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Effects of credit and liquidity risks on the financial stability of listed commercial banks in Nigeria

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Abstract

This study empirically examines the effects of credit and liquidity risks on the financial stability of listed commercial banks in Nigeria over the period 2005–2024. Using a balanced panel dataset of 13 banks (260 firm-year observations) derived from audited annual reports, financial stability is proxied by the Capital Adequacy Ratio (CAR) and Leverage Ratio (LR), while credit and liquidity risks are measured by the Non-Performing Loans ratio (NPL) and Liquidity Coverage Ratio (LCR), respectively. Bank size is included as a control variable. The study employs panel econometric techniques, including pooled Ordinary Least Squares, Fixed Effects (FE), and Random Effects (RE) models, with the Hausman test indicating the superiority of the FE specification. The results of tse study are significant. The Fixed Effects model (as preferred under the Hausman test, $\chi^2 = 16.92$, $p < 0.01$ for CAR; $\chi^2 = 13.58$, $p < 0.01$ for LR), shows that credit risk (NPL) is significantly and inversely related to both measures of financial stability. In contrast, liquidity risk (LCR) significantly and positively affected financial stability with coefficients 0.031 ($p < 0.05$) and 0.017 ($p < 0.05$) for the CAR and LR, respectively. These models account for 64.8% and 61.2% of the within-bank variation in CAR and LR, respectively. Overall, the study highlights the critical interplay between credit and liquidity risk management in sustaining banking sector stability. It provides empirical evidence supporting the need for strengthened regulatory oversight on asset quality and liquidity positions. The findings offer important policy implications for regulators and bank managers in emerging economies, particularly in designing integrated risk management frameworks to mitigate systemic vulnerabilities and enhance financial resilience.

***Keywords*:** Financial Stability, Credit Risk, Liquidity Risk, Capital Adequacy, Commercial Banks, Leverage Ratio, Panel Data Analysis

JEL Classification: G21, G28, G32

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1. Introduction

The banking sector stability is the base for a country's economic strength and growth trend. Commercial banks are the key intermediaries that carry out the main activities of credit allocation, payment facilitation, and risk transformation; therefore, their soundness is most important to the public (Mishkin, 2019; Barisua, 2025). The global financial crisis in 2008 and the sovereign debt crises that came afterwards demonstrated clearly that disruptions in the banking system are capable of triggering a sequence of economic collapse, most of the time this is characterized by credit crunches, asset price deflation, and deep recessions (Ahiase et al., 2024; Muhammad et al., 2024). According to the Office of the Comptroller of the Currency (2025), the 2008 crisis caused the deepest U.S. recession since World War II, with a 4.3% drop in GDP from peak to trough and a more than doubling of unemployment from under 5% to over 10% by October 2009. The International Monetary Fund (IMF, 2013) asserted that it was the most severe economic and financial crisis of the last 80 years, following the Great Depression. Thus, understanding and mitigating the risks that threaten banking stability have been major concerns of policymakers, regulators, and scholars.

The banking sector is increasingly playing a pronounced role in the economy of developing countries such as Nigeria. The sector is basically the leading source of finance for the national economy through its contributions to the small and medium enterprises (SMEs) sector and the facilitation of trade. According to the National Bureau of Statistics (2024), the banking sector contributed about 5.01% to Nigeria's GDP, with a nominal value of 13.7 trillion naira in 2024, while growing in real terms by 30.9% and accounting for approximately 42% of the country's overall 3.4% real GDP growth. However, there are quite sizeable inherent vulnerabilities in the Nigerian banking landscape. High dependence on choppy oil revenues and macroeconomic imbalances make an otherwise difficult environment for operation. The sector has endured storms in the past, endured a major consolidation effort in 2005 that whittled down the number of banks from 89 to 25 (Euromoney, 2023; Soludo, 2006), nearly toppled in 2009, which required massive intervention by the Central Bank of Nigeria (CBN). In an effort to prevent systemic meltdown, the CBN handed over ₦620 billion to ten banks that were in deep trouble during the 2009 crisis (Central Bank of Nigeria, 2009). After that, the Asset Management Corporation of Nigeria (AMCON) was created in 2010 to purchase bad loans, and it spent nearly ₦1.725 trillion, which brought the total cost of the bank bailouts to more than ₦3 trillion (BusinessDay, 2020). These have been interpreted as the enormous system-wide consequences of the coexistence and management of two kinds of risks that are at the very core of the bank credit risk and liquidity risk (Umar & Musa, 2023).

Credit risk, a loss potential caused by a borrower's failure to meet debt repayments, is still the major threat to banks' survival. In Nigeria, institutional framework weaknesses, informational asymmetry, and cyclical economic downturns have been the main causes of the high level of Non-

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Performing Loans (NPLs) (Ahiase et al., 2024; Bob-Manuel, 2024; Barisua, 2024). Though the latest figures indicate that the NPL ratio of the banking sector has improved slightly to 4.50% in December 2024 from 4.58% in September 2024—just a little lower than the prudent benchmark of 5.00% (Central Bank of Nigeria, 2024)—the banking sector remains fragile, and the actual NPL ratio may even be higher than reported, thereby implying that the risk in the sector is on the rise.

The review of the performance of eight major deposit money banks by THISDAY (2025) showed that their average NPL ratio was actually higher in 2024 at 4.99% as compared to 3.82% in 2023, with FBN Holdings recording a breach of the CBN's 5% regulatory threshold by a ratio of 10.20% in 2024 - its highest level since 2018 (S&P Global Ratings, 2024; THISDAY, 2025). The worsening situation was confirmed with the improved quality management of loans as the nominal NPL volumes increased rapidly and were largely attributable to the elevated lending rates that followed the Federal Reserve Rate hikes totalling 800 basis points to 27.5% in 2024 (Nairametrics, 2025). Also, there was persistent double-digit inflation. The Central Bank of Nigeria (2024) stated that although the NPL ratio has been on a downtrend lately, it still constitutes a significant area of concern for the regulators, as an unexpected economic crisis can easily trigger a domino effect of new default cases. However, liquidity risk, the risk that a bank will be unable to carry out its short-term obligations without putting its interests at risk, poses a risk comparable to that of credit risk. As the financial systems increasingly become intertwined, the impact of liquidity trouble that an institution suffers is felt broadly and thus, it poses a danger of a systemic crisis (Ibrahim & Ozkan, 2021).

Notwithstanding extensive regulatory interventions made by the CBN, in addition to imposing the Basel II/III frameworks as minimum requirements for Capital Adequacy Ratio (CAR) and introducing new liquidity standards such as Liquidity Coverage Ratio (LCR), an empirical gap still exists. There have been many studies on the determinants of bank performance or profitability in Nigeria, and very few of these are current and critical studies that properly assess the dynamic interaction between credit risk and liquidity risk against robust measures of financial stability (such as CAR and Leverage Ratio) using a long-term panel dataset. Noticeably, previous studies are either descriptive, failed to cover the relevant time frame, or have used simplistic analytical approaches that do not adequately capture the complex, time-varying nature of these relationships. Therefore, this research intends to bridge these critical empirical gaps. It considers the relationships in the context of a robust assessment of credit risk (represented by NPL ratio) and liquidity risk (represented by LCR) on the financial stability of thirteen listed commercial banks in Nigeria over a period of 20 years (2005-2024). The study provides a better understanding of banking sector resilience by using both CAR and the Leverage Ratio as proxies for stability while controlling for Bank Size. The findings shall serve to inform regulatory reforms intended to provide a strong financial architecture for Nigeria, resilient against idiosyncratic and systemic shocks. This study seeks to provide answers to the following questions:

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1. What is the effect of credit risk (as measured by the NPL ratio) on the financial stability (as measured by CAR and Leverage Ratio) of listed commercial banks in Nigeria?
2. To what extent does liquidity risk (as measured by the LCR) affect the financial stability of listed commercial banks in Nigeria?

The main objective of this study is to empirically analyze the impact of credit and liquidity risks on the financial stability of listed commercial banks in Nigeria. Specifically, the study seeks to:

- determine the effect of credit risk on the Capital Adequacy Ratio and Leverage Ratio of listed commercial banks in Nigeria.
- assess the effect of liquidity risk on the Capital Adequacy Ratio and Leverage Ratio of listed commercial banks in Nigeria.

2. Literature Review

This section reviews literature on credit risk, liquidity risk, and financial stability, focusing on commercial banks in emerging economies, particularly Nigeria. It examines key institutional and macroeconomic determinants of bank stability and presents the theoretical framework guiding the study.

2.1 Theoretical Framework

The existing literature on banking stability is vast; however, this study reviews and highlights three pertinent strands to this work: the theoretical aspects of financial stability, the empirical evidence linking credit risk and stability, and, lastly, the empirical data with regard to liquidity risk and stability focusing on emerging markets like Nigeria. This study is anchored on the Modern Portfolio Theory (MPT) and the Risk Management Theory. The MPT asserts that risk is inherently associated with returns, and that a diversified portfolio helps optimize its opportunities and trade-offs in risk-return. Within a banking context, the loan portfolio comprises much of the bank's assets. A strong concentrperfectation of non-performing loans gconseives evidence of high credit risk and reflects an under-diversified and high-risk portfolio erosion against a bank's capital that has been responsible for losses to a greater extent (Markowitz, 1952). A dwindling capital compromises financial soundness and increases the probability of an institution failing. The 2008 global financial crisis and the subsequent sovereign debt crises served as a stark warning that instability in the banking sector could have far-reaching consequences. It was a domino effect leading to the economic collapse, characterized by credit crunches, asset price deflation, and deep recessions (Ahiase et al., 2024; Muhammad et al., 2024).

The Risk Management Theory effectively illustrates how financial institutions go through a process of identifying, measuring, monitoring, and controlling different types of risks as a way of achieving organizational stability and sustainability (Crouhy, Galai, & Mark, 2014). The theory further clarifies that risk management is an integral part of the financial institution's operation;

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hence, it should be more than merely a means of minimizing risks. It should facilitate the comprehension of how different risk types interrelate and be managed in such a way that the institution's risk-return profile is optimized (Jorion, 2007). Within the banking environment, credit risk and liquidity risk are closely linked, and if not properly managed, they can result in the failure of an institution as well as systemic crises (Hull, 2012). The theory brings forth that banks should always have enough liquid assets as a health insurance to buffer the shocks and to avoid asset sales at too low prices during times of stress (Bessis, 2015). In the scenario of banks experiencing liquidity problems, they might be compelled to sell their assets at very low prices, thus diminishing their capital and eventually resulting in a solvency crisis. On the other hand, a drop in credit quality implies more provisions and hence erodes capital, which leads to the loss of market confidence, resulting in liquidity being withdrawn by depositors and creditors. This is indicative of the tight relationship between liquidity risk and credit (solvency) risk. Risk Management Theory explains that these risks do not stand alone; a credit shock may lead to a liquidity crisis, while a liquidity squeeze may compel a bank to reduce lending that may result in economic stress and credit losses (Crouhy et al., 2014; Hull, 2012).

2.2 Credit Risk and Financial Stability

The empirical literature overwhelmingly supports a negative relationship between credit risk and financial stability. High NPLs are a direct charge against a bank's earnings and capital. In a study of Nigerian banks by Adegbite and Olorunsegun (2022), it was found that a 1% increase in the NPL ratio significantly reduced the Capital Adequacy Ratio, confirming that defaults on loans directly deplete capital buffers meant to absorb unexpected losses. Similarly, Nkusu (2011) provided evidence of NPLs being a forerunner of banking crises in a cross-country analysis of emerging markets. The study, using panel vector autoregression (PVAR), found that shocks to NPLs have a persistent negative effect on bank capitalization as well as on economic growth. However, this relationship may not always be linear, as some studies suggest threshold effects. In their research, Koju et al. (2020) revealed that banks could utilize their operational income to compensate for credit losses up to a certain limit without affecting their capital significantly; however, after crossing that limit, these losses would go down to their capital directly, which, in turn, would cause a rapid and non-linear further decline of stability. In Nigeria, Umar and Musa (2023) critically noted that the official NPL statistics might be misleading since they show a less severe credit risk situation than what actually exists. They argued that one of the ways in which such risks are hidden is through the recording of an abnormal volume of loan restructurings or forbearance, which keeps the financial institutions in a state of discomfort until a macroeconomic shock occurs. This suggests the necessity for a critical and not just descriptive analysis of NPL data.

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2.3 Liquidity Risk and Financial Stability

The interplay between liquidity risk and financial stability goes beyond a simple one. For a long time, it has been argued in the theoretical discussions that holding significant amounts of liquid assets is a cost because liquid assets usually offer lower returns than illiquid loans. This results in a trade-off between profitability and safety (Berger & Bouwman, 2021). At the same time, banks must keep a reasonable share of liquid assets to total assets so that they can at any time meet their short-term liabilities without getting into trouble. There is large-scale research evidence that strongly supports the role of increased liquidity in calming the situation. Ibrahim and Ozkan (2021) studied banks throughout the MENA area and discovered that banks with higher liquidity ratios experienced very low distress levels during market turmoil. The researchers believe that a bank's strong liquidity buffer indicates its financial health, which results in attracting both depositors and investors. The study by Okoye et al. (2022) in Nigeria also revealed a positive relationship between liquidity ratios and the stability of banks. However, their study only covers a very short period after Basel III implementation. In contrast, this study extends the sample period to 20 years, thus enabling a more comprehensive analysis that includes cycles of regulatory laxity and then very strict enforcement. However, some researchers raise caution against the overharvesting of the beneficial effects of liquidity; for example, according to Cornett et al. (2021), over-investing in highly liquid assets at the expense of lending could, in the long run, hamper the economy and therefore increase credit risk. In addition, the liquidity ratio of a bank may not be that effective during a systemic crisis since the market for liquid assets can freeze. Liquidity, therefore, although being very important, is not a cure-all; liquidity, thus, should be understood in light of the overall macroeconomic environment and regulatory frameworks.

This review stresses that there is a strong theoretical and empirical ground for the negative repercussions of credit risks on financial stability and the positive implications of liquidity. It brings an important gap under spotlight within the Nigerian context, whereby there appears to be no long-term, critical study employing adequate stability measures and advanced econometric techniques. The design of this research intends to fill that gap by exploring the dynamics within a 20-year timeframe that has witnessed drastic economic and regulatory shifts. The following null hypotheses are proposed for testing in the study:

H_{01}: Credit risk has no significant effect on the financial stability of listed commercial banks in Nigeria.

H_{02}: Liquidity risk has no significant effect on the financial stability of listed commercial banks in Nigeria.

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3. Methodology

3.1 Research Design

The study used a quantitative, ex post facto design, using a balanced panel data set. This design is appropriate for examining cause-and-effect relationships with regard to past events (exposures to credit and liquidity risks) and the subsequent effects (financial stability) without manipulation on the part of the researcher. The population comprised all commercial banks listed on the Nigerian Exchange Group (NGX) as of December 2024. Thirteen banks were purposively selected based on their continuous listing from 2005 to 2024. This ensures that the sample is representative of the core banking sector, thus making the data continuous. The selected banks are Access Bank Plc, Zenith Bank Plc, Guaranty Trust Holding Company Plc, United Bank for Africa Plc, FBN Holdings Plc, Ecobank Transnational Incorporated, Fidelity Bank Plc, Stanbic IBTC Holdings Plc, FCMB Group Plc, Union Bank of Nigeria Plc, Sterling Bank Plc, Wema Bank Plc, and Jaiz Bank Plc. The study collected secondary data from the audited annual financial statements and reports of the banks in the study for the years between 2005 and 2024, resulting in a total of 260 firm-year observations (13 banks × 20 years). In addition, data were obtained from CBN statistical bulletins and NGX publications.

3.2 Measurement of Variables

The operationalization of the variables for this study is as follows:

Financial Stability (Dependent Variables): Within the current use of proxies to measure stability, Adegbite and Olorunsegun (2022) have used two proxies that are intended to provide a robust measure of stability in the contemporary usage of financial research.

- *Capital Adequacy Ratio (CAR):* measured as the ratio of a bank's total qualifying capital to its risk-weighted assets. It is a key regulatory standard that measures a bank's ability to endure losses. Essentially, a higher CAR is indicative of a higher level of stability.
- *Leverage Ratio (LR):* It is measured as Tier-1 capital, which is divided by total consolidated assets. It is an absolute non-risk-based measure, acting as a backstop to the risk-based CAR to stop excessive leverage from building up. A lower LR shows higher leverage and hence lower stability. This study may use an inverted form or expect a negative coefficient for consistency in interpretation.

Credit Risk (Independent Variable):

- *Non-Performing Loans Ratio (NPL):* It is essentially the amount of non-performing loans and advances that are divided by the total gross loans and advances. It is also used as the most direct measure of the quality of a bank's loan portfolio. Higher NPL ratios imply higher credit risk.

Liquidity Risk (Independent Variable):

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- *Liquidity Coverage Ratio (LCR):* Measured as the ratio of liquid assets to total assets. The ratio shows how much cash a bank has to pay its short-term debts, which shows the amount of cash the bank can turn into cash quickly without losing value. A higher LCR indicates lower liquidity risk, as the bank maintains a larger cushion of liquid assets relative to its total asset base. Liquid assets typically include cash, cash equivalents, government securities, and other highly marketable securities that can be quickly liquidated to meet unexpected cash demands or depositor withdrawals.

Control Variable:

- *Bank Size (SIZE):* Measured as the natural logarithm of total assets of banks. For instance, banks larger than the average may benefit from economies of scale as well as the implicit guarantee involving "too-big-to-fail"; hence, stability may have been affected. The data were log-transformed to reduce skewness.

3.3 Model Specification

To examine the relationship between the variables, two panel regression models are specified, one for each proxy of financial stability. The models are adapted from Adegbite and Olorunsegun (2022) and Ibrahim and Ozkan (2021), with modifications to include both credit risk and liquidity risk simultaneously, the addition of the Leverage Ratio as an alternative stability measure, and the incorporation of Bank Size as a control variable to align with the specific context and objectives of the current study:

Model 1. Capital Adequacy Ratio (CAR)

$$CAR_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LCR_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}$$

Model 2. Leverage Ratio (LR)

$$LR_{it} = \alpha_0 + \alpha_1 NPL_{it} + \alpha_2 LCR_{it} + \alpha_3 SIZE_{it} + \mu_{it}$$

Where:

- i represents the bank (from 1 to 13)
- t represents the year (from 2005 to 2024)
- CAR_{it} = Capital Adequacy Ratio of bank i at time t
- LR_{it} = Leverage Ratio of bank i at time t
- NPL_{it} = Non-Performing Loans Ratio of bank i at time t
- LCR_{it} = Liquidity Coverage Ratio of bank i at time t
- $SIZE_{it}$ = Bank Size of bank i at time t
- β_0 and α_0 are the constant terms (intercepts)

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- β_1-β_3 and α_1-α_3 are the coefficients of the independent and control variables
- ε_{it} and μ_{it} are the stochastic error terms

Based upon the theory and previous empirical evidence, it is expected that β_1 and α_1 will be negative while β_2 and α_2 will be positive.

3.4 Data Analysis Technique

Stata 17.0 was used to analyze the data. The analysis followed a structured sequence to ensure robustness:

3.4.1 Descriptive Statistics

For all variables, mean, median, standard deviation, minimum, and maximum values are calculated to give an overview of the data.

3.4.2 Correlation Analysis

A Pearson correlation matrix was generated to determine the extent of the linear association between the different variables, as well as any potential multicollinearity issues.

3.4.3 Panel Regression Analysis

The current study applied the three common data panel analysis approaches:

- *Pooled Ordinary Least Squares (OLS):* The panel data structure of the model is ignored, and all 260 observations are estimated as one sample**.** It is considered to be the basic model, but it is normally biased due to unobserved heterogeneity.
- *Fixed Effects (FE) Model:* This model considers time-invariant and bank-specific unmeasured characteristics (i.e., organizational culture, management quality) that may influence the independent variables.
- *Random Effects (RE) Model:* The model views the single impact of unknown bank features as a random effect, which is not correlated with the independent variables.

The Hausman specification test was performed to decide between Fixed Effects and Random Effects models. The null hypothesis of the Hausman test is that the RE model is consistent and efficient. If the test was statistically significant ($p < 0.05$), the null would be rejected, and the FE model would thus be more suitable.

3.4.4 Robustness checks

In terms of firm level, therefore, standard errors were clustered to correct for potential heteroskedasticity and autocorrelated effects within the panel.

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4. Results and Discussion

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the variables utilized in this study. The average Capital Adequacy Ratio (CAR) of 17.42% is above the generally prescribed minimum regulatory value of 15%, being, however, characterized by great variability from a low of 8.12% to a high of 30.45%, indicating time and cross-bank differences in capitalization. The average Leverage Ratio (LR) is 8.87%. With an average of 7.12% for non-performing loans, the NPL ratio exceeds the level recommended by CBN's prudential guideline at 5%. The standard deviation of 4.28% and a maximum of 25.67% bespeak some instances of very poor credit quality for a few banks. The mean LCR stands at 53.85%, which shows that banks keep liquid assets amounting to more than half their total assets. The standard deviation of 13.02% and range from 28.15% to 85.40% demonstrate considerable variation in liquidity management practices across banks and over time. Therefore, Bank Size (SIZE) has exhibited significant growth and variation in the sample.

Table 1. Descriptive Statistics Results

Variable	Proxy	Mean	Std. Dev.	Min	Max
Capital Adequacy Ratio	CAR (%)	17.42	4.35	8.12	30.45
Leverage Ratio	LR (%)	8.87	2.63	3.50	15.80
Credit Risk	NPL (%)	7.12	4.28	1.85	25.67
Liquidity Risk	LCR (%)	53.85	13.02	28.15	85.40
Bank Size	SIZE (Log of Assets)	15.18	1.92	11.50	18.90

Source: Author's computation using Stata (2025)

4.2 Correlation Matrix

Table 2 presents the Pearson correlation matrix. Negative correlations of NPL with both CAR (-0.602) and LR (-0.485) have been observed strongly, which is a strong indication that credit risk contributes to financial instability. The LCR has moderate positive correlations with CAR (0.412) and LR (0.328), meaning that good liquidity can be a source of financial stability. The correlations between the independent variables are from low to moderate, with the maximum being between NPL and LCR (-0.268), which is significantly below the value of 0.8 used for the detection of multicollinearity problems. Therefore, it can be assumed that regression models are not affected by multicollinearity.

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Table 2. Correlation Analysis

Variable	CAR	LR	NPL	LCR	SIZE
CAR	1.000				
LR	0.663**	1.000			
NPL	-0.602**	-0.485**	1.000		
LCR	0.412**	0.328**	-0.268*	1.000	
SIZE	0.205*	0.162*	-0.129	0.218*	1.000

Note: ** Correlation is significant at the 0.01 level; * Correlation is significant at the 0.05 level.

Source: Author's computation using Stata (2025)

4.3 Panel Regression Analysis

Tables 3 and 4 exhibit the results of the regression for the two models of financial stability.

Table 3. Panel Regression Results for CAR (Model 1)

Variable	Pooled OLS	Fixed Effects (FE)	Random Effects (RE)
NPL	-0.527* (-7.15)	-0.468* (-6.24)	-0.501* (-6.78)
LCR	0.038* (4.42)	0.031** (2.68)	0.034* (3.89)
SIZE	0.315* (2.11)	0.162 (0.95)	0.251* (1.88)
Constant	14.98* (10.87)	16.54* (9.45)	15.72* (10.35)
R-squared	0.502	0.648 (within)	0.531 (overall)
F-statistic	48.35***	34.92***	-
Hausman Test (Chi2)	16.92***		

Note: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The Fixed Effects model is preferred based on the Hausman test.

Source: Author's computation using Stata (2025)

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All estimation outputs of the analysis have included pooled OLS, fixed effects, and random effects methods. To determine the most appropriate model, a Hausman test was conducted. The Hausman test produced 16.92 for chi-squared and 0.001 for p-value for Model 1 (Dependent Variable: CAR). This p-value is less than 0.05, and we reject the null hypothesis. Hence, the Fixed Effects (FE) model is most appropriate as it accounts for unobserved bank-specific heterogeneity.

Table 3 shows the FE results; the NPL variable has a coefficient of -0.468, with significance at the 1% level ($p < 0.01$). It means that an increase in the NPL ratio by 1 percentage point results in a decrease in the Capital Adequacy Ratio by 0.468 percentage points, ceteris paribus. This is strong evidence in support of the credit risk hypothesis that credit risk causes a decrease in bank capital. LCR is positive and significant with a coefficient of 0.031 ($p < 0.05$), which suggests that a 1 percentage point increase in the liquidity ratio results in a 0.031 percentage point increase in CAR. This can be interpreted as more liquid banks tend to have a higher level of capital. The control variable, SIZE, is positive but not statistically significant in the FE model. The R-squared of 0.648 shows that the model explains about 64.8% of the variation of CAR at the bank level.

Table 4. Panel Regression Results for LR (Model 2)

Variable	Pooled OLS	Fixed Effects (FE)	Random Effects (RE)
NPL	-0.328* (-5.68)	-0.301* (-5.25)	-0.314* (-5.48)
LCR	0.021* (3.89)	0.017** (2.35)	0.019* (3.25)
SIZE	0.225* (1.95)	0.105 (0.71)	0.168 (1.35)
Constant	7.68* (9.24)	8.32* (7.58)	7.95* (8.87)
R-squared	0.428	0.612 (within)	0.456 (overall)
F-statistic	38.52***	28.47***	-
Hausman Test (Chi2)	13.58***		

Note: t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The Fixed Effects model is preferred based on the Hausman test.

Source: Author's computation using Stata (2025)

Concerning Model 2 (Dependent Variable: LR), a Hausman test demonstrated a chi-squared statistic of 13.58 and a p-value of 0.004. Hence, the Fixed Effects (FE) model is still the best choice. The FE outcomes in Table 4 reveal that NPL carries a significantly negative influence with

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a coefficient of -0.301 ($p < 0.01$). This is to say that an increment of the NPL ratio by 1 percentage point brings about a reduction of the Leverage Ratio by 0.301 percentage points; thus, the non-risk-based measure of capital is going along with credit losses. LCR carries a positive and significant coefficient of 0.017 ($p < 0.05$), which is consistent with the first finding that liquidity and capital stability are two aspects that support each other. SIZE, once again, is not significant in the FE model. The model accounts for 61.2% of the bank's variation in the Leverage Ratio coming from within.

4.4 Discussion

Thus, empirical findings clearly address the research questions. The main findings are that credit risk (NPL) severely constrains the financial and economic stability of Nigerian banks. This has been proved in both stability measures (CAR & LR) and is also consistent with the rejection of hypothesis H_{01}. The coefficient magnitude (-0.468 for CAR) is economically significant, emphasizing strong potential threat to solvency by poor asset quality within the banking sector. Given that loans that fail to perform invoke an obligation on the part of banks to provision, this action translates to a direct deduction from profits. Such losses, when sizeable, start eroding the capital base of a bank, reducing its ability to absorb future shocks, thereby increasing its probability of default. This findings is consistent with the theoretical framework and corroborates previous studies in Nigeria and other emerging markets, as Adegbite and Olorunsegun (2022) and Nkusu (2011). It critically indicates that simply meeting the minimum capital requirements cannot be enough when the underlying asset portfolio is weak. Liquidity Risk (LCR) has a significant positive effect on financial stability. This leads to the rejection of hypothesis H_{02}. Therefore, banks with a high proportion of liquid assets to total assets are also likely to have solid capital and leverage ratios. This aligns with the prudential banking principle that sufficient liquidity buffers are vital for financial stability. Good liquidity fulfils several functions: one, it acts as a cushion for meeting unexpected withdrawals or obligations during stress periods, and two, it is an effective signalling tool to the market (Ibrahim & Ozkan, 2021). A very high LCR helps prevent a solvency crisis by averting the loss of trust of depositors and creditors. Hence, it goes against the idea that liquid assets, just because they are held in large amounts, completely drag down profitability; rather, having enough liquidity is a worthwhile hedge in stability that increases stakeholder confidence and lowers the risk of distress.

Bank Size (SIZE) does not affect stability. The only apparent reason is the exclusion of bank-specific unobserved heterogeneity. Although large banks seem to be more stable in simpler models like Pooled OLS, the more robust Fixed Effects model shows that this effect disappears. The conclusion that follows from this may be that the perceived stability of larger banks may be due to other intrinsic, time-invariant characteristics (an established brand, better management) rather than size itself. It suggests that the "too-big-to-fail" status does not necessarily guarantee better stability; sound risk management practices are very important for all banks regardless of their size.

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5. Conclusion and Recommendations

5.1 Conclusion

This research thoroughly investigated how credit and liquidity risks affect the financial stability of commercial banks listed in Nigeria from 2005 to 2024. The results indicate that credit risk, captured by the NPL ratio, is the primary source of financial instability, creating pressure on both risk-based and non-risk-based capital buffers. However, efficient liquidity management, depicted by a high LCR, plays a critical role in enhancing stability, and it also strengthens banks' capital positions. The findings substantiate the idea that there is a strong link between insolvency and liquidity risks; a regulation that deals with both at the same time is still required. Finally, for the unstable macroeconomic environment of the Nigerian banking sector, these consequences imply that the failure of one of the credit or liquidity risk management could cause the financial system to become unstable rapidly.

5.2 Recommendations

Given the findings, the following recommendations are proffered:

a) The CBN should strengthen its monitoring of the lending standards and follow-up of banks. This entails increased intensity and frequency with which stress testing has been conducted on the shock scenarios for credit, as well as a no-tolerance policy against forbearance practices that mask the real levels of NPLs. Furthermore, effective polices should be put in place to develop policies for the establishment of a secondary market for distressed debt to enable banks to manage their balance sheets better.

b) Regulators need to closely monitor how banks manage their liquid assets because banks must maintain proper liquid asset levels according to their total asset value. Banks should maintain their liquidity standards because the industry exerts pressure to reduce them according to short-term profit goals. The CBN should develop specific LCR benchmarks which banks must follow to maintain adequate liquid asset levels needed during both internal and external emergencies. The CBN needs to improve its emergency liquidity assistance system by creating transparent criteria and developing a reliable mechanism to handle systemic liquidity crises, which might lead to wider financial instability.

c) Banks must transcend siloed risk management and implement an integrated framework that concurrently evaluates credit and liquidity risks. The study establishes a strong correlation between these risks, necessitating that banks clearly describe the manner in which credit shocks can induce liquidity stress and vice versa. This integration must be incorporated into a thorough Internal Capital and Liquidity Adequacy Assessment Process (ICLAAP), guaranteeing integrated capital and liquidity planning, stronger buffers, and increased financial resilience.

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5.3 Limitations and Future Research Directions

This study is subject to certain limitations that also provide avenues for future research. First, the focus on thirteen listed commercial banks in Nigeria may limit the external validity of the findings, particularly for smaller or unlisted institutions. Future studies could broaden the sample or undertake cross-country comparisons to enhance generalizability. Second, reliance on secondary data from audited financial statements may introduce reporting biases, especially in the measurement of non-performing loans resulting from restructuring and regulatory forbearance measures. Third, the use of a static panel model may not fully capture dynamic or nonlinear relationships; thus, future research could employ advanced econometric techniques such as the Generalized Method of Moments (GMM). Finally, the exclusion of key macroeconomic variables (e.g., inflation, exchange rates, and interest rates) underscores the need for more comprehensive models incorporating additional risk dimensions.

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