

Effect of Monetary Policy on Profitability of Deposit Money Banks in Nigeria

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<https://doi.org/10.56201/ijbfr.vol.12.no9.2026.pg1.20>

Abstract

This study examines the effect of monetary policy on the profitability of Deposit Money Banks (DMBs) in Nigeria from 1986 to 2025. The study used secondary data sourced from world bank data site. To test for the hypotheses, the study used the Autoregressive Distributed Lag (ARDL) model, the study analyzed the effects of key monetary policy instruments, including the Cash Reserve Ratio (CRR), Liquidity Ratio (LIR), Monetary Policy Rate (MPR), and lending rates on the profitability of deposit money banks in Nigeria. The results revealed that CRR and LIR positively affected bank profitability in both the short and long run, contradicting traditional expectations that higher reserve requirements constrain bank earnings. MPR also significantly affects profitability, as banks in Nigeria successfully transfer higher borrowing costs to customers. Conversely, lending rates exhibited a negative long-run effect on bank profitability, as excessively high rates discouraged borrowing, reduced loan demand, and increased non-performing loans (NPLs). The findings emphasized the need for a balanced monetary policy approach that ensures financial stability while fostering banking sector growth. The study recommended that, the government should maintain cash reserve ratio to balance financial stability with bank ability to generate revenue, adopt proactive liquidity management strategies to optimize liquidity ratio, adopt a flexible monetary policy approach and lastly encourage banks to set competitive and reasonable lending rates.

Introduction

1.1 Background

Monetary policy is a critical macroeconomic instrument through which central banks regulate money supply, interest rates, credit conditions, inflation, and exchange rates to achieve broader economic objectives. In the banking sector, monetary policy is particularly important because deposit money banks (DMBs) serve as major channels through which policy decisions are transmitted to the wider economy. As financial intermediaries, banks mobilize deposits from surplus economic units and channel funds to deficit units through lending and other financial services, thereby supporting investment, consumption, and economic growth. Consequently,

changes in monetary policy can significantly influence banks' lending capacity, liquidity, cost of funds, risk exposure, and ultimately their profitability.

Globally, monetary authorities employ instruments such as policy interest rates, reserve requirements, and open market operations to influence financial conditions and maintain monetary and financial stability. Changes in these instruments can have direct implications for bank performance. For instance, an increase in the Monetary Policy Rate (MPR) may raise banks' funding costs and constrain credit demand, while higher reserve requirements may reduce the funds available for lending. Conversely, monetary easing can stimulate credit expansion and economic activity, potentially improving banks' earnings. The effectiveness of these mechanisms, however, depends largely on the strength of the monetary policy transmission process and prevailing macroeconomic conditions (Bernanke, 2020; Cecchetti & Schoenholtz, 2022). The relationship between monetary policy and bank profitability is particularly significant in developing economies, where commercial banks constitute the dominant source of financial intermediation due to relatively less-developed capital markets. In Sub-Saharan Africa, and especially Nigeria, deposit money banks play a central role in financing both private and public sector activities. Their performance is therefore closely connected to monetary policy decisions and broader macroeconomic developments (Adeniran, Azeez, & Ogundipe, 2022; Yimka, Ezekiel, & Olusegun, 2020). In Nigeria, the Central Bank of Nigeria (CBN) employs monetary policy instruments such as the Monetary Policy Rate (MPR), Cash Reserve Ratio (CRR), and Liquidity Ratio (LR) to influence money supply, inflation, liquidity, and banking-sector activities. These instruments have important implications for the profitability and financial performance of deposit money banks. For example, increases in the CRR can reduce banks' loanable funds and interest income, while changes in the MPR can affect lending rates, deposit rates, credit demand, and net interest margins. Exchange-rate movements and inflationary pressures can further complicate these effects by influencing banks' operating costs, asset quality, and risk exposure.

Despite the continued application of monetary policy measures, Nigeria's banking sector has experienced considerable macroeconomic and financial challenges, including high inflation, exchange-rate instability, weak private-sector credit growth, and episodes of banking distress. These challenges raise questions about the extent to which monetary policy instruments effectively promote the profitability and stability of deposit money banks. Previous banking crises and regulatory interventions also demonstrate the importance of understanding the interaction between monetary policy and bank-specific financial conditions.

Empirical evidence on the relationship between monetary policy and bank profitability in Nigeria remains inconclusive. Some studies indicate that monetary tightening negatively affects bank performance by increasing funding costs and restricting lending activities (Jegede & Aladejana, 2021; Enebehi-Uzor & Mukhtar, 2024; Hogue et al., 2020). Conversely, other studies suggest that appropriately calibrated monetary policies can stimulate credit expansion, improve macroeconomic stability, and enhance bank profitability (Olalekan, 2022; Anache & Okonkwo, 2023; Iwedi & Egileoniso, 2023; Akinsanmi et al., 2022). These divergent findings suggest that the effect of monetary policy on bank profitability may vary according to the specific policy instrument employed, prevailing economic conditions, and the characteristics of individual banks. Furthermore, existing studies have not fully resolved the empirical gap concerning the dynamic interaction between monetary policy and the financial performance of Nigerian deposit money banks. Some studies focus on individual monetary policy instruments, while others give limited attention to bank-specific factors such as capital adequacy, liquidity, and asset quality that may influence how banks respond to monetary policy changes. The volatile nature of Nigeria's macroeconomic environment, characterized by inflationary

pressures, exchange-rate instability, and frequent policy adjustments, further underscores the need for updated empirical evidence.

Against this background, this study examines the impact of monetary policy on the financial performance of deposit money banks in Nigeria. Specifically, it considers the influence of key monetary policy instruments, including interest rates, cash reserve requirements, and liquidity requirements, while recognizing the potential role of relevant bank-specific and macroeconomic factors.

2.0 Literature Review

2.2 Conceptual Review

This section will provide an in-depth analysis of the key terms essential for comprehending the relationship between monetary policy and bank performance. By exploring these terms, the study will gain a clearer understanding of how monetary policy decisions impact the financial wellbeing and operational efficiency of banks.

2.2.1 Monetary Policy: The process by which a monetary authority, such as the Central Bank of Nigeria manages monetary policy instruments such as the supply of money, interest rates, bank reserves among others to achieve macroeconomic objectives like controlling inflation, maximizing employment, and stabilizing the financial system.

Cash Reserve Ratio (CRR): This is a regulatory tool used by central banks to control liquidity and money supply in the economy. It represents the minimum fraction of a commercial bank's total deposits that must be held in reserve, either in the form of cash in their vaults or as deposits with the central bank. By adjusting the CRR, central banks can influence the amount of funds that banks can lend, thus impacting overall economic activity. A higher CRR reduces the lending capacity of banks, tightening monetary policy, while a lower CRR increases their capacity to lend, thereby loosening monetary policy.

Monetary Policy Rate (MPR): This is the interest rate at which a central bank lends money to commercial banks, often on a short-term basis. It serves as a primary tool for central banks to regulate the supply of money in the economy, manage inflation, and stabilize the national currency. By adjusting the MPR, the central bank influences other interest rates in the economy, including those for loans and savings. An increase in the MPR typically leads to higher borrowing costs and reduced consumer spending and investment, which can help curb inflation. Conversely, a decrease in the MPR usually lowers borrowing costs, encouraging spending and investment to stimulate economic growth.

Interest Rates: The cost of borrowing money, typically expressed as an annual percentage of the loan amount. Central banks influence interest rates to control economic activity. Lower rates generally stimulate borrowing and investment, while higher rates tend to cool down an overheated economy.

Inflation Targeting: A monetary policy strategy where the central bank sets and publicly announces a target inflation rate and then adjusts monetary policy instruments to achieve that target. This helps in stabilizing prices and managing inflation expectations.

Money supply: refers to the total amount of monetary assets available in an economy at a specific time. It includes various forms of money, such as cash, coins, and balances held in

checking and savings accounts. The money supply is a crucial concept in economics as it influences inflation, interest rates, and overall economic activity.

Exchange Rate: this refers to the rate at which one country's currency can be exchanged for another country's currency, as determined by the country's government or central bank. This rate is often set or influenced by the central bank's monetary policy and can be either fixed or floating.

Bank Lending Rate: refers to the interest rate charged by banks on loans to businesses and consumers. It is a critical component of the financial system, influencing borrowing costs, consumer spending, business investment, and overall economic activity. The lending rate can vary based on the type of loan, the creditworthiness of the borrower, and prevailing economic conditions.

Liquidity Rate: refers to a measure of a financial institution's ability to meet its short-term obligations without incurring substantial losses. It indicates how quickly assets can be converted into cash to cover immediate needs, ensuring the institution can handle withdrawals, payments, and other liabilities as they arise.

2.2.2 Bank Profitability: refers to a bank's ability to generate earnings compared to its expenses and other relevant costs incurred during a specific period. It is a crucial indicator of a bank's financial health, efficiency, and overall performance. Profitability is essential for the bank's growth, stability, and ability to provide returns to its shareholders.

Indices of Measuring Bank Profitability

a. Return on Assets (ROA): This metric measures the bank's ability to generate profit from its assets. It is calculated as:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

A higher ROA indicates more efficient use of the bank's assets.

b. Return on Equity (ROE): This measures the profitability relative to shareholders' equity. It is calculated as:

$$ROE = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

A higher ROE indicates more efficient use of equity capital.

c. Net Interest Margin (NIM): This metric measures the difference between the interest income generated and the interest paid out relative to the bank's interest-earning assets. It is calculated as:

$$NIM = \frac{\text{Net Interest Income}}{\text{Average Earning Assets}}$$

A higher NIM indicates better profitability from lending and investing activities.

d. Cost-to-Income Ratio (CIR): This ratio measures the bank's operating efficiency by comparing its operating expenses to its operating income. It is calculated as:

$$CIR = \frac{\text{Operating Expenses}}{\text{Operating Income}}$$

A lower CIR indicates higher efficiency and profitability.

Ponce (2009), bank profitability can be divided into two main categories. The first category considers the impact of managerial decisions, which include factors such as asset structure,

asset quality, capitalization, financial structure, efficiency, size, and income diversification. The second category encompasses factors related to the industry structure and the macroeconomic environment in which banks operate, such as the effects of monetary policies, interest rates, industry concentration, and economic growth. In this study, ROA and ROE is used to measure the profitability of banks in Nigeria.

Theoretical Review

These theories inflation targeting, forward-looking, agency, X-efficiency, and market power to monetary policy and bank profitability involves understanding how each theory influences or interacts with the financial environment and the behaviour of banks. The Inflation Targeting suggest that monetary policy strategy involves central banks setting explicit target inflation rates and using monetary policy tools to steer actual inflation towards these targets. Central banks adjust interest rates, conduct open market operations (OMOs), and use other instruments to control inflation. The theory view that a stable inflation environment reduces uncertainty for banks, allowing them to make more accurate forecasts and lending decisions.

Forward-Looking Theory suggests that policymakers should base their decisions on expectations of future economic conditions rather than current or past data. Monetary authorities use economic models and forecasts to anticipate future inflation and growth trends. This entails that, Banks that adopt a forward-looking approach can better manage risks by adjusting their strategies based on expected economic conditions. again, Anticipating future interest rate changes allows banks to price loans more effectively, protecting profit margins.

Agency Theory in monetary policy, the agent acts on behalf of the public and government (principals) to achieve economic stability. The effectiveness of monetary policy depends on the alignment of interests between the central bank and the broader economy. Transparency and accountability in policy decisions help mitigate agency problems.

X-Efficiency Theory fosters competition and reduces inefficiencies lead to a more efficient banking sector. Central banks can promote efficiency by ensuring a competitive environment and preventing monopolistic practices. Banks that minimize X-inefficiencies can reduce costs and improve profitability. Efficient banks can offer competitive rates and services, attracting more customers and increasing market share. Measuring and improving X-efficiency helps banks enhance their operational processes, leading to higher profitability.

Market Power Theory review the potential monopolist that exist in the financial market thus suggest that, monetary agents monitor the market power of financial institutions to prevent anti-competitive behavior and ensure a level playing field. Policies that discourage monopolistic practices promote a healthier, more competitive banking environment. Banks with significant market power can set higher loan rates and lower deposit rates, enhancing their profitability. However, excessive market power can lead to inefficiencies and reduced innovation. By considering these theories together, central banks and financial institutions can develop strategies that foster a stable and efficient financial system, ultimately enhancing bank profitability.

2.3 Empirical Review

Enebeli-Uzor and Mukhtar (2024) examined how the interplay between monetary policy and digitalization shapes the performance metrics of banks in Nigeria's evolving financial landscape. The study investigates the effects of money supply, lending rates, and digitalization (measured by mobile cell subscriptions) on banks' financial performance, particularly focusing on bank credit and liquid assets. It controls for inflation and exchange rate variables while exploring the interaction between digitalization and monetary policy on bank performance. Using an interactive multiple regression model, the study analyzes time series data from 1996

to 2022 sourced from the World Bank. The findings reveal that stringent monetary policies can limit bank performance by tightening credit and reducing liquidity, but digitalization enhances efficiency, offering a counterbalance to these constraints. Successful digital integration, however, requires substantial investment, regulatory support, and strategic alignment with core bank objectives. The study concludes that Nigerian banks need to skillfully navigate monetary policy fluctuations and leverage digitalization to sustain and improve performance, providing valuable insights for policy formulation and strategic decision-making in the banking sector. Iwedi and Egileoniso (2023) examined the impact of monetary policy on the profitability of commercial banks in Nigeria from 1988 to 2021. The study utilizes data on the credit-to-deposit ratio, return on assets (ROA), return on equity (ROE), Z-score, money supply, income per capita, interest rate, interest spread, and inflation, sourced from the Central Bank of Nigeria's statistical bulletin. The authors employ Autoregressive Distributed Lag (ARDL) techniques to estimate the short- and long-term dynamic equilibrium relationships between monetary policy and commercial bank profitability. The analysis reveals mixed integration through unit root tests, justifying the use of the ARDL approach for the four baseline models. The results indicate a cointegrating relationship between monetary policy and commercial bank profitability in Nigeria, with all variables being bound in the long run. Among the profitability indicators, ROA responds more quickly to changes in monetary policy compared to ROE, the credit-deposit ratio, and the Z-score. The long-term disequilibrium adjustment further supports the existence of a cointegrating relationship among these variables. The study's findings show that money supply and inflation positively affect the bank credit-deposit ratio in the long run. Based on these results, the study strongly recommends increasing the Z-score of the Nigerian banking sector by reducing the standard deviation of ROA. The volatility of ROA contributes to a low Z-score, so maintaining a stable ROA over time is crucial for bank management. Additionally, the government should focus on reducing inflation, particularly inflation resulting from reckless public spending, excessive quoting by public officers, and corruption-induced factors. The study also highlights that the interest spread in Nigeria is too wide, adversely affecting ROA and ROE. Therefore, it suggests narrowing the margin between lending and deposit rates to a single-digit figure by reducing lending rates to single digits. Jeff-Anyeneh, Anachedo, Okonkwo, and Udoeye (2023) highlighted the critical role of the financial sector in any economy and the importance of monetary policy for maintaining an effective, efficient, and sound financial system. This study investigates the impact of the monetary policy rate, cash reserve ratio, liquidity ratio, and loan-to-deposit ratio on the performance of deposit money banks (DMBs) in Nigeria. Utilizing time series data from 1992 to 2021 sourced from the Central Bank of Nigeria's statistical bulletin, the analysis employs the Ordinary Least Square (OLS) regression method and the Granger Causality Test. Pre-estimation tests reveal that banks significantly enhance their asset base when they meet reserve requirements set by the Central Bank of Nigeria, and that the liquidity ratio positively affects asset growth. Additionally, the study finds a positive relationship between the loan-to-deposit ratio and total bank assets. Based on these findings, the study recommends that banks comply with reserve requirements and ensure adequate credit assessments to minimize loan defaults and improve asset quality. Owuoye, Kajola, Oyedayo, and Oshadare (2023) examined the impact of monetary policy on the financial performance of deposit money banks in Nigeria over a 19-year period from 2000 to 2018. Specifically, the study assessed the effects of interest rate (INT) and cash reserve ratio (CRR) on the financial performance of these banks. Secondary data were obtained from the CBN Statistical Bulletin, and the Autoregressive Distributed Lag Model (ARDL) regression technique was used to analyze the time series data. The study found that both the interest rate and cash reserve ratio significantly influenced the performance of banks in terms of their deposit liabilities. Based on these findings, the study recommends that

the government should ensure a stable and effective monetary policy in Nigeria to enhance the performance of deposit money banks.

Shirya, Njoka, and Abdul (2023) investigated the relationship between monetary policy instruments and the financial performance of commercial banks in Nigeria. Grounded in Keynesian theory, the study employed a causal research design. With Nigeria's banking sector comprising 21 commercial banks, a census approach was used. The study utilized panel data and inferential statistical methods for analysis. Regression analysis revealed that open market operations had a coefficient of $\beta = 4.851167$, $p = 0.000$, indicating a positive and significant effect on the earnings performance of commercial banks in Nigeria. Additionally, the study found that monetary policy reforms significantly moderated the relationship between open market operations and the financial performance of commercial banks, marking a distinctive finding. The study concluded that the monetary policy instruments adopted by the Central Bank of Nigeria are crucial and significantly influence the performance of the banking sector. It recommended that the Central Bank of Nigeria should meticulously design policy instruments, involving the management of commercial banks to enhance their earnings.

Akinsanmi, Oladele, Alabi, and Adeboboye, (2022) investigated the impact of monetary policy on bank profitability in Nigeria. To achieve the study's objectives, return on equity (ROE) and return on assets (ROA) were used as indicators of monetary policy and performance. This descriptive study utilized secondary data from the annual financial reports of selected banks and CBN bulletins from 2016 to 2020. A simple linear regression analysis was applied to assess the data. Unlike previous studies, the findings revealed no significant relationship between the cash reserve ratio, lending interest rate, and bank profitability in Nigeria. This suggests that monetary policy does not have a major impact on the profitability of the selected Nigerian banks, thereby establishing the link between monetary policies and bank performance.

Bala, Godiya, Hadith, and Maijama'a (2022) broadly analyzed the effect of monetary policy on the performance of deposit money banks in Nigeria. Using secondary data from the Central Bank of Nigeria (CBN) statistical bulletin and Index Mundi, the study employs the Autoregressive Distributed Lag (ARDL) approach to cointegration. The empirical results show that both in the long run and short run, the bank lending rate (BLR) significantly positively impacts banks' loans and advances (BLA), indicating a positive effect on the performance of deposit money banks in Nigeria. Liquidity rate (LR) has a significant impact in the long run but not in the short run, while interest rate (IR) has no significant impact in the long run but has a significant positive impact in the short run. The study concludes that increasing the interest rate can improve performance in the short run by motivating customers to save more, although this effect neutralizes 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 banks, encouraging broader adoption.

2.3.1 Gap in Literature

Despite the extensive body of literature exploring the relationship between monetary policy and bank performance, significant gaps remain in both theoretical clarity and empirical precision, particularly within the Nigerian context. A review of existing studies revealed inconsistent and contradictory findings: while some researchers argue that monetary policy instruments negatively affect the profitability of deposit money banks (e.g., Enebehi-Uzor & Mukhtar, 2024; Hogue et al., 2020), others contend that such policies exert a positive and stabilizing influence (e.g., Iwedi & Egileoniso, 2023; Akinsanmi et al., 2022). These conflicting conclusions point to a persistent theoretical gap in understanding the precise nature and direction of the monetary policy-profitability nexus.

Furthermore, many prior studies fail to disaggregate the effects of individual monetary policy instruments such as the monetary policy rate (MPR), cash reserve ratio (CRR), liquidity ratio, and lending rate on bank profitability. Instead, they often treat monetary policy as a single composite variable, masking the distinct impact of each instrument. This presents a practical and analytical gap in existing literature, as policymakers require detailed insights to tailor specific tools for targeted outcomes. From a methodological standpoint, most earlier analyses suffer from limitations such as the omission of relevant control variables, failure to correct for endogeneity bias, or reliance on outdated data. This compromises the robustness and reliability of their findings. In contrast, this study addresses the methodological gap by employing an advanced econometric framework the Autoregressive Distributed Lag (ARDL) model which accommodates both short- and long-run dynamics, integrates variables of different orders of integration, and includes appropriate pre-estimation and diagnostic tests. Moreover, the study incorporates techniques to mitigate endogeneity, thereby ensuring more credible causal inferences. In terms of policy relevance, much of the existing literature does not sufficiently align its findings with the current macroeconomic realities in Nigeria, especially considering the sharp currency depreciation, elevated inflation, and the Central Bank's aggressive monetary tightening policies in recent years. This study bridges the policy gap by utilizing up-to-date data from 1986 to 2023, thus capturing multiple reform periods, financial crises, and monetary transitions. The results are expected to offer evidence-based guidance for monetary authorities such as the Central Bank of Nigeria on how to calibrate policy instruments to optimize bank profitability without undermining macroeconomic stability.

Methodology

Nature and Sources of Data

Secondary annual data from 1986 to 2025 were sourced for the purpose of this study: The data on bank performance indicators; interest rate, exchange rate, inflation rate, liquidity rate, bank lending rate, and money supply and the Return on asset were used to measure bank performance. This data was sourced from central bank of Nigeria Bulletin and other Audited Report of the Deposit Money Banks from 1986 to 2025. The Study used secondary data from the Central Bank Bulletin and other related sources all of which are available on the internet.

Model Specification

To recognised the presence of endogeneity the selected variables and the study has ascertained the individual contribution of the independent variables on the dependent variable. The study adopted the model from the work of Bala, Godiya, Hadith, and Maijama'a (2022) which is expressed in functional relationship as;

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

Where BLA is banks loans and advances. IR is Interest Rates, BLR is Bank lending rate and LQR is Liquidity rate.

The model is then further modify to match the study as;

The Return on Asset model

$$ROA = F(CRR, LIR, MPR, LNR, INT, EXCR, M2, INF) \dots \dots \dots 2$$

Where:

ROA is the Return on Asset, CRR is Cash Reserve Ratio, LIR is Liquidity Ratio, MPR is Monetary Policy Rate, LNR is Lending Rate, INT is Interest Rate, EXCR is the official Exchange Rate, and M2 is Money Supply

Taking the natural logarithm of the data to reduce the effect of data variability, and specifying the stochastic form of equation 2, it becomes:

$$\ln ROA_t = (\alpha_0 + \alpha_1 \ln CRR_t + \alpha_2 \ln LIR_t + \alpha_3 \ln MPR_t + \alpha_4 \ln LNR_t + \alpha_5 \ln INT_t + \alpha_6 \ln EXCR_t + \alpha_7 \ln M2_t + \alpha_8 \ln INF_t + \varepsilon_t) \dots \dots \dots 3$$

Where:

α_0 is the intercept

α_1 to α_8 are parameter estimates

$\ln$ standard for natural logarithm

ε_t is the stochastic error term

Stating the model equation in Auto Regressive Distributive Lags (ARDL) form, it becomes;

$$\Delta \ln ROA_t = \delta_0 + \sum_{i=0}^n \gamma_{1i} \Delta \ln ROA_{t-1} + \sum_{i=0}^n \gamma_{2i} \Delta \ln CRR_{t-1} + \sum_{i=0}^n \gamma_{3i} \Delta \ln LIR_{t-1} + \sum_{i=0}^n \gamma_{4i} \Delta \ln MPR_{t-1} + \sum_{i=0}^n \gamma_{5i} \Delta \ln LNR_{t-1} + \sum_{i=0}^n \gamma_{6i} \Delta \ln INT_{t-1} + \sum_{i=0}^n \gamma_{7i} \Delta \ln EXCR_{t-1} + \sum_{i=0}^n \gamma_{8i} \Delta \ln M2_{t-1} + \sum_{i=0}^n \gamma_{9i} \Delta \ln INF_{t-1} + \alpha_1 \Delta ROA_{t-1} + \alpha_2 CRR_{t-1} + \alpha_3 LIR_{t-1} + \alpha_4 MPR_{t-1} + \alpha_5 LNR_{t-1} + \alpha_6 INT_{t-1} + \alpha_7 EXCR_{t-1} + \alpha_8 M2_{t-1} + \alpha_9 INF_{t-1} + \varepsilon_t \dots \dots \dots 4$$

Data Presentation, Analysis and Discussion

Descriptive Statistics

Table 1: Descriptive Statistics

	ROA	CRR	LNR	LIR	INT	INF	EXCR	M2	MPR
Mean	12.233	40.822	24.063	48.839	2.434	19.564	141.823	124bn	10.785
Median	14.302	25.000	23.097	46.367	4.416	12.941	127.229	2.37bn	9.917
Maximum	17.954	144.668	36.090	104.202	18.180	72.835	535.412	599bn	16.500
Minimum	1.490	1.000	12.000	26.392	-31.452	5.3880	1.754	2.36bn	6.000
Jarque-Bera	6.562	16.527	0.079	41.347	18.556	25.204	8.699	12.051	5.600
Probability	0.037	0.000	0.961	0.000	0.000	0.000	0.012	0.002	0.060
Observations	38	38	38	38	38	38	38	38	38

Source: E-Views 10 Output

Table 1 presents the descriptive statistics for the key indicators used to evaluate the relationship between Monetary Policy instruments and the performance of Deposit Money Banks (DMBs) in Nigeria. The indicators include Return on Assets (ROA), Cash Reserve Ratio (CRR), Lending Rate (LNR), Liquidity Ratio (LIR), Interest Rate (INT), Inflation Rate (INF), Exchange Rate (EXCR), Broad Money Supply (M2), and Monetary Policy Rate (MPR). The average (mean) values of the indicators across the 1986–2023 period are as follows: ROA: 12.33% representing the average profitability of DMBs. CRR: 40.82% reflecting the average regulatory reserve requirement. LNR: 24.06% indicating the average commercial bank lending rate. LIR: 48.84% showing the average liquidity coverage of banks. INT: 2.43% the average interest rate in the banking sector. INF: 19.56% average annual inflation, indicating macroeconomic instability. EXCR: ₦141.82 highlighting the naira's depreciation over time. M2: ₦124 billion the average value of money supply in the economy. MPR: 10.79% the average policy rate set by the Central Bank of Nigeria. These mean values reflect the central tendencies of each variable, providing a general picture of their historical behavior and serving as benchmarks for further analysis.

On the other hand, the analysis also identifies the years in which each indicator reached its maximum and minimum values: ROA peaked in 2008, possibly due to strong post-reform bank performance, and dipped in 2010, a year marked by post-crisis adjustments. CRR reached its highest level in 2004, indicating tighter monetary control, and was lowest in 2010. LNR was

highest in 1993, reflecting tight credit conditions, and lowest in 1986. LIR peaked in 2019, possibly due to liquidity tightening, and was lowest in 2009. INT was highest in 2009 and lowest in 1995, likely influenced by inflation and monetary tightening. INF soared in 1995, a turbulent macroeconomic period, and was lowest in 2007. EXCR hit its highest value in 2023, evidencing sharp naira depreciation, and its lowest in 1986. M2 was highest in 2023, showing substantial money supply growth, and lowest in 1986. MPR also peaked in 2023, indicating an aggressive monetary tightening stance, and was lowest in 2009, likely due to post-recession easing. These time-specific peaks and troughs provide critical historical context, highlighting key monetary and economic policy shifts over the decades.

To validate the suitability of the data for further econometric analysis, the Jarque-Bera test for normality was conducted: Variables ROA ($p = 0.037$), CRR (0.000), LIR (0.000), INT (0.000), INF (0.000), EXCR (0.012), and M2 (0.002) have p-values less than 0.05, suggesting that these variables deviate from normal distribution. While this may affect the choice of statistical models, it is common in macroeconomic data. LNR (0.961) and MPR (0.060) both have p-values above 0.05, indicating approximate normal distribution, which enhances the validity of classical regression assumptions for these variables.

This analysis sets a solid foundation for the study's econometric investigation. The wide dispersion in the data and variation in peak years underscores the volatile and evolving nature of monetary policy and bank performance in Nigeria. The normality results further justify the use of advanced models like the Autoregressive Distributed Lag (ARDL) approach, which accommodates non-normally distributed data and mixed integration orders, making it a robust tool for the study's objectives.

Unit Root Result

Table 2: Unit Root Result

VARIABLE	ADF @ LEVEL	ADF@ DIFFERENCE	1 DECISION RULE
ROA	0.2637	0.0000	I(1)
CRR	0.9859	0.0057	I(1)
LNR	0.0036	0.0111	I(0)
LIR	0.0192	0.0000	I(0)
INT	0.1632	0.0002	I(1)
INF	0.0126	0.0000	I(0)
EXCR	1.0000	0.0355	I(1)
M2	0.2531	0.0203	I(1)
MPR	0.5065	0.0000	I(1)

Source: E-views 10 output

Table 2 presents the results of the unit root test, a statistical method used to evaluate whether a time series variable is non-stationary and exhibits a unit root. Non-stationary time series data have a mean, variance, or covariance that changes over time, rendering them unsuitable for standard econometric analyses. Unit root testing helps determine if a time series can be made stationary through differencing or other transformations. This study employs the Augmented Dickey-Fuller (ADF) test and uses probability values to assess the stationarity of the variables. If the probability value is greater than 0.05, the null hypothesis of a unit root is rejected, indicating that the variable is not stationary at levels. The results in Table 2 indicate that **LNR, LIR, and INF** are stationary at levels, while **ROA, CRR, INT, EXCR, M2, and MPR** achieve stationarity only after first differencing. This implies that the latter variables required at least one level of differencing to become stationary. The mixed order of integration among the variables makes the Auto-Regressive Distributed Lag (ARDL) estimation technique the most

suitable approach for this study, as it accommodates variables with different levels of integration (stationary at levels and first difference).

Co-integration Test Result

Table 3: Co-integration Test Results for all the models

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	13.58697	10%	3.8	3.8
K	0	5%	4.6	4.6
		2.5%	5.39	5.39
		1%	6.44	6.44

Source: E-views 10 output **Note: the threshold is peg at 5% critical level

Table 3 presents the long-run bounds cointegration test results for the monetary policy instruments and deposit money banks profitability model. The decision rule is to reject the null hypothesis if the F-statistic exceeds the upper boundary at the chosen confidence interval, indicating the presence of a level relationship. In Table 5, the F-statistic value of 13.586 exceeds the upper boundary critical value of 4.6 at the 5% significance level. This confirms evidence of cointegration in the long run.

The Effect of Monetary Policy on Profitability of Deposit Money Bank (DMBs) in Nigeria

This section present result of both short run and long run effect of monetary policy instruments affect the profitability of deposit money bank (DMBs) in Nigeria. This section also reveals the mean reverting ability of the monetary policy instruments on the profitability of deposit money banks.

The Short Run Effect of Monetary Policy on Profitability of Deposit Money Bank (DMBs) in Nigeria

Table 4: Short Run Auto-Regressive Distributed Lag Model for Profitability of DMBs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CRR	0.030149	0.010850	2.778839	0.0098
LIR	0.012595	0.028790	0.437465	0.6653
LNR	-0.074267	0.087240	-0.851291	0.4021
INT	-0.033247	0.060124	-0.552973	0.5848
INF	-0.021690	0.036110	-0.600665	0.5531
LNM2	0.073335	0.101252	0.724284	0.4751
EXCR	-0.026245	0.004513	-5.814800	0.0000
MPR	0.925429	0.221148	4.184666	0.0003
CointEq(-1)*	-0.674728	0.127103	-5.308519	0.0000
R-squared	0.860358	Mean dependent var		-0.232919
Adjusted R-squared	0.763317	S.D. dependent var		2.953323
S.E. of regression	1.951615	Akaike info criterion		4.382965
Sum squared resid	106.6464	Schwarz criterion		4.774810
Log likelihood	-72.08485	Hannan-Quinn criter.		4.521108
Durbin-Watson stat	2.260057			

Source: E-views 10 Output

Table 4 the Error Correction Model (ECM) results indicate a negative mean-reverting process; however, the convergence from disequilibrium to equilibrium is expected to be gradual. This is evident in the Error Correction Model (ECM) value of -0.67, which is less than 1, signifying a 67% adjustment speed between the short-run and long-run equilibrium. This suggests an

automatic correction of disequilibrium over time however; the speed will be fast given that the coefficient of speed of adjustment is close to 1.

Further, a onetime change in LNR, INT, INF and EXCR will negatively impact ROA in the short run by -0.0742, -0.0332, -0.0216 and -0.0262 separately. On the other hand, CRR, LIR, M2 and MPR will influence ROA positively given a unit change by 0.0301, 0.0125, 0.0733 and 0.9254 correspondingly. The result of LIR, LNR, INT, INF and M2 with corresponding probability values of 0.6653, 0.4021, 0.5848 and 0.4751 reveals that, the result is not statistically significant at 5% critical level. This implies that, there is insufficient information to conclude that LIR, LNR, INT, INF and M2 can predict ROA in the long run, given the probability values of CRR, EXCR and MPR revealed as 0.0098, 0.0000 and 0.0003 respectively. Given the threshold of 0.05, this means the result is statistically significant at 5% critical level. However, CRR is not theoretical plausible because it is expected that CRR should influenced ROA negatively this is because an increase in cash reserve ratio would leads to a decrease in banks profitability. This is evidence such that higher cash reserve ratio requires banks to hold a larger portion of their deposits in reserve rather than lending them to customers as a result, banks have fewer opportunities to earn interest income thus this may negatively affect their profitability.

The Long Run Effect of Monetary Policy on Profitability of Deposit Money Bank (DMBs) in Nigeria

Table 5: Short Run Auto-Regressive Distributed Lag Model for Profitability of DMBs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.324939	9.746745	0.033338	0.9737
ROA(-1)*	-0.674728	0.134819	-5.004685	0.0000
CRR	0.030149	0.011050	2.728497	0.0111
LIR	0.012595	0.029711	0.423907	0.0250
LNR	-0.074267	0.091419	-0.812374	0.0037
INT	-0.033247	0.061280	-0.542541	0.5919
INF	-0.021690	0.037626	-0.576473	0.5691
LM2	0.073335	0.308206	0.237942	0.8137
EXCR	-0.026245	0.006503	-4.035684	0.0004
MPR	0.925429	0.235156	3.935379	0.0005

Source: E-views 10 output

Table 5 reveals the Long Run Autoregressive Distributed Lag (ARDL) of deposit money banks profitability model. The results show that LNR, INT, INF and EXCR will contribute to change in ROA negatively given a onetime shock. While CRR LIR and M2 will contribute to variation in ROA positively given a onetime shock in the long run. The result of INT, INF and M2 is not statistically significant given the probability values of 0.5919, 0.5691 and 0.8137 separately while the probability values of CRR, LIR, LNR and MPR is 0.0111, 0.0250, 0.0037 and 0.0005 which is less than the conventional threshold of 0.05 thus, the result is statistically significant at 5% critical value. However, the result did not conform to apriori expectation.

Diagnostic Test

Table 6: Diagnostic Test

	Jarque-Bera/F-Statistics values	Prob. Values
Normality Test	10.2936	0.0058
Serial Correlation Test	5.4021	0.1032
Heteroskedasticity Test	2.9498	0.0642

Source: E-views 10 Output

Table 6 presents the diagnostic tests for the effect of monetary policy on deposit money banks profitability in Nigeria. The analysis focuses on three key tests: The Jarque-Bera normality test, the Breusch-Godfrey serial correlation LM test and the Breusch-Pagan-Godfrey heteroscedasticity test.

The Jarque-Bera test evaluates whether a dataset follows a normal distribution. The decision rule is to reject the null hypothesis of normality if the probability value is less than the critical value (usually 0.05). In this case, the probability values for the model 0.0058, which is below the critical threshold of 0.05. This indicates that the data is not normally distributed.

To ensure the robustness of the models, a serial autocorrelation test was conducted. The null hypothesis assumes no autocorrelation, and the decision rule is to reject the null hypothesis if the probability value is less than 0.05. According to Table 6, the probability values of 0.1032 is greater than 0.05, indicating no evidence of serial autocorrelation in the models.

Heteroskedasticity refers to inconsistencies in the variability of error terms across the levels of the independent variables in a regression model. Addressing heteroskedasticity is critical for accurate analysis and may involve applying robust standard errors or transforming the data. Table 6 shows probability value of 0.0642 which is greater than the critical value of 0.05. This suggests the null hypothesis of constant variance is not rejected, indicating no evidence of heteroskedasticity in the model. In conclusion, the diagnostic tests confirm that the data satisfies the assumption of no autocorrelation, and homoscedasticity, supporting the reliability and validity of the deposit money banks profitability model.

Stability Test

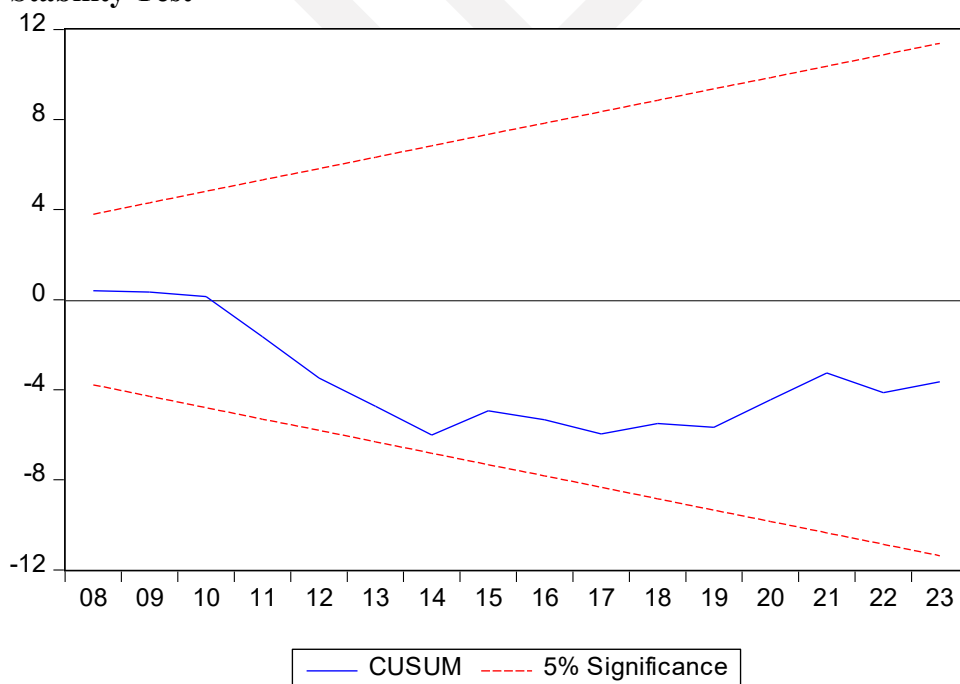


Figure 1a: CUSUM Test of Stability for Deposit Money Banks Profitability Model

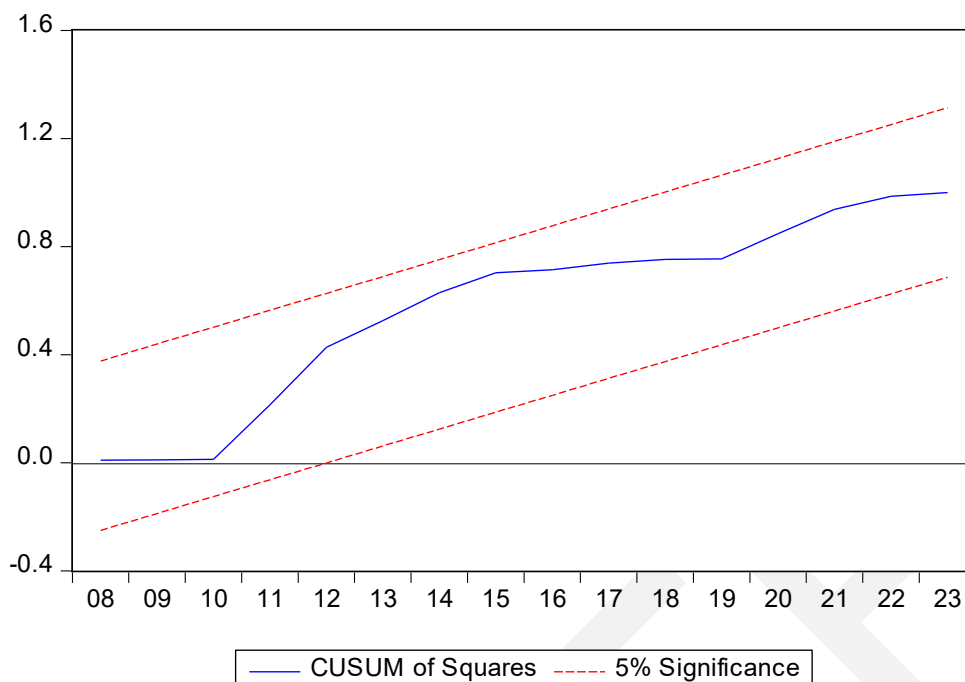


Figure 1b: CUSUM of Squares Test of Stability for Deposit Money Banks Profitability Model

A detailed examination of Figures 1a and 1b indicates that the Deposit Money Banks Profitability Model is stable, as the optimal fit line stays within the threshold boundaries. The decision rule for determining significance involves comparing the CUSUM (Cumulative Sum) statistic to the critical threshold, with validation provided by the CUSUM Square test. These tests are instrumental in evaluating the stability of a model, particularly in the context of time series analysis or sequential data.

Discussion of Findings

This study aligns its findings with its primary objectives. The first objective is to examine the effect of the Cash Reserve Ratio (CRR) on the profitability of Deposit Money Banks (DMBs) in Nigeria. The results indicate that CRR positively influences bank profitability in both the short and long run. These findings are consistent with the studies of Jeff-Anyeneh, et al (2023) and Gimba, Vincent, and Oyedokun (2020), which also reported a positive relationship between CRR and bank profitability. However, this contrasts with the findings of Afolabi, et al (2018), who suggested that CRR has a negative effect on bank profitability.

Theoretically, the a priori expectation is that an increase in CRR would negatively impact bank profitability, as it restricts the portion of deposits available for lending and investment. Since banks generate significant revenue from interest-earning assets, a higher CRR should, in principle, limit their ability to generate profits. However, the empirical findings of this study challenge this theoretical expectation. The positive impact observed in this study can be attributed to the stringent CRR policies imposed by the Central Bank of Nigeria (CBN) over time, which have contributed to financial stability, reduced excessive lending, and mitigated risks of bank failures. Furthermore, a higher CRR can lead to lower levels of non-performing loans (NPLs), thereby improving asset quality and overall bank profitability in the long run. This suggests that while higher reserve requirements may initially restrict lending, their long-term impact on financial stability, risk management, and asset quality could enhance

profitability. Hence, policy interventions on CRR should strike a balance between ensuring financial stability and maintaining an enabling environment for banking sector growth.

The second objective of this study is to evaluate the effect of the Liquidity Ratio (LIR) on the performance of Deposit Money Banks (DMBs) in Nigeria. The findings indicate that the Liquidity Ratio positively influences bank profitability in both the short and long run. This result aligns with the studies of Bala, et al (2022) as well as Ayinam and Obi-Uwosu (2018), who also found a positive relationship between Liquidity Ratio and the profitability of DMBs. Conversely, the research by Afolabi, et al (2018) suggested that the Liquidity Ratio negatively affects bank profitability, highlighting the potential drawbacks of excessive liquidity.

The Liquidity Ratio is a fundamental financial indicator that assesses a bank's ability to meet short-term financial obligations using its liquid assets. A higher liquidity ratio signifies that a bank maintains sufficient cash reserves and liquid securities, ensuring its ability to fulfill depositor withdrawals and settle immediate liabilities. This financial cushion enhances operational stability, investor confidence, and overall financial resilience. However, while maintaining adequate liquidity is essential, an excessively high Liquidity Ratio could lead to underutilization of assets, meaning banks may miss out on potentially higher returns from investments or lending activities. Therefore, an optimal liquidity balance is crucial too little liquidity exposes banks to financial distress, while excessive liquidity may hinder profitability. Given this, bank managers must strategically balance liquidity management and investment decisions to maximize profitability while ensuring financial stability. Implementing effective liquidity management frameworks will enable DMBs to navigate financial uncertainties, mitigate risks, and sustain long-term profitability.

The third objective of this study examines the effect of the Monetary Policy Rate (MPR) on the profitability of Deposit Money Banks (DMBs) in Nigeria. The ARDL short-run and long-run estimates indicate that MPR significantly influences bank profitability in both the short and long term, with results statistically significant at the 5% confidence level.

The findings of Enebeli-Uzor and Mukhar (2024) contrast with this study, arguing that a tight monetary policy constrains bank performance by increasing the cost of funds and discouraging credit expansion. Conversely, Aginam and Obi-Uwosu (2018) support this study's findings, highlighting that adjustments in MPR can, under certain conditions, enhance bank profitability. Theoretical expectations generally suggest a negative relationship between MPR and bank profitability. Since MPR is the benchmark interest rate set by the Central Bank, a higher rate typically raises borrowing costs, discourages loan uptake, and reduces banks' net interest margins. However, the findings of this study challenge this traditional view, suggesting that under specific economic conditions, an increase in MPR can improve profitability.

This outcome is plausible in Nigeria because Deposit Money Banks (DMBs) successfully transfer the higher borrowing costs to customers by raising lending rates. Consequently, despite an initial rise in funding costs, banks may experience higher interest income on loans and advances, leading to improved profitability in both the short run and long run. This finding underscores the importance of monetary policy flexibility and banks' ability to adapt to regulatory changes to optimize financial performance.

The fourth objective of this study is to assess the effect of lending rates on the profitability of Deposit Money Banks (DMBs) in Nigeria. The findings suggest that lending rates negatively affect bank profitability in both the short and long run. However, the short-run effect is not statistically significant at a 5% critical level, indicating insufficient statistical evidence to conclude a short-term impact. In contrast, the long-run estimates are statistically significant at a 5% critical level, confirming a sustained negative relationship between lending rates and profitability over time.

This result contradicts previous studies such as Bala, et al (2022) and Aginam and Obi-Uwosu (2018), which found a positive relationship between lending rates and bank profitability. However, it aligns with the findings of Afolabi, et al (2018), which also indicated a negative impact. The theoretical expectation (a priori expectation) is typically positive, as higher lending rates are assumed to boost interest income, a primary revenue source for banks. However, this study suggests that excessively high lending rates in Nigeria discourage borrowing, leading to a decline in loan demand and ultimately reducing banks' ability to generate revenue. Additionally, the high cost of borrowing in Nigeria has made loans unaffordable for businesses and individuals, leading to increased loan defaults and rising non-performing loans (NPLs), which negatively affect bank profitability. These findings emphasize the need for a balanced lending rate policy to ensure that banks remain profitable while promoting credit accessibility and economic growth.

Conclusion and Recommendations

06 Conclusion

This study examined the effect of monetary policy on the profitability of Deposit Money Banks (DMBs) in Nigeria over the period 1986–2023. The findings provide significant insights into the relationship between key monetary policy instruments and bank performance. The study concludes that;

I. **Cash Reserve Ratio (CRR)** positively affect bank profitability in both the short and long run, contrary to theoretical expectations. The stringent CRR policies implemented by the Central Bank of Nigeria (CBN) contributed to financial stability, reduced excessive lending, and minimized non-performing loans (NPLs), ultimately enhancing bank profitability.

II. **Liquidity Ratio (LIR)** has a positive effect on profitability. Highlighting the importance of maintaining adequate liquidity levels. While sufficient liquidity ensures financial stability and operational resilience, excessive liquidity may lead to underutilization of assets, reducing potential returns on lending and investments. Therefore, banks must strike a balance to optimize profitability.

III. **Monetary Policy Rate (MPR)** has significant effect on bank profitability in both the short and long run. While an increase in MPR raises borrowing costs, Nigerian banks effectively transferred these costs to customers by increasing lending rates, thereby maintaining or even improving profitability. This underscores the importance of monetary policy flexibility to adapt to economic conditions.

IV. **Lending Rates** confirms that high lending rates negatively affect bank profitability, particularly in the long run. Excessively high rates discourage borrowing, reduce loan demand, and increase non-performing loans (NPLs), ultimately harming bank performance. This highlights the need for a balanced lending rate policy to support both banking sector profitability and economic growth. Overall, the study concludes that while monetary policy instruments significantly influence bank profitability, their effects vary based on economic conditions and policy implementation. A flexible and well-structured monetary policy approach is essential for sustaining a profitable and stable banking sector in Nigeria.

Recommendations

Based on the findings of this study on the effect of monetary policy on the profitability of Deposit Money Banks (DMBs) in Nigeria, the following recommendations are proposed:

First, the government through Central Bank of Nigeria (CBN) should maintain a CRR level that balances financial stability with banks' ability to generate revenue. Excessively high CRR levels should be avoided to prevent excessive liquidity constraints, which may hinder credit availability for economic growth. Secondly, government should encourage Banks to adopt proactive liquidity management strategies to optimize their Liquidity Ratio (LIR), this ensure banks maintain sufficient liquidity to meet obligations without excessive idle cash reserves. Further, Regulatory authorities should provide guidelines that promote an optimal liquidity threshold, ensuring banks remain resilient during economic fluctuations.

Thirdly, the government through the CBN should adopt a flexible monetary policy approach, ensuring that adjustments to the MPR do not excessively increase borrowing costs. That may stifle credit expansion and economic growth. Policymakers should regularly assess the effect of MPR changes on banks' net interest margins and adjust policies accordingly to sustain profitability and lending activities. Lastly, The Government should encourage Banks to set competitive and reasonable lending rates to encourage borrowing while minimizing the risk of loan defaults and non-performing loans (NPLs). Again, government and regulatory bodies should explore policies that promote lower borrowing costs for businesses and individuals, enhancing economic activities and financial sector stability.

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