



## MONETARY POLICY EFFECT ON THE NIGERIA AGRICULTURAL SECTOR GROWTH 1980 -2020

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**ABSTRACT:** *This study explored the effect of monetary policy on the Nigeria agricultural sector growth, from 1980-2020. The objectives are to: ascertain the significant effect of the Central Bank of Nigeria's monetary policy rate (MPR), open market operations and cash reserve ratio implementation on commercial banks' credit lending rate to Nigeria's agricultural sector, and examine the selective sectoral credit control policy of Central Bank of Nigeria and how it affects commercial banks' credit lending rate to Nigeria agricultural sector. The study employed the following advanced econometric and statistical techniques; Augmented Dickey-Fuller (ADF) tests, Co-integration Test, Vector Error Correction Model (VEC) and Granger Causality. Based on the above econometric and statistical techniques conducted, it was observed that the CBN monetary policy rate (MPR), open market operations and cash reserve ratio implementation have a significant effect on commercial banks' credit lending to the Nigeria agricultural sector. Our results indicated that there is a positive significant effect of the CBN selective sectoral credit control policy (Agricultural Credit Guarantee Scheme Fund (ACGSF) on commercial bank lending to Nigeria's agricultural sector within the period of the study 1980 to 2020. Based on the findings, the researcher recommends that; an increase in the cash reserves ratio and the monetary policy rate cannot be used to influence stabilized growth from commercial bank lending to the Nigerian agricultural sector especially in the short run. Changes in the structural changes effect can be used to stimulate growth in the commercial bank lending to Nigeria's agricultural sector. The positive controlled Liquidity ratio and volume of broad money stock/cash balances in the hands of the various economic units could be directly manipulated for a more effective monetary policy management than that of Open market operations as proxy and represented by Aggregate Central Bank of Nigeria Treasury Bill (CBNTB).*



## INTRODUCTION

Monetary policy involves deliberate actions of the monetary authorities (Central Bank of Nigeria CBN), to change the quantity, availability or cost of money in an economy to achieve macro and microeconomic objectives in a given country. One of these macro and microeconomic objectives in Nigeria is food security which can be achieved through agricultural sector productivity (CBN, 2021).

In Nigeria as well as other developing countries, it has been observed that prudent monetary policies are the keystone to effective regulations as well as supervision for the growth of any country's banking industry. By effective manipulation of monetary policy variables, the Central Bank of Nigeria seeks to direct and influence the level of money supply, interest rate, liquidity level, and the availability of credit from the commercial bank for other economic sectors in Nigeria (Omankhanlen, Okorie and Niyan, 2015). One of the traditional roles of commercial banks is savings; however, the commercial banking sector plays other fundamental roles through their intermediation, by mobilising resources (savings) from the surplus units and channelling them to the deficit units for productive activities within the economy (Ekpung, Udede, Uwalaka, 2017).

Central bank of Nigeria has the mandate to direct commercial banks on the maximum amount of loan to avail to different economic sectors. This is referred to as the credit ceiling and selective sectoral direct credit control policy. Credit ceiling, according to CBN (2011), is a direct monetary policy instrument whose primary purpose is the general limiting by monetary authorities of credit expansion in all or certain sectors while selective sectoral direct credit control policy is the process whereby the monetary authorities allot or direct commercial banks to channel credits to particular sectors such as solid minerals, agriculture, manufacturing, etc. It is used as the monetary policy part of the overall development strategy and the distribution of credit according to the guidelines (Agbonkhese and Asekome, 2016).

The boom in the petroleum sector in the 1970s created a bandwagon shift away from the agricultural sector by practitioners. The Nigerian agricultural sector had lost its attraction for many reasons, among which was that local farmers were not adequately or satisfactorily rewarded. The action or inaction of the government progressively rendered agricultural sector business commercially unviable for the farm workers, and encouraged them to migrate to other occupations in the cities (Andreas, 2020). The funds provided by CBN remain inadequate, and often only a fraction gets to the rural farmers due to corruption (Ajayi and Atanda, 2017), and commercial banks, who are supposed to be stakeholders in the provision of finance for the various sectors of the economy concentrate on other less preferred sectors.

Nevertheless, a sustained monetary and credit policy implementation by the Central bank of Nigeria for the agricultural sector is critical to the growth and transformation of Nigeria's economic sectors. This is due to the low level of investment and high risk in the agricultural sector compared to its huge potential to create employment, generate wealth and reduce poverty. The agricultural sector in Nigeria is endowed with fertile soil, complimented by streams, lakes, forests, and lush grassland, as well as huge demand driven by a large active population, estimated at 192 million as of 2021, representing 2.35 per cent of the global population. The abundant resources from the agricultural sector, if properly harnessed, have the potential of generating employment opportunities, alleviating food insecurity, encouraging



agro-industrialisation and improving entrepreneurship through capacity building to the teeming population, of which about 50 per cent of them are employed in the sector (World Bank, 2018).

The realisation of this fact led Nigerian Central bank to embark on seven (7) percent monetary and credit policy implementation intervention to commercial bank lending rate on agricultural sector in Nigeria since 2005 till date (Owolabi and Adegbite, 2017). The CBN again in 2011 announced a ten-year target of seven percent credit allocation to the agricultural sector. To achieve this target, the apex bank introduced some measures, including the establishment of the Nigerian Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) and intervention funds like the Commercial Agricultural Credit Scheme (CACs) and the Anchor Borrowers Programme (ABP). The seven per cent target was further affirmed in the NIRSAL document, with the CBN saying that part of the value proposition for the initiative was to, “increase lending to agriculture from 1.4 per cent to 7 percent of total banks’ credit to the economy within 10 years, with NIRSAL becoming economically self-sustaining”. This target translates to 400 percent growth in agric sector’s share of total banks’ credit from 2011 to 2021, and hence annual growth rate of 40 percent (Owolabi and Adegbite 2017).

However, financial data analysis from the National Bureau of Statistics (NBS) on commercial banking sector credit to the various sectors of the economy from the first quarter of 2017 (Q1’2017) to the first quarter of 2021 (Q1’2021) revealed a sluggish growth rate of five per cent per annum in the agric sector’s share of total banks’ credit during the period. The NBS data showed that the agricultural share of commercial banks’ lending rate rose from 3.49 percent in Q1’2017 to 4.21 percent as of Q1’2021, indicating 20 percentage point growth over the four years period or five per cent annualised. This, however, is far below the average growth of 42.6 percentage points recorded by the top five sectors during the four year period (National Bureau of Statistics (NBS), 2020).

The sectors, which account for 44 per cent of total banks’ lending of N13.2 trillion as of Q1’19 are Power & Energy (services), which recorded 63 percent growth in share of banks’ credit; followed by the public sector which recorded 56 percent growth; Oil & Gas (industry) which recorded 42 percent growth; finance & insurance sector which recorded 30 percent growth; and Power & Energy (industry) which recorded 22 percent growth. In absolute terms, banks’ lending to the agric sector rose to N638.5 billion as at Q1’19 from N466.4 billion as at Q1’15, indicating 37 percent increase, translating to annual average growth rate of 9.25. Meanwhile the N638.5 billion credit allocation to the agric sector as at Q1’19 is N461.5 billion below the target N1.1 trillion, or 7.0 percent of the N15.2 trillion total bank credits during the period. The above implies that banks will have to almost double their lending to the agric sector by about N1.2 trillion by the end of 2021 in order to meet the CBN’s target of 7.0 percent agric share of banks’ credit (National Bureau of Statistics (NBS), 2020).

The researcher suspects that the relationships may have significant effects on the willingness of commercial banks to lend their funds to the agricultural sector. Literature (Okpara, 2020; Oyelade, 2019) have attributed agricultural lending issues to attitudes of commercial banks to risks and returns, and the researcher suspects that monetary policy implementation may be responsible for these actions of commercial banks. Arising from the foregoing, the researcher believes that there are conflicting monetary policy implementations, such that, while a policy is creating a conducive environment, others are netting it off. Thus the study focuses on the monetary policy on Nigeria's agricultural sector growth 1980 to 2021.



## Objectives of the Study

The broad objective of this study is to evaluate the effect of monetary policy implementation on commercial banks' credit lending to the agricultural sector and to specifically examine the significant effect of the Central Bank of Nigeria's monetary policy rate (MPR), open market operations and cash reserve ratio on Nigeria agricultural sector growth and ascertain the selective sectorial credit control policy of Central Bank of Nigeria and how it affects Nigeria agricultural sector.

## LITERATURE REVIEW

### Concept of Monetary Policy

The Classical economists' view on monetary policy is based on the quantity theory of money. The quantity theory of money is represented by the equation:

$$MV = PY$$

Where 'M' denotes the supply of money that is under the control of the monetary authorities; 'V' denotes the velocity of circulation (the average frequency currency is spent on final goods and services within a financial year; 'P' denotes the price level; while 'Y' is the output. 'PY' represents the current nominal Gross Domestic Product (GDP). The classical economists assume that the economy is always almost at the natural level of GDP. In the short run, 'Y' and 'V' tend to be constant. Therefore an increase in price level leads to an increase in money supply. Business Dictionary defines monetary policy as an economic strategy chosen by a government in deciding expansion or contraction in the country's money supply. Applied usually through the central bank, a monetary policy employs three major tools: (1) buying or selling national debt, (2) changing credit restrictions, and (3) changing the interest rates by changing reserve requirements. Monetary policy plays the dominant role in control of aggregate demand and, by extension, of inflation in an economy. Monetary policy is a deliberate action of the monetary authorities to influence the quantity, cost and availability of money credit in order to achieve the desired macroeconomic objectives of internal and external balances (CBN, 2011). The idea of monetary policy arose from the belief that the government can control the economy by using certain tools that directly or indirectly impact on the movement, flow of money and credit to certain sectors of the economy, or the demand and supply of money in an economy. The objectives of monetary policy are to influence investments, create employment, improve output, control the general price level, and maintain a favourable balance-of-payments position through the use of tools that impact directly or indirectly on money supply. It could be to discourage or encourage savings, and investments. It also includes policies that are capable of increasing or reducing the cost of funds to certain preferred sectors by market-based instruments or fiat. Monetary policies have not been without their own limitations (Gertler & Gilchrist, 1991).



### ***Monetary Policy Instruments***

These are macroeconomic tools by which monetary authorities influence the volume of money supply, and the cost and availability of credit in the economy. They are Monetary Policy Rate, open market operation, cash reserve requirements, average lending rate, variable liquid asset Ratio, stabilisation securities/special deposits, selective credit control, foreign exchange, Moral suasion and more recently, concessionary lending rates. These instruments could constitute direct or indirect influences.

#### ***Monetary Policy Rate (MPR)***

The Monetary Policy Rate (MPR) is the rate of interest at which the Central Bank, as the lender of last resort, lends to commercial banks in the country. This rate determines the average lending rate of commercial banks in Nigeria. The government through the CBN can increase the rate or decrease it depending on whether it wants to increase or reduce the money supply.

#### ***Open Market Operation (OMO)***

The open market operation (OMO) is the sale and purchase, or exchange of government securities or bonds in the money market, by the Central Bank with the primary aim of influencing credit and cash flow or controlling the excess liquidity in the banking system.

#### ***Cash Reserve Requirement***

Cash reserve requirement (CRR) is a monetary policy tool employed by the Central Bank and imposed on commercial banks, to put a check on money available for lending purposes. It sets the minimum amount of funds that must be held by a commercial bank. These reserves consist of liquid assets or cash held by commercial banks in their vault, in transit, and balances with the Central Bank. The Central Bank determines the minimum reserve, usually a percentage of the amount of total deposit liabilities held by the commercial bank. Cash reserve requirement is also a prudential regulation to ensure that commercial banks do not jeopardise their ability to continue to meet short to medium term financial obligations to their customers. An increase in this ratio reduces funds available for lending while its reduction increases available lending funds (CBN, 2012).

#### ***Average Lending Rate***

The monetary authorities use the monetary policy rate to manipulate the average lending rate, and sometimes directly determine the average lending rate as in the case of the agricultural credit guarantee scheme and their variants and the N200 billion SME funding scheme, which stipulated the maximum interest rate to be charged in funding of certain preferred sectors of the economy. In most cases average lending rate of commercial banks is determined by a spread on the monetary policy rate, presumed to be the cost of fund, since it is the rate at which the Central bank lends to commercial banks.

#### ***Variable liquid asset ratio***

Commercial banks are required by monetary authorities to diversify their portfolios of liquid asset holdings. The main aim of this policy is to ensure that the banks have enough liquidity assets to call, in the event of a shortage of funds. It also serves to limit what is available for lending. These liquid assets usually are not the best investment in terms of returns accruable



from it. This monetary policy is not in use today for monetary control instrument, but banks are encouraged to have liquid assets for liquidity purposes (Stightz & Weiss, 1981).

### ***Selective Direct Credit Control***

This monetary policy tool is a process where the monetary authorities allot or direct commercial banks to channel credits to particular sectors such as solid minerals, agriculture, manufacturing, etc. Special schemes or vehicles are used to drive this policy. Examples of selective credit control include: agricultural credit guarantee scheme fund, commercial agricultural credit scheme, Nigeria incentive-based risk-sharing for agricultural lending, and small and medium enterprise (SME) development fund. These schemes were established to cater for the financing needs of the agricultural sector.

### ***The Commercial Bank Lending***

Basically, commercial banks (CBs), as financial intermediaries, have three basic functions: deposit collection, payment, and credit creation. Bigsten et al. (2003) stated that the principal economic function of banks is to fund consumption, investments, individuals and government units. Apart from direct lending, CBs perform various other financial functions like issuing financial guarantees not involving direct disbursement of cash, but all the same creates credit. They satisfy the financial needs of various sectors of the economy, including agriculture. Lending or credit creation is the most significant function of Commercial Banks. While sanctioning a loan to a customer, they open a deposit account from which the borrower can withdraw. In other words, they automatically create hitherto non-existent deposits, known as deposit creation. The concept of commercial bank lending dates back to the era of the blacksmith in England. With the liberalisation, privatisation and globalisation, the role of the banking industry changed dramatically. The extension of credit facilities is one of the critical inputs for agricultural development. (Saini & Sindhu, 2014).

### ***Monetary Policy Implementation and Commercial Banks***

Circulation of cash in an economic system is facilitated by commercial banks (CBs). This is by way of provision of facilities that make funds easily available for speculative, precautionary and transaction motives. Monetary policies are usually directed by the government through its financial systems, which include the CBs. The CBs are primarily in focus because they are closer to the citizens, to make an immediate desired impact. The lending and deposit collection of CBs are directly affected by monetary policies of the government, such that a Contractionary policy like an increase in Cash Reserve Requirement tends to reduce the lending capacity of CBs while an increased Monetary Policy Rate increases the lending rate, and discourages borrowers (CBN, 2014).

### ***The Nigeria's Agricultural Sector***

Agriculture constitutes one of the most important sectors of the Nigerian economy. It is also a veritable tool for combating mass poverty in third-world countries and achieving long-term economic development. Although Nigeria depends heavily on the oil industry for its revenues, the country is still predominantly an agricultural society with approximately 70% of the population engaging in agricultural production at a subsistence level. Based on the varying climatic conditions of regions and the vast and rich soil, the country produces varieties of crops while a significant portion of the agricultural sector in Nigeria involves livestock production,



fishing, poultry, and lumbering, hence, agricultural products were major export products in the 1960s and early 1970s with the sector contribution to the GDP standing at 35% in 2013 (CBN 2013). Due to the sector's importance, successive governments have propounded policy programmes and strategies, both monetary and otherwise, to revitalise agriculture in Nigeria from 1960, with all programmes aimed at increasing agricultural output for consumption and export, providing inputs and subsidies to small-scale farmers, make credit facilities accessible to a large segment of rural farmers, eradicate poverty, create employment and raise the standard of living (CBN, 2014).

The Agricultural credit guarantee scheme (ACGSF) was established in 1977. The act provides for a fund of N100 million subscribed to by the then federal military government (60%) and the Central Bank of Nigeria (40%) for the year ended 31st December 1980. In 2001, the capital base of the fund was increased to N3.0 -13824 in order to enhance its coverage and performance. The purpose of the fund is to provide a guarantee in respect of loans granted by commercial and merchant banks for agricultural purposes with the aim of increasing the level of bank credit to agricultural sector. In order to guard against the misuse of the funds, the decree provided that for loans for the purposes of purchase livestock, machinery or farming equipment, direct payment should be made to the supplier who should furnish the Bank with the document in evidence of the delivery of the items. The scheme has granted over N3.3 billion to beneficiaries since its inception. There is a tendency for all investors to use the credit for purposes other than that for which it was granted. There is the temptation to utilise the credit outside any planned programme, with the result that the farmer may push himself into over-expansion, over-trading, extravagant living or even fraudulent or highly speculative ventures. There is also the endemic problem with most of the peasant farmers concerning their lack of knowledge of even the sources of credit or terms of loans, owing to the low level of literacy among the preponderance of the full-time farmers and also due to inadequate communication facilities in the country, most of the farmers are not in a position to indicate or understand the names, locations and types of existing credit resources, much less of the import of interest rates which apply to farm loans. Again certain credit institutions notably banks could demand to be satisfied with the quality of the management of any venture into which they are being called upon to invest (CBN, 2012).

According to Ehinomen & Akorah (2012) the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) was restructured and recapitalised for greater efficiency and to provide credits to individual farmers, and cooperative societies/bodies for all classes of agricultural projects. The Bank is also concentrating on the promotion of its popular group-lending scheme whereby a much higher proportion of the active farming population is being reached by its retail outlets across its six Zonal offices. The Bank Management is supporting the new policy orientation of the present administration regarding poverty alleviation by emphasizing micro credit. The Bank is now strongly committed to the promotion of grass roots based, small and medium farming activities in the country. The ongoing injection of N50 billion equity shares into NACRBD by the Federal Government is to empower the Bank to meet the challenges of poverty alleviation and food production through timely disbursement of credits. The bank is also supporting the promotion of Animal Traction and Hand Tool Technology. It has instituted several credits and savings schemes for farmers and rural dwellers who constitute about 70% of the nation's population.



### *Empirical Literature*

Anthony et al. (2022) examined monetary policy channels, agriculture sectoral outputs and sustainable growth in the ECOWAS region: a rigorous analysis and implications for policy. Data from the World Bank and International Monetary Fund over 2013–2019 were sourced for thirteen member countries. The study adopted the Driscoll–Kraay fixed-effects ordinary least squares regression (OLS) estimator. The findings revealed that while the effect of monetary policy channels on the agricultural sector value added is largely heterogeneous and significantly in-elastic, the ones on the industrial and services sectors are overwhelmingly homogeneous and negative, but insignificant for the services sector. Moreover, the effect of monetary policy channels on sustainable economic growth is also homogeneously asymmetric, with imminent stagflation while the interactive effects of monetary policy channels are heterogeneous on sustainable economic growth and economic sectors. Therefore, an inflation-targeting monetary policy stance is generally recommended with prioritised exchange rate stabilisation amid sufficient fiscal space.

Umeh, Ugwo and Ochuba (2021) investigated on impact of monetary policy on commercial banks' supply of agriculture credit in Nigeria for the period of 1985-2020. Secondary data was employed, autoregressive-distributed lag model was used to estimate the mode. The major findings of the study: (1) monetary supply has positive insignificant effect on commercial banks' supply of agriculture credits in Nigeria ( $t$  – statistics (1.3511) <  $t_{0.05}$  (1.684); (2) cash reserve ratio has positive significant effect on commercial banks' supply of agriculture credits in Nigeria ( $t$  – statistics (3.2824) >  $t_{0.05}$  (1.684); (3) interest rate has no insignificant effect on commercial banks' supply of agriculture credits in Nigeria ( $t$  – statistics (1.2053) <  $t_{0.05}$  (1.684); (4) there is no long-run relationship between monetary policy variables and the commercial banks' supply of agriculture credits in Nigeria and (5) the cash reserve ratio was the monetary policy variable that is more relevant to the commercial banks' supply of agriculture credits in Nigeria. The study concluded that monetary policy has significant effect on commercial banks' supply of agriculture credits in Nigeria.

Asukwo, Ita, Owui, and Olugbem (2020) conducted a study to examine the effect of Commercial Banks Lending on the Growth of the Agricultural Sector in Nigeria". Their data were sourced from secondary, using Central Bank Statistical Bulletin, Multiple regression statistical technique was employed in examining the effect of commercial bank lending on the growth of the Agricultural sector in Nigeria. Based on the analysis, the findings revealed that there was a significant relationship between loans and advances, interest rate, liquidity, and bank assets on agricultural output.

Ogolo and Tamunotonye (2018) examined the effects of monetary policy on commercial banks lending to the real sector from 1981–2017. Annual time series data were sourced from the Central Bank of Nigeria statistical bulletin. Two multiple regression models were specifically estimated with the aid of Software Package for Social Sciences. The result shows collinearity that corresponds with the Eigen value condition index, and the variance constant is less than the required value. The Durbin-Watson statistics show the absence of multiple auto correlation and negative autocorrelation, while the variance inflation factors indicate the absence of autocorrelation. The regression results from model one found that interest rate, and monetary policy rate have a positive relationship with commercial banks lending to the agricultural sector while the Treasury bill rate, exchange rate, broad money supply and liquidity ratio have negative effects on the dependent variable. Model two found that interest rate, Treasury bill rate,





exchange rate, broad money supply and liquidity ratio have negative effects on commercial banks lending to the manufacturing sector while monetary policy rate has a positive relationship with the dependent variable.

Anyanwu, Ananwude and Okoye (2017) examined the Impact of Commercial Banks' Lending on the Economic Development of Nigeria from 1986 to 2015. Data sourced from the Central Bank of Nigeria statistical bulletin were diagnosed for serial correlation, heteroskedasticity, granger, Johansen co-integration, Ramsey Reset, stationary test and vector error correction model fitness specification and were employed. The Johansen co-integration envisaged a long-run relationship between commercial banks' lending and gross domestic product but such could be said for the index of industrial production. The granger impact assessment result shows that commercial banks' lending has a significant impact on real gross domestic product and real gross domestic product, on the other hand, has a significant impact on credit to the private sector. The index of industrial production was not significantly influenced by commercial banks' lending activities. The vector error correction model depicts that for the achievement of long-term growth and development of the Nigerian economy, commercial banks' lending is very pivotal as the high interest rate charged by commercial banks remains a threat to the positive influence of banks' credit on the economy.

Makinde (2016) conducted a study to examine the implications of commercial bank loans on economic growth in Nigeria between 1986 and 2014. Secondary data was sourced from the Central Bank of Nigeria statistical bulletin and the National Bureau of Statistics between 1986 and 2014. Using the Ordinary Least Square (OLS) multiple regression techniques; the study revealed that only the agricultural sector has been enjoying much bank credit and it has been making a positive impact on the gross domestic product (GDP) while others like mining and quarrying, manufacturing, building and construction sectors have not been getting much attention in terms of bank credit to spur development in that sector.

Udoka, Mbat & Duke (2016) also did a study to examine the effect of commercial banks' credit on agricultural output in Nigeria. Data for the study were collected from published articles and the Central Bank of Nigeria Statistical bulletin. To estimate the specified equation, the ordinary least squares regression technique was employed. The following result arose; the estimated results showed that there was a positive and significant relationship between the agricultural credit guarantee scheme fund and agricultural production in Nigeria. This means that an increase in agricultural credit guarantee scheme funds could lead to an increase in agricultural production in Nigeria; there was a positive and significant relationship between commercial banks' credit to the agricultural sector and agricultural production in Nigeria. This result signified that an increase in commercial banks' credit to the agricultural sector led to an increase in agricultural production in Nigeria. Again, there was a positive and significant relationship between government expenditure on agriculture and agricultural production in Nigeria and a negative relationship between interest rate and agricultural output confirmed theoretical postulations. This is because an increase in the rate of interest charged farmers for funds borrowed discouraged many farmers from borrowing and thus less agricultural investment. The study recommended that the positive effect of the agricultural credit guarantee scheme fund on agricultural production called for the proper funding of the scheme by the government. To this end, there was the need for the government to continue to guarantee loans lent to farmers as this would encourage the banks to lend more to farmers.



### ***Theoretical Framework***

This study is anchored on the credit channels theory of monetary transmission mechanism. The Credit channel theory on which this study is based was developed by Bernanke, Gertler and Gilchrist (1999). It states that government policy changes affect the amount of credit that banks issue to firms and consumers for purchases, which in turn affects the real economy

The works of Bernanke and Blinder (1988) state that monetary policy adjustments that affect the short-term interest rate are amplified by endogenous changes in the external finance premium. The external finance premium is a wedge reflecting the difference in the cost of capital internally available to firms (i.e. retaining earnings) versus firms' cost of raising capital externally via equity and debt markets. External financing is more expensive than internal financing and the external finance premium will exist so long as external financing is not fully collateralised. Fully collateralised financing implies that even under the worst-case scenario the expected payoff of the project is at least sufficient to guarantee full loan repayment. The assumption is that banks cannot shield their loan portfolios from changes in monetary policy and borrowers cannot fully insulate their real spending from changes in the availability of bank credit. Credit channel literature makes a distinction between a "bank lending channel" which pertains to banks only and is related to their dual nature of holders of deposits and generators of loans to firms and a "broad credit channel" which treats the supply of external funds to firms by all financial intermediaries. The credit channel deals with information asymmetries between borrowers and lenders which give rise to the above-mentioned monitoring cost premium.

## **METHODOLOGY**

### ***Model Specification***

The model for this study is Ordinary Least Square (OLS) multiple regression analysis which was used to investigate simultaneously the association of four independent variables on a single variable. Specifically, the researcher estimated the effect of the implementation of monetary policy instruments on commercial banks' lending to the agricultural sector. Co-integration and vector error correction model is also employed as parts of OLS to know whether there is a long-run relationship that exists among the variables and to see how the system adjust to equilibrium if there is disequilibrium. The model is presented thus:

$$\text{CBLGS} = F(\text{ASC}, \text{ACGSF}, \text{CBNTB}, \text{CBALR}, \text{MPR}, \text{CRR}, \mu) \dots (1)$$

$$\text{CBLGS} = \beta_0 + \beta_1\text{ASC} + \beta_2 \text{ACGSF} + \beta_3\text{CBNTB} + \beta_4\text{CBALR} + \beta_5\text{MPR} + \beta_6\text{CRR} + \mu) \text{-----} (2)$$

Where;

CBLGS = Commercial Banks' Credit Lending to the Nigeria Agricultural Sector.

ASC = Agricultural Sector Credit

ACGSF = Agricultural Credit Guarantee Scheme Fund as a Proxy to Selective Sectoral Credit Control



CBNTB = Aggregate Central Bank of Nigeria Treasury Bill as a proxy to Open Market Operation

CBALR = Commercial Banks' Average Lending Rate

CRR = Cash Reserve Ratio as a proxy for Cash Reserve Requirements

MPR = Monetary Policy Rate.

Where  $\beta_1$  to  $\beta_6$  are the coefficients of the respective variables, 't' is the period (year), ' $\beta_0$ ' is the intercept of the model and ' $\mu$ ' is the stochastic error term, while ln is the natural log.

The above implies commercial banks' credit lending to the Nigeria agricultural sector (CBLGS) is the dependent variable on the left-hand side of the equation, as a function of these monetary variables in prettiest (or at the right-hand side) (i.e. ASC, ACGSF, CBNTB, CBLRA, CRR and MPR ) all in abbreviation or acronyms.

## PRESENTATION OF RESULTS/FINDINGS

**Table 4.0** Result of Dickey-Fuller Unit Root Test

Variable	ADF statistic @ level	ADF statistic @ 1 <sup>st</sup> diff.	Order of integration	co-5% critical value
CBLGS	1.682586	5.693944	I(1)	3.529758
ASC	2.389191	6.341353	I(1)	3.529758
ACGSF	2.425651	3.696500	I(1)	3.529758
CBLRA	0.717459	5.055094	I(1)	3.529758
CRR	1.413999	5.011255	I(1)	3.529758
CBNTB	1.154495	3.395305	I(1)	3.529758
MPR	3.303356	7.042057	I(1)	3.529758

**Source:** Author's computation 2024

From the results in Table 4.0, all the variables employed were not stationary at levels and hence no integration at all. The variables were therefore subjected to unit root test in first-order difference. The results show that all the variables were stationary at the first-order difference. This means that CBLGS, ASC, ACGSF, CBLRA, CBNTB, CRR and MPR are integrated into order one (1). Having found that all the variables are integrated of order one co-integration tests are conducted to see if there is a long run or equilibrium relationship among the variables.

**Table 4.1** Johanson Co-integration Test

No. of integration	Co-Aigenvalue	Trace statistic	5% critical value	Prob.
None*	0.9984	540.3922	125.6154	0.0001
At most 1*	0.9759	302.9212	95.7537	0.0000
At most 2*	0.9175	165.0650	69.8189	0.0000
At most 3*	0.6731	72.7392	47.8561	0.0001
At most 4*	0.4674	31.3707	29.7971	0.0327
At most 5*	0.1792	8.0581	15.4947	0.4592



At most 6*	0.0201	0.7509	3.8415	0.3862
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**Source:** Author's extractions from e-views output

Judging by the Trace statistics and its corresponding probability value, there are at least five co-integrating equations in Table 4.1 above.

**Table 4.3 Vector Error Correction Model (VECM)**

Var. Lag	Co-int. eq1
CBLGS(-1)	0.1000
ASC(-1)	-12.1397
ACGSF(-1)	-0.0002
CBLRA(-1)	-139.7505
CBNTB(-1)	-0.6678
CRR(-1)	1.4298
MPR(-1)	-217.2021
C	- 9730.346

**Source:** Author's extractions from e-views output

From Table 4.3, the short-run coefficients of the Vector Error Correction Mechanism (VECM) regression presented in table 4.3 above, show that the coefficient of agricultural sector credit (ASC), agricultural credit guarantee scheme fund (ACGSF) as a proxy to selective sectorial credit control, aggregate Central Bank of Nigeria treasury bill (CBNTB) as a proxy to open market operation, commercial banks' average lending rate (CBLRA) and monetary policy rate (MPR) at lag one had a negative relationship effect with commercial banks' credit lending to the Nigeria agricultural sector (CBLGS). Whereas, coefficients of cash reserve ratio (CRR) only had a positive relationship with commercial banks' credit lending to the Nigeria agricultural sector (CBLGS). Moreover, the result further shows that the sign of the value of the co-integration coefficient also known as the Error Correction Mechanism (ECM) was negative and statistically significant.

**Table 4.4 Breusch-godfrey Serial Correlation LM Test**

F-statistic	2.8451	Prob. F(2,31)	0.0734
Obs* R-squared	6.0485	Prob. Chi-Square(2)	0.2486

**Source:** Researcher's Estimate from Eview 9.0 (2024)

The post-diagnostic result of serial correlation in Table 4.4 above revealed that there is no presence of serial correlation because both the probability values of F-statistic and observed R-square respectively are more than 5% level of significant.

**Table 4.5 Breusch-Pagan-Godfrey Heteroskedasticity Post-Diagnostic Test**

F-statistic	0.8497	Prob. F(6,32)	0.5417
Obs* R-squared	5.3593	Prob. Chi-Square(6)	0.4986
Scaled explained SS	3.3789	Prob. Chi-Square(6)	0.7600

**Source:** Researcher's Estimate from Eview 9.0 (2024)



The Breusch-Pagan-Godfrey test of Heteroskedasticity in table 4.5 above also revealed that there is no presence of Heteroskedasticity because the probabilities of the F statistic and that of the observed R square respectively are higher than the 5% level of significant.

## DISCUSSION

From Table 4.1 the result of the co-integration test showing that the variables are co-integrated of the same order is an indication that there exist long-run equilibrium relationships among the variables.

The error correction regression mechanism showed ASC, ASCGSF, CBNTB, CBLRA and MPR to have negative relationships with CBLGS implying that an increase in value changes in these variables will lead to a decrease in agricultural sector output growth (ASCG) at the short-run in Nigeria by [-12.13970ASC, -0.000230ACGSF, -139.7503CBLRA, -0.667774CBNTB and -217.2021MPR]. CRS is the only coefficient with a positive relationship with CBLGS which means that increases in the cash reserve ratio (CRR), will lead to increases in the commercial banks' credit lending to the Nigeria agricultural sector (CBLGS) as well. The t-statistic values of these variables were [-12.4789ASC, -5.94339 ACGSF, -14.7659 CBLRA, -4.82727 CBNTB, 1.88257CRR and -15.4052MPR] at 5% level of significance respectively during under the periods of the study.

On the other hand, the value of ECM constant value [- 9730.346] being negative and statistically significant is an indication of the presence of co-integration or long-run relationship existing commercial banks' credit lending to the Nigeria agricultural sector (CBLGS) in Nigeria. The result of the error correction transmission indicates that it will take the value of 9% or 9 years for the model to adjust back to the long-run equilibrium after a shock in the short run. The sign borne by the short-run parameter estimated is not in conformity with the economic a priori expectation at the lag one (i.e. (-1)) estimate.

## IMPLICATION TO RESEARCH AND PRACTICE

The entire research has exposed the inherent belief of that presumed fact that monetary policy positively impacts agriculture which does not come through if thoroughly investigated. So, this will be a turn-around guide for policy makers to be conscious of policy direct when it comes to financing the sector.

The multiple indirect controls of monetary policy will be given direction by focusing on a particular financial directive that is impactful on agriculture. It will also be a guide as it will show the monetary policy committee that it will take a longer time for the agricultural sector to return back to equilibrium if the decisions to give credit to farmers are not made with caution.

Research works are always guides for researchers. This research will guide future researcher on the variables to include in their models by carefully observing the variables of the study. It will also serve as material for empirical study and a point of reference in this particular field.



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## CONCLUSIONS

There is a long-run relationship between monetary policy instrument variables used in the study. This implies that all the variables employed in the model have long-run relationships with each other within the period of this study.

The entire regression plane is statistically significant. This means that the f-statistic values, which are the joint influence of the explanatory variables on the dependent variable employed, were all statistically significant to the study.

The computed coefficient of multiple determinations  $R^2$  of the entire model such as shows that 54%. Based on the  $R^2$  values, we concluded that our models were linear regression with a good fit.

The results rejected the null hypotheses one, and two and accepted their alternative hypotheses. In other words;

The CBN monetary policy rate (MPR), open market operations and cash reserve ratio have a significant effect on Nigeria's agricultural sector growth.

There is a positive significant effect of the CBN selective sectoral credit control policy (agricultural credit guarantee scheme fund (ACGSF) on Nigeria's agricultural sector growth within the period of the study 1980 to 2020.

### Suggestion for Future Research

Future research to cover both monetary and fiscal policy and their collective impact on agricultural output especially concerning tax payment/tax holiday to farming business.

## RECOMMENDATIONS

Central banks should place more emphasis on the commercial banks' managing instruments like average lending rates, liquidity ratio, and transactions on treasury bills. These directly affect the monetary aggregate of the Nigeria deposit money bank which in turn letter to affects negatively on lending rate to Nigeria's agricultural credit sector.

Direct manipulation of interest rates to the real farmers other than the money supply should be a better monetary policy tool to impact the real variables of the Nigeria agricultural credit sector.

Efforts should be made to enhance the magnitude of the monetary variable parameters estimated in our study by the CBN. This could be achieved if the financial credit volume system to Nigeria agricultural credit sector is strengthened.

less emphasis should be placed on the use of Cash Reserves ratios and exchange rate because they have virtually neutral and insignificant effect on the agricultural credit sector in Nigeria.

Other Fiscal measures that stimulate the agricultural credit sector in the economy should be applied, to achieve stable growth in the agricultural credit sector which in turn will result positively in the agricultural sector Gross Domestic Product and Price Level.



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