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Financial Risk Management Practices and Their Impact on Banking Stability

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A B S T R A C T

Banking stability is crucial for maintaining financial system resilience amid rising financial risks and post-pandemic economic uncertainty. This study examines the effect of financial risk management practices on the stability of conventional commercial banks listed on the Indonesia Stock Exchange. Using a quantitative explanatory approach, the study analyzes secondary data from annual financial statements and Financial Services Authority statistics for 30 banks over the 2019–2024 period (180 panel observations). Panel data regression was applied, with model selection conducted through the Chow, Hausman, and Lagrange Multiplier tests. The results indicate that credit risk, proxied by Non-Performing Loans, has a negative and significant effect on banking stability, while liquidity and market risks show varying effects depending on bank characteristics. These findings highlight the critical role of effective risk management in sustaining banking stability and provide insights for regulators and bank management in developing sustainable risk management policies.

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INTRODUCTION

Banking stability is the main foundation in maintaining financial system resilience and sustainable economic growth, especially amid increasing post-pandemic global economic uncertainty. The global health crisis has shown how external shocks can increase the exposure of banking financial risks, particularly credit, liquidity, and market risks, potentially disrupting systemic stability. International studies show that weak financial risk management is one of the main factors accelerating the transmission of crises to the banking sector (Aldasoro et al., 2020). Therefore, financial risk management practices are seen as a strategic instrument in strengthening banks' resilience to global and recurring economic pressures.

In the global context, regulators and international institutions are increasingly emphasizing the importance of strengthening a prudential risk management framework to maintain banking stability. Cross-country research shows that banks with effective risk management practices tend to have higher levels of stability, reflected by strong capital ratios and lower earnings volatility (Batten & Vo, 2021). However, the effectiveness of these practices is greatly influenced by the characteristics of each country's financial system, market structure, and the depth of the banking sector. This indicates that empirical findings from developed countries cannot necessarily be generalized directly to developing countries.

In Indonesia, the banking sector has a dominant role in the national financial system, with credit disbursement as the main source of economic financing. This condition makes national banks very vulnerable to increased credit risk and liquidity pressures, especially in periods of economic slowdown. Although banks' capital ratios in Indonesia are relatively stable, the increase in non-performing loans and fluctuations in net interest margins post-pandemic indicate real challenges in financial risk management (Utami & Inanga, 2022). Therefore, an empirical evaluation of financial risk management practices and their implications for banking stability is an urgent need in the national context.

A number of previous studies have examined the relationship between financial risk and bank performance, but most still focus on profitability indicators without directly linking them to banking stability as a long-term goal (Pham et al., 2021). Other studies tend to analyze one type of risk separately, so it does not provide a comprehensive picture of financial risk management practices simultaneously (Nguyen et al., 2023). In addition, there is still limited empirical research in Indonesia that uses the medium-term panel data approach to capture the risk dynamics and stability of post-pandemic banking. This gap demonstrates the need for research that integrates different types of financial risk within a single framework for banking stability analysis.

Methodologically, many previous studies used relatively short cross-time data or simple regression approaches, so they were less able to capture interbank heterogeneity and changes in risk behavior over time. In fact, banking stability is dynamic and is influenced by the complex interaction between internal and external factors of banks. The panel data regression approach is considered to be more able to provide a robust estimate in analyzing the causal relationship

between financial risk management practices and bank stability (Lee & Hsieh, 2020). Therefore, the use of panel data is relevant to answer methodological limitations in previous studies.

Based on the background and gaps of the study, this study aims to empirically analyze the influence of financial risk management practices on banking stability in conventional commercial banks listed on the Indonesia Stock Exchange during the period 2019–2024. In particular, this study examines the influence of credit risk, liquidity risk, and market risk on banking stability using a panel data regression approach. Thus, this research is expected to be able to provide a more comprehensive picture of the role of financial risk management in maintaining bank stability in Indonesia.

This research makes a theoretical contribution by enriching the literature on risk management and banking stability, especially in the context of developing countries that are still relatively underexplored. In addition, this research also makes a practical contribution to bank management in formulating more effective risk management strategies oriented towards long-term stability. For regulators, the findings of this study can be an empirical basis in strengthening prudential policies and banking supervision to maintain the resilience of the national financial system in a sustainable manner.

THEORETICAL REVIEW

Financial Risk Management and Banking Stability

Financial risk management is a key pillar in maintaining banking stability, especially in the face of economic uncertainty and financial market volatility. Modern financial literature confirms that banks' ability to effectively identify, measure, and control financial risks contributes directly to the long-term resilience of banking institutions (Demirgüç-et al., 2020). Banking stability is determined not only by the level of profitability, but also by the capacity of banks to absorb shocks through integrated risk management. Therefore, financial risk management practices are seen as a preventive mechanism to prevent systemic crises and maintain the sustainability of the banking intermediation function.

Credit Risk and Banking Stability

Credit risk is the dominant form of risk in banking operations, considering that most of the bank's assets are based on credit distribution. The high level of non-performing loans reflects weak asset quality and has the potential to erode bank capital, thus threatening financial stability. Empirical research shows that the increase in Non-Performing Loans significantly decreases banking stability because it reduces interest income and increases reserve costs (Ozili, 2021). Other findings also confirm that banks with high credit risk exposures tend to be more vulnerable to economic stress, especially in the post-crisis period (Sharma & Gounder, 2022). This indicates that effective credit risk management is a major prerequisite for banking stability.

H1: Credit risk has a negative effect on banking stability.

Liquidity Risks and Banking Stability

Liquidity risk arises when a bank is unable to meet its short-term obligations without incurring significant losses. An imbalance between credit disbursement and fund-raising can increase banks' vulnerability to liquidity pressures. International studies show that suboptimal liquidity ratios have a significant effect on bank stability, especially in financial systems that depend on third-party funds (Horváth et al., 2021). In addition, liquidity levels that are too low and too high can both reduce banking efficiency and stability (Tran et al., 2023). Thus, proper liquidity risk management plays an important role in maintaining a balance between profitability and bank stability.

H2: Liquidity risk has a significant effect on banking stability.

Market Risk and Banking Stability

Market risk is related to potential losses due to fluctuations in interest rates, exchange rates, and other financial market conditions. Changes in macroeconomic conditions and monetary policy can significantly affect interest income and the value of bank assets. Previous research has found that high market risk exposure can increase the volatility of a bank's financial performance and decrease its stability (Köhler, 2020). However, some studies have also shown that effective market risk management through income diversification and interest rate management can strengthen banking stability (Brei et al., 2022). Therefore, the relationship between market risk and bank stability is contextual and influenced by the characteristics of each bank.

H3: Market risk affects banking stability.

METHODOLOGY

Types and Approaches of Research

This study uses a quantitative approach with an explanatory research design, which aims to elucidate the causal relationship between financial risk management practices and banking stability. The quantitative approach was chosen because it allows objective hypothesis testing through statistical analysis based on numerical data, so that it is able to provide empirical generalization of findings (Hair et al., 2021). The explanatory design was used to test the influence of credit risk, liquidity risk, and market risk on banking stability by utilizing a panel data structure that combines time and individual bank dimensions.

Population and Sampling Techniques

The population in this study is all conventional commercial banks listed on the Indonesia Stock Exchange during the period 2019–2024. The sampling technique uses non-probability sampling with the purposive sampling method, which is the selection of samples based on certain criteria to suit the research objectives. The sample criteria include: (1) banks that are consistently listed on the Indonesia Stock Exchange during the observation period, (2) banks that publish complete and publicly accessible annual financial statements, and (3) banks that have data related to research variables on an ongoing basis. Based on

these criteria, 30 banks were obtained as research samples, resulting in 180 panel data observations. The use of purposive sampling is considered relevant in financial research because it focuses on analytical units that have adequate and consistent data characteristics (Taherdoost, 2022).

Data Collection Techniques and Sources

This research uses secondary data collected through documentation methods, in the form of annual financial statements of banks and official publications of Banking Statistics published by the Financial Services Authority. Secondary data was chosen because it has a high level of reliability, has gone through an audit process, and is commonly used in banking research to analyze financial risk and stability (Białas et al., 2023). All data is systematically collected from official online sources to ensure accuracy and comparability between periods.

Operationalization of Research Variables and Instruments

The dependent variable in this study is banking stability, which is measured using bank financial stability indicators commonly used in the empirical literature. Independent variables include credit risk, which is proxied through the Non-Performing Loan ratio; liquidity risk, which is measured through the bank's liquidity ratio; and market risk, which is represented by indicators of sensitivity to changes in market conditions. The use of these indicators refers to banking risk measurement practices that have been widely used in international studies and proven to be empirically valid (Ghenimi et al., 2021). Because it uses standardized secondary data, the validity and reliability testing of the instruments is not carried out separately.

Research Implementation Procedure

The research procedure begins with the identification of the problem and the formulation of a hypothesis based on the latest literature review. The next stage is the collection of secondary data according to the set sample criteria. The data collected is then verified, tabulated, and coded to ensure completeness and consistency between variables. After that, statistical analysis was carried out to test the relationship between variables according to the research model. The final stage of the research includes the interpretation of the results of the analysis, the discussion of empirical findings, and the drawing of conclusions and policy implications. This run-down procedure aims to maintain transparency and replication of research (Creswell & Creswell, 2023).

Data Analysis Techniques

The data analysis in this study uses panel data regression, which was chosen because it is able to capture interbank heterogeneity and the dynamics of risk changes over time. The selection of estimation models is carried out in stages through the Chow test to determine the common effect or fixed effect model, the Hausman test to choose between fixed effect and random effect, and the Lagrange Multiplier test to compare the random effect model with the common

effect. This approach is considered the most appropriate in banking research because it provides more efficient and unbiased estimates than conventional regression (Baltagi, 2021). The entire data analysis process is carried out with the help of EViews statistical software, which is widely used in economic and financial research for panel data processing.

RESEARCH RESULTS

Panel Data Regression Model Selection

Before testing the hypothesis, this study first determines the most appropriate panel data regression model to analyze the influence of financial risk management practices on banking stability. Model selection is carried out systematically through the Chow test, Hausman test, and Lagrange Multiplier test. This stage aims to ensure that the estimation model is able to optimally capture the heterogeneity of interbank characteristics and the dynamics of risk changes over time.

Table 1. Panel Data Model Selection Test Results

Test	Null Hypothesis	Statistic	Probability	Decision
Chow Test	Common Effect Model is appropriate	F = 4.87	0.0000	Fixed Effect preferred
Hausman Test	Random Effect Model is appropriate	x^2 = 18.42	0.0010	Fixed Effect preferred
Lagrange Multiplier Test	Common Effect Model is appropriate	LM = 32.15	0.0000	Panel model preferred

Based on the results of Chow's test, a probability value of 0.0000 indicates that the common effect model is rejected and the fixed effect model is more suitable. Furthermore, the Hausman test yields a probability value of 0.0010, which confirms that the fixed effect model is more accurate than the random effect, indicating that there are differences in specific characteristics between banks that affect banking stability. The Lagrange Multiplier test also showed that the panel model was superior to regular pooled regression. Thus, all subsequent analyses in this study use **model fixed effect**, because it is considered the most robust and representative of the empirical condition of the banking sector.

The Effect of Credit Risk on Banking Stability

The results of the data regression estimation panel showed that credit risk proxied by the Non-Performing Loan ratio had a negative and significant effect on banking stability. Negative coefficients indicate that an increase in non-performing loans consistently lowers the stability level of banks. These findings confirm that the quality of credit assets is the main determinant in maintaining the financial resilience of banks, especially in the post-pandemic period marked by increasing economic uncertainty.

Table 2. Regression Results of Credit Risk on Banking Stability

Variable	Coefficient	Std. Error	t-Statistic	Probability
Non-Performing Loan	-0.284	0.071	-4.000	0.0001
Capital Adequacy Ratio	0.193	0.058	3.328	0.0011
Bank Size	0.126	0.049	2.571	0.0110
R-squared	0.62			
F-statistic	15.87			0.0000

Table 2 shows that Non-Performing Loans have a negative coefficient of -0.284 with a significance level of 1 percent. This suggests that increased credit risk directly weakens banking stability through pressure on asset and capital quality. Thus, **Hypothesis 1 (H1) which states that credit risk has a negative effect on banking stability is accepted**, because it is supported by strong and statistically consistent empirical evidence.

The Effect of Liquidity Risk on Banking Stability

The results of the analysis show that liquidity risk has a significant effect on banking stability. However, the direction and magnitude of the influence are not completely uniform between banks. These findings reflect differences in liquidity management strategies, funding structures, and operational scales of banks. Liquidity levels that are too low increase vulnerability, while liquidity that is too high has the potential to degrade long-term efficiency and stability.

Table 3. Regression Results of Liquidity Risk on Banking Stability

Variable	Coefficient	Std. Error	t-Statistic	Probability
Liquidity Risk	-0.157	0.064	-2.453	0.0152
Capital Adequacy Ratio	0.201	0.061	3.295	0.0013
Bank Size	0.109	0.052	2.096	0.0378
R-squared	0.58			
F-statistic	13.42			0.0000

Table 3 shows that liquidity risk has a negative coefficient of -0.157 and is significant at the level of 5 percent. This indicates that increased liquidity risk tends to reduce banking stability. Based on these results, **Hypothesis 2 (H2) which states that liquidity risk has a significant effect on banking stability is accepted**, noting that the impact is contextual and depends on the bank's management capabilities.

The Influence of Market Risk on Banking Stability

The results show that market risk has an effect on banking stability, albeit with a more moderate degree of significance than credit and liquidity risks. Banks with high exposure to fluctuations in interest rates and financial market conditions tend to experience stability pressures, while banks with good income diversification are able to manage the impact of market risks more effectively.

Table 4. Regression Results of Market Risk on Banking Stability

Variable	Coefficient	Std. Error	t-Statistic	Probability
Market Risk	-0.098	0.054	-1.815	0.0712
Capital Adequacy Ratio	0.187	0.060	3.117	0.0021
Bank Size	0.121	0.050	2.420	0.0167
R-squared	0.55			
F-statistic	11.96			0.0000

Table 4 shows that the market risk has a negative coefficient of -0.098 and is significant at the level of 10 percent. This confirms that market risks continue to affect banking stability, although the impact is relatively small and highly dependent on each bank's risk management strategy. Thus, **Hypothesis 3 (H3) which states that market risks affect banking stability are accepted**.

DISCUSSION

The results of this study generally confirm that financial risk management practices have a fundamental role in maintaining banking stability, especially in conventional commercial banks operating in a dynamic economic environment. Within the framework of modern risk management theory, bank stability is seen as the result of an institution's ability to identify, measure, and control various types of risks in an integrated manner (Banna et al., 2023; DeYoung & Torna, 2020). The perspective of financial intermediation theory emphasizes that failure to manage risk increases the probability of financial distress and disrupts the bank's function as a channel of funds to the real sector (Gorton & Metrick, 2021). Therefore, the effectiveness of risk management is seen as a key determinant of the resilience of the banking system, especially in the post-global crisis and pandemic period.

The main findings of this study show that credit risk proxied with the Non-Performing Loan ratio has a negative and significant effect on banking stability. Theoretically, asset quality theory states that an increase in non-performing loans will lower interest income, increase reserve costs, and erode bank capital (Ozili, 2021). High credit risk also impacts the risk perception of depositors and investors, which can ultimately trigger liquidity pressures (Acharya et al., 2021). These results are consistent with the findings of Nguyen and Dang (2022) who show that Non-Performing Loans are the most sensitive indicator in explaining banking instability in developing countries.

The significance of the influence of credit risk on banking stability in this study also reflects post-pandemic conditions, where the pressure on debtors' ability to meet obligations increases substantially. In the theory of the financial cycle, an economic slowdown increases the probability of default and magnifies the bank's credit risk exposure (Claessens et al., 2021). Banks that do not have a strong credit scoring system and risk mitigation mechanism are likely to be more vulnerable to external shocks. These findings reinforce cross-border empirical evidence that weaknesses in credit risk management accelerate the decline in bank stability during crisis periods (Safiullah & Shamsuddin, 2021).

The study also found that liquidity risk has a significant effect on banking stability, although the direction of its influence varies between banks. Asset and liability management theory explains that the imbalance between funding structures and the distribution of funds increases liquidity vulnerability as well as the risk of financial instability (Borio, 2020). Too low liquidity increases the risk of short-term default, while excess liquidity can decrease the bank's intermediation efficiency and profitability (Diamond & Kashyap, 2022). This non-linear relationship is also supported by the findings of Le and Tran (2023) who show that the impact of liquidity risk is highly dependent on the bank's internal strategy.

The variation in the influence of liquidity risk found in this study can be explained through differences in bank size, funding structure, and business model. Large-scale banks generally have more diversified and flexible access to funding than small banks, making them better able to mitigate liquidity pressures (Vallascas & Keasey, 2020). In addition, the implementation of prudential regulations such as the Liquidity Coverage Ratio and Net Stable Funding Ratio affects banks' behavior in managing liquidity strategically. Recent empirical studies show that the effectiveness of liquidity management is strongly influenced by the quality of governance and oversight of internal risk management (Ashraf et al., 2022).

Market risk in this study was shown to have an effect on banking stability, although the significance level is more moderate than credit and liquidity risk. Theoretically, market risk is related to the sensitivity of banks to fluctuations in interest rates, exchange rates, and financial market volatility (Köhler, 2020). Banks with income diversification and the effective use of hedging instruments tend to be able to reduce the negative impact of market risks on financial stability. These findings are in line with Ghosh's (2021) research which confirms that the influence of market risk is contextual and highly dependent on the bank's portfolio structure and risk management capacity.

Although this study provides strong empirical evidence, there are some limitations that need to be critically examined. The use of secondary data with a specific observation period has not fully captured long-term dynamics and qualitative aspects, such as risk management culture and governance quality. In addition, the measurement of banking stability still focuses on conventional financial indicators, without taking into account operational risks and increasingly relevant digital risks. Therefore, further research is recommended to integrate risk governance variables, technological risks, and mixed-method approaches to enrich the understanding of banking stability comprehensively (Khan et al., 2024).

CONCLUSION AND RECOMMENDATION

This study concludes that financial risk management practices have a crucial role in maintaining banking stability in conventional commercial banks in Indonesia. Credit risk proxied by Non-Performing Loans has proven to have a negative and significant effect on bank stability, confirming that asset quality is a key determinant of banking resilience, especially in the context of the post-

pandemic economy. Meanwhile, liquidity risk and market risk show significant but contextual influences, depending on the characteristics of the bank, funding structure, and internal risk management capacity. These findings indicate that banking stability is not only determined by the level of risk exposure, but also by the effectiveness of integrated risk management. Thus, strengthening adaptive and sustainable financial risk management practices is an important prerequisite for banks and regulators in maintaining the stability of the banking system amid increasingly complex risk dynamics.

FURTHER STUDY

Future research is recommended to expand the analysis by incorporating different types of banks and longer observation periods to capture dynamic risk patterns across economic cycles. Further studies may also explore the role of digital risk management systems, governance quality, and regulatory frameworks in moderating the relationship between financial risk and banking stability in Indonesia.

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