

EFFECTS OF CREDIT RISK ON THE FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA: 2008 – 2023

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ABSTRACT

Bank as an agent of economic development take a fundamental position in any country financial system because they act as mediators between those who have surpluses and those with deficits in savings by ensuring proper mobilization and allocation of fund, thereby increasing economic activities and investments. Therefore, the connection between credit risk and banks' financial performance is a critical area of study in financial management and banking. The intention of this study is to investigate the effects of credit risk on the financial performance of Deposit Money Banks (DMBs) in Nigeria, from 2008 – 2023. The research uses Return on Assets (ROA) as a proxy for the financial performance of deposits money banks in Nigeria and it also measuring credit risk with Loan to Deposit Ratio (LDR) and Non-Performing Loan Ratio (NPLR). The research employs the use of Autoregressive Distributed Lag (ARDL) model after conducting unit root tests to confirm stationarity. The findings reveal that neither loan to deposit ratio (LDR) nor non-performing loan ratio (NPLR) significantly influences return on assets (ROA) within the study period, with statistical tests showing no significant relationships and p-values exceeding the conventional thresholds 0.05 significant level. This study recommends that deposits money banks (DMBs) should improve on their operational efficiency, given the limited impact of loan to deposits ratio (LDR) and non-performing loan (NPLR) on return on assets (ROA). This involves streamlining processes, strengthen their credit risk assessment frameworks, enhance loan portfolio monitoring, and implement proactive measures to minimize non-performing loans and other operational risks.

Keys words: Credit risk, Loan to deposit ratio, Non-performing loan ratio, financial performance, Return on assets.

INTRODUCTION

Banks globally served as an agents of economic development, they take a fundamental position in any country financial system because, they act as mediators between those who have surplus and those with deficit in savings by ensuring proper mobilizations and allocation of fund thereby increasing economics activities and investments. The accomplishments and strength of these banks are significantly influenced by the levels of credit risk they encounter. Credit risk, which refers to the possibility for a borrower to default in repaying a loan, has a substantial impact on a bank's financial health and performance (Ayeeni, et al. (2022). In recent decades, Nigerian banks have faced numerous challenges related to credit risk, resulting in robust levels of non-performing loans (NPLs) and considerable loan losses, adversely affecting their profitability and stability, which now call for the need to inspect the impact of credit risks on the financial performance of DMBs in Nigeria over an extended period (Onaolapo, 2022). Also understanding how credit risk indicators, such as the Loan-to-Deposit Ratio (LDR) and Non-Performing Loan Ratio (NPLR), influence the financial performance of banks is essential.

These indicators provide insights into the efficiency of banks in managing their loan portfolios and maintaining liquidity, which in turn affects their profitability (Djiogap & Ngomsi, 2022). The Loan-to-Deposit Ratio (LDR) shows the extent to which a bank deposit are used to fund its loans, highlighting its liquidity management and lending practices. On the other hand, the Non-Performing Loan Ratio (NPLR) measures the quantity of loans that are in default or close to default, showing credit quality and risk exposure. Together, these indicators help assess the resilience and risk tolerance of DMBs amidst varying economic conditions and regulatory environments, guiding strategic decisions aimed at enhancing financial stability and sustainability in Nigeria's banking sector.

Despite numerous strategies put in place by the regulatory bodies to minimize and checkmate the effect of credit risks, Nigerian Deposit Money Banks still continue to struggle with high non- performing loan (NPL) ratios and unstable financial performance that has continue to surface at various levels of Return on Assets (ROA) over the years. The consistent problem of high credit risk served as an important threat to the profitability and stability of deposit money banks.

The main objective of the study is to examine the effect of credit risks on the financial performance of deposit money banks in Nigeria from 2008 – 2023. Other specific objectives are to investigate the effect of loan to deposit ratio on the financial performance of deposit money banks in Nigeria and to examine the impact of non-performing loan ratio on the financial performance of deposit money banks in igeria.

The study formulated the following hypotheses;

H01: Loan to Deposit Ratio (LDR) has no significant impact on financial performance of Deposit Money Banks in Nigeria.H02: Non-Performing Loan Ratio (NPLR) has no significant effects on financial performance of Deposit Money Banks in Nigeria.

REVIEW OF RELATED LITERATURE

In this section, the concepts of credit risk (CCR), the concepts of return on assets (ROA), non-performing loan ratio (NPLR), and deposit-to-loan ratio (DLR) are discussed conceptually based on the perspectives of various scholars.

Concept of Credit Risk (CCR)

According to Nwankwo (2024), credit risk in financial transactions refers to the risks that arise prior to settlement, specifically those associated with the possibility of a borrower's insolvency, collapse, or financial distress before meeting their payment obligations. This type of risk depends on the financial stability of the borrowing institution as assessed during the analysis. To mitigate such risks, the lending institution may require collateral or take other protective measures. Settlement risk, in this context, refers to the chance that the borrower will fail to make a payment on time. However, when credit lines are secured by investments such as treasury bills, bankers' acceptances, or commercial papers, the associated risks are typically reduced, as the lender can rely on the issuers of these securities if the borrower defaults.

According to Deloitte (2023), leaders adjust their credit risk strategies in response to changing regulations and market dynamics, particularly in light of the reduced macroeconomic challenges observed in recent years, which have influenced global credit conditions and default rates.

Concepts of financial performance (CFP)

Concept of financial performance talked about how best a firm can use her available assets to acquire additional revenues. It is used to measure the financial strength over a period of time.

Concepts of Return on Assets (ROA)

Catherine (2023) explains that return on assets (ROA) is a key profitability metric that indicates how efficiently a company utilizes its assets to generate profit. In other words, ROA reflects the ability of a company's management to convert its assets into earnings. The importance of ROA for assessing the profitability of banks should not be underestimated, as it provides valuable insight into how well a company is leveraging its resources to create value for investors.

Concepts of Non-Performing Loan Ratio (NPL Ratio)

On this, Adeola (2022) observes that NPLs essentially perform the function of reflecting the ratio of loans in default to the total value of a bank's loan portfolio, including nonperforming loans before any specific loan provisions are deducted. This ratio is a significant indicator of the quality of the loan portfolio by the bank and it is typically used to determine the overall health of the banking sector by showing how many of its loans are in default or near default.

Concepts of Loan to Deposit Ratio (LDR)

In the view of Olawale (2023), loan to deposit ratio (LDR) is refer to a ratio that compares a bank's total loans to its total deposits. This ratio is used to assess a bank's liquidity by measuring its ability to cover withdrawals made by its depositors. The loan to deposit ratio (LDR) is normally represented in percentage. A high loan to deposit ratio (LDR) implies that the bank may lack enough liquidity to cover up for any unprepared funding needs, while a low loan to deposit ratio (LDR) may implies that the fund

are not judiciously used but instead is been underutilized. It is an indicator of how well a bank is managing its deposit base.

Theoretical Framework

This research evaluate the effects of credit risk on the financial performance of deposit money banks in Nigeria. Though they are other several theories, but the study adopt Merton credit risk theory (1974) as the underpinning theory. This theory provide a holistic view for understanding and managing credit risk in the banking sector.

Credit Risk Theory (CRT)

Credit risk theory by Robert Merton (1974) this theory talked about the risk that is associated with an arrangement or contract agreement between a buyer and a seller to buy some stock at an agreed price with the view of making payment at a later date that is agreed upon by both parties. The theory is of the view that a firm default occurs when its asset value drops below its debt obligation. By modeling the asset value as a stochastic process. The theory provides tools that can be use to evaluate the probability of default (PD) and loss given default (LGD) which are essential for managing credit risk.

Assumptions: The theory assumed that the value of a firm asset follows a stochastic process. A firm defaults when the worth of its assets fall below the worth of its debt. Therefore, a firm equity can be view as a call option on its assets. Credit risk is determine by the volatility of asset values and firms leverage.

Empirical Review

Collins and Agada (2024) examined how credit management practices influenced the financial performance of Deposit Money Banks (DMBs) listed on the Nigerian Exchange Group (NGX) over the period from 2014 to 2023. The study utilized correlation and ex-post facto research approaches, employing descriptive statistics and multiple regression analysis. Net interest margin (NIM) was used as the indicator of performance, with credit risk, liquidity risk, and asset quality serving as independent variables, and firm size acting as a control variable. The results indicated that while credit risk and asset quality had an insignificant negative effect on performance, liquidity risk was found to significantly negatively affect performance. The authors recommended that banks keep a well-balanced portfolio of liquid assets and perform thorough asset quality audits to ensure adherence to standards.

Mbanefo 2024, therefore, investigated the impact of risk management on the performance of Deposit Money Banks in Nigeria, using credit risk, liquidity risk, operational risk, and capital risk as drivers of return on equity. It was based on data from the Central Bank of Nigeria and the Nigeria Deposit Insurance Corporation, with applications of several econometric methods: the Augmented Dickey-Fuller test and Ordinary Least Squares (OLS) regressions. Results indicated that the series was stationary at both levels and first difference, after which they proceeded to apply the Autoregressive Distributed Lag model. It was, therefore, concluded that the CBN should strengthen its regulatory framework to improve the risk management culture in the banking sector.

On his part, Adeusi (2023) examined how credit risk management influences the performance of Nigerian DMBs between the years 2005 and 2019. The regression method adopted in the study is OLS, while pairwise Granger causality tests and co-integration analysis are also used. Some of the important

independent variables in the study include total bank loans, loan-to-asset ratio, loan-to-deposit ratio, and profit after tax. The results showed that with the exception of total bank loans, all other variables were negatively related to PAT. Therefore, the study concluded that impairment of bank performance due to credit risk is short-term and noted an equilibrium relationship in the long term. They suggested the use of an effective credit policy on minimizing the rate of non-performing loans by banks.

Kankpang (2023), on his part, investigates the impact of credit risk on the profitability of Nigeria DMBs during the period spanning between 2005 and 2019. In this regard, he has utilized an ex-post facto research design. The secondary data were gathered from the Central Bank of Nigeria and the National Bureau of Statistics. From the finding, it was observed that liquidity risk and a non-performing loan was seen to have great influence on their profitability. The findings of the study showed that credit risk, mainly in terms of liquidity problems and non-performing loans, is the most important factor in determining the profitability of DMBs. It recommended that for better profitability and financial stability, banks should give priority to managing risks.

Natufe et al. (2023) assessed the relationship between credit risk management and ROE for DMBs in Nigeria within the period 2010-2021. The variables used by the study were capital adequacy ratio, liquidity ratio, loan-to-deposit ratio, risk asset ratio, nonperforming loans ratio, loan loss provision ratio, and firm size as the independent variables. The findings indeed showed that bank shareholders holding international banking licenses were not particularly rewarded for the risks incurred, particularly when compared to low-risk investments like treasury bills.

In this regard, Ohonba and Aigienohuwa (2023) investigated the impact of credit management on the financial performance of DMBs in Nigeria between the years 2012 to 2022 using an ex-post facto research design. They sampled ten banks out of the thirteen banks in Nigeria. These results indicated that the non-performing loans ratio significantly influenced ROA negatively, while the capital adequacy ratio did not show any significant influence. The study thus recommended that banks should implement more stringent credit risk assessment processes in lending to cut down on non-performing loans and improve their financial performances consequently.

Ololade et al. (2023) assessed the impact of risk management on the performance of eight selected Nigerian Deposit Money Banks with international authorization for a period between 2010 and 2021. Through panel data analysis, the study proved that though performance was negatively influenced by liquidity and capital risk, the influence could not be proved through statistics. In the case of credit risk, however, performance was positively influenced in a significant manner. Among these control variables, only management quality had a statistically significant effect. Thus, the study identified that management quality and credit risk were the key determinants of performance for internationally licensed banks.

For example, Omorokunwa and Ogbeide (2023) discussed how the management of credit risk influences the profitability of Deposit Money Banks listed in the Nigerian capital market between 2006 and 2018 using panel regression analysis. The result indicated that the ratio of non-performing loans decreased bank performance while the loan-to-deposit ratio increased performance. However, bank leverage was

not significant to performance. This, the authors argued, should be channeled to self-liquidating projects with better credit management in order to enhance profitability.

Adedeji and Adetayo (2020), therefore, focused their work on the impact which the LDR had on some selected DMBs in Nigeria, against the background of a regulatory shock when the Central Bank of Nigeria increased the minimum LDR to 65 percent in 2019. They used data from the year 2010 to 2019 from 10 leading DMBs in carrying out their fixed-effects panel regression analysis for assessing the effect of LDR on the measures of profitability such as NIM and ROE. The study found that profitability increased positively with moderate LDR increases that improved NIM and ROE up to the regulatory cap but beyond which the additional benefit declined. This is because excessive lending impinged on liquidity and boosted risk. Therefore, the study concluded that the operating profitability of Nigerian banks was optimally balanced with financial stability when the LDR remained within the CBN's prescribed limit of 65%.

Gaps in Literatures.

A key contribution of this study is the transformation of 16 years of data into quarterly series, resulting in 64 observations, a method not utilized in prior research. Additionally, the use of the Autoregressive Distributed Lag (ARDL) model represents a significant methodological advancement, as most of the previous studies reviewed in this work did not employ this approach, likely due to their shorter time spans.

METHODOLOGY

This research adopts an *ex post facto* research design of time series analysis to evaluate the connections between credit risk and the financial performance of deposit money banks in Nigeria. Descriptive statistics are employed to provide a comprehensive overview of key variables, while covariance statistics offer deeper knowledge into the co-movement between credit risk and financial indicators. Unit root and cointegration analysis with three cointegrating equations are conducted to identify long-term equilibrium relationships. Furthermore, an Autoregressive Distributed Lag (ARDL) estimation and error correction mechanism are employed to model the dynamic interactions between credit risk and financial performance variables

The population of this study consist of Deposit Money Banks (DMBs) that where registered on the Nigeria stock exchange as at 2023. These banks comprises of seven (7) commercial banks with international authorization and other fifteen (15) commercial banks with national authorization.

The data for the study was carried out using the following:

Descriptive Statistics: Means, standard deviations, and percentages are used in analyzing the key variables related to credit risk (e.g., non-performing loans, loan loss provisions) and financial performance indicators (e.g., return on assets, return on equity) across different banks in Nigeria.

Correlation Analysis: This analysis is used in accessing the strength and direction of the affiliation between credit risk matrix and financial performance pointers,

Regression Analysis: This is used to model the connection between credit risk factors such as loan portfolio quality (Non-performing Loan) and capital adequacy (Deposit/loan) ratios and financial performance metrics (ROA).

Sensitivity Analysis: This is used in assessing the robustness of the findings to variations in key assumptions or methodological choices, testing the stability of results under different or using alternative measurement approaches. Finally, the results of the data analysis are interpreted and discussed in the context of the research objectives and theoretical framework. The implications of the findings for banking policy, risk management practices, and financial stability in Nigeria are discussed, highlighting key insights and areas for further research.

Model Specification

The functional form of the ARDL model can be expressed as follows:

$$ROAR_t = f(NPLR_t, DLR_t)$$

This indicates that the Return on Assets Ratio (ROAR) at time t is a function of the Non-Performing Loan Ratio (NPLR) and the Deposit-to-Loan Ratio (DLR) at time t.

The econometric form of the ARDL model incorporates lags of both the dependent and independent variables to capture the dynamic relationship. The general ARDL (p, q1, q2) model can be specified as:

$$ROAR_t = \alpha + \beta_1 ROAR_{t-1} + \gamma_0 NPLR_t + \gamma_1 NPLR_{t-1} + \delta_0 DLR_t + \delta_1 DLR_{t-1} + \epsilon_t$$

Where:

ROAR_t = the Return on Assets Ratio at time t.

NPLR_{t-j} = the Non-Performing Loan Ratio at time t-j.

DLR_{t-k} = the Deposit-to-Loan Ratio at time (t-k).

α is the intercept term.

β₁ captures the impact of the lagged ROAR.

γ₀ and γ₁ capture the current and lagged impact of NPLR.

δ₀, and δ₁ capture the current and lagged impact of DLR.

Data Presentation and Analysis

Table 1: Raw Data

Year	LDPR	NPLR	ROAR
2008	80.9289	6.300001	4.105941
2009	79.82141	6.094413	3.941295
2010	84.55497	7.816977	3.77665
2011	79.11752	8.429133	3.612004
2012	62.12072	8.13764	3.447359
2013	53.71742	7.731698	3.282713
2014	53.59952	7.323599	3.118068
2015	62.83526	6.906105	2.953423
2016	72.06894	6.624041	2.788777

2017	76.821	6.847206	2.624132
2018	78.6609	7.190954	2.459486
2019	65.23386	7.334072	2.294841
2020	61.76324	7.129789	2.130195
2021	57.99164	6.894774	1.96555
2022	61.06323	6.582811	1.800905
2023	62.40324	6.410912	1.636259

Source: Central bank annual report and federal reserves of economic data.

Table 1 indicates raw data on the Loan-to-Deposit Ratio, Non-Performing Loan Ratio, and Return on Assets Ratio between 2008 and 2023. Consequently, the dataset shall be of importance in carrying out a detailed time series analysis with a view to understanding how credit risk influences the financial performance of Nigerian banks.

Data Analysis

This section is a detailed investigation of the data set into diagnostic tests, descriptive statistics, and ARDL estimates. Diagnostic tests include normality, multicollinearity, serial correlation, and heteroskedasticity checks to avail proper knowledge in the robustness of the regression model.

Table 2: Descriptive Statistics

	LDPR	NPLR	ROAR
Mean	68.29386	7.109633	2.8711
Median	64.02791	7.017896	2.869881
Maximum	85.10381	8.43259	4.201355
Minimum	53.25348	6.091905	1.599005
Std. Dev.	10.116	0.648936	0.766698
Skewness	0.140293	0.417929	0.00664
Kurtosis	1.577842	2.336697	1.802796
Jarque-Bera	5.603368	3.036343	3.822595
Probability	0.060708	0.219112	0.147888
Sum	4370.807	455.0165	183.7504
Sum Sq. Dev.	6447.002	26.53046	37.033
Observations	64	64	64

Source: Eviews10 Output, 2024

Summary statistics for the considered variables are presented in Table 2. From here, one can have a good grasp of the characteristics of LDR, NPL ratio, and ROA ratio by way of central tendencies and dispersions. Summary statistics include mean, standard deviation, minimum, and maximum values. It is because of the involved shorter years, which is 16 years, hence needing quarterly data that give 64 observations.

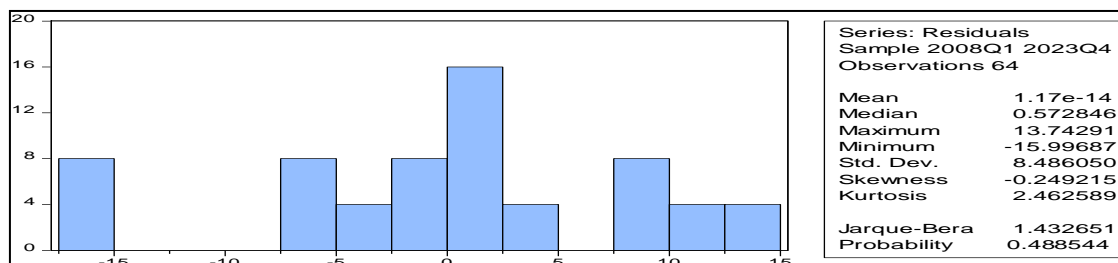
Table 3: Covariance and Correlational Matrix

Covariance Correlation	LDPR	NPLR	ROAR
LDPR	100.7344 1		
NPLR	-0.469659 -0.072679	0.414538 1	
ROAR	3.848258 0.504047	0.122683 0.250493	0.578641 1

Source: Eviews10 Output, 2024

Table 3 presents the covariance and correlation matrix for the selected variables: Loan-to-Deposit Ratio (LDR), Non-Performing Loan (NPL) Ratio, and Return on Assets (ROA) Ratio. The covariance shows the degree to which the variables vary together. The correlation coefficients show the intensity level and direction of linear affinity between the variables.

Figure 1: Normality Test



Source: Eviews10 Output, 2024

From Figure 1, the normality test based on the Jarque-Bera statistic is 1.43657 with a p-value of 0.48854. This indicates that there is no sufficient proof of violation of normality at the conventional level of significance equal to 5%. It also means that data distribution represented in Figure 1 is well below any pathologic deviation from the normality assumption.

Table 4: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	14.89007	Prob. F(1,12)	0.0623
Obs*R-squared	8.859817	Prob. Chi-Square(1)	0.4029

Source: Eviews10 Output, 2024

Table 4: Breusch-Godfrey Serial Correlation LM Test The result of the F-statistic is 14.89007 with a p-value of 0.0623, which provides weak evidence against the no serial correlation null hypothesis at 0.05% (5%). What is more, the Observed R-squared test result is 8.859817 with a p-value of 0.4029 under the Chi-Square distribution; hence, no significant serial correlation has been detected in the residuals. Results from these tests suggest that the assumption of no serial correlation cannot be rejected.

Table 5: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.264254	Prob. F(4,46)	0.8994
Obs*R-squared	1.145583	Prob. Chi-Square(4)	0.887
Scaled explained SS	3.52255	Prob. Chi-Square(4)	0.4745

Source: Views 10 output, 2024

The result of the Breusch-Pagan-Godfrey heteroskedasticity test is shown on Table 5. The F-statistic is 0.264254 with a corresponding p-value of 0.8994, hence providing no significant evidence against the null hypothesis of homoscedasticity at 0.05 level of significance. Also, the Observed R-squared is 1.145583 with the probability of Chi-Square being 0.887, while the Scaled explained SS gives the probability of 0.4745 under Chi-Square distribution, again strengthening the fact that no heteroskedasticity has been left in the residuals of the model. This would again support the assumption that variances are constant across observations.

Table 6: Multicollinearity Test

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
NPLR	2.991026	131.1655	1.066948
ROAR	2.142773	16.2665	1.066948
C	144.1232	124.0201	NA

Source: Eviews10 Output, 2024

Table 6 presents the Multicollinearity diagnostics using Variance Inflation Factors (VIFs) for the variables. The VIF measures for NPLR and ROAR indicate values of 131.1655 and 16.2665, respectively, suggesting high multicollinearity due to their variance in the model. Centered VIF values for NPLR and ROAR normalize to 1.066948, indicating moderate multicollinearity concerns when adjusted for the other variables. The constant term (C) exhibits a VIF of 124.0201, indicating potential multicollinearity issues, though exact centered VIF is not available (NA). These findings highlight the importance of considering multicollinearity effects when interpreting the regression results. Since the centered VIF values for NPLR and ROAR normalize to 1.066948 that is $VIF < 2$, No multicollinearity.

Table 7: Unit Root Test at Level

Method	α	Statistic	Prob.**	
ADF - Fisher Chi-square		43.1922	0.0000**	
ADF - Choi Z-stat		-2.99779	0.0014**	
Intermediate ADF test results				
Series	Prob.	Lag	Max Lag	Obs
LDPR	0.7619	0	1	63
NPLR	0.5356	0	1	63
ROAR	0.0000**	0	1	63

Source: Eviews10 Output, 2024

Table 7 shows the results of the unit root tests conducted at the level for the series: Loan-to-Deposit Ratio (LDPR), Non-Performing Loan Ratio, and Return on Assets Ratio (ROAR). The tests are carried out to reveal the stationarity of the variables as indicated by the ADF-Fisher Chi-square and ADF-Choi Z-stat. The outcome of the intermediate ADF test therefore shows the probability values at each series, denoting whether the null of a unit root could be rejected. ROAR series is stationary at the level with a p-value of 0.0000**, while LDPR and NPLR are not at the level with respective p-values of 0.7619 and 0.5356. This analysis is very important in ensuring the validity of further econometric modeling in the study.

Table 8: Unit root Test at First Difference

Method	Statistic	Prob.**		
ADF - Fisher Chi-square	115.164	0.0000**		
ADF - Choi Z-stat	-9.90521	0.0000**		
Intermediate ADF test results				
Series	Prob.	Lag	Max Lag	Obs
D(LDPR)	0.0000**	0	1	62
D(NPLR)	0.0000**	0	1	62
D(ROAR)	0.0000**	0	1	62

Source: Eviews10 Output, 2024

Table 8 presents the results of Augmented Dickey-Fuller (ADF) unit root tests conducted at the first difference. The tests indicate significant evidence of stationarity for variables LDPR, NPLR, and ROAR after differencing, with all p-values being 0.0000. This confirms the suitability of the data for subsequent time series analysis.

Table 9: The ARDL Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ROAR(-1)	0.992994	0.015147	65.55514	0.0000
LDPR	0.003322	0.002816	1.179546	0.2431
LDPR(-1)	-0.002837	0.002683	-1.05724	0.2949
NPLR	-0.008898	0.037336	-0.23831	0.8125
NPLR(-1)	0.012957	0.038402	0.337397	0.7371
C	-0.080012	0.13997	-0.57164	0.5698
R-squared	0.991461	Durbin-Watson stat		2.103694
Adjusted R-squared	0.990712			
F-statistic	1323.597			
Prob(F-statistic)	0.0000			

Source: Eviews10 Output, 2024

Table 9 presents the results of Autoregressive Distributed Lag (ARDL) estimates for variables ROAR, LDPR, and NPLR. The key coefficients show ROAR (-1) with a coefficient of 0.992994 (t-statistic 65.55514, p-value 0.0000), indicating a strong positive effect. LDPR and its lagged term LDPR (-1) show

coefficients of 0.003322 (t-statistic 1.179546, p-value 0.2431) and -0.002837 (t-statistic -1.05724, p-value 0.2949), respectively, suggesting minor impacts that are not statistically significant. NPLR and NPLR (-1) exhibit coefficients of -0.008898 (t-statistic -0.23831, p-value 0.8125) and 0.012957 (t-statistic 0.337397, p-value 0.7371), indicating no significant relationship. The model displays high explanatory power (R-squared 0.991461, Adjusted R-squared 0.990712) and overall significance (F-statistic 1323.597, p-value 0.0000), with no significant autocorrelation detected (Durbin-Watson statistic 2.103694).

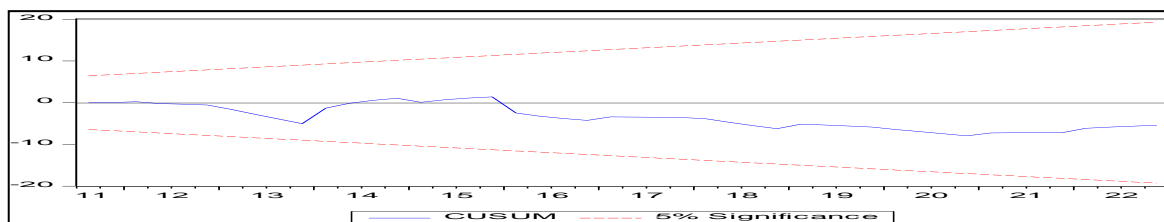
Table 10: ARDL Long Run Form and Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	0.086524	10%	3.17	4.14
K	2	5%	3.79	4.85
		2.50%	4.41	5.52
		1%	5.15	6.36
Finite Sample: n=65				
Actual Sample Size	63	10%	3.3	4.25
		5%	4.01	5.08
		1%	5.583	6.853
Finite Sample: n=60				
		10%	3.27	4.26
		5%	4	5.057
		1%	5.697	6.987
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-0.462502	10%	-2.57	-3.21
		5%	-2.86	-3.53
		2.50%	-3.13	-3.8
		1%	-3.43	-4.1

Source: Eviews10 Output, 2024

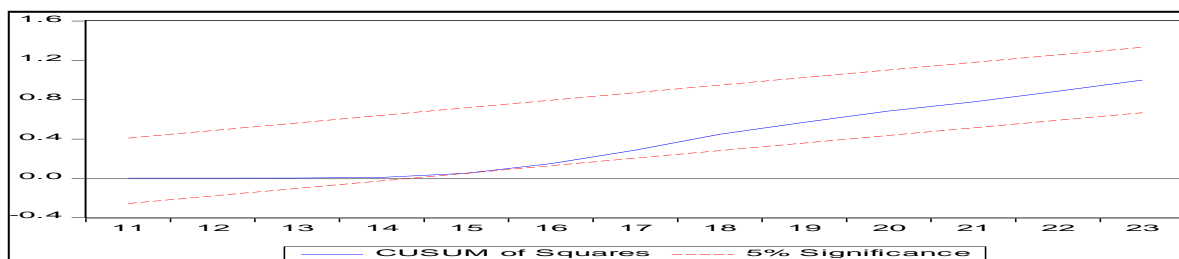
Table 10: Long Run Bound Test: The table presents an analysis of the null hypothesis of no levels relationship by means of F-statistics and t-statistics. The asymptotic F-statistic value for the F-Bounds Test is 0.086524. The critical values for rejection are at 10% significance level for both n=1000 and for finite sample sizes, n=65 and n=60. In the same way, the higher significance levels, 5% and 1% are presented in this table. Similarly, the t-Bounds Test has a t-statistic of -0.462502 that fails to reject the null hypothesis at all significance levels considered, both when n = 1000 and for finite sample sizes. This therefore suggests that there is inadequate evidence to support the hypothesis of no long-run relationship existing among the variables considered.

Figure 2a: Stability Test (CUSUM Test)



Source: Eviews10 Output, 2024

Figure 2b: Stability Test (CUSUM of SquareTest)



Source: Eviews10 Output, 2024

The stability test results for our model in fig 2a and b indicate overall stability, with both the CUSUM and CUSUM of Squares tests providing insightful details. The CUSUM line consistently lies perfectly between the lower and upper bounds, reflecting a stable process without significant shifts or deviations, suggesting that the model is structurally stable over the examined period. The CUSUM of Squares test, although slightly leaning on the lower bound at a certain point, ultimately normalizes further along the timeline, indicating a minor fluctuation rather than long-term instability. This normalization supports the conclusion that the model remains robust and reliable on the Overall, these results confirm the model's reliability and robustness, reinforcing confidence in its predictions and applicability to future data.

Hypotheses Testing

Based on the ARDL estimates, the following conclusions are drawn:

H01: The Loan-to-Deposit Ratio (LDR) does not significantly impact the financial performance (ROA) of Deposit Money Banks in Nigeria. The coefficients for LDR and its lagged term (0.003322 and -0.002837) have t-statistics of 1.179546 and -1.05724, with p-values of 0.2431 and 0.2949, respectively. These results indicate that LDR has no statistically significant effect on ROA. Thus, we fail to reject H01.

H02: The Non-Performing Loan Ratio (NPLR) does not significantly affect the financial performance (ROA) of Deposit Money Banks in Nigeria. The coefficients for NPLR (-0.008898 and 0.012957) show t-statistics of -0.23831 and 0.337397, with p-values of 0.8125 and 0.7371, respectively. These values indicate no significant relationship between NPLR and ROA. Therefore, we fail to reject H02.

In summary, neither LDR nor NPLR significantly impacts the ROA of Deposit Money Banks in Nigeria, suggesting that these factors may not be critical determinants of performance within the context of this model.

Discussion of Findings

Based on the results of the hypothesis testing, the analysis of the Loan-to-Deposit Ratio (LDR) and Non-Performing Loan Ratio (NPLR) on the Return on Assets (ROA) of Deposit Money Banks (DMBs) in Nigeria leads to the following conclusions:

Loan-to-Deposit Ratio (LDR): The findings indicate that variations in the LDR do not have a significant effect on the ROA of DMBs in Nigeria. With p-values of 0.2431 and 0.2949 for LDR and its lagged term, the results suggest that changes in LDR do not noticeably affect profitability. Therefore, the hypothesis (H01) that LDR does not significantly impact ROA is supported. This result contrasts with Adedeji and Adetayo (2020), who found a positive and significant relationship between LDR and the financial performance of Nigerian banks.

Non-Performing Loan Ratio (NPLR): Likewise, changes in NPLR do not appear to significantly influence the ROA of DMBs, with p-values of 0.8125 and 0.7371 for NPLR and its lagged term. This suggests that credit risk, as represented by NPLR, does not have a meaningful effect on bank profitability. Therefore, the hypothesis (H02) that NPLR does not significantly affect ROA is also supported. This finding contradicts the conclusions of Adeusi (2023) and Ohumba and Aigienohumba (2023), who observed a significant negative impact of credit risk on bank performance.

In conclusion, this study assessed the effect of Loan-to-Deposit Ratio (LDR) and Non-Performing Loan Ratio (NPLR) on the financial performance (ROA) of Deposit Money Banks (DMBs) in Nigeria using ARDL modeling. The results indicated that neither LDR nor NPLR significantly influenced ROA, with p-values above conventional significance thresholds. These findings suggest that factors beyond LDR and NPLR may play a more crucial role in determining the profitability of DMBs. Therefore, the hypotheses that LDR and NPLR do not significantly impact ROA, indicating that other factors like operational efficiency and market conditions might be more important and should be given consideration as well.

Recommendations

- i. Banks should prioritize improving operational efficiency by integrating cost-effective technologies and optimizing resource distribution, which will help lower the occurrence of non-performing loans.
- ii. Furthermore, banks need to bolster their risk management practices, especially in areas like credit risk evaluation and ongoing loan portfolio supervision, to safeguard long-term financial stability. This is crucial because lending beyond the funds gathered through deposits can result in financial instability.

References

Adedeji, O., & Adetayo, I. (2020). Loan-to-deposit ratio and profitability of selected deposit money banks in Nigeria. *Journal of banking and finance*, 12(3) 45-60

- Ademola, A. O. (2022). Credit risk management: implication for deposit money banks' performance in Nigeria. *FUOYE Journal of Finance and Contemporary Issues*, 3(2).
- Adeola, M. (2021). Credit risk management in Nigerian Banks. *Journal of Banking and Finance*, 14(3), 143-157.
- Adeusi, S. O., Akosile, M. O., & Ogunsanwo, O. F. (2023). The effects of credit risk management on the deposit money bank's performance in Nigeria. *Nigerian Journal of Banking and Financial Issues (NJBFI)* 9(1).
- Catherme B. (2023). Concept of non-performing Loan. <https://www.fool.com/terms/Non-performing-Loans>.
- Collins, C. & Agada, A. E. (2024). Credit management and financial performance: Evidence from Deposit Money Banks in Nigeria. *GPH-International Journal of Business Management*, 7(05), 56-71.
- Deloitte (2023), Credit risk management trends. Retrieved from *Deloitte Mickinsey And Company*.
- Djiogap, C. F., & Ngomsi, A. (2022). Determinants of bank performance in Nigeria: Credit risk and financial stability. *Journal of Banking and Finance*, 10(4), 245-267.
- Eno E. & Iniabasi E. (2022). Credit risk and financial performance of quoted commercial banks in Nigeria. *AKSU Journal of Administration and Corporative Governance*. DOI: 10.61090/aksujacorg: 2022.041
- Kankpang, A. K. (2023). Credit risk and profitability of deposit money banks in Nigeria. *Nigerian Journal of Management Sciences* 24(1a).
- Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2022). Credit risk and commercial banks' performance In Nigeria: A panel model approach. *Australian Journal of Business and Management Research*, 2(2), 31-38.
- Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77-91.
- Mbanefo P. (2024) Risks management impact on deposit money banks performance in Nigeria. *International Journal of Banking and Finance Research*. 10(4) 2024. www.wijerdjournal.org
- Natufe, O. K., & Evbayiro-Osagie, E. I. (2023). Credit risk management and the financial performance of deposit money banks: Some New Evidence. *Journal of Risk and Financial Management*, 16(7), 302.
- Nuraddeen, et al (2023). Credit risk and financial performance of banks in Nigeria: Moderating effect of board equity ownership. *Journal of International Accounting and Taxation Research Group*. ISSN: 2635-2958 (Online).
- Nwankwo, O. (2024). Bank credit analysis and loan administrating. *Jones Publication Publishers, Revised Edition*.
- Ohonba, N., & Aigienohuwa, O. (2023). Credit management and financial performance of deposit money banks in Nigeria. *Journal of the Management Sciences*, 60 (4), 209-223.
- Olawale, S. (2021). Liquidity Management in Banking. *Journal of Financial Services Research*, 13(4), 199-213.
- Ololade, B. M., Salawu, R. O., & Olatunji, O. O. (2023). Risk management and performance of deposit money banks in Nigeria: A re-examination. *Banks and Bank Systems*, 18(2), 113-126.