European Journal of Business and Innovation Research, 14(1),204-218, 2026
Print ISSN: 2053-4019(Print)
Online ISSN: 2053-4027(Online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

Effect of Liquidity Risk on the Profitability of Commercial Banks in Nigeria

Perpetua Ugwu and Ifeom Mary Okwo
Department of Accountancy,
Faculty of Management Science, Enugu State University of Science and Technology, Enugu

doi: https://doi.org/10.37745/ejbir.2013/vol14n1204218 Published February 20, 2026

Citation: Ugwu P. and Okwo I.M. (2026) Effect of Liquidity Risk on the Profitability of Commercial Banks in Nigeria, *European Journal of Business and Innovation Research*, 14(1),204-218

Abstract: *This study examined how liquidity risk affects the profitability of commercial banks in Nigeria, using Return on Equity (ROE) as the measure of profitability. The study focused on three key liquidity indicators: Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR). Data were collected from financial statements of selected banks covering 2014 to 2023, and analysis was done using Panel Ordinary Least Squares (OLS) regression. The results showed that LDR had a significant positive effect on ROE (coefficient = 0.040697, p-value = 0.0003), meaning that banks that lend out more of their deposits tend to be more profitable. However, CRR and LCR had negative but insignificant effects on ROE, with coefficients of -0.053538 (p-value = 0.7526) and -0.018040 (p-value = 0.3136), suggesting that holding more reserves or liquid assets slightly reduces profitability but does not have a strong impact. The model explained 93% of the changes in ROE (R^2 = 0.936993, Adjusted R^2 = 0.926313), and the F-statistic (87.73978, p-value = 0.000000) confirmed that the overall model was statistically significant. The study recommends that banks optimize their LDR to increase profitability while maintaining enough liquidity to avoid financial risk. It also suggests that banks adopt better asset allocation strategies to reduce any negative effects of CRR and LCR.*

Keywords: return on equity, loan-to-deposit ratio, cash reserve ratio, and liquidity coverage ratio, commercial banks, Nigeria.

INTRODUCTION

Banks are the backbone of any economy, playing a crucial role in financial intermediation by mobilizing deposits and providing loans to businesses and individuals. A well-functioning banking system supports economic growth by ensuring the smooth flow of funds between savers and borrowers (CBN, 2021). However, for banks to operate efficiently, they must maintain adequate liquidity, meaning they should have enough cash or liquid assets to meet their financial obligations at all times. If a bank runs out of liquidity, it may struggle to honor withdrawal requests, pay debts, or fund new loans, which can lead to financial distress or even collapse (Basel Committee, 2019). Liquidity risk arises when a bank is unable to meet its short-term obligations due to a mismatch between its assets and liabilities (Efemena & Augustine, 2024). This occurs when banks over-lend, invest excessively in illiquid assets, or fail to hold enough cash reserves. Effective liquidity

management is therefore crucial in ensuring that banks can meet their financial commitments while still maximizing profits (Efemena & Augustine, 2024). The ability of a bank to manage liquidity risk directly impacts its profitability, stability, and long-term sustainability.

There are several key measures used to assess liquidity risk in commercial banks. One of them is the Loan-to-Deposit Ratio (LDR), which measures the proportion of customer deposits that a bank has given out as loans (Adenuga et al., 2021). A high LDR indicates aggressive lending, which can increase earnings but also heighten liquidity risk, while a low LDR suggests that a bank is not fully utilizing its deposit base for income generation (Adenuga et al., 2021). Another important measure is the Cash Reserve Ratio (CRR), which represents the percentage of customer deposits that banks must hold with the central bank as a safeguard against financial instability (Olagunju & Isiaka, 2021). A higher CRR ensures financial stability but can limit the funds available for lending, reducing profitability (CBN, 2021). The Liquidity Coverage Ratio (LCR) is another key indicator that ensures banks maintain enough high-quality liquid assets to survive short-term financial shocks (Bank for International Settlements, 2023).

Profitability is a critical goal for any commercial bank, and one of the most widely used measures of profitability is Return on Equity (ROE). ROE indicates how effectively a bank is using shareholders' equity to generate profits. A high ROE means the bank is making good use of its capital, while a low ROE suggests inefficiencies in financial management (Singh et al., 2024). Efficient liquidity management is essential for improving profitability, as it ensures that banks have enough funds for lending and investment while maintaining financial stability. However, if a bank holds too much liquidity, it may miss out on profitable investment opportunities, while too little liquidity can expose it to financial distress and regulatory penalties (Obim et al., 2020).

In Nigeria, the issue of liquidity risk has become a major concern for commercial banks. Economic fluctuations, regulatory changes, and rising non-performing loans have made it difficult for banks to maintain optimal liquidity levels (Jeremiah et al., 2022). Some banks struggle with excessive lending, leaving them vulnerable to liquidity crises, while others hold too many idle reserves, limiting their ability to generate profits. The Central Bank of Nigeria (CBN) has introduced several policies, such as the Basel III liquidity framework, to ensure that banks manage their liquidity risk effectively (CBN, 2021). However, despite these regulations, some Nigerian banks continue to face liquidity challenges, raising concerns about their profitability and long-term sustainability.

Given these concerns, this study seeks to examine the effect of liquidity risk on the profitability of commercial banks in Nigeria, using Return on Equity (ROE) as the dependent variable and Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) as independent variables. The findings will provide valuable insights into how Nigerian banks can optimize liquidity management to enhance profitability while maintaining financial stability.

Statement of the Problem

In an ideal banking environment, commercial banks should be able to efficiently manage liquidity risk while ensuring profitability. They should maintain an optimal Loan-to-Deposit Ratio (LDR), meaning they lend enough to generate income without running out of cash for withdrawals. They should also meet the Cash Reserve Ratio (CRR) requirement set by the Central Bank of Nigeria

(CBN) while keeping an adequate Liquidity Coverage Ratio (LCR) to withstand short-term financial shocks (CBN, 2021). With proper liquidity management, banks can remain stable, attract investors, and contribute to economic growth.

However, in reality, many Nigerian commercial banks struggle with liquidity management. Some banks lend out too much of their deposits, leaving them unable to meet withdrawal requests, while others hold excessive reserves, reducing their ability to generate profits. Reports have shown that several Nigerian banks have experienced liquidity crises, leading to regulatory interventions, financial distress, and, in extreme cases, bank failures. Moreover, economic fluctuations, policy changes, and rising non-performing loans have made it difficult for banks to maintain optimal liquidity levels, directly affecting profitability.

The gap between the ideal and actual situation creates a serious concern for the Nigerian banking sector. While banks aim to be profitable, poor liquidity management increases financial risk and weakens investor confidence. The inability to maintain a proper balance between lending, reserve requirements, and liquidity coverage affects Return on Equity (ROE), limiting banks' capacity to grow and remain competitive. This study seeks to address this issue by examining the effect of liquidity risk on the profitability of commercial banks in Nigeria, providing solutions to help banks optimize liquidity while maintaining financial stability.

Objectives of the Study

The main objective of this study is to examine the effect of liquidity risk on the profitability of commercial banks in Nigeria. The specific objectives are to:

i. Determine the effect of Loan-to-Deposit Ratio (LDR) on Return on Equity (ROE) of commercial banks in Nigeria.
ii. Examine the effect of Cash Reserve Ratio (CRR) on Return on Equity (ROE) of commercial banks in Nigeria.
iii. Assess the effect of Liquidity Coverage Ratio (LCR) on Return on Equity (ROE) of commercial banks in Nigeria.

REVIEW OF RELATED LITERATURE

Liquidity Risk

Liquidity risk is the possibility that a bank will not have enough cash or easily convertible assets to meet its financial obligations when they fall due. Banks must maintain a balance between lending to customers and keeping enough liquid assets to handle withdrawals and unexpected expenses (Basel Committee, 2019). If a bank does not have sufficient liquidity, it may struggle to pay depositors, settle debts, or meet regulatory requirements, which can lead to financial distress or even collapse (CBN, 2021). Liquidity risk can arise from poor cash flow management, sudden economic downturns, or panic withdrawals by customers (Efemena & Augustine, 2024). During financial crises, liquidity shortages can spread across the banking system, creating instability and loss of confidence among depositors and investors (Saidu, 2023). To manage liquidity risk, banks are required to maintain a certain level of liquid assets, comply with regulatory requirements, and adopt strategies to ensure they can always meet short-term financial needs (Bank for International Settlements, 2023).

Loan-to-Deposit Ratio (LDR)

Loan-to-Deposit Ratio (LDR) is a measure used to determine how much of a bank's customer deposits are being used for loans rather than being held as reserves (Efemena & Augustine, 2024). It is calculated by dividing the total amount of loans given out by the total customer deposits received. A high LDR means the bank is lending out most of its deposits, which can increase profitability but also heighten liquidity risk if too many withdrawals occur at once (Adenuga et al., 2021). On the other hand, a low LDR suggests that the bank is being too conservative, holding too much cash instead of using it to generate income (Efemena & Augustine, 2024). Regulators often set LDR limits to ensure banks maintain a balance between lending and liquidity. In Nigeria, the Central Bank of Nigeria (CBN) introduced a minimum LDR requirement to encourage banks to lend more and support economic growth while ensuring financial stability (CBN, 2021).

Cash Reserve Ratio (CRR)

The Cash Reserve Ratio (CRR) is the percentage of a bank's total customer deposits that must be kept as reserves with the central bank (Olagunju & Isiaka, 2021). This requirement helps ensure banks have enough funds to handle withdrawals and financial shocks while controlling inflation and money supply in the economy (Bank for International Settlements, 2023). The Central Bank of Nigeria (CBN) uses CRR as a monetary policy tool to regulate banking sector liquidity (CBN, 2021). When the CRR is increased, banks have less money to lend, which can slow economic activity but help control inflation. When the CRR is lowered, banks have more money available for lending, which can boost economic growth but may increase inflationary pressures (Mia et al., 2023). Banks that fail to meet CRR requirements may face penalties from the central bank, as holding sufficient reserves is crucial for maintaining financial stability and depositor confidence (Investopedia, 2023).

Liquidity Coverage Ratio (LCR)

Liquidity Coverage Ratio (LCR) is a financial measure that ensures banks have enough high-quality liquid assets (HQLA) to cover potential cash outflows over a short-term stress period, typically 30 days (Investopedia, n.d.). This requirement was introduced as part of the Basel III banking regulations to strengthen global financial stability following the 2008 financial crisis (Bank for International Settlements, 2023). A high LCR means a bank is holding sufficient liquid assets to handle unexpected withdrawals or financial shocks, making it less vulnerable to liquidity crises (Investopedia, n.d.). However, if a bank holds too many liquid assets, it may miss out on profitable lending and investment opportunities, reducing overall returns (Singh et al., 2024). On the other hand, a low LCR indicates that a bank may struggle to meet short-term financial obligations, putting it at risk of liquidity shortages and regulatory penalties.

Profitability

Profitability refers to a bank's ability to generate income and sustain financial growth over time. It is a key indicator of financial health, showing how well a bank utilizes its assets and resources to make profits (Said & Doll, 2021). Banks earn profits mainly from interest income on loans, transaction fees, and investment returns (Said & Doll, 2021). However, profitability is influenced by various factors, including liquidity management, interest rate policies, operating expenses, and regulatory requirements (Adam & Agayi, 2024). If a bank holds too much liquidity, it may have fewer funds to lend, reducing its income. Conversely, if it lends excessively without maintaining

enough reserves, it faces liquidity risks and potential financial instability (Bank for International Settlements, 2023). Regulators monitor profitability levels to ensure banks remain stable and can withstand economic downturns without requiring government bailouts (CBN, 2021).

Return on Equity (ROE)

Return on Equity (ROE) is a profitability ratio that measures how well a bank generates profits from its shareholders' investments (Said & Doll, 2021). It is calculated by dividing net income by total shareholders' equity, showing the return earned on every unit of invested capital (Investopedia, 2023). A higher ROE indicates that a bank is using its resources efficiently to generate profits, while a lower ROE suggests inefficiencies or financial difficulties (Singh et al., 2024). Factors that influence ROE include loan quality, cost efficiency, capital structure, and liquidity management (Singh et al., 2024). If a bank maintains good liquidity management, it can optimize lending, reduce funding costs, and increase profitability, leading to a higher ROE. However, poor liquidity management, excessive loan defaults, or high regulatory costs can negatively impact ROE, making it harder for banks to attract investors and expand their operations.

Theoretical Framework

This study is based on Financial Intermediation Theory and Liquidity Preference Theory. The Financial Intermediation Theory by Diamond and Dybvig (1983) highlights the role of banks in balancing lending and liquidity to ensure both profitability and stability. The Liquidity Preference Theory by Keynes (1936) explains why banks and individuals prefer holding liquid assets instead of committing all funds to long-term investments. This study was anchored on the Financial Intermediation Theory, as it directly relates to how commercial banks in Nigeria manage liquidity risk while striving for profitability.

Financial Intermediation Theory

The Financial Intermediation Theory explains that banks act as intermediaries between depositors and borrowers, ensuring that funds flow efficiently within the economy (Diamond & Dybvig, 1983). Banks collect deposits from customers and lend them to businesses and individuals, earning interest in the process. However, while banks seek to maximize profits through lending, they must also maintain enough liquid assets to meet customer withdrawals and financial obligations. If they lend too much, they risk liquidity shortages; if they hold too much cash, they limit their profitability (CBN, 2021). This theory highlights the need for a balance between lending and liquidity, which is crucial in understanding the effect of Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) on Return on Equity (ROE) in Nigerian commercial banks. In addition, the theory emphasizes that poor liquidity management can lead to bank failures, financial crises, and economic instability. For example, during the 2008 global financial crisis, banks that failed to manage their liquidity properly collapsed, leading to widespread economic downturns. In Nigeria, regulatory bodies such as the Central Bank of Nigeria (CBN) enforce liquidity requirements to prevent such crises. By anchoring this study on the Financial Intermediation Theory, it becomes possible to assess how Nigerian banks balance liquidity risk and profitability, ensuring they remain stable while maximizing shareholder returns.

Liquidity Preference Theory

The Liquidity Preference Theory, proposed by John Maynard Keynes (1936), explains why individuals and businesses prefer holding liquid assets instead of locking all their funds in long-term investments. Keynes argued that people demand liquidity for three main reasons: transaction purposes (daily expenses), precautionary reasons (unexpected financial needs), and speculative motives (waiting for better investment opportunities) (Keynes, 1936). This theory applies to banks because they must decide how much cash to hold versus how much to lend. Holding too much liquidity means missing out on profitable lending opportunities, while holding too little increases the risk of liquidity shortages (Bank for International Settlements, 2023). For commercial banks, liquidity preference influences their Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR). A high CRR, for example, forces banks to keep more funds with the central bank, limiting their ability to lend and reducing profits (CBN, 2021). However, maintaining too little liquidity can make a bank vulnerable to financial shocks, leading to instability. This theory helps explain why banks must carefully manage liquidity to ensure profitability while remaining financially secure (Singh et al., 2024).

Empirical Review

Obim, et al. (2020) examined the impact of liquidity on banks' profitability using liquid assets, bank deposits, treasury bills, and return on assets as proxies. Secondary data was sourced from the Central Bank of Nigeria statistical bulletin. The study employed the ordinary least square using multiple regression techniques. The study found that there is a positive and non-significant relationship between bank deposits and return on the asset; a negative and non-significant relationship between the liquid asset and return on the asset.

Olagunju and Isiaka (2021) investigated the impact of cash reserve requirement on the profitability of deposit money banks in Nigeria over the period of 31years between 1988 and 2018. Quantitative secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin 2018 edition was considered in the study. The study employed Augmented Dickey-Fuller Unit Root Test, Co integration test, Granger Causality test and multiple regressions methods for the empirical test. It was revealed that there is long-run relationship between cash reserve requirement and the profitability of deposit money banks in Nigeria with the test of Johanson co integration. It was further revealed that there is no unidirectional or bidirectional relationship between cash reserve requirement and profitability of deposit money banks in Nigeria.

Obiora and Ujam (2021) examined the effect of portfolio management on the performance of listed deposit money banks (DMBs) in Nigeria from 2016 to 2020. The study used an ex post facto approach and data from the annual reports of banks with international authorization. Linear regression analysis was employed as the data analysis technique. The findings indicated that liquidity risk management had a significant positive effect on the financial performance of DMBs. Appah et al. (2021) studied how liquidity and profitability ratios affect profit growth in Nigerian oil and gas firms. They used an ex-post facto and correlational research design, analyzing financial reports from 2014 to 2019. They applied descriptive statistics, a correlation matrix, and multiple regression to examine the data. Their findings showed that current ratio, acid-test ratio, gross profit ratio, net profit ratio, net working capital, return on assets, return on equity, and return on capital employed all had a positive and significant effect on profit growth.

Akinroluyo and Dimgba (2022) looked into how banks' liquidity ratio and return on equity affect Nigerian deposit money banks, along with the impact of the acid-test ratio on financial leverage. They focused on listed banks as of 2021. Using a Panel OLS regression model, they analyzed data from 2006-2020. The results showed that a 1% change in the current ratio led to a 4% increase in operating efficiency, with a p-value of 0.0183 proving this effect was significant.

Adesina and Adewumi (2022) explored how liquidity management affects profitability in Nigerian deposit money banks. They studied five banks and used multiple regression to analyze data from 2017-2021. The results showed that liquidity management, measured by the ratio of liquid assets to total assets, had a positive but not very significant impact on return on capital employed. The ratio of liquid assets to total deposits and deposits from other banks to total assets also had positive but weak effects on return on capital employed.

Jeremiah et al. (2022) examined the influence of bank liquidity on the lending behavior of 12 listed DMBs in Nigeria using an ex post facto design and secondary data from 2006 to 2020. Descriptive statistics and regression analysis showed that bank liquidity significantly affects lending behavior, with the loan-to-total assets ratio having the highest influence.

Saidu (2023) assessed the effect of the Loan-to-Deposit Ratio on Net Interest Margin, using Inflation as a moderator and panel data regression on 11 banks listed on the Nigeria Stock Exchange from 2010 to 2021. The Fixed Effects Model was selected based on the Hausman test, and results showed that Inflation moderates the relationship between Loan-to-Deposit Ratio and Net Interest Margin.

Mia et al. (2023) investigated the effect of Cash Reserve Ratio (CRR) on banking intermediation and profitability in Bangladesh's conventional commercial banks. Using correlation analysis and t-tests, the study analyzed secondary time-series data from 2017 to 2021 for 10 leading banks. The findings revealed a negative relationship between CRR and profitability, measured by Return on Assets (ROA) and Return on Equity (ROE), indicating that higher CRR reduces bank profitability. Adam and Ayagi (2024) investigated the relationship between liquidity and profitability of listed deposit money banks in Nigeria, covering the period from 2013 to 2022. A judgmental sampling technique was used to select a sample size of 9 banks from a population of 13 listed deposit money banks. The study used OLS regression with diagnostic tests were used for the analysis. The findings revealed a significant positive relationship between liquidity and profitability, with higher liquidity ratios such as cash ratio and current assets being associated with improved profitability.

Gap in Empirical Review

Previous studies have examined various aspects of liquidity and profitability in the banking sector, but significant gaps remain. Studies such as Obiora and Ujam (2021) and Adam & Ayagi (2024) focused on liquidity risk management and its relationship with profitability but did not specifically analyze the impact of Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) on Return on Equity (ROE). Similarly, Mia et al. (2023) explored the effect of CRR on bank profitability but was limited to Bangladesh's banking sector, leaving a gap in understanding how CRR influences Nigerian commercial banks. Additionally, while Saidu (2023) investigated LDR, it focused on Net Interest Margin (NIM) rather than ROE, missing a key measure

of overall profitability. This study filled these gaps by providing a comprehensive analysis of liquidity risk (measured by LDR, CRR, and LCR) and its direct effect on ROE in Nigerian commercial banks from 2014 to 2023. Unlike previous studies that focused on individual liquidity indicators, this study combines multiple liquidity risk factors to offer a broader perspective on their impact on profitability. It also provides a more recent and focused dataset on Nigerian banks, making its findings highly relevant for policymakers, bank managers, and investors.

METHODOLOGY

The study adopted an ex post facto research design to examine how liquidity risk affected the profitability of commercial banks in Nigeria using past financial data. It focused on the Nigerian banking sector and relied on secondary data obtained from the annual reports and financial statements of selected banks over a ten-year period from 2014 to 2023, alongside publications from the Central Bank of Nigeria and the Nigerian Deposit Insurance Corporation. The population of the study consisted of 26 commercial banks licensed to operate in Nigeria as at March 2025. From this population, seven banks with international authorization were selected because of their wide operations and large asset base. These banks were Access Bank Limited, Fidelity Bank Plc, First City Monument Bank Limited, First Bank Nigeria Limited, Guaranty Trust Bank Limited, United Bank for Africa Plc, and Zenith Bank Plc.

Model Specification

The model for this study examined the liquidity risks (independent variables) on profitability (dependent variable). The general model is specified as follows:

$$ROE = \beta_0 + \beta_1 LDR_{it} + \beta_2 CRR_{it} + \beta_3 LCR_{it} + \beta_4 TA_{it} + c_{it} + \varepsilon_{it} \quad \text{[Equation (1)]}$$

Where:

ROE = Return on Equity
LDR = Loans-to-Deposit Ratio
CRR = Cash Reserve Ratio
LCR = Liquidity Coverage Ratio
TA = Total Assets (Control Variable)
β_0 = Coefficient (constant) to be estimated
$\beta_i - \beta_4$ = Parameters of the independent variables to be estimated
ti = Current period

European Journal of Business and Innovation Research, 14(1),204-218, 2026
Print ISSN: 2053-4019(Print)
Online ISSN: 2053-4027(Online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

DATA ANALYSIS AND DISCUSSION

Data Analysis

Table 4.1.1: Descriptive Statistics for the Variables

	ROE	LDR	CRR	LCR	LNTA
Mean	0.162817	0.499130	25.00000	0.288091	15.21473
Median	0.156578	0.448791	22.50000	0.212364	15.23120
Maximum	0.475046	1.158035	32.50000	5.884101	16.82950
Minimum	0.021015	0.018627	20.00000	0.065047	13.96353
Std. Dev.	0.082508	0.254466	4.504426	0.682720	0.704852
Skewness	0.913559	0.432983	0.628894	8.032868	-0.038105
Kurtosis	4.802001	2.838909	1.953125	66.36732	2.534163
Jarque-Bera	19.20791	2.262885	7.810771	12464.45	0.649869
Probability	0.000067	0.322568	0.020133	0.000000	0.722575
Sum	11.39721	34.93913	1750.000	20.16640	1065.031
Sum Sq. Dev.	0.469722	4.467936	1400.000	32.16131	34.28034
Observations	70	70	70	70	70

Source: Eviews 10.0 Software, 2025

The normality test results indicate that Loan-to-Deposit Ratio (LDR) and Log of Total Assets (LNTA) are normally distributed, while Return on Equity (ROE), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) deviate from normality. LDR has a skewness of 0.432983, kurtosis of 2.838909, and a Jarque-Bera probability of 0.322568, suggesting a symmetrical and normal distribution. Similarly, LNTA has a skewness of -0.038105, kurtosis of 2.534163, and a Jarque-Bera probability of 0.722575, confirming normality. ROE and CRR show mild deviations from normality. ROE is moderately positively skewed (0.913559) and leptokurtic (4.802001), with a Jarque-Bera probability of 0.000067, indicating non-normality. CRR has a mild positive skew (0.628894) and is platykurtic (1.953125), with a Jarque-Bera probability of 0.020133, suggesting that it does not follow a normal distribution. LCR exhibits extreme non-normality, with high positive skewness (8.032868) and excessive kurtosis (66.36732). The Jarque-Bera probability of 0.000000 confirms that LCR is highly non-normal, likely due to extreme outliers. Among the variables, LDR and LNTA are normally distributed, while ROE, CRR, and LCR deviate from normality. The non-normality of LCR is particularly severe, as shown by its extreme skewness and kurtosis.

Table 4.1.2: Panel Ordinary Least Square Multiple Regression Analysis (ROE)

Variable	Coefficient	Standard Error	t-Stat	p-Value
LDR	-0.040697	0.010546	-3.859131	0.0003
CRR	-0.053538	0.169093	-0.316622	0.7526
LCR	-0.018040	0.017748	-1.016476	0.3136
LNTA	0.165667	0.012669	13.07634	0.0000
C	-3.327690	0.123004	-27.05362	0.0000
R^2 = 0.936993, Adjusted R^2 = 0.926313, F-Stat = 87.73978, Prob(F-stat) = 0.000000, DW = 2.09				

Source: Eviews 10.0 Output, 2025

The Panel Ordinary Least Squares (OLS) regression results show how liquidity risk factors affect Return on Equity (ROE) in Nigerian commercial banks. The Loan-to-Deposit Ratio (LDR) has a positive and significant effect on ROE (coefficient = 0.040697, p-value = 0.0003), meaning that as banks increase their loan-to-deposit ratio, profitability improves. The Log of Total Assets (LNTA) also has a strong positive and highly significant impact on ROE (coefficient = 0.165667, p-value = 0.0000), suggesting that larger banks tend to be more profitable. However, Cash Reserve Ratio (CRR) and Liquidity Coverage Ratio (LCR) do not significantly influence ROE, as indicated by their high p-values (0.7526 and 0.3136, respectively). The negative coefficients for CRR (-0.053538) and LCR (-0.018040) suggest that higher reserve requirements and excessive liquidity holdings may slightly reduce profitability, but these effects are not statistically significant.

The model explains a high proportion of the variation in ROE, as shown by $R^2 = 0.936993$ and Adjusted $R^2 = 0.926313$, meaning that about 93% of changes in ROE are explained by LDR, CRR, LCR, and LNTA. The F-statistic (87.73978) and its probability (0.000000) confirm that the model is overall statistically significant. The Durbin-Watson statistic (2.09) suggests that there is no severe autocorrelation in the model. In summary, banks that effectively manage their Loan-to-Deposit Ratio and expand their asset base tend to be more profitable, while holding excessive reserves or liquidity does not significantly impact profitability.

Test of Hypotheses

Decision Rule: Following the guidelines outlined by Gujarati and Porter (2009), the decision rule entails accepting the alternative hypothesis (H1) under the following conditions: if the coefficient exhibits either a positive or negative sign, the absolute value of the t-statistic is greater than 2.0, and the p-value associated with the t-statistic is less than 0.05. Otherwise, the null hypothesis (H0) is accepted, and H1 is rejected.

Presentation of Test Results

Table 4.2.2 Panel ordinary least square multiple regression analysis was used to test the above-stated hypothesis.

Hypothesis One

H_{01}: Loan-to-Deposit Ratio (LDR) has no significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

H_{11}: Loan-to-Deposit Ratio (LDR) has a significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

Decision: The regression result shows that LDR has a coefficient of 0.040697 with a p-value of 0.0003. Since the p-value is less than 0.05, we reject H_{01} and conclude that LDR has a significant positive effect on ROE.

Hypothesis Two

H_{02}: Cash Reserve Ratio (CRR) has no significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

H_{12}: Cash Reserve Ratio (CRR) has a significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

Decision: The regression result shows that CRR has a coefficient of -0.053538 with a p-value of 0.7526. Since the p-value is greater than 0.05, we fail to reject H_{02}, meaning that CRR does not have a significant effect on ROE.

Hypothesis Three

H_{03}: Liquidity Coverage Ratio (LCR) has no significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

H_{13}: Liquidity Coverage Ratio (LCR) has a significant effect on Return on Equity (ROE) of commercial banks in Nigeria.

Decision: The regression result shows that LCR has a coefficient of -0.018040 with a p-value of 0.3136. Since the p-value is greater than 0.05, we fail to reject H_{03}, meaning that LCR does not have a significant effect on ROE.

DISCUSSION OF FINDINGS

Effect of Non-Performing Loan Ratio on Return on Assets

The study found that the Loan-to-Deposit Ratio (LDR) has a significant positive effect on Return on Equity (ROE), meaning that as banks lend out a higher proportion of their deposits, their profitability improves. This is because lending is the primary income-generating activity for banks, and a higher LDR means more funds are being used for loans rather than sitting idle. Loans generate interest income, which directly increases profits and improves ROE. The significance of this effect suggests that Nigerian banks benefit from maintaining an optimal balance between deposits and loans, ensuring they earn enough interest income while still managing liquidity risk. Jeremiah et al. (2022) support this finding, stating that bank liquidity significantly influences lending behavior, with the loan-to-total assets ratio having the highest impact on how banks allocate their resources. Similarly, Saidu (2023) found that LDR affects bank profitability, though inflation can moderate this relationship. This reinforces the idea that effectively managing LDR is crucial for improving ROE in Nigerian banks.

Another reason for the significant positive effect of LDR on ROE could be related to operational efficiency. When banks manage their lending well, they can maximize interest income while minimizing bad loans. Akinroluyo and Dimgba (2022) found that a 1% change in liquidity ratios led to a 4% increase in operating efficiency, meaning that well-managed liquidity can enhance profitability. If banks lend too little, they may not earn enough from interest, and if they lend too much without proper risk assessment, they may struggle with bad debts. Therefore, maintaining an optimal LDR ensures banks remain profitable while avoiding excessive liquidity risk. The findings of this study align with these previous studies, emphasizing that banks that effectively balance their lending and deposits tend to achieve higher profitability.

Effect of Cash Reserve Ratio on Return on Equity

The results showed that Cash Reserve Ratio (CRR) has a negative but insignificant effect on ROE, meaning that while higher reserve requirements may slightly reduce profitability, the impact is not strong enough to be statistically significant. CRR represents the percentage of deposits that banks must keep as reserves with the Central Bank of Nigeria (CBN). When CRR is high, banks have fewer funds available for lending, which can limit their ability to generate interest income. Mia et

al. (2023) found a similar trend in Bangladesh, where a higher CRR negatively affected bank profitability, as measured by Return on Assets (ROA) and ROE. The negative direction of the effect in this study suggests that banks holding more reserves experience slight profit reductions, but the lack of significance implies that banks find ways to adjust their financial strategies to minimize this impact.

A possible explanation for the insignificant effect of CRR on ROE is that banks may compensate for higher reserve requirements by increasing other revenue streams, such as fees, investments, or higher lending rates. Olagunju and Isiaka (2021) found that there is a long-run relationship between CRR and profitability, meaning that while CRR might not show an immediate impact on ROE, it could affect bank performance over time. Additionally, Adesina and Adewumi (2022) observed that liquidity management sometimes has an insignificant effect on profitability, suggesting that banks use alternative financial strategies to maintain stable profits even when regulatory requirements are strict. This aligns with the study's findings, indicating that while CRR may slightly reduce profitability, it does not have a major impact on ROE in the short term.

Effect of Liquidity Coverage Ratio on Return on Equity

The study also found that the Liquidity Coverage Ratio (LCR) has a negative but insignificant effect on ROE, meaning that holding higher levels of liquid assets does not significantly impact profitability. LCR ensures that banks maintain enough high-quality liquid assets to cover short-term financial obligations. While this is crucial for financial stability, excessive liquidity holdings may reduce profitability because liquid assets often generate lower returns compared to loans and other investments. The negative direction of the effect suggests that banks with higher LCRs may be sacrificing profitability by keeping too many reserves instead of using funds for income-generating activities. Adesina and Adewumi (2022) found similar results, where liquidity management had a positive but insignificant effect on profitability measures like return on capital employed and total loans to total assets. This suggests that while LCR is essential for risk management, it may not directly influence profitability in a significant way.

One possible reason for the insignificant effect of LCR on ROE is that banks may adjust their asset allocations to balance liquidity and profitability. Adam and Ayagi (2024) found that higher liquidity ratios like cash ratio and current assets were positively related to profitability, meaning that maintaining some liquidity is beneficial. However, when liquidity levels become too high, banks may miss out on profitable lending opportunities. This could explain why LCR shows a negative but insignificant effect on ROE in this study, banks are required to maintain liquidity for stability, but beyond a certain level, excess liquidity does not contribute much to profitability. The findings suggest that while LCR is important for managing financial risk, it should be maintained at an optimal level to avoid negatively affecting bank profitability.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study successfully achieved its objective of examining how liquidity risk affects the profitability of commercial banks in Nigeria. It specifically investigated the impact of Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) on Return

on Equity (ROE). The findings provided clear answers to the research questions. The study found that LDR has a significant positive effect on ROE, meaning that banks that lend out a higher proportion of their deposits tend to be more profitable. However, CRR and LCR had negative but insignificant effects on ROE, suggesting that holding more reserves or liquid assets slightly reduces profitability but does not strongly influence financial performance.

The study also supports the Financial Intermediation Theory, which explains how banks' balance lending and liquidity to maximize profitability while maintaining stability. The positive effect of LDR on ROE confirms that efficient lending improves bank performance. However, the findings on CRR and LCR provide mixed support for the Liquidity Preference Theory. While the negative direction of their effect aligns with the idea that excessive liquidity holdings can limit returns, their insignificance suggests that banks can manage liquidity constraints through other financial strategies. Overall, the study highlights that proper liquidity management is essential for improving bank profitability, ensuring that banks remain stable while maximizing returns for shareholders.

Recommendations

Based on the study's findings, the following recommendations were made:

i. Commercial banks should optimize their loan-to-deposit ratio by ensuring they lend a reasonable portion of their deposits to generate higher interest income. However, banks must also maintain a balance to avoid excessive lending, which could lead to liquidity shortages or an increase in bad loans. Banks should strengthen their credit risk assessment processes to ensure loans are given to creditworthy borrowers, reducing the risk of defaults and enhancing profitability.
ii. The study showed that CRR had a negative but non-significant effect on ROE, suggesting that while reserve requirements may slightly reduce profitability, they do not strongly influence financial performance. To mitigate this impact, banks should adopt efficient asset allocation strategies by diversifying revenue streams beyond interest income. Additionally, banks should explore high-yield investment opportunities permitted by regulatory authorities to ensure that funds held as reserves do not remain idle but contribute to overall profitability.
iii. Since LCR had a negative but insignificant effect on ROE, banks should aim to maintain an optimal level of high-quality liquid assets. Holding excessive liquidity may limit income-generating opportunities, while too little liquidity can expose banks to financial distress. Banks should implement dynamic liquidity management strategies, such as adjusting liquidity holdings based on market conditions, regulatory requirements, and economic forecasts. This will help them meet short-term obligations while ensuring that excess liquidity is efficiently reinvested for better returns.

Contribution to Knowledge

This study expanded existing knowledge on liquidity risk and bank profitability in Nigeria by addressing gaps left by previous research. Unlike earlier studies that focused on general liquidity management, this study specifically examined how Loan-to-Deposit Ratio (LDR), Cash Reserve Ratio (CRR), and Liquidity Coverage Ratio (LCR) affect Return on Equity (ROE). The findings showed that LDR has a significant positive impact on ROE, while CRR and LCR have negative but insignificant effects, providing a clearer understanding of their roles in bank profitability. A more recent and Nigeria-specific dataset covering 2014 to 2023 was used, ensuring that the findings are

relevant for bank managers, policymakers, and investors. This research offers practical insights for improving liquidity management strategies and making informed financial decisions in the Nigerian banking sector.

REFERENCES

Adam, U. M., & Ayagi, S. R. (2024). Liquidity and Profitability of Listed Deposit Money Banks in Nigeria. *FUDMA Journal of Accounting and Finance Research [FUJAFR]*, *2*(2), 71–80. https://doi.org/10.33003/fujafr-2024.v2i2.60.71-80.

Adenuga, A. O., Mohammed, J. A., Laniyan, C. V., Akintola, A. A & Asuzu, O. C (2021). Measuring the impact of loan-to deposit ratio (LDR) on banks' liquidity in Nigeria, CBN Economic and Financial Review (EFR), 59(2), 43-59.

Adesina, O. D., & Adewumi, A. A. (2022). The Effect of liquidity management on the Financial Performance of selected Deposit Money Banks in Nigeria. *Fuoye Journal of Accounting and Management*, *5*(2), 52-63.

Akinroluyo, B. I. & Dimgba, C. (2022). Banks liquidity ratio and return on equity of Nigeria deposit money bank in Nigeria. *International Journal of Management & Entrepreneurship Research, 4(1),* 36-47. DOI: https://doi.org/10.51594/ijmer.v4i1.283

Appah, E., Onowu J. U., & Tonye Y. (2021). Liquidity and profitability ratios on growth of profits of listed oil and gas firms in Nigeria. *African Journal of Accounting and Financial Research 4(3),* 1-14. DOI: 10.52589/AJAFR6NHPAYUO.

Bank for International Settlements (BIS). (2023). *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools.* Basel: BIS Publications.

Bank for International Settlements. (2023). *Liquidity coverage ratio (LCR)*. Retrieved from https://www.bis.org/fsi/fsisummaries/lcr.htm

Basel Committee on Banking Supervision. (2017). *High-level summary of Basel III reforms*. Bank for International Settlements. Retrieved from https://www.bis.org

Basel Committee on Banking Supervision. (2019). *Risk management in banking: Principles and guidelines*. Bank for International Settlements.

Central Bank of Nigeria (2021). *The Banks and Other Financial Institutions Act (BOFIA).* Abuja, Nigeria: CBN.

Central Bank of Nigeria (CBN). (2016). *Understanding monetary policy series No. 40*. Retrieved from https://www.cbn.gov.ng/out/2016/mpd/understanding%20monetary%20policy%20series%20no%2040.pdf

Central Bank of Nigeria (CBN). (2021). *Financial Stability Report.* Abuja: CBN Publications.

Diamond, D. W., & Dybvig, P. H. (1983). *Bank runs, deposit insurance, and liquidity*. *Journal of Political Economy*, *91*(3), 401–419.

Efemena E. O. & Augustine, C. I. (2024). Bank liquidity and financial performance of deposit money banks in Nigeria. *International Journal of Scientific Research and Management, 12(12),* 8053-8063. DOI: 10.18535/ijsrm/v12i12.em04

Investopedia. (n.d.). *Liquidity coverage ratio (LCR)*. Retrieved February 21, 2025, from https://www.investopedia.com/terms/l/liquidity-coverage-ratio.asp

Jeremiah, O. O., Akpanuko, E., & Acha, I. (2022). The influence of bank liquidity on lending behaviour of deposit money banks (DMBS) in Nigeria (2006-2020). *AKSU Journal of Management Sciences, 7(1&2),* 177-195.

Keynes, J. M. (1936). *The General Theory of Employment, Interest, and Money.* London: Macmillan.

Mia, M. F., Nodi, M. A., Arif, M., & Shah, A. (2023). Impact of cash reserve ratio on banks profitability: A study on conventional commercial banks in Bangladesh. *Journal of Asian Business Strategy*, *13*(1), 24.

Obim, E. N., Takon, S. M. & Mgbado, M. U. (2020). The impact of liquidity on banks profitability in Nigeria. *IIARD International Journal of Banking and Finance Research, 6(1),* 1-8.

Obiora, F. & Ujam, O. J. (2021). Effect of portfolio management on performance of listed deposit money banks in Nigeria. IIARD International Journal Of Banking And Finance Research, 7(2), 21-33.

Olagunju, I. L., & Isiaka, N. A. (2021). The Economic Implication of Cash Reserve Requirement on the Profitability of Deposit Money Banks in Nigeria. Cross-Cultural Communication, 17(1), 38-47. Available from: http//www.cscanada.net/index.php/ccc/article/view/12060 DOI: http://dx.doi.org/10.3968/12060

Said, K., & Doll, Y. (2021). Strategies to improve financial profitability in the banking industry. *International Journal of Applied Management and Technology, 20,* 52–70. https://doi.org/10.5590/IJMAT.2021.20.1.03

Saidu, A. (2023). Effects of loan-to-deposit ratio on net interest margin of commercial banks in Nigeria: Moderating role of inflation. *Being a Paper Presented at The 3rd International Conference on Administration and Management College of Administration and Management Studies Hassan Usman Katsina Polytechnic, Katsina, Nigeria 6th - 9th June, 2023*.

Singh, R., Gupta, C. P., & Chaudhary, P. (2024). Defining return on assets (ROA) in empirical corporate finance research: A critical review. *Empirical Economics Letters, 23*(Special Issue 1), 1–20. https://doi.org/10.5281/zenodo.10901886