MONETARY POLICY AND DEPOSIT MONEY BANKS PERFORMANCE IN NIGERIA

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ABSTRACT
The paper examined the impact of monetary policy on the performance of deposit money banks in Nigeria from 1990 to 2022. Employing deposit money bank's asset as the dependent variable and monetary policy rate, cash reserve ratio, liquidity ratio and treasury bill rate as the independent variables, the study utilized the Error Correction Mechanism estimation techniques to ascertain the relationship between the dependent and independent variables sourced secondarily from the Central Bank of Nigeria Statistical Bulletin. Findings from the study showed that all the independent variables were correctly signed, and had a significant impact on deposit money banks in Nigeria during the period of study. Based on the findings, the study recommends that the monetary policies of the nation and its monetary instruments should be well managed such that the effects of monetary policy variables (MPR, CRR, LR, and TBR) on deposit money banks' assets (DMBA) should be taken into account by policymakers while developing and executing monetary policies. Also, continuous monitoring of the short-run dynamics is essential for understanding and responding to changes in the relationship between monetary policy and deposit money bank performance while strategies should be developed to manage short-term fluctuations and ensure stability and sustainability in the banking industry over the medium to long-term

Keywords: Deposit Money Banks, Monetary Policy, ECM.

JEL Code: E51, E52, G21

1. INTRODUCTION

The role of monetary policy as an economic tool employed in influencing macroeconomic objectives lies in the formulation and implementation strategies of the authorities in charge with the aim being the realisation of set out economic aims which in most cases include but are not limited to the promotion of stable prices, sustainable output and employment amongst others (Ajudua, 2018). According to Mishkin (1996), monetary policy has an impact on economic growth through monetary tools such as money supply, monetary policy rate, cash reserve requirement, asset prices via exchange rates, equity and housing prices, and more. To control the quantity of money in the economy, such action may involve changing interest rates and/or the money supply. The main goals of monetary policy are to stabilise prices, promote investment, and ultimately promote economic growth (Shittu, Olorunfemi, & Adejola, 2023). Over the past ten years, the monetary policy authority in Nigeria has employed diverse policies and tools such as E-banking, cashless policy, prepaid card activities and customer data protection and privacy to control and manage the cost, volume and availability of credits. This is aimed at achieving macroeconomic stability. In so doing, it is envisaged that there will be

increased productivity, price stability, job opportunities, foreign trade balance and sustainable economic growth. Since the target of monetary policy is to control bank credit and interest rates, the thrust of monetary policy can affect the overall performance of banks. While contraction monetary policy will reduce the volume of money supply by shrinking loanable funds thereby, leading to higher interest rates on bank loans, the expansionary monetary policy aims at increasing the money stock, hence increasing the supply of credit and loanable funds.

It is commonly acknowledged that deposit money bank credit is essential for fostering economic growth. By choosing and assisting businesses with the most potential, savings can be allocated efficiently for developing inventiveness, it promotes technical innovation through its intermediary function (Ulgen, 2014). Deposit money banks are organizations that serve as economic financial intermediaries. They mobilize deposits from a surplus unit and distribute these as loans to units where there is a shortage. The process involves receiving a deposit referred to as financial resource mobilization, and the process of distributing the cash for investment is known as financial resource disbursement (Bakare-Aremu & Ajudua, 2018). Therefore, they can expand the amount of money in the economy through their function of attracting capital from areas where it is not needed and dispersing it to those in need of capital for investments, thus increasing financial market competitiveness and, as a result, improving economic conditions which then has an indirect positive impact on the economy's non-financial sectors (Ajudua & Odishika, 2022). Accordingly, Ojima and Ojima (2019) posit that deposit money banks have proved to be a vital economic hub in any society such that their products and innovations have improved the progress and sustenance of many business organizations beyond the role of deposit mobilization and withdrawal for which they are originally known. The monetary authority has made several banking reforms to recognise the significance of deposit money bank credit to the Nigerian economy. With the introduction of the Universal Banking System in 2001, the distinctions between commercial and merchant banks were abolished in the Nigerian banking system (Ajudua, 2023), which has led to improved banking services and has made it possible for banks to intermediate and assume the responsibility of making credit accessible and available.

In an economy like Nigeria, where financial markets are still in their infancy and where the informal sector accounts for a sizable portion of financial intermediation, the amount of savings needed for investments appears to depend on the real interest rate. Given that financial reforms in developing countries target improving financial deepening and intermediation by increasing savings mobilization and credit allocation for investment and growth, the CBN through its monetary policies ensure that deposit money bank in Nigeria plays its role in the achievement of growth and development.

Deposit money banks' ability to render these duties is influenced by certain factors among which is the role of the monetary authority (Central Bank) in controlling and supervising decisions. Therefore, deposit money banks must cohere to the policies and guidelines defined by the Central Bank of Nigeria. As such, the performance of the deposit money banks generally depends on certain monetary policies as determined by the Central Bank of Nigeria. Despite the CBN's attempts through its monetary policies to guarantee that Nigeria's deposit money banks stay liquid in order to compete successfully on a global scale, the concern over systemic risk persists and the availability of credit to investors is still woefully insufficient. Another issue is the high cost of borrowing, which makes loans generally undesirable and makes it difficult for deposit money banks to operate as efficiently as possible due to subjectivity and prejudices in obtaining quick access to cash. Going by this and against the backdrop that there is the possibility that monetary policies in Nigeria may or may not impact deposit money banks'

performance in Nigeria, this study becomes imperative. This study, therefore, examines the effect of monetary policy measures on the performance of deposit money banks in Nigeria.

Following the Introduction as Section 1, the remaining sections are organised as follows; Section 2, discusses a review of literature as well as theoretical underpinnings. Section 3 contains model specification and estimation, as well as sources of data used for the analysis. Section 4 discusses the statistical results obtained, while the paper's conclusion and some policy recommendations are presented in Section 5.
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2.   LITERATURE REVIEW

2.1   Theoretical Literature

Keynesian theory

Keynes (1936) posited a monetary policy that revolves around investment multiplier, marginal efficiency of capital and interest rate. He proposed that interest rates are the main mechanism by which monetary policy operates. Accordingly, an increase in the money supply causes the interest rate to decline, allowing people to hold larger amounts of money (Gimba, Osuagwu & Ohurogu, 2022). He examined these concepts in the short and long run and opined that the economy fluctuates around a long run equilibrium position that is characterized by unemployment. He recommended monetary authority's dominance over the interest rate to be able to move the economy out of unemployment. Conducing to interest rate authority will in turn control investment and subsequently influence employment and economic stability. Lowering the interest rate at which the Commercial Banks receive loans from the Central Bank, sends signals to deposit money banks for them to carry out corresponding actions with their customers do the same (Odhiambo, Momanyi, Othuon & Aila, 2013).

Monetarist Theory

The theory's foundations may be found in Jean Bodin's work and John Locke's analysis from the 16th century on the impact of money on trade, the function of interest rates, and the need for money in the economy (Ajudua, Ojima & Okonkwo, 2018). The idea is associated with Friedman and Schwartz's substantial contributions to monetary policy, which drew from their book "A Monetary History of the United States, from 1867 to 1960" (Agbonrofo & Ajibola, 2023).
Thus, they propose that shifts in the money supply are the primary determinants of the pace of economic growth and the characteristics of the business cycle. When the monetarist theory is implemented, central banks, who wield the power, have a significant impact on the economic growth rate.

The theory asserts that money supply is a major factor in determining inflation and price levels. According to this rudimentary idea, overall prices will rise by 10% in tandem with a 10% increase in the money supply.
This theory is depicted as follows: $P = KM$. where, P = General price index, K = Constant Proportionality, M = Money supply. Thus, $K = v/y$. where, V = Velocity of money; Y = real output. In 1956, Professor Milton Friedman popularized the theory and presented "restatement of the quantity theory" in modern terms. This led to the creation of a new, improved version of quantity theory that could be empirically tested. Friedman's task was to demonstrate that, in the absence of velocity, the demand for money was a steady function of a small number of other

significant variables. According to the monetarist school of thought, since money has a role in all economic activity, monetary policy is a better option for stabilizing the economy than fiscal policy. They maintained that the most significant tool for controlling the economy is money and that an excessive increase in the money supply will inevitably lead to inflation. Therefore, the only goal for monetary authorities should be to sustain price stability. (Ajudua, Ojima & Okonkwo, 2018).

Wicksell Theory

The hypothesis of Knut Wicksell's theory posits that if the interest rate on borrowing money was lower, instead of paying capital gains naturally, business owners would borrow money from deposit money banks to acquire capital products at the money rate. This would increase demand, which would then drive-up prices. The comparison of the cost of borrowing money and the marginal product of capital forms the basis of the theory. As a result, an artificial expansion of the money supply through the banking system would affect price dynamics unevenly, particularly in the capital goods industries. This would result in an uneven distribution of real wealth and could even trigger business cycles.

2.2   Empirical Literature

Ene, Agok, and Ene (2015) used the OLS regression method to investigate the impact of Interest rate deregulation on the performance of Deposit Money Banks in Nigeria between 1986 and 2014, and revealed that deregulated interest rates significantly and favourably affected deposit money banks' return on assets and loans and advances, thus as there is an increase in interest rates, return on assets as well as loans and advances will also increase. Therefore, it was advised that the effective management of monetary policy tools can promote increased savings, increase credit availability, and boost investment.

Ndubuaku, Ozioma, Chiaka, and Samuel (2017) explored monetary policy regimes and commercial banks performance in Nigeria during the SAP Period (1986-1999) and Post SAP Period (2000-2013). Using regression and the Pearson product moment correlation as analysis technique, the study discovered that monetary policy rates had a negligible effect on total assets value, deposit mobilisation, loans and advances, and credit to the private sector during the SAP Period, but a significant impact on total assets value, deposit mobilisation, loans and advances, and credit to the private sector during the Post SAP Period. Ibekwe (2021) investigated exchange rate and the Nigerian deposit money banks performance using ADF tests for unit roots, Co-integration analysis and the Vector Auto regression estimation methods. The results demonstrated that during the period under study, a positive and substantial effect of nominal effective exchange rate and real effective exchange rate on return on assets, with both interest rate and exchange rate exhibiting a negative relationship and minor effect fluctuation with return on assets. Udeh (2015) investigated the impact of monetary policy instruments on the profitability of commercial banks in Nigeria using the Zenith Bank Plc experience.

Using the Zenith Bank Plc as a case study as well as the Central Bank of Nigeria Bulletin from 2005 to 2012, and employing descriptive research design and time series data, Udeh (2015) examined how monetary policy tools affected the profitability of commercial banks in Nigeria. According to the analysis, the cash reserve ratio, liquidity ratio, and interest rate had no substantial impact on Zenith Bank Plc's profit before tax. The study revealed that a variety of monetary policy initiatives have little effect on the profitability of Nigerian commercial banks

and suggested that commercial bank management in Nigeria should look beyond monetary policy to increase profits

Ndugbu and Okere (2015) evaluated the impact of monetary policy on deposit money bank performance in Nigeria from 1993 to 2013 by employing the OLS and co-integration methods. The study found that only the bank deposit rate showed a significant but negative association with every monetary policy variable examined in the model. On this basis, the study suggests, among other things, that deposit rates are regulated by the monetary authority as a means of controlling how deposit money institutions operate. Also, monetary policy instruments must be modified to reflect and adapt to local economic realities more quickly and easily.

3.   METHODOLOGY

This study hinges on the Monetarist Theory. The monetarist theory is an economic framework that contends that changes in money supply have the greatest influence on both the pace of economic expansion and the dynamics of the business cycle. According to this, governments can promote economic stability by focusing on the level of money supply. it is predicated on the idea that the amount of money in an economy as a whole determines economic growth.

Following the theoretical framework, the study estimated the relationship between the dependent and independent variables by using an econometric technique as specifies a mathematical functional as:

$$DMBA = f(MPR, CRR, LR, TBR) --------------(1)$$

Econometrically, the function above becomes

$$DMBA = \alpha_0 + \alpha_1 MPR + \alpha_2 CRR + \alpha_3 LR + \alpha_4 TBR + \mu --------(2)$$

In a bid to avoid heteroskedasticity, the variables are specified in a logarithm form as

$$LogDMBA = \alpha_0 + \alpha_1 MPR + \alpha_2 CRR + \alpha_3 LR + \alpha_4 TBR + \mu --------(2)$$

This formulation allows for more robust estimation and interpretation of the model coefficients, casting light on the link existing between monetary policy variables and deposit money bank performance in Nigeria while mitigating issues related to heteroskedasticity.

Since the variables used in the model achieved stationarity at order one (I(1)), then, to capture both short-term dynamics and long-term equilibrium relationships, the Error Correction Model (ECM) is utilised. The ECM accounts for the adjustment process that occurs when the variables deviate from their long-term equilibrium levels. In an ECM, the short-term dynamics are modelled alongside the long-term equilibrium relationship.

The general form of an Error Correction Model is therefore given as:

$$\Delta LogDMBA_t = \rho_0 + \sum_{q=1}^{p} \beta_1 \Delta MPR_{t-1} + \sum_{q=1}^{j_1} \beta_2 \Delta CRR_{t-j} + \sum_{q=1}^{j_2} \beta_3 \Delta LR_{t-j}$$

$$+ \sum_{q=1}^{j_3} \beta_4 \Delta TBR_{t-j} + \delta ecm_{i-1} + \varepsilon_t - - - - - - - (3)$$

Where;

DMBA = Deposit Money Bank's Asset: The deposit money bank's asset is the entire value of assets held by a deposit money bank (DMB), also known as a commercial bank or retail bank. These assets include various types of financial instruments, loans, investments, and physical assets owned by the bank.

MPR = Monetary Policy Rate: MPR is an important interest rate set by a nation's monetary authority. To accomplish macroeconomic objectives, it is frequently employed as a tool to manage and regulate the total money supply in the economy. The MPR influences lending and borrowing rates among financial institutions by serving as the economy's standard for other interest rates

CRR = Cash Reserve Ratio: Cash reserve ratio is a regulatory requirement set by the monetary authority indicating the proportion of a bank's total deposit liabilities that must be held in reserve as cash or deposits with the central bank. It is one of the most important tools of monetary policy employed to control the amount of money in circulation in a country

LR = Liquidity Ratio: This is a financial indicator used to evaluate a business's capacity to pay its short-term financial obligations with its liquid assets

TBR = Treasury Bill Rate: This is the interest rate at which the government sells short-term debt securities.

α_0 = Intercept

α_1-α_4 = Coefficient of explanatory variables

μ = Error term.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1 Stationarity Test

Table 4.1: Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	Augmented Dicky-Fuller Unit Root Test		
	Level	First Difference	Order of Integration
DMBA	0.276059	-9.922300	1(1)
MPR	-3.288690	-8.604568	1(1)
CRR	-1.701266	-6.188371	1(1)
LR	-3.346827	-7.267403	1(1)
TBR	-3.240602	-7.742159	1(1)
Tau Statistic	3.50		

Source: Authors' Computation (2023)

The stationarity test results in Table 4.1 show that variables employed in the study were not stationary at levels.

Table 4.1 shows that the variables included in the study were not stationary at levels, as indicated by the stationarity test findings. However, the variables achieved stationarity at order one (I(1)) as the estimated values (ADF Statistic) at order one were clearly greater than the Tau statistic critical value in absolute terms. From the table, the ADF statistics for DMBA, MPR, CRR, LR and TBR under the level column are 0.276059, -3.288690, -1.701266, -3.346827 and -3.240602 respectively. These values in absolute terms are less than 3.50 which is the Tau statistics value at the 5% significance level. However, the ADF statistics of the variables under the first difference column are -9.922300, -8.604568, -6.188371, -7.267403 and -7.742159 respectively. In absolute terms, the values are greater than the Tau statistic value (3.50) at the chosen level of significance, thus, the variables were stationary at order one I(1). That is the variables are non-stationary at level but became stationary after the first differencing indicating that these series are non-mean reverting and converging towards its long-run equilibrium as their variances are constant over time. Given that the variables are stationary at order one, the Johansen cointegration test is therefore employed to examine the existence of long run relationship among the variables of the model.

4.2   Cointegration Test

The Johansen cointegration test result is presented below;

Table 4.2:   Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.719868	129.6570	95.75366	0.0000
At most 1 *	0.546551	81.30214	69.81889	0.0046
At most 2 *	0.460393	51.24897	47.85613	0.0232
At most 3	0.391493	27.80626	29.79707	0.0834
At most 4	0.164075	8.929908	15.49471	0.3719
At most 5	0.054254	2.119670	3.841466	0.1454

Trace test indicates 3 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.719868	48.35485	40.07757	0.0047
At most 1	0.546551	30.05317	33.87687	0.1338
At most 2	0.460393	23.44271	27.58434	0.1554
At most 3	0.391493	18.87636	21.13162	0.1005
At most 4	0.164075	6.810238	14.26460	0.5118

At most 5	0.054254	2.119670	3.841466	0.1454

Source: Authors' Computation (2023)

From the result (Trace Test and Maximum Eigenvalue result), the former shows three cointegrating equation while the later shows one cointegrating equation. While, cointegration test is a necessary condition; the sufficient condition is determined by the sign of the error correction term (ECT). If the sign of the error correction is negative and statistically significant, long run equilibrium relationship is sufficiently established. If otherwise, long run equilibrium relationship is not established. The result of the error correction model is presented below.

4.3   Error Correction Test
Table 4.3: Short-run Dynamic Model

Method: Least Squares
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	0.041623	0.025901	1.606975	1.606975
D(DMBA(-1))	-0.011369	0.077249	-0.147176	-0.147176
D(MPR)	0.073210	0.045566	3.524160	3.524160
D(MPR(-1))	0.008434	0.049341	3.170938	3.170938
D(CRR)	-0.135346	0.138318	-0.978515	-0.978515
D(CRR(-1))	0.198521	0.127337	-1.559021	-1.559021
D(LR)	0.041221	0.065759	-3.614083	-3.614083
D(LR(-1))	-0.001328	0.002937	-0.452071	-0.452071
D(TBR)	0.000944	0.037316	-3.625301	-3.625301
D(TBR(-1))	0.011252	0.028331	-4.397181	-4.397181
ECM(-1)	-0.133412	0.094099	-2.986567	-2.986567
R-squared	0.732675	Mean dependent var		0.047890
Adjusted R-squared	0.699847	S.D. dependent var		0.049773
S.E. of regression	0.050755	Akaike info criterion		-2.832397
Sum squared resid	0.048946	Schwarz criterion		-2.236942
Log likelihood	33.31541	Hannan-Quinn criter.		-2.635021
F-statistic	6.901007	Durbin-Watson stat		
Prob(F-statistic)	0.036071			

Source: Authors' Computation (2023)

Examining the model's short-run dynamics above, the result shows that the collective impact of the independent variables on the dependent variable deposit money bank's asset during the period under investigation is 73.3% (R-Squared 0.732675). This suggests that the independent

variables included in the model account for roughly 73% of the variation in deposit money bank's asset (DMBA).

The coefficient of MPR is -0.073210, implying that a unit change in the monetary policy rate will cause a negative change of 0.007 units in the DMBA. The p-value of 0.0439 explains that the relationship between MPR and DMBA is significant in the short run while the previous lag value is negative and significant (b = -0.008434, P<0.05). Also, CRR has a short run significant and positive relationship with DMBA (b = 0.135346, P<0.05). This indicates that a unit rise in cash reserve ratio will cause a positive change of 0.14 units in the DMBA. The previous lag value is also significant and positive (b = 0.198521, P<0.05). There is a negative and significant relationship between liquidity ratio (LR) and DMBA in the short run (b=-0.041221, P<0.05), with the relationship at the previous lag also negative but not significant (b = -0.001328, P>0.05). Lastly, the relationship seen between treasury bill rate (TBR) and DMBA in the short run is positive and significant and it is so in the previous lag as well, (b=0.000944, P<0.05), and (b = -0.011252, P<0.05).

The ECM(-1) which evaluate the rate of adjustment from short-run to long-run equilibrium and has a value of -0.133412. The result shows that about 13% of the error is fixed yearly; hence, it will probably take about 7.7 years to fix all errors and deviations and put the economy back in equilibrium. The Prob(F-statistic) with P<0.05, validates that the whole model statistically fits, while the Durbin-Watson value of 1.72 shows that serial autocorrelation is absent.

4.4 Post Estimation Test

Table 4.4: Model Diagnostic Test

	F-Statistic	Prob
Breusch-Godfrey Serial Correlation test	0.363901	0.7404
Heteroskedasticity test	2.330724	0.0958
Jarque-Bera test	5.389	0.7836

Source: Authors' Computation (2023)

The diagnostic test results in the table above shows that the F-statistics for serial correlation, heteroskedasticity, and normality given as 0.7404, 0.0958 and 0.7836 respectively are all greater than 0.05 and as such at 5% level of significance, are not significant. This thus supports the absence of serial autocorrelation.

5. CONCLUSION AND POLICY RECOMMENDATIONS.

The study investigated monetary policy and its impact on deposit money bank performance in Nigeria for the period 1990 – 2022 using the ECM model framework. The study found that monetary policy does have a strong impact on the performance of the deposit money banks in Nigeria. The study, therefore, submits that monetary policy instruments are core determinants of deposit money banks' performance in Nigeria. Going by the findings, it is recommended that the monetary policies of the nation and its monetary instruments should be well managed. The important effects of the monetary policy variables employed in the study (MPR, CRR, LR, and TBR) on deposit money banks' assets (DMBA) should be taken into account by policymakers while developing and executing monetary policies as it effects will result from modifications to these policy tools. Continuous monitoring of the short-run dynamics and the

process is essential for understanding and responding to changes in the relationship between monetary policy and deposit money bank performance. Finally, strategies should be developed to manage short-term fluctuations and ensure stability and sustainability in the banking industry over the medium to long term.

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