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Causal Dynamics of Interest Rate, Inflation, and Agricultural Productivity in Nigeria: A Policy Perspective

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Abstract

The study examined the causal dynamics of interest rate and inflation on agricultural productivity in Nigeria. The aim was to ascertain the causality of these macroeconomic variables on productivity of the agricultural sector and how government policies/ intervention schemes such as subsidy removal in 2012, 2016, and 2020 impacted the economy. Quarterly time series data were used which covered a span of 11 years (2012-2022) i.e. 44 quarters. The independent variables analyzed include interest rate, inflation rate, guaranteed loans from ACGSF, exchange rate, and deposit money bank loans to the agricultural sector. Agricultural GDP stood as the dependent variable. The econometric models used in the research included the ADF and Granger causality model. Results of the Granger causality test revealed a unidirectional relationship between AGDP and INF. The recommendation therefore includes targeted interventions, such as conditional cash transfers or input subsidies also, ensure that subsidy removal is paired with robust support mechanisms, such as food vouchers, transportation subsidies, and access to affordable credit and clarity in how the savings from subsidy removal are reinvested to build trust in government policies.

Keywords: interest rate, agriculture, Nigeria

Introduction

Interest rates alongside inflation are crucial macroeconomic indicators in any monetary framework of the central bank as both affect productivity through their interplay. Understanding the relationship that exists between these indicators is key to maintaining economic balance. Monetary policy instruments are used by the central bank to achieve the desired results of the government. For instance, inflation control and direction of credit influence the level of economic activities to achieve desired stability in an economy. (Chigbu & Okonkwo, 2014). Interest rate is important as it determines

the return on investment. Investors are there for searching to maximize profit and reduce investment costs (Dixon, 2022). The rate of interest is adjusted to maintain a healthy level of inflation in the economy and steer investments in the needed direction. When there is high demand and a shortage in supply caused by population growth, for instance, inflation is said to be demand-driven. However, when the cost of doing business begins to rise independent of demand, (meaning local currency loses value and the cost of raw materials goes up) and new wage negotiations are in motion resulting in inflationary pressures due to increased consumer spending, this is cost-push inflation. Key to note is that when inflation is on an increase, interest rates tend to also rise as it is used to curb or stabilize rising prices by slowing demand and when inflation is low, the rate of interest is brought down by the monetary authorities to enhance investment activities and increase aggregate demand. (Amaefula, 2016). The inflation rate in the economy and transfer of monetary impulses to the real sectors of the economy are important topics in macroeconomics (Ademola, Yimka, Alalade, Ogbebor & Aworinde, 2023).

The use of monetary policies to improve agricultural productivity is based on the realization that the Nigerian economy needs expansion in terms of production to guard against shocks that have continued to rock the international oil market (oil being the mainstay of the Nigerian economy). This has had its toll on revenue generation. There has been almost a steady decline in the estimates of Nigeria's agricultural production from the early 1960s to the late 1980s. (Etale, Suwari, & Adaka, 2021). Abubakar and Muhammed (2023) stated that during 1960-1970, the sector contributed 55.8% of GDP but between 1971 and 1980, this dropped to 28.4%. The average value for agricultural output in Nigeria during 1981-1990, 1991- 2000, 2001-2010, and 2011-2020 was 18.2%, 24.42%, 27.39% and 21.46% respectively (World Bank, 2020). Toward the tail end of the 20th century, Nigeria became dependent on oil revenue, impacting food production and security (Okafor, 2020). (Abayomi, Adam, & Alumbugu, 2015) emphasized that increasing agricultural production is essential for achieving industrialization. High inflation affects the cost of agricultural inputs, commodity prices, and demand for products which creates uncertainties in the local market. Interest rate as a monetary policy instrument is crucial in terms of its role in enlisting financial resources to support growth in the agricultural sector. An increase in the interest rate to lower inflation could hinder farmers from accessing credit, thus reducing potential output (Abubakar & Muhammad, 2023). According to (Asekome & Ikojie, 2011), there is a relationship between interest rates and inflation that is inverse. This is hinged on the idea that higher interest rates make borrowing more expensive, which reduces

spending and investment, and helps control inflation. Lower interest rates, on the other hand, encourage borrowing and spending, fostering economic growth.

To enhance agricultural productivity in Nigeria, the government adopted various agricultural funding schemes and monetary policy strategies so as to bring about growth and increase development in the economy (Adekanbi, 2019). Government initiatives, like the Agricultural Credit Guarantee Scheme fund (ACGSF) aimed to enhance the level of bank credit to the agricultural sector by providing guarantees concerning loans granted by lending banks; the Good Luck Ebele administration set up the Agricultural Transformation Agenda (ATA) to develop value chains in the agricultural sector through the growth enhancement scheme (GES) and staple crop processing zones (SCPZ) (Ogah, Solomon & Edet, 2022). Under the Muhammadu Buhari administration, the Anchor Borrowers Program (ABP) was launched and with this, average rice and maize production increased. The sectoral contribution also showed an average growth of 27.5 percent under the Obasanjo administration, 25.6 percent under the Yar'Adua administration, and 21.75 percent under the Jonathan administration then 24.4 percent under the Buhari regime (Zhizhi, 2018). (Abu, 2012) revealed that total bank lending expanded from about 2 percent in 2011 to 5 percent in 2013; lending to seed companies and agro-input dealers also expanded from $100 million in 2012 to $500 million in 2014. (Itodo, Apeh, & Adeshina, 2012) in his analysis shared that by 2015, Nigeria became a net exporter of rice, which was a shift from decades of rice importation that cost the country an average of ₦1 billion daily. The advancement of agriculture and value-addition activities in the downstream agro-processing sub-sector offers a potential platform for effective wealth generation and sustainable poverty eradication. The agricultural sector is strategic to economic development on a national level and its contribution to the current GDP is over 42.1 percent (Eleri, Oduka, Akuto, Onuvae, & Anwara, 2012).

Theoretical Framework

The Modern Theory of Interest

Under this theory, interest rates are influenced by four main factors: savings, investment, liquidity preference and quantity of money. The balance among these elements establishes both the rate of interest and level of income. Hansen clarifies that equilibrium is reached when cash reserves align with the money supply, when marginal efficiency of capital matches interest rate, and investment equals desired saving amount. At various levels of interest rate, the negatively sloping IS curve reflects the loanable funds theory (Jhingan, 2008). The liquidity preference theory relates to the positively sloping LM curve, representing different interest rates at varying income levels. The IS curve illustrates the connection between interest rates and income concerning saving and investment equality. On the

other hand, the LM curve reveals the link between interest rates and income based on money supply and demand equality. In the realm of financial markets, modern interest rate theory focuses on the equilibrium between the supply and demand of loanable funds. This theory suggests that interest rates reach a stable point when the supplied funds align with the funds demanded. (Jhingan, 2008). This equilibrium is influenced by the level of savings, demand on investment, speculation on inflation, and policies of the central bank. Access to advanced farming equipment could significantly boost productivity in Nigeria when lending rates favor investors. Favorable interest rates benefit smallholder farmers who often lack the necessary capital for productivity-enhancing investments. When monetary policy achieves the aim of price stabilization, farmers' purchasing power is safeguarded and stimulates investment in productivity-enhancing ventures. Interest rates impact the affordability of agricultural inputs affecting farmers' productivity. A stable interest rate environment fosters economic stability and investor confidence, supporting long-term projects and sustainable farming practices. Government initiatives offering subsidized loans at reduced interest rates enable farmers to invest in productivity improvements. Aligning interest rate policies with broader agricultural development programs, like those of the Central Bank of Nigeria, can enhance agricultural productivity by influencing the interest rate scenario. Essentially, modern interest rate theory plays a vital role in shaping agricultural productivity in Nigeria by affecting borrowing costs, credit availability, inflation stability, and economic confidence, directly impacting farmers' ability to invest in productivity-enhancing technologies and methods. Policymakers can leverage this understanding to craft financial and agricultural strategies that promote a more productive and sustainable agricultural sector in Nigeria.

Cost - Push Inflation

This is caused by wage increases pushed for by strong trade unions and share of profit increases by employers. When money wage increases rapidly over productivity of labor, we have what is known as cost-push inflation. This inflation type was found in the medieval period and later revived in the 1950s and then 70s as the main cause of inflation. It was termed the ‘new inflation’. Cost-push inflation can be attributed to rise in production cost this impacts negatively on aggregate supply. For instance, trade unions pressure employers for wage increases without considerable increase in productivity. With increased cost of production employers are pushed to raise the prices of their products. Some sectors of the economy might be affected especially those that provide raw materials to local industries. Factors contributing to cost-push inflation can include rising wages, increased prices of raw materials, or government regulations raising production costs. Profit push can add to inflation when firms raise prices to offset the rise in labor and production costs to earn higher profits.

Empirical Review

The relationship exhibited between interest rates and inflation is fundamental to management of an economy. In the work of Mukhtar, Ibrahim, Jabir & Sanusi (2024), they aimed to explore the complex correlation between interest rates and inflation in Nigeria by utilizing Nonlinear ARDL model with annual time series data dating 1986 to 2023. NARDL Bound test confirmed cointegration among variables, with long-term coefficients indicating that a 1% inflation increase correlates with a -0.568 decrease and a -0.483 increase in interest rates. The study revealed a short-term asymmetric effect with inflation decreasing by (-.898) percent in the current period, maintaining a decline in subsequent periods. The ECM (-1) term demonstrates negative conditions and statistical convergence properties from long-term disequilibrium.

Ademola, Alalade, Ogbebor & Olalekan (2023) adopted an ex-post facto approach, utilizing time series data spanning 68 quarters from Q1, 2006 to Q4, 2022. The study applied the Autoregressive Distributed Lag (ARDL) model to examine the impact of interest rates on inflation in Nigeria, with the Augmented Dickey-Fuller (ADF) and Phillip-Perron tests used for stationarity. The findings revealed a significant long-term cointegrating relationship between interest rates and inflation rates. Akwe (2020) had two major objectives in their study; the first was to determine the impact of inflation on economic growth in Nigeria and the second was to examine the impact of interest rates on economic growth in Nigeria. The study period was from 1999-2017 and it adopted the ordinary least square regression technique establishing a non-significant positive relationship between inflation and economic output while interest impacted the economy negatively and significantly.

Babalola, Danladi, Akomolafe & Ajiboye, (2015) aimed to establish the effect inflation and interest rates have on economic growth, as well as to identify sustainable corrective measures for inflation and interest rate trends in Nigeria from 1981 to 2014. The analysis employed the ordinary least square method and the Johansen integration test. Causality direction and trend analysis were conducted on the variables, revealing that inflation and interest rates negatively impacted economic growth, but neither of them caused economic growth as per the Granger causality test. The study concludes by recommending that a low rate of inflation should be pursued by policy makers (preferably single digits) and ensure stability in interest rates.

Yusuf (2015) analyzed foreign direct investment in output of the agricultural sector using the ARDL model from 1970-2012. The variables used in the study were interest rate, exchange rate, foreign direct investment, government expenditure, inflation, and agricultural output. The results

revealed that the rate of interest and inflation hurt agricultural output though inflation was not significant while foreign direct investment, expenditure of government, and the rate of exchange reviewed had significant impact that was positive on agricultural output.

Methodology

Research Design

The methodology used for this study is quantitative research. It employs quarterly time series data on interest rate and inflation rate, the agricultural performance given by the aggregate of agricultural contribution to GDP i.e. Agricultural GDP, DMB loans to the agricultural sector, ACGSF loans, and exchange rate from 2012-2022. This model design was adopted with modifications on the variables used for the study because it has been used in previous research works such as that of Adekanbi (2019) who researched the impact that inflation, interest rate, and exchange rate would have on gross domestic product. Data is from the CBN (statistical bulletin, ACGSF reports, and database), and the NBS.

Model Specification

The adapted model is from the work of Adekanbi (2019). His research work covered interest rate, inflation, exchange rate, and the effect of these variables on GDP in Nigeria, to define the functional form of this research. Adekanbi's study considered GDP as the dependent variable and interest rate, inflation, and rate of exchange as independent variables.

The specification in functional form of the model is as:

GDP = F (Inf. Rate, Ex. Rate and Int. Rate) ……1

The variables to be adopted for this study have been modified to include agricultural productivity measured by total production for the sector (AGDP), and the contribution of government programs to output measured by loans guaranteed by the ACGSF and DMB loans, for period under review. This is due to the level of potential impact from historical contributions, that the sector has had to the GDP in Nigeria and urgent need for diversification of the economy.

AP = F (INT, INF, EXG, LAGR and ACGSF) …….2

The model in logarithmic form is represented as follows,

Causality among Interest Rate, Inflation and Agricultural Productivity

Using the paire wise granger causality model, the relationship among interest rate, inflation, and agricultural productivity is as follows:

1. $INT_t = \alpha o + \sum_{i=1}^{p} a_{iINT_{t-1}} + \sum_{j=1}^{p} w_{jAGDP_{t-j}} + \varepsilon_{1t}$ 5

$AGDP_t = \beta_o + \sum_{i=1}^{p} \beta_{1\ AGDP_{t-1}} + \sum_{j=1}^{p} \phi_{jINT_{t-j}} + \varepsilon_{2t}$ 6

2. $INF_t = \alpha_o + + \sum_{i=1}^{p} a_{iINF_{t-1}} + \sum_{j=1}^{p} w_{jAGDP_{t-j}} + \varepsilon_{1t}$ 7

$AGDP_t = \beta_o + \sum_{i=1}^{p} \beta_{1\ AGDP_{t-1}} + \sum_{j=1}^{p} \phi_{jINF_{t-j}} + \varepsilon_{2t}$ 8

Data Presentation, Analysis and Interpretation

Table1: Result of Descriptive Statistical Analysis of variables

	LAGDP	INT	INF	LACGSF	EXG	LDMBL
Mean	8.5566	28.03	12.9917	14.2735	280.1502	13.2518
Median	8.3377	27.61	12.26	14.2573	305.75	13.1675
Maximum	11.8772	31.55	20.77	15.0527	432.87	14.3211
Minimum	7.9394	23.21	7.8	13.1277	155.7	12.4617
Std. Dev.	0.8933	2.4049	3.6915	0.5005	93.6521	0.5496
Skewness	3.0203	-0.1283	0.2296	-0.1925	-0.0595	0.4044
Kurtosis	10.8278	1.9586	1.9026	2.1941	1.6850	2.2006
Jarque-Bera	167.0147	1.9651	2.4175	1.3626	2.9785	2.2093
Probability	0	0.3743	0.2986	0.5060	0.2255	0.3313

Source: Authors computation with E-views 9

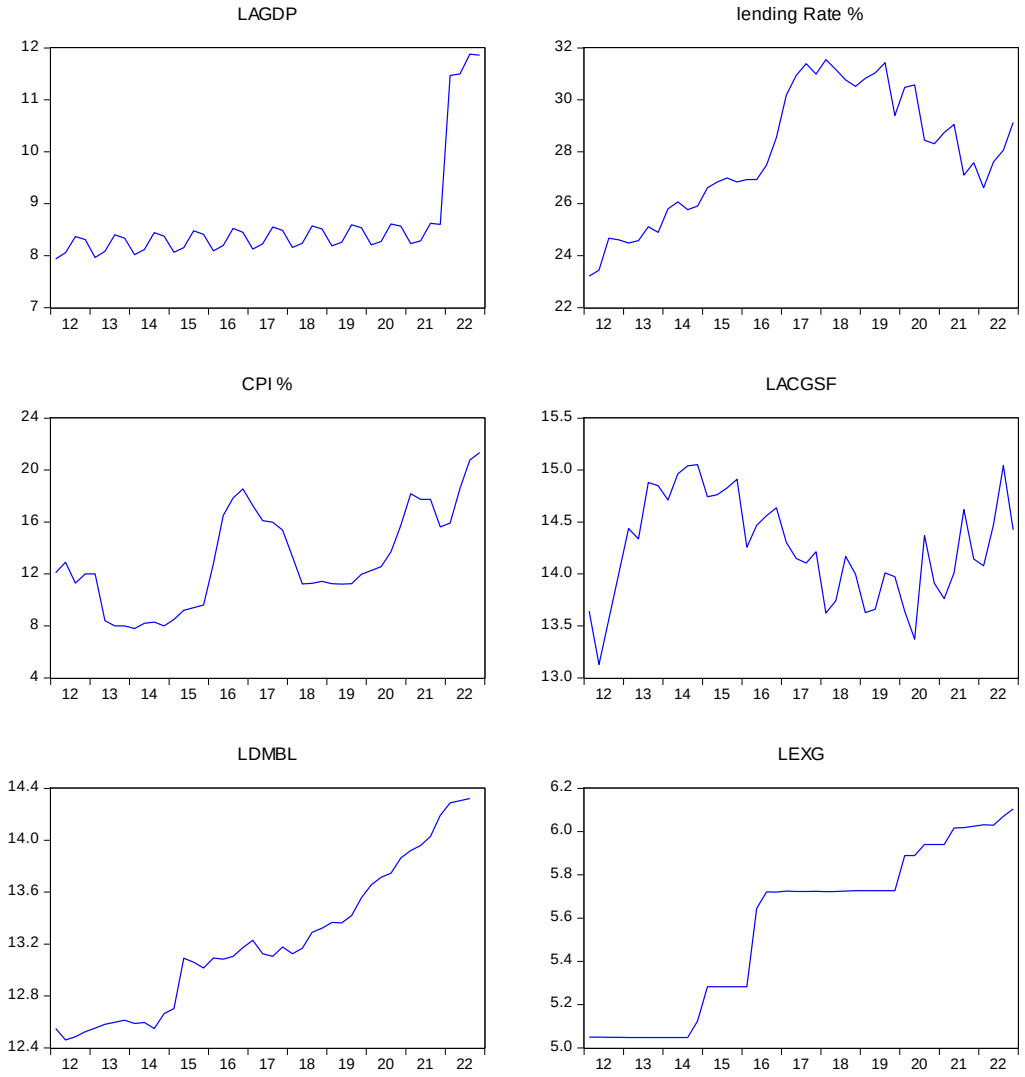
The results from the table above show the exchange rate to have the highest mean value of 280.1502 among the variables. The mean value represents the typical value of a given data set so therefore from the results obtained, the exchange rate has the highest value among the variables. The lowest mean value is that of total agricultural production with a value of 8.5566. The exchange rate has the highest median value and maximum value while inflation has the minimum value. It is worth noting that all the variables have positive median values indicative of an even distribution in the dataset. The standard deviation measures variability of data points around the mean in a dataset and a higher standard deviation indicates greater variability from the results, the exchange rate being the highest, has the highest variability among the variables while total loan guarantee from the ACGSF has the lowest variability. INT, EXG, and ACGSF are negative in terms of skewness indicative of a long left tail in distribution. GDP, CPI, and DMBL are positive implying positive skewness with a distribution that has a long right tail. All variables are platykurtic except for AGDP in terms of kurtosis because the values are less than 3 this indicates a distribution with a lower peak and implies that the

data has fewer extreme values and is more dispersed around the mean compared to a normal distribution. So it has less variability. AGDP is leptokurtic. The Jarque Bera test indicates a P-value that is above the significance level of 5%, therefor not enough evidence is seen to reject the null hypothesis. This implies that it follows a normal distribution.

Trend Analysis of the Variables

From Figure 4.1, loans from deposit money banks (DMBL) indicate a steady upward movement with volatility but an increase over the last ten years. The breaks in the trend lines on the other variables show a high level of volatility given the use of quarterly data. The use of quarterly data gives a microscopic view of the trend movement and captures any disruptions in the flow of economic activities within quarters displaying the movement as seen on the graphs.

Figure 1: Graphical presentations of the variables



Source: Author's Computation using Eviews9

Results of the Unit Root Test

Table 2: Result of ADF Unit Root Test

Variable	At Level		At 1st Difference		Order of Stationarity
	T-STAT	PROB	T-STAT	PROB	
LAGDP	0.019808	0.9552	-6.498915	0	I(1)
INT	-1.936538	0.3130	-6.590642	0	I(1)
INF	-1.380679	0.5826	-3.933564	0	I(1)
LDMBL	0.969447	0.9955	-6.544411	0	I(1)
EXG	0.122004	0.9639	-5.990006	0	I(1)
LACGSF	-3.195839	0.0302	-	-	I(0)

Source: Authors computation using Eviews

The unit root test was carried out to ascertain whether or not the data samples were stationary or non-stationary. Stationarity enables the selection of the appropriate model to be used for forecasting and analysis, to ensure the accuracy of result findings. It addresses the issue of spurious regression; this is where an unrelated time series may exhibit the existence of a relationship due to non-stationarity. The results obtained from the ADF unit root test show stationarity at 1st difference for all variables except LACGSF which is stationary at level. The variables LAGDP, INT, INF, LDMBL, and EXG are not stationary at the level, this implies a high level of volatility in these variables. Variables are of mixed integration order

Granger Causality Test Result

Table 3: Results of the Pairwise Granger Causality Test

Null Hypothesis:	**F-Statistic**	**Prob.**	**Decision**
INT does not Granger Cause LAGDP	0.6545	0.5256	Accept
LAGDP does not Granger Cause INT	1.3536	0.2708	Accept
INF does not Granger Cause LAGDP	2.6043	0.0875	Accept
LAGDP does not Granger Cause INF	3.6149	0.0368*	Reject
LACGSF does not Granger Cause LAGDP	0.9882	0.3830	Accept
LAGDP does not Granger Cause LACGSF	0.8179	0.4501	Accept
EXG does not Granger Cause LAGDP	1.5182	0.2324	Accept
LAGDP does not Granger Cause EXG	1.1809	0.3183	Accept
LDMBL does not Granger Cause LAGDP	2.4349	0.1019	Accept
LAGDP does not Granger Cause LDMBL	0.2698	0.7651	Accept

Source: Authors computation using E-views

The result of Granger causality test indicates that the Ho of INT not granger causing LAGDP and LAGDP not granger causing INT cannot be rejected as their probability values exceed the 5 percent level of significance i.e. 0.5256 and 0.2708 respectively. This implies no causal relationship among interest rate and agricultural productivity as measured by AGDP. The Ho that LAGDP does not granger cause INF is rejected as the probability value of 0.0368 is less than 5 percent LS but does not reject however that INF does not granger cause LAGDP. This result implies a unidirectional causal relationship between the LAGDP and INF and not otherwise. LACGSF, EXG, and LDMBL all do not granger cause LAGDP as their probability values exceed the 5 percent LS.

Result of Post-Estimation Stability and Diagnostic Test

Table 4: Serial Correlation Result Model 1

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.510610	Prob. F(4,27)	0.7284
Obs*R-squared	2.742714	Prob. Chi-Square(4)	0.6018

Source: Authors computation using Eviews

Table 5: Heteroscedasticity Test Result Model 1

Heteroscedasticity Test: ARCH			
F-statistic	0.067923	Prob. F(1,36)	0.7959
Obs*R-squared	0.071561	Prob. Chi-Square(1)	0.7891

Source: Authors computation using Eviews

The above post-estimation test was carried out for model one. The normality test, heteroscedasticity, serial correlation test, and stability tests were carried out using the Jarque-Bera, Breusch-Godfrey, ARCH test, and CUSUM tests respectively. Test results imply no serial correlation or heteroscedasticity as the probability values are above 0.05 level of significance. The CUSUM test shows the variables move within the critical bounds, though the results of the Jarque-Bera indicate extremity in the distribution of the variables which could be attributed to the impact of the subsidy removal through the various administrations under review and high volatility of quarterly data.

Table 6: Serial Correlation Test Result Model 2

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.456679	Prob. F(2,8)	0.6489
Obs*R-squared	3.586475	Prob. Chi-Square(2)	0.1664

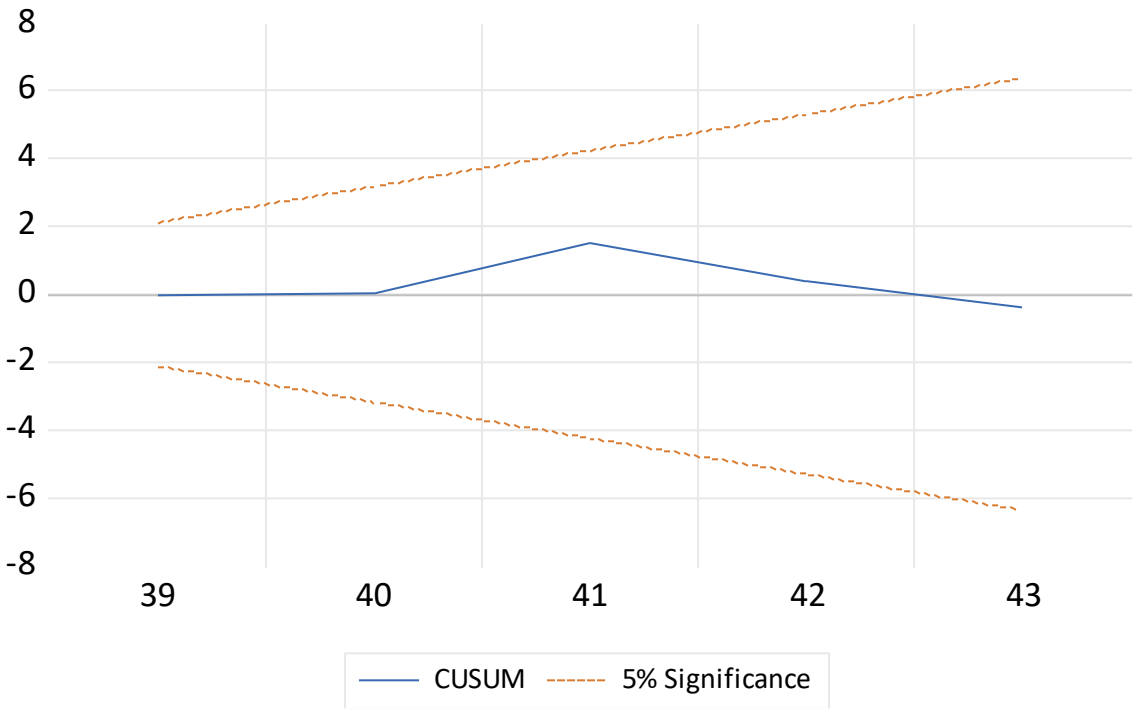
Source: Authors computation using Eviews

Table 7: Heteroscedasticity Test Result Model 2

Heteroscedasticity Test: ARCH			
F-statistic	0.084013	Prob. F(1,32)	0.7738
Obs*R-squared	0.089030	Prob. Chi-Square(1)	0.7654

For model 2, the serial correlation test, heteroscedasticity, normality test and stability tests were carried out using Jarque-Bera, Breusch-Godfrey, ARCH test, and CUSUM tests respectively. Test results imply normality, no serial correlation or heteroscedasticity as the probability values are above 0.05 level of significance. This shows the model was rightly specified.

Figure 2 CUSUM Stability Test Result



The stability test findings, illustrated in the figure above indicated that the model successfully passed the stability test at the 5% LS. This was evident as the line plotted (representing the recursive errors) remained within the V-mask on the graph. Therefore, the model utilized in the research is deemed stable, ensuring the reliability of the regression results. A model is classified as unstable if the plotted line deviates from the parallels or the V-mask.

Hypothesis

Ho: there is no causal relationship that exists among interest rate, inflation, and agricultural productivity in Nigeria

The test revealed a unidirectional causal relationship among AGDP and inflation for Granger causality given a probability value of 0.0368, this implies that following the law of demand and supply, a rise or fall in agricultural productivity as measured by agricultural GDP affects the general price level i.e. inflation. No causal relationship exists among interest rate, inflation rate, and agricultural performance but inflation is responsive to agricultural GDP. The null hypothesis of no causality cannot be rejected.

Summary of Major Findings

The aim of the research was to ascertain if there exists a causal relationship among these variables. Econometric models used for this research include the ARDL (the findings of which have been published in other articles) and Granger causality models. Quarterly time series data was used and variables analyzed include interest rate, inflation rate, guaranteed loans from ACGSF, exchange rate, DMB loans the agricultural sector as independent variables, and AGDP as the dependent variables covering the span of 11 years and 44 quarters from 2012 to 2022.

The results on Granger causality imply no causality among the independent variables with the dependent variable. Interest rate does not granger cause agricultural GDP; inflation rate does not granger cause AGDP but AGDP granger causes inflation implying a unidirectional relationship that exists among inflation rate and AGDP. EXG, DMBL, and ACGSF do not granger cause agricultural GDP either.

Conclusion

In previous publications, the ARDL model established short-run convergence for the second model that examined whether or not INF had an impact on AGDP in Nigeria. It also ascertained long-run co-integration implying an impact of these variables on agricultural productivity. The impact implies that even within a matter of months the independent variables contribute to the overall sectoral

performance of agriculture and therefore policymakers should pay close attention to KPIs especially those in the short run as they influence the results obtainable in the long run or over very long periods. High interest rates can discourage borrowing for agricultural investment, limiting growth. Inflation can raise production costs, reducing farmers purchasing power and affecting profitability. The inverse relationship in terms of impact between interest rate and inflation agrees with the fact that monetary authorities use interest rates to stabilize inflationary pressures within an economy.

Recommendations

The findings of this study, coupled with insights from my previous research on inflation and interest rates, provide critical guidance for designing effective and equitable policies in the aftermath of fuel subsidy removal. From my earlier work, the ARDL model established both short-run convergence and long-run cointegration between inflation, interest rates, and agricultural productivity. These results underscore the profound and enduring impact of macroeconomic variables on the agricultural sector. It is imperative to address the short-run volatility that often accompanies subsidy removal. The immediate effects of increased transportation costs and food prices disproportionately burden vulnerable populations and smallholder farmers, who are critical to the nation's agricultural productivity. To cushion the effect of this, targeted interventions, such as conditional cash transfers or input subsidies, can help to support farmers during periods of economic adjustment, policymakers can mitigate disruptions to agricultural production and food security. The research findings emphasize the importance of strengthening social safety nets. Inflationary pressures, as evidenced in both this study and earlier research, amplify the economic challenges faced by low-income households. Policymakers must ensure that subsidy removal is paired with robust support mechanisms, such as food vouchers, transportation subsidies, and access to affordable credit. These measures not only protect vulnerable populations but also sustain demand within the agricultural sector, preventing further economic decline.

The removal of subsidies creates significant fiscal space, as highlighted in earlier studies. However, for citizens to trust these policy decisions, there must be clarity in how the savings are reinvested. Allocating these funds to infrastructure that directly supports agricultural value chains—such as improved road networks, storage facilities, and irrigation systems—would yield tangible benefits for productivity and rural livelihoods. Clear documentation and communication of these allocations can enhance public trust and acceptance of subsidy reforms. The cointegration findings from previous research reveal the enduring interplay between inflationary variables and agricultural

productivity. Policymakers should adopt monetary strategies that stabilize currency fluctuations and reduce the pass-through effects of exchange rate volatility on domestic prices.

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