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THE CAPITAL ADEQUACY RATIO MODERATED ENTERPRISE RISK MANAGEMENT ON FINANCIAL DISTRESS

Herlina Lusmeida ✉[1], **Ezra Stephen Gunawan**[2]
Universitas Pelita Harapan[1,2]
✉[1] herlina.lusmeida@uph.edu
Jalan M.H. Thamrin Boulevard No.1100, Kelapa Dua, Tangerang Regency, Banten 15811, Indonesia

Abstract

Over recent decades, digital innovations in product creation, A corporation is in financial distress when it is having trouble making ends meet. Examining how operational, credit, liquidity, and market risk relate to financial hardship is the primary goal of this study. Also, this study aims to examine Indonesian banking businesses listed on the BEI from 2015 to 2022 to see whether the capital adequacy ratio may mitigate the effect of risk management on financial hardship. Logistic regression analysis, performed in Stata 17.0, is the backbone of this study methodology. Purposive sampling is used in the sampling procedure. The findings reveal that credit risk has no effect on financial hardship, but operational risk, liquidity risk, and market risk do. The capital adequacy ratio decreases the detrimental effects of liquidity risk and market risk on financial issues, while reducing the positive effects of operational risk and credit risk, according to this study.

Keywords: financial distress; operational risk; credit risk; liquidity risk; capital adequacy ratio

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INTRODUCTION

Silicon Valley Bank, one of the prominent banks in the United States, went bankrupt after failing to meet its obligations to customers, which led to a massive withdrawal of funds. In March 2023, the bank was declared bankrupt by the U.S. government after it could not pay its debts, exacerbated by aggressive interest rate hikes by the U.S. Central Bank aimed at controlling inflation (Barrett, 2023). These significant interest rate increases, meant to curb inflation, made borrowing more expensive and slowed economic activity. For banks like Silicon Valley Bank, this resulted in a decline in the value of long-term bonds in which the bank had invested. As interest rates rose, the market value of these bonds dropped, creating a mismatch between the bank's assets and liabilities. This triggered a liquidity crisis, causing customers to rapidly withdraw their funds. The surge in withdrawals further strained the bank, forcing it to sell assets at a loss, ultimately resulting in a loss of 27 trillion Rupiah. News of this significant loss spread quickly, leading to panic among customers who had not yet withdrawn their funds, which triggered a "bank run." Ultimately, the government decided to close Silicon Valley Bank and declare it bankrupt (Dewi Buchari et al., 2023).

Both operational and liquidity risks were significant contributors to the collapse of Silicon Valley Bank (SVB). On the operational side, SVB failed to anticipate how rising interest rates would affect its long-term bond investments, a result of inadequate risk assessment and mitigation strategies. The Federal Reserve's aggressive rate hikes reduced the market value of these bonds, leading to significant unrealized losses. In terms of liquidity, SVB relied heavily on deposits from tech-sector clients, who began withdrawing large sums due to financial pressures. This left SVB with insufficient cash reserves, as most of its assets were tied up in long-term bonds that could not be liquidated without substantial losses. The resulting mismatch between assets and liabilities triggered a bank run, exacerbating the crisis and ultimately causing the bank's bankruptcy.

Understanding financial distress is essential due to its far-reaching economic and social implications, including job losses, slowed economic growth, and rising inequality. By analysing these causes, individuals and organizations can improve risk management practices. Moreover, policymakers can use these insights to implement regulations and policies that enhance financial stability and prevent similar crises in the future (Mickiewicz & Rebmann, 2020).

If we look back to 1998, Indonesia experienced a severe economic crisis triggered by a combination of domestic and international factors. In other words banking performance influenced by internal and extermal factors (Jahidah, et al., 2024; Khalifaturofi'ah & Ulum, 2022). One of the main causes was the weakness of Indonesia's economic fundamentals, including an overreliance on foreign debt, a fragile banking sector, and high levels of corruption. This was compounded by speculative attacks on the rupiah, leading to a dramatic depreciation of the currency against the US dollar. The crisis severely impacted the banking sector, with many customers defaulting on loans, while banks themselves had extended credit beyond the Batas Maksimum Pemberian Credit (BMPK, the Maximum Lending Limit) to affiliated companies. BMPK is a regulation set by Bank Indonesia to limit the amount of credit a bank can extend to a single debtor or a group of related debtors, ensuring that the bank's credit exposure is diversified and manageable. The failure to adhere to these limits further exacerbated the banks' vulnerabilities during the crisis.

The lack of effective regulation and oversight, coupled with poor risk management practices, led many banks to face severe financial distress, eventually resulting in their bankruptcy. This situation highlights the importance of risk management and governance in mitigating financial crises.

This issue ties into the stakeholder theory, which asserts that the goal of business is not only to maximize profits but also to balance the interests of various stakeholders to ensure long-term success (Pedrini & Ferri, 2019). During the 1998 crisis, stakeholders, such as creditors, customers, and regulators, had the power to influence or mitigate the risks faced by the banks. However, the lack of proper risk management and governance allowed these risks to grow unchecked (Saiq & faisal, 2024). Stakeholders have the right and responsibility to identify, assess, and address risks that could impact a company's stability (Miles, 2017). In the context of the crisis, this theory suggests that if the interests of key stakeholders had been better managed, the banks might have been better prepared to withstand external shocks. Effective risk management, which involves addressing operational, credit, liquidity, and market risks, is essential for any company to survive financial turmoil (Settembre-Blundo et al., 2021).

According to Al-Yatama et al. (2020), operational risk arises from problems within a company's internal processes that disrupt its business operations. For example, a failure in the bank's transaction processing system could lead to incorrect account balances or missed payments, which can negatively impact customer trust and the company's financial stability. Effective management of operational risk involves identifying potential process failures and implementing corrective measures to minimize errors that affect the company's performance (Ko et al., 2019).

In addition to operational risk, businesses also face credit risk, which occurs when a borrower defaults on a loan or fails to meet financial obligations (Giovanni et al., 2022). A concrete example of credit risk would be a business lending money to a partner company, only for that company to go bankrupt, leaving the lender unable to recover the funds. According to Ekadjaja et al. (2021), the inability to collect debts can severely strain the company's financial position, affecting its liquidity and overall operations.

Liquidity risk is closely related to credit risk. It refers to the danger that a company will not have enough cash or liquid assets to meet its short-term financial obligations, such as paying suppliers or employees. For instance, if a company is heavily dependent on long-term investments, it might not be able to quickly convert

these investments into cash when needed. According to Hunjra et al. (2022) highlight that companies facing liquidity issues may also struggle to refinance their debt or borrow additional funds, which exacerbates financial distress.

Market risk involves the potential for financial losses due to changes in market conditions, such as fluctuations in asset values, interest rates, or currency exchange rates. For example, if a company holds stocks and the stock market crashes, the value of these stocks may decrease, leading to potential losses. According to Fan et al. (2021), these market changes can significantly impact a company's profitability by reducing the value of investments or increasing costs. As a result, market risk is an essential consideration for investors, researchers, and analysts to assess a company's overall financial health and ability to weather economic fluctuations (Haroon et al., 2021; Sondakh et al., 2021).

The Capital Adequacy Ratio (CAR), also known as CAS, is a critical financial indicator used to evaluate the stability and soundness of banks and other financial institutions (Yuhasril, 2019). It is primarily used by regulators to ensure that banks have enough capital to cover their risk-weighted assets, thereby helping to safeguard against potential financial crises. A higher CAR indicates that a bank is better positioned to absorb financial shocks, providing a buffer that can help prevent or mitigate financial distress (Utami & Muslikhati, 2019).

This study specifically examines the moderating role of CAR in reducing the severity of financial distress in banking institutions. Financial distress arises when a company faces difficulties in meeting its financial obligations, such as failing to pay debts or bills on time, which could lead to its insolvency (Nadhifah & Arif, 2020). In the context of banks, such distress can occur when they are unable to meet liquidity requirements or sustain profitability due to adverse market conditions or poor internal management. The study aims to determine whether a stronger CAR can act as a stabilizing factor, helping banks better navigate these challenges and avoid bankruptcy. According to Parlindungan et al. (2024) credit risk is the other factor that was claimed to affect profitability, and CAR as a proxy for ability of a company to manage credit risk that can affect bank's profit.

Financial distress can take various forms, as explained by several scholars. Nadhifah & Arif (2020) highlight that financial distress typically occurs when a company is unable to pay its debts when they are due. In contrast, Hastuti (2018) notes that some companies may continue to operate despite financial distress, though their viability is increasingly jeopardized. Theodorus & Sri Artini (2018) emphasize that financial distress can also emerge from a company's failure to meet its financial goals, often resulting from poor strategic decisions or external economic shocks.

Factors contributing to financial distress include internal issues such as mismanagement, conflict among stakeholders, and mis-funding, which refers to a failure in securing adequate financing. According to Prasetianingtias & Kusumowati (2019), these issues can exacerbate financial troubles, underscoring the importance of effective risk management and governance in preventing distress.

Risk management (RM) aims to reduce the likelihood and impact of potential risks, enabling companies to navigate uncertainties in their environment (Sondakh et al., 2021). Businesses face external challenges such as policy changes, economic shifts, technological advancements, and environmental factors, all of which can significantly affect their operations. In this context, RM becomes essential for protecting companies and maintaining a competitive edge (Hunjra et al., 2022).

Key risks, including operational, credit, and liquidity risks, are pivotal in influencing company performance. Operational risk, stemming from internal processes, can directly disrupt daily operations, reducing efficiency (Al-Yatama et al., 2020). Credit risk, resulting from defaults or delayed payments, negatively impacts cash flow and profitability (Hunjra et al., 2022). Liquidity risk, while often seen as detrimental, can, under certain conditions, improve performance. For example, Suryaningsih and Sudirman (2020) found that businesses could capitalize on liquidity risk if they manage it effectively, converting assets quickly to seize new opportunities without jeopardizing solvency.

Additionally, the Capital Adequacy Ratio (CAR) plays a crucial role in moderating financial distress by ensuring banks maintain enough capital to cover risks. While studies by Hayati (2018) suggest a higher CAR

reduces financial hardship, others, such as Ekadjaja et al. (2021) and Pratiwi et al. (2022), argue that it may sometimes exacerbate distress, particularly when capital is tied up in non-liquid assets. This inconsistency in findings highlights the need for further exploration of CAR's role in moderating financial distress, especially in the banking sector.

Despite substantial research on financial distress and its relationship with risk management, there remains a significant gap in understanding how CAR moderates the impact of operational, credit, and liquidity risks on financial distress. While existing studies have addressed these risks individually, few have examined how CAR influences the relationship between them and overall financial stability. Moreover, research has not fully explored the combined effects of these risks and their interplay, especially under different market conditions. This gap indicates the need for a more comprehensive approach that considers both individual and combined risk factors, as well as the role of CAR in mitigating financial distress.

This study aims to fill this gap by examining the moderating role of CAR in the relationship between operational, credit, and liquidity risks, and their collective impact on financial distress in the banking sector. By exploring the interplay of these risk factors, this research provides a more nuanced understanding of how banks can manage risks and utilize CAR as a tool to prevent financial turmoil in an increasingly volatile environment.

Referring to the description above, the author develops a hypothesis, as follows: H1: Operational risk positively affects financial distress. H2: Credit risk has a positive effect on financial distress. H3: Liquidity has a positive effect on financial distress. H4: Market risk positively affects financial distress. H5: CAR can weaken the positive effect of operational risk on financial distress. H6: CAR can weaken the positive effect of liquidity risk on financial distress. H8: CAR can weaken the positive effect of market risk on financial distress.

METHOD

This study focuses on 42 banks from the Indonesian financial sector, members of S&P Capital IQ between 2015 and 2022, including both public and private institutions listed on the Indonesia Stock Exchange (IDX). The sample was selected using purposive sampling based on asset size, financial performance, and availability of complete data during the study period. Banks with missing or incomplete data were excluded to maintain integrity. This ensures a representative sample of the diverse Indonesian banking industry for analyzing financial distress and risk management. Data were primarily sourced from S&P Capital IQ, with additional information from IDX and company websites. Since the dependent variable is dummy data, this study uses logistic regression analysis to show the relationship between operational risk, credit risk, liquidity risks, market risk and financial distress. The operationalization of these variables is presented in Table 1, which defines and outlines the measurement criteria for each variable used in this study.

Table 1. Variable Operationalization

Variable	Formula	Source
Dependent Variable		
Financial Distress	FINDES= 1.03X1 + 3.07X2 + 1.66X3 + 0.4X4	(Ariani, 2022)
Independent Variable		
Operational Risk	BOPO = Operating Expense/Operating Income	(Octavian Mambu et al., 2022)
Credit Risk	NPL = Total Bad Debts/Total Loan	(Octavian Mambu et al., 2022)
Liquidity Risk	LDR = Total Loan/Total Deposits	(Octavian Mambu et al., 2022)
Market Risk	NIM = Net Income/Current Assets	(Octavian Mambu et al., 2022)
Variable Moderation		
Capital Adequacy Ratio	CAR = Capital/Risk-Weighted Assets	(Pratiwi et al., 2022)
Variable Control		
Total Assets Tureer	TATO = Net Sales/Average Total Assets	(Diana & Osesoga, 2020)
Primary Ratio	PR = Capital/Total Assets	(Khurana et al., 2006)
Size	SIZE = Ln (Total Asset)	(Nadhifah & Arif, 2020)
Capital Intensity	CI = Total Fixed Assets/Total Assets	(Nadhifah & Arif, 2020)

The formulas used in this study, derived from local research, are highly relevant to the Indonesian banking industry. Ratios like BOPO (operational risk), NPL (credit risk), LDR (liquidity risk) and NIM (market risk) are commonly utilized in Indonesia’s banking sector to assess financial health. While these

formulas are based on local studies, they are aligned with regulatory frameworks established by the Financial Services Authority (OJK) and reflect the current industry practices. Although they have proven effective, it is important to continuously reassess their relevance as the banking sector and regulations evolve.

RESULTS

To provide a synopsis and preliminary description of the observational data, descriptive statistics are used. Table 2 displays the outcomes of a descriptive statistical analysis of all variables utilized in this study. These variables include averages (mean), minimal values, maximal values, and standards. Additionally, the table shows the distribution of observational data regarding skewness and kurtosis for each operational variable in the research.

Table 2. Descriptive Statistical Analysis

Variable	Obs	Mean	Std. dev.	Min	Max
FNDSS	336	.1458	.3535	0	1
OPRISK	336	.9135	.2234	.2699	1.967
CRISK	336	.0336	.0242	.0001	.2227
MRISK	336	.0595	.0673	.0022	.835
LRISK	336	.8776	.8022	.2967	1.9012
CAR	336	.2690	.1894	.0682	1.6992
TATO	336	.0178	.0402	.0006	.3115
SIZE	336	17.4244	1.8175	13.1115	21.4127
CI	336	.7658	.0974	.2583	.9426
PR	336	.1796	.1023	.0318	.8621

Source : Data Processed (Stata 17.0)

The descriptive data for all study variables included in Models 1 and 2 can be found in Table 2. The findings of this investigation are as follows: the average FNDSS of 0.1458 indicates that about 14.6% of banks in the sample show signs of financial distress, in the context of the Indonesian banking sector, this value is relatively low, suggesting that only a small proportion of banks are facing significant financial difficulties. There is some dispersion and variation in the data, as indicated by operational risk (OPRISK), credit risk (CRISK), liquidity risk (LRISK), capital adequacy ratio (CAR), and primary ratio (PR) all having mean values below the standard deviation of 0.3534. On the other hand, market risk variables, total asset turnover, size, and capital intensity all have mean values above the standard deviation. The aforementioned four variables provide non-variable group data.

The results of the determination coefficient test are shown in table 3 which can be observed through the Pseudo R-Squared (*R*") value. The test carried out aims to find the capacity of the independent variable in interpreting the dependent variable with the provision that the closer it is to the number 1, the better the ability of the independent variable to interpret the dependent variable

Table 3 suggests that the independent variable accounts for 61.90% of the variation in financial distress; this is supported by the Pseudo R-squared Model 1 value of 0.6190. Meanwhile, in Model 2, the Pseudo R-squared value was slightly higher at 0.6717, indicating that the independent variable could explain 67.17% of the observed variation in financial distress.

Table 3. Pseudo R-Squared Test Results

Model	Dependent Variables	Predictors	Pseudo R-squared
1	FNDSS	OPRISK, CRISK, MRISK, LRISK, CAR, TATO, SIZE, CI, PR	0,6190
2	FNDSS	OPRISK, CRISK, PROF, LIQ, CAR, CARxOPRISK, CARxCRISK, CARxMRISK, CARxLRISK, TATO, SIZE, CI, PR.	0,6717

Sourced : Data Processed (Stata 17.0)

Hypothesis testing is done by utilizing statistical z tests to determine the significance and how the direction and influence of estimator variables on financial distress for each research model. The results of the Z test can be seen in Table 4 below.

Table 4. The Result of Hypothesis Test (Z-Test)

Period: 2015-2022	Expectations	Model 1			Model 2		
FNDSS		Coefficient	Z	P > |z|	Coefficient	Z	P > |z|
OPRISK	+	0.002	-3.27	0.001*	0.614	-0.16	0.873
CRISK	+	0.001	-0.38	0.706	4.840	1.63	0.102
MRISK	+	-0.816	2.53	0.011**	-1.730	-1.73	0.084
LRISK	+	-0.489	1.31	0.065***	-0.250	3.26	0.001
CAR		-0.705	5.17	0.000	8.201	3.67	0.000
TATO		0.807	0.83	0.407	0.357	0.29	0.772
SIZE		0.555	-2.70	0.007	0.616	-1.97	0.052
CI		0.085	-1.02	0.308	0.061	-0.61	0.330
PR		1.499	2.82	0.005	3.825	9.74	0.000
CARxOPRISK	+				1.410	-2.37	0.018**
CARxCRISK	+				2.201	-2.00	0.045**
CARxMRISK	+				2.220	2.44	0.014
CARxLRISK	+				1741	-3.12	0.002
_Cons		-1176	1.85	0.065	0.012	-0.68	0.498

Significant at levels of *0.01 (1%)**0.05 (5%), and *** 0.10 (10%) respectively.
Sourced : Data Processed (Stata 17.0)

Table 4 displays the results of the regression analysis. The outcomes are as follows: Financial hardship is significantly increased by operational risk, market risk, and liquidity risk; hence, H1, H3, and H4 are accepted, with the exception of H3, which yields a negative result due to the usage of inverse measurement, which is multiplied by -1 (minus one). In addition, we accept H5 and H6 since CAR reduces the beneficial effect of operational risk and credit risk on financial hardship. In contrast, we reject H7 and H8 since CAR mitigates the detrimental impacts of liquidity risk and market risk on financial hardship.

For hypothesis 1 tests operational risk (OPRISK) is proxied by BOPO. Based on Table 4, OPRISK has a coefficient of 0.002 with a p-value of 0.001 or equal to 1%. Thus, operational risk has a significant positive effect on financial distress at a significance level of 1%. So it can be concluded that operational risk using the BOPO indicator has a positive effect on financial distress, so H1 is accepted.

For hypothesis 2 tests credit risk (CRISK) is proxied by NPL. Based on Table 4, CRISK has a coefficient of 0.001 with a p-value of 0.706 or greater than 10%. Thus, credit risk has an insignificant positive effect on financial distress. So it can be concluded that credit risk using the NPL indicator has no effect on financial distress, so H2 is rejected.

For hypothesis 3 tests liquidity risk (LRISK) is proxied by LDR. has a coefficient of -0.489 because it uses reverse measurement, then multiplied by -1 (minus one) to 0.489 with a p-value of 0.065 or greater than 1%. meaning significant at a significance level of 0.05 (5%). Which implies that liquidity risk has a positive effect on financial distress, then H3 is accepted.

For hypothesis 4 tests market risk (MRISK) is proxied by NIM has a coefficient of -0.816 because it uses reverse measurement, then multiplied by -1 (minus one) to 0.816 with a p-value of 0.011 or greater than 1% meaning significant at a significance level of 0.01 (1%). Which implies that market risk has a positive effect on financial distress, then H4 is accepted

For hypothesis 5 tests the moderating effect of the capital adequacy ratio on the relationship between operational risk and financial distress perceived by BOPO. Operational risk with the capital adequacy ratio as a moderating variable shows a probability value of 0.018 which is significant at a significance level of 0.0 (1%), and produces a coefficient of 1.410. This means that the capital adequacy ratio weakens the positive effect of operational risk on financial distress, so H5 is accepted.

For hypothesis 6 tests the moderating effect of the capital adequacy ratio on the relationship between credit risk and financial distress perceived by NPL. Credit risk with the capital adequacy ratio as a moderating variable shows a probability value of 0.045 which is significant at a significance level of 0.05 (5%), and

produces a coefficient of 2.201. This means that the capital adequacy ratio weakens the positive effect of credit risk on financial distress, so H6 is rejected.

For hypothesis 7 tests the moderating effect of capital adequacy ratio on the relationship between liquidity risk and financial distress perceived by LDR. Liquidity risk with capital adequacy ratio as a moderating variable shows a probability value of 0.014 which is significant at a significance level of 0.01 (1%), and produces a coefficient of 2.220 because it uses reverse measurement, then multiplied by -1 (minus one) becomes -2.220. Which means that capital adequacy ratio weakens the negative influence of liquidity risk on financial distress, so H7 is rejected.

For hypothesis 8 tests the moderating effect of capital adequacy ratio on the relationship between market risk and financial distress perceived by NIM. Market risk with capital adequacy ratio as a moderating variable shows a probability value of 0.002 which is significant at a significance level of 0.01 (1%), and produces a coefficient of 1.740 because it uses reverse measurement, then multiplied by -1 (minus one) becomes -1.740 which means that capital adequacy ratio weakens the negative effect of market risk on financial distress, so H8 is rejected.

DISSCUSSION

Test findings examining the impact of operational risk on financial hardship are shown in Table 4. It is determined that operational risks significantly improve business performance. The fact that BOPO serves as a direct connected proxy of operational risk can be explained by the positive value of the test findings. In this case, the likelihood of financial difficulties for an enterprise increases with increasing operational risks. This positive relationship is because BOPO is a measure of how much a bank's operating expenses are compared to the operating profit it generates, therefore, a high ratio affects the increasing financial difficulties that are a condition for early bankruptcy (Ginting & Mawardi, 2021). Ginting and Mawardi (2021) found that operational risk (BOPO) contributed to financial problems in their study of financial institutions, and our results support their findings. In contrast to the findings of Sriyanto et al. (2020), which found that operational risk significantly reduces financial difficulties, this study found the opposite.

The operating cost ratio is used to measure the level of efficiency and ability of a bank in carrying out its operational activities (Dendawijaya, 2009). According to BI Circular Letter No. 3/30/DPNP dated December 14, 2001, BOPO is measured by the comparison between operating costs and operating income. A decreasing BOPO level indicates the higher operational efficiency achieved by the bank, which means that the bank's assets are more efficient in generating profits (Siamat, 2005). A decrease in BOPO indicates that management policies in minimizing costs can guarantee operational efficiency, thereby increasing profits. Because the higher the profit obtained by the bank, the bank can be said to be healthier, so that the risk of Financial Distress is lower. Based on Bank Indonesia regulations, banks that are included in a healthy condition are banks that have a BOPO Ratio (Operating Costs to Operating Income) value below 93.52%. This provision is set by the BIS (Bank for International Settlements).

Table 4 shows that there is no statistically significant relationship between credit risk and financial hardship. Revenue that can be managed in such a way that reserve costs remain low, and profits remain high is evidence that the company can achieve its financial goals. The smaller the percentage of bad loans indicates the less likely the bank is to run into trouble (Aminah et al., 2019). Both Suryaningsih & Sudirman (2020) and Sriyanto et al. (2020) discovered that non-performing loans (NPLs) alleviate financial hardships; nonetheless, the findings were contradictory and different from one another. Aminah et al. (2019) and Defika et al. (2018) also discovered that credit risk does not affect financial issues, which is in line with the findings of this research.

Non-Performing Loans (NPL) or Problematic Credit is often considered as the main indicator in assessing the financial health of a financial institution, such as a bank. NPL refers to credit that cannot be repaid according to the agreed schedule. However, NPL does not always have a direct or significant impact on

the financial distress of a bank or company. There are several reasons why NPL does not always directly affect financial distress (Kurniawan & Suryani, 2019).

First reason is loan loss provision, banks or financial institutions usually have loan loss reserves that function to cover potential losses due to NPL. With this reserve, even though there is an increase in NPL, the bank can still manage its impact in the short term without immediately experiencing financial difficulties.

The second one is portfolio diversification, many banks have a highly diversified loan portfolio. This means that even though there is a problematic loan segment, loans in other segments can still function well. This diversification reduces the negative impact of NPL on the overall financial stability of the bank.

The thirth one is regulatory policy and supervision, in many countries, there is strict supervision by financial authorities over banks. This regulation forces banks to comply with liquidity and capital adequacy standards that can mitigate the potential impact of increasing NPLs. With good policies, banks can still avoid financial distress even though NPLs increase.

The fourth is ability to manage NPL, banks or financial institutions have the ability to manage NPLs through debt restructuring, asset sales, or taking other actions to reduce NPLs. If banks succeed in managing or reducing NPLs effectively, the impact on financial distress can be minimized.

The fifth is overall financial performance, financial distress is not only determined by NPLs, but also by other factors such as liquidity, profitability, and debt-to-equity ratios. Even with high NPLs, if banks have sufficient income, efficient cost management, and good liquidity levels, they can still avoid financial distress.

And the sixth is interest rates and economic conditions, interest rates and overall economic conditions also affect customers' ability to repay loans. If the economy improves, even with high NPLs, banks may still be able to generate profits and avoid financial distress. Conversely, in bad economic conditions, even banks with low NPLs can face difficulties.

Although NPL is an important indicator, financial distress is not determined by NPL alone. Other factors, such as loan loss allowance policy, portfolio management, regulation, and general economic conditions, play an important role in determining whether a financial institution will experience financial distress (Bakar & Karim, 2020).

Table 4 displays the results of the tests that were conducted to determine the impact of liquidity risk on financial hardship. Evidently, liquidity risk has a major impact on monetary hardship. Accordingly, it seems that variations in LDR over the research period substantially impacted the degree of financial difficulty. The findings show that the likelihood of earning interest on a loan is directly correlated with the level of liquidity risk, and a bank can increase its profitability by taking a larger loan amount. The likelihood of disruption in bank liquidity increases with the low LDR value, so this link is important. According to Ginting and Mawardi (2022), commercial banks in Indonesia can use the LDR ratio as a warning mechanism to prevent financial problems. The findings of this study contradict the findings of Yurivin et al. (2018), who found no association between LDR and financial difficulties. However, previous research by Pratiwi et al. (2022) showed that LDR significantly reduced financial hardship, therefore current findings are consistent with this.

Test findings showing that market risk affects financial distress are shown in Table 4 and show that market risk significantly increases financial woes. Although the growth rate fluctuated during the study period, it was still above Bank Indonesia's lower limit of 2%, thus NIM affected the bank's default rate. Banks are protected from insolvency risk when LDR conditions are favourable because it encourages the development of interest income which ultimately affects the stability of the NIM ratio value. Based on the hypothesis that measuring market risk is inversely proportional to the proxies used (Aulia Nuranto et al., 2017), a lower NIM value indicates a higher likelihood of a bank experiencing distress, while a higher value indicates a greater ability to avoid bankruptcy. Whereas previous research by Defika et al. (2018) showed that NIM alleviates financial difficulties, current findings contradict these findings. A study conducted by Hayati (2018) found that NIM alleviates financial difficulties, so the current findings are consistent with the study.

Net Interest Margin (NIM) is the difference between the interest income a bank receives from its assets (such as loans) and the interest expense paid on its liabilities (such as deposits) compared to the assets that generate the interest. NIM is an important indicator in evaluating a bank’s profitability, as it reflects how efficiently the bank is managing its interest-bearing assets and liabilities (Rochet, 2008).

When NIM is low, it indicates that the bank is generating less interest income from its assets or is paying higher interest on its liabilities. This can increase the likelihood of a bank's bankruptcy or financial distress for the following reasons: (1) Declining Revenue: A low NIM means that the bank is generating less

interest income. If banks rely on interest income to cover operating expenses and make a profit, a decline in NIM can worsen their cash flow and reduce profitability. (2) Narrowing Margins: When NIM is narrow, banks face difficulties in balancing costs and revenues. In such a situation, banks may have to take on more risks in search of higher profits, which can worsen their financial position if the decision is wrong. (3) Interest Rate Impact: If banks are unable to raise lending rates quickly in line with rising market interest rates, NIMs may remain low despite rising funding costs. This makes it difficult for banks to maintain healthy margins, which in turn hurts their liquidity and solvency.

Other Factors Affecting the Relationship between NIM and bankruptcy probability, in addition to NIM, there are several other factors that affect a bank's financial stability (Allen & Gell, 2004), including: (1) Market Risk Management: Banks that do not have a sound market risk management strategy can be affected by fluctuations in interest rates, currency exchange rates, or changes in commodity prices. For example, an imbalance in interest rate exposure can hurt a bank when interest rates move unexpectedly, exacerbating financial distress.

(2) Interest Rate Policy: Monetary policy set by a central bank greatly influences market interest rates and, in turn, a bank's NIM. When a central bank lowers interest rates to stimulate the economy, bank lending rates typically fall as well, which can lower NIM, especially if the bank is unable to reduce interest costs proportionately. Conversely, a high interest rate policy can increase NIM but also increase the risk of non-performing loans, especially among borrowers with lower repayment capacity. (3) Asset Quality and Financing: Banks with poor asset quality (e.g., non-performing loans or poor investment portfolios) will be exposed to higher credit risk. While NIMs may be high, poor asset quality can expose banks to significant losses, increasing the risk of bankruptcy.(4) Regulatory Compliance: Compliance with banking regulations and adequate capitalization are important factors in a bank's financial stability. Banks that fail to comply with capital requirements or that experience a decline in capital reserves may face solvency issues, even if they have a high NIM.

NIM fluctuations affect a bank's long-term financial stability in several ways Laeven & Levine (2009): (1) Sustainability of Earnings: If NIMs fluctuate sharply (e.g., experience a significant decline), a bank may struggle to maintain sufficient earnings to cover its fixed costs, such as operating expenses and loan loss reserves. Over the long term, this can affect the bank's liquidity, increasing the risk of bankruptcy. (2) Business and Operational Risk: Large NIM fluctuations often reflect instability in a bank's operations or in the economy in general. Banks that rely heavily on NIMs to generate profits may be affected if market conditions change (e.g., when market interest rates rise or fall sharply). Banks with high NIM fluctuations may face greater uncertainty in long-term financial planning. (3) Need for Diversification: If NIM fluctuations are too large, banks may need to look for ways to diversify their revenue sources, for example by expanding non-interest services or reducing reliance on high-interest loans. This diversification can help maintain financial stability in the long term. (4) Increased Credit Risk: NIM fluctuations can affect a bank's credit risk profile. For example, if NIM drops too low, banks may be encouraged to make riskier loans (e.g. at higher interest rates), which could increase the number of non-performing loans and future losses.

Overall, a stable and healthy NIM is essential to ensuring a bank's financial stability. Banks with low or fluctuating NIMs tend to be more vulnerable to market risk and financial distress. Therefore, market risk management, prudent interest rate policies, and diversification of assets and revenue sources are important factors in maintaining long-term financial health.

Table 4 shows the results of the study, which suggest that the capital adequacy ratio reduces the harmful effect of operational risk on financial hardship. Capital adequacy ratios are higher for organizations with lower operational risk profiles, according to this research. Many investors believe that a company's capital adequacy ratio may help mitigate operational risk, which in turn helps the company's operations. A more cautious approach and a concentration on less risky operations may characterize banks with very high CARs. In such a

situation, they could be inclined to reduce operating expenses linked to risky company operations. On the other hand, BOPO may be impacted by this cautious character if it limits revenue and growth possibilities (Pratiwi et al., 2022). In contrast to Aminah et al. (2019), who failed to detect any link

between the capital adequacy ratio and financial issues, our research did identify a connection. Ekadjaja et al. (2021) and Pratiwi et al. (2022) are in agreement that CAR has a substantial and detrimental effect on financial hardship.

Table 4 displays the findings of the research that illustrates how the capital adequacy ratio reduces the beneficial impact of credit risk on financial distress. This study's findings suggest that a lower credit risk for the organization is associated with a greater capital adequacy ratio. A bank's ability to keep its business plan afloat is correlated with its success in controlling credit risk. There may be a positive correlation between the financial health of banks and their adherence to conservative lending standards. According to Ekadjaja et al. (2021). Research has shown that CAR has a considerable and unfavorable influence on financial issues (Ekadjaja et al., 2021; Pratiwi et al., 2022), which is consistent with the results of our study. This result goes against what Aminah et al. (2019) found, which was that capital adequacy levels are unrelated to financial troubles.

A conservative approach to operational risk management can limit a bank’s revenue and growth opportunities, considering that strict risk management policies, such as maintaining a high Capital Adequacy Ratio (CAR), affect a bank’s financial performance (Bessis, 2015).

Conservative approach and Its impact on bank revenue and growth, a conservative approach to risk management often prioritizes stability and protection against losses rather than taking greater risks to increase revenue. In the context of banks, this usually means maintaining a larger capital reserve to cover potential losses that may arise from their operations, which is reflected in the Capital Adequacy Ratio (CAR). A high CAR can provide assurance to regulators that banks have sufficient capital to cover possible risks, but on the other hand, maintaining a CAR that is too high can limit a bank’s capacity to borrow and invest funds, which has an impact on the bank’s revenue and growth.

Trade-off between high CAR and optimal growth, there is a clear trade-off between maintaining a high CAR and achieving optimal growth. Banks that focus on maintaining a high CAR will be more selective in lending and investing funds. This can limit a bank’s ability to grow, especially in a highly competitive market where other banks may be more aggressive in offering loans and financial products. Conversely, if banks focus too much on growth and ignore capital regulation, they may face greater risks of losses that could affect the bank’s long-term stability (Bassel III, 2011).

Risk management theory explains that in order to achieve an optimal balance between risk and return, banks need to consider the basic principle of risk-return trade-off. This theory states that the greater the risk taken by an entity, the greater the potential return that can be obtained, but also the greater the potential loss. In this context, CAR acts as a tool to measure and manage risk, which must be balanced with the bank’s ability to generate profits (Bessis, 2015; Merton, 1995).

The Modern Portfolio Theory (MPT) model developed by Harry Markowitz is also relevant in this context. MPT suggests that banks, like other investors, need to balance their portfolios with an eye to risk and return. CAR can be thought of as a kind of “filter” in this model, which helps control how much risk a bank can take, without harming its financial stability. In other words, CAR serves to ensure that the risks taken in an effort to achieve growth remain within acceptable limits (Markowitz, 1952).

The Capital Adequacy Ratio is an important indicator that shows how much capital a bank has compared to the risks it faces. The higher the CAR, the greater the bank's ability to absorb losses without threatening its solvency. However, a CAR that is too high can also mean that the bank is holding more capital than is necessary to face potential losses, which means there is potential for lost income because the capital is not invested to support growth. Therefore, bank management needs to find a balance between maintaining sufficient capital reserves and pursuing growth opportunities (Merton, 1995).

According to the data in Table 4, the capital adequacy ratio mitigates the detrimental impact of liquidity risk on financial distress, according to the research. Due to a lack of communication and cooperation

among CAR's many financial stakeholders and decision-makers, the firm has been unable to mitigate the positive correlation between liquidity risk and financial hardship. According to Nur Hidayati (2009),

financial difficulties might be exacerbated by a lack of internal cooperation. To lessen the impact of these dangers, businesses should work together to better manage their data and resources, make more informed choices, and keep operations running smoothly (Ekadjaja et al., 2021). Consistent with other studies (Ekadjaja et al., 2021; Pratiwi et al., 2022), this one also finds that CAR significantly and negatively affects financial hardship. Nevertheless, the study's findings contradict those of Aminah et al. (2019), who found no relationship between financial distress and the capital adequacy ratio.

Lack of communication and internal cooperation within an organization can exacerbate liquidity risk, especially in the context of managing CAR (Capital Adequacy Ratio) which functions to ensure the financial stability of the company, especially in the banking sector. Ineffective collaboration can lead to misalignment

of policies between stakeholders, so that decision-making related to liquidity risk management becomes less than optimal. There are some ways that lack of collaboration can exacerbate liquidity risk, as well as examples of implementing better communication policies (Loffler, 2015).

First, misalignment of policies between stakeholders, if communication between departments within an organization is not going well, each part can take conflicting or unsynchronized policies, especially those related to liquidity management. For example, the treasury team responsible for liquidity management and the risk team that evaluates potential risks may have different understandings of how much cash reserves are needed to face the potential for massive withdrawals. When the policies taken are not aligned, one department may be too aggressive in investing existing funds, while the other is too cautious in providing reserve funds. This can lead to unexpected liquidity shortages at critical times (Loffler, 2015; Vogel, 2016).

For example, a bank may experience a decline in trust from a large customer, who then makes a large withdrawal. If communication between the treasury team that manages liquid assets and the risk management team that assesses the impact of the potential withdrawal is poor, the bank may not have enough cash to meet these withdrawal requests. As a result, the bank may be forced to take emergency measures such as expensive short-term borrowing or even sell assets at an unfavorable price.

The second, poor decision making, a lack of collaboration can lead to untimely decision making in response to changing market conditions or changing liquidity needs. When different teams do not share information transparently, they may not have a complete picture of the overall state of the company, potentially leading to poor decisions about managing cash and investments (Loffler, 2015).

A company’s finance team may assume that its cash position is sufficient for the next few months, while the risk team may not have a clear understanding of its exposure to future revenue declines due to volatile market conditions. If the two teams do not collaborate, the company may fail to prepare for sudden changes in cash flow, ultimately increasing liquidity risk.

The thirth, implementing better communication policies, companies that adopt better communication policies can reduce liquidity risk by ensuring that each team has access to enough relevant information to make quick and informed decisions (Bassel Committee on Banking Supervision, 2010; Loffler, 2015; Vogel, 2016). There are some examples of communication policies that can be implemented: (1) Increased frequency of team meetings, increase the frequency of meetings between treasury, risk, and finance departments to discuss current developments, cash flow projections, and potential risks. By sharing information regularly, teams can be better prepared for rapidly changing conditions. (2) Integrated information systems, use integrated information systems to monitor cash positions and cash flows in real time. This system allows teams to immediately see liquidity needs and detect potential problems as they arise. (3) Developing a joint contingency plan, all stakeholders can be involved in developing a contingency plan to deal with a liquidity crisis.

Table 4 displays the results of the study, which show that the capital adequacy ratio reduces the effect of market risk on financial difficulties. Despite the potential benefits of market risk on financial hardship, CAR would fail to do so for a number of reasons. One of them is a lack of resources; even if CAR were to rise, there would still not be enough to lessen the impact of market risk on financial misery. Capital sufficiency may not be as effective in lowering market risk if there is a lack of communication and cooperation among the company's financial stakeholders and decision-makers. With so many variables impacting businesses and their respective markets, it is unclear if CAR's beneficial effect on preventing financial distress is sufficient to

mitigate the positive correlation between market risk and financial distress (Laussiri & Nahda, 2022). According to Dilla Fatiha and Triyanto (2021) and Luthfiyanti and Dahlia (2020), The market risk that NIM attempts to represent is very sensitive to interest income volatility, which in turn is susceptible to interest rate and other market component variations. Research by Aminah et al. (2019), Ginting and Mawardi (2021), and Pratiwi et al. (2022). Consistent with other studies (Ekadjaja et al., 2021; Pratiwi et al., 2022), this one also finds that CAR significantly and negatively affects financial hardship. The study's findings contradict those of Aminah et al. (2019), who contend that financial hardship is unrelated to the capital adequacy ratio.

CONCLUSION

This research aims to examine the role of the capital adequacy ratio (CAR) in mitigating the negative impact of risk factors on financial distress in Indonesian banking companies, as well as to analyze how risk

management relates to financial issues. The results show that operational, liquidity, and market risks positively affect financial distress, while credit risk has no significant impact. The study also found that the capital adequacy ratio (CAR) can help reduce the negative effects of liquidity and market risks on financial challenges, as well as mitigate the impact of operational and credit risks.

The implications of this study are expected to serve as a reference for future research investigating the causal relationships and interactions between different types of risks that can contribute to financial distress. These findings provide a better understanding of how various risks can trigger or exacerbate financial issues and offer insights for the development of more risk-based business policies and strategies. This includes the importance of integrating risk management with strategic planning and business decision-making processes. Concrete examples of the application of Capital Adequacy Ratio (CAR) in real business policies and strategies can be found in several industrial sectors, especially in the banking sector and companies related to financial markets. Banks can integrate CAR into their risk management policies to ensure that they always have sufficient capital reserves to face losses that may occur due to non-performing loans, market fluctuations, or asset value declines. For example: (1) Credit Risk Management: Banks can use CAR to assess whether they have sufficient capital to cover the credit risk posed by lending. If CAR is low, banks may be more selective in granting credit or increase capital reserves. (2) Market Risk Management: If banks have a large investment portfolio, they need to calculate market risk exposure (for example, interest rate or exchange rate fluctuations) and adjust the required capital based on the potential losses that may occur. (3) Liquidity Risk Management: Banks must ensure that they have sufficient capital to face sudden withdrawals of funds by customers, especially in crisis situations. The application of CAR helps banks maintain a safe capital ratio to deal with events that affect liquidity (OJK, 2019).

There are several limitations in this study, including the fact that the interaction of the moderation variable (capital adequacy ratio) with the independent variables of market risk and liquidity risk may not fully reflect the actual risk management practices of the companies. This study also did not consider the impact of the COVID-19 pandemic, which could have influenced the variables in the study. Furthermore, the research only examined financial distress influenced by financial ratios, without considering other factors such as corporate governance (ownership type, audit committee size, number of board of directors, etc.) and economic conditions (economic growth, unemployment rate, inflation rate, etc.). Additionally, other financial ratios, such as activity ratios, company growth ratios, and cash flow ratios, were not included in this analysis.

From the results of the research and studies that have been conducted by the author, the following suggestions can be given to improve the quality of subsequent research, increase the number of research samples and expand the research criteria to other industrial areas in the Southeast Asia region, extend the time and period of research to collect larger samples and can provide results that are more relevant to the actual situation, consider increasing the number of independent variables and control variables, so that they can better explain the dependent variables discussed and reflect the actual situation.

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