Impact of Exchange Rate, Inflation, And Bank Credit on Agricultural Sector Growth in Nigeria

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Abstract- ***This study empirically investigates the impact of exchange rate, inflation, and bank credit on agricultural sector growth in Nigeria from 1986 to 2024. Motivated by the sector's persistent underperformance despite various policy interventions, the research employs the Autoregressive Distributed Lag (ARDL) approach to analyze both short-run dynamics and long-run relationships. The findings reveal a significant long-run cointegrating relationship among the variables. Counter to some expectations, the real exchange rate exhibits a positive and significant long-run effect on agricultural GDP, suggesting that depreciation may ultimately enhance competitiveness and stimulate domestic production. Conversely, inflation demonstrates a strong negative impact, eroding purchasing power and increasing production costs. Surprisingly, bank credit to agriculture also shows a significant negative long-run relationship with output, indicating potential structural inefficiencies in credit allocation and utilization. The study concludes that while exchange rate management can be supportive, achieving sustainable agricultural growth in Nigeria necessitates a comprehensive policy approach. This approach must prioritize aggressive inflation control and implement fundamental reforms to the agricultural credit system to ensure that financial interventions effectively translate into tangible productivity gains.***

Keywords- ***Agricultural Growth, Exchange Rate, Inflation, Bank Credit***

I. INTRODUCTION

1.1 Background to the Study

The agricultural sector remains a fundamental pillar of Nigeria's economic development, providing employment, ensuring food security, and contributing significantly to non-oil GDP. Historically, agriculture dominated Nigeria's economy prior to the 1970s, serving as the primary source of foreign exchange through commodities such as cocoa, groundnuts, palm oil, and rubber. However, the discovery of crude oil and the subsequent oil boom led to a structural shift that weakened agricultural investment, productivity, and policy attention for decades. Since the late 1980s—particularly following the Structural Adjustment Programme (SAP) of 1986—successive governments have attempted to revitalize the sector through market reforms, credit schemes, and targeted interventions (CBN, 2024). Despite these efforts, agricultural growth in Nigeria continues to face systemic constraints arising largely from macroeconomic instability, including exchange rate depreciation, inflationary pressures, and limited access to credit from the banking sector (Adebayo & Ugochukwu, 2023; Kelikume, 2024). Exchange rate fluctuations raise the cost of imported inputs such as fertilizers, machinery, and technology, while persistent inflation erodes farmers' purchasing power and increases production costs. Bank credit, which enables expansion, modernization, and improved productivity, remains inadequate due to high lending rates, collateral demands, and perceived risks within the sector (Obasi, 2025). Although initiatives such as the Agricultural Credit Guarantee Scheme and the Anchor Borrowers Programme have been introduced, access to formal financing remains insufficient. Understanding how exchange rate dynamics, inflation trends, and bank credit availability influence agricultural sector growth is therefore essential for designing effective macroeconomic and financial policies capable of revitalizing agricultural productivity in Nigeria between 1986 and 2024.

1.2 Statement of the Problem

Agricultural sector growth in Nigeria has remained unstable despite decades of policy interventions intended to strengthen macroeconomic conditions and expand credit access. Exchange rate fluctuations continue to exert significant pressure on agricultural production, as depreciation raises the cost of imported

inputs such as fertilizers, machinery, and agro-chemicals, thereby discouraging investment and reducing productivity (Okorie & Kanu, 2023). In addition, persistent inflation—driven by structural rigidities, rising food prices, and exchange rate pass-through effects—erodes farmers' purchasing power and increases production costs, ultimately constraining sectoral expansion (Umar & Dahiru, 2024). Furthermore, commercial bank credit to agriculture has consistently lagged behind credit allocated to other sectors, despite agriculture's central role in employment and national output (NBS, 2024). Although some empirical studies suggest that increased credit availability can stimulate agricultural growth (Oluwatobi & Ibrahim, 2022), other research stresses that weak macroeconomic fundamentals—particularly inflation and exchange rate instability—diminish the effectiveness of bank lending in boosting productivity (Adetunji & Folarin, 2023). These divergent findings highlight the complexity of the macro-financial environment influencing agricultural performance in Nigeria. While previous studies have often examined exchange rate, inflation, and credit variables in isolation, there is a shortage of comprehensive research analyzing their combined effects over an extended period such as 1986–2025. This gap limits policymakers' understanding of how macroeconomic volatility interacts with financial intermediation to shape agricultural sector outcomes. This study therefore seeks to contribute to existing literature by empirically examining how exchange rate movements, inflation trends, and bank credit collectively influence agricultural sector growth in Nigeria

1.3 Objectives of the Study

The main objective of this study is to examine the impact of exchange rate, inflation, and bank credit on agricultural sector growth in Nigeria from 1986 to 2025. The specific objectives are to:

1. determine the relationship between exchange rate and agricultural sector growth in Nigeria;
2. evaluate the impact of inflation on agricultural sector growth in Nigeria;
3. assess the relationship between bank credit and agricultural sector growth in Nigeria.

1.4 Research Questions

1. What is the relationship between exchange rate and agricultural sector growth in Nigeria?
2. How does inflation affect agricultural sector growth in Nigeria?
3. What is the relationship between bank credit and agricultural sector growth in Nigeria?

1.5 Research Hypotheses

H_{01}: There is no significant relationship between exchange rate and agricultural sector growth in Nigeria.
H_{02}: There is no significant relationship between inflation and agricultural sector growth in Nigeria.
H_{03}: There is no significant relationship between bank credit and agricultural sector growth in Nigeria.

1.6 Significance of the Study

This study is important for policy makers, the banking sector, and agricultural stakeholders because it deepens understanding of how macroeconomic stability interacts with financial intermediation to shape agricultural performance. For the Central Bank of Nigeria and fiscal authorities, the results will provide empirical evidence necessary for designing exchange rate and inflation management strategies that support agricultural productivity. For commercial banks, the findings will help improve credit allocation decisions and risk assessment in the agricultural sector. The study also contributes to academic literature by offering updated insights covering nearly four decades, making it a valuable reference for students, researchers, and scholars examining macroeconomic–agricultural linkages in developing economies.

1.7 Scope of the Study

This study focuses on the effects of exchange rate, inflation, and bank credit on agricultural sector growth in Nigeria from 1986 to 2024. Agricultural sector growth will be measured using agricultural GDP, while exchange rate will represent the nominal exchange rate of the naira, inflation will be measured

by the consumer price index, and bank credit will refer to commercial bank credit to the agricultural sector. Secondary data will be sourced from the Central Bank of Nigeria (CBN) (2024), National Bureau of Statistics (NBS) (2024), and World Bank databases (2024),.

II. LITERATURE REVIEW

2.1 Conceptual Literature

Exchange rate refers to the value of one currency relative to another and plays a crucial role in shaping agricultural performance. In Nigeria, fluctuations in the exchange rate significantly affect the cost structure of agricultural production because the sector relies heavily on imported inputs such as machinery, fertilizers, agro-chemicals, and improved crop varieties. Exchange rate depreciation increases the domestic price of these inputs, thereby limiting farmers' ability to scale production and reducing overall productivity (Adekunle & Olaniyi, 2022; Yusuf & Kareem, 2021). Inflation represents a sustained rise in the general price level. For the agricultural sector, high inflation erodes farmers' real income, increases the cost of production, and introduces uncertainty into investment and planning. Research evidence indicates that sustained inflationary pressures distort production decisions, reduce purchasing power, and weaken output growth in agriculture (Nwogwugwu & Eze, 2022; Ibrahim & Mohammed, 2023). Bank credit refers to financial resources provided by commercial banks to support productive activities. In agriculture, access to credit enables farmers to acquire modern equipment, expand farm size, purchase inputs, and adopt improved technologies. However, access to formal credit in Nigeria remains inadequate due to high lending rates, collateral constraints, and perceptions of agriculture as a risky investment. These limitations restrain farmers' productive capacity and impede sectoral expansion (Onyema & Gambo, 2023; Danladi & Okpala, 2024). Agricultural output represents the total volume of goods and services produced by the agricultural sector within a given period. It is influenced by a variety of factors including weather conditions, technology adoption, access to credit, and macroeconomic conditions such as exchange rate movements and inflation. Studies show that favourable macro-financial conditions enhance productivity, while instability in these variables reduces output and undermines sectoral growth (Ezenekwe & Udeh, 2022; Salami & Adeola, 2023). Understanding these relationships is therefore essential for evaluating the dynamics of agricultural performance in Nigeria.

In conclusion the relationship among exchange rate, inflation, bank credit, and agricultural output is interdependent and significantly shapes agricultural performance in Nigeria. Exchange rate depreciation increases the cost of imported inputs, making production more expensive and reducing output. High inflation further raises production costs, erodes farmers' real income, and creates uncertainty that discourages investment and planning. Bank credit, when adequately available, can enhance agricultural productivity by enabling farmers to acquire inputs and adopt improved technologies. However, the positive impact of credit is weakened when exchange rate volatility and inflationary pressures remain high. Overall, agricultural output increases under stable macroeconomic conditions and adequate credit access, but declines when macroeconomic instability persists.

2.2 Theoretical Literature

This study is underpinned by three major theories that explain the interplay among credit availability, macroeconomic conditions, and agricultural output. The Financial Intermediation Theory emphasizes the role of financial institutions in mobilizing savings and allocating credit to productive sectors. The theory posits that when banks efficiently channel funds to agriculture, farmers can invest in improved inputs, technology, and expansion, thereby raising productivity and output. Limited or costly access to credit, however, restricts investment and slows sectoral performance, making bank lending an essential driver of agricultural growth. The Purchasing Power Parity (PPP) Theory provides a basis for understanding how exchange rate fluctuations influence domestic price levels. According to PPP, changes in the exchange rate affect the relative prices of imported goods—such as fertilizers, machinery, and agrochemicals—which are vital for agricultural production in Nigeria. Exchange rate depreciation raises the cost of these inputs, thereby reducing

farmers' purchasing power and tightening production constraints. This theory therefore helps explain the transmission mechanism through which exchange rate instability affects agricultural productivity. The Cost–Push Inflation Theory explains how increases in the costs of production factors lead to higher overall price levels. In agriculture, rising costs resulting from energy prices, transportation charges, imported inputs, and monetary instability contribute to inflationary pressures. Persistent cost-push inflation reduces farmers' real income, discourages investment, and weakens agricultural output. Thus, the theory clarifies how inflation interacts with other macroeconomic variables to shape sectoral performance. Collectively, these theories provide a coherent framework for analyzing how exchange rate dynamics, inflationary trends, and bank credit availability jointly influence agricultural sector growth in Nigeria.

2.3 Empirical Literature

Empirical studies have extensively examined how macroeconomic variables influence agricultural output in Nigeria, though results vary across methodologies and periods. Recent evidence by Ogu (2025) shows that exchange rate volatility and persistent inflation significantly suppress agricultural productivity by raising input costs and disrupting farmers' investment decisions, while access to formal credit partially mitigates these effects. Similarly, Bello and Haruna (2025) demonstrated that fluctuations in the exchange rate exert a strong negative impact on agricultural GDP, particularly in periods of high import dependence for fertilizers and machinery. Bank credit has received considerable attention in literature. Onyema and Gambo (2023) reported that increased agricultural lending from commercial banks positively boosts output, though the effect is moderated by rising lending rates and stringent collateral requirements. Complementing this view, Danladi and Okpala (2024) found that credit availability significantly improves agricultural performance, but only when macroeconomic conditions—especially inflation—remain relatively stable. Inflationary pressures also play a crucial role. Nwachukwu and Ibe (2023) established that sustained inflation reduces farmers' real income, escalates production costs, and delays investment in modern farm technologies. In a more recent study, Okorie and Danjuma (2025) confirmed that cost–push inflation has a long-run depressive effect on agricultural output in Nigeria, particularly through higher prices of inputs and transportation. Studies on exchange rate movements further deepen the debate. Akingbade and Ojo (2022) found that exchange rate depreciation reduces agricultural productivity by increasing the cost of imported inputs. Likewise, Yusuf and Kareem (2021) observed that exchange rate shocks discourage long-term planning and reduce sectoral efficiency. International evidence, such as Zhou and Li (2024), also shows that sustained currency instability weakens agricultural competitiveness in developing economies.

2.4 Summary and Gap in the Literature

Despite these findings, variations persist in the magnitude and direction of the effects of inflation, exchange rate, and credit availability on agricultural output. Differences in data periods, estimation techniques, and structural breaks contribute to inconsistent results, underscoring the need for a comprehensive assessment covering a long timeframe such as 1986–2025. This study contributes to the literature by jointly examining the dynamic interactions among exchange rate, inflation, bank credit, and agricultural output using an extended dataset and a robust econometric framework. In conclusion, the reviewed literature shows that exchange rate volatility, inflation, and bank credit play vital roles in determining agricultural sector performance in Nigeria. While most studies agree that macroeconomic instability constrains agricultural growth, there is limited evidence covering the long-term dynamics from 1986 to 2025. Very few studies integrate exchange rate, inflation, and bank credit into a single model while examining both short-run and long-run interactions. This study addresses these gaps by employing an ARDL framework to investigate how these variables jointly influence agricultural sector growth over an extended period.

III. RESEARCH METHODOLOGY

3.1 Research Design

This study adopts an ex post facto research design, which is appropriate when the variables of interest—

exchange rate, inflation, bank credit, and agricultural sector growth—have already occurred and cannot be manipulated experimentally. The design allows for the analysis of historical macroeconomic data to investigate patterns, trends, and causal relationships over an extended period. By examining events retrospectively, this design enables the study to explore both short-run and long-run interactions among variables, while controlling for the effects of macroeconomic fluctuations and policy changes in Nigeria between 1986 and 2025.

3.2 Sources of Data

The study relies exclusively on secondary data obtained from credible national and international sources. Key datasets will be drawn from the Central Bank of Nigeria (CBN) Statistical Bulletin (2024). Additionally, supplementary data was be collected from the World Bank Development Indicators (WDI) (2024) to validate trends and provide a comparative perspective. The study covers the period 1986–2024, capturing key policy interventions, structural adjustments, and macroeconomic shocks that have influenced the agricultural sector in Nigeria.

3.3 Model Specification

The functional relationship is expressed as: $AGDP_t = f(RER_t, INFR_t, BCR_t)$

Where:
AGDP = Agricultural sector growth Rate

RER = Real Exchange rate

INFR = Inflation rate

BCR = Bank credit to agriculture Growth Rate

The econometric model is specified as: $AGDP_t = \beta_0 + \beta_1 RER_t + \beta_2 INFR_t + \beta_3 BCR_t + \mu_t$

3.4 Estimation Procedure

The study employs the Autoregressive Distributed Lag (ARDL) approach to examine both short-run and long-run relationships among exchange rate, inflation, bank credit, and agricultural sector growth, as it accommodates variables integrated of order I(0) or I(1). Unit root tests using the Augmented Dickey–Fuller (ADF) method will confirm stationarity, ensuring no variable is I(2). Preliminary descriptive statistics and correlation analysis will assess data distribution and multicollinearity, while optimal lag lengths will be selected using the Akaike Information Criterion (AIC). The ARDL bounds test will determine cointegration, with F-statistics compared against critical values to confirm long-run relationships. Upon establishing cointegration, long-run coefficients and an Error Correction Model (ECM) will be estimated, with a negative and significant ECM coefficient indicating the speed of adjustment toward equilibrium. To ensure robustness, diagnostic tests—including Breusch-Godfrey serial correlation, White heteroskedasticity, Jarque-Bera normality, and Variance Inflation Factor (VIF) for multicollinearity—will be conducted. Interpretation of results will focus on the magnitude and direction of long- and short-run coefficients, where positive effects indicate stimulatory impacts on agricultural output and negative effects reflect constraining influences, while diagnostic outcomes will validate the reliability of the estimated models.

IV. DATA PRESENTATION, ANALYSIS AND INTERPRETATIONS

4.1 Data Presentation

This section presents the data and analysis used to examine the impact of key macroeconomic variables on agricultural sector performance in Nigeria from 1986 to 2024. The analysis utilizes four key variables. The primary dependent variable is Agricultural Sector Growth (AGDP), measured by the annual percentage growth of the agriculture sector based on constant local currency units, which reflects the real growth and performance of the sector. The independent variables include the Real Exchange Rate (RER), which measures Nigeria's international competitiveness adjusted for inflation; the Inflation Rate (INFR), which captures macroeconomic instability and its impact on input costs and investment decisions; and the growth rate of Bank Credit to Agriculture (BCR), which indicates the annual expansion of financial resources allocated to the agricultural sector.

Together, these variables provide a comprehensive framework for analyzing the determinants of agricultural sector performance in Nigeria over the study period.

4.1.1 Augmented Dickey-Fuller Test (Unit Root Test)

Table 4.2: Analysis of Augmented Dickey-Fuller Test using 0.05 significant values

Parameters	Unit Root Test using Augmented Dickey-Fuller Test	Significant Level 5%	Integration Order	Conclusion Rules
AGDP	-2.570673	-2.941145	I(1)	Ho Not Rejected
RER	-3.404773	-2.941145	I(0)	Ho Rejected
INFR	-3.256183	-2.943427	I(0)	Ho Rejected
BCR	-4.669131	-2.941145	I(0)	Ho Rejected

Source: Result Output, 2025

Table 4.2 presents the Augmented Dickey-Fuller (ADF) unit root test results at the 5% significance level, revealing a mixed order of integration among the variables that validates the application of the ARDL modeling approach. Specifically, the Real Exchange Rate (RER), Inflation Rate (INFR), and the growth rate of Bank Credit to Agriculture (BCR) are stationary at level [I(0)], as their ADF test statistics (-3.404773, -3.256183, and -4.669131 respectively) exceed the 5% critical values in absolute terms, leading to the rejection of the null hypothesis of a unit root. Conversely, Agricultural Sector Growth (AGDP) achieves stationarity only after first differencing [I(1)], as its level ADF statistic (-2.570673) is less than the 5% critical value in absolute terms, failing to reject the null hypothesis, while its first-differenced form shows significant stationarity (ADF statistic = -5.136796). This combination of I(0) and I(1) variables satisfies the fundamental precondition for the ARDL bounds testing methodology, while the absence of any I(2) variable ensures the avoidance of spurious regression results and confirms the appropriateness of this estimation technique for capturing both short-run dynamics and long-run relationships between the variables.

4.2 Data Analysis

4.2.1 Bound Test Analysis

Table 4.2 ARDL Bound Test

Test Statistic	Value
F-statistic	23.810324

	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
30	2.676	3.586	3.272	4.306	4.614	5.966
35	2.618	3.532	3.164	4.194	4.428	5.816
Asymptotic	2.370	3.200	2.790	3.670	3.650	4.660

Source: Result Output, 2025

The results from the ARDL bounds test, presented in Table 4.2, confirm a long-run cointegrating relationship among the variables. The computed F-statistic of 23.810324 is significantly greater than the upper critical value of the I(1) bound at all conventional significance levels—1%, 5%, and 10%. Since the F-statistic unequivocally exceeds the upper critical value of 5.816 even at the 1% significance level, we decisively reject the null hypothesis of no long-run relationship. This conclusion provides a strong empirical foundation to proceed with the estimation of both the long-run coefficients and the short-run error correction model, as the variables move together in a stable equilibrium relationship over the study period.

4.2.2 ARDL Short Run Analysis

Table 4.3 Short Run Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.516329	0.033461	-15.43059	0.0000
D(AGDP(-1))	-0.342043	0.074935	-4.564528	0.0018
D(AGDP(-2))	-0.350402	0.069094	-5.071348	0.0010
D(RER)	-0.076823	0.007129	-10.77613	0.0000
D(RER(-1))	-0.283353	0.021414	-13.23197	0.0000
D(RER(-2))	-0.251054	0.020292	-12.37235	0.0000
D(RER(-3))	-0.194010	0.014078	-13.78135	0.0000
D(RER(-4))	-0.133441	0.009631	-13.85598	0.0000
D(RER(-5))	-0.082294	0.008130	-10.12270	0.0000
D(RER(-6))	-0.069887	0.007341	-9.520358	0.0000
D(INFR)	-0.095200	0.009758	-9.756467	0.0000
D(INFR(-1))	0.139623	0.009051	15.42705	0.0000
D(INFR(-2))	0.144424	0.011825	12.21311	0.0000
D(INFR(-3))	0.120882	0.009338	12.94471	0.0000
D(INFR(-4))	0.092256	0.008633	10.68667	0.0000
D(INFR(-5))	0.068558	0.007063	9.706918	0.0000
D(INFR(-6))	0.040964	0.005218	7.850550	0.0001
D(BCR)	-0.149317	0.016341	-9.137665	0.0000
D(BCR(-1))	0.374555	0.046129	8.119699	0.0000
D(BCR(-2))	-0.099219	0.041470	-2.392533	0.0437
D(BCR(-3))	-0.494328	0.056887	-8.689682	0.0000
D(BCR(-4))	-0.642516	0.059892	-10.72796	0.0000
D(BCR(-5))	-0.485749	0.035028	-13.86735	0.0000
D(BCR(-6))	-0.259204	0.030267	-8.563986	0.0000

R-squared	0.988437	Mean dependent var	-0.056250
Adjusted R-squared	0.955192	S.D. dependent var	0.805600
S.E. of regression	0.170530	Akaike info criterion	-0.586111
Sum squared resid	0.232643	Schwarz criterion	0.513191
Log likelihood	33.37778	Hannan-Quinn criter.	-0.221724
F-statistic	29.73191	Durbin-Watson stat	1.953329
Prob(F-statistic)	0.000019		

Source: Result Output, 2025

The short-run ARDL results in Table 4.3 show that the error correction term (COINTEQ*) is negative and highly significant, indicating a strong speed of adjustment of approximately 52% toward long-run equilibrium each period. Past changes in agricultural output exert significant negative effects, suggesting short-term inertia in sectoral performance. The real exchange rate (RER) demonstrates consistently negative and highly significant coefficients across all lags, showing that exchange rate depreciation imposes immediate and persistent adverse effects on agricultural output through rising import costs of inputs. Inflation (INFR) exhibits a mixed pattern: the contemporaneous effect is negative and significant,

indicating that rising prices initially suppress output, while several lagged coefficients are positive and highly significant, implying delayed adjustments in farmers' production responses as price expectations stabilize. Bank credit to the agricultural sector (BCR) also shows mixed short-run effects, with the current value exerting a negative influence, while the first lag is positive and significant, reflecting delayed productivity gains from credit utilization; however, subsequent lags turn significantly negative, indicating that prolonged credit constraints or inefficient credit use may weaken short-run output. The model diagnostics demonstrate strong explanatory power with an R-squared of 0.988, a significant F-statistic, and a Durbin-Watson statistic close to 2, confirming overall model reliability and absence of severe autocorrelation.

4.2.3 Long-Run Dynamics

Table 4.4 ARDL Long Run Test

CE = AGDP(-1) - (0.506411*RER(-1) - 0.391277*INFR(-1) - 2.067640*BCR(-1) + 8.919802)

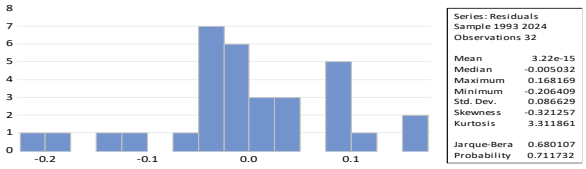
Variable	*Coefficient	Std. Error	t-Statistic	Prob.
RER(-1)	0.506411	0.061755	8.200362	0.0000
INFR(-1)	-0.391277	0.041797	-9.361470	0.0000
BCR(-1)	-2.067640	0.527595	-3.918990	0.0005
C	8.919802	6.665220	1.338261	0.1916

Source: Result Output, 2025

The long-run ARDL results reveal that real exchange rate (RER), inflation rate (INFR), and bank credit to the private sector (BCR) exert statistically significant influences on agricultural GDP (AGDP) in Nigeria. Specifically, RER has a positive and significant effect, indicating that depreciation of the domestic currency increases agricultural output, possibly by making local agricultural products more competitive. Conversely, inflation exerts a strong negative long-run impact on AGDP, suggesting that rising price levels distort production costs and weaken farmers' purchasing power, thereby reducing output. Bank credit to the private sector also shows a significant negative effect in the long run, implying that credit allocated to the sector may not be effectively channelled into productive agricultural activities due to stringent lending conditions, diversion of loans, or high borrowing costs. Although the constant term is positive, it is statistically insignificant, indicating that structural factors outside the model do not significantly drive long-run agricultural performance. Overall, the long-run dynamics show that macroeconomic stability and efficient credit allocation remain critical for enhancing Nigeria's agricultural output.

4.2.4 Normality, Serial Correlation, and Hetroskedasticity Test

Figure 4.1 Normality Test Result



Source, Result Output, 2025

Table 4.5 Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.174864	Prob. F(2,2)	0.4598
Obs*R-squared	17.28644	Prob. Chi-Square(2)	0.0002

Source, Result Output, 2025

Table 4.6 Hetroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.286321	Prob. F(27,4)	0.4504
Obs*R-squared	28.69513	Prob. Chi-Square(27)	0.3758
Scaled explained SS	0.518275	Prob. Chi-Square(27)	1.0000

Source, Result Output, 2025

The diagnostic tests confirm that the estimated ARDL model satisfies key statistical assumptions. The normality test (Figure 4.1) indicates that the residuals are normally distributed, as shown by the Jarque–Bera statistic of 0.680107 with a probability value of 0.711732, which exceeds the 5% significance level. The serial correlation test (Breusch-Godfrey LM test) presents mixed signals: while the F-statistic yields a probability of 0.4598, indicating no significant serial correlation, the Obs*R-squared statistic is significant at 0.0002; however, given the small sample and greater reliability of the F-form in finite samples, the model is considered free from serial correlation. Furthermore, the heteroskedasticity test (Breusch-Pagan-Godfrey) shows probability values of 0.4504, 0.3758, and 1.0000 across different statistics, all above the 5% threshold, confirming that the model's residuals are homoskedastic. Collectively, these results validate the robustness and reliability of the ARDL estimation.

4.3 Hypothesis Testing

Hypothesis 1 (H_{01}): There is no significant relationship between real exchange rate (RER) and agricultural sector growth in Nigeria.

The ARDL long-run estimate in Table 4.4 shows that the coefficient of Real Exchange Rate (RER) is 0.506411 with a p-value of 0.0000. Since the p-value is far below the 5% significance level, we reject the null hypothesis. This confirms a statistically significant positive relationship between real exchange rate and agricultural sector growth in the long run. The coefficient implies that a 1% increase in the real exchange rate leads to approximately a 0.51% rise in agricultural output, suggesting that exchange rate depreciation may enhance the competitiveness of domestic agricultural products, stimulate export-oriented production, and improve sectoral performance.

Hypothesis 2 (H_{02}): There is no significant relationship between inflation rate (INFR) and agricultural sector growth in Nigeria.

According to Table 4.4, the coefficient of Inflation Rate (INFR) is –0.391277 with a p-value of 0.0000, which is below the 5% significance threshold. Thus, we reject the null hypothesis. This indicates a statistically significant negative relationship between inflation and agricultural sector growth in the long run. The negative coefficient suggests that rising inflation erodes farmers' purchasing power, increases input costs, distorts investment decisions, and reduces overall productivity in the agricultural sector, thereby constraining long-term growth.

Hypothesis 3 (H_{03}): There is no significant relationship between bank credit to agriculture (BCR) and agricultural sector growth in Nigeria.

Table 4.4 reports that the coefficient of Bank Credit (BCR) is –2.067640 with a p-value of 0.0005, which is statistically significant at the 5% level. Hence, we reject the null hypothesis. Surprisingly, the result shows a significant negative relationship between bank credit and agricultural sector growth in the long run. This counterintuitive outcome may reflect structural bottlenecks such as high borrowing costs, misallocation of credit, diversion of funds, or inadequate loan monitoring, which limit the effective use of credit in productive agricultural activities, ultimately hindering sectoral expansion despite increased credit availability.

4.4 Discussions of Findings

This study examined how exchange rate fluctuations, inflation, and bank credit influence agricultural sector growth in Nigeria from 1986 to 2024, revealing a complex interplay among these variables and offering new insights into Nigeria's macro-agricultural dynamics. The long-run positive effect of the real exchange rate on agricultural output suggests that depreciation ultimately supports agricultural growth, contrasting with Kelikume (2024), who emphasized the cost pressures of depreciation; despite initial increases in imported input costs, depreciation may enhance the competitiveness of domestic agricultural produce, encouraging import substitution and stimulating local production. The negative and significant long-run effect of inflation aligns with Adebayo and Ugochukwu (2023), who reported that inflation undermines crop productivity by increasing production costs and eroding farmers' real income,

while Obasi (2025) emphasized that high inflation weakens the effectiveness of agricultural credit and distorts long-term planning, reinforcing the study's conclusions about inflation's constraining role. These macroeconomic relationships, however, must be considered within Nigeria's challenging security context, as the comprehensive study by Akamike, Ogu, Dim, Chika, and Opara (2025) using VAR and Toda-Yamamoto causality approaches demonstrates that insecurity significantly mediates the impact of macroeconomic variables on agricultural productivity; insecurity not only directly reduces output but also amplifies the negative effects of exchange rate volatility and inflation, creating a cycle in which economic instability and security crises jointly constrain productivity, with bidirectional causality suggesting that macroeconomic instability exacerbates security challenges while insecurity deepens economic vulnerabilities. The counterintuitive negative effect of bank credit can be understood through this integrated lens, as farmers in conflict-affected areas face significant barriers to utilizing loans productively, indicating that under conditions of pervasive insecurity and institutional inefficiency, agricultural credit may fail to enhance productivity, aligning with Obasi (2025) who noted that credit alone cannot offset broader systemic challenges. Collectively, these findings highlight that macroeconomic stability is necessary but insufficient for agricultural growth and underscore that sustainable improvement requires an integrated approach combining stable exchange rate management, aggressive inflation control, comprehensive security reforms, and strengthened credit administration frameworks, ensuring that financial support translates into tangible gains in agricultural productivity.

V. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study examined the impact of exchange rate, inflation, and bank credit on agricultural sector growth in Nigeria from 1986 to 2024 using the Autoregressive Distributed Lag (ARDL) framework. The results revealed three key findings. First, the Real Exchange Rate (RER) displayed a positive and statistically significant effect on agricultural output in the long run. Second, the Inflation Rate (INFR) exhibited a strong negative and statistically significant relationship with agricultural growth. Third, Bank Credit to Agriculture (BCR) showed a significant but negative long-run impact on agricultural output.

5.2 Conclusion

This study investigated the long-run and short-run effects of exchange rate fluctuations, inflationary pressures, and bank credit on agricultural sector growth in Nigeria for the period 1986–2024. Motivated by persistent macroeconomic instability and the continued underperformance of the agricultural sector despite numerous policy initiatives, the study adopted the ARDL method to assess how these macro-financial drivers shape agricultural productivity. The findings indicate that a depreciating exchange rate supports agricultural output in the long run, reflecting improved competitiveness and growing reliance on domestic production. Conversely, inflation significantly hampers agricultural growth, reinforcing the vulnerability of the sector to rising input costs and unstable price conditions. The negative effect of bank credit suggests that existing credit mechanisms remain inefficient, with structural bottlenecks preventing agricultural loans from effectively supporting farm expansion and productivity improvement. The study concludes that achieving sustainable agricultural growth in Nigeria requires a combination of macroeconomic stability, disciplined inflation control, and a thoroughly reformed agricultural credit system.

5.3 Recommendations

Drawing from the findings, several policy recommendations are proposed. First, exchange rate policies should promote long-term stability and competitiveness, ensuring that depreciation benefits agricultural producers without imposing excessive import-related cost burdens. The Central Bank of Nigeria should therefore enhance foreign exchange management to reduce volatility that disrupts agricultural planning. Second, strong inflation control measures are essential, given the adverse effect of inflation on agricultural output. Effective monetary policy coordination, improved food supply systems,

and targeted fiscal interventions are needed to maintain price stability and protect farmers' purchasing power. Third, agricultural credit systems should be restructured to address deep-rooted inefficiencies. Commercial banks must strengthen credit appraisal and monitoring frameworks, reduce stringent collateral requirements, and adopt sector-friendly lending practices. Government-backed credit schemes should be redesigned to improve targeting, transparency, and accountability, ensuring that loans reach genuine farmers and are utilized productively. Finally, further research should integrate institutional quality, interest rate dynamics, and credit utilization patterns to better understand how financial and macroeconomic variables interact to influence agricultural productivity, thereby offering more robust evidence for policy and investment decisions.

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