Money Supply and Agricultural Output Nexus: The Nigerian Experience

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Abstract. This study examined the nexus between the money supply and agricultural sector output in Nigeria from 1990 to 2023. The study's specific objectives were to investigate the influence of the money supply on agricultural sector output and to determine the direction of the relationship between them, using an autoregressive lag model and a Granger causality test. The study's result showed a long-term link between money supply and agricultural output. It also showed that the broad money supply had a direct and significant long-term impact on the agrarian sector's production within the study period. Researchers using the Granger causality test found a one-directional relationship between the broad money supply and agricultural sector output. The study recommended that policymakers and the government should provide concessional credit instruments to farmers to increase access to these credit facilities and enhance agrarian output.

Keywords: money supply; agricultural sector output; financial stability; credit availability.

INTRODUCTION

The money supply is an essential economic tool that helps determine the liquidity, financial stability, and investment drive of any economy. Authors [1] assert that the central bank of a country controls the supply of money via monetary policy instruments to stabilise the economy. Authors [2] posit that monetary policy impacts various sectors of a country through the following avenues: bank lending, interest rates, asset pricing, treasury bills, and equity.

The agricultural sector has made significant contributions to employment generation, food security, and economic stability in Nigeria. Despite its importance, the sector's performance has been inconsistent due to various economic and financial constraints [3]. One key determinant of agricultural output is money supply, which affects credit availability, investment, and production capacity [4]. The link between money supply and agrarian output continues to generate mixed reactions in economic literature, as changes in monetary policy influence inflation, interest rates, and access to capital, all of which impact agricultural productivity [5].

Nigeria's monetary authorities have implemented various policies to regulate money supply, aiming to foster economic growth, control inflation, and improve credit access for key sectors, including agriculture [6]. An adequate and well-regulated money supply enhances liquidity, reduces interest rates, and facilitates easier access to agricultural credit, thereby boosting productivity [7]. However, excessive increases in money supply can lead to inflationary pressures, increasing input costs such as fertilisers, seeds, and machinery, which may negatively impact agricultural output [8]. The nexus between money supply and agrarian production, when understood, would enhance effective policy design for agricultural sector performance and ensure economic stability [9].

Despite numerous government interventions and policies aimed at boosting agricultural output, the sector has not realised its full potential. Fluctuations in money supply, inflationary pressures, and inconsistent credit policies have constrained

agrarian productivity in Nigeria. Limited access to credit, high-interest rates, and poor infrastructure have further compounded the sector's challenges, leading to suboptimal performance [10]. A major constraint in the agricultural sector's performance is access to credit. Farmers in developing countries face challenges in obtaining loans due to high interest rates, stringent collateral requirements, and a preference for low-risk investments by financial institutions [11]. Without adequate credit, farmers cannot invest in modern equipment, high-quality seeds, or fertilisers, leading to low productivity [12]. Again, many smallholder farmers face difficulties in accessing banking services in rural areas. Adequate knowledge of rural financial markets suggests that monetary supply policies geared toward farmers often do not reach these end-users [13]. Additionally, a lack of proper financial inclusion compels farmers to resort to alternative sources of funding, such as informal credit, at higher costs.

An unstable money supply often exerts severe pressure on input prices, such as fertilisers, seedlings, and farm implements required by farmers. At excessive inflation, it erodes the financial strength of farmers and constitutes a significant impediment to acquiring major farm inputs [8]. Additionally, rising inflation can increase the cost of borrowing, further limiting farmers' ability to invest in expansion. Governments and financial institutions often introduce agricultural financing schemes, but inconsistent policies and inadequate implementation hinder their effectiveness. For example, in many countries, subsidy programs and low-interest agricultural loans are introduced but later discontinued due to budget constraints or corruption [14]. This instability makes long-term agricultural investment risky and unpredictable. For countries that rely on agricultural exports, fluctuations in exchange rates linked to changes in the money supply can impact farmers' incomes. A depreciation in currency value can make exports more competitive, but it also increases the cost of imported agricultural machinery and inputs [15]. This dual effect creates uncertainty in investment planning for farmers and agribusinesses.

There appears to be a lack of consensus on the relationship between the money supply and agricultural output in Nigeria. While some studies suggest a positive correlation, arguing that an increased money supply enhances credit availability and investment in agriculture, others indicate that excessive money supply leads to inflation, which erodes farmers' purchasing power and reduces productivity. This study aims to unravel the nexus.

The study's primary objective was to examine the relationship between the money supply and the agricultural sector in Nigeria. The precise objectives were to investigate the link between the money supply and the agricultural sector within the Nigerian economy, as well as the causality between the money supply and agrarian sector output. The scope of this study encompasses Nigeria, covering the period from 1990 to 2023.

Literature review

The money supply refers to the volume of money available in a country, comprising cash, checking accounts, and easily accessible deposits. It can be categorised as M1, M2, and M3. M1, or narrow money, which includes currency and demand deposits, is used for daily transactions. M2, or broad money, comprise M1 and savings deposits, time deposits, certificates of deposit and money market securities. At the same time, M3 includes M1, M2, and time deposits by financial institutions [16]. In economic growth, the money supply plays a crucial role in influencing employment, consumption, and the production of goods and services across all sectors of the Nigerian economy, including the agricultural industry [17].

Agricultural sector output encompasses the overall production of goods from the farm industry, including crop production, animal husbandry, forestry, and fishing products. Agricultural output can significantly contribute to a country's GDP, but various factors, including climate conditions, technology, land use, and labour, influence it. The sector is vital in ensuring food security, generating inputs for the industrial sector, and creating employment opportunities. Hence, changes in agricultural output can have a pass-through effect on food prices, trade balances, and economic growth [18].

The Quantity Theory of Money. This study draws on theories that explain the relationship between the money supply and agricultural output. Prominent among the theories is the quantity theory of money (QTM), which examines the changes in the money supply that directly impact the price level and output in the short term, as outlined in the equation MV = PQ [19, 20]. The Keynesian

theory posits that the money supply influences aggregate demand, thereby affecting economic output, including agriculture, by making credit more accessible to farmers and agribusinesses, which leads to increased investment and productivity [21]. The credit availability theory posits that an increased money supply improves credit availability for productive sectors, including agriculture, thereby facilitating investments and enhancing productivity [22]. Lastly, the structuralist theory posits that the money supply can influence agricultural output through specific structural factors, including financial sector development, infrastructure, and institutional frameworks [23]. These theories, when combined, provide a basis for evaluating the nexus between the money supply and agricultural output in Nigeria.

Credit Availability Theory. This theory posits that an increase in money supply enhances credit availability for productive sectors, including agriculture. According to Shaw [22], financial deepening facilitates agricultural investments, improving productivity and economic development. In Nigeria, policies such as the Commercial Agriculture Credit Scheme (CACS) have demonstrated the role of increased money supply in enhancing agricultural output through accessible credit.

Structuralist Theory. Structuralists argue that the impact of the money supply on agricultural output is contingent upon specific structural factors, including infrastructure, financial sector development, and institutional frameworks [23]. Despite increasing the money supply and implementing other expansionary monetary policies in Nigeria, policymakers still face challenges such as poor rural banking infrastructure and low financial inclusion, which limit growth in the agricultural sector output.

Empirical evidence on the impact of monetary policy on the money supply and agricultural output in Nigeria reveals a direct relationship between money supply and agricultural productivity. Studies have consistently shown that increased money supply enhances credit availability, boosts agrarian investments, and improves productivity [25]. Expansionary monetary policies have been found to positively affect agricultural output by increasing liquidity and credit accessibility [26]. However, excessive money growth can lead to inflation, which negatively affects agricultural output [27].

The literature also highlights the importance of complementary policies, such as fiscal policies,

infrastructural development, and improved financial inclusion, to maximise the benefits of monetary expansion on agriculture [28]. Furthermore, concessionary interest rates and increased budgetary allocations to the agricultural sector have been recommended to support smallholder farmers [29]. Overall, the literature suggests that monetary policy can significantly enhance agrarian growth in Nigeria; however, its effectiveness varies depending on various factors, including the state of the economy, the institutional framework, and other government policies.

In an empirical descriptive literature review, authors [30, 31] examined the effect of monetary policy on agricultural sector output in Nigeria over various periods, ranging from 1981 to 2020. Their study showed that the farm sector generally has no impact on unexpected conflicting interest rates; however, the industry is directly affected by unstable interest rates and liquidity preferences. Additionally, their study revealed a significant positive effect of the Apex bank's monetary policy, such as selective credit, on agricultural sector output.

Authors [29, 32] also evaluated the influence of monetary supply on the agricultural sector. They observed that economic policy, such as supply and exchange rates, has a substantial and direct impact on agricultural sector output. They advocated for government-discounted interest rate policies to support farmers in broadening their investment in the agricultural sector and enhancing agrarian output.

Author [25] assessed the effect of financial inclusiveness on agricultural output in Nigeria. It found that access to financial services, facilitated by an increased money supply, significantly boosts agrarian productivity, particularly among smallholder farmers. Authors [28] argue that monetary policy alone is insufficient to drive agricultural growth in Nigeria. Their study highlights the need for complementary fiscal policies, infrastructural development, and improved financial inclusion to maximise the benefits of monetary expansion on agriculture.

Authors [27] employed the ARDL technique to examine the long-term and short-term relationships between money supply and agricultural output. The findings indicated that while money supply directly affected agrarian production in the short run, inflationary pressures from exces-

sive money growth can erode these benefits over the long run.

Authors [26] analysed the influence of monetary policy on the agricultural sector in Nigeria. The study concluded that expansionary monetary policies directly affect agrarian output by increasing liquidity and credit accessibility. However, they also noted that an excessive money supply could lead to inflation, which negatively affects the cost of agricultural inputs.

Authors [33] found that the money supply has a significant impact on agricultural productivity through improved credit availability. Their study, which employed a Vector Autoregressive (VAR) model, demonstrated that an increase in the money supply enhances farming investments and productivity.

Authors [34] investigated the association between Agricultural output and Nigeria's economic growth, employing the ordinary least squares (OLS) technique. Their results revealed a direct cause-and-effect relationship between Nigeria's gross domestic product (GDP) and agricultural output.

Despite extensive studies on the impact of money on the agricultural sector output in Nigeria, several gaps remain. Some studies have used outdated data, which may not reflect the current economic situation and policy environment. This paper aims to address this gap by providing a more comprehensive overview of the impact of the money supply on agricultural output in Nigeria, thereby informing more effective policy decisions.

METHODS

Research design. This paper employed a retrospective method of investigation to evaluate the relationship between the money supply and agricultural sector output. The researchers adopted this method to determine the variation in dependent variables resulting from changes in independent variables.

Model Specification. The model used in this study investigated the relationship between the money supply and agricultural sector output in the specified area, while controlling for other relevant macroeconomic variables. The model incorporates the broad money supply (M2) as a measure of monetary policy, while credit availability is proxied by credit to the private sector. The inter-

est rate (INT) measures the cost of borrowing, while the inflation rate (INF) serves as a measure of price stability. Given the quantity theory of money (QTM) and credit availability, the researchers formulated a model to evaluate the association between money supply and agricultural sector output, incorporating the rate of interest, inflation, and credit to the private sector. The functional form of the model appears as:

$$ASO = f(M2, INTR, INFL, CPS) \qquad (1)$$

where ASO – Agricultural sector output measured as a percentage of the share of the agricultural sector output to GDP; M2 – Broad money supply; CPS – Credit to the private sector, measured as the percentage of the share of private sector credit to GDP; INT – Interest rate. Measured in percentage of the capital borrowed; INF = Inflation rate.

Measured as the percentage change in the consumer price index.

The mathematical form of the model is specified as follows:

$$ASO_t = \alpha_0 + \alpha_1 M2 + \alpha_2 INTR_t + \alpha_3 INFL_t + \alpha_4 CPS \qquad (2)$$

Equation 2 is specified in an econometric form, thus:

$$ASO_t = \alpha_0 + \alpha_1 M2_t + \alpha_2 INTR_t + \alpha_3 INFL_t + \alpha_4 CPS_t + \varepsilon_t \qquad (3)$$

where $\alpha_0\ to\ \alpha_4$ are the target parameters, ε_t.– the model's residual captures other variables that affect agricultural sector output but excludes them explicitly.

Granger Causality Equation. The second objective of this work was to determine the causality between the money supply and agricultural sector output. Author [35] asserts that if two variables have a long-run relationship, then there is bound to be a cause-and-effect relationship between the two, at least in one direction. The Granger causality test was employed to ascertain the long-run relationship. The researchers stated the equation for the series as follows:

$$Y_t = \alpha_{10} + \sum_{j=1}^{k} \alpha_{1j} Y_{t-j} + \sum_{j=1}^{k} \beta_{1j} X_{t-j} + U_t.$$

$$X_t = \beta_{20} + \sum_{j=1}^{k} \alpha_{2j} X_{t-j} + \sum_{j=1}^{k} \beta_{2j} Y_{t-j} + U_t \tag{4}$$

The first causality function is given by Yt, which is the explanatory variable (agricultural sector output), Xt is the independent variable (money supply), and Ut is the residual. In contrast, in the second causality function, Xt is the explanatory variable (money supply) and Yt is the independent variable (agricultural sector output).

The Granger causality function for the causal relationship between agricultural sector output and money supply is stated as:

$$ASO_t = \alpha_{10} + \sum_{j=1}^{k} \alpha_{11j} ASO_{t-j} + \sum_{j=1}^{k} \beta_{12j} M2_{t-j} + U_{1t}$$

$$M2_t = \beta_{20} + \sum_{j=1}^{k} \alpha_{21j} M2_{t-j} + \sum_{j=1}^{k} \beta_{22j} ASO_{t-j} + U_{2t} \tag{5}$$

where U1t and U2t are the zero-mean white noise error terms.

The Granger causality test was employed to ascertain the extent to which past values of the money supply could predict future changes in Nigeria's agricultural sector output. This test helped to elucidate the direction of causality between the money supply and agricultural sector output, providing insight into whether changes in the money supply precede changes in agricultural sector output.

Definition of the Variables and Theoretical Expectations: ASO (Agricultural sector output): Measured as the percentage share of agricultural sector output to GDP, representing the role of agriculture in any country.

M2 (Broad money supply). Represents the quantum of money in circulation in the country, such as cash, demand deposits, plus other financial securities. Money supply has a direct effect on agricultural sector output: a1 > 0.

CPS (credit to the private sector). Measured as the percentage share of private sector credit to GDP, representing the accessibility of loanable funds to the private sector. Credit to the private sector has a direct influence on the agricultural industry, a2 > 0.

INT (Interest rate). Measured as the percentage of the capital borrowed, representing the cost of funds to agricultural output. Interest rate hurts agricultural sector output: a3 < 0.

INF (Inflation rate). represents the rate of change in the price index, which is the rate of price increase and the erosion of purchasing power. It denotes an indirect association between the inflation rate and agricultural sector output: a4 < 0.

Unit Root Test and ARDL Bounds Test. The researchers conducted a stationarity test through the Augmented Dickey-Fuller (ADF) test to ensure the reliability of the data used. Additionally, the Autoregressive Distributed Lag (ARDL) bound test was employed to determine the long-term impact of the money supply on the country's agricultural sector output over 33 years (1990–2023). The F-statistic exceeded the 10%, 5%, and 1% levels of significance, indicating a long-run relationship. An Error Correction Model was also estimated to ascertain the speed of adjustment of variables to the long-run equilibrium.

Nature and Sources of Data. The study utilised secondary data obtained from the Central Bank of Nigeria's statistical bulletin (1990 –2023) and data from the World Development Indicators of 2023. The required data include agricultural gross domestic product (AGDP), also known as agrarian sector output (ASO), broad money supply (M2), interest rate (INT), inflation rate (INF), and domestic credit to the private sector (DCPS).

RESULTS AND DISCUSSION

This section presents the results, analysis, and discussion of the study's findings.

Table 1 presents the descriptive statistics of the variables used in this study.

Table 1 – Summary Statistics

	ASO	M2	INT	INF	CPS
Mean	12.95118	12.54088	18.60382	18.27912	10.43853
Median	13.02500	12.69000	17.69500	12.94500	10.01000
Maximum	13.29000	13.72000	31.65000	72.84000	19.60000
Minimum	12.54000	10.76000	11.48000	5.390000	4.950000

	ASO	M2	INT	INF	CPS
Std. Dev.	0.273172	0.909050	4.019020	15.90238	3.639740
Skewness	-0.293638	-0.379280	1.033425	2.180516	0.769453
Kurtosis	1.458499	1.811551	4.795482	6.855680	3.134380
Jarque-Bera	3.854917	2.816083	10.61880	48.00357	3.380577
	ASO	M2	INT	INF	CPS
Probability	0.145518	0.244622	0.004945	0.000000	0.184466
Sum	440.3400	426.3900	632.5300	621.4900	354.9100
Sum Sq. Dev.	2.462553	27.27027	533.0332	8345.223	437.1742
Observations	34	34	34	34	34

According to the table, there are a total of 34 observations spanning the period from 1990 to 2023. Given the results, the researchers observed that the average values of ASO, M2, INT, INF, and CPS are 12.9511, 12.5408, 18.6038, 18.2791, and 10.4385, respectively. The standard deviations of the variables were 0.2731, 0.9090, 4.0190, 15.9023, and 3.6397, respectively. Based on the mean and standard deviation values, it is evident that the mean values of the variables employed in this study exceed their respective standard deviations; this entails that all variables are stable during the study period. All variables except ASO and M2 are positively skewed towards normality, as indicated by the positive values of their skewness statistics. In addition, INT, INF, and DCPS are leptokurtic (K-value > 3), while ASO and M2 are platykurtic (K-value < 3) in nature. Their P-values exceed the conventional 5% level of significance, and the Jarque-Bera statistics indicate that the variables follow a normal distribution.

The correlation matrix (Table 2) explicates the absence of multicollinearity, which suggests that the independent variables do not correlate; this holds given that most of the values are less than 0.8.

Table 2 − Correlation Matrix

	ASO	M2	INT	INF	DCPS
ASO	1				
M2	0.9814	1			
INT	-0.7564	-0.7698	1		
INF	-0.4286	-0.4089	0.4148	1	
DCPS	0.7354	0.7546	-0.5466	-0.2653	1

According to the computations in Table 3, the ADF test indicates that one of the variables is stationary at the level, while the others are stationary after first differencing. In other words, the variables are characterised by the I(0) and I(1) series.

Table 3 − ADF Test Result

Variables	ADF t-Statistics	ADF P-values	ADF Level of Integration
M2	-3.620185	0.0107	I(0)
ASO	-5.023588	0.0003	I(1)
INT	-7.076265	0.0000	I(1)
INF	-4.645122	0.0008	I(1)
CPS	-3.986475	0.0043	I(1)

The result in Table 3 is a prerequisite for adopting the ARDL analytical technique; hence, we present the ARDL Bounds test to ascertain the presence or absence of a long-run relationship among the variables used in the model.

Table 4 shows that the F-statistic, given by 4.6406, exceeds both the upper and lower bounds and is significant at the 10% and 5% levels.

Table 4 − ARDL Bounds test results

Model		F = 4.6406
ASO = f (M2, INT, INF, DCPS)		K = 4
Critical Values	Lower Bound	Upper Bound
10%	2.2	3.09
5%	2.56	3.49

By implication, this suggests that a long-term relationship exists between the variables, necessitating the study to conduct an ARDL long-run estimate to determine how the various explanatory variables affect ASO in the long run. Table 5 shows the long-run estimate of the ARDL.

The output of the long-run coefficient in Table 5 indicates that the broad money supply (M2) and Interest rate (INT) have a direct impact on agricultural sector output (ASO) in the long term, as seen from the positive coefficients of these variables. In contrast, inflation (INF) and domestic credit to the private sector (CPS) hurt agricultural sector output (ASO) in the long term, as indicated by the negative parameters.

Table 5 – ARDL Long Run Estimates Dependent variable: ASO

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2	0.332207	0.066942	4.962630	0.0000
INT	0.017177	0.016742	1.025990	0.3140
INF	-0.002743	0.002796	-0.981032	0.3353
CPS	-0.003439	0.011922	-0.288463	0.7752
C	8.651021	0.951241	9.094453	0.0000

However, while INT, INF, and CPS have a statistically insignificant effect on ASO, as seen from their probability values, which are higher than the traditional criterion of 0.05, the impact of M2 on the ASO is noticeable, given that its probability value of 0.0000 is greater than the conventional 5% level of significance. Given the result, the money supply has significantly affected the agricultural sector output in the Nigerian economy. A 1% improvement in the money supply will spur agricultural sector output by approximately 0.33% on average.

In the short-run analysis (Table 6), the results showed that the model is free from autocorrelation, as indicated by the Durbin-Watson statistics of 2.08.

Table 6 – ARDL error correction regression model: Explained Variable (ASO)

Variables	Coefficient	Std. Error	T-Statistic	Probability
D(M2)	0.034157	0.049774	0.686236	0.5001
D(INT)	0.003061	0.001846	1.658493	0.1121
D(INT(-1))	-0.007843	0.002200	-3.564811	0.0018
D(INT(-2))	-0.004164	0.001890	-2.203355	0.0389
ECT(-1)*	-0.390231	0.068880	-5.665398	0.0001

Notes: R^2 = 0.4561, Adjusted R^2 = 0.3724, Durbin Watson Stat = 2.086711

The Error Correction term, based on the results, showed that the model will correct itself if there are any deviations from the equilibrium value at a rate of approximately 0.39% per annum. It carries the correct sign (that is, Negative) and was also significant. A negative error correction term indicates that the model can quickly adjust for errors in previous periods. In other words, the system corrected approximately 39% of the disequilibria in M2 from the last year to the current year. The short-run results indicate that the first-period and second-period lags of the interest rate reduce agricultural sector output by approximately 0.008% and 0.0004%, respectively.

Table 7 illustrates the degree of association between the variables used in the study.

Table 7 – Results of the Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
M2 does not Granger-cause ASO	33	4.26935	0.0475
ASO does not Granger-cause M2	33	2.80373	0.1044
INT does not Granger-cause ASO	33	0.57091	0.4558
ASO does not Granger-cause INT	33	9.37985	0.0046
INF does not Granger-cause ASO	33	0.59982	0.4447
ASO does not Granger-cause INF	33	1.29171	0.2647
CPS does not Granger-cause ASO	33	0.83473	0.3682
ASO does not Granger-cause CPS	33	3.91032	0.0572

The results indicated a one-directional association between the money supply (M2) and agricultural sector output (ASO) in Nigeria at a time lag of 1. The results suggest that the money supply Granger-causes agricultural sector output (ASO), and Agricultural Sector Output does not Granger-cause money supply over the study period. Additionally, the findings suggest that there is no causal relationship between agricultural sector output, inflation, and domestic credit to the private sector. The result also revealed a unidirectional association between interest rate (INT) and agrarian sector output (ASO) in the country. The results indicate that the Interest rate Granger-causes agricultural sector output; however, the farm sector output does not predict the interest rate over the study period.

According to Table 8, the model followed a normal distribution.

Table 8 – Summary of diagnostic test results

Test	F-Statistic	Probability Value
Jarque-Bera	1.1901	0.5515
Breusch-Godfrey Serial Correlation LM Test:	1.5467	0.2451
Heteroskedasticity Test: Breusch-Pagan-Godfrey	3.2017	0.0133
Ramsey RESET	6.2001	0.0242

This notion is based on the fact that the probability value of the Jarque-Bera Statistic is greater than the conventional level of significance 5%. In other words, the result reveals that the model is well-behaved. With an F-statistic of 1.5467 and a p-value of 0.2451, the Breusch-Godfrey Serial Correlation LM Test indicates that the model is free from serial correlation. Overall, the model passes all tests except the Heteroskedasticity Test: Breusch-Pagan-Godfrey and Ramsey RESET, which are less than the conventional level of significance (5%), as evidenced in the findings.

The study's findings are consistent with existing literature. The study demonstrates that an increase in the money supply has a positive impact on agricultural sector output, corroborating the views of [25, 26, 33]. However, the study's short-run results, which show a positive but not statistically significant impact of broad money supply on agricultural sector output, may be attributed to the lagged effects of monetary policy or the presence of other factors that influence agricultural production in the short run.

The Granger causality test revealed a unidirectional relationship between the money supply (M2) and agricultural sector output (ASO), indicating that the money supply Granger-causes agricultural sector output, but not vice versa; this suggests that an increase or decrease in the money supply can affect agricultural sector output and, consequently, agricultural development.

CONCLUSIONS

This study examined the nexus between the money supply and agricultural sector output in Nigeria, utilising time-series data spanning from 1990 to 2023. The study adopted a quantitative technique for data analysis. The specific objectives of the study included investigating the impact of money supply (M2) on Nigeria's agricultural sector output (ASO) and determining the causal relationship between them. The researchers conducted an econometric analysis that included a data summary of the variables, a correlation matrix, the ARDL bound test, the ARDL long-run test, and the ECM, all of which were used to investigate the association between the explained and explanatory variables. They also applied the Granger causality test to assess the cause-and-effect relationship between the variables.

The ARDL Bound test revealed that a long-run relationship binds the criterion and explanatory variables. Based on the long-run estimates, the researchers found that the explanatory variables, except for inflation and domestic credit to the private sector, hurt agricultural sector output

(ASO). In line with this, none of the control variables were significant, except for Money Supply (M2), which has a substantial effect on ASO. The finding from the Granger causality test also revealed a one-directional association from Broad Money Supply to the Agricultural Sector.

In conclusion, this study offers critical insights into the impact of the money supply on agricultural sector output in Nigeria. The findings indicate a significant positive relationship, suggesting that the effective coordination of monetary and fiscal policies in the economy contributes to enhanced agricultural productivity and performance; this highlights the key role of economic variables and factors in revitalising the agricultural sector. The study also highlights the need for the government to provide concessional credit facilities to small and medium-scale farmers, thereby increasing access to these facilities and enhancing agricultural output.

Based on the results of this study, we propose the following recommendations to enhance agricultural productivity and overall economic growth:

a) The government should allot sufficient credit to the agricultural sector in the country and provide affordable lending rates to enhance agricultural output.

b) The government should pursue policies that would motivate deposit money banks to reduce interest rates on loans to the agricultural sector, to enhance investment in this sector, and to stimulate economic growth

c) Government should spend directly by investing in the agricultural sector through the provision of infrastructure, agricultural research programmes, and subsidise inputs to stimulate food productivity, processing and storage.

d) Stringent rules for loans to farmers should be relaxed, and lending to farmers should be at a low interest rate. In contrast, the government should encourage farmers' cooperative societies to facilitate coordinated investment in the country's agricultural sector.

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