



Effect of Macroeconomic Variables on the Financial Performance of Deposit Money Banks in Nigeria

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ABSTRACT

The study investigated the effect of macro-economic variables on the financial performance of Deposit Money Banks (DMBs) in Nigeria. The specific objectives of the study are; to examine the effects of interest rate on the financial performance of deposit money banks, to evaluate the effects of inflation on the financial performance of deposit money banks and to ascertain the effects of exchange rate on the financial performance of deposit money banks. The study utilised ex-post facto research design in its time series using multiple linear regression analysis. The data sources for the study were from the annual financial reports of the selected banks in Nigeria, international monetary fund and World Bank from 2005 to 2019. The major findings of the study showed that exchange rate and interest rate were statistically significant to financial performance of deposit money banks, while inflation rate is statistically insignificant to the financial performance of deposit money banks. The study adopted Return on Equity (ROE) as proxy for financial performance while exchange rate, inflation rate and interest rate were macro-economic indicators for financial performance of deposit money banks. The study concluded that a significant relationship exists between macro-economic variables and banks' financial performance. The study therefore recommended that, banks should always take cognizance of macro-economic factor fluctuations; as its instability has the tendency to affect the financial performance of banks which consequently affects Return on Equity (ROE).

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INTRODUCTION

Understanding the crucial roles Deposit money banks (DMBs) play in economic growth and development of any economy is of utmost importance in studying macro-economic effects on its performance. It is, therefore, seen as the central nervous system of a market economy. Its major role of accepting deposits from customers on savings, current and all forms of deposits account and enhances transfer of funds from the surplus sector of the economy to the deficit units for production purposes. Consequently, achieving a higher performance by Deposit money banks (DMBs) has been a major concern for stakeholders, economists and policy makers alike. Nevertheless, the performance of the deposit money banks is proportionally influenced by macroeconomic shocks (Akeem A., Salawu A., & Pam D. F. 2021).

Bank managers are usually at a dilemma on how to balance shareholders who are stringent on profitability which has to do with their dividends and depositors who are also stringent with liquidity which has to do with their demand deposits and term deposit as the case may be. This is why effective management of macro-economic variables is highly imperative in corporate financial management which deals directly with liquidity and profitability of deposit money banks (Godswil, O., Ikpefan, A., Romanus, O., & Emoarehi E. 2017).

Thus, macro-economic is defined as the study of entire economy of a nation. However, there are macro-economic variables that hinder financial managers from achieving their optimal level of performance (profitability and operational efficiency). These factors include: interest rate, inflation rate and exchange rate etc. The chief goal of any organisation is to get maximum profit, which the financial managers want to maximize. Another important objective is to maintain the liquidity of a bank

(Toby 2006) inferred that failure of the banking institution to adjust to the macroeconomic variable shocks can be traced to the performance of some DMBs. For Instance, Nigerian economy is typified by macroeconomic policy instability, high risk concentration and liquidity crisis, a situation that threatens the existence of the commercial banks. Consequently, the central bank of Nigeria between 1994 and 2015 shuts down 49 DMBs. This was largely due to inability of the affected banks to meet up with the minimum paid up capitalization. This was further downsized to 25 by CBN (World Bank Group, 2016). As at 2020, the number of Deposit money banks (DMBs) stood at 33 (CBN). The poor performance of DMBs adversely affects economic growth, and worsening unemployment situation in Nigeria.

In the course of this study, some relevant questions naturally emerged

- i. To what extent does interest rate affect the financial performance of Deposit Money Banks (DMBs) in Nigeria?
- ii. Does inflation rate affect the financial performance of Deposit Money Banks (DMBs) in Nigeria?
- iii. To what extent does exchange rate affects the financial performance of Deposit Money Banks (DMBs) in Nigeria?

CONCEPTUAL FRAMEWORK

The success of any corporation is a function of its ability to generate adequate information about the macro-economic factors of the country where the corporation is located.

Macroeconomics is the study of the entire economy. It focuses on the behaviour of an entire economy's "big picture" which can be regional, national or international (Aghionet, 2011). Macro-economic (from the Greek prefix Makro-meaning "large" and economics) is a branch of economics dealing with the

performance, structure, behaviour, and decision-making of the entire economy, rather than individual markets. This applies to national, regional, and global economies. Snowdon and Vane, (2005) developed a model that explain the relationship between macroeconomics factors. These macro-economic factors include inflation, Gross Domestic Product (GDP), economic growth, level of education, employment level, unemployment levels, savings and investments, interest rates, legal, regulatory environment and risk. A study done in Kenya found that macro-economic factors had the greatest effects on the financial performance within the country's commercial banks. The study recommended that in order for the commercial banks to be effective in operation and service delivery, they should recognize the impact of macro-economics (Wainaina, 2013).

Macro-economic variables refer particularly to factors of overall importance to the position of countries economy both at the regional and national levels. These factors have an impact on a very high proportion of population (Sharma and Singh, 2011). Macroeconomic variables are majorly closely checked by businesses, governments and consumers as a result of their influence on overall performance of the economy. Kwon and Shin (1999) in their study concluded that GDP, interest rates, currency exchange rate, inflation, market risk and money supply are the most impactful macroeconomic variables. Mishkin (2004) defines macro-economic variables as the factors which are important to an economy as a whole. The GDP, unemployment, exchange rate and inflation were identified as the variables that have major influence on the economy.

Interest rate is the price paid by a debtor for the utilization of the funds borrowed. Interest rates are rarely stable, often changing with changes in the macroeconomic environment (Ali, 2014). Sill (1996) explains that interest rates react to situations in the international and domestic markets, national economic prospects and inflation. Nominal interest rate was a combination of real interest rate and inflation (Fisher 1930). As inflation rises investors demand higher returns to compensate them for the decrease in the value of their investment. Interest rate is considered as a crucial element affecting saving and investment, it is mostly recognised that the interest rate has a major impact on a country's saving and investment Akubo, Abdullahi and Suleman (2020)

Inflation rate is the rate at which the general price levels for products rises with the reduction in the currencies purchasing power. It is also a situation where few goods are purchased with too much money due to devaluation in currencies (Sharma and Singh, 2011). The consumer price index (CPI) is often used as an inflation proxy and it is used to measure the current price level relative to the base year selected. The CPI is used to measure changes in prices at retail level and further indicates the purchase price of goods and services used by private households (Subhani, Gul and Osman, 2010).

Exchange rate is referred to as the price of a country currency in terms of the other (Mishkin and Eakins, 2009). Exchange rate can either be a direct or an indirect quotation. A direct quotation refers to the amount of units of the foreign currency that could be purchase by a unit of home currency whereas an indirect quotation refers to the amount of foreign currency obtainable from a unit of the home currency (Howells and Bain, 2007). When exchange rate includes inflationary effects it is said to be nominal exchange rate, and is referred to as the real exchange rate when inflationary effects are excluded (Lothian and Taylor, 1997). Prior to 1972, nearly all countries in the world operated on a fixed exchange rate system whereby their individual countries' currencies had a fixed rate relative to US dollar.

Poor macroeconomic performance has the capability of endangering deposit mobilization and credit allocation by DMBs in the economy which can negatively affect its performance. Hence, Alaba (2002) suggests that macroeconomic variable such as interest rate has the aptitude of increasing or decreasing

lending behaviour of banks. This is expounded in the variation between the lending rate and deposit rate denoted as interest rate spread. Therefore, for DBMs to remain in business, Interest rate spread which facilitates the generation of sufficient revenue to cover their marginal cost and other associated costs of running day-to-day business has to be stimulated. With this in sight, Mirzaei, Moore and Liu (2013), noted that emerging banks can increase their profit through interest rate spread. Being a critical factor, this variable will decide the capacity and inclination of banks to demand and extend funds to the productive sector. Conversely, DMBs would adjust interest rate in order to raise revenue especially in emerging economies. In this regard also, Uboh (2005) opined that the banking sector crises of the 1980s and 1990s were blamed on the poor macroeconomic performance and the tough business environment of the period. Incidentally, studies have also shown that the profitability of the DMBs can also be impacted by inflation. In a study carried out by Revell (1979), he opined that salaries and other operating costs of the banks are functions of how inflations affect its profit margin. Thus, as inflation rate rises, salaries and operating costs rise. This, therefore, decreases bank's profitability. Consequently, banks can modify interest rates appropriately to drive profit if the inflation rate is fully anticipated.

Profitability: Profitability focuses on the relationship between revenue and expenses and on the level of profit relative to the size of assets, capital or investments in the business. Profitability also means obtaining an income from sales that should exceed expenses. Profitability is the capability of the bank to address associated risk in the process of increasing the capital. It is all about the efficacy of management and competitiveness amongst banks (Abu, Olukoga, Ibrahim and Id achaba 2020). What Management, shareholders & creditors consider profitability is not the same. Management considers it as an important input when planning the operations of the business, whereas creditors and shareholders look at profitability to determine the returns on their investment in the business and assess the risks of their investments, which may be affected by the industry structure and the nature of the competitive environment (Gitman, 1997). Management has some discretion over the level of investment in working capital and the financing of this investment, at any particular level of output; however this decision involves a risk-return trade-off (Madura and Veit, 1988). In the quest for profitability managers have to eliminate uneconomic investments (Uyemura and Kantor, 1997) and costly financing options to ensure value is created for the shareholders. Return on Equity (ROE) is one of the variables used in evaluating profitability. Return on Equity (ROE) indicates a company's profitability by measuring how much shareholders earned for their investment in the company. It exhibits how well the company has utilized the shareholders fund. ROE is calculated by dividing net profit by net worth and if the company's ROE turns out to be low it indicates the company did not use the capital invested by the shareholders efficiently.

Sharma and Singh (2011) opined that many commercial banks, which normally carry out their investment over a long duration of time usually, have an expectation that macro-economic variables will remain stable and favourable to their operations over the whole duration of their investment. Snider (2019) observed that, a country's economy affects the performance of its organizations and by extension the most influential macro-economic variables are GDP, currency exchange rate, interest rates, inflation, bank lending rates and market risk. Many researchers have focused on different variables. This study establishes the effects of macro-economic variables on the financial performance of selected banks in Nigeria.

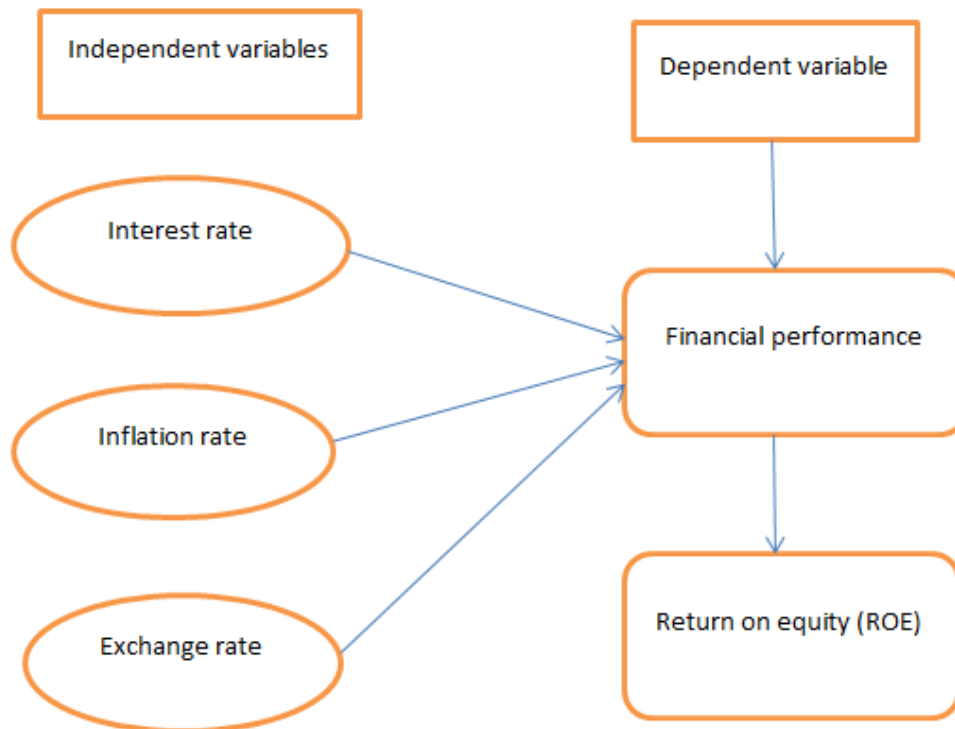
Conceptual Framework:

Figure1. Relationship between dependent and independent variables

Source: Researcher's computation, 2022

There are various macro-economic variables that affect the performance of Deposit money banks (DMBs). However, for the sake of this study interest rate, inflation rate and exchange rate are used as indicators to measure their effects on Deposit money banks (DMBs) while return on equity (ROE) will be used as proxy for financial performance of deposit money banks (DMBs) in Nigeria.

THEORETICAL FRAMEWORK**AGENCY THEORY**

The concept was propounded in 1976 by Jensen & Meckling. The concept has been in the frontline of firms' performance. The theory rests on the opinion that there exist a link between owners of businesses and the management (Mulwa, 2015). The theory postulates that agency conflict emerges from such relationship. The managers of firms are treated as agents given the responsibility of running the affairs of the firms by the stockbrokers in the form of a contract where they are expected to bring about high financial performance while increasing the wealth of owners (Waweru, 2013). In general, the managers are supposed to act in stockholders' best interests.

As regarding this research, agency theory is an important theory that provides intuitions on how banking performance in terms of return on equity (ROE) is predicted by the effectiveness and efficiency of bank management. The manner and way by which banking activities are taking care of by banks managers impacts on the financial performance of banks. Bank managers are naturally expected to enhance the value of shareholders. Managers as agents although, sometimes instead of maximizing the wealth of shareholders may sometimes be seen involving in some activities which are patterned towards

satisfying personal gain at the detriment of the shareholders. (Macharia, 2013). Such practices are in turn at the detriment of banking performance. However, stockholders can address these by adopting strategies which bring about financial reward as managers will be motivated to put in their best as regards to the banking operations (Waweru, 2013). However, threatening managers can also be used as strategies by the bank owners. Agency Theory therefore provides support for financial performance.

EMPERICAL LITERATURE REVIEW

Olowo, Edewusi and Dada (2020) examined the effects of selected macroeconomic variables on commercial banks performance in Nigeria. The study covered a period of 2000 to 2018, using annual time series data. The study employed ordinary least square (OLS) and formulated return on asset as dependent variable, while real gross domestic product, inflation rate, interest rate and money supply were the explanatory variables, denoting the sampled macroeconomic variables. The study revealed that all macroeconomic variable positively impacts commercial banks performance. Whereas, money supply and interest rate showed a significant impact, inflation and gross domestic product exhibited insignificant impact. Therefore, they concluded that there is a positive relationship between macroeconomic variables and banks performance in Nigeria. They however recommended that macroeconomic policies that will promote sustainable growth, business friendly and conducive environment that will enhance capacity utilization of industries so as to allow for high level of credit demand and absorption in the economy.

Bekalu & Abel, (2017) analyzed the determinants of profitability of selected private commercial banks of Ethiopia. Panel data were used to examine the bank-specific, industry-specific and macro-economic factors affecting bank profitability for six selected private commercial banks from the period 2001 to 2011. The regression result suggested that gross domestic product have positive coefficient and statically significant impact on banks' profitability measured by ROA. Inflation has shown a negative coefficient but, statically insignificant

Combey and Togbenou (2017) used Pool Mean Group estimator to examine short-run and long-run relationship between three main macroeconomic indicators (gross domestic product growth, real effective exchange rate, and inflation) and banking sector profitability (return on assets and return on equity). The output indicated that, in the short run, banks' return on assets and return on equity are not related to macroeconomic variables. While banks' return on assets is determined positively by bank capital to assets ratio and bank size, banks' return on equity is affected negatively by bank capital to assets ratio. In the long-run, real gross domestic product growth and real effective exchange rate were found to have negative and significant impact on banks' return on assets, while inflation rate has no significant effect. On bank's return on equity, in the long-run, results revealed that real gross domestic product growth, real effective exchange rate, and inflation exert negative impacts on bank's return on equity.

Rachael and Moses (2017) carried out a study to investigate the effect of macroeconomic variables on financial profitability of listed commercial banks in the Nairobi Securities Exchange (NSE) for years 2001 to 2012. Panel data analysis using Fixed Effects model was applied on the data to examine the effects of three major macroeconomic variables which are: Gross Domestic Product (GDP), Exchange rates, and interest rates on profitability of the listed commercial banks. The study findings indicated that real GDP growth rate had positive but insignificant effect to profitability of commercial banks as measured through Return on Assets (ROA). Furthermore, real interest rates had a significant negative influence on profitability of listed commercial banks in Kenya. While the exchange rate had a positive significant effect on the profitability of listed commercial banks on Nairobi Securities Exchange.

Belete, (2017) examined determinants of private commercial banks profitability in Ethiopia by using panel data of six private commercial banks from year 2002 to 2016. Secondary financial data were analyzed by using multiple linear regressions model. The empirical results showed that macroeconomic factors; level of GDP, and lending rate and exchange rate have a positive and strong influence on the profitability of private commercial banks in Ethiopia.

Ghurtskaia, (2018) studied Macroeconomic determinants of bank profitability: evidence from Georgia by taking data from 2003-2017 and regressed ROA with GDP, inflation, unemployment, foreign direct investment and Exchange rate and found that all these Macroeconomic factors have insignificant effect on banks profit.

Grilli, Mrkajic and Latifi (2018) carried out a study in Europe to examine the determinants of Private entities (PE) investments across 21 European countries between 10 year periods of 1997 to 2006. The study's empirical model included many of the macroeconomic determinants already tested in previous studies. However, first time variables were included to capture the institutional environment. Using a panel data technique of estimation, it was established that GDP growth, market capitalization, research and development expenditures and unemployment are the most influential macroeconomic determinants of European PE investments. The study also showed that early stage investments and funds raised are differently affected by institutional quality. Thus, while the index of economic freedom had a significant and a positive effect on funds raised by PE firms, it appeared a significant determinant of early stage PE investments. This review confirmed that there exists a relationship between GDP growth rate and PE firms' financial performance as earlier hypothesized in this study.

Kavwele, Ariemba and Evusa (2018) investigated the relationship between interest rates and financial performance of commercial banks in Kenya. To achieve the objective of the study they used regression model. In the model ROE was defined as the profitability indicator and found that there is a positive relationship between interest rates and financial performances of commercial banks. Thus companies should therefore prudently manage their interest rates to improve their financial performance.

So far, previous studies both in Nigeria and other countries like Kenya have been focusing on a single macro-economic variable. Studies by Kavwele, Ariemba and Evusa (2018), Maigua and Mouni (2016) both in Kenya focused only on interest rate while studies by Carolyn and Daniel (2016) focused on exchange rate both in Kenya. Studies by Nigerians who also used single macro-economic variables include. Amassoma and Odeniyi (2016), Ismaila (2016), Diala and Igwekalu (2016), Agbeja, Adalakun and Udi(2016), Takon, Nsofor and Ugwuegbe (2016). However, this study comprehensively examines the effects of selected macroeconomic variables (exchange rate, Inflation rate and interest rate) on Deposit money banks' financial performance in Nigeria. Empirical studies reviewed in this study; relating to macroeconomic variables and Commercial Banks' performance both in Nigeria and outside Nigeria left some gaps which we intend to fill. Therefore, this study tends to;

(i) Find out the effects of selected macroeconomic variables on Deposit money banks financial performance in Nigeria, using return on equity (ROE) as dependent variable while macroeconomic variables; Exchange rate and Interest Rate, as independent variables.

(ii) The study will therefore provide further verifications on the relationship between selected macroeconomic variables and Deposit money banks financial performance in Nigeria measured by return on equity (ROE)

METHODOLOGY

The methodology adopted has to do with the processes and procedures employed in accomplishing this study. It therefore spells out the nature of the research design, data collection methods, model selection/specification, diagnostic tests conducted and the analytical tools for data analysis.

This study adopts an ex-post facto research design. It is a time series study whose data is historical in nature and cannot be randomly assigned and thus, a quasi-experimental study or *ex post facto* research design according to Alleydog (2010), is adopted. Consequently, the independent variables will be regressed on the dependent variable. Alleydog (2010) further stressed that an ex post facto design is considered quasi-experimental because the subjects are not randomly assigned. They are grouped based on a particular characteristic or trait. This research approach is based on its advantages as supported by Babbie Muijs, (2010) for manipulating pre-existing statistical data using computational techniques. This study being quantitative in nature focuses on gathering numerical data, analysing and generalizing it across the variables of study to explain the observable facts concerning them. Unit root test is conducted to ensure stationarity of the time series data and some diagnostic tests were conducted to also ensure that data used conform to regression assumptions. The result of the group unit root test shows that all the data were stationary at first difference I(1) specifying the use of Auto Regressive Distributed Lag (ARDL) with an OLS method of analysis.

Model Specification

This study employed time series data and adopted an econometric model of multiple regressions to test for effect of the predictor macro-economic variables on the criterion variable (Bank performance). The model for the study was consequent upon the result of the unit root test. Thus, auto regressive distributed lag (ARDL) model was specified for the study. It is showing the dependent variable as a function of its lagged values and the current values of other exogenous variables, that is, a model with a first difference I(1) order of integration. From the long run and bound test, it has to be ascertained if the variables are found integrated or not, as such, only short or long-run ARDL model will be estimated.

Thus, the adopted generalized model for regression analysis is as follow:

$$Y_t = \gamma_{0j} + \sum_{i=1}^p \delta_j Y_{t-i} + \sum_{i=0}^q \beta_j X_{t-i} + \varepsilon_{jt} \dots \dots \dots (1)$$

Where;

Y_t = Dependent Variable at Time t

γ = Constant of the Equation,

δ and β = Coefficients of the Equation

p and q = Optimal Lag length associated with dependent and independent variables respectfully.

i = 1.....k

y_{t-i} = Lagged Value or lag length of Dependent Variable

X_{t-i} = Lagged Value or lag length of Independent Variable

ε_{jt} = Vector of the Error Term

The adopted regression model for this study based on the above model specification is as below for short-run equation:

$$\Delta Avroe_t = \alpha_1 + \sum_{i=1}^p \alpha_1 \Delta Avroe_{t-i} + \sum_{i=1}^q \alpha_2 \Delta Exchange_{t-1} + \sum_{i=1}^q \alpha_3 \Delta Inflation_{t-1} + \sum_{i=1}^q \alpha_4 \Delta Interest_{t-i} + \varepsilon_{jt}$$

.....(2)

Where;

Avroe = Average return on equity for the 5 banks – the dependent variable

Exchange = Exchange rate or foreign exchange rate – an independent variable

Inflation = Inflation rate –an independent variable and

Interest = Interest rate – an independent variable

$\alpha_1, \dots, \alpha_4$ = Various Coefficients of the Variables

Δ = Sign of Difference Operator for the Variables

ε_t = Vector of the Error Term

DATA ANALYSIS AND DISCUSSION OF RESULTS

This section is meant for various tests of diagnostic – Unit Root, Linearity, Multicolliniarity, Serial Correlation (Autocorrelation) and Heteroskedasticity, and so on. Analysis of the data is also performed alongside interpretation of results and the hypotheses were as well tested. Various results of the descriptive, diagnostic, unit roots and regression are presented below

Table 1. Descriptive Statistics

	AVROE	EXCHANGE	INFLATION	INTEREST
Mean	13.59975	13.59975	11.50847	7.568447
Median	15.09983	13.93875	11.51494	6.302702
Maximum	19.21032	18.00353	18.07490	18.87953
Minimum	4.156879	10.33662	5.314619	1.019273
Std. Dev.	4.378310	1.918032	3.342528	4.387648
Skewness	-0.911875	0.061656	0.215098	0.807687
Kurtosis	2.752442	2.599268	2.424671	2.333503
Jarque-Bera	8.468380	0.439480	1.290180	6.801644
Probability	0.074492	0.802728	0.524615	0.083346
Sum	815.9848	815.9848	690.5081	454.1068
Sum Sq. Dev.	1131.006	217.0520	690.5081	454.1068
Observations	60	60	60	60

Source: Excerpt from E-views12 Output, 2021

Table 1 is the descriptive statistics showing the mean, median, maximum, standard deviation, skewness and kurtosis of all the variables of study. It is meant to quantitatively describes or summarize features from the data used for this study.

Table 2. Unit Root Test (Group Test Summary) @ 1st Difference

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-13.1336	0.0000	4	229
Null:Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-13.1336	0.0000	4	229
ADF - Fisher Chi-s.886quare	133.886	0.0000	4	229
PP - Fisher Chi-square	140.975	0.0000	4	229
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Source: Excerpt from E-views12 Output

Table 4 shows summary of the group unit root test of the data for this study. The variables are shown at common and individual levels to have integrated at same order I(1) of 1st difference. This is means that the variables are all stationary at first difference, which gives a pointer to a test of co-integration. This is to say that with the null hypotheses of presence of unit root, their probability values being less than 1%, the null hypotheses are therefore rejected.

Table 3. Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey				Remarks
F-stat	0.768710	Prob. F (4,54)	0.5503	N Sig.*
Obs*R-squared	3.178555	Prob. Chi-square(4)	0.5284	N Sig.*
Scaled explained SS	18.57795	Prob. Chi-square(4)	0.0010	Significant

Source: Excerpt from E-views12 Output, 2021.

The summary result in table 3 shows the F-statistics probability value of 0.5503 with a corresponding observed R-square probability chi-square value of 0.5284 are both greater than the 5% level of significance. Hence, the study failed to reject the hypothesis of no Heteroskedasticity. The results thus, indicated that the data for analysis are all homoscedastic.

Table 4. Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test				Remarks
F-stat	0.114201	Prob.F(1,53)	0.7367	N Sig.**
Obs*R-squared	0.023244	P.Chi-Square(1)	0.7217	N Sig.**
Durbin-Watson = 1.992020 (*Absence of Autocorrelation)				

Source: Excerpt from E-views12 Output, 2021.

The table 4 indicates a Durbin-Watson value of 1.992020 with non-significant probability values of F-statistics and Chi-square of (0.7367) and (0.7217) respectfully. Having a null hypothesis of no serial correlation, we fail to reject the null hypothesis considering the results of the F-stat and chi-square of (0.7367) and (0.7217) which are greater than the 5% level of significance. More so, the Durbin Watson value of 1.9920 clearly signifies that there were no cases of serial autocorrelation.

Table 5. Multicollinearity Test: Variance Inflation factors

Multicollinearity Test				
Variable	Coefficient Variance	Unmetered VIF	Centred VIF	Remarks
AVROE (-1)	0.005129	11.98642	1.126824	Absence of Multicollinearity
EXCHANGE	5.155651	300.9984	1.214672	Absence of Multicollinearity
INFLATION	0.014332	23.14972	1.720545	Absence of Multicollinearity
INTEREST	0.006336	5.649145	1.357851	Absence of Multicollinearity
C	24.21005	278.6697	NA	NA

Source: Excerpt from E-views12 Output

Table 5 shows in summary the variables of study, the coefficient variances, un-centred VIFs, centred VIFs and remarks. The result showed VIF values for all the variables at less than 2.5, which indicated that there was absence of multicollinearity among the variables

Table 6. Lag length criteria Summary - (VAR Lag Order Selection Criteria)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-540.4980	NA	3277.591	19.44636	19.59102	19.50244
1	-358.5382	331.4268	8.754957	13.51922	14.24256	13.79966
2	-161.3577	330.9815	0.013681	7.048490	8.350502	7.553277
3	-84.94984	117.3407	0.001619	4.891066	6.771750	5.620203
4	810.8962	1247.786*	3.82e-17*	-26.53201*	-24.07265*	-25.57852*

* indicates lag order selected by the criterion

Source: Excerpt from E-views12 Output, 2021.

Table 6 illustrates summary of the lag length criteria for reason of co-integration test and subsequent Variance Autoregressive (VAR) estimation Model. The table indicates a lag order selected by the criterion as 4 by the asterisk sign (*) on the entire criterions (LR, FPE, AIC, SC, HQ) in roll of 5.

Table 7. Heteroskedasticity – Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistics	1.253577	Prob. F(12,43)	0.2804
Obs R-square	14.51346	Prob. Chi-Square(12)	0.2691
Scaled exp SS	19.48188	Prob. Chi-Square(12)	0.0775

Source: Excerpt from E-views12 Output

Table 7 shows the F-statistics probability value of 0.2804 with a corresponding observed R-square probability value of 0.2691 and are both greater than the 5% level of significance. Hence, the study failed to reject the hypothesis of no Heteroskedasticity. The results simply indicated that the data for analysis are all homoskedastic.

Table 8. Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 4 lags			
F-statistics	0.389691	Prob. F(4,39)	0.8147
Obs R-square	2.152208	Prob. Chi-Square(4)	0.7078
Durbin Watson	1.992020		

Source: Excerpt from E-views12 Output, 2021

The summary of Breusch-Godfrey Serial Correlation LM result in table 8 indicates a Durbin-Watson value of 1.9920 with non-significant probability values of F-statistics and Chi-square respectfully. With a null hypothesis of no serial correlation, this study failed to reject the null hypothesis considering the results of the F-stat of 0.8147 and chi-square (X^2) of 0.7078 both greater than the 5% level of significance. In summary, the Durbin Watson value of approximately 2.0 alongside the F-statistics and Chi-square values clearly signifies that there are no cases of serial autocorrelation

Table 9. Long-run form and Bound Test

F-Bound Test Null Hypothesis: No level relationship				
Test Statistic	Values	Significance	I(0)	I(1)
F-Statistic		10%	2.72	3.77
	1.6230980	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61
t-Bound Test Null Hypothesis: No level relationship				
t-Statistic		10%	-2.57	-3.46
	-2.240848	5%	-2.86	-3.78
		2.5%	-3.13	-4.05
		1%	-3.43	-4.37

Source: Excerpt from E-views12 Output, 2021.

Table 9 shows the result of the bound test, with the values of F-stat and t-stat. The F-value been equal to 1.6230980 and less than 2.23 of 5% significance at I(0) bound. Also less than the 4.35 of 5% significance at I(1) bound. Similarly, the t-stat absolute value of (-2.212833) is less than 5% significance at I(0) and I(1) bounds. These indicate absence of co-integration in this study model

Table 10. Summary of ARDL – Least Square Method

Variables	Coefficient	Strd. Error	t-Statistic	Prob
AVROE(-1)	0.226082	0.129653	1.743754	0.0883
EXCHANGE	-353.6034	68.31540	-5.176043	0.0000
EXCHANGE (-1)	987.9948	197.8600	4.993404	0.0000
EXCHANGE (-2)	-917.9660	194.9565	-4.708568	0.0000
EXCHANGE (-3)	284.1356	65.38409	4.345638	0.0001
INFLATION	-0.017778	0.159854	-0.111212	0.9120
INFLATION (-1)	0.191132	0.174130	1.097639	0.2785
INFLATION (-2)	0.055792	0.156194	0.357196	0.7227
INFLATION (-3)	0.057141	0.156394	0.365368	0.7166
INFLATION (-4)	-0.397474	0.133460	-2.978233	0.0047
INTEREST	-0.224407	0.103096	-2.176675	0.0350
INTEREST(-1)	0.181090	0.101944	1.776357	0.0827
C	5.065910	4.715232	1.074159	0.2887
R-Square = 0.891172 F-statistics = 29.34332				
Adj. R-Square = 0.860802 Prob. F-statistics = 0.000000 Durbin-Watson stat = 1.890695				

Source: Author's Excerpt from E-views12 Output

Table 10 shows that the lagged value of the dependent variable (AVROE) is not statistically significant, though with a positive coefficient value. The current value of exchange rate and the lagged values are all statistically significant with a negative coefficient for only the current value and lag 2. All values of inflation rate are statistically insignificant with only the current value having a negative coefficient. This shows that inflation rate even not statistically significant, its current value affects performance of banks negatively. Similarly, current value of interest rate has significant probability and a negative coefficient values. Whereas, the lag value is statistically insignificant with a positive co-efficient.

SUMMARY OF FINDINGS

Return on Equity used as dependent variable is not statistically significant with a p- value of (0.0883)

1. Exchange rate is statistically significant at p-value of (0.0000) and all the lag values are statistically significant. The current value has a negative co-efficient of (-353.6034) signifying that financial performance of Deposit Money Banks (DMBs) in Nigeria has been negatively influenced by exchange rate.
2. Inflation rate is statistically insignificant at p-value of (0.9120) the lagged values are statistically insignificant. The current value of inflation has a negative co-efficient value of (-0.017778) signifying that inflation rate has a negative influence on the financial performance of Deposit Money Banks (DMBs)
3. Interest rate is statistically significant at p-value of 0.350 with negative co-efficient of (-0.224407)

CONCLUSION

Based on the findings of this study, it can be concluded that a significant relationship exists between financial performance of Deposit Money Banks (DMBs) and exchange rate as well as interest rate but inflation rate has an insignificant relationship with performance of Deposit money banks (DMBs)

Return on Equity (ROE) was adopted as proxy for financial performance of Deposit Money Banks while exchange rate, inflation rate and interest rate were adopted as proxies for macro-economic variables. Specifically the study concluded that, exchange rate current value is statistically significant with a negative effect on the financial performance of Deposit Money Banks (DMBs). The study also concluded that, inflation rate is not statistically significant but its current value negatively affects the financial performance of Deposit Money Banks (DMBs). More so, the study concluded that interest rate is statistically significant with negative effects on the financial performance of Deposit Money Banks (DMBs).

The study is limited to its scope that is studying; macro-economic variables and its effect on the financial performance of Deposit Money Banks in Nigeria from 2005 to 2019, the information used were gotten from annual financial report of the selected banks, international monetary fund (IMF) and World Bank.

RECOMMENDATIONS

In the light of the above summary of findings and conclusion of the study, the following recommendations have been made.

1. Banks should always take cognizance of exchange rate fluctuation as its instability has the tendency to affect the financial performance of banks which in turn affects Return on Equity(ROE)

2. The central bank of Nigeria (CBN) and other regulatory agencies should always have a check on the flow of currency in the circulation as excess currency will lead to inflation which in turn will affect the performance of Deposit money banks in Nigeria (DMBs).
3. The regulatory authorities should review interest rate as at when due in order to motivate productive activities and improving real gross domestic product (RGDP). These will lead to effective and improvement of financial performance of Deposit Money Banks in Nigeria.

In general the government through the regulatory authorities should come up with policies that create conducive atmosphere for Deposit money banks (DMBs) to operate in since an improved financial performance of Deposit money banks (DMBs) in Nigeria will translate into economic growth and development in Nigeria.

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