

# The Nexus of Financial Stability and Bank Specific Risks: Evidence from the Nepalese Banking Sector

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*This study examines the correlation between the financial stability of Nepali commercial banks and bank-specific risks by utilizing panel data from 20 commercial banks over a 12-year period from 2011 to 2023. The findings, which were obtained through the use of a fixed-effect model, demonstrate that bank-specific risks – notably liquidity risk and credit risk – present a significant threat to the stability of banks. Conversely, there is no discernible impact of funding risk on financial stability. Furthermore, larger banks have a detrimental effect on stability, while return on assets (ROA) has a beneficial effect on financial resilience. In order to preserve long-term stability, bank management must establish prudent policies that guarantee the safe disbursement of loans and the prompt repayment of the same, thereby mitigating credit risk. Additionally, it is imperative to maintain a proactive approach to liquidity management and effectively mobilize client deposits in order to achieve robust financial stability.*

**Keywords:** Financial stability, bank-specific risks, Credit risk, liquidity management, and return on assets (ROA)

## Introduction

Investors, policymakers, and governments around the world have been paying more attention as a result of the global financial crisis of 2007–2008, which highlighted the complex relationship between financial stability and economic growth. In Nepal, where the banking sector dominates the financial landscape, ensuring stability in this sector is crucial for economic resilience and development. As of mid-July 2023, deposits in banks and other financial institutions totaled NPR 5,569 billion, according to recent data from the Nepal Rastra Bank (NRB), while credit disbursements came to NPR 4,858 billion (NRB, 2023). These figures underscore the significant role of the banking sector in mobilizing resources and driving economic activity.

The Nepalese banking sector, however, faces a spectrum of risks that threaten its stability. Increased non-performing loans (NPLs), liquidity issues, and credit risks are major hazards that have been made worse by outside shocks like the COVID-19 pandemic. The pandemic disrupted

economic activity, impaired borrowers' repayment capacities, and tested the resilience of financial institutions (Lamichhane, 2022). Because of these vulnerabilities, the importance of sound risk management techniques as the foundation of financial stability has increased.

Financial stability is greatly impacted by bank-specific risks, such as credit risk, liquidity risk, and operational risk, according to studies conducted in Nepal. Credit risk, often associated with loan defaults, remains one of the most pressing concerns for commercial banks in Nepal (Chettri, 2022). Another important consideration is liquidity risk, which represents banks' incapacity to fulfill short-term commitments, particularly in uncertain economic times. Operational risks, arising from internal inefficiencies or external disruptions, further compound these challenges (Budhathoki et al., 2024).

Financial stability is also significantly shaped by macro-level elements like monetary policy, economic uncertainty, and the effectiveness of governance. For instance, the NRB's adoption of risk-based supervisory mechanisms and enhanced capital adequacy requirements aims to mitigate systemic risks and strengthen the sector's resilience (NRB, 2023). Additionally, recent research highlights those competitive dynamics within the banking sector influence stability, with concentrated markets potentially exacerbating risk-taking behaviors (Budhathoki et al., 2024).

The primary focus of this study is the relationship between financial stability and bank-specific risks in the Nepalese context. The research aims to provide policymakers and bank management with valuable information by analyzing critical risks, including operational, liquidity, and credit risks. In contrast to previous research that examined mixed banking systems, this study exclusively examines the conventional banking industry to guarantee accuracy and relevance. It is expected that the findings will facilitate the formulation of policies that fortify Nepal's financial system's resilience.

## Literature Review

Jensen and Meckling (1976) introduced agency theory, which examines the interaction between principals (shareholders) and agents (bank managers). This theory can clarify how managerial choices, especially those pertaining to risk-taking and financial policies, affect the stability of financial institutions in the context of your research. Your study's emphasis on the detrimental impact of bank size on stability supports agency theory's claim that as institutions expand, managerial inefficiencies and risk-taking tendencies may rise, creating governance issues.

## Financial Stability and Its Determinants

Financial stability reflects the ability of financial institutions to sustain economic activities, manage risks, and absorb external shocks without disrupting the broader financial system. In Nepal, where the banking sector constitutes a significant share of the financial system, stability is a critical factor for economic growth and development. The Nepal Rastra Bank (NRB) has

emphasized this connection through policy measures targeting bank risks, which include credit risk, liquidity risk, and funding risk (NRB, 2023). Recent studies highlight that effective risk management strategies are vital for maintaining stability in Nepalese banks (Khadka et al., 2024).

### **Financial Stability and Liquidity Risk**

Liquidity risk arises when banks are unable to fulfill their short-term obligations as a result of a scarcity of readily convertible assets. The fluctuating nature of deposits and the dependence on liquid reserves render this risk critical for Nepalese banks. A study by Niroula and Gnawali (2024) revealed that liquidity risk remains a pressing challenge for Nepalese commercial banks, especially during times of economic uncertainty. The study found that a lack of adequate liquidity buffers not only hampers individual banks but also destabilizes the entire banking system (Niroula & Gnawali, 2024).

Contrasting perspectives are also present, as Chettri (2022) discovered a positive correlation between liquidity risk and financial stability under specific circumstances. These findings indicate that the effective management of moderate levels of liquidity risk may enhance stability and encourage prudent asset-liability management.

Hypothesis:

H1: Liquidity risk significantly impacts financial stability in Nepalese banks.

### **Credit Risk and Financial Stability**

Credit risk is the probability that a borrower will fail to fulfill their loan obligations, which can have a substantial impact on a bank's financial stability. The Nepalese banking sector faces persistent credit risk challenges, with rising non-performing loans (NPLs) being a key issue. Studies by Bagale (2023) and Darlami (2023) emphasize that heightened credit risk reduces banks' profitability and financial stability (Bagale, 2023; Darlami, 2023).

Additionally, Poudel (2023) notes that the credit-to-deposit ratio is a crucial metric for evaluating Nepalese banks' credit risk management procedures. The findings suggest that lower credit risk correlates with enhanced financial stability, particularly when supported by sound loan appraisal and recovery mechanisms (Poudel, 2023).

Hypothesis:

H2: Credit risk significantly impacts financial stability in Nepalese banks.

### **Funding Risk and Financial Stability**

Funding risk arises from potential mismatches between the sources and uses of funds. This includes the risk of deposit withdrawals and an over-reliance on equity sources. Nepalese banks, with their high dependency on customer deposits, are especially vulnerable to funding risks.

Maharjan, Yadav, and Poudel (2023) observed that strategic deposit utilization is essential for the promotion of long-term financial stability and the mitigation of funding risk.

Additionally, Tuladhar (2017) highlighted that funding risk is influenced by macroeconomic factors such as interest rate volatility and foreign exchange fluctuations. Effective policy interventions, including setting minimum liquidity requirements, were found to reduce funding risk significantly (Tuladhar, 2017).

Hypothesis:

H3: Funding risk significantly impacts financial stability in Nepalese banks.

### Data and Methodology

This study examines the connection between bank-specific risks and the financial stability of Nepalese commercial banks. The dataset, which was collected over a 12-year period from 2011 to 2023, includes 20 scheduled banks that are active in Nepal. The study focuses solely on conventional banks and excludes those with incomplete observations during the selected period to ensure consistency and reliability in the data. These banks collectively represent a significant share of Nepal's banking sector, making them ideal for assessing financial stability.

### Specification of Variables

#### Financial Stability Dependent Variable

The widely used z-score, a reliable stand-in for calculating the distance to insolvency, is used to assess the dependent variable in this study, which is financial stability. According to earlier research, the z-score accurately depicts a bank's capacity to withstand shocks and preserve stability (Uhde & Heimeshoff, 2009; Li et al., 2017; Niroula & Gnawali, 2024).

The following formula is used to determine the z-score:

$$Z - \text{score} = \frac{ROA + ETA}{\sigma(\text{ROA})}$$

Where:

- ROA, or return on assets, is a profitability ratio that shows how well a bank uses its assets to produce profits.
- ETA (Equity-to-Total-Assets): Indicates the bank's level of capitalization, which acts as a safeguard against monetary losses.
- The standard deviation of ROA is indicated by  $\sigma(\text{ROA})$ , which captures the fluctuations in profitability over time.

A bank's resilience to financial distress is highlighted by a higher z-score, which denotes greater financial stability and a lower risk of insolvency. This metric has been extensively used in financial stability research and remains a benchmark for assessing bank performance and risk (Uhde & Heimeshoff, 2009; Niroula & Gnawali, 2024).

## Independent Variables

Several bank-specific risk factors are included in this study as independent variables in order to evaluate their effect on financial stability. A detailed explanation of these variables is provided below and summarized in **Table 1**.

### Credit Risk (CR)

The ratio of non-performing loans (NPLs) to total advances is used to measure credit risk. This indicator shows how likely it is that a borrower will miss payments. An elevated level of credit risk is indicated by a higher ratio value, which compromises bank stability by raising the possibility of financial losses (Natsir et al., 2019; Niroula & Gnawali, 2024).

### Liquidity Risk (LR)

The ratio of liquid assets to total assets is used to calculate liquidity risk. It stands for a bank's capacity to fulfill its immediate responsibilities while preserving operational flexibility. A greater ability to manage short-term obligations is indicated by a higher liquidity ratio, but it can also be a sign of underutilization of available funds. Maintaining financial stability, particularly in times of economic uncertainty, requires effective management of liquidity risk (Adusei, 2015; Lamichhane, 2022).

### Funding Risk (FRISK)

Funding risk evaluates a bank's dependency on customer deposits and its capacity to sustain operational stability. It is calculated using the following formula:

$$Z - \text{score (FUNDRISK)} = \frac{DEP/TA_{i,t} + E/TA_{i,t}}{\sigma(DEP/TA_{i,t})}$$

Where:

- **DEP/TA:** Deposits-to-total-assets ratio, representing reliance on customer deposits.
- **E/TA:** Equity-to-total-assets ratio, indicating capitalization strength.
- **$\sigma$ (DEP/TA):** Standard deviation of deposits-to-total-assets.

Greater funding stability and efficient deposit mobilization are indicated by a higher funding risk z-score. This indicator shows how well banks are able to protect consumer deposits and keep cash on hand when things get tight financially (Adusei, 2015; Ali & Puah, 2018).

### Control Variables

Bank size and ROA are used as control variables in the study in addition to the main risk factors:

- The natural logarithm of total assets is used to calculate bank size (SIZE), which takes into consideration the impact of scale on risk exposure and financial performance.
- **Return on Assets (ROA):** A profitability measure, capturing the efficiency of asset utilization in generating returns.

Prior studies have made extensive use of these control variables to examine the connection

between financial performance and bank-specific risks (Tan, 2015; Ghenimi et al., 2017).

**Table 1:** Description of Variables

Symbol	Variable	Measures
BSTAB	Bank Stability	$Z - \text{Score} = \frac{ROA+ETA}{\sigma(ROA)}$
CR	Credit Risk	Non-performing loans / Total Advances
LR	Liquidity Risk	Liquid Assets / Total Assets
FRISK	Funding Risk	$Z - \text{score (FUNDRISK)} = \frac{DEP/TA_{i,t} + E/TA_{i,t}}{\sigma(DEP/TA_{i,t})}$
SIZE	Bank Size	$\ln(\text{Total Assets})$
ROA	Return on Assets	Net Profit After Tax $\times$ 100

### Modeling Financial Stability

The study employs the following regression model:

$$Z - \text{Score}_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LR_{it} + \beta_3 FRISK_{it} + \beta_4 CR_{it} * LR_{it} + \beta_5 Size_{it} + \beta_6 ROA_{it} + \varepsilon_{it}$$

In the specified formulas,  $LR_{it}$  and  $CR_{it}$  denote liquidity risk and credit risk, respectively. The term FRISK signifies "funding risk," while ROA refers to "return on assets." The relationship between credit risk and liquidity risk is shown by the expression  $CR * LR_{it}$ .

### Method of Estimation

This study used the Hausman test to identify the best econometric model in order to investigate the connection between bank-specific risks and the financial stability of Nepalese commercial banks. A fixed-effects model was chosen for the analysis based on the test results. To make sure the results were reliable, a number of diagnostic tests were carried out before the Hausman test.

Among these tests were:

- **Multicollinearity Analysis:** Assessed using correlation coefficients and the Variance Inflation Factor (VIF) to identify potential interdependencies among the independent variables.
- **Heteroscedasticity Test:** To find any discrepancies in variance throughout the dataset, the White test was used.

The dataset comprised 240 observations from 20 scheduled commercial banks in Nepal over a 12-year period (2011–2023). Table 2 displays the variables' descriptive statistics. The mean z-score, representing financial stability, was calculated as 0.954. This value indicates a lower level of financial stability in Nepalese banks compared to global benchmarks, such as 2.29 for

Ghanaian banks (Niroula & Gnawali, 2024) and 20.87 for Tunisian banks (Lamichhane, 2022). These findings highlight the vulnerability of Nepalese banks to financial risks.

Additionally, the mean ROA of 0.97 suggests low asset productivity in the Nepalese banking sector. The high mean values of credit risk (10.72), liquidity risk (8.49), and funding risk (75.78) further underscore significant internal risks within the sector. These results reflect structural inefficiencies in risk management and suggest the need for improved regulatory frameworks to enhance stability.

**Table 2:** Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
Z-Score (Stability)	0.954	1.94	-8.901	9.76
CR	10.72	7.23	0.13	50.94
LR	8.49	2.33	4.68	16.02
ROA	0.97	0.96	-5.26	3.14
Funding Risk	75.78	6.52	60.12	91.18
Size	19.94	1.31	16.21	22.13
CRLR	-0.049	0.78	-3.84	2.03

### Analysis of Correlation and Multicollinearity

#### Analysis of Correlation and Multicollinearity

The Variance Inflation Factor (VIF) and correlation coefficient results are shown in Table 3. The VIF values, which are all less than 10, demonstrate that there are no significant linear relationships between the independent variables and that multicollinearity problems are not present in the regression model. The relationships between the variables and financial stability are indicated by the correlation coefficients.

The results reveal that ROA demonstrates a significant positive correlation with financial stability, suggesting that profitability enhances bank stability. Conversely, CR, FRISK, and LR exhibit negative correlations with financial stability, though these associations are statistically insignificant at the 5% level. These findings indicate that while profitability has a direct and measurable impact on financial stability, the influence of credit, liquidity, and funding risks remains relatively weak in the model, reflecting a limited explanatory relationship in the Nepalese banking context.

Table 3: Correlation coefficients and the variance inflation factor (VIF)

Construct	VIF	1/VIF	Stability	CR	LR	ROA	Size	FR	CRx-LR
Stability	1.38	0.7246	1.0000						
CR	1.44	0.6944	-0.0897	1.0000					
LR	1.21	0.8264	-0.0879	0.0032	1.0000				
ROA	1.29	0.7767	0.5627*	-0.1925*	0.0731	1.0000			
Size	1.35	0.7407	0.1124	-0.2047*	0.2182*	0.4757*	1.0000		
FR	1.17	0.8547	-0.0317	0.2284*	0.3094*	-0.0112	0.0742	1.0000	
CRxLR	1.43	0.6982	0.1129	-0.5361*	-0.0365	0.2464*	0.2241*	-0.1748*	1.0000

### Heteroscedasticity Analysis

The White test results, which were used to determine whether heteroscedasticity was present in the model, are shown in Table 4. Finding out if the variance of errors is constant across observations is the goal of the test. The p-value for the test exceeds the 0.05 threshold, confirming the absence of heteroscedasticity in the model. This finding indicates that the model satisfies the homoscedasticity assumption, ensuring the reliability of regression estimates (Niroula & Gnawali, 2024; Lamichhane, 2022).

The results are more credible because the lack of heteroscedasticity confirms that the fixed-effects model is suitable for examining the connection between bank-specific risks and financial stability in Nepalese banks.

**Table 4:** White Test for Heteroscedasticity

chi <sup>2</sup>	df	p-value
26.48	27	0.5172

### Fixed-Effect Model Results

Table 5 presents the findings of the fixed-effect model, which shed light on the connection between financial stability and bank-specific risks. The Hausman test was used to determine the appropriate model, and its outcome confirmed the fixed-effect model as the most suitable approach for the study.

The results show that financial stability is significantly harmed by credit risk (CR) and liquidity risk (LR). This finding is consistent with earlier research indicating that increased credit and liquidity risks weaken banks' resilience (Niroula & Gnawali, 2024; Lamichhane, 2022). Conversely, funding risk (FR) does not exhibit a significant effect on financial stability, which diverges from some existing literature that emphasizes the importance of effective deposit mobilization (Adusei, 2015).

The study also reveals that bank size negatively affects financial stability, consistent with agency



theory. This theory posits that increased firm size often results in governance inefficiencies as managers prioritize power and influence over optimal decision-making. Meanwhile, ROA demonstrates a positive and significant relationship with financial stability, indicating that profitability strengthens a bank's stability by enhancing its capacity to absorb shocks.

Financial stability is not substantially impacted by the interaction between credit risk and liquidity risk (CR\*LR), indicating that the combined impact of these risks is minimal in the banking environment of Nepal. These results highlight how important risk management is to strengthening banks' financial stability.

**Table 5:** Fixed-Effect Model Results

Variables	Coefficient	t-statistic	p-value
CR	-0.05682	-2.04	0.044
LR	-0.19472	-2.55	0.011
FR	0.01832	0.84	0.396
CR*LR	-0.21824	-1.05	0.310
ROA	1.19324	7.52	0.000
Size	-0.98154	-3.53	0.001
Constant	20.19321	3.21	0.002

### Conclusion and Recommendations

With an emphasis on major bank-specific risks like funding, credit, and liquidity risk, this study examines the variables affecting the financial stability of Nepalese commercial banks. The results show that credit risk and liquidity risk significantly impair Nepalese banks' financial stability, highlighting the urgent need for efficient risk management. On the other hand, funding risk does not exhibit a statistically significant impact on stability within Nepal's banking context. Additionally, bank size negatively influences stability, suggesting that larger banks may encounter operational inefficiencies, while ROA (Return on Assets) positively impacts stability, reflecting the importance of profitability in maintaining financial resilience.

### Policy Implications

The results provide actionable insights for Nepalese policymakers and banking institutions. To minimize credit risk, banks should implement stringent loan approval policies with a robust assessment of borrowers' repayment capacity. Strengthened credit monitoring mechanisms and efficient loan recovery strategies are necessary to address the challenge of non-performing loans (NPLs), which continue to impact stability adversely.

The study emphasizes the importance of managing liquidity risk, as it is a significant determinant of instability in Nepalese banks. Institutions must prioritize maintaining adequate liquidity levels to meet short-term obligations and avoid potential crises. Adopting advanced asset-liability management techniques and regularly reviewing liquidity ratios are vital for operational sustainability.

While funding risk was not found to have a direct impact, banks should continue to focus on mobilizing customer deposits effectively. Innovative deposit schemes and enhanced customer engagement can improve funding stability. Building public trust through transparent and reliable banking practices will further contribute to long-term financial stability.

### Limitations and Future Research Directions

This study primarily focuses on 20 conventional commercial banks in Nepal, and its findings may not capture the full diversity of the banking sector. Future studies could expand the sample size to include smaller financial institutions and regional development banks for broader insights. Additionally, the study primarily considers internal bank-specific factors. Expanding the research to incorporate external influences, such as Nepal's economic conditions, political stability, and regulatory environment, would provide a more holistic view of the determinants of financial stability.

Future studies addressing these topics will improve knowledge of the risks and tactics required to fortify the stability and resilience of Nepal's banking industry in the face of changing financial and economic difficulties.

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