EFFECTS OF MONETARY POLICY MANAGEMENT ON ECONOMIC GROWTH IN NIGERIA

ONYEMAECHI CHRISTOPHER NWANI
Federal University, Wukari, Nigeria
nwani@fuwukari.edu.ng
PRECIOUS ADUKWU
Federal University, Wukari, Nigeria

Abstract

This study examined the effects of monetary policy management on economic growth in Nigeria. The specific objectives were to ascertain the effects of monetary policy rate, cash reserve ratio, liquidity ratio, and loan-to-deposit ratio on economic growth in Nigeria. The study adopted Ex-post facto research design with yearly time series data obtained from Central Bank of Nigeria (CBN) Statistical Bulletin and Monetary Policy Committee communiqué of the CBN. The dependent variable for this study was economic growth proxy by gross domestic product (GDP). A computer based multiple regression equation using Autoregressive Distributed Lag (ARDL) method of estimation and other descriptive statistics techniques were employed. The findings from the study revealed that monetary policy rate has negative significant effect on economic growth in Nigeria both in the short-run and long-run while cash reserve ratio has positive significant effect on economic growth in Nigeria both in the short-run and long-run. Liquidity ratio has positive effect on economic growth in Nigeria in the short-run but not statistically significant while the long-run effect was negative and statistically significant. Lastly, loan-to-deposit ratio has negative significant effect on economic growth in Nigeria both in the short-run and long-run. The implication of these findings is that all the individual instruments of monetary policy were significant in affecting economic growth. Consequently, the study recommended among others that the activities of non-bank financial intermediaries be highly regulated because of the deposits they attract and the continued implementation of sound banking guidelines that will further encourage economic agents to deposit monies in the bank. The study concludes that monetary policy management with the inclusion of loan-to-deposit ratio is a potent strategy for improving economic growth in Nigeria.

Keywords: Monetary Policy Rate, Cash Reserve Ratio, Liquidity Ratio, Loan to Deposit Ratio, Economic growth

JEL classification: E52, O4

1. INTRODUCTION

Macroeconomic instability has long been a problem for many economies globally. Balance of payment deficits, unemployment, inflation, and many more are

only a few of the various manifestations of macroeconomic instability. To deal with these issues, different economic policies have been formulated. Monetary policy and fiscal policy are the two basic economic policies for managing the level of economic activities in a country (Oseni & Oyelade, 2023; Todaro & Smith, 2009). Monetary policy refers to a plan or a deliberate action intended to control the cost, supply, and value of money so that it aligns with the anticipated level of economic activities while fiscal policy describes how government spending and taxation are used to influence macroeconomic conditions (Jahan & Sarwat, 2014). The Monetary Policy Committee (MPC) of the Central Bank of Nigeria (CBN) was established in 1999 to assist in achieving price stability as well as support Nigeria's economic policies. The attainment of allocative efficiency of the financial markets and price stability are prerequisites for achieving economic growth. Thus, monetary policy is often carried out via the financial market and banking system (Ogbonna, 2021).

To boost growth in the gross domestic product (GDP), CBN adopts an approach to economic growth that primarily focuses on intermediate targets of monetary variables. Intermediate targets such as interest rate, bank credit and money supply are used to achieve monetary policy objectives since there is no direct link between the policy objectives and the policy tools.

In Nigeria, monetary policy rate (MPR), which is the rate that money market (short term) interest rates are anchored on also influences the interest rates of long-term financing. Monetary decision of lower monetary policy rate by an apex bank is a signal of an expansionary monetary policy, which could lead to more investment as well as the acquisition of long-lasting consumer items. Deposit money banks and other loan providers may also relax their lending regulations in response to the anticipation that economic activities will pick up speed, enabling households and businesses to spend more. The opposite may hold when the MPR is raised. In the credit and banking system view, the effects of monetary decisions are conveyed mostly via the amount of money that banks lend. The central bank periodically imposes cash reserve ratio, loan-to-deposit ratio as well as liquidity ratio aimed at influencing the credit-creating capacity of the banks.

Changes in credit available to the private sector via the channels of cash reserve ratio, loan-to-deposit ratio as well as liquidity ratio is expected to have an impact on aggregate demand. As a result, investment and consumption decisions are influenced, and output tends to shift accordingly (Iyoha, Oyefusi, & Oriakhi, 2002; Nwoko, Ihemeje, & Anumadu, 2016). For example, the MPC reduces the cash reserve ratio and liquidity ratio when it aims to stimulate investment activities and growth, while the loan-to-deposit ratio is raised when it aims to increase the volume of money in circulation.

In spite of different monetary policy decisions made over the years, the growth rate to rollover time been marginal as higher proportion of Nigerians still live in extreme poverty (Aule, Bakut, Ihum, & Haddy, 2020), thereby forcing the government roll out several economic reforms in a bid to achieving sustainable growth.

Despite different monetary policy decisions made over the years by the MPC, there seems to be no stable correlation between the aforementioned monetary policy tools as well as output growth in Nigeria. As an example, there has been a drop in MPR from 20.5% in 2001 to 9.5% in 2007, which is an indication of an expansionary monetary policy. Within same period, there was consecutive increase in output from ₦8,234.49b in 2001 to ₦34,675.94b in 2007 as anticipated. Conversely, the MPR rose from 6% in 2009 to 13% in 2014 (contractionary policy) whereas output within same period grew consecutively from ₦43,461.46b in 2009 to ₦90,136.98b in 2014. More recently, the latter trend followed suit between 2020 to 2022 as MPR rose from 11.5% to 16.5% respectively whereas output also rose from ₦154,252.32b in 2020 to ₦202,365.03b in 2022. The CRR was not different either as it dropped from 10% in 2005 to 1% in 2012 while output rose consecutively from ₦23,121.88b to ₦72,599.63b within same period as anticipated. Contrarily, the CRR rose from 8% in 2011 to 27.5% in 2022 (contractionary policy) whereas output still grew from ₦63,713.36b to ₦202,365.03b within same period. Within 2000 to 2005, LQR fell consecutively from 64.1% to 50.2% whereas output grew consecutively also within same period from ₦7,062.75b to ₦23,121.88b as anticipated. While there was consecutive increase in LQR from 38.27% in 2014 to 104.20% in 2019, output still grew from ₦90,136.98b to ₦145,639.14b consecutively within same period as expected. A much less talked about ratio that can influence money supply in the economy is the loan-to-deposit ratio (LDR). The LDR dropped consecutively from 86.91% in 2008 to 37.56% in 2013 whereas output grew consecutively within same period from ₦39,954.21b to ₦81,009.96b contrary to expectation. Same LDR rose consecutively though marginally from 58.73% in 2019 to 61.70% in 2022 while output grew within same period from ₦145,639.14b to ₦202,365.03b as anticipated.

The above analyses reveals that for selected years, changes in the aforementioned monetary policy instruments in Nigeria in connection with output growth have been inconsistent and there are misgivings as to whether monetary policy instruments have been beneficial to Nigeria's economic growth. Again, economists have failed to agree whether monetary policy involvement by the government results in economic stabilization. This disagreement has given rise to the classical, the Keynesian, Neo-Keynesian, and the monetarists school of thought. More so, existing studies disagreed both in the direction of impact and in the line of significance of the effects of monetary policy on economic growth in Nigeria. Studies such as Adeleke, Anuolam, and Ezeilo (2023), Balogun (2021), Nwevo (2022) submit that monetary policy instruments of monetary policy rate, cash reserve ratio, and liquidity ratio to mention a few have positive and significant effect on economic growth, respectively. Other studies Ogbonna (2021), Akinsanya, Tella, and Oseni (2021), Awogbemi (2022) found the effects of same policy instruments of monetary policy rate, cash reserve ratio, and liquidity ratio on economic growth in Nigeria to be negative and significant, respectively. More so, Adeagbo (2021), Etale and Oweibi (2019), Ekechukwu, Mbah, Ozoko, Diele, and Iwu (2020) found no significant effect of monetary policy rate, cash reserve ratio, and liquidity ratio on economic growth in Nigeria, respectively.

Based on the aforementioned controversy, this study investigated the extent to which monetary policy rate, cash reserve ratio, and liquidity ratio have impacted on economic growth with the inclusion of loan-to-deposit ratio as a novel variable. The study shall benefit the MPC of the CBN, the general public and will also be of academic relevance for future researchers.

2. THEORETICAL REVIEW

2.1 THE KEYNESIAN THEORY

A study of the link between monetary policy and economic growth can be theoretically supported by a number of theories in monetary economics and finance. The main theories that deal with the subject are the Keynesian, Neo-Keynesian, monetarist, the classical as well as the Cambridge theory. In all, the Keynesian theory serves as the basis for the study because of its assertion that the levels of output, employment as well as investment in the economy are all determined by interest rate.

According to the Keynesian theory, monetary policy is a major factor influencing economic activities. The theory argues that variables like interest rate, income, output, level of employment as well as aggregate demand may be affected by changes in the money supply. The theory believes in unemployment equilibrium and advocates for cheap money supply in times of unemployment. Therefore, interest rate tends to decrease once the supply of money is augmented. The transmission mechanism in the Keynesian theory is indirect via the interest rate. A key component in Keynes theory is the interest rate. According to Keynes (1936, as cited in Adeleke et al., 2023), the level of output, employment as well as investment in the economy are all determined by interest rate. In this regard, economic growth and interest rates are strongly connected because the monetary authority uses interest rates to determine how resources are allocated and how much is produced. Interest rates, according to Keynes, are the compensation for giving up liquidity for a given amount of time. The unwillingness of people with liquidity to give up their liquid cash for a given period is measured by interest rates. Keynes posited that what drives interest rates is the will to hold cash or to give up cash. This was termed “liquidity preference” by him. As an example, Keynesians believe that by increasing the supply of loanable funds via the banking system, cost of borrowing will fall, which will positively affect marginal efficiency of capital and have multiplier effects that include increased income, increased employment, increased demand for goods and services, increased investments as well as overall growth of the economy. However, if interest rates increase, the opposite will occur.

3. EMPIRICAL REVIEW

Ugwu (2024) examined the impact of monetary policy on economic growth In Nigeria. The study employed yearly times series data for the period 1981 to 2017. Real gross domestic product (RGDP) was used as the explained variable while exchange rate, interest rate as well as monetary policy rate served as explanatory variables. The study used ordinary least square (OLS) estimation technique as well as multiple regression model and found that interest rate and MPR had positive and

negative impact on Nigeria's economic growth respectively but was statistically insignificant. Exchange rate had negative impact on Nigeria's economic growth, and the impact was statistically significant. The implication of the finding is that as exchange rate reduces (appreciation in relation to other currencies) so does output increase.

Dauda and Abdulkareem (2023) investigated the impact of monetary policy on economic growth in Nigeria. The study employed annual times series data for the period 1990 to 2020. Gross domestic product growth rate (GDPg) was employed as the explained variable whereas monetary policy rate as well as money growth rate were the explanatory variables of interest. Also, inflation rate (IFR), labor force participation rate, gross fixed capital formation, and exchange rate served as control variables. The study employed multiple regression model and ARDL estimation technique and found that in the short run, MPR as well as money growth rate had negative and positive impact on economic growth in Nigeria respectively and the impact was statistically significant. The long run result also revealed that MPR and money growth rate had negative impact on economic growth but only MPR was statistically significant. This implies that reduction in monetary policy rate boost Nigeria's economic growth.

Imandojemu, Adeleye, and Aina (2023) examined monetary policy and economic growth in Nigeria: Evidence from Bounds and Bayer-Hanck Cointegration Techniques. The study employed annual times series data for the period 1970 to 2018. GDP per capita was used as the explained variable while monetary policy rate was the explanatory variable of interest. Also, the control variables employed were domestic credit to the private sector, trade openness, exchange rate, and IFR. The study employed multiple regression model and ARDL estimation technique and found that in the short run, monetary policy rate had negative effect on economic growth in Nigeria, and the effect was statistically significant. The implication of the finding is that as monetary policy rate reduces, output increases.

Adeleke et al. (2023) examined the effect of monetary policy on economic growth in Nigeria. The study employed yearly times series data for the period 2004 to 2022. GDP was used as the explained variable whereas MPR, money supply as well as lending interest rate served as the explanatory variables. The study employed multiple regression model and ARDL estimation technique and found that at levels, money supply and monetary policy rate had positive effect on Nigeria's economic growth and the effect was statistically significant while the effect of lending interest rate on Nigeria's economic growth was negative and was statistically significant. The implication of the finding is that economic growth and lending interest rate move in the opposite direction whereas MPR and money supply move in same direction with economic growth.

Oseni and Oyelade (2023) examined the effects of monetary policies on economic growth in Nigeria. The study employed yearly times series data for the period 1981 to 2020. GDP was employed as the explained variable whereas tax revenue, government expenditure, lending interest rate, broad money supply, labor, and gross capital formation served as the explanatory variables. Multiple regression

model was used and the result showed that economic growth in Nigeria is impacted by lending interest rate, gross capital formation, broad money supply as well as total number of employees. However, the effect of gross capital formation, broad money supply as well as total number of employees on gross domestic product was positive and the effect was statistically significant while lending interest rate had negative effect on GDP and the effect was statistically significant.

Anu et al. (2022) examined monetary policy shocks and economic growth in Nigeria. The study employed yearly times series data for the period 1986 to 2018. RGDP was used as the explained variable whereas interest rate (ITR), inflation as well as money supply were employed as the explanatory variables. The study employed multiple regression model and vector autoregression (VAR) estimation techniques and found that the effect of money supply on Nigeria's economic growth was positive and the effect was statistically significant whereas interest rate and inflation had positive effect on Nigeria's economic growth, but the effect was statistically not significant. The implication of the finding is that as money supply increases, output in the economy improves.

Ayanniyi (2022) examined the impact of monetary policy on economic growth in Nigeria. The study employed yearly times series data for the period 1986 to 2020. GDP was used as the explained variable whereas MPR, money supply, interest rate, real exchange rate, and investment to the productive sector served as the independent variables. The study employed OLS estimation technique and multiple regression model and found that the impact of interest rate, monetary policy rate as well as investment to the productive sector on Nigeria's economic growth was positive but statistically insignificant. Real exchange rate as well as money supply had negative and positive impact on economic growth respectively and the impact was statistically significant. The implication of the finding is that increase in money supply boost economic growth while decrease in exchange rate (appreciation) enhances output growth in the economy.

Ovat et al. (2022) investigated monetary policy rate and economic growth in Nigeria. The study employed yearly times series data for the period 2006 to 2020. RGDP was used as the explained variable while monetary policy rate, real exchange rate and inflation served as explanatory variables. The study employed multiple regression model and two stage least squares (2SLS) estimation technique and found that MPR and real exchange rate had negative effect on Nigeria's economic growth, and the effect was statistically significant while inflation had negative effect on economic growth but statistically insignificant. The implication of the findings is that higher monetary policy rate discourages access to finance thereby hampering economic growth.

Aliu (2022) examined the effectiveness of monetary policy in stimulating economic growth in Nigeria. The study employed yearly times series data for the period 1990 to 2019. RGDP was used as the explained variable whereas inflation, liquidity ratio, monetary policy rate, reserve requirement, and interest rate were the explanatory variables. The study used multiple regression model and error correction model (ECM) estimation technique and found that interest rate and reserve

requirement had positive effect in stimulating Nigeria's economic growth but the effect was not statistically significant while MPR had negative effect in stimulating economic growth, but the effect was statistically not significant.

Nwevo (2022) examined monetary policy variables and economic growth in Nigeria. The study employed yearly time series data for the period 1981 to 2020. GDP was employed as the explained variable whereas liquidity ratio, interest rate and exchange rate served as the explanatory variables. The study employed multiple regression model and ARDL estimation technique and discovered that liquidity ratio and exchange rate had negative effect on economic growth in the short run and the effect was statistically significant. In the long run, interest rate and exchange rate had negative effect on economic growth and the effect was statistically significant while the effect of liquidity ratio on economic growth was positive and statistically significant in the long run. The implication is that increase in liquidity ratio leads to economic growth in Nigeria.

Awogbemi (2022) examined the impact of monetary policy on Nigeria's economic growth. The study employed yearly time series data for the period 2000 to 2022. GDP was used as the explained variable whereas cash ratio, broad money supply as well as liquidity ratio served as the explanatory variables. The study used multiple regression and OLS estimation technique. The result revealed that liquidity ratio had negative impact on the Nigerian economy, while cash reserve ratio had negligible impact. Only money supply had positive and significant impact on Nigeria's economic growth over time. This implies that as money supply increases, so does output increase.

Balogun (2021) examined monetary policy and economic growth in Nigeria. The study employed yearly time series data for the period 1999 to 2020. RGDP was used as the dependent variable whereas cash reserve requirement and MPR served as the independent variables of interest. Prime lending rate served as control variable. The study employed multiple regression model and ARDL estimation technique and discovered that in the short run, cash reserve requirement and MPR had negative effect on economic growth but the effect was statistically not significant while prime lending rate had positive effect on economic growth and the effect was statistically not significant. This implies a higher ratio signifies that productive sectors of the economy are stifled by funds, which affects the performance of the GDP. In the long run, cash reserve requirement and MPR had positive and negative impact respectively on economic growth and the impact was statistically significant while prime lending rate had positive effect on economic growth and the effect was statistically significant.

Obeh and Nwagu (2021) examined the nexus on the responsiveness of Nigeria economy to monetary policy. The study employed yearly time series data for the period 1986 to 2018. RGDP was employed as the explained variable while interest rate, exchange rate, liquidity ratio, inflation, MPR and money supply served as the explanatory variables. The study employed multiple regression model and OLS estimation technique and found that exchange rate, money supply and monetary policy rate had positive effect on Nigeria's economy, and the effect was statistically

significant while liquidity ratio had negative effect on Nigeria's economy, and the effect was statistically significant. Also, the effect of inflation and interest rate on the economy was negative and positive respectively but statistically not significant. The implication of the finding is that as money supply increases so does output increase.

Muhammed, Babawulle, and Tahir (2021) examined the impact of monetary policy on economic growth in Nigeria. The study employed yearly times series data for the period 1981 to 2016. GDP was employed as the explained variable while inflation rate, cash ratio, money supply, and liquidity ratio were the explanatory variables. Multiple regression model, vector error correction mechanism (VECM), and the OLS estimation technique were employed and the study found that liquidity ratio and inflation rate have positive and negative impact on GDP respectively but statistically insignificant. Money supply as well as cash ratio had positive and negative impact on economic growth respectively and the impact was statistically significant. This implies that as money supply increases, so does output in the economy increase.

The review of previous studies as indicated in the paragraphs above shows there is no agreement in their findings indicating the need for additional investigation on this subject. This study thus differs from earlier research by including in the investigation, the tool of loan-to-deposit ratio which to the best of my knowledge has not been used in any of the studies conducted in Nigeria. While loan-to-deposit ratio aims at controlling the liquidity position of DMBs, the ratio by extension of this function also influences the availability as well as the quantity of money in the economy. The inclusion of loan-to-deposit ratio as a monetary policy tool is the novelty in this study.

4. METHODOLOGY

Given that there is already existing secondary data, the *Ex-post facto* research design was used to accomplish the objectives. Consequently, yearly time series data for the years 1999 to 2023 was collected and used in the study. The data used were sourced from various issues of CBN Statistical Bulletin and MPC communique. Specifically, data for real gross domestic product, monetary policy rate, liquidity ratio, loan-to-deposit ratio, and total market capitalization were extracted from CBN Statistical Bulletin whereas the data for cash reserve ratio were extracted from both the MPC communiqué and CBN Statistical Bulletin.

The model used was adapted from the work of Balogun (2021). The linear regression employed by the researcher is stated thus:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U \quad (1)$$

Where Y = RGDP (as measure of economic growth); $X_1 - X_3$ = independent variables of Cash Reserve Requirement, Monetary Policy Rate and Prime Lending Rate.

The model for this study was modified in terms of the measures for monetary policy management. Consequently, the model is given as:

$$GDP = f(MPR, CRR, LQR, LDR, TMC) \quad (2)$$

Equation (2) is transformed into a linear equation:

$$GDP = \beta_0 + \beta_1 MPR + \beta_2 CRR + \beta_3 LQR + \beta_4 LDR + \beta_5 TMC + U \quad (3)$$

where:
GDP = Real Gross Domestic Product as proxy for economic growth; β_0 = Intercept of the regression.
β_1, β_2, β_3, β_4, β_5 = slope of the line; MPR = Monetary Policy Rate; CRR = Cash Reserve Ratio.
LQR = Liquidity Ratio; LDR = Loan-to-Deposit Ratio; TMC = Total Market Capitalization.
U = Error term.
A priori Expectation

It is anticipated that $\beta_1, \beta_2, \beta_3 < 0$; $\beta_4, \beta_5 > 0$.

5. RESULTS AND INTERPRETATION

5.1 DESCRIPTIVE STATISTICS

Table 1 below presents the summary statistics of the variables under consideration. According to the descriptive statistics, the average (mean) of economic growth is approximately 10.8026. The mean value which is slightly lower than the median value of 11.0623 indicates that the values of economic growth are nearly identical and are also skewed to the left (negative skewness). The standard deviation of 1.1097 is lower than the average value, indicating low variability in economic growth in Nigeria. Among the explanatory variables, only MPR was negatively skewed to the left since the median value is greater than the mean. The control variable of TMC was also skewed to the left.

The J-B, kurtosis, and skewness statistic sheds light on the normality of the series. The null hypothesis of normal distribution is accepted for all the variables in the model except LQR given that the probability (p) value of their J-B statistics is shown to be greater than 0.05.

Table 1: *Descriptive statistics*

	GDP	MPR	CRR	LQR	LDR	TMC
Mean	10.8026	13.0900	12.3920	52.8340	64.5736	8.9740
Median	11.0623	13.0000	10.0000	50.9000	62.7800	9.4866
Maximum	12.3649	20.5000	32.5000	104.2000	96.8200	11.2280
Minimum	8.6093	6.00000	0.00000	26.3900	37.5600	5.7038
Std. Dev.	1.1097	3.4685	10.9903	16.2703	14.1788	1.5389
Skewness	-0.5045	-0.0078	0.2866	1.1894	0.2860	-0.7159
Kurtosis	2.1154	3.0155	1.5980	5.4354	2.8645	2.4477
Jarque-Bera	1.8757	0.0005	2.3899	12.07268	0.3598	2.4530
Probability	0.3915	0.9998	0.3027	0.0024	0.8353	0.2933
Observations	25	25	25	25	25	25

Source: Researcher's Computation, 2025 using E-views 9

5.2 UNIT ROOT TEST

To determine the order of integration properties, the variables of interest are put through a unit root test employing the Philips Perron (PP) test put forward by Phillips and Perron (1988) and the Augmented Dickey–Fuller (ADF) put forward by Dickey and Fuller (1979).

The null and alternate hypothesis for the unit root test is:

H_0: There is the presence of a unit root.

H_A: There is no unit root.

The null hypothesis would be accepted, and it would be agreed that a unit root exists and the data stationary if the probability values were less than 0.05 or significant at the 5% level of significance.

Table 2: *Stationarity test*

		GDP T-stat (*P*Value)	**MPR T-stat (*P*Value)**	**CRR T-stat (*P*Value)**	**LQR T-stat (*P*Value)**	**LDR T-stat (*P*Value)**	**TMC T-stat (*P*Value)**
Level							
ADF	With constant	-4.4549 (0.0019)	-2.0895 (0.2502)	-0.0073 (0.9489)	-2.7511 (0.0804)	-3.7610 (0.0106)	-1.9958 (0.2865)
PP	With constant	-4.5706 (0.0015)	-2.0903 (0.2499)	0.1119 (0.9599)	-2.7450 (0.0814)	-2.4032 (0.1514)	-2.3510 (0.1653)
First Diff							
ADF	With constant		-5.7629 (0.0001)	-4.4803 (0.0019)	-5.9358 (0.0001)	-3.9266 (0.0078)	-4.0729 (0.0049)
PP	With constant		-5.7485 (0.0001)	-4.4598 (0.0020)	-5.9926 (0.0001)	-4.5391 (0.0017)	-4.0462 (0.0052)

Source: Researcher's computation, 2025 using E-views 9

Examining the unit root result in table 2, only the dependent variable (GDP) was found to be stationary at levels and therefore integrated of order zero I(0). Thus, we accept the null hypothesis and reject the alternate hypothesis. The variables of MPR, CRR, LQR, LDR and TMC were confirmed to be stationary at first difference I(1).The results reported are for those with constant. However, the results with constant and trend were not significantly different.

5.3 ARDL BOUNDS TEST FOR CO-INTEGRATION

Upon confirmation that the stochastic time series are integrated of order one, I(1) and order zero I(0), the study therefore suspects the presence of co-integration in the model. That is, the existence of a long-term relationship among the variables. Consequently, Pesaran, Shin, and Smith (2001) bound test for long run relationship was employed. The calculated F statistics is compared to the asymptotic critical value bounds of Banerjee, Dolado, and Mestre (1998); Pesaran et al. (2001) to determine the long-term connection between the variables. It states that a definitive illation can be made and that determining the co-integration/integration status of the

underlying regressors is not necessary if the calculated F-statistic is outside the critical value bounds. But, if the calculated F-statistic is within I(1) and I(0) bounds, illation cannot be established, and information of the order of integration of the underlying variables is necessary before definite illation can be drawn.

The null and alternate hypothesis for the co-integration test is:

H_0: $\beta 1 = \beta 2 = 0$ (No co-integration)

H_1: $\beta 1 \neq \beta 2 \neq 0$ (There is co-integration).

***Table 3**: Bounds test for co-integration.*

Variables	F-Statistics	Co-integration
F(GDP, MPR, CRR, LQR, LDR, TMC)	41.36844	Cointegration
Critical Values	Lower Bound	Upper Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Researcher's computation, 2025 using E-views 9

Result from the bound test in table 3 showed that the computed F-statistic value is greater than all the upper critical bound I(1) values. Consequently, the null hypothesis of no co-integration is rejected. The findings therefore suggest that the investigated monetary policy instruments and economic growth in Nigeria have a long run relationship.

5.4 ESTIMATION OF THE EFFECTS

***Table 4:** ARDL estimations*

Variables	Coefficient	Std. Error	T-statistics	Prob.
Short-run Coefficients				
D(GDP(-1))	0.1156	0.0840	1.3768	0.2270
D(MPR)	-0.0286	0.0030	-9.5520	0.0002
D(MPR(-1))	0.0178	0.0022	8.0613	0.0005
D(CRR)	0.0184	0.0019	9.5868	0.0002
D(CRR(-1))	-0.0229	0.0023	-9.7363	0.0002
D(LQR)	0.0008	0.0005	1.7432	0.1418
D(LQR(-1))	-0.0003	0.0004	-0.7184	0.5047
D(LDR)	-0.0055	0.0006	-8.7656	0.0003
D(LDR(-1))	-0.0019	0.0006	-3.0318	0.0290
D(TMC)	0.1672	0.0212	7.8803	0.0005
D(TMC(-1))	-0.1038	0.0250	-4.1460	0.0089
CointEq(-1)	-0.7830	0.0809	-9.6833	0.0002

Long-run Coefficients				
MPR	-0.0526	0.0063	-8.3494	0.0004
CRR	0.0518	0.0035	14.9322	0.0000
LQR	-0.0030	0.0008	-3.9294	0.0111
LDR	-0.0073	0.0007	-11.0808	0.0001
TMC	0.3207	0.0270	11.8572	0.0001
C	8.7829	0.3363	26.1199	0.0000

Source: Researcher's computation, 2025 using E-views 9

This study employs the ARDL model in estimating the effects. The model uses a general-to-specific modeling framework with enough lags to capture the data-generating process (Shrestha & Bhatta, 2018; Ghouse, Khan, & Rehman, 2018). By taking a general to specific approach, the ARDL methodology enables the development of the most suitable interpretable model while addressing a number of econometric issues like autocorrelation and misspecification (Ghouse et al., 2018). Furthermore, the ARDL model provides without bias an estimation for the study by concurrently estimating the long-run and short-run co-integration relationship (Qamruzzaman & Jianguo, 2018; Pesaran et al., 2001). The estimated error correction form (cointEq(−1)) corresponding to the long-run estimates measures the speed of adjustment whereby short-run dynamics converge to the long-run equilibrium path in the models. The coefficients of CointEq(−1) are expected to be negative and significant. In line with the ARDL optimal model of (2, 2, 2, 2, 2, 2), the result of the long-run and short-run forms of the ARDL model is presented in table 4 above.

As can been seen in table 4 above, the error correction term (ECT) represented as CointEq(-1) is significant at 1% and has the anticipated negative sign. This provides more evidence that the variables have long-run effects. The coefficient of the ECT implies that the previous period deviation from long run equilibrium is corrected in the current period at a speed of approximately 78 percent.

5.5 DIAGNOSTIC TESTS

Some diagnostic tests were performed to check the strength of the model, which is presented in table 5. The Jarque-Bera normality test result showed that the p-value of 0.7314 is greater than 0.05, implying that the hypothesis of normality is not rejected and that the data are from a normal distribution.

The Breusch-Godfrey Residual Serial Correlation test and the Breusch-Pagan-Godfrey Heteroskedasticity test results shows that their probability values of 0.1651 and 0.3989 respectively are greater than 0.05, implying that the null hypothesis of no serial correlation and no heteroskedasticity in the residuals are accepted. Therefore, the model has no problem with serial correlation and heteroskedasticity. Lastly, the Ramsey RESET test result revealed that the p-value of 0.5915 is greater than 0.05, implying that the model is stable.

Table 5: *Diagnostic tests*

Specification	Stat. (PValues)	Conclusion
Jarque-Bera Normality	0.6257(0.7314)	Normal Distribution
Breusch-Godfrey Serial Correlation	3.4843(0.1651)	No serial correlation
Breusch-Pagan-Godfrey Heteroskedasticity	1.3436(0.3989)	No Heteroskedasticity
Ramsey RESET Test	0.3392(0.5915)	Model is stable

Source: Researcher's computation, 2025 using E-views 9

5.6 TEST OF HYPOTHESES

Hypothesis One: The null and alternate hypothesis one is stated thus:

H_{O1}: Monetary policy rate has no significant effect on economic growth in Nigeria.

H_{A1}: Monetary policy rate has significant effect on economic growth in Nigeria.

Decision Rule: Reject the null hypothesis and accept the alternate if the p-value is less than 0.05.

Hypothesis one, the p-value is 0.0002 and 0.0004 for short and long run, respectively. Therefore, the null hypothesis is rejected. Consequently, monetary policy rate has significant effect on economic growth in Nigeria both in the short-run and long run.

Hypothesis Two: The null and alternate hypothesis two is stated thus:

H_{O2}: Cash reserve ratio has no significant effect on economic growth in Nigeria.

H_{A2}: Cash reserve ratio has significant effect on economic growth in Nigeria.

Hypothesis two, the p-value is 0.0002 and 0.0000 for short and long run, respectively. Therefore, the null hypothesis is rejected. Thus, cash reserve ratio has significant effect on economic growth in Nigeria both in the short-run and long run.

Hypothesis Three: The null and alternate hypothesis three is stated thus:

H_{O3}: Liquidity ratio has no significant effect on economic growth in Nigeria.

H_{A3}: Liquidity ratio has significant effect on economic growth in Nigeria.

Hypothesis three, the p-value is 0.1418 and 0.0111 for short and long run, respectively. Only the p-value for long run is less than 0.05 and therefore the null hypothesis is rejected. Hence in the long run, liquidity ratio has significant effect on economic growth in Nigeria.

Hypothesis Four: The null and alternate hypothesis four is stated thus:

H_{O4}: Loan-to-deposit ratio has no significant effect on economic growth in Nigeria.

H_{A4}: Loan-to-deposit ratio has significant effect on economic growth in Nigeria.

Hypothesis four, the p-value is 0.0003 and 0.0001 for short and long run, respectively. Therefore, the null hypothesis is rejected. Thus, loan-to-deposit ratio has significant effect on economic growth in Nigeria both in the short-run and long run.

6. DISCUSSION

The study revealed that MPR has negative effect on GDP in Nigeria over the time studied and the effect was statistically significant both in the short-run and long run. In a model where the dependent variable has been log-transformed and the predictor was not. To interpret the amount of change in the original metric of the outcome, we first exponentiate the coefficient of MPR in the short run to obtain exp(0.0286) =1.0290. To calculate the percentage change, we can subtract one from this number and multiply by 100. Therefore, for a unit increase in MPR, GDP decreases by 2.90 percent in the short-run, ceteris paribus. The finding is in line with the work of Dauda and Abdulkareem (2023) but in contrary to finding of Balogun (2021). Also, for a unit increase in MPR, GDP decreases by 5.4 percent in the long-run, ceteris paribus. The finding is in tandem with Dauda and Abdulkareem (2023), Balogun (2021) but contrary to the finding of Ibrahim (2019), Akinsanya et al. (2021). The above findings are consistent with theoretical expectation that suggest negative effect. That is, when there is a fall in monetary policy rate which serves as the base upon which all other rates are determined, it will lead to increase in actual investment and also increase in the level of employment, thus bringing an incremental effect on income and output level, all of these will now transmit through the multiplier effect into economic growth.

Cash reserve ratio showed positive effect on GDP in Nigeria over the time studied and the effect was statistically significant both in the short-run and long run. The implication of the finding is that a unit increase in cash reserve ratio increases GDP by 1.86 percent in the short-run, ceteris paribus. The finding is in tandem with the work of Anowor and Okorie (2016) but contrary to the finding of Balogun (2021). Also, a unit increase in cash reserve ratio increases GDP by 5.32 percent in the long-run, ceteris paribus. This finding is in line with the work of Balogun (2021). The above findings are not in line with theoretical expectation that suggest negative effect, and this may not likely be unconnected to the limitation of cash reserve ratio in controlling money supply because the CRR only applies to deposits and deposits account for a small portion of the money supply.

Liquidity ratio showed positive effect on GDP in Nigeria over the time studied and the effect was not statistically significant in the short run. In the long run, the effect on GDP was negative and statistically significant. The implication of the finding is that a unit increase in liquidity ratio increases GDP by 0.08 percent in the short-run, ceteris paribus. The result is not in tandem with the findings of Nwevo (2022) which revealed negative significant effect on GDP in the short run. Conversely, a unit increase in liquidity ratio decreases GDP by 0.30 percent in the long-run, ceteris paribus. The result is again contrary to the finding of Nwevo (2022) which revealed positive significant effect on GDP in the Long run. The finding also

disagrees with the empirical result of Akinsanya et al. (2021). The long run dynamics is consistent with theoretical expectation that suggest negative effect.

Loan-to-deposit ratio which is the novelty in this study showed negative effect on GDP in Nigeria over the time studied and the effect was statistically significant both in the short-run and long run. The implication of the finding is that for a unit increase in loan-to-deposit ratio, GDP decreases by 0.55 percent in the short-run. Also, for a unit increase in loan-to-deposit ratio, GDP decreases by 0.73 percent in the long-run. The above findings are not in line with theoretical expectation that suggest positive effect. This may be because of DMBs not channeling loans to viable and productive sectors of the economy.

7. CONCLUSION AND RECOMMENDATIONS

The study revealed that all the investigated monetary policy instruments (monetary policy rate, cash reserve ratio, liquidity ratio & loan-to-deposit ratio) were significant in affecting economic growth, however only monetary policy rate was effective in driving economic growth in the right direction as the other variables of cash reserve ratio, liquidity ratio and loan-to-deposit ratio (credit and banking system channels) were driving growth in the wrong direction. Therefore, the study submits that monetary policy management is a potent strategy for enhancing economic growth in Nigeria.

Based on the above findings and conclusion, the study recommends the following for policy action:

i. In view of the finding that lowering monetary policy rate will stimulate growth in GDP, monetary policy committee of the CBN should set the MPR at a level ideal for encouraging production, investment and maintaining price stability.

ii. The activities of non-bank financial intermediaries be highly regulated by the monetary authority because of the deposits they attract as their operations limit the effectiveness of cash reserve ratio of DMBs in controlling money supply.

iii. Authorities should execute policies that will develop the money and capital market in Nigeria by creating new financial products and ensuring that the markets does not lack in investable outlets such as bills, stocks, and shares for investment by DMBs.

iv. Monetary authorities should continue to introduce sound banking guidelines that will encourage economic agents to deposit all monies in the bank while also directing the flow of bank deposits to economically viable industries that will attract both local and foreign investments, encourage non-oil exports, generate employment opportunities as well as revive industries that are presently functioning far below their installed capacity.

Since the extent to which these policy instruments will affect the macroeconomic targets may depend greatly on the interaction between the conduit (financial institutions) and the monetary policy mechanism, future research could explore the possibility of introducing a moderator variable such as financial

institutions development or institutional quality to investigate this time, the conditional effect of monetary policy management on economic growth in Nigeria.

REFERENCES

Adeagbo, M.O. (2021). Monetary policy and economic growth nexus in Nigeria. *Ianna Journal of Interdisciplinary Studies, 3*(2), 92–103.

Adeleke, A.O., Anuolam, M.O., & Ezeilo, F.I. (2023). The effect of monetary policy on economic growth in Nigeria. *International Journal of Research and Innovation in Social Science, 7*(2), 566–577.

Akinsanya, T.A., Tella, S.A., & Oseni, I.O. (2021). Monetary policy management and economic growth in Nigeria: New lessons relearned. *KIU Interdisciplinary Journal of Humanities and Social Sciences, 2*(2), 113–131.

Aliu, T.I. (2022). Effectiveness of monetary policy in stimulating economic growth in Nigeria. *International Journal of Research in Social Science and Humanities, 3*(2), 33–42.

Anowor, O. F., & Okorie, G. C. (2016). A reassessment of the impact of monetary policy on economic growth: Study of Nigeria. *International Journal of Developing and Emerging Economies, 4*(1), 82–90.

Anu, K.T., Oluwatoba, O.A., Francis, O.L., Anayo, V.E., Friday, C.N., & Isaac, A. (2022). Monetary policy shocks and economic growth in Nigeria. *Indonesian Journal of Contemporary Education, 4*(2), 71–79.

Aule, D.T., Bakut, P.Z., Ihum, J.T., & Haddy, I. (2020). Analysis of the effects of monetary policy on economic growth in Nigeria. *International Journal of Research and Innovation in Social Science, 5*(12), 95–102.

Awogbemi, T.O. (2022). The impact of monetary policy on Nigeria's economic growth. *Innovations, 70*(4), 1076–1084.

Ayanniyi, A.D. (2022). Impact of monetary policy on economic growth in Nigeria. *Global Scientific Journal, 10*(7), 1508–1532.

Balogun, A.A. (2021). Does monetary policy affect economic growth in Nigeria? *Fuoye Journal of Finance and Contemporary Issue, 1*(1), 92–102.

Banerjee, A., Dolado, J., & Mestre, R. (1998). Error–correction mechanism tests for cointegration in a single–equation framework. *Journal of Time Series Analysis, 19*(3), 267–283.

Dauda, R.O., & Abdulkareem, M. (2023). Impact of monetary policy on economic growth in Nigeria. *Journal of Emerging Economies and Islamic Research, 11*(1), 71–90.

Dickey, D.A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*(366a), 427–431.

Ekechukwu, C., Mbah, P.C., Ozoko, E.E., Diele, F.C.O., & Iwu, F. (2020). Money supply, liquidity ratio and economic growth: The Nigeria experience.

International Journal of Disaster Recovery and Business Continuity, 11(1), 1811–1820.

Etale, L.M., & Oweibi, G.T. (2019). Monetary policy and economic growth nexus: Further evidence from Nigeria. *Global Journal of Arts, Humanities and Social Sciences, 7*(8), 24–37.

Ghouse, G., Khan, S.A., & Rehman, A.U. (2018, January 10). ARDL model as a remedy for spurious regression: Problems, performance and prospectus. Retrieved from https://mpra.ub.uni-muenchen.de/83973/

Ibrahim, V.H. (2019). Monetary policy and economic growth in Nigeria: An autoregressive distributed lag analysis. *Advances in Social Sciences Research Journal, 6*(3), 90–100.

Iyoha, M.A., Oyefusi, S.A., & Oriakhi, D.E. (2002). *An introduction to modern macroeconomics.* Benin City: Mindex Publishing.

Jahan, S.A., & Sarwat, A.M. (2014). The relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria. *The African Economic and Business Review*, 3(1), 23–40.

Imandojemu, K., Adeleye, B.N., & Aina, B. (2023). Monetary policy and economic growth in Nigeria: Evidence from Bounds and Bayer-Hanck cointegration techniques. *Economic Annals, 68*(236), 81–-103.

Muhammed, M.N., Babawulle, D.H., & Tahir, H.M. (2021). Impact of monetary policy on economic growth in Nigeria: Vector error correction mechanism approach. *Asian Journal of Economics, Finance and Management, 3*(1), 519–529.

Nwevo, C.N. (2022). Monetary policy variables and economic growth in Nigeria. *Journal of Economics and Business Aseanomics, 7*(2), 1–15.

Nwoko, N.M., Ihemeje, J.C., & Anumadu, E. (2016). The impact of monetary policy on the economic growth of Nigeria. *African Research Review, 10*(3), 192–206.

Obeh, H.O., & Nwagu, U.G. (2021). Nexus on the responsiveness of Nigeria economy to monetary policy. *Socialscientia Journal of the Social Sciences and Humanities, 6*(1), 45–59.

Ogbonna, U.G. (2021). Monetary policy and economic growth in Nigeria. *Uniport Journal of Business, Accounting and Finance Management, 12*(2), 1–14.

Oseni, I.O., & Oyelade, A.O. (2023). The effects of monetary policies on economic growth in Nigeria. *African Journal of Economic Review, 11*(3), 13–28.

Ovat, O.O., Ishaku, R.N., Ugbaka, M.A., & Ifere, E.O. (2022). Monetary policy rate and economic growth in Nigeria. *International Journal of Economics and Financial Issues, 12*(3), 53–59.

Pesaran, H., Shin, Y., & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326.

Phillips, P.C.B., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335–346.

Qamruzzaman, M., & Jianguo, W. (2018). Nexus between financial innovation and economic growth in South Asia: Evidence from ARDL and nonlinear ARDL approaches. *Financial Innovation, 4*(20), 1–19.

Shrestha, M.B., & Bhatta, G.R. (2018). Selecting appropriate methodological framework for time series data analysis. *The Journal of Finance and Data Science, 4*(2), 71–89.

Todaro, M.P., & Smith, S.C. (2009). *Economic development*. Harlow, England: Addison-Wesley.

Ugwu, F.O. (2024). Impact of monetary policy on economic growth in Nigeria. *International Journal of Innovative Finance and Economics Research 12*(1), 263–276.