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Monetary policy and performance of deposit money banks in Nigeria

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Abstract
This research examines the impact of monetary policy interventions on the performance of deposit money banks in Nigeria from 1990 to 2022. Monetary policy indicators—cash reserve ratio, monetary policy rate, lending interest rate, and wide money supply—served as proxies, while profit after tax was utilised to evaluate bank performance. The Augmented Dickey-Fuller Unit Root Test and the Auto-Regressive Distributed Lag (ARDL) model were utilised to guarantee data dependability and correctness. The research was owing to secondary data from the Central Bank of Nigeria's 2022 statistical bulletin. The upshots demonstrated a long-term association between monetary policy and bank performance, as validated by the bound test. The cash reserve ratio shown a favorable short-term effect on profit after tax, but the monetary policy rate revealed a positive and substantial influence in both the short and long term. Lending interest rates shown a negative and substantial correlation with bank performance, whereas the broad money supply had a negative but substantial influence on profitability. The report argued that monetary policy is crucial in influencing the profitability of deposit money institutions in Nigeria. The CBN is advised to either maintain or make minor modifications to the cash reserve ratio to promote ongoing profitability and financial stability within the banking sector. This research offers essential information for policymakers, banking entities, and financial experts.

Keywords: Cash Reserve Ratio, Monetary Policy, Money Supply, Lending Interest Rate, Profit after Tax

1. Introduction

Since the Central Bank of Nigeria (CBN) was established in 1958, monetary policy has been crucial in regulating the Nigerian economy. So as to accomplish macroeconomic goals i.e. price stability, full employment, and economic development, the CBN (2011) defines monetary policy as the measures employed to manage the money supply, interest rates, and credit conditions. Similarly, in congruent with Jhingan (2010), monetary policy is when the government controls the money supply and interest rates so as to impact the economy, particularly to keep inflation under control and the currency stable. Monetary Policy Rate (MPR), Cash Reserve Requirement (CRR), and Open Market Operations (OMO) are some of the monetary policy instruments utilised by the CBN in Nigeria to influence the economy and the actions of financial institutions, i.e. deposit money banks (DMBs).

The deposit money banks in Nigeria play an important role in the nation's economy by taking deposits, lending money, and easing investment opportunities. In light of this, the article defined deposit money banks (DMBs) as a kind of bank that takes deposits and then uses those funds to make loans and payments. Supporting economic development, they aid in the mobilization of savings and the allocation of credit. Located in Nigeria, DMBs are overseen by the CBN. Financial organizations that take deposits from the general public, provide loans owing to those deposits, and mediate between savers and borrowers are known as deposit money banks (Mishkin, 2007). In congruent with Ogunleye (2009), DMBs actively participate in the monetary transmission mechanism by managing

liquidity and creating credit, making them the principal avenues by which monetary policy affects the economy as a whole. Large domestic money-center banks (DMBs) in Nigeria include Zenith Bank, Access Bank, and First Bank of Nigeria, all of which contribute substantially to the nation's economy and help put the CBN's monetary policies into action. Note that monetary policy has a major effect on deposit money bank performance in accordance with its goal of price stability. As a result of reduced liquidity, banks are less able to lend money and see a drop in profitability when monetary policy is restrictive, as shown by high MPR or rising CRR. By contrast, expansionary policies often boost bank profitability via interest rate reduction and increased lending. For example, as pointed out by Obamuyi (2013), deposit money banks' lending rates are heavily impacted by changes in the MPR, which in turn affects the profitability and performance of loans. Deposit money banks in Nigeria, i.e. Guaranty Trust Bank (GTB) and United Bank for Africa (UBA), saw a decrease in lending and a rise in non-performing loans (NPLs) during times of strict monetary policy, such the 2008 global financial crisis when the MPR was hiked to 10.25 percent. As a result of tight monetary policies that raised borrowing costs and limited access to credit, nonperforming loans in Nigerian banks jumped from 7% in 2007 to 37% in 2009, as reported by Sanusi (2010).

Also, in congruent with Nwaeze's (2020) research on how the CBN's monetary policy affected deposit money banks from 2015 to 2019, the MPR cut from 14% in 2016 to 13.5% in 2019 encouraged credit expansion. Total credit to the private sector increased by 8.1% in 2019, thanks to the improved loan portfolios of banks like Access Bank and First Bank of Nigeria. This case study illustrates how a more accommodating monetary policy might improve DMB performance by promoting more loan activity.

This study aims to address the following issues in light of the context provided. What effect has the cash reserve ratio had on the net profit? How much of an impact has the monetary policy rate had on net income? How has the interest rate on loans affected the net profit, and how has the expansion of the money supply improved the net profit? Therefore, this study sets out to do just that by conducting an empirical investigation of the effect of monetary policy on the performance of Nigerian deposit money banks from 1990 to 2022. The remaining sections of the article are organized as follows: Having introduced the topic in Section 1, the next section will provide a concise synopsis of the relevant theoretical and empirical literature. We define the research variables and talk about the study procedures in Section 3. The upshots are detailed in Section 4. In Section 5, we will quickly go over the theories and policy consequences of the study.

2. Literature Review

2.1 Conceptual Review

Monetary Policy

To accomplish macroeconomic objectives including limiting inflation, stabilizing the currency, and encouraging economic development, a nation's central bank may engage in monetary policy, which entails regulating the money supply and interest rates. To control the nation's economy, the CBN employs measures like as the Monetary Policy Rate (MPR), reserve requirements, and open market activities. Onoh (2007) states that the CBN uses monetary policy tools to stabilize the economy, manage inflation, and control the money supply. Managing inflation and currency rates are two areas where he stresses the importance of interest rates and open market operations as instruments to impact economic activity. As an example, exogenous variables, i.e. changes in oil prices, and an oversupply of currency led to inflation of almost 14.5 percent in Nigeria between 2015 and 2021 (NBS,

2021). In 2021, the Monetary Policy Rate (MPR) was 14%, and the CBN made periodic adjustments to it in an attempt to curb inflation (CBN, 2021). In congruent with Ojo (2010) and Igbinovia and Thankgod (2022), the CBN employs monetary policy when it wants to affect key economic variables including growth, employment, and inflation. Monetary policy, he says, uses instruments to regulate liquidity in an effort to stabilize prices and stimulate economic development. In 2020, after the COVID-19 epidemic produced a slump in the economy, the CBN cut the MPR to 11.5% so as to encourage economic activity (CBN, 2020). Notwithstanding this, substantial inflation persisted, hitting 15.75 percent in December 2020 due to naira devaluation and supply chain disruptions (NBS, 2020). Anyanwu (2014) states that the Cash Reserve Ratio (CRR), liquidity ratio, and MPR are instruments utilised by Nigerian monetary policymakers to manage inflation and maintain stability. The CBN raised the CRR to 22.5% in 2016 to combat inflation, which reached 18.55% that year as a result of economic contraction and the depreciation of the naira caused by the oil price drop (CBN, 2016). Monetary authorities in Nigeria have complicated issues in controlling the nation's economy, since inflationary pressures continued despite these actions.

Bank Performance

Any number of financial, operational, and strategic metrics may be utilised to evaluate a bank's success. Academics and business analysts have taken a keen interest in this matter due to the pivotal function that banks perform in the economy. Financial measurements are one typical approach of gauging a bank's efficiency. An important financial indicator is the return on equity (ROE) or return on assets (ROA). Both return on equity (ROE) and return on assets (ROA) measure the profitability of a bank, however ROE focuses on the shareholders' equity while ROA takes into account all of the bank's assets. A bank's success is also affected by the quality of its assets. One indicator of a bank's loan portfolio quality is the amount of non-performing loans (NPLs) and reserves for loan losses. Too many nonperforming loans (NPLs) might hurt a bank's bottom line. An indication of a bank's cost management prowess might be its operational efficiency. As a general rule, operational efficiency is evaluated utilising the Cost-to-Income Ratio (CIR). A bank's efficiency is shown by its low CIR.

2.2 Theoretical Review

Keynesian Theory

Publication of "General Theory of Employment, Interest and Money" by John Maynard Keynes in 1936 (Keynes, 1936, p. 90) marked the beginning of the Keynesian Revolution. Money, in congruent with Keynes and other Cambridge economists, influences interest rates, which influence investment and cash holdings. This cascade effect then impacts the economy as a whole. Since monetary policy can only indirectly affect interest rates, Keynes argued that it is mostly useless on its own to boost the economy. Public and private financial institutions base their investment choices on interest rates set by monetary policy, in congruent with the Keynesian model, which is explained by Amacher & Ulbrich (1989), Gertler & Gilchrist (1991), Okpara (2010), and Solomon (2013). So as to stabilize the economy, maintain full employment, and promote expansion, Keynes argues that fiscal policy should mainly be implemented by the government. Keynes advocated a hybrid strategy that integrates fiscal and monetary instruments in response to monetary policy's shortcomings (Onyemaechi, 2005). The connection between money and aggregate demand, which is indirectly formed via interest rates, is fundamental to the Keynesian monetary mechanism.

↓OMO→↓ R→↑MS→↓r → I→↓GNP

Where, OMO = Open Market Operating R = Commercial Bank Reserve

MS = Stock of Money
r = Interest Rate
I = Investment
GNP = Gross National Product

When the CBN buys government securities via Open Market Operations (OMO), commercial banks' reserves (R) and their own holdings will grow, in congruent with the numbers, if the economy is initially balanced. To bring the interest rate (r) back to where it needs to be, banks increase lending or broaden credit. The money supply (MS) grows as new loans generate additional demand deposits. Interest rates tend to fall as the money supply rises (r). Companies are more likely to invest when interest rates are low because they expect to make more money in the future. As a result, the economy feels the effects throughout time, with increased GNP as a result of induced investment expenditures brought about by successive rounds of final demand spending. As the money supply decreases, interest rates increase, which boosts commercial banks' profitability (Jhingan, 2005).

Monetarism/Neo-Classical Theory

The monetarist idea was first out by Milton Friedman in 1956. Friedman made a strong case against the idea that monetary policy determines the magnitude, cost, and future course of the money supply (1968: 1-17). He claims that inflation is a universal monetary phenomenon. Onyemaechi (2005) concurs that central banks should exercise caution when considering the potential short-term and long-term implications of increasing the money supply, which include decreasing unemployment and increasing inflation, respectively. To further understand the monetarists' perspective on the money transmission process, consider the following symbols:

From overall market order to total national GDP, via expenditures to MS,

The major claim made by monetarists is the traditional money quantity theory. In congruent with the theory given by M. L. Jhingan in Monetary Economics 6th Edition, pages 418-419, if the velocity of money in circulation remains constant, changes in the money supply will directly influence prices and gross national product (GNP). The value of money is said to fluctuate in tandem with changes in the money supply, as per monetarist theory. A multiplication effect adds to the money supply, which is the last step in the transmission mechanism described by Friedman and Schwartz (1963) as follows: first, the central bank expands its open market operations, which increases the stock of money. Second, the ability to create credit and commercial bank reserves are also increased. Banks and non-bank organizations buy assets that are similar to what the Central Bank sells so as to diversify their holdings and encourage spending in the real economy.

2.3 Empirical Review

From 2000 to 2018, Owoeye et al. (2023) tracked the financial performance of Nigerian deposit money institutions and looked at how monetary policy affected it. Focusing on deposit money institutions, the research determined how interest rate (INT) and cash reserve ratio (CRR) impact their financial performance. A statistics bulletin published by CBN was utilised as a secondary source. Since this is data that changes over time, we utilised the ARDL regression method. Banks' deposit liability performance was shown to be affected by interest rate and cash reserve ratio, in congruent with the study's upshots.

The impact of monetary policy rate, cash reserve ratio, liquidity ratio, and loans to deposit ratio on DMB performance is investigated by Jeff-Anyeneh et al. (2023). This research makes use of time series data derived from the CBN statistics bulletin, 2021, which covers the years 1992 to 2021. OLS regression and the Granger Causality Test were utilised to evaluate the data. The upshots of the pre-estimation tests demonstrated that banks in Nigeria greatly strengthen their asset base when they send

more of their reserve requirements to the CBN. The upshots also showed that the liquidity ratio has a positive and statistically substantial impact on the growth of banks' assets in Nigeria. Lastly, the upshots showed that the loan-to-deposit ratio correlates positively with banks' total assets.

In their study, Afrogha et al. (2023) examines the relationship between monetary policy tools and several financial performance metrics of DMBs utilising data from 1990 to 2020. The research also explores the possibilities and threats that DMBs confront as they deal with the ever-changing regulatory dynamics and macroeconomic situations that make up the monetary policy environment. This study's upshots highlight how monetary policy substantially affects the bottom lines of Nigeria's deposit money banks. To secure the development and stability of the banking industry and the wider Nigerian economy, monetary policy choices must be well-rounded and owing to evidence. Policymakers, central banks, DMBs, investors, and the overall Nigerian economy are all greatly affected by these upshots.

The effectiveness of Nigeria's deposit money banks was studied by Igbinovia and Thankgod (2022) in connection to monetary policy tools. The investigation spans from 1981 until 2020.The study's overarching goal is to assess how various monetary policy rates, liquidity ratios, cash reserve ratios, and Treasury bill rates affect the ROA and post-tax profit of deposit money institutions. The ARDL models were estimated utilising the upshots of the Unit Root and Cointegration tests conducted on the variables in each model. Both ROA and net income are substantially impacted by monetary policy tools, in congruent with the upshots. In congruent with the upshots, the performance of Nigeria's deposit money institutions is heavily influenced by monetary policy tools.

The impact of Nigeria's monetary policy on the efficiency of deposit money institutions is examined by Bala et al. (2022). The data utilised in this study came from secondary sources, i.e. the Index mundi and the statistics bulletin of the CBN. To accomplish this, the ARDL method of cointegration was utilised. Bank lending rate (BLR) substantially affects bank loans and advances (BLA) in both the long and short term, in congruent with the empirical data. This suggests that BLR substantially improves the performance of deposit money banks in Nigeria. The long-term effects of liquidity rate (LR) are substantial, but the short-term effects are negligible; similarly, interest rate (IR) has no long-term effects but has a positive and substantial short-term effect on the efficiency of deposit money institutions.

From 2008 to 2020, Hassan and Oyedele (2022) analyze the financial performance of deposit money banks listed in Nigeria and how monetary policy affected it. The Cash Reserve Ratio, Inflation Rate, and Interest Rate were utilised to depict monetary policy as an independent variable, while return on asset was utilised to quantify financial performance as a dependent variable. The selected banks' annual reports provided the panel data. After running the numbers through Pooled OLS multiple regression, we found that among the sample banks, Cash Reserve Ratio substantially impacts financial performance in a positive way, Inflation Rate has a negligible negative impact, and Interest Rate has a substantial negative effect.

In their 2020 study, Yimka et al. looked at how monetary policy affected the profitability of Nigerian deposit money institutions. A time series data set spanning 35 years, from 1984 to 2018, was utilised in the research. Deposit money banks' net worth and total credits were utilised as financial performance measures, and the impact of liquidity ratio, lending rate, loan to deposit ratio, and cash reserve ratio was

studied. Two methods, the OLS and ARDL, were utilised, depending on the outcome of the stationarity test. We generated a net worth model for the short run and a log net worth and total credit model for the long run. The upshots showed that the log of net worth was unaffected by monetary policy factors i.e. lending rate, liquidity ratio, loans to deposit ratio, and cash reserve ratio over the long term. Nonetheless, the log of net worth in the current year was substantially impacted in the short term by changes in the liquidity ratio, loans to deposit ratio, and cash reserve ratio from prior years. In the long term, the liquidity ratio and the loans to deposit ratio had a favorable and substantial impact when total credits were utilised as a measure of financial success. Over time, the cash reserve ratio substantially impacted negatively. Whether looking at the long or short term, the log of the loan rate does not matter. The purpose of the study by Adesina et al. (2018) is to evaluate the impact of the monetary policies implemented by the CBN on the financial performance of deposit money banks (DMBs) in Nigeria both before and after the bank consolidation operation (2000–2016). Secondary data from the CBN Statistical Bulletin, 2016 was analyzed utilising an ARDL. The upshots showed that the CBN's monetary policies substantially affected DMB performance in the short-run, but had no influence in the long-run.

The effect of monetary policy on the efficiency of Nigeria's deposit money institutions was studied by Ndugbu and Okere (2015) (1993–2013). The study's data came from yearly reports, statements of accounts, and the statistics bulletin of the CBN. A combination of OLS and co integration was utilised to assess how monetary policy affected the efficiency of deposit money institutions. Cointegration and the ADF unit root test demonstrated that the variables are stationary and that there is a long-run connection among them. Of the four monetary policy variables (bank lending rate, liquidity ratio, cash reserve ratio, and bank deposit rate) included in the model, the OLS found that only the bank deposit rate had a meaningful association, although an inverted one. In conclusion, a survey of the relevant literature shows that the majority of research has concentrated on how different monetary policy tools have affected the bottom lines of Nigerian deposit money banks (DMBs). Research on the impact of interest rates, liquidity ratios, cash reserve ratios, and lending rates has mostly relied on secondary data, time series analysis, and econometric methods like as ARDL and OLS models. For example, Afrogha et al. (2023) broadens the study to include the difficulties encountered by DMBs in navigating policy dynamics, whilst Eye et al. (2023) and Jeff-Anyeneh et al. (2023) focus on the importance of interest rates and cash reserve ratios on banks' performance. The majority of these research demonstrate that monetary policy instruments substantially affect performance metrics i.e. asset growth and profitability. While domestic monetary policy influences bank performance, there has been little investigation into the ways in which foreign macroeconomic variables (i.e. inflation, exchange rate volatility, or global economic circumstances) interact with it. There is also a lack of research into how changes in digital banking and other financial technologies could affect the efficacy of conventional tools for monetary policy. There is a lack of research that takes into account these changing economic and technical aspects when studying the connection between monetary policy and DMB performance.

3. Methodology

The focus of this article is on the performance and monetary policy of Nigeria's deposit money banks. To represent monetary policy, we utilised cash reserve ratios (CRR), liquidity ratios (LR),

maximum lending rates (MLR), and monetary policy rates (MPR), while profit after tax (PAT) measured the efficiency of deposit money institutions. Secondary data for this research was mostly sourced from audited annual reports of Nigerian deposit money institutions, statistics bulletins, the World Bank's Development Indicators (WDI), and the CBN from 1990 to 2022.

Model Specification

This research modified Punita and Somaiya's (2006) multiple regression model and applied it as follows:

P= f (CRR, LR, IR, MPR)

To transform the above model to a multiple regression form can be written like this:

$$P= \beta_0 + \beta_1 CRR + \beta_2 LR + \beta_3 MLR + \beta_4 MPR + \mu \ldots\ldots\ldots\ldots\ldots (a)$$

Where:

P = Aggregate of bank Asset; CRR = Cash Reserve Ratio; *LR* = Liquidity Ratio; *MLR* = Maximum Lending Rate; *MPR* =Monetary Policy Rate; μ = error term or control variable

The model was modified by introducing broad money supply (MS) as a new variable. Thus, the new expanded model is formulated below;

PAT=f (CRR, MPR, LIR, MS)……1

$PAT= a_0 + a_1CRR_t + a_2MPR + a_3LIR + a_4MS$…..2

$PAT= a_0 + a_1CRR_t + a_2MPR + a_3LIR + a_4MS + U_t$..3

Where:

PAT = Industrial Output (Proxy for Performance of Deposit Money Banks)

CRR = Cash Reserve Ratio

MPR = Monetary Policy Rate

LIR = Lending Interest Rate

MS = Broad Money Supply

a_0 = Slope Intercept

a_1, a_2, a_3, a_4 = Slope Parameters

u = Stochastic

Error Term of the model which accounts for other indices that are not specified in the model

t = Time period (1900 – 2022)

4. Results and Discussion

Unit Root Test

Researchers ruled out spurious regression and chose the correct technique by utilising the Augmented Dickey Fuller (ADF) unit root test to identify which variables should be integrated first.

Table 1: Unit Root Test utilising Augmented Dickey Fuller (ADF)

Variables	Levels		First Difference		Order of Integration	P-value
	ADF Statistics	5% Critical Value	ADF Statistics	5% Critical Value		
PAT	-2.67687	-2.957110	-6.198098	-2.960411	I(1)	0.0000
CRR	0.789580	-2.957110	-2.960411	-2.960411	I(1)	0.0005
MPR	-3.231039	-2.957110			I(0)	0.0273
LIR	-2.351810	-2.957110	-7.031746	-2.960411	I(1)	0.0000
LMS	-4.490728	-2.957110			I(0)	0.0012

Source: Extracts from E-view 10. * Level of significance at 5%

To determine whether the study's variables were stationary or non-stationary series, we put them through the ADF Tests utilising the information in table 1. While MPR and LMS were determined to be stationary at level I (0), the stationarity test revealed that PAT, CRR, and LIR were stationary at initial difference 1. The variables are found to be stationary with regard to both their level and beginning differences, or to have a mixed order of integration, in congruent with the stationarity tests.

Co-integration Result

Table 2: ARDL Bound Test

Test Statistics	Value	K
F-statistics	4.843511	4

Significance	I (0)	I(1)
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Researchers' computation derived from E-Views 10 output

A comparison of the F-statistics with the critical bound values is shown in Table 2 as the outcomes of this bound test. The F-statistic is 4.843511. The upshots showed that the F-statistic is more than the critical values at the 0.05 level of significance, surpassing both the lower bound (2.86) and the upper bound (4.01). It is true that monetary policy affects the performance of Nigerian deposit money institutions. Hence, the anticipated outcomes, both immediate and distant, from the ARDL models.

Table 3: ARDL Long-run Result (Dependent Variable =PAT)

Variable	Co-efficient	Std. Error	t-statistics	Prob
CRR	0.781309	0.321164	-2.432741	0.0316
MPR	3.834840	1.155691	3.318222	0.0061
LIR	-3.075638	1.346320	-2.284478	0.0413
LMS	3.597688	1.681493	2.139580	0.0536
EC = PAT - (-0.7813*CRR + 3.8348*MPR -3.0756*LIR + 3.5977*LMS)				

Source: Researchers' computation derived from E-Views 10 output

There is a positive correlation of +0.781309 between the cash reserve ratio (CRR) and profit after tax (PAT), a measure of deposit money institutions' performance, as shown in the long-term upshots of the ARDL model (Table.3). Increases of one unit in the cash reserve ratio (CRR) result in an increase of around 0.78 percent in profit after tax (PAT). The correlation between CRR and PAT is indeed statistically substantial ($p = 0.0316$). Upshots from this study are supported by previous research by Jeff-Anyeneh et al. (2023) which found that monetary policy factors, such the cash reserve ratio, substantially and positively affected bank performance. The monetary policy rate (MPR) and PAT had a positive association of +3.834840. For every one unit increase in the MPR, the profit after tax (PAT) rises by 3.8 units. The correlation between the MPR and the PAT co-efficient is statistically substantial ($p = 0.0061$). Igbinovia and ThankGod (2022) have both come to similar conclusions in their prior research. Profit after tax (PAT) and lending interest rate (LIR) had a negative association of -3.075638, in congruent with the data. In accordance with conventional economic wisdom, banks should see an improvement in their bottom lines as a result of more lending, which should in turn boost interest revenue. But this may happen because the government is trying to encourage economic activity by lowering the cost of borrowing money so as to speed up economic development. There will be a 3.1 unit drop in profit after tax (PAT) for every unit increase in the value of the lending interest rate (LIR). The p-value of 0.0413 indicates that the value of the lending interest rate (LIR) substantially affects profit after tax (PAT). These upshots are backed by research conducted by Ndugbu

and Okere (2015). In light of the ARDL long-term relationship between the two variables, we find that LMS has a positive log value that is equivalent to +3.597688 times LMS. Gains after taxes (PAT) will increase to around 3.6 units for every one-unit increase in the log value of the broad money supply (LMS). A p-value of 0.0536 indicates that the correlation between the money supply and the PAT value is statistically substantial.

Table 4: ARDL Short-run Result (Dependent Variable =PAT)

Variables	Co-efficient	Std. Error	t-Statistics	Prob
C	40.11530	7.211372	5.562783	0.0001
D(CRR)	-1.107310	0.515045	-2.149927	0.0529
D(CRR(-1)	-0.212665	0.539901	-0.393896	0.7006
D(CRR(-2)	-0.287289	0.497300	-0.577697	0.5741
D(MPR)	1.913032	0.493080	3.879759	0.0022
D(MPR(-1)	-0.415668	0.705216	-0.589419	0.5665
D(MPR(-2)	0.611749	0.484571	1.262453	0.2308
D(LIR)	-1.926704	0.636781	3.025691	0.0106
D(LIR(-1)	1.062820	0.677463	1.568823	0.1429
D(LIR(-2)	-0.620953	0.590205	-1.052098	0.3135
D(LMS)	6.693559	10.90779	0.613650	0.5609
D(LMS(-1)	2.716090	13.20646	0.205664	0.8405
D(LMS(-2)	-30.42465	11.58806	-2.625516	0.0222
ECM(-1)	-0.563955	0.103616	-5.442739	0.0001
Adj R^2 =0.710819, F-statistics = 6.483331 (0.000362), DW =2.261522				

Source: Researchers' computation derived from E-Views 10 output

It is easy to see the big and negative co-efficient of the error correcting component in Table 4, which displays the upshots of the ARDL model. Another way of putting it is that the significance of the negative sign is justified. This means that the ECM will successfully fix any deviations from the long-run equilibrium. In congruent with the ECM co-efficient of -0.563955, the rate of adjustment is 1% when all long-term equilibrium deviations are rectified in the current era. What this means is that changes in CRR, MPR, LIR, and LMS have a progressive effect on the current value of PAT. From the ARDL short-run upshots, it is clear that the constant parameter (Bo) should be set at +40.11530. This indicates that PAT, as the dependent variable, will increase by 0.56% year, assuming all other independent variables remain constant. It is assigned a co-efficient of -1.107310 to the cash reserve ratio (CRR). Right now, it seems like CRR is inversely connected to PAT. This outcome is predictable, as expected in advance. Profit after tax (PAT) would fall by 1.1 units for every unit rise in the cash reserve ratio, in congruent with the negative result. There is a statistically substantial negative relationship between the value of the cash reserve ratio (CRR) and profit after tax (PAT).

In terms of this year in particular, the MPR is positive at +1.913032. Therefore, MPR and PAT are positively correlated. For every one unit increase in MPR, PAT will rise by 1.9 units in the immediate run. Although this discovery goes against preconceived notions, it is nonetheless noteworthy. Not only that, but the LIR for this year is -1.926704. There seems to be an inverse relationship between LIR and PAT about this. The current relationship between LIR and PAT is that for every one unit rise in LIR, PAT will fall by 1.9 units. There are major ramifications to this finding, which is in line with assumptions. The second-year profit-after-tax report also revealed that the broad money supply (LMS) had a negative log value. The negative correlation between LMS and PAT is, nonetheless, supported by statistical evidence.

To back up the claim of a substantial correlation and high degree of linkage, the dependent variable's variance was 71% covered by the revised R2 co-efficient,

suggesting a strong correlation. The model is very substantial, with a probability value of 0.000362, indicating its large overall relevance. The series supposedly do not have any autocorrect bugs, in congruent with Durbin Watson of 2.261522. It is obvious that monetary policy affects the efficiency of Nigeria's deposit money institutions.

Diagnostic Test

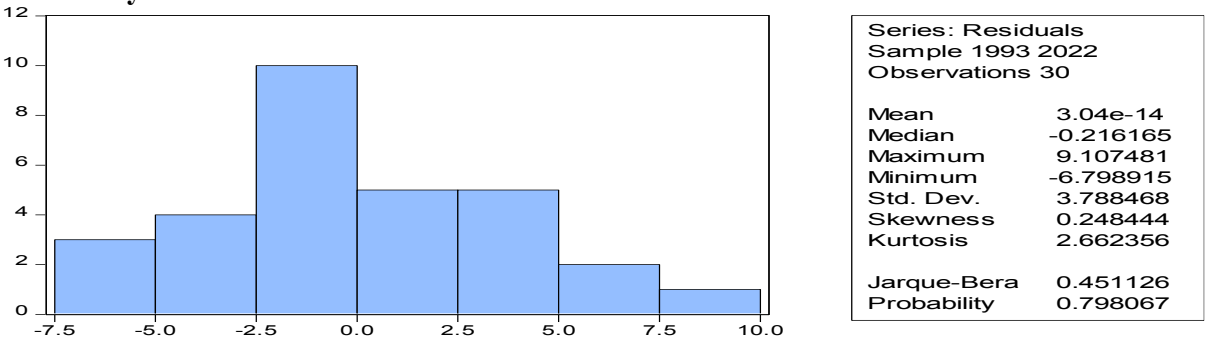
Table 5: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Upshots

	F-Statistic	Prob.Value
Ramsey Reset Test	2.261583	0.1608
Breusch-Godfrey Serial Correlation LM Test	0.706032	0.5166
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.812940	0.6608

Source: *Author's Computation utilising E-view 10*

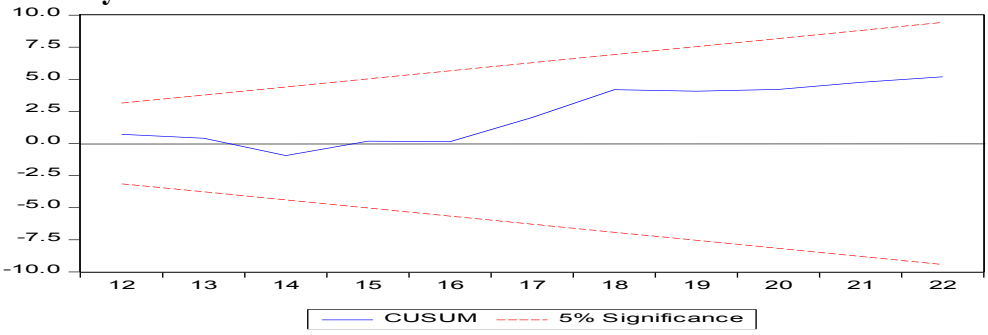
One of the diagnostic tests, the Ramsey reset test's linearity test, which verified that the model is well specified, is shown in Table 5. The f-statistic (2.261583) and estimated p-value (0.1608) are more than the 5% (0.05) cutoff; hence the result is confirmed. Therefore, the upshots of the investigation disprove the null hypothesis. Godfrey and Breusch's relationship Serial or autocorrelation test upshots showed a 0.5166 Chi-Square probability and an f-statistic of 0.706032. Researchers determined that serial correlation is not a part of the model since the probability value of 0.5166, which is almost 52%, is higher than the 5% (0.05) threshold. A Chi-Square probability of 0.6608 and an f-statistic of 0.812940 were produced by the Breusch-Pegan-Godfrey test, which is utilised to detect heteroscedasticity. It may be concluded that the model does not exhibit heteroskedasticity since the probability Chi-square value is more than 5% (P > 0.05). The preference for a constant variance in regression allows us to assert that the residuals are homoscedastic.

Normality Test



The normality test upshots are shown in Figure 1. They show that the residuals are normally distributed; the associated probability value is 0.798067 and the Jarque-Bara value is 0.451126, both of which are more than the 0.05 significance level.

Stability



The model is stable, in congruent with the summary upshots of the stability test, as shown in Figure 5. This is obviously the case as the blue line falls between the green and red lines, or is less than the 0.05 significance level.

5. Conclusion and Recommendation

Conclusion

This study looked at the years 1990–2022, analyzing how monetary policy affected the success of Nigerian deposit money institutions. We utilized Profit after Tax as a stand-in for the dependent variable and Cash Reserve Ratio, Monetary Policy Rate, Lending Interest Rate, and Broad Money Supply as the independent variables. We utilised the audited yearly reports of Nigerian deposit money banks, the CBN's Statistical Bulletin, and the WDI, which are World Bank's development indicators, as our secondary data sources. Financial policy rate, cash reserve ratio, and long-term profit after taxes were found to be favorably and statistically linked in this research. A positive long-term connection exists between the broad money supply and profit after taxes, but a negative short-term correlation and a large negative correlation exist between the lending interest rate and profit after taxes this year. Deposit money institutions in Nigeria were therefore substantially affected by monetary policy.

Recommendations

Owing to the upshots, here are a few suggestions:

i. Deposit money banks in Nigeria may lower their lending rates in response to a cut in the monetary policy rate (MPR) announced by the national bank. Fast loan turnover increases the after-tax profits of deposit money institutions, which lures investors to borrow more money.

ii) Rather than giving the CBN the authority to double the monetary policy rate, the federal government should make deposit money banks in Nigeria keep their lending rates around it. More options for low-interest financing will be available to investors both now and in the future.

iii) As a last point, as the money supply increases, deposit money banks may lower their lending rates to attract more investment. To boost their cash on hand, they should think about raising the deposit rate.

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