

Macro-economic Variables and Bank Performance in Nigeria: Fourth Republic Perspective

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Abstract:

Purpose:

The vagaries of the macroeconomic variables make the business environment unpredictable, and this often portends mammoth implications for various businesses, primarily critical businesses such as banking, which the successive governments within the Fourth Republic have strived to protect jealously. Therefore, this study assessed the impact of macroeconomic factors on the performance of Nigerian banks from 1999 to 2021.

Methodology:

Data for the study period came from the World Bank reports and the CBN and SEC Statistical Bulletins. An ARDL (Autoregressive Distributed Lag) model was employed to evaluate the data.

Findings:

Lending interest rates had a negative and statistically insignificant impact on the performance of Nigerian banks with a coefficient of -0.0422 (p-value = 0.3860 & gt; 0.05), in contrast to the unemployment rate, which had a negative but statistically significant impact with a coefficient of -0.0534 (p-value = 0.0012 & gt; 0.05).

Implication:

Lending interest rate and unemployment rate impeded banks' performance, gross domestic savings, GDP per capita income, and exchange rate facilitated banks' performance in Nigeria.

INTRODUCTION

Any economy's development and growth depend heavily on banks. As a result, it is referred to as the brain of a market economy. Their primary function in deposit mobilization is facilitating the flow of surplus funds from household units to the economy's productive sector. Moreover, banks perform these roles of deposit mobilization and credit extension within the macroeconomic environment. Considering the vagaries of the Nigerian macroeconomic environment, it is needless to emphasize that Nigerian banks' operations occur in a turbulent macroeconomic environment that may impact their performances. Hence, a weak macroeconomic environment or performance tends to incapacitate the banks from performing their mandates and endangers deposit mobilization and credit allocation activities.

The Nigerian economy, within which banks operate, suffers from macroeconomic instability. Interest rate, which is predominantly the source of income for banks, is not stable and is subject to market demand and supply forces and the monetary policy direction of the CBN; incidentally, the Monetary Policy Rate, which is the anchor rate, has witnessed adjustment twice in 2022 alone by the Central Bank of Nigeria's Monetary Committee, in response to the ravaging inflationary pressure; firstly from 11.5% to 13% in May (Emejo & Ekeghe, 2022), and from 13% to 14% in July (Olawoyin, 2022). Worse still, inflation is hovering around 19.64% on a year-on-year basis as of July 2022, remains the highest in a decade and represents about a 26% increase from the 15.60% inflation rate as of January 2022 (National Bureau of Statistics [NBS] 2022). Similarly, the exchange rate fluctuates and suffocates daily in Nigeria due to the nefarious activities of black marketers and speculators. The exchange

rate of Naira to Dollar as of August 19, 2022, is N685 in the parallel market (Onye, 2022), and this represents about a 19% increase from N575 per Dollar on January 1, 2022 (Adegbesan, 2022). All these macroeconomic indicators directly affect businesses, including banking, and impact banks' performance.

Furthermore, Studies have also revealed that macroeconomic factors like inflation can impact how profitable DMBs are (Adetokun et al., 2021). Additionally, Ejem et al. (2020), referencing Adler and Dumas (1980), demonstrated that banks' actions are subject to exchange rates since asset value volatility depends on exchange rates. Sayedi (2013), however, stated that in the absence of stable interest rates, domestic and international investors will shun the market, and resources will be directed elsewhere. According to economic evidence of investment behavior, uncertainty, and macroeconomic instability have a significant and negative impact on private investment in addition to traditional determinants like historical economic activity growth, actual interest rates, and private sector credit.

Statement of the Problem. The empirical analyses of the relationship between Nigerian banks' performance and the behavior of macroeconomic indicators are not new in the literature. Indeed, quite a great deal of research has been conducted in this area, with conflicting results reported based on existing authors' research approaches and strategies. It is, however, instructive that a preponderance of the existing studies over-concentrate on measuring the performance of the banks with financial ratios such as returns on asset, return on equity, and returns on capital employed with attendant neglect of other performance metrics (Popoola & Sunday, 2019; Anshu & Ghakhar, 2019; Adetokun et al., 2021; Ejem et al., 2020). Although authors like Adiga et al. (2020) measured banks' performance with net interest margin while Ani, Ugwunta, and Imo (2012), as well as Floyd (2020), considered return on equity as a measure of banks' performance, none of the existing studies, to the best of my knowledge, has measured banks' performance with absolute naira value of profit before or after tax which is another recommended, quick, crucial and efficient indicators of banks' performance according to NDIC (2018).

Furthermore, existing studies have excessively focused on a handful of the macroeconomic variables such as inflation rate, exchange rate, interest rate, and GDP (Ejem et al., 2020; Adetokun et al., 2021; Anshu & Ghakhar, 2019), whereas there are other macro-economic variables such as GDP per capita income, gross domestic savings, and unemployment rate which are crucial and equally influence banks performance. Thus, the literature is replete with measuring banks' performance with the outcome of ratio analysis and some preferred macroeconomic indicators. However, these metrics need to be improved in terms of multiple definitions and subjective interpretations, thereby distorting the true wealth of the banks. Consequently, to fill the preceding gaps, the present study digresses from the trends in the existing studies. It measures banks' performance with total loans and advances granted to various sectors of the economy. Also, against what is popular in the literature, macroeconomic indicators, such as GDP per capita income, gross domestic savings, employment rate, and lending interest rate, are considered in this study. Following the problems above, this study raises the following questions to aid the investigation of the effect of macroeconomic variables on banks' performance in Nigeria: What is the effect of interest rates on banks' performance in Nigeria? How does GDP per capita income affect banks' performance in Nigeria? How does the unemployment rate affect banks' performance in Nigeria? How do gross domestic savings affect banks' performance in Nigeria? What is the relationship between the exchange rate and banks' performance in Nigeria?

H01: Interest rate has no significant effect on banks' performance in Nigeria

H02: GDP per capita has no significant effect on banks' performance in Nigeria

H03: Unemployment rate has no significant effect on banks' performance in Nigeria

H04: Gross domestic savings have no significant effect on banks' performance in Nigeria

H05: Exchange rate has no significant relationship with banks' performance in Nigeria

So many banks operate in Nigeria's financial landscape, and numerous macroeconomic indicators abound in the Nigerian economy. However, in the interest of this study, attention is focused on the Deposit Money banks,

the most significant form of banks in Nigeria. In addition, among the prevalent macroeconomic variables, GDP per capita income, interest rate, unemployment rate, and gross saving deposit are the focus of this study from 1999 to 2021. This period is chosen based on the availability of data and the time frame within which this study has to be concluded.

Literature Review, Conceptual Review Macro-economy and Macro-economic Variables. According to Anshu and Ghakhar (2019), macroeconomics studies a country's economy. It is accomplished by evaluating an economy's overall performance by looking at a few macroeconomic variables. It discusses seasonal patterns in the gross domestic product, price level, currency rate, interest rates, money supply, budget deficit, and unemployment, among other things. Indeed, macro-economy is concerned with managing the entire economy, which affects every sector over which no single person has control. These scholars further posited that When Adam Smith published "The Wealth of Nations" in 1776, along with David Ricardo (1772–1823), Thomas Robert Malthus (1766–1834), and John Stuart Mill (1806–1873), microeconomic and macroeconomic behavior were not thought to be distinct until the 1930s. The traditional school of thought in economics held that the market would automatically interact with pricing flexibility to react to any disruption.

The state of macro-economy is usually revealed by some indicators known as macro-economic variables, which, according to Adidu and Olanye (2006), remain outside the control of any business organization, including political, supplier, competitor, social, and economic regulations. Along this line, Kwon and Shin (1999) argued that GDP, exchange rate, interest rate, inflation, and market risk are critical macroeconomic variables. Some of these factors are the output of an economy, unemployment, inflation, savings, and investment. Buttressing the preceding, Khalid et al. (2012) attested that these factors are the primary performance driver of an economy and are closely examined by each government, while Mankiw and Ball (2010), Broadstock et al. (2011) and World Bank Group (2015) affirmed that GDP, Exchange rate, CPI, interest rates, corporate tax, stock market index, and other monetary regulations were continuously utilized to judge the macroeconomic indicators.

In addition, Brinson et al. (2009), while providing insight on macro-economic variables and in confirmation of the position maintained earlier by Adidu and Olanye (2006), viewed Macro-economic variables are those that pertain to a national economy and have an impact on the entire region rather than just a few chosen people. Significant factors identified by the study included inflation, the GDP, interest rates, currency exchange rates, the legal system, and regulatory framework risk. According to Sharma and Singh (2011), most enterprises typically consider macroeconomic variables' stability and favorability while making financial decisions over a more extended period. From the views reviewed so far, it is apparent that the importance of macro-economy must be emphasized, and numerous macroeconomic indicators can reveal the condition of a macro-economy. However, this study concerns interest, unemployment, exchange rates, GDP per capita income, and domestic savings.

Relating interest rates to banks' performance, According to Enyioko (2012), interest rate policies have had a minimal impact on the economy's expansion and have not significantly benefited the overall performance of banks. Because banks' profit before tax serves as a stand-in for their performance in this study, the interest rate is measured as one of the macroeconomic factors. Moreover, connecting exchange rates to banks' performance, according to Adiga, Haruna, Yua, and Adigwe (2020), the fluctuation of foreign currency rates is a potentially fascinating aspect that influences deposit money banks' level of profitability by impacting their financial intermediation process. Changes in exchange rates could pose a danger to both a business and a bank that accepts deposits. Considerable losses in foreign exchange can cause businesses to fail and burden profitability tremendously. As a result, Lagat and Nyandema (2016) and Taiwo and Adesola (2013) found a link between exchange rate volatility and financial performance and that this association could put deposit money institutions' profitability at risk. Hence, this study measures the exchange rate to assess its effect on total loans and advances to measure banks' performance. From the preceding attestations that exchange rate has a connection with banks' performance, there is a need to carry out the present study to properly understand the nature of the relationship

between exchange and banks' performance in the context of measuring banks; performance with on total loans and advances.

In addition, between 2015 and 2019, the gross savings by the deposit money banks amounted to N11,458.13bn, N12,320.23bn, N12,965.06bn, N15,316.02bn, and N17,301.03bn respectively. Compared to their total assets, they represent 40%, 38%, 37%, 40% and 42% of the banks' assets respectively (CBN, 2019). Also, between 2020 and 2021, gross domestic savings increased by about 23% from N20,841.84bn to N25,648.26; in the same vein, total credits granted by the banks during the same period moved up by 19% from N20,373.43bn to 24,378.19bn (CBN, 2021). The preceding implies that savings are a notable ingredient that propels banks' performance because, without savings, there would be nothing for the banks to lend; by implication, no interest incomes can be earned without savings deposits with the banks. Hence, any significant fluctuation in the volume and quality of national savings (which is usually caused by interest rates occasioned by the monetary policy as well as market forces) tends to affect the banks' ability to grant credits to customers, and this would by extension, impact negatively on the performance of the banks in terms of decline in profitability occasioned by decline in credit extension. It is because investment by the banks and other investing public is a function of saving deposits received. Consequently, a decline in savings implies a decline in banks' investment in lending and taking positions in other safe securities. Thus, this study evaluates gross savings about banks' performance to understand its effect on the performance of banks in Nigeria.

Also, according to Salami (2021), while the industrial sector's employment output is still unattractive, the unemployment rate is predicted to reach nearly 40% by the end of 2021. He further submitted that youth unemployment is presently at 40%. Theoretically, a high unemployment rate affects all sectors of the economy and brings about a lull in business activities by lowering purchasing power and demand for goods and services. With youth employment at 40%, jobless youths need help to think about opening bank accounts and having security to guarantee borrowing from banks. To this end, an empirical investigation must be carried out to unravel the true nature of unemployment on banks' performance as measured by total assets, deposits, loans, and profit before the banks' tax.

Moreover, Salami (2021) estimates that the inflation rate was 17.38% in July 2021, up from 16.5% in January 2021, and that food prices were up 21.03%. Therefore, Uboh (2005), quoted by Adetokun et al. (2021), argued that research has also indicated that inflation can impact the DMBs' performance. As a result, Revell (1979) remarked that how inflation affects a bank's profit margin impacts the bank's salaries and other operating costs. Therefore, as inflation rates rise, salaries and operational costs may reduce the bank's profitability. On the other hand, if the inflation rate is fully anticipated, banks can adjust interest rates to maximize profit.

Furthermore, although inflation and bank performance are positively correlated, according to studies by Bourke (1989) and Molyneux and Thornton (1992), there is a need to corroborate or contradict the preceding position, which accounts for while one of the objectives of the present study is aimed at investigating the effect of inflation on profit before tax, total assets, total mobilized deposit and total loans granted, unlike previous studies. Also, the literature has uncertainty in the relationship between rising GDP and bank operational costs. According to Bolt et al. (2012), unfavorable economic conditions, such as slower GDP growth rates, may lead to declining deposits, loans, and the costs associated with managing them. These circumstances might make recovering loan payments more expensive. This study thus becomes imperative to reveal the connection between GDP per capita income and banks' performance, which, unlike the existing study, is measured by profit before tax, total assets, total mobilized deposits, and total loans granted by the banks.

Theoretical Framework, Market Power Model. This study also directly affects the Bikker and Boss (2008) built the Market Power Model. The Bikker and Boss model heavily references the broad profit maximization theory. According to the market power model (Bikker & Boss, 2008), changes in the environment and competitor behavior impact how healthy banks perform. The study considers the structure conduct performance (SCP) and efficient-structure (EFS) hypotheses, two variations of the market power model. According to the Structure-

Conduct-Performance (SCP) paradigm, if there is no industry-wide collusion, bank profitability should decline as market concentration (HHI) increases. However, if bank earnings are rising together with industry concentration, it follows that businesses are working together to maximize oligopoly profits. According to the Structure-Conduct-Performance (SCP) model, market structure impacts bank behavior and profitability. Banks are more inclined to engage in collaborative conduct, and their oligopoly rents boost profitability in a more concentrated market (Bikker & Bos, 2008). The market power model is enough to explain the relationship between the performance of banking institutions and their macroeconomic surroundings in Nigeria because banks operate within the macroeconomy.

Empirical Review. Macroeconomic variables and the performance of Nigerian deposit money banks from 1989 to 2018 were examined by Ejem et al. (2020). Returns on assets were used as a proxy for banks' performance, so the gross domestic product rate, interest rate, inflation rate, money supply, and exchange rate were chosen as independent variables. The Generalized Method of Moment and Vector Error Correction Model was used to estimate the required model. It was discovered that none of the selected macroeconomic variables had a discernible impact on banks' performance and that neither the variables' individual nor collective effects on banks' performance—in the short and long terms—could be attributed. Furthermore, the study discovered that bank performance was not significantly impacted in response to the shocks of any chosen macroeconomic factors based on the impulse response estimation. This study, however, did not measure bank performance in terms of loans and advances as done in the present study.

From 1985 through 2019, Adetokun et al. (2021) investigated the impact of specific macroeconomic variables on the performance of Nigeria's deposit money institutions. Return on Asset (ROA) was used as a proxy to quantify the performance of deposit money institutions, with interest rate, money supply, inflation rate (INF), and actual gross domestic product (RGDP) serving as the independent variables. Thus, in comparison with the work of Ejem et al. (2020), this study excluded the exchange rate from their estimated model. Data were collected from the secondary source and analyzed using the vector error correction method. The findings indicated that while money supply and actual gross domestic product hurt return on assets, interest and inflation rates showed favorable associations with return on assets. Thus, it was determined that interest and inflation rates influenced bank performance over time more than money supply and real GDP.

Anshu and Ghakhar (2019) assessed the impact of macroeconomic variables on the financial performance of the Indian banking sector from 2000 to 2017. Return on assets was the proxy for banking sector performance as a dependent variable, and inflation rate, GDP, interest rate, and exchange rate were the independent variables proxies for macroeconomic variables. Data were sourced from secondary sources such as the Handbook of Indian Statistics, the National Statistics portal, the Federal Reserve Bank, the World Bank, and Indian Trading Economics. Analysis of the collected data was done via multiple regression and descriptive statistics. Findings revealed that the inflation rate and interest rate positively and significantly affected the returns of assets of the banking sector.

On the other hand, GDP was also positively related to returns on assets, but its coefficient was insignificant. The exchange rate was, however, negative and significantly related to the return on assets. The study, however, needed to incorporate the exchange rate, unlike the present study, which takes cognizance of the effect of the exchange rate concerning the foreign exchange transactions of the banks in Nigeria.

Abisomwan (2018) studied the nexus between macroeconomic performance and banking Industry performance in Nigeria. A survey research design was adopted in the study while questionnaires were administered to collect primary data from 120 bank branches with a customer base of about 2400 in Nigeria. Data analysis was done using the Generalized Method of Moments technique, while hypotheses testing was done at a 1% significance level. Findings showed that macroeconomic performance positively impacted the financial performance of the Nigerian banking industry, while performance was found to be significantly predicted by sex and employment status, such that female managers appeared more profitable than their male counterparts; also, it was found that the higher the status of employment of the managers, the better their abilities to drive their banks' profitability. This submission thus aligns partially with that of Anshu and Ghakhar (2019), that macroeconomic variables are

strategic to the adequate performance of the Nigerian banking sector, and disagrees with Ejem et al. (2020), who submitted that macroeconomic variables had no significant effect on banks performance.

Another helpful insight was provided in the study of Chidozie and Ayadi (2017) on the relationship between Macro-economy and Banks' Profitability in Nigeria. The CBN's Statistical Bulletin of various editions was used to collect the data, which was then analyzed using a panel regression technique. The results showed that total assets were favorably significant in predicting return on average equity as a proxy for banks' profitability. In contrast, the cost-to-income ratio, market concentration, and crude oil price adversely affected returns on average equity. Based on these findings, it was advised that due to the significant impact of crude oil prices on banks' profitability, banks' exposure to the oil and gas sector merits special attention.

The impact of specific macroeconomic variables on the profitability of deposit money banks in Nigeria was explored by Adiga, Haruna, Yua, and Adigwe (2020). Multiple linear regression was specified for the study in which net interest margin as a measure of banks' profitability was expressed as a function of selected macroeconomic variables such as exchange rate, inflation rate, interest rate, and Gross Domestic Product. Data were collected from the secondary sources. Analysis of the data was done via ordinary least square multiple regressions to analyze the data; results showed that all the selected macroeconomic variables were not significant predictors of Net interest margin. It was therefore concluded that the selected macroeconomic variables were not significant predictors of the Nigerian deposit money banks' profitability for the period covered by the study.

Popoola and Sunday (2019) looked into how the financial performance of deposit money banks in Nigeria from 2005 to 2014 was influenced by firm-specific characteristics and macroeconomic factors. Random effects were used with the multiple-panel regression approach to evaluate the data and estimate the given model. The findings showed that while Capital Strength was found to have been weak, bank-specific features like Fund Source, Loan Quality, Liquidity, Management Quality, and Direction of Efforts considerably improved the financial performance of the banks. Additionally, it was discovered that the annual loan rate, inflation, and economic growth were all important variables that affected the financial performance of deposit money banks in Nigeria throughout the study. However, the submission in this study contradicts the one made by Adiga, Haruna, Yua, and Adigwe (2020), who submitted that macroeconomic variables had no significant effect in predicting banks' performance in Nigeria.

Between 2005 Q1 and 2020 Q3, Floyd (2021) evaluated the impact of macroeconomic factors on the asset positions and financial performance of non-banking financial institutions (NBFIs) in Jamaica. Quantitative information was gathered from secondary sources, and the autoregressive distributed lags model's cointegration and error correction models were used to analyze the data. The findings indicated that actual gross domestic product and the unemployment rate had positive long-term relationships with return on assets; additionally, interest rates and stock market growth had positive long-term relationships with return on equity; and finally, it was found that all the independent variables had sustained long-term causal relationships with total assets. With return on assets, return on equity, and total assets, the short-run causal linkages between variables were minimized.

In concluding this section, and having traversed the literature to x-ray the views of scholars as related to this study, it is undoubtedly clear that within the Fourth Republic of Nigeria, authors have not explored the effect of some macro-economic variables such as GDP per capita income, domestic savings, interest rate, and unemployment rate on banks' performance, measured by total loans and advances in Nigeria. Furthermore, it is also crystal clear that in measuring banks' performance, excellent and bank-mandate-compliant indicators like total credits created by the banks have yet to be used to gauge their performance against NDIC recommendations. The submissions above, therefore, leave considerable gaps in the literature. If the gaps are correctly filled, literature on the effect of macroeconomic variables on banks' performance can be complete, and accordingly, no unanimous consensus can be made. Finally, from the above, literature has equally established a connection between macro-economic indicators selected in this study and banks' performance, which necessitates. In contrast, this study has to be carried out to reveal the relationship between macro-economic variables and the performance of the banks

in the context of total loans granted, which previous scholars have not explored but had equally been affirmed as a good indicator of banks' performance according to NDIC (2019).

METHODS

Research Design. Since the event being investigated in this study has occurred in the past. Therefore, this study adopted an ex post facto research design and collected quantitative data to measure the effect of macroeconomic variables, which are the independent variables on banks' performance and the dependent variable. This research design method was chosen to facilitate the answering of the research questions and the eventual accomplishment of the stated objectives.

Model Specification. This study adapted the model estimated by Adiga et al. (2020) to suit the purpose of this study. Consequently, the linear model expressing the relationship between macro-economic variables and banks' performance is specified thus:

$$BP = f(SMEV) \dots \dots \dots \text{Eq (3.1)}$$

Where BP connotes banks' performance, and MEV connotes selected macroeconomic variables.

Expanding Eq (3.1) and introducing proxies for macro-economic variables and banks' performance, Eq (3.1) becomes:

$$TLAB = f(LIR, GDPPC, UER, DSAV \& EXCR) \dots \dots \dots \text{Eq (3.2)}$$

For ease of estimation, Eq (3.2) can be transformed into econometric form as follows:

$$TLAB = \beta_0 + \beta_1 LIR + \beta_2 GDPPC + \beta_3 UER + \beta_4 DSAV + \beta_5 EXCR \dots \dots \dots \text{Eq (3.3)}$$

The above Eq (3.3) is expressed in the Autoregressive Distributed Lags model thus:

$$\Delta \ln TLAB = \beta_0 i + \beta_1 LIR_{t-1} + \beta_2 \ln GDPPC_{t-1} + \beta_3 UER_{t-1} + \beta_4 \ln DSAV_{t-1} + \beta_5 \ln EXCR_{t-1} \sum_{i=1}^p \theta_i \Delta \ln TLAB_{t-1} + \sum_{i=1}^q \gamma_i \Delta LIR_{t-1} + \sum_{i=1}^q \lambda_i \Delta GDPPC_{t-1} + \sum_{i=1}^q \phi_i \Delta UER_{t-1} + \sum_{i=1}^q \delta_i \Delta DSAV_{t-1} + \sum_{i=1}^q \alpha_i \Delta EXCR + \Psi ECM_{t-1} + U_t \dots \dots \dots \text{Eq(3.5)}$$

Description and Measurement of Variables. Variables in Eq (3.3) are measured as follows:

TLAB = Total loans and advances of the DMBs, measured as the gross value of the total credits granted to various sectors of the economy.

LIR: Prime lending interest rate, which is measured by the market prime lending rate as published by the CBN

GDPPC = This is the gross domestic product or the total output of goods and services produced in Nigeria by both resident and non-resident individuals divided by the population of the country

UER = This is the rate of people willing and able to work but cannot get a job in Nigeria.

DSAV = This is the summation of all savings or deposits made with Nigerian banks on an annual basis

EXCR = This is the rate at which the naira is exchanged for other currencies, usually Dollar. It is the amount of naira required to buy one unit of foreign currency.

β_0 = regression constant

$\beta_1 - \beta_5$ = coefficients of the parameters to be estimated or regression intercepts

A Priori Expectation. The nature of the relationship of each of the macro-economic proxies in equation 3.3 with profit before tax of banks is expectedly stated thus:

$\beta_1 < 0$ or > 0 , i.e. Negative/Positive

$\beta_2 > 0$ i.e. Positive

$\beta_3 < 0$ i.e. Negative

$\beta_4 > 0$ i.e. Positive

$\beta_5 < 0$ i.e. Negative

Sources of Data. As earlier noted, in order to aid the estimation of equation 3.5, quantitative data were collected from CBN's Statistical Bulletin from 1999 to 2021. The choice of this source was informed by its validity and reliability since the author of the Bulletin is an accredited government agency that oversees the economy at both macro and micro levels.

Method of Data Analysis. The estimation technique chosen in this study was Ordinary Least Square due to its ability to estimate parameters with minimum variance and its acclamation as the Best Linear Unbiased Estimator among other estimators.

RESULTS AND DISCUSSION

Descriptive Statistics Summary. The study used descriptive statistics to check the nature of the data series collected for each variable, and the results are contained in Table 1:

Table 1. Descriptive Statistics Results

	LTLAB	LIR	UER	LDSAV	LGDPPEC	LEXCR
Mean	8.508332	17.36415	12.20826	8.250608	7.384080	5.124326
Median	8.961802	16.93750	13.30000	8.689695	7.614805	5.012620
Maximum	10.10144	24.85000	33.30000	10.15223	8.038835	5.991374
Minimum	5.776924	11.55463	3.590000	5.626424	6.210600	4.529297
Std. Dev.	1.295775	2.727319	9.325757	1.442507	0.568878	0.425047
Skewness	-0.688765	0.414311	0.593299	-0.470998	-0.909342	0.748818
Kurtosis	2.162116	4.609387	2.166764	1.782042	2.414359	2.297955
Jarque-Bera	2.491320	3.140212	2.014701	2.271994	3.498479	2.621788
Probability	0.287751	0.208023	0.365185	0.321102	0.173906	0.269579
Sum	195.6916	399.3755	280.7900	189.7640	169.8338	117.8595
Sum Sq. Dev.	36.93871	163.6419	1913.334	45.77821	7.119692	3.974625
Observations	23	23	23	23	23	23

Source: Author's Computation (2023)

Table 1 unambiguously shows that all the research variables have their mean values between the minimum and the maximum values, with the lending interest rate having the highest mean value of 17.34. In contrast, the lowest mean value of 5.12 was associated with the exchange rate (EXCR). In addition, a closer look at Table 1 also shows that all the variables have shallow standard deviation values, which connotes low risk, and that all the data sets collected in this study were closer to their mean values. It is, however, except the unemployment rate with a comprehensive and certainly highest standard deviation value of 9.32 from the mean value of about 12.20. The Kurtosis result shows that the lending interest rate (LIR) was leptokurtic and had a peaked curve, while all other variables were platykurtic and had flatted curves. The Skewness of the collected observations showed that LIR, UER, and EXCR were positively skewed, and their distributions were regular and symmetrical around their mean values; on the other hand, TLAB and DSAV were negatively skewed, and by implications, their distributions were long left tail with lower than sample mean values. Furthermore, the Jarque-Bera normality test showed that all the variable's distributions were normal since their p-values were higher than the 0,05 critical value, suggesting that the null hypothesis of normal distribution cannot be rejected.

Table 2. Correlation Matrix

	LTLAB	LIR	UER	LDSAV	LGDPPC	LEXCR
LTLAB	1					
LIR	-0.3513	1				
UER	-0.1445	-0.6007	1			
LDSAV	0.5557	-0.6370	0.0519	1		
LGDPPC	-0.6011	-0.1477	0.2267	-0.0027	1	
LEXCR	0.4432	0.0758	0.1574	-0.0657	-0.8792	1

Source: Author's Computation (2023)

Table 2 shows the degree of the relationship among the variables of this study. Table 2 shows that LIR was negatively related to TLAB with -0.35, suggesting that a low negative relationship exists between lending interest rate and the banks' performance, measured by total loans and advances. It is a confirmation that a high interest rate discourages borrowing from the banks and reduces the banks' lending activities. Unemployment rate (UER) also was negatively related to the performance of the banks with a correlation coefficient of -0.14, suggesting a weak negative relationship and a confirmation that unemployment would reduce lending activities of the banks as earned incomes and, by extension, deposits inflows to the banks, nosedive due to high unemployment rate. DSAV was positively and strongly correlated to TLAB to the tune of about 56%, meaning that domestic savings and total credit of the banks move together in the same direction, a confirmation that deposit is a vital factor in determining the lending volume of the banks since deposits are usually translated to credits by them. Also, with a 60% correlation expectation, the GDP per capita was negatively associated with performance in contradiction to the a priori expectation. Moreover, EXCR was weakly but positively related to TLAB, such that they move together with 44% magnitude, which may be due to the encouragement of foreign investment inflow into Nigeria as more naira exchange for other currencies, and this would also necessitate borrowing from local banks as more naira would be needed to bring in raw materials inputs as well as other imports from abroad.

Table 3a. Unit Root Test

Philips Perron Unit root test	Augmented-Dickey-Fuller Unit root test
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Variables	Critical value @5%	Philips Perron test statistics	Order of Integration	Critical value @5%	ADF-test Statistics	Order of Integration
TLAB	-3.004361	-3.172493*	I (0)	-3.029970	-3.822639	I (0)
LIR	-3.004361	-1.729654	-	-3.004861	-1.816355	-
UER	-3.004361	2.001801	-	-3.004861	1.517540	-
DSAV	-3.004361	-2.094170	-	-3.004861	-2.379526	-
GDPPC	-3.004361	-2.481104	-	-3.004861	-2.745368	-
EXCR	-3.004361	0.542074	-	-3.004861	0.734384	-

Notes: *Denotes significance at the 5% level and rejects the null hypothesis of non-stationarity.

Source: Author's Computation (2023)

Table 3b. Unit root test results at first differences

Philips Perron Unit root test			Augmented-Dickey-Fuller Unit root test			
Variables	Critical value @5%	Philips Perron test statistics	Order of Integration	Critical value @5%	ADF-test Statistics	Order of Integration
TLAB	-3.012363	-	I (0)	-3.012363	-	I (0)
LIR	-3.012363	-6.204093*	I (1)	-3.012363	-5.679350*	I (1)
UER	-3.012363	-3.378240*	I (1)	-3.012363	-3.380771*	I (1)
DSAV	-3.012363	-3.658336*	I (1)	-3.012363	-3.658336*	I (1)
GDPPC	-3.012363	-3.085807*	I (1)	-3.012363	-3.042159*	I (1)
EXCR	-3.012363	-3.203661*	I (1)	-3.012363	-3.219107*	I (1)

Notes: *Denotes significance at the 5% level and rejects the null hypothesis of non-stationarity.

Source: Author's Computation (2023)

As revealed in Table 3a, all the variables were not stationary at levels, as most of them have unit roots except TLAB. It led to their first differencing, as contained in Table 3b, in which case, every other variable became stationary, suggesting that the research variables are a mixture of I (0) and I (1) integration order. Based on this finding, the Autoregressive Distributed Lags model proposed by Pesaran, Shin, and Smith (2001) is appropriate for estimating the study's model.

ARDL Model Dynamic Stability Test.

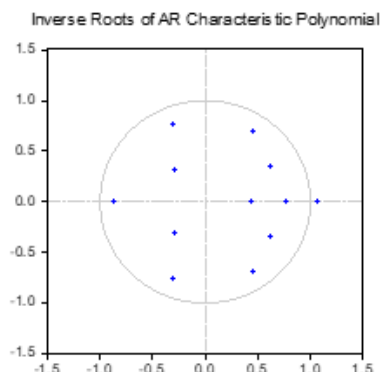


Figure 1. Dynamic Stability Test for ARDL Model

Figure 1 helps to reinstate the extent of stability of the estimated model in this study. Hence, it is perceptible that all the inverse roots concerning the model are encircled within the polynomial circle unit except one; this attests to the strength of the stability in the model that was estimated and supports the validity of the conclusion reached from the estimates.

Optimal Lag Length Selection. Since ARDL models are usually lagged, there is a need to determine the optimal lag length for the study's variables. Consequently, the VAR order selection criteria were used, and the result of these criteria, as revealed by Table 4, confirms that using Akaike Information Criteria (AIC), the optimal lag length for the variables of this study is 2.

Table 4. VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-83.45128	NA	0.000202	8.519169	8.817604	8.583937
1	55.57455	185.3678*	1.30e-08	-1.292814	0.796231	-0.839438
2	115.0731	45.33221	4.13e-09*	-3.530768*	0.348887*	-2.688784*

Source: Author's Computation (2022)

Cointegration Bound Test. To be sure that the study's variables move together in the long run, a co-integrated test for the ARDL model was carried out, and the result is displayed in Table 5:

Table 5. Cointegration Bound Test Result

Test Statistic	Value	k
F-statistic	3.866420	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79

2.5%	2.96	4.18
1%	3.41	4.68

Source: Author's Computation (2022)

From Table 5, the F-statistic value is 3.87, more significant than the lower critical value bound and the upper critical value bound at a 0.05 significance level. It connotes that the test was conclusive and confirmed that the variables were co-integrated in the long run. Hence, the next step is to estimate the long-run coefficients.

Table 6a. Short-Run Coefficients with ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (LTLAB (-1))	0.996789	0.240472	4.145141	0.0043*
D (LIR)	-0.038110	0.023068	-1.652080	0.1425
D (LIR (-1))	0.028059	0.023483	1.194883	0.2710
D (UER)	-0.036004	0.015179	-2.371987	0.0495*
D (UER (-1))	0.021523	0.013525	1.591347	0.1556
D (LDSAV)	0.418106	0.502449	0.832137	0.4328
D (LDSAV (-1))	-1.268085	0.456315	-2.778971	0.0273*
D (LGDPPC)	0.459060	0.249886	1.837082	0.1088
D (LEXCR)	1.219995	0.408089	2.989529	0.0202*

LTLAB: log of total loans and advances of the deposit money banks; LIR: Lending interest rate; UER: Unemployment rate; LDSAV: log of gross domestic savings; LGDPPC: Log of GDP per capita income; LEXCR: log of average exchange rate. Notes: * 5% level of significance

Source: Author's Computation (2022)

Table 6a shows the relationship among the variables in the short run. According to this result, the current value of the LIR was negatively associated with TLAB, while its first lag was negatively related to the TLAB; in each of these cases, LIR was a weak predictor of TLAB. For UER, its current value was negatively and significantly associated with TLAB, unlike its first lag, which displayed a positive and weak relationship with TLAB. In addition, in its current value, DSAV was positive and weak in its relationship with TLAB, while this relationship was reversed to weak and negative in its first lag. Furthermore, DSAV in its first lag was negatively and strongly related to TLAB but had a weak direct relationship with TLAB in its current values. Also, in the short run, GDPPC was directly related to TLAB in its current value, while EXCR was significantly and positively related to TLAB in its current value. As earlier noted, however, evidence of long-run relationships has been revealed in this study; therefore, the study is more interested in the long-run relationships in Table 6b than the short-run relationships.

Table 6b. Error Correction Model (ECM) and Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIR	-0.042220	0.045674	-0.924376	0.3860
UER	-0.053462	0.010272	-5.204750	0.0012
LDSAV	0.797007	0.115242	6.915970	0.0002
LGDPPC	0.303772	0.158173	1.920499	0.0963
LEXCR	0.807301	0.209980	3.844650	0.0063

ECM (-1)	-1.511201	0.348302	-4.338773	0.0034
C	-3.010699	1.139960	-2.641057	0.0334

LTLAB, LIR, UER, LGDPPC, and LEXCR are as previously defined under Table 6a.

*Notes: * 5% level of significance*

Source: Author's Computation (2022)

From Table 6b, which contains the summary of the long-run coefficients of the estimated parameters, it is noticeable that in the long run, LIR eventually maintained a negative but insignificant relationship with TLAB in line with the short-run effect. To this extent, a 1% change in LIR was linked to about 4.2% opposite change in the TLAB. The unemployment rate equally retained its strong effect on TLAB in the long run, just the same way its current value strongly determined TLAB in the short run. It means that in the short run and long run, the UEM rate was stable as a negative influencer of TLAB; hence, should UER be increased by 1%, its resultant effect on TLAB would be about a 5% decrease and vice versa. Furthermore, DSAV, like in the short run, its current value was positively connected to the TLAB when the long-run effect is considered; however, unlike the short-run effect, its effect on TLAB was reversed from weak to strong in the long run; hence, 1% increase in DSAV produced about 80% increase in the TLAB in Nigeria; the reverse of this was equally true. In addition, GDPPC was stable in its weak relationship in the long run as it maintained a direct relationship with TLAB; this implied that for every 1% change in GDPPC, it would culminate in about 30% insignificant change in TLAB and the same direction. For EXCR, the result in Table 6a shows that its significant and positive relationship with TLAB in the short run was repeated in the long run, such that EXCR produced about 81% change in TLAB for every 1% change in its value and vice versa.

The Error Correction Mechanism (ECM) is reported in Table 6b to be -1.51; this connotes that any shock experienced by the variables that cause disequilibrium in the short run would be corrected at the speed of 151%. The statistical significance of this result is attested to by the p-value, which is 0.0034, implying that the variables converge in the long run at a high speed from their disequilibrium state.

Test of Hypothesis and Discussion of Findings, Decision Rule. The decision rule in the testing hypothesis states that the null hypothesis is rejected when $p\text{-value} \leq 0.05$; otherwise, the null hypothesis cannot be rejected.

H01: Interest rate has no significant effect on banks' performance in Nigeria

H11: Interest rate has a significant effect on banks' performance in Nigeria

From Table 6b, the p-value of the lending interest rate is 0.3860, which is higher than the critical value at a 0.05 significance level; hence, the null hypothesis cannot be rejected. Therefore, this study concludes that lending interest rate does not significantly affect banks' performance in Nigeria.

In addition, the lending interest in this study aligns with the theoretical expectation of a negative relationship with the performance of banks, especially as measured by the total credits granted by the banks to the various sectors of the economy. It confirms that a high-interest rate discourages borrowing and thus lowers banks' performance. In contrast, lower and affordable lending interest rate facilitates banks' performances by promoting lending activities due to increased demand for borrowing as spurred by affordable lending interest rate of the banks. This finding corroborates Ejem et al. (2020), who found that lending interest rate had an insignificant negative effect on banks' performance, measured by return on assets, but contradicts the submission of Adetokun et al. (2021) that lending interest rate has a positive effect on banks performance. The reason for this contradiction must have been accounted for by the differences in the measurement of banks' performance. They used ROA instead of the present study that measures banks' performance with banks' credit portfolios, which directly affects lending interest rates.

H02: GDP per capita has no significant effect on banks' performance in Nigeria

H12: GDP per capita has a significant effect on banks' performance in Nigeria

Equally, Gross Domestic per capita was found to be directly associated with banks' performance. It confirms the expectation that prosperity in the economy would bring much fortune to various sectors of the economy, create more savings with banks, and trigger more demands for investment capital from the banks by the productive sectors. Thus, this study has once again proved that a higher GDP growth implies a higher disposable and per capita income, which positively influences banks' performance in terms of high credit expansion, low loan default rates, and improved saving deposits arising from a reduction in unemployment due to economic prosperity. Confirming the preceding finding are Adiga et al. (2020) as well as Anshu and Ghakhar (2019)' all of whom reported that GDP exerts a positive influence on banks' performance in Nigeria. Nevertheless, Adetokun et al. (2021), who measured banks' performance with ROA, discovered a negative link between GDP and the return on assets of the banks in Nigeria.

H03: Unemployment rate has no significant effect on banks' performance in Nigeria

H13: The unemployment rate has a significant effect on banks' performance in Nigeria

In addition, Table 6b reveals that the p-value of the unemployment rate is 0.012, which is less than the critical value at a 0.05 significance level. The study rejects the null hypothesis and concludes that the unemployment rate significantly negatively affects the performance of banks in Nigeria. The negative effect results from the decline in the potential savings and lack of demand for goods and services from teaming with the unemployed population, which, according to Salami (2021), hit 40% by the end of 2021. Since this class of the labor force earns no income, it translates to a reduction in banks' deposits and, consequently, reductions in the performance of banks in terms of credit expansion to various sectors of the economy. The finding thus confirms the a priori expectation that an increase in the unemployment rate would reduce banks' performance. To this extent, this finding contends with the finding of Ejem et al. (2020) that macro-economic variables must have been due to differences in the econometric approach and banks' performance measurement adopted; unlike the present study, GMM estimation technique was employed by Ejem et al. (2020) while ROA was the proxy for banks' performance. Also, this study disagrees with Floyd (2021), who found that the unemployment rate has a positive relationship with banks' performance; this was equally due to the measurement of banks' performance by financial ratio, i.e., ROA, even though the same ARDL used in this study was employed in Floyd (2021).

H04: Gross domestic savings have no significant effect on banks' performance in Nigeria

H04: Gross domestic savings have a significant effect on banks' performance in Nigeria

Moreover, gross domestic savings have a p-value of 0.0002, less than the critical value at a 0.05 significance level. This study concludes that gross domestic savings significantly positively affect banks' performance in Nigeria. It corroborates the fact that lending is proportional to savings deposit mobilized by the banks since savings are usually transformed into loans and advances following asset transformation theory, which posits that the core mandate of the banks is to mobilize deposit and creates credit (asset) from the mobilized deposits. Hence, by this finding, the a priori expectation is confirmed that savings deposits strongly influence banks' performance in Nigeria. It must have accounted for why lending increased by 19% compared to a 23% increase in domestic savings between 2020 and 2021, according to CBN (2021). An increase in savings would spur an increase in investment; an increase in investment would spur an increase in demand for credits from the banks, while the increase in prudential lending would increase interest earnings, and this would produce a spiral positive effect on the profitability of the banks; this is to establish that savings cannot be divorced from the macro-economic indicators that influence banks performance in Nigeria.

H05: Exchange rate has no significant relationship with banks' performance in Nigeria

H05: Exchange rate has no significant relationship with banks' performance in Nigeria

Furthermore, according to this study's findings, the exchange rate significantly promotes the banks' performance. With p-value = 0.0063 < 0.05, this study rejects the null hypothesis and concludes that the exchange

rate has a significant positive effect on the performance of banks in Nigeria. This finding must have been driven by the enormous gains usually recorded by the banks from foreign currency operations. All the banks participate in the autonomous foreign exchange market where forex are bought and sold among the banks at a profit margin; moreover, most of the banks that have international license maintain foreign branches and subsidiaries, and when the balance sheets of their foreign operations are translated to local currency, huge profits are likely to be recorded, especially with the recent volatility in the exchange rate of naira to other major convertible currencies of the world. However, the finding of Adiga et al. (2020), in which a harmful and insignificant relationship between exchange rate and banks' performance, contradicts the present finding. Unlike the present study, the contradiction must have been engendered by using OLS as an estimation technique and measuring banks' performance by net interest margin by Adiga et al. The present finding disagrees with Anshu and Ghakhar (2019), who used OLS and found a significant negative relationship between exchange rate and banks' performance measured by ROA.

Post-estimation Test. The study checked for the residuals' autocorrelation and homoscedasticity to ensure the calculated coefficients were not heteroscedastic and autocorrelated. The results are displayed in Tables 7 and 8.

Table 7. Breusch-Godfrey Serial Correlation LM Test

F-statistic	10.11475	Prob. F (2,5)	0.0675
Obs*R-squared	16.83821	Prob. Chi-Square (2)	0.0002

As in Table 7, the p-value of the F-statistics is $0.4314 > 0.05$; thus, the null hypothesis that the residuals are homoscedastic cannot be rejected. The study concludes that the estimated model's residuals are homoscedastic, and the estimates' efficiency and reliability are robust.

CONCLUSION

As in the global realm, banks as finance institutions in Nigeria operate within the macro-economic environment, which affects their investment and financial decisions and, by extension, their operating performances. To this end, studies have been conducted to relate different macroeconomic variables to banks' performance, while different metrics have been used to measure the performance of banks in the literature. However, within the Fourth Republic of Nigeria, macroeconomic variables such as GDP per capita and gross domestic savings have yet to be examined concerning total loans and advances granted by the banks as performance indicators. This study thus assessed the effect of macroeconomic variables on banks' performance in Nigeria by considering gross domestic savings deposits, GDP per capita, and other macroeconomic variables concerning total banks' loans and advances as measurement of banks' performance. Using both descriptive and ARDL models as analysis techniques, the study found that all the variables examined were normally distributed, and the standard deviations suggested low risk and volatility except for the unemployment rate. The study further revealed that gross domestic savings and GDP per capita were positive determinants of banks' performance, a pointer to the fact that the performance of banks in terms of extension of loans and advances is predicated upon deposit availability with the banks and the level of economic prosperity experienced in Nigeria. Also, lending interest and unemployment rates were all revealed as a negative determining factor of banks' performance, with the unemployment rate being very significant. Consequently, based on the results, the study concludes that macroeconomic variables, especially gross domestic savings, exchange rate, and unemployment rates, are significant predictors of banks' performance in the fourth Republic of Nigeria. Accordingly, the following recommendations are made:

1. The anchor rate should be maintained at a comfortable level that would guarantee affordable lending interest rates to the investing borrowers since the lending rate was a significant negative determinant of banks' performance in Nigeria.
2. It is suggested that the Nigerian government should urgently enact policies that would make Nigeria an investment-friendly and productivity enhancer, especially by addressing the issue of epileptic or lack of power supply, to increase the GDP per capita income as this has been confirmed positively in association with banks' performance by this study.
3. Again, creating an enabling environment for investment and industries to strive is advised. According to this study, it would boost job creation and reduce unemployment, negatively impacting Nigerian banks' performance.
4. Monetary authorities should consider increasing the deposit interest rate to encourage more inflows of deposits into Nigerian banks since this has a positive and significant effect on banks' performance.
5. The exchange rate should be allowed to float and determined by the demand and supply forces to normalize the banks' earnings from foreign exchange operations.

Contribution to Knowledge. This study has enhanced the literature as a knowledge body as it examined some of the macro-economic indicators, such as GDP per capita and gross domestic savings, which, concerning Nigerian banks' performance, have not been examined by the previous studies; also, the study measured Nigerian banks' performance with a total of the loans and advances granted by the banks, which is different from indicators already explored the existing studies.

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