.1002/jae.616

Ramey, V. A., & Zubairy, S. (2018). Government spending multipliers in good times and in bad: Evidence from U.S. historical data. *Journal of Political Economy*, 126(2), 850–901. https://doi.org/10.1086/696277

Samson, A. A., Yusuf, T. A., & Ojo, M. O. (2022). The political economy of industrial policies in Nigeria: Assessing the Nigerian Industrial Revolution Plan. *African Development Review*, 34(1), 1–15. https://doi.org/10.1111/1467-8268.12538

Thankgod, M., & Vivian, O. (2023). Role of government in promoting real sector development in Sub-Saharan Africa: The Nigerian experience. *African Journal of Social Sciences and Humanities Research*, 6(3), 20–34.

Tenreyro, S., & Thwaites, G. (2016). Pushing on a string: US monetary policy is less powerful in recessions. *American Economic Journal: Macroeconomics*, 8(4), 43–74. https://doi.org/10.1257/mac.20150016

Ubesie, C. M., Ananwude, A. C., Cyracus, E. N., & Emmanuel, E. (2020). Do fiscal policy tools have the potential to stimulate performance of the manufacturing sector in Nigeria? *Finance & Economics Review*, 2(3), 33–51. https://doi.org/10.38157/finance-economics-review.v2i3.163

World Bank. (2021). *World Development Report 2021: Data for better lives*. https://www.worldbank.org

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