



## **The Effect of Monetary Policy on the Performance of Deposit Money Banks in Nigeria**

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### **Abstract**

This study broadly seeks to analyze the effect of monetary policy on the performance of deposit money banks in Nigeria. This research was based on secondary source of data extracted out from Central Bank of Nigeria (CBN) statistical bulletin and Index mundi. The Autoregressive Distributed Lag (ARDL) approach to cointegration was applied to achieve the objective. The empirical results revealed that both in the long run and short run, bank lending rate (BLR) has been found to have a significant positive impact on banks loans and advances (BLA), This means that (BLR) has significant positive impact on the performance of deposit money banks in Nigeria. While liquidity rate (LR) has significant impact in the long run but has no significant impact in the short run likewise interest rate (IR) has no significant impact in the long run but in the short run has significant and positive impact on the performance of deposit money banks. The study concluded that increasing the interest rate can equally lead to improve performance in the short-run as this can motivate customers to save more but this effect will neutralize in the long-run. The study recommends that the central bank of Nigeria should redefine its monetary policy instruments to make them more attractive to the banks. This will make banks to embrace them beyond mere.

**Keywords:** Monetary policy, Deposit money, Banks performance, Bank lending, Interest rate

## **1. Introduction**

Banks sustainability can solitary be survived with a positive return on capital invested the higher profitability made them success, therefore it driven factor activities of commercial banks. Consequently, banks involve in different kind of works and services in other to achieve maximum revenue in return. Banks usually giving out loan to borrowers that are looking for capital to do businesses (Udeh, 2015). The Central Bank of Nigeria (CBN) monetary policies significantly influences the performance of commercial banks in the country (Anthony, 2018; Chukwu & Godfrey, 2020). The borrowers in return it is mandatory to return the initial amount borrowed and some agreed percentage of interest. Thus, banks play vital role of financial intermediation which is highly regulated by the government. To carry out this regulation effectively, government employs monetary policies as the primary tool to regulate the banking sector. Monetary policy is one of the macroeconomic instruments with which nations do manage their economies (Ajie & Nenbe, 2010). Monetary policy involves the use of monetary instruments to regulate or control the volume, the cost, the availability and the direction of money and credit in an economy to achieve some macroeconomic objectives such as price stability, full employment and sustainable economic growth (Mishkin, 2013) According to CBN (2006) the main objectives of monetary policy is price stability and sustenance of economic growth. The CBN's monetary policy can be clearly split into two phases: the period before the Structural Adjustment Program (SAP) of 1986 and the period beyond. Before 1986, monetary policy was implemented by directly controlling both the interest rate and exchange rate (Matousek & Solomon, 2018). The idea was to channel cheap credit to the sectors of the economy that was viewed to be at the vanguard of growth and development (Yinusa & Akinlo, 2008). In reality, the attempt to use interest and exchange rates respectively to achieve set targets in growth were rarely achieved (Ibeabuchi, 2007). Instead these policies contributed to distortions, bottlenecks and widespread inefficiencies and wastage in resource allocation.

In Nigeria, the Central Bank of Nigeria (CBN) is the sole monetary authority. Its core mandate is to promote monetary and price stability and evolve an efficient and reliable financial system through the application of appropriate monetary policy instruments and systemic surveillance (Ibeabuchi, 2007). The 1958 Act establishing the Central Bank of Nigeria gave it the following specific functions (which have endured in the 2007 CBN Act): Issuance of legal tender currency notes and coins in Nigeria; maintenance of Nigeria's external reserves; safeguarding the international value of the currency; promotion and maintenance of monetary stability and a sound and efficient financial system in Nigeria; and Acting as banker and financial

adviser to the Federal Government. Embedded in these objectives are two separate but highly related roles: A developmental role and financial surveillance (stability) role. The roles demand, among others, that the CBN focuses on both price stability and growth. In order to ensure the realization of the goals of price stability and economic growth, the CBN deploys its monetary policy instruments in such a way as to ensure optimality in inflation and growth outcomes. It follows, therefore, that the efficient conduct of monetary policy is a major responsibility of the Central Bank of Nigeria. (Ajayi & Atanda, 2012) assert that the Central Bank of Nigeria (CBN) over the years, have instituted various monetary policies to regulate and develop the banking system in order to achieve major macroeconomic objectives which often conflict and result to distortion in the economy; although, some monetary policy like cash reserve and capital requirements have been used to buffer the liquidity creation process of commercial banks through deposit base and credit facilities to the public. According to Ibeabuchi (2007) the conduct of monetary policy in Nigeria has undergone several phases.

Banks are like other private sectors or enterprises, banks have private goals (other than the necessity to effectively perfect the intermediation role) of profitability, liquidity and solvency. However, these banks do operate within the framework of the monetary and banking policies provided by the economy that could serve to hinder or enable them to achieve their profitability goal (Ekpung, Udude, & Uwalaka, 2015) The Apex bank has gone a long way at ensuring monetary stability by using policies like cash reserve requirements and capital requirements. These are continually used to cushion the effect of liquidity transmission, through deposit base and credit facilities by Deposit money banks; they have been unable to achieve maximum efficiency in this respect (Omankhanlen, 2014) Indirect instruments of monetary policy are constantly mobilized to control liquidity demand pressures while lending commitments by banks continue to pose a challenge to economic development. The non-cooperation of some banks to adhere to stipulated requirements for issuing of loans and advances has caused the many set-backs in the achievement of macroeconomic objectives. Some have attributed reasons of their non-compliance to the progressive increase of the Monetary Policy Rate (MPR) in recent times. . However, others have taken to a contrary stance, laying claim to monetary policy requirements on bank's Cash Reserve Ratio (CRR) and Liquidity Ratio (LR).

After the adoption of the 2010 tightening stance by Central bank of Nigeria (CBN), to enhance the banking system's performance through monetary easing policies; so much pressure was mounted on the Exchange Rate (ER) and external reserves. This has in turn affected the value of the Naira currency, leaving the

increase in interest rate unchecked and performance of credit extended by banks to the general public unstable, even in the light of slight inflationary pressures. For this study, the performance of the banking industry which is represented by Deposit money banks total loans and advances (TLA) is dependent on Cash Reserve Ratio, (CRR), Liquidity Ratio (LR), Monetary Policy Rate (MPR) and Average Exchange Rate (AER). Therefore there is a need to discover the true effect of monetary policy measures on the Nigerian banking system. The extent of regulatory intervention may also determine whether financial markets can develop to their full potential or not. The more sophisticated the monetary policy, the greater its vulnerability to failure of banks to deliver against its promises. (Ogunyemi, 2014) reported that some monetary policy instruments like minimum rediscounting rate (MRR); liquidity ratio, exchange rate in Nigeria were not in favor of the increase in the volume of commercial banks loans and advances in Nigeria due to poor infrastructural facilities and high cost of operating in such a volatile environment. When these failures occur, investment which is an important factor in economic growth is kept low. Consequent upon this, trust and confidence in the financial system may go down and sourcing of funds from banks may face a downward trend due to increase in cost of loan. Despite several empirical evidences that found the efficacy of monetary policy lies on the effectiveness of the real sector; how those monetary policies had influenced the performance of Deposit Money Banks in Nigeria remains unresolved and demands investigation (Ayodele, 2014). This study, therefore empirically evaluate the effect of monetary policy on the performance of deposit money banks in Nigeria.

## **2. Literature Review**

There are some research within the Nigerian content Okoye & Eze (2013) examined the impact of bank lending rate on the performance of Nigerian Deposit Money Banks between 2000 and 2010. It specifically determined the effects of lending rate and monetary policy rate on the performance of Nigerian deposit money Banks and analyzed how bank lending rate policy affects the performance of Nigerian deposit money banks. The result confirmed that the lending rate and monetary policy rate have significant and positive effects on the performance of Nigerian deposit money banks. The implication of this is that lending rate and monetary policy rate are true parameter of measuring bank performance. Akomolafe et al. (2015) found that there is a positive relationship between banks' profits and monetary policies in Nigeria. The study covers a period from 2003 to 2013. Another study by (Ekpung et al. (2015) also examined the effect of monetary policy on banking sector performance from 1970 to 2006. However, the study uses banks' deposit liabilities to represent banks' performance and indicates that monetary policy has a significant

effect on banks' deposit liabilities. In particular, deposit rate and minimum discount rate have a negative influence on banks' deposit liabilities, whereas exchange rate has a positive and significant impact on this variable. More particularly Udeh (2015) investigated the impact of monetary policy instruments on profitability of commercial banks in Nigeria using the Zenith Bank Plc. experience from 2005 to 2012. The study discovered that cash reserve ratio, liquidity ratio and interest rate have an insignificant impact on the profit before tax of Zenith Bank Plc. However, minimum rediscount rate is found to have significant effect on this variable. The author then concluded that a number of monetary policy instruments have an insignificantly impact on profitability of commercial banks in Nigeria, and thus management of commercial banks should look beyond monetary policy instruments to enhance their profits.

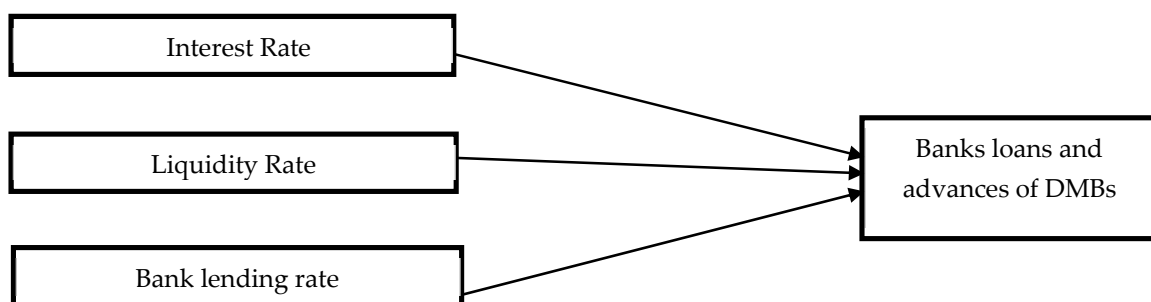
The research examines the effect of monetary policy on commercial banks used three generations of banks. The results show that an increase in interest rate will leads to a decrease in the lending rate while liquidity ratio and cash ratio were statistically significant to the profit of commercial banks (Akanbi & Ajagbe, 2012). The research discovered that their bi-directional causality between monetary policy rate and bank savings rate also unidirectional causality from bank lending rate to bank savings rate and from monetary policy rate to bank lending rate (Joseph & Thaddeaus, 2013). Another results discovered that exchange rate and interest positively influence commercial banks lending, though money supply and liquidity ratio negatively influence the commercial banks in Nigeria (Charles, 2014). Similar results show that there is a positive relationship between banks' profits and monetary policies (Akomolafe, Danladi, Babalola, & Abah, 2015) while another research reveals that monetary policy rate, interbank rate and savings deposit were all negatively and significantly affecting inflation rate (Maji, Waziri, Sulaiman, Tijani, & Bala, 2015). While AlAli (2019) studies Kuwait banks financial performance found that National bank of Kuwait and Ahli United bank of Kuwait are the base performing banks in Kuwait within the period of study.

Other research Amidu & Wolfe (2008) examined the constrained implication of monetary policy on bank lending in Ghana between 1998 and 2004. Their study revealed that Ghanaian banks' lending behavior is affected significantly by the country's economic support and change in money supply. Their findings also support the finding of previous studies that the Central Bank prime rate and inflation rate negatively affect bank lending. Prime rate was found statistically significant while inflation was insignificant. Based on the firm level characteristics, the study reveals that bank size and liquidity significantly influence bank's ability to extend credit when demanded. Younus & Akhtar (2009) examined the significance of Statutory Liquidity Requirement (SLR) as a monetary policy instrument in Bangladesh. Using descriptive analysis techniques,

they found that statutory liquidity requirement has experienced infrequent changes and past evidence showed that reduction in SLR produced positive impact on bank credit and investment especially prior to the 1990s. SLR and Cash Reserve Requirement (CRR) were found to be significant tools of reducing inflation and both are used only in situation of Drastic imbalance resulting from major shocks. They posited that Bangladesh Bank has used open market operations (OMO) more frequently rather than changes in the Bank Rate and SLR as instruments of monetary policy in line with its market oriented approach. Ajayi & Atanda (2012) investigated the effect of monetary policy instruments on banks' performance with a view to determining the existence of long-run relation for the period 1980-2008. The empirical estimates indicated that bank rate, inflation rate and interest rate are credit enhancing, while liquidity ratio and cash reserves ratio exerted negative effect on banks total credit. Although, it was only cash reserve system and interest rate that were found to be significant at 5% critical value, main conclusion drawn was that monetary policy instruments are not effective to stimulate credit in the long-run, while banks total credit is more responsive to cash reserve system.

### 3. Methodology

This part discusses the methodology the researcher employed in investigating the effect of monetary policy on the performance of deposit money banks in Nigeria. These are theoretical framework, research design and population of the study, source of data, tools as well as the techniques that will be used to analyze the data collected. Monetary policy affects almost every facet of the economy like inflation, interest rate and employment etc. Monetary economics also studies the behavior of financial institutions such as deposit money banks which are significant in determining the pace of growth and development in the economy.



**Figure 1.** Conceptual framework, Source: Udeh (2015)

Based on the review of empirical studies conducted, the conceptual framework for this study was developed based on the previous work of Udeh (2015) as shown in figure 1. The study employed descriptive research design. The main reason for selecting descriptive research design is because it provides a knowledge base when little is known about a phenomenon or such things as clarification of a situation, classification of information, or description of subject characteristics that will aid in the refinement of the research problem, formulation of the hypothesis, or design of data collection and analysis procedures. It also allows one to establish a relationship between variables.

The data used in this study will be secondary data. The data was collected from CBN Statistical Bulletin and Index Mundi. The data collected is for analysis is from 1988 to 2019. This duration was considered appropriate since a number of monetary policy changes were made hence it will be prudent to find out how they affected the performance of DMBs. Since the main focus is to have a better understanding of the effect of monetary policy on the performance of deposit money banks in Nigeria, the thrust of this research is to thoroughly investigate the effect of monetary policy on the performance of deposit money banks in Nigeria.

Therefore, the model for this research is specified thus;

$$BLA = f(IR, BLR, LQR) \dots \dots \dots (1)$$

$$BLA_t = \alpha_0 + \alpha_1 IR_t + \alpha_2 BLR_t + \alpha_3 LQR_t + \mu_t \dots \dots \dots (2)$$

Where;

*BLA* = Banks loans and advances

*IR* = Interest rate

*BLR* = Bank lending rate

*LQR* = Liquidity rate

$\mu$  = Error term

### **Technique of Estimation**

The method of estimation to be used in this study would be autoregressive distributive lag (ARDL) approach to cointegration. The method of estimation has been chosen owing to its unique characteristics which make it more suitable than other methods that could be used to achieve similar objective. Unlike other methods of estimation for testing cointegration relationship, ARDL could be applied irrespective of the order of integration of the variables, i.e., whether the variables are I(0), I(1) or mixed. Secondly, with ARDL, both long-and short-run estimates could be obtained simultaneously. Thirdly, it is suitable technique for both large sample and small sample size between 30 to 80 observations.

The specification of ARDL begins with constructing conditional error correction model as thus:

$$\Delta BLA_t = \phi_0 + \sum_{i=1}^1 P_i \Delta BLA_{t-1} + \sum_{i=0}^1 \delta_i \Delta IR_{t-1} + \sum_{i=0}^1 \vartheta_i \Delta BLR_{t-1} + \sum_{i=0}^1 x_i \Delta LR_{t-1} + \alpha_1 BLA_{t-1} + \alpha_2 IR_{t-1} + \alpha_3 BLR_{t-1} + \alpha_4 LR_{t-1} + \xi_t \dots \dots \dots (3)$$

To test for cointegration relationship among the variables of interest, the null hypothesis of no cointegration ( $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ ) will be tested against the alternative hypothesis ( $H_a: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$ ) which indicates existence of cointegration relationship. The cointegration test is based on F-test/Wald test and is conducted using ordinary least squares. The inference here is that, if the computed F-statistic is greater than the upper bound critical value of the bounds test, there is said to be cointegration. If the computed F-statistic is less than the lower bound critical value, there is no cointegration. However, if the value of the computed F-statistic lies between the upper and the lower critical values, then the inference is said to be inconclusive.

Once cointegration relationship exists, the long-run model would be estimated as specified:

$$BLA_t = \phi_1 + \sum_{i=1}^l L_i BLA_{t-1} + \sum_{i=0}^l \delta_i IR_{t-1} + \sum_{i=0}^l \vartheta_i BLR_{t-1} + \sum_{i=0}^l x_i LR_{t-1} + \xi_t \dots \dots \dots (4)$$

Similarly, the short-run model of the error correction specification would be estimated to ascertain the short-run dynamic behavior of the variables in the model.

$$\Delta BLA_t = \phi_1 + \sum_{i=1}^l L_i \Delta BLA_{t-1} + \sum_{i=0}^l \delta_i \Delta IR_{t-1} + \sum_{i=0}^l \vartheta_i \Delta BLR_{t-1} + \sum_{i=0}^l x_i \Delta LR_{t-1} + \beta ECM_{t-1} + \xi_t \dots \dots \dots (5)$$

$$ECM = BLA_t - \phi_1 - \sum_{i=1}^l L_i BLA_{t-1} - \sum_{i=0}^l \delta_i IR_{t-1} - \sum_{i=0}^l \vartheta_i BLR_{t-1} - \sum_{i=0}^l x_i LR_{t-1} \dots \dots \dots (6)$$

Where  $ECM$  is the error correction term and  $\beta$  is the coefficient of the error correction term which measures the speed of adjustment of the variables back to equilibrium in the long-run. It also shows the percentage of deviation from the equilibrium that needs to be corrected.

#### 4. Results and Discussion

In this part, the empirical results will be presented and discussed based on the outcome of the study. The empirical results include unit root test results, co-integration test and ARDL results which are presented in the subsequent Tables. Having estimated the model, the variables considered Banks Loans and Advances



BLA (dependent variable) Interest Rate (IR), Bank Lending Rate (BLR), Liquidity Rate (LR) were all used as the independent variables.

**Unit Root Test**

In this part the stationarity properties of all the variables of study are examined using time series plot. Prior to the estimating cointegration, the study employed popular unit root tests, Augmented Dickey Fuller (ADF) and Phillips Perron to identify the order of integration of the variables under consideration. Though ARDL approach does not formally requires pretesting for unit root test but it is worthy to note that any presence of I (2) among the variables of study may render the methodology invalid. This is because the method has been developed based on the assumption that the variables are purely either I (1), I(0) or mixed. Therefore, we conducted the unit root tests to be sure of the variables' order of integration and the results are reported in Table 1.

**Table 1.** Unit Root test results

ADF Test Statistics Variable	Constant		Trend	
	Level	First difference	Level	First difference
<i>BLA</i>	-1.557	-6.767***	-5.021***	-5.337***
<i>BLR</i>	-2.570	-6.289***	-5.054***	-6.147***
<i>IR</i>	-5.412***	-8.297***	-5.543***	-8.233***
<i>LR</i>	-3.082**	-5.913***	-3.128*	-5.801***
PP Test Statistics				
<i>BLA</i>	-0.011	-15.45***	-5.045***	-32.33***
<i>BLR</i>	-2.774*	-6.571***	-4.178**	-6.391***
<i>IR</i>	-5.411***	-28.16***	-5.661***	-27.46***
<i>LR</i>	-3.041**	-12.06***	-3.093	-11.54***

\*\*\*, \*\*, \* Denotes 1%, 5% and 10% significance level respectively

The results from Table 1 above reveal that IR and LR are stationary at level, whereas *BLA*, and *BLR* are stationary at first difference. Having mixture of the order of integration, ARDL approach becomes the most suitable method to apply in this study. Therefore, the results justified the application of ARDL framework. Having established the suitability of the method based on the unit root test results, cointegration test was conducted using OLS to check if the variables have long-run relationship or not. To accomplish this task, an optimum lag of 4 was selected based on schwarz information criterion (SIC) and the null hypothesis of no cointegration ( $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ ) was tested against the alternative hypothesis ( $H_a: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$ ). The cointegration test is based on F-test/Wald test and is conducted using ordinary least squares. The inference here is, if the computed F-statistic is greater than the upper bound critical value there is said

to be cointegration. If the computed F-statistic is less than the lower bound critical value, there is no cointegration. However, if the value of the computed F-statistic lies between the upper and the lower critical values, then the inference is said to be inconclusive.

**Table 2.** Cointegration tests results

Model	F-statistic	lag	Level of Significance	Bound test critical values (constant level)	
$BLA = f(IR, BLR, LQR)$	4.955	4		1(0)	1(1)
			10%	2.72	3.77
			5%	3.23	4.35
			2.5%	3.69	4.89
			1%	4.29	5.61

The results reported in Table 2 above indicate that the computed F-statistic 4.955 is greater than the upper bound value, 4.35, at 5% significance level based on the computational result in the Table 2 above. This shows presence of long-run relationship among our variables and therefore we could safely reject our null hypothesis of no cointegration exist and accept the alternative hypothesis that long-run relationship exist.

**Table 3.** Estimated Long-run Coefficients results

Regressors	Coefficients	T-statistic
<i>BLR</i>	-13.90***	-5.071
<i>IR</i>	-3.941	-1.721
<i>LR</i>	10.32**	2.342
Constant	27.21*	2.151

\*\*\*, \*\*, \* Denotes 1%, 5% and 10% significance level respectively

The results presented in Table 3 show that Bank lending rate has significant negative impact on the performance of deposit money banks in Nigeria in the long-run. This shows that as banks' lending rate increases, the performance of deposit money bank decreases and vice versa. As such a unit increase in bank lending rate will lead to 13.90 decreases in deposit money banks' performance in Nigeria. The result also revealed that liquidity rate has significant positive impact on the performance of deposit money banks in Nigeria in the long run. The results show that a unit increase in liquidity rate will leads to 10.32 increases in the performance of deposit money banks in Nigeria. However, interest rate has no impact on the performance of deposit money bank in Nigeria.

**Table 4.** Short-run ARDL results

Regressors	Coefficient	T-statistics
<i>BLR</i>	2.461**	2.221
<i>IR</i>	0.599**	3.011
<i>LR</i>	-0.672	-1.275
<i>ECT<sub>t-1</sub></i>	-0.236**	-2.467

\*\* , \*\*, \* Denotes 1%, 5% and 10% significance level respectively.

The short-run results presented in Table 4 denote the coefficients of the explanatory variables which indicate the direction of strength of relationship between explanatory variables and performance of deposit money banks in Nigeria in the short-run. The results donate Interest Rate and Bank lending rate has significant positive impact on the performance of deposit money banks in the short-run in Nigeria. It suggests that as Interest rate and Bank lending rate increase, the performance of deposit money Banks in Nigeria increases in the short-run during the study period. The liquidity rates do not have significant impact on the performance of deposit money banks in Nigeria during the study period. The error correction term depicts 24% speed of adjustment to the long-run equilibrium, i.e it shows 24% percentage of deviation from the equilibrium that needs to be corrected each year. Being negative, less than one in absolute value and significant, the coefficient of the error term confirms the cointegration relationship among the variables.

### 5. Conclusion and Recommendation

The study aimed at determining the effect of monetary policy on the performance of deposit money banks. The study revealed that in the long –run bank lending rate (BLR), and liquidity rate (LR) have significant on performance while interest rate (IR) is insignificant. Furthermore in the short-run, interest rate and bank lending rate had significant positive impact on performance of deposit money banks. It is therefore concluded that increasing bank lending rates in the short-run can help improve the performance of deposit money banks in Nigeria, while this might result in decreased in performance in the long-run. Similarly, the study concluded that increasing the interest rate can equally lead to improved performance in the short-run as this can motivate customers to save more but this effect will neutralize in the long-run. Finally the study concluded that maintaining adequate liquidity can have a long-run effect on bank performance that in the short-run as it will help portray a good image of the banks as being sound. Having established that not all of the instruments of monetary policy significantly impact on the performance of deposit money banks in Nigeria, the management of banks should look beyond monetary policies to enhance their performance. The Central Bank of Nigeria should redefine its monetary policy instruments to make them

more attractive to the banks. This will make banks to embrace them beyond mere coercion. Banks in Nigeria should avail themselves of the additional benefit of profit enhancement component of minimum rediscount rate for better implementation.

The Nigerian government will be able to understand the effect of monetary policy on the profitability of commercial banks. The government will also get to understand how this affects the economic growth and development of the country. The findings will therefore assist the government to come up with appropriate monetary policy that can enhance not only the profitability of banks but the economy at large. The findings from this study will assist in providing more literature to support existing empirical propositions on the effect of monetary policy on the profitability of deposit money banks. It will also be a significant source of literature on monetary policy and profitability of banks for future researchers or those in the academic field.

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**Appendix**

**Preliminary Tests**

**Table 1.** Descriptive statistics

Variables	LBLA	LBLR	LIR	LLR
Mean	6.584350	2.958334	3.834759	3.808770
Median	6.733668	2.905248	4.008972	3.817652
Maximum	9.607256	3.454738	4.321214	4.160444
Minimum	2.970414	2.739549	1.860975	3.370738
Std. Dev.	2.214460	0.163859	0.571033	0.203892
Skewness	-0.176532	1.147846	-2.479255	-0.428702
Kurtosis	1.719464	4.074383	8.721966	2.798558
Jarque-Bera	2.205532	8.030626	71.65965	0.969650
Probability	0.331952	0.018037	0.000000	0.615805
Sum	197.5305	88.75001	115.0428	114.2631
Sum Sq. Dev.	142.2112	0.778643	9.456271	1.205590
Observations	30	30	30	30

**Table 2.** Diagnostic tests

Diagnostic Test	Result of T-statistics
Serial correlation	*
Heteroscedasticity	1.080190
Stability test	1.772242
Normality test	0.906360

\* \*\*, \*\*\*,\* Denotes 1%, 5% and 10% significance level respectively.

A: Langrage multiplier test of residual serial correlation

B: Ramsey’s RESET test using the square of the fitted values

C: Based on a test of skewness and kurtosis of residuals

D: Based on the regression of squared residuals on squared fitted values.

Ensuring the reliability and efficiency of the estimates, the study conducted some diagnostic tests and reported the results in Table 5 above. The measures of the goodness of fit of the model reported in Table 5 above which included R<sup>2</sup>, F-statistics and DW-statistic were all in favor of the model’s good fit. The results reveal that the model passed serial correlation, normality, functional form and heteroscedasticity tests as we could not reject their null hypotheses at 5% significant level. In other word, the model passed all the diagnostic tests conducted above as we failed to reject their null hypotheses.