

IMPACT OF BANKING SECTOR CONTRIBUTION ON AGRICULTURAL DEVELOPMENT IN NIGERIA

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DOI: <https://doi.org/10.70118/ajbam-01-2026-005>

ABSTRACT

This study examined the contributions of the Banking sector to agricultural development in Nigeria from 1990 to 2023. Secondary data sourced from the CBN statistical bulletin 2023 were employed and analysed using the ARDL regression technique. The ARDL model results indicate that agricultural output growth in Nigeria exhibits strong short-run persistence, as evidenced by the significant positive effect of its own lagged values. While commercial bank loans to agriculture (LBLA) show no contemporaneous effect, their third lag has a significant negative impact. In contrast, the Agricultural Credit Guarantee Scheme Fund (LACGSF) exerts a positive and statistically significant influence on output growth both contemporaneously and with a one-period lag. The inflation rate (LINFR) has a mixed effect in the short run, being significantly positive at the second lag and negative at the third. The error-correction term is negative and highly significant, with an adjustment speed of approximately 71%, confirming a strong tendency to return to long-run equilibrium following short-term shocks. In the long-run estimates, inflation retains a statistically significant positive coefficient, while both LBLA and LACGSF have positive but statistically insignificant effects. The observed positive long-run relationship between inflation and agricultural output is likely due to the nominal measurement of output, suggesting that the inflation effect reflects price increases rather than real productivity gains. These observations show limitations in the long-term efficacy of current credit interventions, but they also partially support classical theories of development, which emphasize capital investment.

Keywords: Banking sector; Bank credit; Agricultural Credit Guarantee; Agricultural output

JEL: G21, Q14

1. INTRODUCTION

Because of its significant influence on stability and economic growth, agricultural development continues to be a crucial topic of interest on a global scale. As the largest industry in terms of employment, agriculture is

acknowledged as the foundation of the Nigerian economy. Despite its importance, the agricultural sector has received relatively little funding, which has resulted in enduring issues like insufficient funding, ineffective value chains, and a slow adoption of new technologies (Oyaniran, 2020). These issues

together limit the sector's overall development and productivity (Obansa & Maduekwe, 2013). The availability of financial tools has a significant impact on farmers' decisions to invest and produce. Farmers' capacity to acquire new technologies, buy essential agricultural inputs, and make investment decisions that could improve operational efficiency is hampered by the absence of financial services catered to their unique needs (Ugbede & Nwankwo, 2023; Idris & Bawa, 2023). Thus, the banking sector plays a pivotal role in bridging these financing gaps by channeling funds and delivering essential financial services to agricultural enterprises.

According to Idris and Bawa (2023), bank lending must have a positive impact on the economy's investible sectors, particularly by increasing agricultural output. In addition to promoting food security, adequate funding for agricultural projects encourages young investors to pursue entrepreneurial endeavours. Raufu et al. (2025) also highlighted the need to ease the financial burden that farmers frequently endure, contending that easier access to financing would promote the quick adoption of new technologies, which would boost sectoral growth and agricultural productivity. However, smallholder and peasant farmers make up the majority of Nigeria's agricultural sector, and they rely heavily on unofficial credit sources like cooperatives, community development associations, thrift societies, friends, family, and moneylenders. These unofficial sources are not enough to cover farmers' extensive credit needs, claims (Idris & Bawa, 2023; Nwankwo, 2013). The Nigerian government has responded by launching several initiatives to improve financing for agriculture. Notable among these are the Central Bank of Nigeria's Agricultural Credit Guarantee Scheme Fund (ACGSF), which was created to reduce the risks associated with agricultural lending, and the Nigerian Agricultural Cooperative and Rural Development Bank, formerly known as the Nigerian Agricultural Cooperative Bank. To further encourage credit flow to the industry, initiatives like the Anchor Borrowers' Program have been implemented more recently.

Despite these interventions, its large amount of arable land, and its favourable climate, which

allows for year-round agricultural production, Nigeria still performs poorly in the production of cereals, sugar, edible oils, fruits, vegetables, cocoa, coffee, livestock, and livestock products (Oyaniran, 2020; Salami & Arawomo, 2013). According to some studies (Ugbede & Nwankwo, 2023; Idris & Bawa, 2023), the primary cause of this poor performance is the agricultural sector's insufficient credit supply. It is further argued that commercial banks are not very interested in financing agriculture, which is why programs like the Agricultural Credit Guarantee Scheme are necessary (Raufu et al., 2025; Obilor, 2013). The effectiveness of current interventions in promoting significant credit flows from the banking industry to agriculture is seriously called into question by this ongoing funding gap. Itodo et al. (2013) argue that the country is still heavily dependent on imports for basic food items and raw materials, which drives up unemployment rates and raises living expenses. Similarly, Udensi et al. (2012) assert that government efforts to revive the agricultural sector have not produced meaningful results, so more research into the banking sector's role in fostering agricultural growth in Nigeria is urgently needed to better understand how financial institutions can support the growth of one of the economy's most important sectors.

Therefore, this study is an attempt to examine the intersection between the banking sector credit and the growth of the agricultural sector in Nigeria. This study modelled the growth of the agricultural sector using the Deposit Money Bank (DMBs) Loan to Agriculture and Agricultural Credit Guarantee Scheme Fund. The study also factored in the inflation rate to add to the robustness of the model. The study will focus on the contribution of the banking sector to agricultural growth in Nigeria over 32 years, from 1990-2023. This will provide insights into the contributions of the banking sector to the development of the agricultural sector in Nigeria and provide future policy suggestions.

2. REVIEW OF RELATED LITERATURE

Agricultural Productivity

In Nigeria, agricultural productivity continues to be essential for fostering economic expansion and ensuring food security.

Cultivating crops and raising animals for food, fibre, and other products is known as agriculture. It has been the foundation of human civilisation by producing the surpluses that allowed for specialisation and urbanisation. Today, the sector in Nigeria is made up of four major sub-sectors: forestry, which accounts for about 1.1% of the sector's total output; livestock, which contributes about 8.1%; fisheries, which contributes about 3.2%; and crop production, which dominates with about 87.6% of the sector's total output (Oyaniran, 2020). Agriculture has continued to be a vital sector of the Nigerian economy, even in the face of fluctuations in oil revenues. Agriculture, forestry, and fishing collectively contributed 22.7% of GDP in 2023, a slight decrease from the average of 24% observed from 2013 to 2019, highlighting its ongoing significance. Furthermore, according to ILO-modeled data, agriculture employs 35% of all workers as of 2019, making it the largest employer in the nation. In addition, more than 70% of Nigeria's rural populace works as farmers, primarily for subsistence (ILO, 2019).

According to recent empirical research, Nigeria's agri-productivity has both strengths and weaknesses. The assessments of food insecurity for 2021 revealed that, for example, agriculture accounted for 22.35% of GDP in the first quarter of 2021, even though almost 70% of households continued to rely on their production for their subsistence (Villacis et al., 2022). Raising productivity, decreasing poverty, and guaranteeing national food security will all depend on increasing yields in the future through the use of better seeds, improved financing, and mechanisation (Shaibu et al., 2020; FAO, 2022).

Banks' Credits to Agriculture

A key component of sustainable agricultural development is credit availability, especially in developing nations where the majority of agricultural producers are smallholder farmers. By facilitating investments in post-harvest technologies, mechanisation, land improvement, and modern inputs, agricultural credit in Nigeria has the potential to empower rural farmers (Ugbede & Nwankwo, 2023). Increasing productivity, guaranteeing food security, and improving rural livelihoods all depend on such investments. Nevertheless, agriculture continues to be one of the most

underfunded sectors by formal financial institutions, despite its crucial role in Nigeria's economic structure, it accounts for around 25% of the nation's GDP and employs over 70% of the rural labour force (National Bureau of Statistics [NBS], 2020).

According to the World Bank (2019), even in developing nations where agriculture contributes significantly to GDP, banking sectors typically devote a disproportionately small portion of their loan portfolios to this industry. The situation is the same in Nigeria. Due in large part to perceptions of high credit risk, seasonality, weather dependence, and smallholder farmers' lack of official collateral, banks have a systemic reluctance to lend to the agricultural sector, which is reflected in this disparity (World Bank, 2019). Because of this, farmers frequently turn to unofficial lenders or microfinance organisations that provide high-interest, short-term credit that is usually out of step with the lengthy gestation periods that characterise agricultural investments (FAO, 2017). The ramifications of this structural financing gap are extensive. First, it restricts small-scale farmers' capacity to expand their businesses or implement innovations that increase productivity. The majority of rural farmers are forced to produce at the subsistence level in the absence of timely and reasonably priced credit, which perpetuates cycles of food insecurity and poverty (Itodo et al., 2013; Diao et al., 2010). Second, the underfunding of agriculture limits the sector's ability to spur more extensive economic change by impeding the expansion of agro-enterprises and value chains. Furthermore, inadequate investment in market infrastructure, transportation, and storage results in post-harvest losses when credit is inadequate.

It is important to remember that the lack of liquidity in the banking industry is not the main factor preventing agricultural lending in Nigeria. Instead, it results from structural flaws in the rural finance ecosystem and institutional risk aversion. According to Binswanger-Mkhize (2012), these include insufficient credit information systems, no credit guarantees, lax contract enforcement, and little insurance protection against shocks brought on by bad weather. As a result, even when credit is available, it is insufficient to

address the sector's financial needs in terms of affordability, duration, and scale.

A more inclusive and accessible agricultural finance system will empower Nigerian farmers and position agriculture as a resilient pillar of national economic recovery and development (Christiaensen & Demery, 2011; Obansa & Maduekwe, 2012; World Bank, 2021). To address these barriers, agricultural finance policies must be purposefully redesigned. De-risking mechanisms like credit guarantees, blended finance models, and index-based insurance can encourage private financial institutions to increase lending to the sector (Idris & Bawa, 2023). Public-private partnerships, strengthened rural banking systems, and digitalised credit delivery platforms also hold promise in bridging the agricultural financing gap.

Government Spending on the Agricultural Sector in Nigeria

The allocation and distribution of public financial resources to different agricultural sub-sectors, such as crop production, livestock, forestry, and fisheries, is referred to as government expenditure on agriculture (Nurudeen & Usman, 2010). Considering how important agriculture is to promoting sustainable economic growth, such investment is essential. The industry makes a substantial contribution to the creation of jobs, export earnings, the fight against poverty, and general food security. Agriculture continues to be a vital component of rural livelihoods and the resilience of the Nigerian economy, having been a fundamental pillar of the country's economy, especially before the oil boom of the 1980s.

From a conceptual standpoint, agriculture includes the methodical production of food, feed, fibre, and raw materials through the rearing of animals and the cultivation of plants. In addition to farming, it also includes fishing, forestry, and the processing and sale of agricultural goods (Ndor et al., 2020). Agriculture is the science and practice of using the land for the production of plants and animals, according to Olorunfemi (2008). To direct energy flows for human consumption, both directly and through agro-industrial processes, it represents a purposeful simplification of natural ecosystems.

Before the exploitation of petroleum resources diverted national attention and investment, Nigeria's economy was based primarily on agriculture. Nigeria was a major exporter of cash crops like cocoa, groundnuts, cotton, and palm oil before the oil boom. However, agricultural funding and productivity declined as a result of the change in national priorities. Public investment in agriculture has been uneven, according to Lawal (2011), who looked at trends in federal government spending on the industry. His research showed a clear relationship between the amount of government funding and agricultural output, especially its GDP contribution. This emphasises the necessity of consistent and well-planned public spending to realise the sector's full potential.

Nigeria's large landmass and variety of ecological zones further support its agricultural potential. Nigeria is geographically endowed with a diverse range of agro-ecological systems, ranging from savannah and arid zones in the north to tropical rainforests and coastal mangrove swamps in the south. Nigeria occupies an area of about 924,000 square kilometres (National Population Commission [NPC], 2004). These topographical and climatic variances offer ideal circumstances for a wide range of agricultural pursuits, establishing the industry as a possible engine for industrialisation and equitable economic expansion.

However, consistent and targeted government spending is necessary to fully realise the potential of agriculture; agricultural research, rural infrastructure, extension services, and credit availability are especially important, as the sector may continue to perform below its potential to promote broad-based development (Raufu et al., 2025)

Theoretical Framework

Schumpeter's Theory of Financial Intermediation serves as the theoretical foundation for this investigation. Schumpeter (1911) maintained that financial institutions, especially banks, are essential in promoting economic growth by providing credit to profitable endeavours. In his opinion, banks are active forces of economic change that support innovation and entrepreneurship by lending money to industries with room to grow, rather than being passive savers.

By providing financial resources to entrepreneurs and productive sectors, banks contribute to structural change and economic dynamism. This role is crucial in developing economies where capital constraints hinder the potential of key sectors like agriculture. According to Schumpeter, the process of “creative destruction”, in which new industries and productive activities emerge and replace less efficient ones, is largely dependent on the provision of credit.

Although the agricultural sector continues to be the largest industry in Nigeria in terms of employment and GDP contribution, formal financial institutions severely underfund this sector (World Bank, 2019). Innovation, investment, and mechanisation in agribusiness value chains have been hindered by this funding gap. Thus, the theory of financial intermediation offers a convincing framework for examining how the banking industry's credit distribution, savings mobilisation, and rural outreach can improve economic growth and agricultural productivity.

The idea that greater banking sector participation in agriculture, through credit facilities, loans, and financial inclusion programs, can boost capital formation, encourage innovation, and enhance sectoral performance is supported by Schumpeter's theory. This is consistent with empirical evidence that, in nations where banks are more active in rural finance, financial development and agricultural output are positively correlated (King & Levine, 1993).

This theoretical framework thus provides the basis for assessing how financial institutions can act as catalysts for transforming Nigeria's agricultural sector into a driver of inclusive and sustainable growth. So, the contribution of the banking sector to agricultural development in Nigeria can be evaluated not only in terms of loan volumes or credit access but also in terms of the sector's ability to leverage financial intermediation for innovation, technological advancement, and increased productivity.

Empirical Review

An increasing amount of research has looked at how credit affects Nigerian agriculture, frequently emphasising how government policies and financial institutions can boost

sectoral productivity. Raufu et al. (2025) used annual data from 1981 to 2021 to examine how the Agricultural Credit Guarantee Scheme Fund (ACGSF) affects agricultural output. The study models agricultural output as a function of ACGSF disbursements, interest rates, government spending on agriculture, exchange rates, and inflation using secondary data from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). Employing the ARDL Bounds Testing approach, preceded by unit root testing via ADF and Phillips-Perron methods, the findings reveal a statistically significant positive effect of ACGSF on agricultural output in both the short and long run. Long-term stability is confirmed by the significant and appropriately signed error correction term. The study's findings may not be as robust, though, because it does not separate formal and informal credit sources, perform structural break analysis, or use diagnostic checks.

Nigeria's GDP over 37 years was examined by Chijoke and Amadi (2020) in relation to government capital expenditures in six infrastructure sectors, including agriculture. Using VECM and Johansen cointegration approaches, they discover that while spending on natural resource infrastructure and agriculture has a negative relationship with GDP, investments in health, education, transportation, and communication have a positive impact. The authors blame this on ineffective public sector interventions and fiscal illusion. To achieve noticeable productivity increases, these findings highlight the necessity of reevaluating and redesigning agricultural infrastructure policies. Using an ARDL model, ADF unit root testing, and diagnostic assessments to capture both short-run and long-run dynamics, Idris and Bawa (2023) examined the impact of commercial bank credit facilities to agriculture on Nigeria's real output growth. The study's findings show a strong, positive, and statistically significant relationship between agricultural credit and output, and the authors advocate for the provision of low-interest credit to improve farmers' access to capital-intensive inputs and recommend stronger enforcement mechanisms to ensure appropriate utilisation of agricultural loans.

The impact of commercial bank credit on agricultural productivity between 1981 and 2019 in Nigeria is evaluated by Ugbede and Nwankwo (2023). They used the ARDL model after unit root analysis, which shows that although agriculture credit has a long-term beneficial impact, it has a comparatively small impact. In contrast, government spending has a stronger impact on sectoral output. Along with increased government participation through subsidies and input provision, the study suggests lowering interest rates, improving monitoring systems, and increasing the amount of credit allocated by commercial banks. A nonlinear ARDL (NARDL) framework is used by Olowofeso et al. (2017) to evaluate the asymmetric impacts of credit on agricultural output from 1992Q1 to 2015Q4. Long-run estimates suggest that positive credit shocks have a greater effect on agricultural output than negative shocks, particularly after a four-quarter lag, even though short-run effects do not exhibit any discernible asymmetry. To give credit impacts enough time to manifest before repayment obligations start, the authors support policy frameworks that take credit moratoriums into account.

Using real agricultural GDP as a proxy, Sulaimon (2021) presents a threshold regression model to assess the nonlinear effects of ACGSF on agricultural performance. The results show an inverted U-shaped relationship: ACGSF has a positive effect on agricultural performance up to a threshold of ₦68,399.7 thousand, but beyond that, its effect becomes significantly negative. The study attributes this to potential inefficiencies, such as credit misallocation or limited absorptive capacity in the sector. It also finds that the real exchange rate has a positive impact on performance, but the real interest rate has no discernible effect. Lastly, the paper suggests that the Central Bank should increase guaranteed credit proportions and make the scheme easier for smallholder farmers.

Overall, the empirical literature emphasises how government intervention and commercial bank credit can increase agricultural output. However, credit monitoring, absorptive capacity, and policy alignment with sectoral needs are critical factors that determine how effective these financial instruments are.

3. METHODOLOGY

Data

The data used for this study are secondary data. They are time series data for Agricultural productivity, Deposit Money Bank (DMBs) Loan to the Agricultural Sector, Agricultural Credit Guarantee Scheme Fund, and Inflation Rate. All the data were obtained from the Central Bank statistical bulletin from the period 1990 to 2023.

Model Specification

The study adopted the ARDL model proposed by Pesaran et al. (2001) following the work of Ugbede and Nwankwo (2023). The ARDL model is stated as follows

$$AO_t = \alpha + \beta_1 AO_{t-1} + \lambda_j BLA_{t-j} + \delta_k ACGSF_{t-k} + \theta_l INFR_{t-l} + \mu$$

Where:

AO = Agricultural output

BLA = Deposit Money Bank (DMBs) Loan to the Agricultural Sector

ACGSF = Agricultural Credit Guarantee Scheme Fund

INFR = Inflation Rate

μ = error term

Analytical Technique

The Autoregressive Distributed Lag Model was used to estimate the long-run and short-run dynamics of the link between banking sector contribution and agricultural development in Nigeria. The choice of the Autoregressive Distributed Lag Model is because it offers a versatile framework for analyzing time series data, by providing insights into the dynamics of the relationships among variables over time. Other post-regression tests, such as the normality test, the serial correlation test, and heteroscedasticity, were performed to enhance the robustness of the findings.

4. RESULTS AND DISCUSSIONS

The objective of this study is to examine the contribution of banking sector on the growth of agricultural sector in Nigeria using deposit money banks (DMBs) loan as independent variable proxied by Government Spending to Agriculture (ACGSF) and DMBs Inflation

Rate (INFR) while the dependent variable is the Growth of Agricultural sector proxied by Agricultural Output (AO). The data are logged and analysed below.

Descriptive Statistics and Correlation Analysis

The study variables’ descriptive statistics are shown in Table 1. High skewness, kurtosis, and the results of the Jarque-Bera test show that LINFR deviates significantly from normality. In contrast, LBLA is moderately normal, and LAGO and LACGSF are roughly normally distributed, according to the results. In particular, LINFR is leptokurtic and significantly left-skewed, indicating the existence of extreme values or outliers. Except

for LINFR, the mean and median values for all variables are rather close, suggesting that skewness has little effect on central tendency. The correlation results in Table 2 showed that relationships between the variables are generally weak, according to the correlation analysis, with LAGO showing very little association with LBLA, LINFR, and LACGSF. Notably, there is a moderately negative correlation between LBLA and LACGSF, suggesting that a decrease in reliance on credit guarantee programs is linked to a rise in bank lending to agriculture. Overall, the low correlation coefficients indicate that multicollinearity is not a major concern, which supports the appropriateness of these variables for further regression analysis.

Table 1: Descriptive Statistics

	LAGO	LBLA	LINFR	LACGSF
Mean	3.177216	-0.645966	2.585138	8.997669
Median	3.161587	-0.651109	2.493171	9.067278
Maximum	3.609974	0.004067	4.341205	10.60927
Minimum	2.995245	-1.833411	-1.609438	7.935445
Std. Dev.	0.138922	0.435175	0.979041	0.643965
Skewness	1.166091	-0.615271	-2.034757	0.192321
Kurtosis	4.621568	3.123277	11.37789	2.477021
Jarque-Bera Probability	11.43046	2.166697	122.8958	0.597064
	0.003295	0.338460	0.000000	0.741907
Sum	108.0253	-21.96284	87.89470	305.9207
Sum Sq. Dev.	0.636876	6.249442	31.63122	13.68480
Observations	34	34	34	34

Source: Authors’ Eviews Results, 2025.

Table 2: Correlation Matrix

	LAGO	LBLA	LINFR	LACGSF
LAGO	1.000000			
LBLA	-0.155762	1.000000		
LINFR	-0.038496	0.295890	1.000000	
LACGSF	0.011368	-0.547973	-0.104701	1.000000

Source: Authors’ Eviews Result, 2025

Unit Root Test

The Augmented Dickey-Fuller Test was performed to ascertain the stationarity properties of the time-series data. The result is presented in Table 3.

Table 3: Unit Root Test

		<u>At Level</u>			
		LAGO	LBLA	LINFR	LACGSF
With Constant	t-Statistic	-1.8707	-1.0649	-4.3153	-1.7981
	Prob.	0.3410	0.7173	0.0018	0.3749
		n0	n0	***	n0
With Constant & Trend	t-Statistic	-3.5450	-0.3980	-4.3119	-1.8021
	Prob.	0.0513	0.9833	0.0089	0.6808
		*	n0	***	n0
Without Constant & Trend	t-Statistic	0.1794	-0.6222	-0.6206	-0.9094
	Prob.	0.7315	0.4399	0.4406	0.3150
		n0	n0	n0	n0
		<u>At First Difference</u>			
		d(LAGO)	d(LBLA)	d(LINFR)	d(LACGSF)
With Constant	t-Statistic	-6.4092	-8.8221	-8.4604	-5.7455
	Prob.	0.0000	0.0000	0.0000	0.0000
		***	***	***	***
With Constant & Trend	t-Statistic	-6.4581	-9.5405	-8.3132	-5.6447
	Prob.	0.0000	0.0000	0.0000	0.0003
		***	***	***	***
Without Constant & Trend	t-Statistic	-6.5110	-8.9660	-3.3982	-5.7695
	Prob.	0.0000	0.0000	0.0015	0.0000
		***	***	***	***

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%.

The stationarity test was conducted using the Augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller (1979). The preliminary test results presented in Table 3 revealed that there is a mixed order of integration. The LAGO and LINFR exhibited

stationarity at levels, while LBLA and LACGSF exhibited stationarity at first difference. Therefore, the study proceeded to estimate an ARDL regression to test the hypotheses raised.

ARDL Estimates

To estimate the ARDL, the ARDL bounds test was performed to ascertain if the variables are cointegrated (exhibit long-run dynamics). The result of the ARDL Bounds test is presented in Table 4.

Table 4: Bound Test

Test Statistic	Value	k
<i>F-statistic</i>	10.85786	3
<i>Critical Value Bounds</i>		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Authors' Eviews Results, 2025.

Table 4 shows the bound test result to determine whether there exists a long-run relationship. The F-statistic value of 10.85786

at a 1% significance level confirmed that the variables are cointegrated, thus indicating the existence of a long-run relationship.

Autoregressive Distributed Lag Estimates

Table 5 presents the ARDL short-run and long-run dynamics.

Table 5: ARDL Short-run and Long-run Estimates

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LAGO(-1))	0.897795	0.173190	5.183868	0.0001
D(LBLA)	-0.000638	0.060255	-0.010596	0.9917
D(LBLA(-1))	0.071531	0.051181	1.397618	0.1840
D(LBLA(-2))	-0.056244	0.046379	-1.212691	0.2453
D(LBLA(-3))	-0.166634	0.040464	-4.118095	0.0010
D(LINFR)	0.019925	0.012824	1.553731	0.1426
D(LINFR(-1))	0.019537	0.012400	1.575583	0.1374
D(LINFR(-2))	0.041451	0.012240	3.386477	0.0044
D(LINFR(-3))	-0.051661	0.014307	-3.610761	0.0028
D(LACGSF)	0.145112	0.037383	3.881791	0.0017
D(LACGSF(-1))	0.107505	0.039022	2.754962	0.0155
CointEq(-1)	-0.709398	0.123929	-5.724229	0.0001

$$\text{Cointeq} = \text{LAGO} - (0.0113*\text{LBLA} + 0.0769*\text{LINFR} + 0.0104*\text{LACGSF} + 2.9157)$$

Long-run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LBLA	0.011276	0.076920	0.146591	0.8855
LINFR	0.076854	0.034765	2.210705	0.0442
LACGSF	0.010445	0.041978	0.248821	0.8071
C	2.915662	0.332144	8.778305	0.0000

Source: Authors' Eviews Results, 2025.

The ARDL results in Table 5 revealed that the lagged changes in LAGO (log agricultural output growth) significantly boost current output growth in the short-run estimates of the ARDL model, suggesting that output dynamics are persistent. Bank loans to agriculture (LBLA), on the other hand, have a negligible contemporaneous effect, but a significantly negative coefficient on its third lag. In a similar vein, the inflation rate (LINFR) exhibits a mixed lagged impact, with a significant and positive coefficient at the second lag and a negative coefficient at the third. Notably, output growth is positively and significantly impacted by the Agricultural

Credit Guarantee Scheme Fund (LACGSF), both immediately and with a one-period lag.

A quick adjustment towards the long-run equilibrium is indicated by the negative and highly significant error-correction term (CointEq(-1)), which suggests that about 71% of any short-run disequilibrium is corrected each period. Although both LBLA and LACGSF have positive long-run coefficients that are not statistically significant, only the inflation rate maintains a statistically significant positive impact on agricultural output growth in the long-run cointegrating relationship. These results highlight that, although the inflation rate has a significant and

long-lasting positive impact on agricultural growth, bank lending and credit guarantees only have statistically significant short-term effects. It is noteworthy that the positive impact of the inflation rate on agricultural growth is counterintuitive. This could be because the agricultural output variable is measured in nominal terms without adjusting for inflation. Thus, the positive relationship reflects price-level effects rather than real productivity.

Diagnostic Tests

Several diagnostic tests were carried out to confirm the estimated model’s robustness and the results are presented in Table 6. Functional form misspecification was not strongly supported by the Ramsey RESET test, which

yielded a t-statistic of 1.818, an F-statistic of 3.307, and a p-value of 0.0921. An F-statistic of 0.455 (p = 0.9291) and an ObsR-squared value of 9.826 (p = 0.8306) were obtained from the Breusch-Pagan-Godfrey heteroskedasticity test, indicating that there is no heteroskedasticity and that the residuals show constant variance. Additionally, the results of the Breusch-Godfrey LM test for serial correlation showed a mild indication at the 10% level but no significant serial correlation at the 5% significance level, with an F-statistic of 1.403 (p = 0.2835) and an ObsR-squared value of 5.685 (p = 0.0583). All things considered, the diagnostic findings validate the model’s sufficiency and dependability.

Table 6: Diagnostic Test

Ramsey RESET Test	value	df	Prob.
<i>t-statistic</i>	1.818489	13	0.0921
<i>F-statistic</i>	3.306904	(1, 13)	0.0921
Heteroskedasticity Test			
<i>F-statistic</i>	0.454559	Prob. F(15,14)	0.9291
<i>Obs*R-squared</i>	9.825523	Prob. Chi-Square(15)	0.8306
Breusch-Godfrey Serial Correlation			
<i>F-statistic</i>	1.402695	Prob. F(2,12)	0.2835
<i>Obs*R-squared</i>	5.684532	Prob. Chi-Square(2)	0.0583

Source: Authors’ Eviews Results, 2025.

Also, Mild to moderate multicollinearity is suggested by the Variance Inflation Factors (VIF). The main variables of this study have VIFs below the 10-point threshold, indicating

that multicollinearity is generally not a significant issue. The VIF result is presented in Table 7.

Table 7: Variance Inflation Factor for Multicollinearity

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LAGO(-1)	0.020246	2607.987	4.843576
LBLA	0.003631	30.97711	8.057619
LINFR	0.000164	14.88859	1.759294
LACGSF	0.001397	1419.576	7.313299

Source: Authors’ Eviews Results 2025.

CUSUM (Cumulative Sum) test graph

Fig. 1 shows the CUSUM graph. From the graph, no structural breaks are detected (i.e.,

the curve remains within bounds), thus, the study model’s estimates are considered stable.

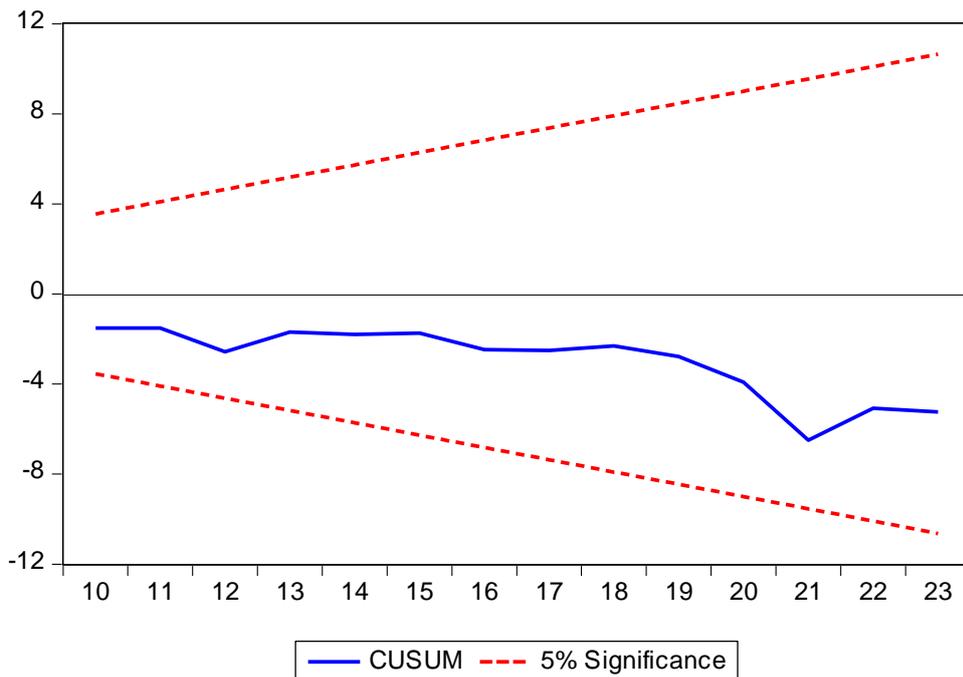


Figure 1: CUSUM (Cumulative Sum) test graph

Discussion of Findings

According to the ARDL estimates, Nigeria’s agricultural growth exhibits both short-term and long-term dynamics. Conventional bank lending to agriculture seems to have short-term negative effects, while the inflation rate and the agricultural credit guarantees scheme fund show immediate stimulative effects. Though this study is anchored on the financial intermediation theory advocated by Schumpeter (1911), the positive short-run coefficients on the inflation rate and agricultural credit guarantees scheme fund make sense from a Keynesian standpoint; policy-backed lending programmes and public investment increase demand while lowering investment risk, which boosts output. Also, moderate inflation may improve the relative profitability of agricultural commodities from a Keynesian and structuralist perspective, encouraging producers to boost output in response to rising market prices. In Nigeria, where food demand is comparatively inelastic and price increases brought on by inflation might not substantially reduce consumption, this is especially pertinent. For instance, Chizoba et al. (2024) discovered a positive and significant correlation between Nigerian agricultural output and public capital expenditure on economic services, which is an analogue of inflation. Sulaimon (2021)

contend that there is a strong positive correlation between Nigerian agricultural production and the Agricultural Credit Guarantee Scheme Fund. These results lend credence to the notion that government-supported inputs can increase output in the short term. In contrast, an infusion of commercial credit may initially slow growth, as indicated by the bank loan’s noticeably negative short-run coefficient. This unexpected outcome might be the result of crowding-out effects or inefficient allocation; new loans might not immediately result in profitable investment, which could fuel inflation or debt service obligations that reduce output. According to Olowofeso et al. (2017), credit shocks from the private sector do not immediately improve Nigerian agricultural output. Similarly, Adjognon et al. (2017) demonstrate that African farmers use both formal and informal credit “extremely low” across contexts, suggesting that abrupt changes in lending have minimal short-term effects.

Nevertheless, the short-run ARDL results defy the naive assumption that any increase in financing would increase output as canvassed by Idris and Bawa (2023) and Schumpeter’s (1911) financial intermediation theory, but they are consistent with growth theory insofar as public capital (Agricultural Credit

Guarantee Scheme Fund) functions as an instant growth stimulus. This opinion is supported by Chizoba et al. (2024), who show that infrastructure spending still influences agricultural productivity. On the other hand, the Agricultural Credit Guarantee Scheme Fund and Bank Loan to Agriculture long-run coefficients are both positive but statistically insignificant. This points to potential inefficiencies in long-term credit policies as well as declining returns on financial inputs. Similar results are reported by Ugbede and Nwankwo (2023), who found that commercial bank credit had a “positive but weak” long-term impact on Nigerian agricultural productivity, meaning it “could not explain the variation” in output. According to Olowofeso et al. (2017), there is only a slight long-term pass-through from credit to agricultural growth. The lack of significance in the long-term impact of the Agricultural Credit Guarantee Scheme Fund could be due to crowding-out or threshold effects:

The Agricultural Credit Guarantee Scheme Fund only increases output to a certain extent before having a negative impact beyond high funding, according to Sulaimon’s (2021) inverted-U relationship for Nigeria. There is conflicting evidence to support this claim. For example, Raufu et al. (2025) report that the Agricultural Credit Guarantee Scheme Fund has significantly improved Nigeria’s agricultural performance in both the livestock and crop sectors, indicating that, in certain circumstances, guarantees do increase output. Our negligible long-term coefficients, however, support research showing that credit policies by themselves might not be sufficient to maintain growth in the absence of supplementary reforms. Classical growth frameworks can be used to interpret these empirical patterns. According to Solow’s model, merely increasing capital (or credit) results in diminishing marginal returns, while only productivity-augmenting investments, like infrastructure that increases total factor productivity, have long-lasting output effects.

According to Keynes, the observed short-run coefficient signs are consistent with the idea that short-term demand-side stimulus, such as credit guarantees, can temporarily increase output. However, the detrimental short-term effects of bank loans raise the possibility that,

in a financial system that is still in its infancy, simple monetary expansion may be ineffectual or even detrimental. These results are consistent with data showing that while simple credit expansion may not succeed, government-led investment can increase agricultural output quickly. In sharp contrast to our findings, Chijioke and Amadi (2020) argued that there was a notable inverse relationship between Nigeria’s expenditures on natural resource infrastructure and agriculture, suggesting inefficiencies in the way policies were implemented.

All things considered, our ARDL results both support and contradict traditional theories. In line with the convergence properties, the robust adjustment speed (roughly 71% of any disequilibrium corrected annually) indicates a comparatively quick return to a long-run path. Overall, the results show that the inflation rate seems to be a stable growth driver in Nigeria’s agricultural sector, whereas bank lending and guarantee programs have more ephemeral or conditional effects. Although the outcome points to some long-term inflation-induced stimulus, persistent inflation may eventually undo these gains by driving up input costs and discouraging long-term investment, highlighting the necessity of inflation-targeted agricultural policy. These findings call for a nuanced approach to policy, one that takes into account the conflicting empirical data on credit interventions as well as the growth theory’s suggestion of the promise of public capital.

5. CONCLUSION AND POLICY IMPLICATIONS

The analysis concludes that while bank loans have a delayed negative impact with no long-term positive effect, and the agricultural credit guarantee scheme only produces temporary benefits, the inflation rate in Nigeria significantly boosts agricultural growth and yields significant short- and long-term gains. The sector swiftly regains equilibrium following shocks, as evidenced by the quick adjustment speed (roughly 71% annually). These observations show limitations in the long-term efficacy of current credit interventions, but they also partially support classical theories of development, which emphasize capital investment.

In order to take advantage of these findings, Nigeria should reform the credit guarantee program to make sure its effects last (by increasing access and bolstering monitoring, for instance), and collaborate with banks to customize loan terms to farmers' requirements (by lowering interest rates and extending maturities, for example) so that credit can boost productivity even in the long-term.

REFERENCES

- Adjognon, S. G., Liverpool-Tasie, L. S. O., & Reardon, T. A. (2017). Agricultural input credit in Sub-Saharan myth from facts. *Food Policy*, 67, 93-105. <https://doi.org/10.1016/j.foodpol.2016.09.014>
- Binswanger-Mkhize, H. P. (2012). Is there too much hype about index-based agricultural insurance? *Journal of Development Studies*, 48(2), 187–200.
- Chijoke, A. K. & Amadi, A. I. (2020). Government expenditure on infrastructure as a driver for economic growth in Nigeria. *Journal of International Business Research and Marketing*, 5(2), 20-26. <https://doi.org/10.18775/jibrm.1849-8558.2015.52.3004>
- Chizoba, A.F., Adione, J. O., Chidera, O., Olasunkanmi, F., Lisa, F.D., Adogu, P., Standly, N. & Lucy, K.U. (2024)Healthcare Accessibility and Affordability Measures among Older Persons in Rural Nigeria". *Acta Scientific Medical Sciences*, 9(2)143-154.
- Christiaensen, L., & Demery, L. (2011). *Down to Earth: Agriculture and Poverty Reduction in Africa*. Washington, DC: World Bank Publications.
- Food and Agriculture Organization [FAO]. (2022). *Nigeria Agriculture at a Glance*. FAO Publications.
- FAO. (2017). *The future of food and agriculture – Trends and challenges*. Rome: Food and Agriculture Organization of the United Nations.
- Idris, M., & Bawa, S. S. (2023). Effect of commercial bank credit facilities to agriculture on real output growth in Nigeria. *Journal of Development Economics and Finance*, 4(2), 359–374. <https://doi.org/10.47509/JDEF.2023.v04i02.05>
- Itodo J.I., Ayo J.O., Rekwot I.P., Aluwong T., Allam L., Ibrahim, S. 2022. Comparative evaluation of solven Azanza garckeana fruit pulp on hormonal profiles, spermogram and antioxidant activities in rabbit bucks. *World Rabit Sci.*, 30: 309-326. <https://doi.org/10.4995/wrs.2022.17256>
- International Labour Organization [ILO] (2019). ILOSTAT database. Data retrieved in September 2019.
- King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics*, 108(3), 717–737. <https://doi.org/10.2307/2118406>
- Lawal, W. A. (2011). An analysis of government spending on agricultural sector and its contribution to GDP in Nigeria. *International Journal of Business and Social Science*, 2(20), 244–250.
- National Bureau of Statistics. (2020). *Nigerian Gross Domestic Product Report (Q4 & Full Year 2019)*.
- National Population Commission (NPC). (2004). *National Population and Housing Census Report*. Abuja: NPC.
- Ndor E., Obadiah A. A., & Nasir U. I. (2020). A review of sustainable agricultural development and economic growth: Nigerian experience. *World Journal of Advanced Research and Reviews*, 2020, 08(01), 019-025. Article DOI: <https://doi.org/10.30574/wjarr.2020.8.1.0353>
- Nurudeen, A., & Usman, A. (2010). Government expenditure and economic growth in Nigeria, 1970–2008: A disaggregated analysis. *Business and Economics Journal*, 2010(4), 1–11.

- Obansa, S. A. J., & Maduekwe, I. M. (2013). Agriculture financing and economic growth in Nigeria. *European Scientific Journal*, 9(1), 168-204.
- Obilor, S. I. (2013). The Impact of Commercial Banks Credit to Agriculture on Agricultural Development in Nigeria. *International Journal of Business, Humanities and Technology*, 3-7.
- Olorunfemi, D. (2008). *Agricultural science: A comprehensive approach*. Lagos: Unity Publishers.
- Olowofeso, O. E., Adeboye, A. A., Adejo, V. T., Basse, K. J., & Abraham, O. (2017). Agricultural sector credit and output relationship in Nigeria: Evidence from nonlinear ARDL. *CBN Journal of Applied Statistics*, 8(1), 101-122.
- Oyaniran, T. (2020). Current State of Nigeria's Agriculture and Agribusiness Sector. African Continental Free Trade (AfCTA) Workshop.
- Pesaran, M.H., Shin, Y. and Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16, 289-326.
<https://doi.org/10.1002/jae.616>
- Raufu, M., Fajobi, D. T., Dlamini-Mazibuko, B., Miftaudeen-Raufu, A., & Olalere, J. (2025). Agricultural credit guarantee scheme funds and agricultural performance in Nigeria. *International Journal of Multidisciplinary Approach Research and Science*, 3(1), 1-13.
<https://doi.org/10.59653/ijmars.v3i01.1190>
- Salami, A., & Arawomo, D.F. (2013), Empirical Analysis of Agric Any Role for Institutional Factors?, Working Paper Series N 192 African Dev Tunisia.
- Shaibu, U.M. Ibitoye, S.J. Ibrahim M.K. & Shaibu, Y.A. (2020). Modeling the Factors that Influence Farmers' Participation in Agricultural Insurance Scheme in Kogi State, Nigeria: Implications for Agricultural Policy. *Nigerian Agricultural Policy Research Journal (NAPReJ)* 7(1), 36-41. DOI: [10.22004/ag.econ.314137](https://doi.org/10.22004/ag.econ.314137)
- Schumpeter, J. A. (1911). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle* (R. Opie, Trans.). Harvard University Press.
- Sulaimon, M. (2021). Agricultural Credit Guarantee Scheme Fund (ACGSF) and agricultural performance in Nigeria: A threshold regression analysis. Available at SSRN. <https://doi.org/10.2139/ssrn.3973046>
- Udensi, E. U., Tarawali, G., Ilona, P., Okoye, B. C. & Dixon, A. (2012). Adoption of chemical weed control technology among cassava farmers in south eastern Nigeria. *Journal of Food, Agriculture and Environment* 10(1), 667-674.
- Ugbede, J. A. & Nwankwo, O. (2023). The effect of bank credits on agricultural output in Nigeria: 1981-2019. *Sustainable Economies*, 1(1), 1-15.
<https://doi.org/10.62617/se.v1i1.27>
- Villacis, A. H., Mayorga, J., & Mishra, A. K. (2022). Experience-based food insecurity and agricultural productivity in Nigeria. *Food Policy*, 113, 102286.
<https://doi.org/10.1016/j.foodpol.2022.102286>
- World Bank. (2019). *Enabling the Business of Agriculture 2019*. Washington, DC: World Bank.
- World Bank. (2021). *Nigeria Development Update: Resilience through Reforms*. Washington, DC: World Bank.