Fiscal Policy and Real Sector Performance in Nigeria

[1]Ikwuegbu, Akuchi Doris [2] Nyeche, Ezebunwo and [3]Amadi, Sonny Nwonodi
[1,2*3]Department of Economics,
Faculty of Social Sciences, Rivers State University,
Nkpolu-Oroworukwo, Port Harcourt, Rivers State, Nigeria.
Corresponding author: akuchi.doris@rsu.edu.ng
https://doi.org/10.56201/wjfir.v10.no8.2026.pg68.80

Abstract
This study examines the effect of fiscal policy on real sector performance in Nigeria from 1990 to 2024. The study specifically analysed the effect of capital expenditure, recurrent expenditure, external debt, and tax revenue on real sector performance in Nigeria proxied by agricultural value added. Data were sourced from the World Bank World Development Indicators and the CBN Statistical Bulletin. The study employed descriptive statistics, KPSS unit root test, ARDL bounds cointegration test, and the ARDL estimation. The KPSS results showed that the logarithm of capital expenditure and external debt were stationary at level, while other variables were stationary at first difference. The ARDL bounds test confirmed the existence of long-run relationships among the variables. The findings revealed that capital expenditure had a positive and statistically significant effect on agricultural value added in both the short and long run. External debt also exerted a positive and statistically significant effect on agricultural value added in the short and long run. Recurrent expenditure had a statistically significant negative effect at the first lag in the short run, while tax revenue exerted a statistically significant negative effect in the immediate short-run period. The study concluded that productive capital expenditure and appropriately managed external borrowing had the potential to enhance agricultural value added in Nigeria, while inefficient recurrent expenditure and tax-related constraints could adversely affect agricultural performance. The study recommended greater prioritization of productive agricultural capital expenditure, improved allocation of external borrowing to agricultural investments, more efficient management of recurrent expenditure, and measures to reduce distortionary tax burdens on the agricultural sector.

Keywords: *ARDL, KPSS, fiscal policy and agricultural value added*

1. Introduction

Fiscal policy constitutes an important macroeconomic instrument through which governments influence economic growth, structural transformation, and sectoral productivity. In developing economies, government expenditure, taxation, and public borrowing can affect productive activities through infrastructure provision, investment promotion, and the allocation of resources to strategic sectors (Osinowo, 2015). Agriculture is particularly important in this context because of its contributions to employment, food production, rural livelihoods, economic diversification, and value addition (Chete et al., 2016). Consequently, understanding how fiscal policy affects agricultural performance remains important for development policy, particularly in economies seeking to diversify away from commodity dependence.

Nigeria provides an important setting for examining this relationship. The economy has historically depended heavily on oil revenues, while agriculture, which dominated economic

activity before the oil boom of the 1970s, has remained central to employment and economic diversification. Oil dependence has also exposed public finances to fluctuations in international oil prices, creating fiscal pressures and increasing the importance of effective expenditure allocation, domestic revenue mobilization, and sustainable public borrowing. In this context, the effectiveness of fiscal policy in supporting productive sectors such as agriculture has remained an important policy concern.

Nigeria's fiscal landscape has experienced substantial changes over the past three decades. Federal government expenditure increased considerably, while the composition and efficiency of public spending remained important concerns. According to the Central Bank of Nigeria (CBN, 2023), total federal government expenditure increased from approximately ₦60.3 billion in 1990 to ₦19,808.4 billion in 2023. At the same time, increasing fiscal deficits contributed to greater reliance on public borrowing. External borrowing could provide resources for financing infrastructure and other productive investments, but excessive borrowing could also increase debt-servicing obligations and constrain fiscal space. The challenge, therefore, was not simply the size of government expenditure or borrowing, but the extent to which fiscal resources were translated into productive sector outcomes.

Tax revenue represented another important component of fiscal policy because it provided resources for financing government expenditure and reducing dependence on borrowing. Nigeria introduced Value Added Tax (VAT) in 1994 and subsequently implemented several tax reforms aimed at broadening the tax base and improving revenue mobilization (Abari-Ogunsona et al., 2024). Nevertheless, relatively weak domestic revenue mobilization continued to constrain fiscal capacity. These developments raised questions about whether the combination of government expenditure, taxation, and borrowing had effectively supported agricultural production and value addition.

Despite the importance of agriculture to Nigeria's economic diversification, empirical evidence on the effects of fiscal policy on agricultural value added remained limited and mixed. Existing studies had examined individual fiscal policy instruments or broader agricultural-sector outcomes, but less attention had been given to the joint effects of capital expenditure, recurrent expenditure, tax revenue, and external debt on agricultural value added within a unified time-series framework. Moreover, differences in study periods, model specifications, and estimation techniques had produced varying conclusions regarding the effectiveness of fiscal policy in supporting agricultural-sector performance.

Against this background, this study examined the effects of fiscal policy on agricultural value added as a percentage of GDP in Nigeria over the period 1990–2024. Specifically, it examined the effects of capital expenditure, recurrent expenditure, tax revenue, and external debt on agricultural value added in both the short and long run using the Autoregressive Distributed Lag (ARDL) approach. By focusing on the dynamic relationship between fiscal policy and agricultural value added, the study sought to contribute empirical evidence to the debate on the effectiveness of fiscal policy in promoting agricultural development and economic diversification in Nigeria.

2. Literature Review

Keynesian Fiscal Theory

The Keynesian Fiscal Theory originated from Keynes's *The General Theory of Employment, Interest and Money* (1936), which challenged the classical proposition that market forces would automatically restore an economy to full-employment equilibrium. Keynes argued that an economy could persistently operate below its potential output because of insufficient aggregate demand, particularly when wages and prices were rigid in the short run. Consequently, government intervention through fiscal policy was considered an important mechanism for

stabilizing economic fluctuations, supporting employment, and stimulating economic activity (Keynes, 1936).

The Keynesian framework posited that aggregate demand determined output and employment in the short run. Aggregate demand comprised consumption, investment, government expenditure, and net exports. When private consumption and investment were insufficient, government expenditure could compensate for the resulting demand deficiency and stimulate production and employment. Keynesian theory also recognized that investment could be affected by uncertainty and expectations, making private investment potentially inadequate to sustain full employment (Arestis, Şen, & Kaya, 2021). Government intervention could therefore help stabilize economic activity when private-sector demand was weak.

A central proposition of Keynesian fiscal theory was the expenditure multiplier. An increase in government expenditure directly increased aggregate demand and, through successive rounds of income and consumption, could generate a larger increase in national output. The magnitude of this effect depended on factors such as the marginal propensity to consume, taxation, imports, and the productive capacity of the economy (Gechert, 2023). The multiplier mechanism provided the theoretical basis for expansionary fiscal policy during periods of weak economic activity.

Within this framework, government expenditure could affect economic activity through both capital and recurrent components. Capital expenditure on infrastructure, transportation, electricity, irrigation, and other productive facilities could increase aggregate demand in the short run while simultaneously enhancing productive capacity over time. In an economy such as Nigeria, productive public investment could reduce infrastructure constraints, lower production costs, facilitate private investment, and support agricultural and industrial activities. Recurrent expenditure could also influence aggregate demand through public-sector wages, transfers, and other government consumption. However, its economic effect depended on the extent to which such expenditure translated into productive activity rather than merely increasing administrative costs.

Taxation represented another important fiscal instrument in the Keynesian framework. Changes in taxation affected the disposable income of households and firms and consequently influenced consumption and investment. A reduction in taxes could increase disposable income and aggregate demand, whereas higher taxes could reduce private spending. The effect of taxation on output therefore depended on the structure and incidence of the tax system and the extent to which tax revenue was used to finance productive public expenditure.

Keynesian fiscal theory also provided a basis for deficit financing and government borrowing. Where current government revenue was insufficient to finance expenditure, borrowing could provide resources for expenditure that supported aggregate demand and productive investment. External borrowing could therefore contribute to economic activity when it financed productive infrastructure and other investments that expanded productive capacity. However, the growth effects of borrowing were not automatic, as inefficient allocation, excessive debt accumulation, and high debt-servicing obligations could weaken the benefits of fiscal expansion.

The Keynesian Fiscal Theory therefore provided the theoretical foundation for examining the relationship between fiscal policy and agricultural value added in Nigeria. Specifically, the theory suggested that capital expenditure could enhance agricultural productive capacity, recurrent expenditure could influence aggregate demand and public-sector activity, taxation could affect private-sector incentives and disposable income, and external borrowing could provide additional resources for financing productive investment. These theoretical channels provided the basis for examining the effects of capital expenditure, recurrent expenditure, tax revenue, and external debt on agricultural value added as a percentage of GDP in Nigeria.

Wagner's Law of Public Expenditure

Wagner's Law of Public Expenditure, also known as the Law of Increasing State Activity, was proposed by the German economist Adolph Wagner in the late nineteenth century. The law posited that public expenditure tended to increase with economic development as rising income, structural transformation, and increasing economic complexity generated greater demand for public services and government activities (Wagner, 1883; Peacock & Wiseman, 1961). Thus, unlike the Keynesian perspective, which emphasized the role of government expenditure in influencing economic activity, Wagner's Law implied a causal direction from economic growth to the expansion of public expenditure.

The expansion of government activity under Wagner's proposition was associated with the increasing administrative, regulatory, social, and infrastructural responsibilities of the state. Economic development and structural transformation increased the demand for public services and large-scale infrastructure, including transportation, electricity, education, healthcare, and institutional development. Consequently, public expenditure was expected to expand as governments responded to the changing requirements of a developing economy (Peacock & Wiseman, 1961).

The relevance of Wagner's Law to the Nigerian context arose from the expansion of government expenditure alongside economic and structural changes. As government responsibilities increased, both capital and recurrent expenditures expanded to finance infrastructure, public administration, and service delivery. In the agricultural sector, such expenditure could be associated with infrastructure and institutional development that supported productive activities. However, Wagner's Law did not imply that public expenditure necessarily caused agricultural growth; rather, it suggested that expanding economic activity could generate increased government expenditure.

Therefore, Wagner's Law provided a complementary theoretical perspective to the Keynesian Fiscal Theory adopted in this study. While the Keynesian framework provided a basis for examining how fiscal policy could influence agricultural value added, Wagner's Law emphasized the possibility of feedback from economic development to public expenditure. Together, the two perspectives provided a broader theoretical foundation for examining the dynamic relationship between fiscal policy and agricultural value added in Nigeria.

Empirical Review

Nyeche et al. (2025) examined the effects of financial deepening on economic growth in Nigeria and South Africa using time-series data obtained from the Central Bank of Nigeria Statistical Bulletin and the World Development Database. The study employed the Vector Error Correction Model (VECM) to analyze the relationship between financial deepening indicators and economic growth. The results revealed that South Africa exhibited a higher speed of adjustment toward equilibrium than Nigeria. Financial deepening variables explained greater variations in South Africa's real GDP than in Nigeria's. Private-sector credit, the market capitalization ratio, and broad money supply contributed more significantly to South Africa's economic growth than to Nigeria's. The study concluded that financial deepening had a stronger impact on economic growth in South Africa.

Aninwagu et al. (2024) examined the effects of fiscal deficits in Nigeria using time-series data collected from the Central Bank of Nigeria's Statistical Bulletin and the World Development Indicators, covering a period of 38 years (1982–2020). The study employed the inflation rate (INF) as the dependent variable, while budget deficits financed through domestic borrowing (DOMB), external borrowing (EXTB), and foreign exchange reserves (FER) served as the predictor variables. The Augmented Dickey-Fuller (ADF) unit root test and bounds cointegration test were used to examine the properties of the variables, while the Autoregressive Distributed Lag (ARDL) model was applied for the data analysis. The findings

indicated that fiscal deficits had a positive but statistically insignificant impact on Nigeria's economic growth. External borrowing also had a positive but statistically insignificant effect on economic growth. Foreign exchange reserves had a positive and statistically significant impact on economic growth, while domestic borrowing also had a positive and statistically significant impact on economic growth.

Okeme et al. (2025) examined the relationship between cashless policy instruments and economic growth in Nigeria using quarterly data spanning the first quarter of 2009 to the fourth quarter of 2019. The study employed point-of-sale (POS) transactions, online payments, mobile money transactions, and automated teller machine (ATM) transactions as indicators of cashless policy, while gross domestic product (GDP) served as a proxy for economic growth. Following the confirmation of a long-run relationship through the ARDL bounds test and mixed orders of integration among the variables, the Autoregressive Distributed Lag (ARDL) model was estimated. The findings indicated that mobile money transactions and online payments exerted positive and statistically significant long-run effects on economic growth, whereas POS and ATM transactions exerted significant short-run effects. The study concluded that strengthening digital payment infrastructure and improving the accessibility and efficiency of electronic payment systems would enhance economic growth in Nigeria.

Aninwagu and Onyema (2024) examined the relationship between financial inclusion and economic resilience in Nigeria over the period 1990–2023. The study employed the Ordinary Least Squares (OLS) estimation technique. The findings indicated that inflation exerted a negative and statistically significant effect on GDP growth, with an estimated coefficient of −0.119173. Similarly, internet usage exhibited a negative and statistically significant relationship with GDP growth, with an estimated coefficient of −0.098994. In contrast, SME financing exerted a positive but statistically insignificant effect on GDP growth, suggesting that there was insufficient statistical evidence of a significant contribution to economic growth during the study period.

Didi et al. (2016) determined the impact of capital expenditure in the agricultural sector on economic performance in North Kalimantan Province, Indonesia. The research used panel data that combined time-series data from 2004–2013 with cross-sectional data from five regencies/cities in North Kalimantan Province, Indonesia. The research employed an econometric model approach, namely a simultaneous equations model consisting of two identity equations and six structural equations. The analysis concluded that capital expenditure in the agricultural sector had a positive and statistically significant impact on the gross regional domestic product of the agricultural sector. Every one-percent increase in agricultural-sector capital expenditure increased the gross regional domestic product of the agricultural sector by 42.86%. Capital expenditure in the agricultural sector also had a positive simultaneous impact on gross regional domestic product, consumption, investment, and regional exports.

Slogan et al. (2024) established the relationship between external debt and agricultural GDP growth in Ghana. The Augmented Dickey-Fuller and Phillips-Perron tests and the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration were employed for the econometric analysis covering the period from 1980 to 2019. The study revealed a direct and statistically significant effect of external debt on agricultural GDP growth in Ghana. This finding implied that external funds had been optimally channelled and utilized to stimulate agricultural output. The results also indicated that external debt servicing had a positive effect on agricultural GDP growth, suggesting that Ghana had been capable of fulfilling its debt obligations.

Edeh et al. (2020) evaluated the impact of government expenditure on agriculture on agricultural-sector output in Nigeria over the period 1981–2018, using time-series data obtained from the Central Bank of Nigeria Statistical Bulletin and Annual Reports. Agricultural value added was specified as a function of labour force, capital expenditure, recurrent

expenditure, agricultural loans, average annual rainfall, interest rate, and economic reforms. The Augmented Dickey-Fuller unit root test, which was used to test the stationarity of the data, revealed that the time-series data were stationary at I(0) and I(1). The bounds test for cointegration indicated the existence of a long-run relationship in the model. The results of the ARDL model revealed that capital expenditure was positively related to agricultural output and was statistically significant at the 5% level in the current year (P(t) = 0.0080). The study indicated that the impact of capital expenditure on agricultural output began to weaken after one year (P(t) = 0.0815). However, recurrent expenditure had a negative and statistically insignificant impact on agricultural output (P(t) = 0.6657).

3. Methodology

This study adopted a quantitative ex-post facto research design in order to empirically examine the effect of fiscal policy on real sector performance in Nigeria over the period 1990–2024. The data were obtained from reputable macroeconomic databases, including the Central Bank of Nigeria (CBN) Statistical Bulletin, the Debt Management Office (DMO), and the World Bank World Development Indicators (WDI).

The theoretical foundation for this study is the Keynesian fiscal theory, developed by John Maynard Keynes in 1936. The empirical model specification involved the development of an econometric model that captured the relationship between fiscal policy instruments and real sector performance in Nigeria. The study specifies the following models:

The functional model:

$AMVA_t = f(LOGCEXP_t, LOGREXP_t, LOGEDEBT_t\ LOTAXR_t)$ 3.1

The econometric forms expressed as:

$AMVA_t = \beta_0 + \beta_1 LOGCEXP_{2t} + \beta_2 LOGREXP_t + \beta_3 LOGEDEBT_t + \beta_4 LOGTAXR_t + \mu_t$ 3.2

Specifically, the ARDL model for this study based on the variables in equations (3.3) is provided below:

$$\Delta AMVA = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta AMVA_{t-1} + \sum_{i=1}^{q} \alpha_2 \Delta LOGCEXP_{t-1} + \sum_{i=1}^{q} \alpha_3 \Delta LOGREXP_{t-1} + \sum_{i=1}^{q} \alpha_4 \Delta LOGEDEBT_{t-1} + \sum_{i=1}^{q} \alpha_5 \Delta LOGTAXR_{t-1} + \lambda_1 AMVA_{t-1} + \lambda_2 LOGCEXP_{t-1} + \lambda_3 LOREXP_{t-1} + \lambda_4 LOGEDEBT_{t-1} + \lambda_5 LOGTAXR_{t-1} + \varepsilon_{1t}$$

Where:

$AMVA_t$ = Agricultural value added as a percentage of GDP, $LOGCEXP_t$ = logarithm capital expenditure, $LOGREXP_t$ = logarithm of recurrent expenditure, $LOGEDEBT_t$ = logarithm of external debt, $LOGTAXR_t$ = logarithm of tax revenue, β_0, α_0 = intercept terms, α_1 - α_5 = short run parameters, λ_1 - λ_5 = long-run multipliers, p = optimal lag for each of the dependent variables, q = optimal lag of the independent variables, Δ = first difference operator, t = time, period (1990–2024), μ_t, ε_t= stochastic error terms

4. Data Analysis

Table 1: Summary of descriptive Statistics for the variables

	AMVA	LOGCEXP	LOGEDEBT	LOGREXP	LOGTAXR
Mean	24.96743	6.152330	7.615441	6.967031	5.832044
Median	25.17000	6.398383	7.397255	7.304116	6.618886
Maximum	36.97000	8.408764	11.16068	9.564342	7.908994
Minimum	19.99000	3.180135	5.699138	3.589611	2.955951

Std. Dev.	3.814728	1.319653	1.421142	1.746776	1.785865
Skewness	1.023880	-0.658943	0.688229	-0.474994	-0.551223
Kurtosis	4.437595	2.854256	2.621165	2.041714	1.638943
Jarque-Bera	9.129174	2.490593	2.972303	2.579452	4.346141
Probability	0.010414	0.287856	0.226242	0.275346	0.113828
Sum	873.8600	209.1792	266.5405	236.8791	198.2895
Sum Sq. Dev.	494.7731	57.46894	68.66795	100.6904	105.2474
Observations	35	34	35	34	34

Source: Researcher's computations using Eviews 12.

The descriptive statistics presented in Table 1 showed that agriculture value added as a percentage of GDP (AMVA) and the logarithm of capital expenditure (LOGCEXP) recorded mean values of 24.96 and 6.15, respectively, over the study period. AMVA ranged from a minimum of −19.99 to a maximum of 36.97, indicating substantial variation in the contribution of agriculture to GDP during the study period. Similarly, LOGCEXP ranged from 3.18 to 8.40, reflecting variations in capital expenditure over the period under consideration.

The logarithm of external debt (LOGEDEBT) and the logarithm of recurrent expenditure (LOGREXP) recorded mean values of 7.61 and 6.96, respectively. LOGEDEBT ranged from 5.69 to 11.16, while LOGREXP ranged from 3.58 to 9.56. The logarithm of tax revenue (LOGTAXR) recorded a mean value of 5.83, while its reported minimum and maximum values were 6.55 and 20.93, respectively. However, because the reported minimum exceeded the mean, the descriptive statistics for LOGTAXR appeared to contain a transcription or reporting error and therefore required verification against the original data or Table 1.

The standard deviations indicated the degree of dispersion of the observations around their respective means. Since the standard deviations were lower than the corresponding means, the variables generally exhibited moderate dispersion relative to their mean values. Nevertheless, the standard deviation alone did not provide sufficient evidence to conclude that the observations were closely clustered, and the ranges of the variables also needed to be considered when assessing their variability.

The Jarque–Bera statistics were used to examine the normality of the variables. The probability values indicated that the null hypothesis of normality was not rejected for the variables whose p-values exceeded 0.05, whereas the null hypothesis was rejected for AMVA if its p-value was below 0.05. Thus, the results suggested that the distribution of AMVA differed significantly from normality at the 5% level, while the other variables were consistent with a normal distribution where their respective p-values exceeded 0.05. However, the Jarque–Bera test did not establish the stationarity of the variables. The stationarity properties of the series were instead determined through the unit-root tests presented in the subsequent analysis.

Table 2 KPSS Unit Root Test

Variables	KPSS at Level	Critical value 5%	KPSS at 1st Diff.	Critical value 5%	Order of Integration
AMVA	0.103286	0.463000	NA	NA	1(0)
LOGCEXP	0.745843	0.463000	0.142671	0.463000	1(1)
LOGEDEBT	0.526676	0.463000	0.187783	0.463000	1(1)
LOGREXP	0.193525	0.463000	NA	NA	1(0)
LOGTAXR	0.166009	0.463000	NA	NA	1(0)

Source: Researcher's computation using Eviews 12.

The results of the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root test presented in Table 2 indicated that the logarithm of capital expenditure (LOGCEXP) and the logarithm of external debt (LOGEDEBT) were non-stationary at levels. The KPSS statistics for LOGCEXP and LOGEDEBT were 0.745843 and 0.526676, respectively, both of which exceeded the 5% critical value of 0.463000. Consequently, the null hypothesis of stationarity was rejected for both variables, indicating that LOGCEXP and LOGEDEBT were integrated of order one, I(1), provided that their first differences were stationary.

The first-difference results confirmed this condition. The KPSS statistics for the first differences of LOGCEXP and LOGEDEBT were 0.142671 and 0.187783, respectively, both of which were below the 5% critical value of 0.463000. Therefore, the null hypothesis of stationarity was not rejected at first difference, indicating that both variables became stationary after first differencing. Hence, LOGCEXP and LOGEDEBT were classified as I(1) variables.

In contrast, agriculture value added as a percentage of GDP (AMVA), the logarithm of recurrent expenditure (LOGREXP), and the logarithm of tax revenue (LOGTAXREV) were stationary at levels, as their respective KPSS statistics were below the relevant critical value. These variables were therefore classified as I(0), indicating that they were stationary without requiring differencing.

Overall, the KPSS results established that the variables in the study comprised a mixture of I(0) and I(1) processes. Specifically, AMVA, LOGREXP, and LOGTAXREV were integrated of order zero, I(0), while LOGCEXP and LOGEDEBT were integrated of order one, I(1). This combination of integration orders provided an important basis for selecting an appropriate econometric technique for the subsequent analysis. In particular, the absence of variables integrated of order two, I(2), supported the suitability of methodologies such as the Autoregressive Distributed Lag (ARDL) approach, provided that the remaining model assumptions were satisfied.

Table 3: Bounds cointegration tests results for the model AMVA

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	14.53061	10%	3.03	4.06
K	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72

Source: *Author's computation using Eviews 12.*

Note: K denotes number of explanatory variables

The ARDL bounds test results presented in Table 3 indicated the existence of a long-run relationship among agriculture value added as a percentage of GDP (AMVA) and the banking sector development variables. The computed F-statistic of 14.53061 exceeded the upper-bound critical value at the 5% level of significance. Consequently, the null hypothesis of no long-run relationship among the variables was rejected. This result provided evidence of cointegration among the variables, indicating that agriculture value added and the banking sector development variables maintained a stable long-run relationship despite possible short-run fluctuations.

Model Estimation and Discussion

Table 4: ARDL Short and Long Run Results

Dependent Variable: AMVA

Short run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-40.25212	4.297872	-9.365593	0.0000
@TREND	-1.611066	0.164147	-9.814788	0.0000
D(AMVA(-1))	0.709739	0.091053	7.794762	0.0000
D(LOGCEXP)	5.572182	0.949436	5.868941	0.0001
D(LOGEDEBT)	1.746896	0.661486	2.640868	0.0204
D(LOGEDEBT(-1))	-0.035612	0.653903	-0.054461	0.9574
D(LOGEDEBT(-2))	-3.073704	0.724238	-4.244051	0.0010
D(LOGEDEBT(-3))	2.255287	0.555176	4.062294	0.0013
D(LOGREXP)	-4.493021	1.951111	-2.302801	0.0385
D(LOGREXP(-1))	-2.467678	1.626484	-1.517186	0.1532
D(LOGREXP(-2))	1.809588	1.251622	1.445795	0.1719
D(LOGTAXR)	-8.021093	1.380970	-5.808302	0.0001
CointEq(-1)*	-0.759875	0.077958	-9.747197	0.0000

Long run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGCEXP	9.368239	2.333239	4.015122	0.0015
LOGEDEBT	3.740807	0.875066	4.274883	0.0009
LOGREXP	4.831770	8.157118	0.592338	0.5638
LOGTAXR	-0.613550	4.056606	-0.151247	0.8821

R-squared 0.919357; Adjusted R-squared 0.862432

Source: Researcher's computation using Eviews 12.

Table 4 presents the ARDL short- and long-run findings, illustrating the empirical relationship between agricultural value added as a percentage of GDP and fiscal policy variables in Nigeria. In the short term, the results indicate that the logarithm of capital expenditure has statistically significant positive effects on agricultural value added as a percentage of GDP. Specifically, a 1% increase in the logarithm of capital expenditure results in an increase of 5.57 units in agricultural value added as a percentage of GDP in Nigeria in the short run. The long-run results similarly demonstrate a statistically significant effect, showing that a 1% rise in capital expenditure increases agricultural value added as a percentage of GDP in Nigeria by 9.36 units. This finding aligns with empirical research by Didi et al. (2016), which identified significant impacts on agricultural manufacturing value added.

The short-run results also reveal that the logarithm of external debt at both the immediate period and lag 3 has a statistically significant positive relationship with agricultural value added as a percentage of GDP in Nigeria. This implies that a 1% increase in the logarithm of external debt increases agricultural value added as a percentage of GDP by 1.74 and 2.25 units, respectively, in the short term. At lags 1 and 2, however, the logarithm of external debt shows a negative effect, with significance only at lag 2. In contrast, the long-run results indicate a statistically significant positive effect on agricultural value added as a percentage of GDP in Nigeria, suggesting that a 1% increase in the logarithm of external debt raises agricultural value added

by 3.74 units. These findings are consistent with those of Sogah et al. (2024) and Hu et al. (2025), who reported significant impacts on agricultural manufacturing value added.

The ARDL short-run results indicate that the logarithm of recurrent expenditure has a negative but statistically significant effect on agricultural value added as a percentage of GDP only at lag 1. At lag 2, the logarithm of recurrent expenditure shows a positive effect on agricultural value added as a percentage of GDP in Nigeria, although this effect is not statistically significant. The long-run results similarly suggest a positive relationship, but this effect is also not statistically significant, indicating that a 1% increase in the logarithm of recurrent expenditure raises agricultural value added in Nigeria by 4.83 units. These results contrast with findings from Edeh et al. (2020), which indicated that recurrent expenditure do not positively correlate with agricultural manufacturing value added.

Furthermore, the short-run ARDL analysis shows that the logarithm of tax revenue in the immediate period has a statistically significant negative effect on agricultural value added as a percentage of GDP. The long-run results also indicate a negative correlation between agricultural value added as a percentage of GDP and tax revenue, although this correlation is not statistically significant. Specifically, a 1% increase in tax revenue results in a decrease of 0.61 units in agricultural value added as a percentage of GDP in Nigeria in the long run.

The error correction term CointEq(-1), which quantifies the rate of return to equilibrium, is highly significant (-0.759875, p-value = 0.0000). This finding suggests that approximately 76% of deviations from the long-term equilibrium are corrected each year, indicating a rapid adjustment process to short-term disturbances. The R-squared value of 0.919357 reflects a strong fit of the model to the data, validating the explanatory capacity of the analyzed variables regarding their effects on agricultural value added as a percentage of GDP in Nigeria. The adjusted R-squared value of 0.862432, which takes degrees of freedom into account, indicates a good model fit after considering the number of predictors.

Table 5 Post-Estimation Tests Results

Test	Null Hypothesis	F-Statistic	Probability	Decision
J-B Normality Test	**H_0:** Normally distributed	0.653783	0.721162	Retain H_0
B-G Serial Correlation LM Test	**H_0:** No serial correlation	0.951449	0.4158	Retain H_0
B-P-G Heteroskedasticity Test	**H_0:** Homoscedasticity	0.913951	0.5738	Retain H_0

Source: *Researcher's Computation using Eviews 12.*

The post-estimation diagnostic results presented in Table 4.5 indicated that the estimated ARDL model satisfied the principal residual diagnostic conditions at the 5% level of significance. The Breusch–Godfrey Serial Correlation LM test produced a test statistic of 0.951449 with a probability value of 0.4158. Since the probability value exceeded the 5% significance level, the null hypothesis of no serial correlation was not rejected. This result indicated that there was no statistically significant evidence of serial correlation in the residuals.

Similarly, the Breusch–Pagan–Godfrey test produced a probability value of 0.5738, which was greater than the 5% significance level. Consequently, the null hypothesis of homoscedasticity was not rejected. This result suggested that there was no statistically significant evidence of heteroskedasticity in the residuals, implying that the variance of the error term remained statistically constant over the observations.

Furthermore, the Jarque–Bera normality test produced a statistic of 0.653783 with a probability value of 0.721162. Since the probability value exceeded 0.05, the null hypothesis that the

residuals were normally distributed was not rejected. Thus, the residuals were consistent with a normal distribution at the 5% level of significance.

Overall, the post-estimation diagnostic results provided no statistical evidence of residual serial correlation, heteroskedasticity, or departure from normality at the 5% level. These findings suggested that the estimated ARDL model had satisfactory residual properties and that there were no apparent violations of these key diagnostic assumptions. Consequently, the model provided a reasonable basis for subsequent inference, subject to the results of other relevant specification and stability tests.

5. Conclusion and Recommendations

Conclusion

The study concluded that fiscal policy had important implications for agricultural value added in Nigeria. Capital expenditure had a positive and statistically significant effect on agricultural value added in both the short and long run, while external debt also exerted a positive and statistically significant effect. In contrast, recurrent expenditure had a statistically significant negative short-run effect, while tax revenue exerted a statistically significant negative short-run effect. Overall, the findings suggested that improving the allocation and productivity of public expenditure, particularly capital expenditure, while ensuring that external borrowing supported productive agricultural investment, could contribute to strengthening Nigeria's agricultural sector.

Recommendations

Based on the findings and conclusion drawn from this study, the following recommendations are made:

1. The government should expand capital expenditure directed toward agricultural infrastructure, irrigation, rural roads, storage facilities, and mechanization, given the statistically significant positive short- and long-run effects of capital expenditure on agricultural value added.
2. External borrowing should be strategically directed toward productivity-enhancing agricultural projects with measurable economic returns and strong implementation and monitoring mechanisms.
3. The government should improve the efficiency of recurrent spending and redirect expenditures that support agricultural production, extension services, research, and farmer-support institutions rather than allowing recurrent spending to crowd out productive agricultural investment.
4. Fiscal authorities should minimize tax-related burdens that directly or indirectly constrain agricultural producers and businesses, particularly through measures that reduce excessive or distortionary taxation within agricultural value chains.

References

Abari-Ogunsona, T. A., Abari, A. O., Adeyanju, Y. T., Akintayo, O. E. (2024). *Examining the nexus between value added tax, government expenditure and economic growth in Nigeria: An empirical analysis*. https://www.researchgate.net/publication/399794840

Aninwagu, V. O., & Onyema, J. I. (2025). Financial inclusion and Nigeria's economic resilience. *SSRN Electronic Journal 1*(1), 139-150. https://doi.org/10.2139/ssrn.5358921

Aninwagu, V. O., Amadi, C. R., Onyema, J. I., & Momodu, A. A. (2024). Fiscal deficit and economic growth in Nigeria. *SSR Social Science Review, 3*(2), 215-222.

Arestis, P., Şen, H., & Kaya, A. (2021). On the linkage between government expenditure and output: Empirics of the Keynesian view versus Wagner's law. *Economic Change and Restructuring*, *54,* 265-303. https://doi.org/10.1007/s10644-020-09284-7

Central Bank of Nigeria (CBN). (2004). *Statistical Bulletin*. Abuja: CBN.

Central Bank of Nigeria (CBN). (2023). *Statistical Bulletin.* Abuja: CBN. https://www.cbn.gov.ng

Central Bank of Nigeria (CBN). (2024). *Statistical Bulletin.* Abuja: CBN. https://www.cbn.gov.ng

Chete, L. N., Adeoti, J. O., & Adeyinka, F. M. (2016). *Industrial development and growth in Nigeria: Lessons and challenges*. Oxford University Press.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366), 427 431. https://doi.org/10.1080/01621459.1979.10482531

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, *49*(4), 1057–1072. https://doi.org/10.2307/1912517

Didi, S., Budi, H., Nuhfil, S., & Syafrial, S. (2016). *The impact of capital expenditure of agricultural sector on economic performance: case in North Kalimantan Province, Indonesia.* https://doi.org/10.18551/rjoas.2016-12.03

DMO (2024). *Nigeria's External debt stock as at December 31, 2024 in Million USD.* https://www.dmo.gov.ng/debt-profile/external-debts/external-debt-stock/5210-external-debt-stock-as-at-december-31-2024/file

Edeh, E. C., Ogbodo, J. C., & Onyekwelu, U. C. (2020). *Impact of government expenditure on agriculture on agricultural sector output in Nigeria (1981-2018). International Journal of Research and Innovation in Social Science (IJRISS), IV*(X), 15-26.

Gechert, S. (2023). Fiscal policy: Post- or New-Keynesian? *European Journal of Economics and Economic Policies*, *20*(2). https://doi.org/10.4337/ejeep.2023.0120

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics* (5th ed.). McGraw-Hill.

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. London: Macmillan.

Nyeche, E., Nwankwo, N. U., & Ewubare-Dennis, R. C. (2025). Financial deepening and economic growth: A comparative analysis of Nigeria and South Africa. https://doi.org/10.51594/gjabr.v3i1.65

Okeme, E., Gbarayorks, L. D., Aninwagu, V. O., & Udofia, J. J. (2025). Impact of cashless policy on economic growth in Nigeria. *International Journal of Economics and Financial Management (IJEFM), 10*(6), 32-45.

Osinowo, O. H. (2015). Effect of fiscal policy on sectoral output growth in Nigeria. *Advances in Economics and Business, 3*(6), 195–203. https://doi.org/10.13189/aeb.2015.030601

Peacock, A. T., & Wiseman, J. (1961). *The growth of public expenditure in the United Kingdom.* Princeton 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

Sogah, E., Tuffour, J. K., Mawutor, & Gborse, F. C. (2024). *The relationship between external debt and agriculture GDP growth in Ghana: an ARDL cointegrating bound testing approach. Cogent Economics & Finance, 12*(1). https://doi.org/10.1080/23322039.2024.2330426

World Bank (2022). *Nigeria's need to spend more and better – Revenue.* https://www.worldbank.org/en/news/infographic/2022/11/21/nigeria-s-need-to-spend-more-and-better revenue#:~:text=Nigeria%20needs%20to%20increase%20its,interlinked%20and%20mutually%20reinforcing%20pillars.

World Bank. (2023). *World Development Indicators: Manufacturing value added and GDP growth definitions*. https://data.worldbank.org

World Bank. (2024). *World Development Indicators*. https://data.worldbank.org