AN ANALYSIS OF THE IMPACT OF MONETARY POLICY ON THE AGRICULTURAL SECTOR IN NIGERIA

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Abstract

In this paper, an attempt has been made to investigate the impact of monetary policy on the agricultural sector while specifically examining the impact of lending rate, cash reserve ratio, agricultural credit guarantee scheme and money supply on agricultural sector output. Also, the study examined the long run relationship between the different monetary policy channels and agricultural output. This was done through descriptive statistical analysis with focus on the level and trends in key variables over time. It was found that there is a long run relationship between monetary policy variables of agricultural credit guarantee scheme fund as well as foreign private investment on agricultural sector output with evidence showing a decline in agricultural output in the period between 2004 -2008. Also, it was found that changes in monetary policy over time caused significant changes in output. For example, as the prime lending rate falls, there was an increase in agricultural output. With this in mind, it is recommended that even after deploying some monetary policy instruments by the government, there is the need to periodically monitor the impact of such policy to ensure that the desired goals are being achieved by putting in place a feedback mechanism.

Key words: *Prime Lending Rate, Agricultural Output, Cash Reserve Requirement, Open Market Operations, Real Exchange Rate.*

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1.0 Introduction.

The agricultural sector is a major sector in any economy because of the roles it plays in enhancing human well-being and economic growth.

As a matter of fact, the significance of agriculture in bringing about economic growth and development of a nation cannot be underestimated, the reason why a nation possesses sustainable food security, is because it produces enough food to feed her citizens and even export these goods to other needy countries thereby generating foreign exchange which in turn increases the national income in the long-run. The agricultural sector serves all other sectors in the economy especially the industrial sector. One of the major problems facing the agricultural sector in Nigeria is inadequate capital and production credit for agribusiness generally and it is viewed that monetary

policy can be framed to address this since the financial sector should play significant roles in making credit available to the agricultural sector.

Ordinarily, monetary policy includes a number of policies by which a country controls its money stock so as to achieve macroeconomic goals. It is a major economic stabilization tool which involves measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy with the aim of achieving broad desirable macroeconomic objectives. Monetary policy involves all steps taken by the monetary authorities to affect the monetary base through influencing the availability and cost of credit and the direction of flow of credit.

For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, employment creation, output growth and sustainable development. It is within the purview of employment creation and increasing domestic output that the sector is very relevant.

The implementation of monetary policy through money supply and interest rate is carried out by the Central Bank of Nigeria (CBN) as other monetary authorities of a countries through the use of monetary policy instrument which include Minimum Rediscount Rate, Open Markets Operations (OMO); Cash Reserve Requirements, Liquidity Ratio, among others. Depending on the aim, the central bank reduces or increases the minimum discount rate if the aim is to increase or reduce liquidity and investment, with the commercial banks in turn, increasing or reducing the interest rate charged to borrowers so as to attract borrowing at low interest rate or wade them off. Open Market Operation also involves the buying and selling of treasury bills, treasury certificates, commercial papers etc by the CBN so as to influence the level of money in circulation as desired. The reserve requirement also known as the reserve ratio requires commercial banks to put a certain fraction of their reserves behind their demand and time deposit liabilities which definitely impacts the capacity of commercial banks to make loans to the public by simply increasing the ratio and enhancing their lending position by reducing the rate.

The transmission platform of monetary policy is that through which changes in monetary supply affects the decisions of organizations, households and financial institutions as well as businessmen this changing the level of economic activities and prices. According to Kuttner and Mosser (2003), there are four major channels through which monetary policy affects the economy and these are, the interest rate, exchange rate, bank lending and wealth channel or income distribution channel.

The agricultural sector in Nigeria today has been characterized by low productivity. Recognising this, the Nigerian government introduced series of macroeconomic programmes and policies aimed at improving the sector performance. However, the share of agriculture contribution to GDP declined from 42.20% in 2007 to 40% in 2010 and to a more worsening rate of 35% in 2013 (CBN, 2013). Today, Nigeria is a major net importer of household foods, raw materials etc with the agricultural sector suffering from a host of problems. The need to correct the existing structural distortions in the Nigerian agricultural sector and put the economy on the path of sustainable growth is therefore compelling. Thus, this study tries to investigate the impact of monetary policies

and instruments in influencing agricultural performance in Nigeria and how effective the policies have been in achieving an improved agricultural sector.

2.0 Literature Review

Several studies have been conducted to analyze the impact of monetary policy on economic growth which encapsulates all sectors of the economy and translated into the gross domestic product. However, sector specific impact studies on the impact of monetary policy on the agricultural sector in particular is scanty.

Monetary policy is generally defined as combination of measures designed to regulate the value, supply and cost of money in an economy in order to achieve a desirable level of economic activities and macroeconomic performance indicators. Obademi ((2018) posited that monetary policy for it to be effective must also take cognizance of the direction of money.

Monetary policy can either take the form of be expansionary or contractionary measures in which case expansionary monetary policy seeks to increase the stock of money in circulation with the aim of stimulating consumer and business credit. This approach is usually deployed when an economy is experiencing recession or depression.

According to Iyoha and Oriakhi (2002), monetary policy and credit policy should be such as ensure low but positive real interest rate in order to encourage capital accumulation.

The role expected from the government by the citizens as it concern ensuring some level of economic stability demands that the government from time to time ensures the stability and functionality of the financial system to guarantee credit to critical sectors of the economy like the agricultural sector. This is sometimes done through concessionary interest rates. However, in recent times, sequel to the deregulation of interest rate and the view by banks that the agricultural sector is a high risk sector, the funding of that sector has dwindled.

According to Gbosi (2005) this was most noticed shortly after the introduction of the structural adjustment programme (SAP) and consequent competition for funds by all sectors after the stoppage of the then sectoral credit policy. This subsequently led to increase in food import bills. In year 2006, the National Microfinance Policy was launched to enhance easy access to credit especially among Nigerians living in rural areas, this was complemented with the Agricultural Credit Support Scheme but these interventions have not achieved much impressive results. The question is, would this have justified e classical view of monetary supply that assumes that a change in money supply will in the long run not affect real variables like output since automatic stabilizers or adjustments back to equilibrium will occur because markets will clear on their own, justifying the act of the invisible hand.

This position is at variance with the Keynesian view which asserts that an economy can remain in low output and unemployment without the invisible hand guiding the economy back to full employment level or output.

Talking about the impact of monetary policy from researches by some scholars, Saygin and Evren (2010) evaluated sectoral growth cycles and the impact of monetary policy in the Turkish manufacturing industry. They found that all manufacturing sectors respond to a tightening monetary policy shock with a reduction in output.

Imoughele and Ismala (2014) examined the relationship between manufacturing sector output and monetary policy variables, they found that long run relationship exists between manufacturing sector output and monetary policy variables. In a related study on the impact of monetary on both the agricultural and manufacturing sector, Nwosa and Saibu (2012) investigated the policy impulses on sectoral growth between 1986 - 2009 and found that interest rate channel was most effective in transmitting monetary policy to the two sectors.

However, according to Ehinomenand Akorah (2013) though the Agricultural Credit Support Scheme and National Microfinance Policy was targeted at the agricultural sector, the impact has been unimpressive judging from the food infalation figures that kept rising steadily from 3.9% in year 2006 to 12.7% in 2012.

3.0 Methodology

Model Specification

The main focus of this study is to determine the extent to which monetary policy has influenced agricultural output in Nigeria. From the conceptual perspective, a model is hereby specified in a functional form as follows:

AGRUT = f (REER, MPR, ACGSF, FPI)

Where: AGRUT – Agriculture output; REER – Real Exchange Rate; MPR – Monetary Policy Rate; ACGSF -Agricultural Credit Guarantee Scheme Fund; FPI – Foreign Private Investment. In an explicit form, it is specified as:

$$AGRUT = \beta_0 + \beta_1 REER + \beta_2 MPR + \beta_3 ACGSF + \beta_4 FPI + U_t$$

Where: u_t is the error term that is assumed to be normally distributed with the mean of zero and constant variance; β_0 = Constant term/intercept; β_1; β_2; β_3; β_4= Slope coefficient.

Method of Data Analysis.

A Descriptive Statistical Analysis method making use of averages, growth rates and graphs was employed to capture the effect of some selected monetary policy instruments and their significance in impacting on the provision of credit to farmers and agricultural businesses over an average of fiveyears interval from the year 1994-2018, represented as follows, 1994-1998; 1999-2003; 2004-2008; 2009-2013; 2014-2018 respectively. The focus is on the analysis of levels and trends in key variables of interest to provide insight into their pattern of movement over time.

An attempt has been made here to do a descriptive analysis on the impact of monetary policy instruments such as the agricultural credit guarantee scheme fund, prime lending rate; cash reserve requirement, and money supply, on agriculture.

The Augmented Dickey-Fuller (ADF) is used to test for unit root so as to avoid the generation of spurious regressions that arise from time series data analysis, followed by the Johansen cointegration test and vector error correction model (VECM) respectively.

Data Analysis

Table 1: Average of AGRUT and Monetary Policy Instruments (1994-2018)

YEAR	AGRUT	ACGSF	PLR	CRR	M2
1994-1998	8167.6	2518.2	9.8	5.2	21254.9
1999-2003	10604.6	25596.6	19.2	2.44	54010.6
2004-2008	11858.4	18369.8	23.4	5.88	256722
2009-2013	14537.4	60383.4	20	9.68	801408
2014-2018	17644.7	34957	20	8.3	2429874

Source: computed by the researcher with data obtained from CBN statistical bulletin.

From table 1, the average value of agricultural output from the year 1994-1998 is the lowest, compared to the other averages, this period's performance was undermined mainly by disincentives created by the over valuation of the naira exchange rate and the sharp increases in foreign exchange earnings which resulted from rising oil revenues and consequently aided large food imports. In addition, an increased inflow of petro-naira which encouraged increased wages in the public sector also drained labour from the rural areas, thereby depriving the agricultural sector of the much needed manpower for its labour intensive activities.

The average value of the period of 1999 to 2003 shows an increasing value of AGRUT, caused by government policies to aid production in the agricultural sector. As a reflection of the increase in agricultural output, the value of agricultural exports rose on the average by 52.0 per cent while its share in total exports stood at 3.1 per cent. The profitability of some agricultural enterprises increased considerably resulting in expansion in their scale of operation.

The period between 2004-2008; and 2009-2013, represents the period where government became more focused on the agricultural sector. The CBN launched the National Micro Finance Policy in 2006. The main objectives of the policy were to make financial services accessible to a large segment of the potentially productive Nigerian population including rural farmers. This initiative also helped to boost and increase AGRUT. The growth in the output of agricultural products during this period was though slower, as aggregate output rose on the average by 3.6 per cent. In year 2013, a new Nigerian agricultural policy was launched. The successful implementation of the agricultural policy was underpinned by the existence of appropriate macroeconomic policies that provide the enabling environment for agriculture to grow along with other sectors.

The average of the agricultural credit guarantee scheme fund shows a 2518.2 value in the period 1994-1998, the average value of the period 1999-2003 increased by a value of 23078.4, also, in the period of 2004-2008, there was a decrease in ACGSF by an average value of 7226.8 and the period of 2009-2013 the average value of ACGSF increased by a value of 42013.6, the period of 2014-2018, the average value of the ACGSF reduced again by a whooping sum of 25426.4. The trend here shows a high level of fluctuation in the provision of credit by the ACGSF due to macroeconomic instability inherent in the economy as a whole.

Table 2: Percentage Growth rate of the average values of AGRUT and Monetary Policy Instruments (1999-2018)

YEAR	GRAGRUT	GRACGSF	GRPLR	GRCRR	GRM2
1999-2003	22.98	90.16	48.95	-113	60.64
2004-2008	10.57	-39.34	17.94	58.5	78.96
2009-2013	18.43	69.53	-17	39.3	67.97
2014-2018	17.61	-72.73	0	-16.6	67

Source: computed by the researcher with data obtained from CBN statistical bulletin

Table 2 shows the growth rate of the average values of agricultural output, the agricultural credit guarantee scheme fund, prime lending rate; cash reserve requirement, and money supply, from the period of 1999-2003; 2004-2018; 2009-2013; and 2014-2018 respectively, with a five year interval at each period.

The table above shows that as the growth rate of the ACGSF value of the periods 1999 - 2003 and 2014 - 2018 respectively decreases, the growth rate of the agricultural output also falls and as it increases in periods 2004-2008; and 2009-2013; respectively, the growth rate of the agricultural output in this period also rises.

The table 2 also shows that as the growth rate of the prime lending rate in the period 2009-2013 is negative, the growth rate of the AGRUT (agricultural output) in this period increases by a greater value.

The relationship between the growth rate of the average values of the dependent variable AGRUT (agricultural output) and a monetary policy instrument CRR (cash reserve requirement) shows that as the cash reserve requirement growth rate yields a negative value, agricultural output increases in the period 1999-2003, in the period 2004-2008, CRR increases and AGRUT falls, in the period 2009-2013, CRR falls but AGRUT increases. This analysis tallies with a priori expectation because there is an inverse relationship between the two variables.

The table also shows the relationship between the growth rate of the average values of the dependent variable AGRUT (agricultural output) and a monetary policy instrument M2(money supply), as money supply falls which is shown in periods 2004-2008 agricultural output increases and when money supply decreases, the agricultural output falls. This analysis is consistent with a priori expectation because there is an inverse relationship between the two variables.

Table 3: % Growth rate of the average values of AGRUT and ACGSF (1999-2018)

YEAR	**1999-2003**	**2004-2008**	**2009-2013**	**2014-2018**
GRACGSF	90.16	-39.34	69.53	-72.73
GRAGRUT	22.98	10.57	18.43	17.61

Source: computed by the researcher with data obtained from CBN statistical bulletin

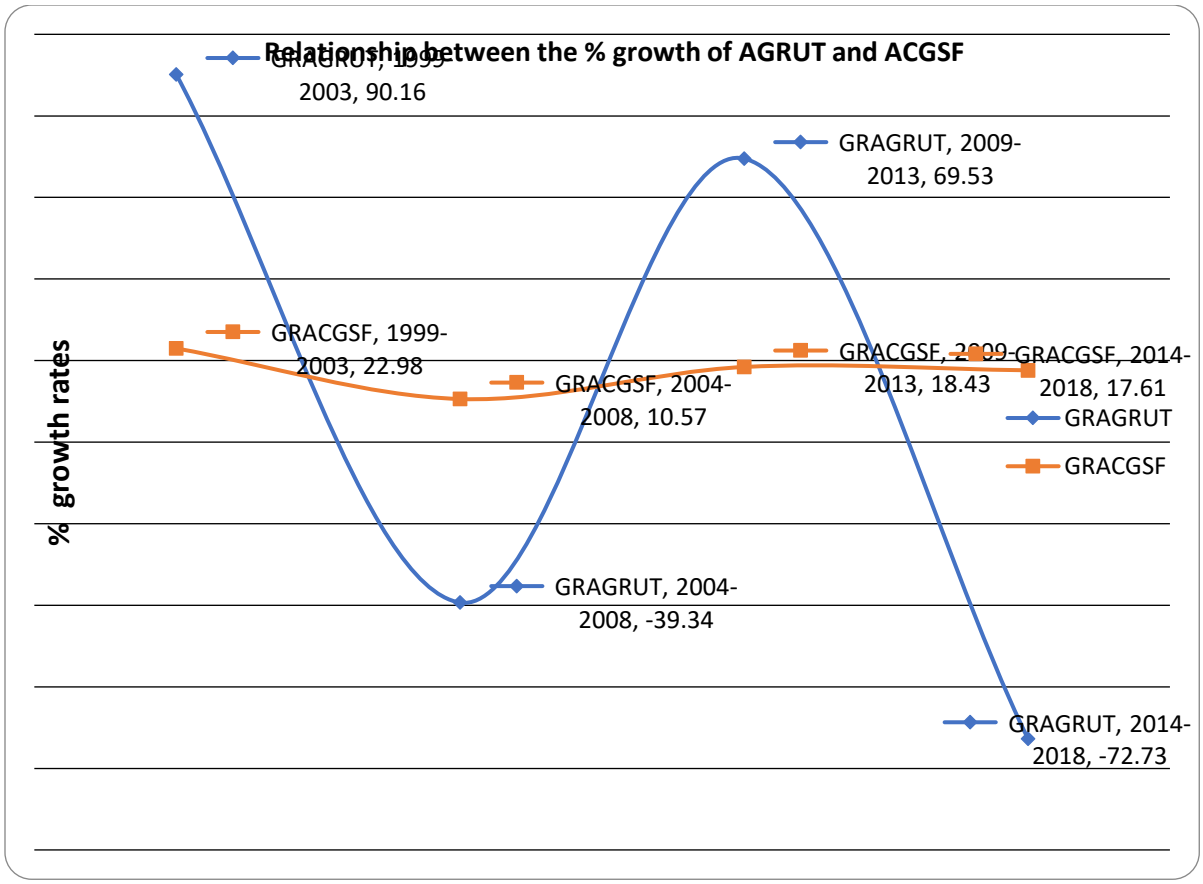

Figure: 1

Graph 1: Relationship between the Growth rate of AGRUT and ACGSF (1999-2018)
Source: Author's Design (2023)

Graph 1 show the relationship between the growth rate of the average values of the dependent variable AGRUT (agricultural output) and a monetary policy instrument ACGSF (agricultural credit guarantee scheme fund) obtained in table 3. The graph shows that as the agricultural credit guarantee scheme fund growth rate yields a negative value, agricultural output falls in the period 2004-2008, while in the period 2009-2013, ACGSF increases and AGRUT increases although not at the same proportion and in the period between 2014-2018 when ACGSF falls by a higher proportion AGRUT also decreases slightly. This analysis is consistent with a priori expectation because there is a positive relationship between the two variables.

Table 4: Percentage Growth rate of the average values of AGRUT and PLR (1999-2018)

YEAR	1999-2003	2004-2008	2009-2013	2014-2018
GRPLR	48.95	17.94	-17	0
GRAGRUT	22.98	10.57	18.43	17.61

Source: computed by the researcher with data obtained from CBN statistical bulletin

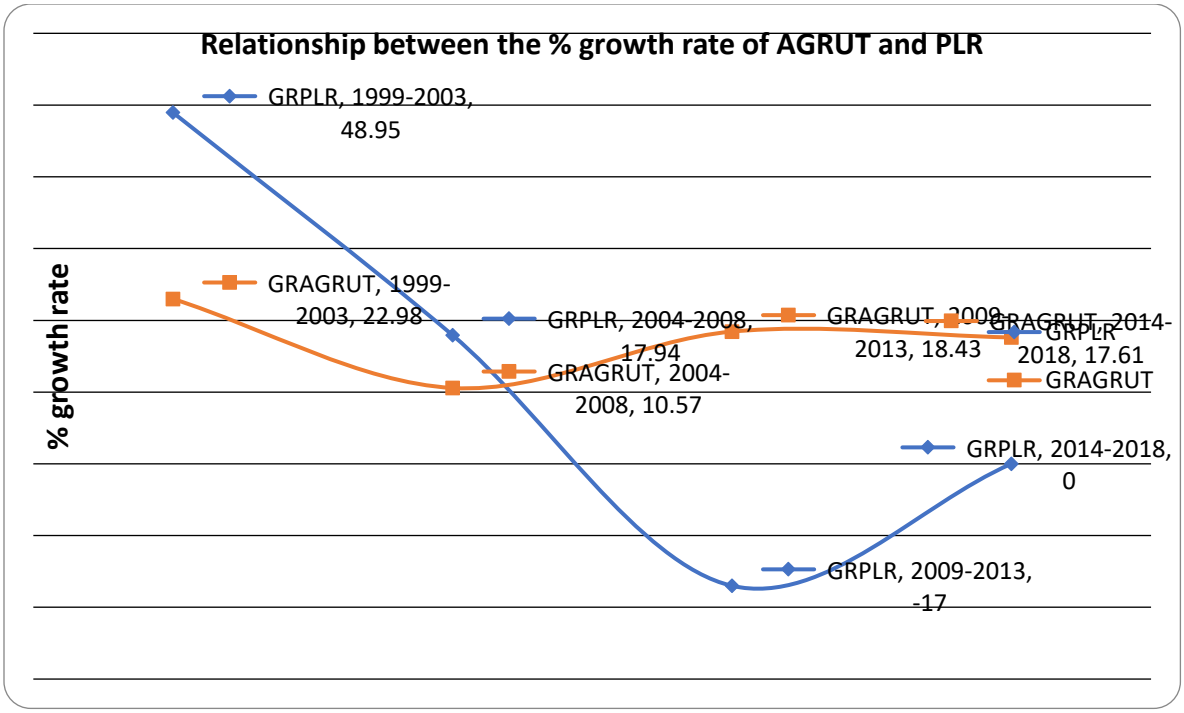

Figure 2: Relationship between the Growth rate of AGRUT and PLR (1999-2018)

Source: Author's Design (2023)

Graph 2 shows the relationship between the growth rate of the average values of the dependent variable AGRUT (agricultural output) and a monetary policy instrument prime lending rate (PLR) for the period between 1999-2018 obtained in table 4. The graph shows that in the period 2009-2013 as the prime lending rate falls an AGRUT increase. This analysis is consistent with a priori expectation because there is an inverse relationship between the two variables.

4.3.1 Unit Root Test

A unit root test with the augmented dickey fuller was carried out due to the non- stationarity characteristic of time series data, to find out if variables are stationary of order 1 or higher order. The results obtained are as follows:

Table 5: Results Of Unit Root Test For Stationarity

Variable	ADF Statistic at level	Critical value (0.01)	ADF Statistic at 1st difference	Critical value (0.10)	Order of Integration	Remarks
AGRUT	-0.1357	-2.6318	-3.7343	-2.6348	I(1)	Stationary
REER	-0.0230	-2.6318	-3.6329	-2.6348	I(1)	Stationary
MPR	-2.5780	-2.6318	-3.7343	-2.6348	I(1)	Stationary
AGCSF	-3.3830	-2.6318	-3.7343	-2.6348	I(1)	Stationary
FPI	-0.9202	-2.6318	-3.7343	-2.6348	I(1)	Stationary

Author's computation Using E-view 9

Table 5 above shows the ADF unit root tests, with the conclusion that the variables are not stationary at tested levels. This result was identified from comparing the absolute values of the ADF test statistics and the absolute values of the critical values at the 10% level of significance. At this point, the null hypothesis of the unit root for these variables is accepted.

The unit root null hypothesis is rejected at the 10 % significance level for all series in first difference and this indicates that at first difference all the variables (AGRUT, REER, MPRACGSF, FPI) testing for unit root at first difference shows that all our variables are integrated of order one, I (1). With this result a co-integration test was conducted using the Johansen Autoregressive model to obtain the long-run relationship between the variables.

4.3.2 Findings from the Study

In this study, using the descriptive statistical analysis, it was discovered that changes in monetary policy instruments caused changes in agricultural output and from the empirical analysis using econometric methods there is a long-run relationship between the monetary policy variables (ACGSF, and foreign private investment) and agricultural output.

Summary, Conclusion, And Recommendations

The neglect of the agricultural sector for many years due to the over-reliance on oil money led to a steady decline in agricultural output of the country making it dependent on imports for raw materials used in the economy. Farmers and agribusinesses in Nigeria, suffer from inadequate capital for start-up, loans and credit for expansion and investment to acquire advanced technology and sophisticated equipment for mechanized production. But these financial institutions are skeptical due to the history of non-performing loans associated with the Nigerian agricultural sector, this is where the government and monetary authorities should play a major role in making credit available through changes in monetary policy and the manipulation of the monetary policy instruments to the advantage of the agricultural sector due to the importance of this sector in sustainable economic development.

Consequent upon the findings from the study, using the descriptive statistical analysis, in which case it was discovered that changes in monetary policy instruments caused changes in agricultural output and from the empirical analysis using econometric methods there is a long-run relationship between the monetary policy variables (ACGSF, and foreign private investment) and agricultural output, some inferences can be made.

Based on the findings it is therefore recommended that monetary policy changes must be well thought out and simulated before they are deployed. In addition, it is imperative that the effects of such policies be monitored to ensure that the desired goals are being achieved by putting in place a feedback mechanism. Knowing how monetary policy changes affect agricultural output is the first step in making farmers and people in agribusiness active players in the policy making process.

With this awareness, they can begin to complement efforts of policymakers to design monetary policies that benefit agriculture and the larger economy.

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