© SEP 2026 | IRE Journals | Volume 10 Issue 3 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I3-1723325

Impact Of Selected Macroeconomic Variables on Agricultural Sector Credit in Nigeria (1981–2024)

SIMNOM BERNICE BAKO
Department of Economics, Faculty of Social Sciences, Bingham University, Karu, Nigeria
Doctoral Researcher

Abstract- ***The agricultural sector remains a cornerstone of Nigeria's economy, contributing to national output, employment, food security, and domestic and export market activities. However, agricultural credit remains constrained by financing costs and macroeconomic instability. This study examined the effects of minimum lending rate by commercial banks to agriculture, monetary policy rate, average exchange rate, and consumer price index on agricultural sector credit in Nigeria over 1981–2024. Annual secondary data were obtained from the Central Bank of Nigeria Statistical Bulletin (2025), and the Dynamic Ordinary Least Squares (DOLS) estimator was employed to examine the long-run relationship among the variables. The results show that minimum lending rate is negatively related to agricultural sector credit, although the coefficient is statistically insignificant. Monetary policy rate also has a negative long-run relationship with agricultural sector credit. Exchange rate has a negative and statistically insignificant effect, while consumer price index has a positive and statistically significant long-run effect. Specifically, a one-percentage-point increase in minimum lending rate, monetary policy rate, exchange rate, and consumer price index is associated with approximately 0.057%, 0.221%, 0.001%, and 0.168% changes in agricultural sector credit, respectively, holding other variables constant. The study recommends measures that improve access to affordable agricultural credit, strengthen monetary-policy transmission, promote exchange-rate stability, and reduce input-price volatility.***

Index Terms- ***Agricultural credit, exchange rate, interest rate, monetary policy rate, consumer price index, Nigeria***

I. INTRODUCTION

Agriculture is the world's largest industry, employing more than one billion people and generating substantial food value annually, while pasture and cropland occupy a large share of the earth's habitable land and support numerous species [1]. In Africa, agriculture is a cornerstone of many economies, contributing significantly to trade and industrial production; more than 80% of trade value and over 50% of industrial raw materials in many African countries originate from agriculture [2].

In Nigeria, agriculture remains central to national development, contributing to gross domestic product, employment, domestic economic activity, and export earnings. Nigeria has approximately 37 million hectares of arable land and diverse agro-ecological conditions that support agricultural production [3]. Nevertheless, the sector has struggled to keep pace with the demands of a rapidly growing population. Low productivity has been associated with inadequate credit facilities, low yields of staple crops, and limited mechanisation, among other constraints [4], [5].

Government and other stakeholders have consequently introduced programmes aimed at increasing food production and expanding farmers' access to finance. One major intervention is the Agricultural Credit Guarantee Scheme Fund (ACGSF), established to encourage commercial and merchant banks to increase and sustain lending to agriculture. The scheme has undergone several design changes, including the waiving of tangible collateral for certain small-scale farmers, linkage of self-help groups with banks, upward revisions of loan limits, the introduction of the interest-drawback programme, and the trust-fund model [6].

Despite these interventions, loan default has remained a persistent challenge for the ACGSF. Earlier studies identify default and weak repayment performance as important constraints to the effectiveness of agricultural credit guarantee schemes [7], [8]. The persistence of default suggests that the effectiveness of a credit guarantee is not determined solely by the guarantee ratio but is also shaped by bank behaviour, government objectives, and the prevailing macroeconomic environment [9].

The macroeconomic environment is particularly important because changes in interest rates, inflation, exchange rates, and monetary-policy conditions can influence the cost, availability, and risk of agricultural credit. Higher interest rates can make borrowing more expensive and discourage investment, while exchange-rate movements can increase the cost of imported agricultural machinery, fertilisers, and agrochemicals. Inflation can similarly increase input costs and affect borrowers' repayment capacity.

Against this background, this study examines the effects of minimum lending rate by commercial banks to agriculture, monetary policy rate, average exchange rate, and consumer price index on agricultural sector credit in Nigeria over the period 1981–2024. The study contributes to the literature by focusing specifically on agricultural sector credit, rather than agricultural output alone, and by employing the Dynamic Ordinary Least Squares (DOLS) approach to estimate the long-run relationships among the variables.

II. LITERATURE REVIEW

A. Conceptual Review

1) Macroeconomic Variables

Macroeconomic variables refer to indicators used to analyse the performance, behaviour, structure, and overall conditions of an economy. They include variables such as interest rates, exchange rates, inflation, output, and monetary-policy conditions [13], [14]. These variables influence resource allocation, production decisions, investment, credit conditions, and the general economic environment.

Interest Rate: Interest rate represents the cost of borrowing funds and plays an important role in borrowing, saving, investment, and credit allocation [15], [16]. In agriculture, affordable credit is necessary for purchasing seeds, fertilisers, equipment, and other productive inputs. Higher lending rates increase financing costs and may discourage investment and reduce access to agricultural credit [17], [18].

Exchange Rate: The exchange rate is the price of one currency in terms of another and has implications for trade, inflation, and competitiveness [19]. Depreciation of the naira can raise the cost of imported machinery, fertilisers, and agrochemicals, although it can also improve the international competitiveness of export-oriented agricultural products. The net effect therefore depends on the import intensity and export orientation of the agricultural sector.

Consumer Price Index: The Consumer Price Index (CPI) measures changes over time in the prices of a basket of goods and services and is widely used as an indicator of inflation [20], [21]. For agriculture, inflation can increase the prices of fuel, fertilisers, labour, transportation, and other inputs. Persistent price increases can also reduce purchasing power and create uncertainty that affects production and investment decisions [22].

Monetary Policy Rate: The monetary policy rate (MPR) is a benchmark rate used by the central bank to signal the stance of monetary policy and influence liquidity, borrowing costs, and economic activity [23], [24]. An increase in MPR can raise market lending rates and reduce the affordability of agricultural credit, while a lower policy rate may encourage borrowing and investment. The effectiveness of this transmission depends partly on how commercial banks adjust their lending rates.

B. Theoretical Framework

The relationship between macroeconomic variables and agricultural sector credit can be interpreted through the Cobb-Douglas production framework. The production function expresses output as a function of capital, labour, and total factor productivity:

$$Q = A K^{\alpha} L^{\beta}, \quad (1)$$

where Q represents output, A denotes total factor productivity, K is capital, L is labour, and α and β are the output elasticities of capital and labour. In the conventional constant-returns-to-scale case, $\alpha + \beta = 1$. For this study, agricultural sector credit is represented by the Agricultural Credit Guarantee Scheme Fund (ACF), measured as cumulative loans guaranteed by the scheme, while minimum lending rate (MLR), monetary policy rate (MPR), average exchange rate (EXR), and consumer price index (CPI) are treated as the principal macroeconomic variables. The empirical relationship is therefore specified as:

ACF = f(MLR, MPR, EXR, CPI). (2)

The framework is useful because macroeconomic conditions affect the cost and availability of capital used in agricultural activities. Interest rates influence borrowing costs, inflation affects input prices and the real value of finance, exchange-rate movements influence the cost of imported inputs, and monetary-policy conditions affect liquidity and credit-market conditions. The framework therefore provides a basis for examining the macroeconomic determinants of agricultural sector credit in Nigeria.

C. Empirical Review

Mudau and Mokatsanyane [27] examined how short- and long-term interest rates, the real exchange rate, and GDP growth influence agricultural derivatives performance in South Africa using an ARDL model. Their findings indicate that macroeconomic changes can substantially affect agricultural-market volatility and risk-management conditions.

Abdullahi [28] investigated monetary policy, agricultural productivity, and food prices in Nigeria using the ARDL approach. The study found that exchange-rate movements affected agricultural output and food prices, while higher interest rates reduced agricultural productivity in the long run. The study also reported that money supply reduced agricultural productivity but increased food prices.

Bonny and Ayunku [29] examined selected macroeconomic variables and agricultural-sector performance in Nigeria over 1990–2021 using ARDL. Their results showed that credit to the private sector had a positive but insignificant effect, while monetary policy rate and inflation had negative and insignificant effects. Bank lending rates, however, had a positive and significant effect on agricultural-sector performance.

Okuduwor et al. [30] examined selected macroeconomic variables and agricultural output in Nigeria using an ARDL model. The study found a long-run cointegrating relationship among the variables and reported short-run effects of exchange rate, recurrent government expenditure, and money supply on agricultural output.

Chiogor et al. [31] analysed the macroeconomic effects of agricultural financing reforms in Nigeria using a computable general equilibrium model. Their simulations indicated that reductions in agricultural-loan interest rates had positive and significant effects on agricultural output and economic growth.

Eyo et al. [32] assessed the ACGS within Nigeria's macroeconomic environment and concluded that macroeconomic conditions influence the value and performance of agricultural credit guarantees. The study highlighted interest rates, inflation, exchange rates, and other macroeconomic indicators as important considerations for improving the scheme.

Tiamiyu et al. [33] examined the contribution of the agricultural credit guarantee scheme to Nigeria's GDP using time-series data from 1981–2013. Their findings indicated a positive relationship between agricultural credit and commercial-bank lending to agriculture and a positive contribution of the scheme to agriculture's share of GDP.

Onyishi et al. [34] investigated interest-rate deregulation, agricultural finance, and growth in Nigeria. Using OLS and a Chow test, the study found a significant difference in agricultural credit between regulated and deregulated periods and identified interest rate as an important determinant of agricultural credit, particularly during deregulation.

Akpan et al. [35] examined agricultural credit guarantees and selected macroeconomic fundamentals in Nigeria using cointegration and error-correction techniques. Their results showed a significant negative long-run relationship between commercial-bank interest rates and the amount of credit guaranteed by the ACGSF.

III. DATA AND METHOD

The study employed an ex-post facto research design and used annual secondary data covering 1981–2024. Data were obtained from the Central Bank of Nigeria Statistical Bulletin (2025). The dependent variable is agricultural sector credit, proxied by the Agricultural Credit Guarantee Scheme Fund (ACF), while the explanatory variables are minimum lending rate by commercial banks to agriculture (MLR), monetary

© SEP 2026 | IRE Journals | Volume 10 Issue 3 | ISSN: 2456-8880
DOI: https://doi.org/10.64388/IREV10I3-1723325

policy rate (MPR), average exchange rate (EXR), and consumer price index (CPI).

The empirical model was adapted from Okeke and Okeke [36], with modifications to reflect the variables and focus of the present study. The functional form is specified as:

$ACF_t = f(MLR_t, MPR_t, EXR_t, CPI_t)$. (3)

The semi-logarithmic form is written as:

$\ln(ACF_t) = \beta_0 + \beta_1 MLR_t + \beta_2 MPR_t + \beta_3 EXR_t + \beta_4 CPI_t + \varepsilon_t$. (4)

where ln denotes the natural logarithm; ACF is the Agricultural Credit Guarantee Scheme Fund; MLR is the minimum lending rate by commercial banks to agriculture; MPR is the monetary policy rate; EXR is the average exchange rate; CPI is the consumer price index; β_0 is the intercept; β_1–β_4 are the parameters to be estimated; and ε is the error term.

A priori, MLR and MPR are expected to have negative effects on agricultural credit because higher borrowing costs can reduce the demand for and supply of agricultural loans. The expected sign of EXR may be positive or negative depending on the relative importance of imported inputs and export opportunities. CPI is expected to have a negative effect because higher inflation can reduce the real value of credit and increase production costs.

The study employed the Dynamic Ordinary Least Squares estimator developed by Stock and Watson [37]. DOLS estimates the long-run cointegrating relationship while incorporating leads and lags of the first differences of the explanatory variables to address potential endogeneity and serial correlation. The general DOLS specification is:

$\ln(ACF_t) = \beta_0 + \Sigma\beta_i X_{it} + \Sigma\Sigma\gamma_{ij} \Delta X_{i,t+j} + \varepsilon_t$. (5)

where X represents the vector of explanatory variables, ΔX denotes their first differences, j indexes the leads and lags included in the regression, and ε is the error term. Newey–West heteroskedasticity and autocorrelation consistent standard errors were used to improve inference [38].

IV. RESULTS AND DISCUSSION

A. Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
ACF	52013.68	71378.94	361.45	246082.50
MLR	22.7923	6.1164	10.00	36.10
MPR	13.5398	4.4776	6.00	27.25
EXR	159.5182	253.9341	0.60	1535.00
CPI	19.4013	16.2318	5.3880	72.8355

Source: Author's computation using EViews 12 (2025).

The descriptive statistics show substantial variation in agricultural sector credit and the selected macroeconomic variables over the study period. Agricultural sector credit has a mean of ₦52,013.68 million and a standard deviation of ₦71,378.94 million. The average minimum lending rate is 22.79%, while the average monetary policy rate is 13.54%. The average exchange rate is ₦159.52 per U.S. dollar, and the mean CPI is 19.40%.

B. Correlation Analysis

	ACF	MLR	MPR	EXR	CPI
ACF	1.000				
MLR	-0.051	1.000			
MPR	0.170	0.657	1.000		
EXR	-0.344	0.457	0.446	1.000	
CPI	0.311	0.156	0.377	-0.005	1.000

Source: Researcher's computation using EViews 12 (2025).

The correlation coefficients are below 0.80 in absolute value, suggesting no serious pairwise multicollinearity among the variables. The correlation between ACF and EXR is the largest in absolute value among the explanatory relationships with ACF, at approximately -0.34.

C. Unit Root Test

Variable	ADF Level	ADF 1st Difference	Order
ACF	-2.385955 (0.3813)	-6.364002 (0.0000)	I(1)
MLR	-3.461445 (0.0566)	-7.245136 (0.0000)	I(1)
MPR	-2.374027 (0.3873)	-7.769925 (0.0000)	I(1)
EXR	-0.205202 (0.6064)	-7.459610 (0.0000)	I(1)
CPI	-3.958871 (0.1800)	-6.628444 (0.0000)	I(1)

Note: * indicates significance at the 1% level. Source: Researcher's computation using EViews 12 (2025).

The ADF results indicate that all variables are non-stationary in levels but become stationary after first differencing. Hence, all variables are integrated of order one, I(1), supporting the use of a cointegration procedure to examine their long-run relationship.

D. Cointegration Test

Test	Statistic	Critical value (1%)	p-value	Decision
Engle–Granger residual ADF	-2.894878	-2.619851	0.0000	Cointegrated

Source: Author's computation using EViews 12 (2025).

The residual-based Engle–Granger cointegration test indicates a long-run equilibrium relationship between agricultural sector credit and the selected macroeconomic variables. The significant residual ADF statistic supports estimation of the long-run relationship using DOLS.

E. DOLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	p-value
MLR	-0.056885	0.105900	-0.537155	0.5996
MPR	-0.220881	0.118785	-1.859511	0.0841
EXR	-0.000536	0.005271	-0.101670	0.9205
CPI	0.167709	0.028992	5.784588	0.0000
C	10.50438	1.255071	8.369550	0.0000
R^2	0.899130			
Adjusted R^2	0.856209			
Long-run variance	0.739647			

Source: Author's computation using EViews 12 (2025).

The DOLS estimates show that MLR has a negative coefficient of -0.056885, indicating that higher lending rates are associated with lower agricultural sector credit in the long run. However, the relationship is statistically insignificant at conventional levels. The finding is consistent with the expected negative relationship between borrowing costs and agricultural credit.

MPR also has a negative coefficient (-0.220881), suggesting that tighter monetary policy is associated with lower agricultural sector credit in the long run. The coefficient is not statistically significant at the 5% level but is marginally significant at the 10% level ($p = 0.0841$). This result is broadly consistent with the findings of Bonny and Ayunku [29].

EXR has a negative coefficient (-0.000536) and is statistically insignificant. This indicates that exchange-rate depreciation is associated with a small reduction in agricultural sector credit over the long

run, although the estimated effect is not statistically distinguishable from zero.

CPI has a positive and statistically significant coefficient (0.167709; $p < 0.01$). Thus, a one-unit increase in CPI is associated with approximately a 0.168% increase in agricultural sector credit, holding other variables constant. This positive coefficient does not conform to the study's a priori expectation. One possible interpretation is that rising nominal agricultural financing requirements may accompany higher input and production costs, increasing the nominal amount of credit required by agricultural producers.

The model has an R^2 of 0.899130, implying that approximately 89.91% of the variation in the logarithm of agricultural sector credit is explained by the included variables. The adjusted R^2 of 0.856209 indicates that the explanatory power remains substantial after accounting for the number of regressors.

F. Post-Estimation Diagnostics

Test	Statistic	p-value	Inference
Correlogram Q-statistic	15.62531	0.302	No serial correlation
Jarque–Bera	0.175309	0.916077	Residuals approximately normal

Source: Researcher's computation using EViews 12 (2025).

The diagnostic results provide no evidence of serial correlation because the Q-statistic has a p-value of 0.302. The Jarque–Bera test also fails to reject residual normality ($p = 0.916077$). These results support the adequacy of the estimated long-run specification for the reported inferences.

V. CONCLUSION AND RECOMMENDATIONS

This study examined the long-run effects of minimum lending rate, monetary policy rate, average exchange rate, and consumer price index on agricultural sector credit in Nigeria over 1981–2024 using the DOLS estimator. The findings establish a long-run relationship between agricultural sector credit and the selected macroeconomic variables.

Minimum lending rate has a negative but statistically insignificant effect on agricultural sector credit. Monetary policy rate also has a negative long-run effect and is significant at the 10% level. Exchange rate has a negative and statistically insignificant coefficient, while CPI has a positive and statistically significant effect on agricultural sector credit. The positive CPI coefficient differs from the a priori expectation and suggests that higher price levels may be associated with increased nominal financing requirements in agriculture.

Based on these findings, the study recommends: (i) financial institutions and relevant policymakers should improve access to affordable agricultural credit through appropriately targeted lending programmes; (ii) monetary-policy transmission to agriculture should be strengthened so that changes in the policy rate do not unduly restrict productive agricultural finance; (iii) foreign-exchange management should support greater stability and predictability for agricultural producers that depend on imported inputs; and (iv) policies that reduce input-price volatility, particularly for fuel, fertilisers, and other key agricultural inputs, should be strengthened.

REFERENCES

[1] S. Shyamoli and D. Arghadeep, "Sustainability and agriculture: A futuristic coherent environmental ethical technique," *Strad Research*, vol. 9, no. 1, pp. 93–103, 2022.

[2] R. Osabohien, N. Adeleye, and T. Dei Alwis, "Social protection policies and agricultural output in ECOWAS: Empirical evidence from panel data," *Heliyon*, vol. 6, no. 9, Art. no. e04891, 2020.

[3] International Food Policy Research Institute, "Unlocking the potential of African agriculture: Opportunities and challenges," IFPRI, 2021. IFPRI

[4] A. A. Chandio, "Factors influencing agricultural productivity in developing countries: A

systematic review," *Journal of Agricultural Studies*, vol. 7, no. 3, pp. 123–135, 2019.

[5] World Bank, *World Development Report: Agriculture for Development*. Washington, DC, USA: World Bank, 2022.

[6] M. S. Igben and E. O. Eyo, *Agricultural Economics: An Introduction to Basic Concepts and Principles*. Uyo, Nigeria: Best Print Publishers, 2002.

[7] F. O. Nwosu, N. N. O. Oguoma, N. G. Ben-Chendo, and A. Henry-Ukoha, "The agricultural credit guarantee scheme: Its roles, problems and prospects in Nigeria's quest for agricultural development," *Researcher*, vol. 2, no. 2, pp. 87–90, 2010.

[8] A. A. Umoren, E. J. Udoh, and S. B. Akpan, "Analysis of loan default among agricultural credit guarantee scheme (ACGS) loan beneficiaries in Akwa Ibom State, Nigeria," *African Journal of Agricultural Economics and Rural Development*, vol. 2, no. 2, pp. 120–128, 2014.

[9] N. Yoshino and F. Taghizadeh-Hesary, "Optimal credit guarantee ratio for small and medium-sized enterprises financing: Evidence from Asia," *Economic Analysis and Policy*, vol. 62, pp. 342–356, 2019, doi: 10.1016/j.eap.2018.09.011. ScienceDirect

[10] M. Gudger, *Credit Guarantees: An Assessment of the State of Knowledge and New Avenues of Research*. Rome, Italy: FAO, 1996.

[11] Central Bank of Nigeria, *Agricultural Credit Guarantee Scheme: Annual Report and Statement of Account, Dec. 2000*. Abuja, Nigeria: CBN, 2000.

[12] Central Bank of Nigeria, *Agricultural Credit Guarantee Scheme Activities, January–December 2018*. Abuja, Nigeria: Development Finance Department, CBN, 2018.

[13] A. Abdulsalam, "The socio-economic effects of youth unemployment: The case of Yola South Local Government Area, Adamawa State," *International Journal of Social Sciences and Management Research*, vol. 4, no. 5, pp. 12–35, 2018.

[14] A. O. Adegbemi, "Macroeconomic dynamics and the manufacturing output in Nigeria," *Mediterranean Journal of Social Sciences*, vol. 9, no. 2, pp. 13–25, 2018.

[15] International Monetary Fund, "Interest rate," IMF, 2025.

[16] H. A. Alafif, "Interest rate and some of its applications," *Journal of Applied Mathematics and Physics*, vol. 11, no. 6, pp. 1557–1569, 2023, doi: 10.4236/jamp.2023.116102. Scientific Research Publishing

[17] Central Bank of Nigeria, *Statistical Bulletin*. Abuja, Nigeria: CBN, 2016.

[18] A. S. Iliyasu, "An empirical analysis of the impact of interest rate on agriculture in Nigeria," *Journal of Economics and Sustainable Development*, vol. 10, no. 22, pp. 106–115, 2019.

[19] Central Bank of Nigeria, *Statistical Bulletin*. Abuja, Nigeria: CBN, 2017.

[20] International Monetary Fund, "Consumer Price Index (CPI) – IMF Data," IMF, 2024. IMF Data

[21] U.S. Bureau of Labor Statistics, "Consumer Price Index (CPI)," 2023. U.S. Bureau of Labor Statistics

[22] E. Chukwuemeka and U. Ibekwe, "Effect of exchange rate on agricultural sector output in Nigeria (1987–2019)," *International Journal of Economic Development Policies*, vol. 8, no. 1, pp. 45–58, 2020.

[23] Central Bank of Nigeria, "The conduct of monetary policy," CBN, 2022. Central Bank of Nigeria

[24] F. S. Mishkin and S. Eakins, *Financial Markets and Institutions*, 9th ed. Harlow, U.K.: Pearson, 2021.

[25] O. A. Olatunji and A. S. Adebayo, "The impact of monetary policy on agricultural productivity and food prices in Nigeria," *ABUAD Journal of Sustainable Development*, vol. 9, no. 1, pp. 45–60, 2024.

[26] O. Utuk, A. B. Udo, B. L. Akpan, E. E. Bassey, and I. M. Okon, "Effect of climate change on agricultural sector: Evidence from Nigeria," *Wukari International Studies Journal*, vol. 8, no. 5, pp. 92–100, 2024.

[27] T. Mudau and D. Mokatsanyane, "Analyzing the impact of macroeconomic variables on agricultural derivatives performance in the SAFEX market," *Finance, Accounting and Business Analysis*, vol. 7, no. 1, pp. 17–29, 2025.

[28] B. M. Abdullahi, "The impact of monetary policy on agricultural productivity and food prices in Nigeria: A time-series analysis," *African Journal of Stability & Development*, vol. 16, no. 2, pp. 291–315, 2024.

[29] D. T. Bonny and E. P. Ayunku, "The impact of selected macroeconomic variables on agricultural sector performance in Nigeria," *African Journal of Management and Business Research*, vol. 17, no. 1, pp. 308–325, 2024, doi: 10.62154/ajmbr.2024.017.010525.

[30] A. A. Okuduwor, G. L. Tuaneh, M. O. Obe-Nwaka, and E. Agbenyi, "Effects of some macroeconomic variables on agricultural output: Implication for food security in Nigeria," *AKSU Journal of Agricultural Economics, Extension and Rural Development*, vol. 6, no. 1, pp. 27–33, 2023.

[31] O. H. Chiogor, J. Gylych, and O. O. Alabi, "Macroeconomic impact of agricultural financing reforms: A computable general equilibrium analysis of Nigeria," *Journal of Economics, Finance and Accounting*, vol. 10, no. 2, pp. 98–107, 2023.

[32] E. O. Eyo, M. A. Nwaogu, and M. E. Agenson, "Agricultural credit guarantee in Nigeria and the uncertainties of the macroeconomic environment," *International Journal of Economics and Financial Issues*, vol. 10, no. 2, pp. 20–29, 2020.

[33] O. P. Tiamiyu, R. W. Bwala, and O. O. Alawole, "The impact of agricultural credit guarantee scheme on Nigeria's GDP: A sectoral approach," *Journal of Agricultural Finance and Policy*, vol. 3, no. 2, pp. 89–99, 2017.

[34] L. O. Onyishi, C. J. Arene, and C. M. Ifiorah, "Effects of interest rate deregulation on agricultural finance and growth in Nigeria," *Review of Agricultural and Applied Economics*, vol. 18, no. 1, pp. 1–8, 2015.

[35] S. B. Akpan, O. D. Akpan, and U. A. Essien, "Government agricultural credit policy and macroeconomic fundamentals: A case study of agricultural credit guarantee scheme fund in Nigeria," *Public Policy and Administration Research*, vol. 2, no. 2, pp. 61–75, 2012.

[36] D. C. Okeke and O. R. Okeke, "Macroeconomic variables and agricultural output in Nigeria," *Medicon Agriculture & Environmental Sciences*, vol. 2, no. 6, pp. 43–49, 2022.

[37] J. H. Stock and M. W. Watson, "A simple estimator of cointegrating vectors in higher order integrated systems," *Econometrica*, vol. 61, pp. 783–820, 1993, doi: 10.2307/2951763. JSTOR

[38] W. Newey and K. West, "Automatic lag selection in covariance matrix estimation," *Review of Economic Studies*, vol. 61, pp. 631–653, 1994, doi: 10.2307/2297912. Oxford Academic