CONTRIBUTIONS OF MONETARY POLICY ON PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA: AN ARDL APPROACH

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Abstract

The study empirically examined the effect of monetary policy on performance of deposit money banks in Nigeria. The specific objectives were to: examine the effect of money supply on the performance of deposit money banks, ascertain the effect of interest rate on the performance of deposit money banks, and to investigate the effect of open market operations on the performance of deposit money banks in Nigeria. Descriptive and exploratory designs were adopted to evaluate the effect of monetary policy on banks performance. Secondary sources of data were used as the main methods of data collection. The relevant data for this study was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin,2020. The data were collected on annual basis from 1990 to 2020. Ordinary least square of multiple regression was employed in this study to test and estimate the relevant equations. This study employed the following techniques in order to analyze the relationship that existed between monetary policy and performance of deposit money banks. They include Philip-Perron (PP) unit root test, ARDL and error correction mechanism (ECM). In the long run, the study revealed that there was a positive and significant relationship between money supply and banks profit, there was a positive and significant relationship between interest rate and banks profit, and there was a positive and significant relationship between open market operation and banks profit. In line with the findings, the study recommended that government through the CBN to regulate money supply in a manner that will not hamper the cost of accessing loans and advances which is major source of income to deposit money bank. Furthermore, Central Bank of Nigeria monetary policy rate should be structured in such a way that businesses and indeed the banking sector will be impacted positively and monetary authorities should reduce the monetary policy rate of deposit money banks as this will enable the customers to access loans and advances for increased productivity and expansion.

Keywords: Monetary policy, money supply, interest rate, open market operation, banks profit, performance, Deposit money banks

1. Introduction

Monetary policy is one of the key economic stabilization processes that includes measures meant to regulate and control the volume, cost, availability, and direction of an economy's money supply in order to

achieve a certain macroeconomic policy goal. It entails deliberate efforts by monetary authorities to control the money supply and credit conditions in order to achieve broad economic goals (Anyanwu, 1993). Over time, the Central Bank of Nigeria (CBN) has regulated the appropriate flow of money in an economy. The CBN, as the monetary authority, is entirely responsible for issuing rules on how banks should function each year. Monetary policies are intended to aid the banking system, create confidence in the substance of reasonable financial services, and raise the standard of behavior and professionalism in the banking business (Nzotta, 2004).

According to Powel (2004), monetary policy is the purposeful action taken by the government to attain economic objectives through the use of monetary tools such as control over bank lending and interest rates. Monetary policy is developed and implemented by the monetary authority with the objective of controlling the amount, cost, and direction of money and credit in order to achieve certain macroeconomic goals (Olaloku, 2006). The importance of the banking sector in a country's economic development cannot be overstated; it is the channel via which idle monies are made available to the productive sector. The central bank (CBN) regulates the money supply and credit conditions in the economy in order to achieve particular macroeconomic goals such as price stability, employment, sustainable economic growth, and balance of payment equilibrium.

The effectiveness of monetary policies in achieving the set objectives, on the other hand, is dependent on the level of compliance with the policy directives by the bank. On the other hand, the existence, growth, and survival of the banks are primarily dependent on the profit that they are able to earn, and profitability usually increases the value for shareholders to a significant extent. The banking sector's financial intermediation function assumes the necessity to satisfy the sector's ultimate goals. Banks have private aims of profitability, liquidity, and solvency. Profitability is possibly more crucial for financial intermediaries, such as banks, because it demonstrates strength and advancement and helps to generate and radiate confidence in the banks.

Over the years, Nigeria has used these policies to regulate and control the cost, volume, availability, and direction of money credit in order to affect policy objectives such as price stability, high employment, and sustained economic growth. The Central Bank of Nigeria's primary monetary policy position was to improve the banking system's performance through monetary measures, so significant pressure was exerted on the currency rate and foreign reserves, causing the naira to plummet in value. Furthermore, the interest rate charged by banks for credit has continued to rise, causing significant distortion in the financial intermediation process, unchecked increase in interest rates, and unstable performance of credit extended by banks to the general public, even in the face of slight inflationary pressures. Some banks' failure to conform to the established conditions for granting loans and advances to customers has resulted in setbacks in achieving the desired macroeconomic objectives.

Many banks explained why they believe the monetary policy rate set by the monetary

policy committee is too high. This rate is still in effect during the time period under consideration, which is relatively high when compared to the government's objective for a single interest rate regime for loans and advances. This volatile policy has an impact on credit granted to clients and credit administration by banks. The specific objectives are to assess the effect of money supply, interest rate, and open market operation on the performance of deposit money banks in Nigeria.

Objectives of the study

The specific objectives of the study are stated thus:

1. To examine the effect of money supply on the performance of deposit money banks

2. To ascertain the effect of interest rate on the performance of deposit money bank

3 To investigate the effect of open market operations on the performance of deposit money banks in Nigeria.

Research questions

1. To what extent does money supply affect the performance of deposit money banks?

2. To what extent does interest rate affect the performance of deposit money banks?

3 To what extent does open market operations on the performance of deposit money banks?

Research hypotheses

The following hypotheses are tested in null form.

1. There is no significant effect of money supply on the performance of deposit money banks in Nigeria

2. There is no significant effect of interest rate on the performance of deposit money banks in Nigeria

3 There is no significant effect of open market operations on the performance of deposit money banks in Nigeria

Literature review
Instruments of monetary policy under the regime

The major instrument of indirect monetary control in Nigeria is the open market operations (OMO). Till date, this instrument has been complemented by reserve requirements, CBN securities, as well as moral suasion.

(a) **Open market operations**

The OMO was established at the end of June 1993 and is entirely based on Nigeria Treasury Bills (NTBs) and repurchase agreements. The OMO comprises the CBN selling or buying qualified bills or securities in the open market in order to influence deposit money, bank reserves, the level of base money, and hence the overall level of monetary and financial circumstances. In this transaction, banks who subscribe to the offer draw on their reserve balances with the CBN, lowering the overall liquidity of the banking system and the bank's ability to create money through lending (Bernanke, 2007).

(b) **Reserve requirement**

The CBN adds a reserve requirement to the use of OMO. In this regard, the reserve requirement serves as a tool for both liquidity management and prudential supervision. The reserve requirements are the cash reserve ratio (CRR) and the liquidity ratio (LR). The former is defined as a percentage of the total demand, savings,

and time deposits that banks are expected to keep as deposits with the CBN, while the latter is the percentage of banks' liquid assets to their total deposit liabilities. The CRR and liquidity ratio have been gradually increased or decreased depending on the monetary authority's complementing role (Cochrance, 2008).

(c)   Discount window operations
The CBN discount window facilities were developed rigorously in accordance with the Bank's intended position as "lender of last resort." As a result, it has continued to make short-term loans to banks in need of cash. The borrowing institution's holdings of government debt securities and any other instrument approved by the CBN, subject to a maximum quota, characterize the facilities. The nominal anchor that impacts the level and direction of other interest rates in the domestic money market is the Minimum Rediscount Rate (MRR) (Cushman, 2007).

(d)   Moral suasion
The CBN uses this strategy to establish two-way communication with banks, ultimately improving the environment for monetary policy efficacy. The Banker's Committee, which meets bimonthly, is the primary point of contact. This interaction with banks was broadened in November 2000 to include other stakeholders such as important government officials, financial market participants, academics, and so on, all under the auspices of the monetary policy-making process (Ehrmann, 2007).

Theoretical framework
The Modiglani-Miller bank lending channel theories were used in this investigation. Modiglani-miller proposed this idea in 1958. According to the hypothesis, monetary policy has a direct impact on the availability of bank loans and advances. For example, in countries where contractionary monetary policy is implemented, such as Nigeria, the Central Bank limits the intake of reserve deposits by banks. This decrease in reserve liabilities has an inverse effect on bank lending. In order for a bank lending channel to function, the market for non-reserve bank liabilities must be frictionless, allowing banks to access profitable lending opportunities.

Except in cases where a contractual capital requirement exists, the lending channel of banks has nothing to do with bank capital regulation or bank capital level. In this instance, rules such as the minimum or maximum level of capital for financial intermediaries will have an impact on bank lending. This is because changes in a bank's capital level have a significant impact on its lending capabilities. As a result, Modigliani and Miller's bank lending channel theories rely on the availability of liquidity constraints in the banking system. This simply means that if a bank experiences cash shortages, asset illiquidity, or is unable to acquire access to a frictionless market for managed debt. According to the hypothesis, monetary policy actions can have an impact on bank profitability due to interest rate variations.

Loanable funds theory
According to this idea, interest rates are determined by the demand and supply of loanable funds in the capital market. According to the loanable funds theory of interest, long-term interest rates are determined by both saves and investments,

and short-term interest rates are determined by the financial conditions that exist in an economy. Interest rates play a significant role in affecting commercial bank borrowers' credit appetite. This has an impact on the demand for loanable funds idea. The rate of interest is not solely a monetary phenomenon, according to this theory; loanable funds influence the rate of interest, which is also influenced by monetary policy.

Impact of interest rate on banking performance

Several studies have been undertaken throughout the years to examine the impact of interest rate fluctuations on commercial bank profitability. With a review of past material, researchers will describe the profitability of commercial banks and interest rates in this part. The interest rate is defined as the amount of money paid by someone for the use of funds for a given time period. Furthermore, interest rate refers to the amount of money paid by a debtor to a creditor for the use of the creditor's funds for a specified time period. Creditors charge interest as a proportion of the amount lent.

Similarly, for the use of money, institutions such as banks pay interest rates to depositors. Bank profitability is defined as interest or non-interest revenue and after-tax profits, which are calculated as income less provisions and operational costs (Ahmed, Takeda & Shawn, 1998). Interest rates play a vital role in our daily lives. It has a significant impact on people's purchasing power. As a depositor, it is critical to pay attention to these interest rate patterns because they can have a significant impact on people's funds. Because of the wide range of these trends, it is critical to assess both existing and potential investment prospects. Interest rate changes have a big impact on banks. The differential in interest rates charged to and paid to clients accounts for the majority of the bank's revenue.

Previously, in commercial bank operations, interest rates were a minor component to achieve general economic stability by managing foreign trade rates and controlling inflation.

According to Jhingan (2004), there are three key goals that a prudent bank pursues: liquidity, safety, and profitability. In the same vein, he recognized basic requirements for a sound financial system. The secret to successful banking is to distribute resources among different types of assets in such a way that there is enough cash to meet every demand while also earning enough money for the bank to pay its bills and earn profits for its shareholders.

Profitability is one of the primary goals of banks. It is required for the purpose of paying corporation tax, paying interest to depositors, wages to employees, dividends to shareholders, and meeting other expenses. As a result, banks cannot function successfully unless they generate profits. Profitability is critical for a bank to maintain ongoing activity and for its investors to receive fair returns, but it is also critical for regulators since it ensures more resilient solvency ratios, even in a risky economic climate. An entity that consistently loses money will eventually deplete its capital base, putting stock and debt investors at danger. Furthermore, because the ultimate goal of any profit-seeking organization is to protect and produce wealth for its owners,

the bank's return on equity must be larger than its cost of equity to create shareholder value.

The interest rate is the amount of money paid or received on the use of funds. When a creditor lends money, he receives interest, and when a debtor borrows, he pays interest (Uchendu, 1995). The amount of interest received by a creditor is a proportion of the amount of money lent, and the amount of interest paid by a borrower is a percentage of the total amount borrowed. Anyone can make a loan to someone and collect interest, or any entity, such as a bank, can accept deposits. However, it is normally the role of the bank to make loans and take deposits. The question here is where do banks get their money to make loans? Banks encourage the public to deposit their money by paying interest rates, which inspire the public to deposit their money by creating various accounts with the banks, and banks use their funds to make loans to other individuals (Jhingan, 2004).

In practice, when a bank provides a loan to a customer, it charges a higher interest rate but pays lower interest rates to the depositor; with this disparity in interest rates, banks generate a profit in exchange for providing these services. To make a profit, the bank charges the highest interest rate feasible while paying the lowest rate possible. However, in order to attract the same borrower and depositor, banks compete with one another, which keeps interest rates at a comparable range (Coyle, 2000). Interest rates remain in a comparable range due to bank rivalry. Interest rates must be handled as a key economic problem in order to address and manage the considerable

development. On the other hand, the interest rate in the profit and loss statement also manages the interest component altogether. Furthermore, the interest rate reflects the receipt of debt, the excellence of debt, the expectations of visions participation proportions, and the fixed floating mixing of debt (Ahmad, 2003). Businesses must pay more for borrowing when interest rates climb. In other words, as the cost of borrowing rises, so does their profitability, and as profits fall, so does the market price of their stock. Furthermore, an increase in interest rates reduces the value of corporate bonds. Due to the high interest rate, the interest rate that a bond pays to its holder is not very appealing. There are several types of interest rates that banks give to set the rate of interest for borrowing and saving (Gieseche, 2004). As a general rule, a decrease in interest rates is very good for the economy since customers can easily pay for taking loans because they do not have to pay higher interest rates for taking loans. The interest rate is used as a tool to control economic development. Interest rates will generate inflation when the economy develops rapidly. In other words, as the availability of bank loans changes, prices rise to greater levels, reducing people's purchasing power and affecting demand for products and services. However, when interest rates are low, the cost of borrowing falls, increasing the purchasing power of the public, and as a result, people tend to make investments and spend in various ways. Lower interest rates also allow enterprises to take out capital investment loans. It boosts the firm's confidence by making large investments in emerging sectors and producing considerable profits (Felix & Claudine, 2008).

Open market operation

Under the market-based system of monetary management, open market operations are a major instrument of monetary policy. Essentially, monetary authorities employ open market operations to control the amount of money supply by regulating the cost and availability of credit in the banking system. The sale or purchase of qualified bills or securities in the open market by the CBN for the aim of affecting deposit money, bank reserve balances, the level of base money, and hence the overall level of monetary and financial conditions is referred to as open market operations (OMO). Treasury bills, treasury certificates, and development stocks with maturities of no more than three years are among the products traded. Banks who subscribe to the offer, via discount houses, draw on their reserve holdings at the CBN, lowering the total liquidity of the banking system and the bank's ability to create money through credit. However, the use of open market operations (OMO) is aimed at achieving significant monetary tightening given the continued upward spiral in the inflation rate, the growing pressure on the naira exchange rate, and the underlying growth of domestic liquidity resulting from the CBN's accommodation of the federal government's growing fiscal deficit.

Banks profitability

The profitability of a bank is commonly expressed as a function of both internal and external determinants. Because they are triggered from bank accounts such as the balance sheet or profit and loss account, the interior determinants are referred to as micro or bank specific determinants of profitability. Exterior determinants, on the other hand, are variables over which the bank's management has no control. These variables reflect the legal and economic environment, which might have an impact on the process and performance of a business. Furthermore, bank expenses are seen as a crucial predictor of bank profitability (Epure & Lafuente, 2012).

Empirical Review

Olarunfemi and Dotun (2008) used simple regression to analyze the impact of monetary policy on Nigeria's economic performance. According to the findings, there is a negative association between interest rates and GDP on the one hand, and inflation and GDP on the other. The study did not break down the influence of monetary policy on other sectors of the economy, such as the manufacturing sector. Onyeiwu (2012) used the ordinary least squares method to examine the impact of monetary policies on chosen macroeconomic variables such as GDP, inflation rate, and balance of payment between 1981 and 2008. His findings indicate that monetary policy has a favorable impact on GDP growth and the balance of payments but a negative impact on inflation rates.

Ogunlewe (2001) discovered that the determinants of bank profitability include reserve ratio, allowed credit expansion, stability securities, and exchange rate in a study of the monetary policy influence on bank profitability using data from Nigerian banks. Total deposits, treasury bills rates, and lending rates were also identified as predictors of bank profitability in the study.

Olweny and Chiluwe (2012) investigate the relationship between monetary policy and

private sector investment in Kenya by tracking the effect of monetary policy through the transmission mechanism to explain how investment reacted to monetary policy changes. The study uses quarterly macroeconomic data from 1996 to 2009, and the approach employs unit root and co-integration testing with a vector error correction model to investigate the dynamic relationship of the variables' short-run and long-run effects owing to an exogenous shock. According to the IS-LM model, monetary policy variables such as government domestic debt and treasury bill rate are inversely related to private sector investment, but money supply and domestic savings are positively associated to private sector investment. Based on the empirical findings, the paper reveals that tightening monetary policy by 1% reduces investment by 2.63 percent, whereas loosening monetary policy increases investment by 2.63 percent.

Udeh (2015) used the Zenith Bank Plc. experience to investigate the impact of monetary policy instruments on the profitability of commercial banks in Nigeria. The study used a descriptive research approach with time series data acquired from Zenith Bank Plc's public financial statements and the Central Bank of Nigeria Bulletin from 2005 to 2012. The data was analyzed using Pearson Product Moment Correlation methods, and the hypotheses were tested using the t-test statistic. They discovered that the cash reserve ratio, liquidity ratio, and interest rate had no substantial impact on the bank's earnings before tax. The report concluded that a variety of monetary policy measures have little impact on the profitability of Nigerian commercial banks.

Enyioko (2012) investigated the performance of Nigerian banks based on their interest rate policies. The investigation looked into two Nigerian banks. The relationship between interest rates and bank performance was investigated using regression and error correction methods. According to the report, interest rate strategies have not considerably benefited bank performance.

Alper and Anbar (2011) studied the bank-specific and macroeconomic factors of commercial bank profitability in Turkey from 2002 to 2010. Return on asset (ROA) and return on equity (ROE) are both used as proxies for bank profitability in the study. Using a balanced set of panel data and a fixed impact model, the results reveal that only the real interest rate is related to profitability in terms of macroeconomic variables. In other words, an increase in the real interest rate would boost the profitability of Turkish commercial banks.

Okoye and Eze (2013) investigated the effect of bank lending on the performance of Nigerian deposit-taking institutions between 2000 and 2010. It investigated the influence of lending rates and monetary policy rates on the performance of Nigerian deposit money institutions. The findings revealed that lending rates and monetary policy rates have a significant and favorable impact on the performance of Nigerian deposit money institutions. This implies that the lending rate and the monetary policy rate are accurate indicators of bank performance.

Between 1980 and 2008, Ajayi and Atanda (2012) evaluated the impact of monetary policy instruments on bank performance. The analysis found that monetary policies implemented throughout the study period were effective in increasing the volume of the economy. The results of the multiple regression analysis show that monetary policies have a considerable impact on bank performance. According to the findings, the liquidity ratio has a negative impact, while the interest rate and money supply are positively associated. According to their conclusions, the liquidity ratio and interest rate cause the economy's ineffectiveness. Due to the high interest rate, investors did not have access to funds to enhance their output.

Taiwo and Adesola (2013) explored the link between currency fluctuations and bank profitability. Profitability was defined by the authors in two ways: first, as the ratio of total loan loss to total loans, and second, as the ratio of bank capital to deposit. Their findings were relevant in two ways: (a) the tendency of banks to acquire excessive bad loans as a result of exchange rate fluctuations; and (b) bank capital levels could be substantially eroded as a result of deteriorating exchange rates. According to the authors, banks are expected to incur a reduction in profit due to uncontrollable swings in exchange rates.

Methodology
Research design
The research design presents the study structure and strategy investigation concerned in order to obtain answer to research questions. The specific structure of this useful guide is described as a research design. Based on the existing theoretical and empirical literature, descriptive and exploratory designs were adopted to evaluate the effect of monetary policy on banks performance

Sources of data
Secondary sources of data were used as the main methods of data collection. The relevant data for this study was obtained from the Central Bank of Nigeria (CBN) statistical Bulletin and the Central Bank of Nigeria (CBN) Annual Reports and Statements of Accounts (various years). The data were collected on annual basis from 1990 to 2020.

Techniques of data analysis
Ordinary least square of multiple regression are employed in this study to test and estimate the relevant equations. This study employs the following techniques in order to analyze the relationship that existed between monetary policy and performance of deposit money banks. They include Unit root and Autoregressive distributed lag(ARDL). The unit root test is engaged in order to ascertain the stationarity or non-stationarity of the variables under study. In order to achieve this, the study adopted Philip-Perron (PP) unit root test and error correction mechanism (ECM)

Model specification
For the purpose of this study, the empirical models for this study are specified in line with Modiglian-miller bank lending channel theories and loanable theory.

$$BPROF = f(MS, INTR, OMO)$$

The variables are linearized into ordinary least square model; $BPROF = b_0 + b_1MS + b_2INTR + b_3OMO + e$

Where;

b_0	=	Regression constant	

b_1-b_3 =   Regression parameters

e   =   Stochastic error term

BPROF   =   Banks profitability

MS   =   Money supply

INTR   =   Interest rate

OMO   =   Open market operation

The apriori expectations of the coefficients are stated below: $\beta2 > 0 < \beta1$ and $\beta3$. This means that increase in explanatory variables is expected to significantly and positively improve banks profitability

Results and findings

Table 1: Philip-Perron unit root test

Variables	At level	At 1st Difference	Order of integration
BPROF	-3.043952	-	1(0)
MS	-1.609323	- 4.603592	1(1)
INTR	-2.284411	- 4.193078	1(1)
OMO	-1.129039	- 3.9053954	1(1)

Source: Eviews 11.0 statistical software

Philip – Perron unit root test

Table 1 shows regression for the purpose of clarifying the result for the Philip-Perron unit root test. It was found that only BPROF exhibited no unit root process at various critical levels mostly at five percent level of significance and was found to be stationary at levels. In other words, variables such as INTR, OMO, MS were found to be non-stationary at their levels, at such, their null hypotheses of the presence of unit root cannot be rejected. However, these variables (INTR, OMO, MS) became stationary at their first differences, hence, their null hypotheses can be rejected.

ARDL F-bound testing approach

The F-test is used to determine the combined significance of the model's coefficients. Table 2 shows the lower and upper bounds of the ARDL F-bound test based on a 5% significance level. However, because this analysis is based on the traditional 5% significance level, the results in Table 2 show that monetary policy variables are jointly co-integrated with the dependent variable BPROF, implying that a long-run relationship exists. The estimated F-statistic of 34.46 at 5% significance level was discovered to be bigger than the ARDL lower (2.79) and upper (3.67) critical bound values. The value provided evidence of long-run co-integration between monetary policy variables (MS, INTR, OMO) and deposit money bank performance.

Table 2: ARDL F-bounds test

F-Bounds Test		Null Hypothesis; No levels of relationship		
Test statistic	Value	Signif	1(0)	1(1)
		Asymptotic: n = 1000		
F-statistic	34.46507	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual sample size	20	Finite sample: n = 30		
		10%	2.678	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Source: E-views 10.0 statistical software

Table 3: ARDL Long run form

Dependent variable: D(LBPROF)				
Selected model: ARDL (1,4,4,4)				
Variable	**Coefficient**	**Std Error**	**t-statistic**	**Prob**
LMS	0.320403	0.064545	4.964004	0.0157
LINTR	0.226475	0.048168	4.701822	0.0182
LOMO	1.099019	0.198329	5.541386	0.0116
C	-0.809181	1.164568	-0.694834	0.5371
EC=LBPROF-(0.3204*LMS+0.2265*LINTR+1.0990*LOMO-0.8092)				

Source: E-views 10.0 statistical software

ARDL long run form estimates

The long run coefficients must be estimated based on the results of the ARDL bound test. The long run coefficient quantifies the independent factors' long-run effect on the dependent variable. Long run estimates from the ARDL long run form in table 3 revealed that the independent factors have a combined substantial negative effect on bank performance in the long run. This suggests that a rise in these variables will have a major negative impact on bank performance in the long run. All else being equal, banks' profits will fall by 0.809 percent in the long term as monetary policy variables rise (ceteris paribus). However, everything else being equal, MS, INTR, and OMO will have a major beneficial impact on bank performance in the long run. In the long run, the relationship between monetary policy and bank performance was found to be positive and significant.

Table 4: ARDL short run dynamics result
Selected Model: ARDL(1, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LBPROF(-1)	0.365272	0.217948	1.675962	0.1923
LMS	0.045197	0.053273	0.848420	0.4585
LMS(-1)	0.038016	0.034836	1.091278	0.3550
LMS(-2)	0.020197	0.032770	0.616332	0.5813
LMS(-3)	0.213423	0.027704	7.703593	0.0045
LMS(-4)	-0.113464	0.033096	-3.428372	0.0416
LINTR	0.073423	0.018643	3.938299	0.0292
LINTR(-1)	0.045302	0.019417	2.333094	0.1019
LINTR(-2)	-0.032147	0.022561	-1.424911	0.2494
LINTR(-3)	-0.004837	0.017798	-0.271744	0.8034
LINTR(-4)	0.062008	0.015355	4.038177	0.0273
LOMO	-0.320177	0.085535	-3.743237	0.0333
LOMO(-1)	0.513602	0.146545	3.504740	0.0393
LOMO(-2)	0.232432	0.184986	1.256484	0.2979
LOMO(-3)	-0.310443	0.172361	-1.801123	0.1695
LOMO(-4)	0.582165	0.148921	3.909208	0.0297
C	-0.513610	0.900571	-0.570316	0.6084

R-squared	0.999960	Mean dependent var		10.29213
Adjusted R-squared	0.999744	S.D. dependent var		1.051380
S.E. of regression	0.016810	Akaike info criterion		-5.530764
Sum squared resid	0.000848	Schwarz criterion		-4.684391
Log likelihood	72.30764	Hannan-Quinn criter.		-5.365543
F-statistic	4644.956	Durbin-Watson stat		3.273414
Prob(F-statistic)	0.000005			

*Note: p-values and any subsequent tests do not account for model
selection.
ARDL short run estimates

The ARDL short-run estimates provided in table 4 revealed that the value of the intercept, -0.5136, revealed that when all other variables are held constant, bank performance will decline by 0.5136 percent. The analysis also revealed that the R2(R-squared) value, which measures the overall goodness of fit of the entire ARDL model, was significant. The R2 value of 0.999 represents this (99 per cent). This means that the independent factors accounted for almost 99.9% of the variation in the independent variable. Similarly, the high F-statistics value (4644.95) demonstrated that the whole

model is statistically significant. The overall importance of the ARDL short-run model means that all explanatory factors are equally important in explaining short-run variations in bank performance. Changes in the preceding lagged period, two previous lagged periods, and the previous three lagged periods of MS had a beneficial effect on bank performance. The assumption is that, all else being equal, a percentage rise in MS will boost bank performance in the short run. The ARDL findings also demonstrated that modifications in the present period of INTR had a beneficial influence on bank performance. The inference is that, all else being equal, a percentage rise in INTR will boost bank performance in the short run. Changes in the prior lagged period, on the other hand, had a beneficial effect on bank performance. The inference is that, all else being equal, a percentage rise in INTR will boost bank performance in the short run. The consequence is that, everything else being equal, a percentage rise in INTR will reduce bank performance in the short run. Changes in the prior four delayed periods of INTR also had a favorable influence on bank performance. The inference is that, all else being equal, a percentage rise in INTR will boost bank performance in the short run. Finally, the study found that changes in the current period of OMO have a detrimental impact on bank performance in the short run.

The assumption is that, all else being equal, a percentage rise in OMO will improve bank performance in the short run. Changes in the prior lagged period and the two previous lagged periods of OMO also had a favorable influence on bank performance. The inference is that, all else being equal, a percentage increase in OMO will improve the bank's profit in the short run. A change in three preceding delayed periods of OMO reduced bank profit. The implication is that, everything else being equal, a percentage rise in OMO will reduce bank performance in the short run. Furthermore, a change in four lagged periods of OMO had a positive influence on bank performance. The inference is that, all else being equal, a percentage rise in OMO will boost bank performance in the short run.

ARDL regression error correction (ECT)

The ECT coefficient indicates how quickly variables converge to equilibrium in the short run, and it should be statistically significant with a negative sign. The variable results demonstrate that the expected negative sign of the error correction term (ECT) was found to be significant. The highly significant ECT demonstrates the existence of a long-term stable and meaningful relationship. This confirms the long-run important relationship between monetary policy and bank performance, with its varied lags.

Table 5: Summarized f-test from the ARDL Wald coefficient restriction test
Source: E-view 10.0 Econometric Software

The f-test as summarized:	f-tab	Corresponding probability	Remarks
MS: C(2)=C(3)=C(4)=C(5)=C(6) {10.17}	± 2.08	0.0071	Significant
INTR: C(7) {5.36}	± 2.08	0.0375	Significant
OMO: C(8)=C(9)=C(10) {11.43}	± 2.08	0.0049	Significant

Test of hypotheses

Hypothesis one

H_0:   There is no significant relationship between money supply and banks profit

H_1:   There is a significant relationship between money supply and banks profit

From the table 5, it can be deduced that MS (10.17) is greater than 2.08 (extracted from the above table) which represent the t-value tabulated, implying that MS is statistically significant. Hence, the study upholds alternate hypothesis and concludes that there is a positive and significant relationship between money supply and banks profit.

Hypothesis two

H_0:   There is no significant relationship between interest rate and banks profit.

H_1:   There is a significant relationship between interest rate and banks profit.

From the table, INTR (5.36) is greater than 2.08 (extracted from the above table) which represent the t-value tabulated, implying that INTR is statistically significant. Hence, the study upholds alternate hypothesis and concludes that there is a positive and significant relationship between interest rate and banks profit.

Hypothesis three

H_0:   There is no significant relationship between open market operation and banks profit.

H_1:   There is a significant relationship between open market operation and banks profit.

From the table, OMO (11.43) is greater than 2.08(extracted from the above table) which represent the t-value tabulated, implying that OMO is statistically significant. Hence, the

study upholds alternate hypothesis and concludes that there is a positive and significant relationship between open market operation.

Discussion of findings

The study looked at monetary policy and bank profit in Nigerian deposit money institutions. In order to meet the study's stated aims and test hypotheses, empirical tests were used. At the levels used in the Philip-Perron unit root test, all of the explanatory variables were not stationary. Only BPROF, however, was immobile at the first difference. The ARDL bound test revealed the existence of a distinct cointegration and long run link between the model's variables. The ARDL F-bound test results demonstrate that monetary policy variables are jointly cointegrated with the dependent variable, indicating the existence of a long-run link, as evidenced by the estimated F-statistic of 34.46. The value is more than the upper critical bound of 3.67. The value demonstrated that independent variables and dependent variables have long-run cointegration. Changes in monetary policy had a negative influence on bank profits in Nigeria, according to an analysis of the ARDL short-run ECT estimates. R2(adj) has goodness of fit when the independent variables account for 99 percent of the variation on the independent variable. Changes in the prior lagged period, two periods, and three periods of money supply also had a beneficial influence on bank profit. Furthermore, the results revealed that INTR has a favorable effect on bank profit in the current era, whereas OMO has a negative effect. Furthermore, data revealed that changes in other periods differ between the independent variables and the dependent

variable. Some monetary policy factors have a positive influence on BPROF, whereas others have a negative influence. Furthermore, the speed of adjustment from short-run disequilibrium to long-run equilibrium is below average, indicating that the postulations grounded by theories have minimal existence.

Conclusion/recommendations

Based on the analysis of the results, it was discovered that money supply, interest rate and open market operation have positive effect on the performance of deposit money banks in Nigeria. Monetary policy is one of the major economic stabilization mechanisms that features measures designed to regulate and control the volume flow, cost, availability and direction of money supply in an economy which is used to achieve some specific macro-economic policy objective. The monetary policies aim at aiding the banking system, promote confidence in substance of reasonable banking services, standard of conduct and professionalism in banking industry. The central Bank of Nigeria (CBN) over the years have instituted various monetary policies to regulate and develop the financial system in order to achieve major macroeconomic objectives which often conflict and result to distortion in the economy. The role of the banking sector in the economic development of a nation cannot be overemphasized, it is the channel through which idle funds are made available to the productive sector. The monetary authority (CBN) controls the money supply and credit condition in the economy so as to achieve certain macroeconomic objectives including price stability, employment, sustainable, economic growth and balance of payment

equilibrium. In line with the findings, the study recommended that:

1. The government through the CBN to regulate money supply in a manner that will not hamper the cost of accessing loans and advances which is major source of income to deposit money bank.

2. Central Bank of Nigeria monetary policy rate should be structured in such a way that businesses and indeed the banking sector will be impacted positively.

3. Monetary authorities should reduce the monetary policy rate of deposit money banks as this will enable the customers to access loans and advances for increased productivity and expansion.

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