Government Expenditure and Agricultural Output in Nigeria

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Abstract

This study investigated the contribution of government expenditure on the output of the agricultural sector in Nigeria. Specifically, government capital expenditure on agriculture, government recurrent expenditure on agriculture, expenditure on agricultural subsidies and grants, and government expenditure on agricultural credit facilities were used to measure the impact of government expenditure on agricultural output. Data on the variables spanning the period 1981 to 2023 were sourced from the 2023 edition of the Central Bank of Nigeria statistical bulletin and the World Bank, World Development indicators. The Augmented Diskey unit root test which was used to test for the stationary of the variables confirm that the variables became stationary after first difference. The Johansen cointegration test result revealed at least three cointegrating equations, suggesting that the variables have a long run relationship. The result of the error correction model shows that all the independent variables- government capital expenditure on agriculture, government recurrent expenditure on agriculture, government expenditure on agricultural subsidies and grants, and government expenditure on agricultural credit facilities have significant positive impact on Nigeria's agricultural output. Among other suggestions, the study recommended that government should prioritize budget allocations to agricultural infrastructure, including irrigation, storage facilities, and rural road networks, and that financial incentives, such as subsidies for fertilizers, improved seeds, and mechanized tools, be expanded.

Keywords: *Government expenditure on agriculture, Agricultural output, Agricultural credit facilities*

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Background to the Study

Government expenditure on agriculture in Nigeria has varied significantly over the years, often influenced by economic conditions, political priorities, and international pressures. For instance, the Structural Adjustment Program (SAP) of the 1980s led to a reduction in public spending on agriculture, which negatively impacted the sector's growth. In contrast, recent initiatives under the recent administrations have sought to increase agricultural funding as part of broader economic diversification efforts. According to Ogbuabor *et al.* (2020), government expenditure on agriculture has a positive but limited impact on agricultural output in Nigeria. Similarly, Adebayo and Olagunju (2022) found that although government expenditure on agriculture has increased in recent years, the sector still faces significant challenges, including inadequate funding, corruption, and policy inconsistencies that hinder its potential for growth.

Agriculture is a cornerstone of Nigeria's economy, providing employment to a significant portion of the population and contributing to food security and export revenue. However, the sector has consistently underperformed in recent decades, failing to meet the country's growing demand for food and agricultural products. Despite numerous government interventions and increased expenditure, agricultural output in Nigeria has not experienced the anticipated growth. This disconnects between government spending and agricultural productivity raises critical questions about the effectiveness of public expenditure in fostering agricultural development (Agbana and Lubo, 2022).

One of the key issues is the inadequate and inconsistent allocation of government funds to the agricultural sector. Although government expenditure on agriculture has increased in recent years, it remains far below the 10% of the national budget recommended by the Maputo Declaration, which Nigeria is a signatory to. For instance, Ogbuabor *et al.* (2020) found that the share of agriculture in the national budget has often been insufficient to address the sector's numerous challenges, such as inadequate infrastructure, low access to modern farming technologies, and poor extension services. This underfunding has resulted in limited progress in achieving food security and reducing rural poverty, despite Nigeria's vast agricultural potential.

Moreover, the effectiveness of government expenditure is further undermined by issues of corruption, mismanagement, and inefficiencies in the implementation of agricultural policies. According to Adebayo and Olagunju (2022), a significant portion of funds allocated to the agricultural sector is either misappropriated or poorly managed, leading to suboptimal outcomes. This has created a situation where increased government spending does not necessarily translate into higher agricultural output. The persistence of these governance challenges raises concerns about the accountability and transparency of public expenditures in the agricultural sector. Another problem is the misallocation of government resources. Recent studies, such as that by Adedoyin *et al.* (2021), have shown that a large share of government expenditure is directed towards recurrent items, such as salaries and subsidies, rather than capital investments in infrastructure, research, and development. While subsidies and salaries are essential, their dominance in agricultural budgets has limited the impact of government

spending on improving agricultural productivity. Investments in rural roads, irrigation systems, and access to credit, which have the potential to significantly boost agricultural output, remain underfunded.

Furthermore, policy inconsistencies and frequent changes in government priorities have disrupted the agricultural sector's growth trajectory. For instance, while the introduction of the Agricultural Promotion Policy (APP) and other initiatives aimed at boosting agricultural productivity are commendable, their impact has been diluted by inconsistencies in implementation and sudden shifts in policy direction. These problems lie in the fact that despite increased government expenditure on agriculture, Nigeria's agricultural output has not grown proportionately. This raises questions about the adequacy, efficiency, and effectiveness of public spending in the sector. Addressing these challenges requires a comprehensive approach that includes increasing budgetary allocations, improving governance and transparency, and ensuring that funds are directed towards productive investments that can drive sustained agricultural growth. Without addressing these issues, the agricultural sector may continue to underperform, with significant implications for Nigeria's food security, economic growth, and poverty reduction efforts.

The main objective of this study therefore, is to examine the impact of government expenditure on agricultural output in Nigeria. The specific objectives of the study are: to evaluate the impact of government capital expenditure in agriculture on agricultural output in Nigeria; to ascertain the effect of government recurrent expenditure in agriculture, on agricultural outputs in Nigeria; to determine the influence of agricultural Subsidies and Grants on agricultural outputs in Nigeria, and to examine the impact of government expenditure on agricultural Credit Facilities on agricultural outputs in Nigeria.

Literature Review

This section of the study comprises of the conceptual clarifications, as well as the theoretical and empirical literature. Conceptual clarification provides definitions and explanations to relevant concepts in the study. The theoretical literature provides the theoretical foundation for the study, while the empirical review critically examines the findings and contributions of other scholars to the discourse under review.

Conceptual Clarification

Agricultural Output: Agricultural outputs encompass the total quantity of crops, livestock, and related products generated by farming activities over a specific period, typically measured as yield per unit of input, such as land, labor, or capital. These outputs are central to economic growth, food security, and rural livelihoods, especially in agrarian economies like Nigeria, where agriculture contributes substantially to the GDP and sustains a large portion of the population (Adewale & Mba, 2022). The term broadly includes food crops, cash crops, livestock, and forestry products, with the diversity of outputs reflecting the ecological and economic context of production. Agricultural outputs are often categorized into two primary groups: crop production and livestock production. Crop production involves food and cash crops, including staples like maize, rice, and cassava, which are essential for food security and

economic stability (Abubakar & Jibril, 2021). Cash crops such as cocoa, cotton, and rubber contribute to export revenues and play a vital role in Nigeria's foreign exchange earnings. Livestock production, on the other hand, includes cattle, poultry, and fish, providing protein sources and income for many rural households (Ekpo & Njoku, 2020).

Government Expenditure: This refers to any expenditure embarked upon by any tier of government, whether local, state or federal governments for the purpose of delivering public service to the general masses. Tawose (2012) opined that government expenditures can influence the dynamics of industrial growth through its consequences for the effectiveness of resource allocation and accumulation of productive resources. Both of these conditions assume the influence on the productivity of private sector. For instance, an increase in government expenditures on a public intermediate good (e.g. building road, bridge or financing of education) has significant influence on industrial productivity. Government expenditure is basically categorised into two, namely: capital expenditure and current expenditure.

Government Capital Expenditure on Agriculture: These are investments in agricultural/other infrastructure, such as rural roads, irrigation systems, and storage facilities. Capital investments are expected to have a positive impact on agricultural output by enhancing infrastructure that reduces production costs, minimizes post-harvest losses, and increases access to markets and resources. Improved infrastructure can boost productivity, resulting in higher agricultural output.

Government Recurrent Expenditure on Agriculture: These are regular operational costs, including salaries of agricultural extension workers, maintenance of infrastructure, and administrative expenses. Recurrent expenditure includes funds allocated to the day-to-day operations and maintenance of agricultural projects and programs. This may include salaries of agricultural extension workers, maintenance of existing infrastructure, and operational costs of agricultural services. Recurrent spending is anticipated to positively impact agricultural output by ensuring continuity and efficiency in the services provided to farmers. Properly funded extension services, for instance, can lead to better-informed farmers who adopt more productive practices, thereby increasing output.

Agricultural Subsidies and Grants: Agricultural subsidies are government spending on subsidies for inputs like fertilizers, seeds, and pesticides. Subsidies and grants refer to financial assistance from the government to reduce farmers' production costs, including subsidies for fertilizers, seeds, equipment, and other essential inputs. Agricultural subsidies are generally expected to increase agricultural output by lowering the costs of production for farmers. This encourages higher input usage and adoption of improved practices, leading to greater productivity and higher yields.

Government Expenditure on Agricultural Credit Facilities: These are government expenditures related to agricultural financing programs, such as loans and risk-sharing schemes. This expenditure includes government allocations to programs or facilities that

provide credit and financing options to farmers, either directly or through financial institutions. These credits often have favourable terms to make borrowing affordable for smallholder farmers. Government credit facilities have been facilitated through several programmes such as the Agricultural Credit Scheme, Anchor Borrowers Programme and others. Expenditure on credit facilities is expected to positively impact agricultural output by enabling farmers to invest in quality inputs, machinery, and improved farming techniques. Access to affordable credit helps farmers enhance productivity, directly contributing to increased agricultural output.

Theoretical Literature
Keynesian Theory of Government Expenditure
This theory asserts that government spending is a critical driver of economic activity, especially in periods of low private sector investment. In the agricultural sector, Keynesian theory suggests that government expenditure can stimulate production by injecting funds directly into the economy, increasing demand and leading to a multiplier effect (Adewale & Mba, 2022). This increased demand for agricultural products can encourage farmers to expand production, thereby enhancing overall output. Government expenditure in the form of subsidies, grants, and price supports is particularly effective in increasing agricultural outputs. For instance, subsidies on inputs such as fertilizers, seeds, and pesticides reduce production costs for farmers, allowing them to allocate resources more efficiently, thus increasing productivity (Adegbola & Bako, 2023). Similarly, government investment in infrastructure, such as rural roads, irrigation systems, and storage facilities, can further reduce costs, improve accessibility, and minimize post-harvest losses, collectively boosting agricultural productivity.

Endogenous Growth Theory
This theory emphasizes the role of knowledge, human capital, and innovation as the primary drivers of sustainable economic growth, which is particularly relevant in agriculture. This theory posits that investments in research and development (R&D), agricultural education, and training can significantly improve productivity and yield, with government expenditure playing a key role in facilitating these advancements (Romer, 1994). In agriculture, spending on R&D can lead to the development of new crop varieties, pest- resistant seeds, and efficient farming techniques, all of which contribute to long-term growth in agricultural outputs. In Nigeria, the limited investment in agricultural R&D has hindered productivity growth. Studies indicate that increasing government funding for agricultural research institutions and extension services could result in substantial improvements in crop yields and livestock productivity (Ekpo & Njoku, 2020). For example, government investment in research on climate-resilient crop varieties would help mitigate the adverse effects of climate change on agriculture, a significant challenge facing Nigerian farmers (Afolabi & Salami, 2023).

Public Goods Theory
Public Goods Theory provides another framework for understanding the relationship between government expenditure and agricultural outputs. Public goods are non-excludable and non-rivalrous, meaning they benefit all individuals within a society without reducing availability for others. In agriculture, infrastructure—such as rural roads, irrigation systems, and storage

facilities—serves as a public good that benefits the entire farming community and contributes significantly to productivity (Abubakar & Jibril, 2021). In Nigeria, where the private sector often lacks the incentives or resources to invest in largescale agricultural infrastructure, government intervention becomes essential. Public Goods Theory posits that government spending on infrastructure can yield positive externalities, such as reduced transaction costs, increased market accessibility, and minimized post-harvest losses, which ultimately boost agricultural outputs. Adedayo *et al.* (2022) demonstrate that rural infrastructure investments have improved access to markets in Nigeria, reducing the cost and time associated with transporting goods, and consequently, enhancing farmers' profit margins and productivity.

Empirical Literature

Using annual data from 1980 to 2023, Amabuike *et al.* (2024) examined the impact of fiscal policy tools on agricultural sector output growth in Nigeria. Empirical results derived from the Autoregressive Distributed Lag (ARDL) estimate showed that government expenditure on agricultural sector and domestic capital formation contributed positively and impacted significantly on Nigeria's agricultural output. The study found that in the short run, exchange rate's impact on agricultural sector output was negative and significant, while its long run impact was positive and significant. Also, value added tax and inflation rate were both found to have insignificant negative impacts on agricultural output. The study recommended based on its findings that, for agricultural output to increase, there is the need for an increase in governments budget allocation to the agricultural sector.

In another study, Nomor and Udele (2024) adopted a Structural Vector Autoregressive (SVAR) model to analyze how Nigeria's economic growth responds to government capital and recurrent expenditure through agricultural sector output. Data on the variables spanned the period 1981-2022. The outcome of the results indicated that government recurrent expenditure in the agricultural sector led to an increase in agricultural sector output. Likewise, there was a positive response on the part of economic growth to agricultural output. On the other hand, government capital expenditure in agriculture was seen to cause a decline in the output of the agricultural sector, however, its effect on economic growth in Nigeria was positive. Based on these findings, the study recommended among others that the Nigerian government should improve on monitoring the use of funds meant for capital agricultural projects to ensure overall efficiency.

Utitofon *et al.* (2022) considered the effect of government expenditure on agricultural output in Nigeria. The Ordinary Least Square (OLS) multiple regression method was used to analyze the data collected from the Central Bank of Nigeria Statistical bulletin for the period 1990 to 2020. From the regression result it was found that the independent variables government expenditure on administration, government expenditure on social and community services, and government expenditure on economic services all had insignificant positive impact on the output of the agricultural sector. The study thus reached the conclusion that government expenditure in agriculture has no bearing in the sector's output growth, and recommended that a strengthening of the banking sector by the Nigerian government would engender efficient credit flow to the agricultural sector.

Nuhu, Onuoha, and Dalyop (2022) assessed the impact of government expenditure on agricultural output in Nigeria within the period 1981 to 2019. The outcome of the Autoregressive Distributed Lag estimation suggested the existence of long run relationship among the dependent variable- agricultural output, and the independent variables - government agricultural capital spending, government agricultural recurrent spending, and agricultural loan guarantee scheme funds. Findings disclosed that the short-and-long term effects of government agricultural capital spending on agriculture output were adverse, but inconsequential, while that of government agricultural recurrent spending were favorable, but however inconsequential. The impact of agricultural loan guarantee scheme funds on agricultural output was observed to be positive but insignificant in the short run, while its long run effect was negative and statistically insignificant. The study advised among others that government should promote the consumption of locally grown farm products to limit the number of resources spent on imported agricultural items.

Considering the effect of corruption, Efanga, Ame and Takon (2024) investigated the contribution of government funding in the agricultural sector, on the sector's output. Findings from the ARDL regression result showed that agricultural output benefited tremendously from government's expenditure in agriculture. Corruption which was proxied by corruption perception index exerted moderating effects on the relationship between options for agricultural financing and the output of the agricultural sector in Nigeria. Given these findings, the study suggested that the Nigerian government should encourage potential agricultural producers through financial initiatives that would help in enhancing agricultural output in the country.

Similarly, Nduka and Nwankwo (2023), examined the effect of government expenditure on the performance of small and medium scale enterprises in Nigeria. The study employed descriptive statistics, Augmented Dickey Fuller and Philip Perron Tests for Unit Roots test, Granger Causality Test, and the Ordinary Least Square (OLS) as techniques of analysis. Findings from the regression estimates revealed that government's capital expenditure on agriculture, education, roads, as well as government's recurrent expenditure all had considerable positive influence on small and medium scale enterprises, which in turn contributed positively to Nigeria's economic growth. Additional findings showed that small and medium scale enterprises suffered insignificant negative impact from government borrowing. The study advised among others that government should rely on taxes, given that it has greater effects on investment than borrowing.

In the same vein, Alabi and Abu (2020) evaluated the impact of agricultural public expenditure on agricultural productivity in Nigeria. Data from the period 1981 to 2014 were analyzed using the Co-integration and Error Correction model and system of equations method. The findings of the study indicated that government's capital expenditure on agriculture had influenced agricultural productivity positively, while government's recurrent expenditure on agriculture had negligible impact. The study also showed that agricultural public spending on irrigation did not only have the highest Benefit Cost Ratio of 4.74 (compared with 0.74 for input subsidy), but also induced more agricultural private investment

than spending on research and development, rural development and subsidy programmes. Following these findings, the study suggested that budgetary allocations to the agricultural sector should be realigned in order to favor investments in irrigation, research and development, and rural development which currently attracted lower budgetary allocations in Nigerian agricultural budgets.

Using data from 1990 to 2023, Odetola and Adekunle (2025) investigated how government expenditure influenced economic development in Nigeria. Time series data on government spending on education, government spending on health, government spending on agriculture, and GDP per capita were analyzed using unit root test, and Autoregressive Distributed Lag (ARDL) testing technique. The study concluded that huge spendings in education, coupled with reforms in the health and agricultural policies, are indispensable for encouraging long-term economic development in Nigeria. On this premise, the study advocated that in order to maximize the potentials of government expenditure in economic development, priority should be placed on the education and health sectors, while policies to enhance the agricultural sector be developed.

Mile *et al.* (2021) empirically analyzed how agricultural output responded to government expenditure in the agricultural sector. Descriptive and analytical techniques such as descriptive statistics, Augmented Dickey-Fuller test, VEC Granger Causality/Block Exogeneity Wald test, Johansen co-integration test, vector error correction test, impulse response, and variance decomposition were employed to estimate data from 1981 to 2019. The study concluded that government agricultural spending only exerted positive long run influence on Nigeria's agricultural output. In another study, Ikwuba (2019) investigated the relationship between government spending and agricultural output in Nigeria. Data for the period 1999 to 2012 were estimated using descriptive test statistic and econometric techniques of Augmented Dickey- Fuller (ADF) unit root test, and Engle Granger single line co-integration test. The study found a long run relationship among the variables, and suggested among others, the efficient use of funds allocated to the agricultural sector.

Methodology
Research Design
The ex post facto research design was employed in the study for the purpose of acerating the magnitude of cause-and-effect nexus between the dependent variable and the independent variables.

Model Specification
The technical relationship between government expenditure and agricultural output is presented in both the functional and econometric forms as follows:
$$AGRO = f(GCE, GRE, ASG, ACF) \qquad (1)$$

The econometric form of equation 1 is given as
$$AGRO = \alpha + \alpha GCE + \alpha GRE + \alpha ASG + \alpha ACF + \mu \qquad (2)$$

In other to linearize the model, equation 2 is transformed into log form:

$$\log(AGRO) = \alpha + \alpha\log(GCE) + \alpha\log(GRE) + \alpha\log(ASG) + \alpha\log(ACF) + \log(\mu) \tag{3}$$

Where:

$AGRO$ = Agricultural output

GCE = Government Capital Expenditure on Agriculture

GRE = Government Recurrent Expenditure on Agriculture

ASG = Agricultural Subsidies and Grants

ACF = Expenditure on Agricultural Credit Facilities

A = Constant Term

$\alpha_1 - \alpha_4$ = Estimated Parameters of the explanatory variables

μ = Error Terms

Sources of Data

Secondary data on the various variables for the period 1981 to 2023 were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2023) edition, and the world Bank's World Development Indicators for Nigeria.

Presentation and Discussion of Results

Test for Unit Root

Given that the data are secondary in nature, the need to test for the stationarity of the variables becomes paramount. In this study, the Augmented Dickey-Fuller unit root test was employed to ascertain the stationarity properties of the variables. The result of the unit root test is presented in Table 1 below.

Table 1: Unit Root Test using Augmented Dickey-Fuller (ADF) Test

Variables	Augmented Dickey-Fuller Test		Lag	Order of int.	Remark
	@ level	@ 1st Diff			
Log(AGRO)	-1.545367	-6.025818	Maxlag=9	I (1)	Stationary
Log(GCE)	-1.586323	-6.858622	Maxlag=9	I (1)	Stationary
Log(GRE)	-2.458293	-6.760027	Maxlag=9	I (1)	Stationary
Log(ASG)	-2.380065	-3.995693	Maxlag=9	I (1)	Stationary
Log(ACF)	-1.449388	-4.291314	Maxlag=9	I (1)	Stationary
	-4.192337	-4.198503			
Test of CV	-3.520787	-3.523623			
	-3.191277	-3.192902			

Source: Author's own computation using E view 10

The outcome in Table 1 suggests that all the variables (agricultural outputs, government capital expenditure on agriculture, government recurrent expenditure on agriculture, agricultural subsidies and grants and expenditure on agricultural credit facilities) were not stationary at level that is I(0), but were stationary after taking their first differential, that is integrated of order one I(1). Hence the use of the error correction mechanism (ECM) approach is justified.

Johansen Cointegration for Long Run Test

The condition for using Johansen cointegration is satisfied given that all the variables became stationary after taking the first difference. Hence, the cointegrating equations will be employed to determine whether the variables have a long run relationship. The result of the cointegration test is presented in Table 2 below.

Table 2: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.608458	92.89500	69.81889	0.0003
At most 1 *	0.428521	54.45083	47.85613	0.0106
At most 2 *	0.385523	31.51018	29.79707	0.0314
At most 3	0.231854	11.54385	15.49471	0.1802
At most 4	0.017624	0.729042	3.841466	0.3932

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's own computation using E view 10

The Johansen cointegration test examines whether there is a long-run equilibrium relationship among the variables in the model. The test result in Table 2 show that the trace statistic exceeds the critical value at the 0.05 level for three hypothesized cointegration equations, indicating that there are three cointegrating equations among the variables. Overall, the Johansen cointegration test indicates three cointegrating relationships at the 5% significance level, suggesting that the variables maintain a stable long-term equilibrium.

Error Correction Model

The result of the ECM is presented in Table 3 below.

Table 3: Error Correction Mechanism for the variables

Dependent Variable: DLOG(AGRO)
Method: Least Squares
Sample (adjusted): 1985 2023
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.067330	0.016941	3.974277	0.0005
DLOG(AGRO(-2))	-0.201661	0.177384	-1.136866	0.2664
DLOG(GCE)	0.227854	0.085005	2.680478	0.0137
DLOG(GCE(-2))	0.185578	0.063232	2.934875	0.0063
DLOG(GCE(-3))	0.112280	0.033310	2.368657	0.0155
DLOG(GRE)	0.265353	0.093783	3.492672	0.0080
DLOG(GRE(-3))	-0.053700	0.040230	-1.334826	0.1940
DLOG(ASG)	0.147442	0.059913	2.791853	0.0359
DLOG(ASG(-1))	0.040019	0.068415	0.584943	0.5638
DLOG(ACF)	0.234496	0.046165	4.747225	0.0009
DLOG(ACF(-1))	0.024957	0.045276	0.551210	0.5864
DLOG(ACF(-3))	0.024095	0.044666	0.539459	0.5943
ECM(-1)	-0.147396	0.040429	-3.049611	0.0039
R-squared	0.614375	Mean dependent var		0.054513
Adjusted R-squared	0.561851	S.D. dependent var		0.070816
S.E. of regression	0.060842	Akaike info criterion		-2.487798
Sum squared resid	0.092545	Schwarz criterion		-1.890622
Log likelihood	62.51206	Hannan-Quinn criter.		-2.273537
F-statistic	12.36930	Durbin-Watson stat		1.967429
Prob(F-statistic)	0.000388			

Source: Author's own computation using E view 10

The result of the ECM in table 3 revealed that the coefficient of DLOG(GCE) is 0.227854 with a t-statistic of 2.680478 and a p-value of 0.0137, which is significant at the 5% level. This positive and significant result suggests that increased government capital expenditure contributes positively to agricultural output.

Government recurrent expenditure on agriculture, represented by DLOG(GRE), exhibits a significant positive impact on agricultural output with a coefficient of 0.265353, a t-statistic of 3.492672, and a p-value of 0.0080. This suggests that ongoing government spending on agriculture, such as maintenance, staff, and recurrent agricultural expenses, has an immediate and positive impact on agricultural output.

Agricultural subsidies and grants (ASG) also show a positive impact on agricultural output. DLOG(ASG) has a coefficient of 0.147442, a t-statistic of 2.791853, and a p-value of 0.0359, which is significant at the 5% level. This result suggests that subsidies and grants boost agricultural output by providing direct financial support to the sector. DLOG(ACF) represents expenditure on agricultural credit facilities, and it shows a significant positive effect on agricultural output, with a coefficient of 0.234496, a t-statistic of 4.747225, and a highly

significant p-value of 0.0009. This finding implies that credit facilities provide essential funding that drives agricultural productivity.

The error correction term (ecm(-1)) has a negative coefficient of -0.147396, a t-statistic of -3.049611, and a significant p-value of 0.0039. The negative sign indicates that any short-term deviations from the long-run equilibrium are corrected over time, with an adjustment speed of approximately 14.74%. This means that the system converges back to equilibrium following short-term disturbances, underscoring the stability of the long-run relationship among the variables.

In terms of model fit, the R-squared value is 0.614375, which means that approximately 61.44% of the variation in agricultural output is explained by the model, indicating a reasonably good fit. The adjusted R-squared of 0.561851 adjusts for the number of predictors and provides a similar indication of fit, though slightly lower, reflecting the model's predictive capability while accounting for degrees of freedom. The F-statistic of 12.36930, with a corresponding probability of 0.000388, indicates that the overall model is statistically significant, meaning that the independent variables collectively explain variations in agricultural output effectively. Lastly, the Durbin-Watson statistic of 1.967429 is close to the ideal value of 2, suggesting minimal autocorrelation in the residuals. This result implies that serial correlation is not a concern in the model, thereby supporting the reliability of the regression results.

Discussion of Findings

The results of this empirical analysis on government expenditure and agricultural output in Nigeria suggest several important policy implications. First, the positive and significant effects of government capital expenditure (GCE) and recurrent expenditure (GRE) on agricultural output indicate that both types of spending are crucial for sustaining and boosting agricultural productivity. Capital expenditure, which includes spending on infrastructure like irrigation systems, roads, and storage facilities, has shown a lasting impact on agricultural growth over several time periods. This suggests that consistent and well-allocated capital investment in agriculture could strengthen the sector's productivity in the long run. Hence, policymakers should prioritize steady funding for agricultural infrastructure development to ensure long-term output growth.

Recurrent expenditure, which encompasses day-to-day operational costs such as staffing, maintenance, and agricultural extension services, also positively influences agricultural output. This implies that regular support for agricultural programs, as well as efficient management of ongoing operational expenses, is essential to maintain productivity. Policymakers should therefore consider the strategic allocation of recurrent spending to ensure that crucial services and maintenance are continuously funded to sustain output levels.

The significant positive impact of subsidies and grants highlight their roles in reducing farmers' production costs and encouraging investment in agriculture. Policies that provide targeted subsidies, especially to smallholder farmers, can be instrumental in boosting

agricultural output. Similarly, the role of credit facilities underscores the need for accessible and affordable financing options to support farmers, allowing them to invest in inputs, equipment, and improved farming methods. This points to a potential area for policymakers to enhance credit access and perhaps work with financial institutions to lower barriers to financing in the agricultural sector.

Conclusion and Recommendations

From the regression result, it is evident that government capital expenditure on agriculture, government recurrent expenditure on agriculture, agricultural subsidies and grants, and government expenditure on credit facilities all have significant positive impacts on agricultural output. It is on this premise that this study concludes that governments' expenditure on agriculture plays a veritable role in influencing Nigeria's agricultural output in a positive manner. Based on this conclusion, it is hope that the following suggestions will go a long way in ensuring the effective use of government expenditure to influence agricultural outputs in Nigeria.

i.   Government should prioritize budget allocations to agricultural infrastructure, including irrigation, storage facilities, and rural road networks. This would enhance agricultural productivity by improving access to essential resources and market reach.

ii. Financial incentives, such as subsidies for fertilizers, improved seeds, and mechanized tools, should be expanded. Targeted subsidies can help small and medium-scale farmers increase output, leading to higher aggregate agricultural productivity.

iii. To ensure that funds reach intended projects, the government should establish transparent monitoring systems. This would reduce corruption and inefficiencies, guaranteeing that
funds are used effectively to boost agricultural growth.

iv. Collaboration between the government and private sectors should be encouraged in areas like agribusiness financing, technological innovation, and farm management training. Public-private partnerships can foster modernization in agriculture, increase investment, and improve productivity in the sector

References

Abubakar, M., & Jibril, I. (2021). Infrastructure deficit and its implications on agricultural productivity in rural Nigeria. *Journal of Rural Development and Planning*, 7(2), 102-115.

Adebayo, O. O., & Olagunju, O. (2022). Government spending and agricultural productivity in Nigeria: An empirical analysis. *International Journal of Agricultural Economics*, 7(4), 118-126.

Adedayo, S., Adegboye, T., & Akinola, O. (2022). The impact of rural infrastructure on agricultural productivity in Nigeria, *International Journal of Agricultural Economics and Development*, 4(3), 245-258.

Adedoyin, F. F., Olanrewaju, G., & Alao, F. O. (2021). Government expenditure and agricultural productivity in Nigeria: A regional analysis, *Journal of Development Economics*, 16(2), 101-115.

Adegbola, F., & Bako, U. (2023). Climate change and agricultural productivity in Nigeria: An assessment of impact and adaptation strategies, *Climate and Development Review*, 11(4), 299-312.

Adewale, T., & Mba, C. (2022). Access to credit and its effect on agricultural productivity among smallholder farmers in Nigeria, *African Journal of Economic Studies*, 8(1), 76-89.

Afolabi, O., & Salami, T. (2023). Digital agricultural technologies and productivity among smallholder farmers in Nigeria. *Journal of Digital Agriculture*, 5(1), 88-102.

Agbana, E. Z., & Lubo E. (2022). Government expenditure on agriculture and economic growth in Nigeria. *Journal of Good Governance and Sustainable Development in Africa*, 7(2).

Alabi, R. A., & Abu, G. A. (2020). *The impact of agricultural public expenditure on agricultural productivity in Nigeria.* Work in Progress Paper Submitted for Presentation at AERC Virtual Biannual Workshop Slated for 8-11 June 2020. Retrieved from https://aercafrica.org/wp-content/uploads/2020/06/E5-Reuben-Albai-WIP.pdf.

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

Nomor, D. T. & Udele, E. T. (2024). Government agricultural expenditure, agricultural output and economic growth in Nigeria: A structural vector autoregressive approach, *Journal of Economic and Social Research,* 10(1), 244-263.

Efanga, U. O., Ame, O. & Takon, S. M. (2024). Government funding and agricultural sector output in Nigeria: The moderating effect of corruption, *Journal of Development Economics and Finance,* 5(2), 321-340.

Ekpo, E., & Njoku, A. (2020). The impact of technology adoption on productivity in Nigeria's agricultural sector, *Technology and Rural Development Journal*, 6(1), 57-70.

Ikwuba, A. (2019). Government agricultural spending and agricultural output in Nigeria (1999-2012). *International Journal of Research and Innovation in Social Science,* 3(3), 36-44.

Amabuike, L. I., Ezenekwe, U. R., Nzeribe, G. E., & Kalu, C. U. (2024). Fiscal policy and agricultural sector output growth in Nigeria, *The Nigerian Journal of Energy & Environmental Economics*, 15(2), 103-121.

Mile, B. N., Ijirshar, V. U., Asom, S. T., Sokpo, J. T., & Fefa, J. (2021). Empirical analysis of government agricultural spending and agricultural output in Nigeria, *Asian Journal of Economics, Business and Accounting*, 21(7), 7-23.

Nduka, J. A. & Nwankwo, B. C. (2023). Effect of government expenditure on the performance of small and medium scale enterprises in Nigeria, *African Banking and Finance Review Journal,* 1(1), 317-332.

Nuhu, N. A., Onuoha, J. O., & Dalyop, G. F. (2022). Impact of government expenditure on agricultural output in Nigeria (1981-2019). *International Journal of Advanced Research in Social Sciences, Environmental Studies & Technology*, 7(2), 1-23.

Odetola, B. F., Adekunle, O. D., & Akinrinola, O. (2025), Government expenditure and economic development in Nigeria: A disaggregated approach, *African Journal of Accounting and Financial Research,* 8(2), 84-97.

Ogbuabor, J. E., Akinyemi, O., & Anyanwu, O. (2020). Government expenditure on agriculture and its impact on agricultural output in Nigeria, *Journal of Economics and Sustainable Development,* 11(12), 23-31.

Romer, P. M. (1994). The origins of endogenous growth, *The Journal of Economic Perspectives*. 8 (1), 3-22.

Tawose, O. A. (2012). *Issues in money, fianance and industrial development in Nigeria. University of Lagos Press, Lagos Federal Government of Nigeria: National Economic Empowerment and Development Strategy (NEEDS):* The NEEDS Secretariat, National Planning Commission, Federal Secretariat, Abuja, March, 2012.

Utitofon, M. U., Akpabio, U., Ekere, S. A., & Akpan, E. O. (2022). Government expenditure and agricultural sector output in Nigeria, *American Journal of Arts and Human Science,* 1(4), 20-26.