Malia
Published by: Study Program of Sharia Economics, Faculty of Islamic Studies Universitas Yudharta Pasuruan
Volume 17, Number 1, December 2025, Pages 39-57
Print : 2087-9636
Online : 2549-2578

The Effect of Financial Ratios on Financial Distress with the Springate Approach

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Article Info
Article History:
Received May th, 2025
Revised May th, 2025
Accepted May th, 2025
Available onlineon December th, 2025

DOI: 10.35891/ml.v13i2.3267
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ABSTRACT

Purpose: This study aims to examine the effect of financial ratios—liquidity, profitability, non-performing financing, and effectiveness—on financial distress in Sharia Rural Banks (BPRS) in Central Java, using the Springate (S-score) model as an early warning approach for financial failure.

Design/methodology/approach: This research adopts a quantitative descriptive approach using panel data from 18 Sharia Rural Banks (BPRS) in Central Java over the 2019–2023 period. Secondary data were obtained from audited financial statements published by the Financial Services Authority (OJK). Financial distress was measured using the Springate (S-score) model, while liquidity was proxied by the Financing to Deposit Ratio (FDR), profitability by Return on Assets (ROA), non-performing financing by NPF, and effectiveness by the Operating Expenses to Operating Income (BOPO) ratio. Data were analyzed using panel data regression with the Common Effect Model (CEM).

Findings: The results indicate that profitability (ROA) and effectiveness (BOPO) have a significant negative effect on financial distress, suggesting that higher profitability and better operational efficiency reduce the likelihood of financial distress in BPRS. Conversely, liquidity (FDR) and non-performing financing (NPF) show positive but insignificant effects on financial distress. These findings suggest that financial distress in BPRS is more strongly influenced by operational efficiency and asset utilization rather than liquidity conditions or financing quality alone.

Practical implications: The findings provide practical insights for BPRS management to prioritize improving profitability and operational efficiency as key strategies to mitigate financial distress. Regulators such as OJK and LPS may also utilize these results to strengthen early warning systems and supervisory frameworks for Islamic rural banks, particularly by focusing on performance-based financial indicators.

Originality/value: This study contributes to the Islamic banking and financial distress literature by applying the Springate (S-score) model to Sharia Rural Banks, a context that remains underexplored. By focusing on BPRS in Central Java, this research offers empirical evidence on the relevance of financial ratios in predicting financial distress within Islamic microfinance-oriented banking institutions.

Keywords: Financial Distress, Springate (S-Score), Liquidity Ratio, Profitability Ratio, Non-Performing Loan Ratio, Effectiveness Ratio.

Paper type: *Research paper*

A. INTRODUCTION

Banks have the primary function of acting as financial intermediaries that collect funds from the public and channel them back in the form of credit. This function makes

banks an important pillar of economic growth through productive financing, investment, and financial risk management. In the Indonesian context, the role of banks also includes financing national development projects through the ownership of government securities and support for fiscal management.

One type of bank that plays a strategic role in financial inclusion is the Sharia Rural Bank (BPRS). BPRS operates under sharia principles and focuses on small and medium-sized businesses, especially in rural areas (Nur Kholis & Vivin Maharani Ekowati, 2023). These characteristics make BPRS more vulnerable to financial fluctuations, due to limited capital and managerial capacity compared to commercial banks. Financing is the main source of income for BPRS, but on the other hand, it increases the risk of financial distress if the quality of financing is not managed optimally.

The Deposit Insurance Corporation (LPS) has the task of formulating, determining, and implementing preparations for the liquidation of insurance companies and sharia insurance companies whose business licenses are revoked by OJK. Liquidation occurs because the bank experiences *financial distress* severe enough to be unable to pay its debts and obligations. In carrying out its duties, LPS has liquidated as many as 137 banks in Indonesia in 2006-2024.

Table 1. List of Rural Banks in Central Java in Liquidation

BPRS in Liquidity	Region	CIU Year
PT BPRS Al Hijrah Amanah	Central Java	2019
PT BPRS Tanggamus	Central Java	2020
PT BPRS Artha Madani	Central Java	2020
PT BPRS Haji Miskin	Central Java	2021

Source: Data processed, 2024.

Every company faces the risk of bankruptcy, which can be caused by various financial problems, both internal and external (Ja'far et al., 2025). This risk will be even greater if the company is unable to manage its resources optimally, including human resources and funding. One way to assess the potential for bankruptcy is through financial statements, which can be analyzed using various financial ratios.

Financial distress is the initial phase of the decline in the company's financial condition before it actually goes bankrupt. Research results Wulandari & Jaeni, (2021) factors affecting financial distress include operating cash flow, leverage, liquidity, operating capacity, profitability, and sales growth (Susanty et al., 2025). Financial ratios such as liquidity, profitability, and effectiveness ratios are often used as analytical tools to measure the likelihood of financial distress. By conducting this analysis, both internal and external parties of the company can anticipate the risk of loss and assess the viability of the company more accurately (Sasongko et al., 2019) .

The Springate method was developed in 1978 by Gorgon L.V. *Springate*. In its development, *Springate* used the same method as Altman (1968), namely MDA. Initially, there were 19 financial ratios considered. After going through tests similar to those conducted by Altman (1968), *Springate* chose 4 ratios that were considered capable of distinguishing companies that were experiencing financial difficulties and those that were not.

Mita Pratiwi & Wiweko (2022) The Springate method is considered the most accurate in predicting financial distress because it combines liquidity ratios, two profitability ratios,

and activity ratios. Its main advantage lies in the two profitability ratios, which reflect the company's ability to generate profits and manage operations effectively. This makes it superior to the Altman, Grover, and Zmijewski methods. The Altman method uses profitability and liquidity ratios, Grover focuses on two profitability ratios, while Zmijewski emphasizes profitability, solvency, and liquidity ratios, but focuses more on debt ratios and less on other aspects. Kason et al (2020) research comparing the accuracy of the Grover, Springate, and Altman Models in predicting financial distress concluded that the Springate Model is the most effective, with an accuracy rate of 85.71%. This model is proven to be the most accurate in determining the company's financial distress condition (Munawarah, 2020) .

This study uses four financial ratios, namely the liquidity ratio, profitability ratio, non-performing loan ratio and effectiveness ratio. The liquidity ratio is used to measure the company's liquidity level (Prayuningsih et al., 2021) . In this study, the liquidity ratio is measured by the *Financing to Deposit Ratio* (FDR). LDR is used to measure the liquidity ratio because it provides insight into how well the bank manages deposits and loans, as well as its ability to deal with potential liquidity risks in the future.

Profitability ratios are used to assess the company's ability to generate profits (Rahma, 2020). Profitability ratio is measured by *Return On Assets* (ROA). ROA is used in measuring the profitability ratio because it provides a clear picture of operational efficiency and how well the company manages its assets to generate profits. While the ratio of *non-performing* loans is measured by *Non-Performing Financing* (NPF) (Subagiyo et al., 2025). The selection of NPF in this measurement is because it provides a clear indicator of the quality of bank loans, the level of credit risk faced, and the bank's ability to manage these risks, which is very important to maintain financial health and banking stability.

The effectiveness ratio measures the company's ability to achieve revenue according to the target. In this study, the BOPO (Operating Expenses to Operating Income) ratio is used because it can show the bank's operational efficiency in managing costs to generate income (Kassim et al., 2025). This ratio is important to assess the performance, effectiveness of resource management, and sustainability of bank profitability.

Studies on financial distress prediction have mostly focused on non-financial companies or commercial banks, using predictive methods such as Altman Z-Score, Grover, and Zmijewski. However, these methods are not entirely suitable for sharia-based financial institutions such as BPRS, which have unique characteristics in terms of financial structure and risk management. Meanwhile, the Springate model (S-score) model, which combines liquidity, profitability, and efficiency ratios, is considered more accurate but is still rarely applied specifically to the BPRS context. Additionally, previous research on the influence of financial ratios on financial distress has shown inconsistencies. Some studies found significant relationships, while others yielded varied results depending on the sector and observation period.

This study aims to analyze the impact of financial ratios on financial distress conditions in Islamic Rural Banks (BPRS) in Indonesia, as well as to test the effectiveness of the Springate (S-score) prediction model in detecting potential financial failure in the Islamic banking sector. This study specifically aims to answer the question: "To what extent do financial ratios such as FDR (Financing to Deposit Ratio), ROA (Return on Assets), NPF (Non-Performing Financing), and BOPO (Operational Expenses to Operational Income)

influence financial distress conditions at BPRS, and how accurate is the Springate method in predicting such potential financial distress?"

This study contributes to enriching the literature on early detection of financial failure in Islamic financial institutions by testing the effectiveness of the Springate model, which is still rarely applied in the context of Islamic rural banks. Theoretically, these findings expand understanding of the relationship between financial ratios and the potential for distress in the Islamic financial system. Practically, the research results can be utilized by Islamic rural bank management in making strategic decisions based on financial indicators, be utilized by BPRS management in making strategic decisions based on financial indicators, as well as serve as a reference for regulators such as the OJK and LPS in designing a more responsive supervisory system for the risk of failure in Islamic financial institutions. The structure of this article consists of five main sections: introduction, literature review, research methodology, results and discussion, and conclusion containing the conclusions and implications of the research.

B. THEORETICAL STUDY

1. Theory Review

a. Signaling Theory

Prayuningsih et al (2021) signal theory explains how companies should provide signals that indicate the actions of company management to fulfill the wishes of the owner. Signal theory is used to explain that financial statements can provide positive or negative signals. Signal theory can also be used by agents, companies, investors, and other parties to reduce information asymmetry by producing high-quality financial reports. This signal theory is information about management actions that have been taken to fulfill the wishes of the owner. Financial statements are a process of analysis and research that can help explain the goals that a company has achieved and can be used to determine the performance and financial condition of the company so that it can predict future bankruptcy. Information disclosed by companies can influence investor decisions (Sutra & Mais, 2022) .

b. Financial Distress

Financial distress is a condition in which a company faces financial difficulties, characterized by insufficient cash flow to meet short-term and long-term obligations. In this situation, the company needs to make adjustments to its activities. *Financial distress* can also lead a company to bankruptcy, so action is needed to improve cash flow (Sutra & Mais, 2022). *Financial distress* can be described through two extremes, ranging from short-term liquidity difficulties to *insolvency*. Short-term financial distress is usually temporary. Indicators of *financial distress* can be seen through cash flow analysis, company strategy analysis, and company financial reports (Suot et al., 2020) .

c. Springate (S-score)

The Springate method was created in 1978 by Gorgon L.V. *Springate*. In its development, *Springate* continued the method used by Altman (1968), namely MDA. Initially, 19 ratios were proposed. After undergoing testing similar to that conducted by Altman (1968). *Springate* chose 4 ratios that are considered capable of distinguishing between companies that are in *distress* and those that are not. In the *Springate* method,

the sample consisted of 40 companies located in Canada, the same number as the sample in the Altman method.

Mita Pratiwi & Wiweko (2022) found that the Springate method is the most accurate method for predicting financial distress. The Springate model consists of liquidity ratios, two profitability ratios, and activity ratios. The presence of two profitability ratios in this model clearly places Springate at the top, because companies that generate high profits will tend to avoid signs of financial distress. This indicates that management has been successful in managing the company's operations, which in turn sends a positive signal to investors. Unlike the Altman method, the Grover method, and the Zmijewski method, where the Altman method uses profitability ratios and liquidity ratios, the Grover method uses two profitability ratios. Meanwhile, the Zmijewski method uses profitability ratios, solvency ratios, and liquidity ratios, which focus on debt ratios and do not consider other components (Nawirah et al., 2022).

Kason et al (2020) analyzed the accuracy of predicting financial distress using the Grover Score Method, the Springate Score Method, and the Altman Z Score Method. The results of the study concluded that the Springate Score model is the most suitable and effective model for estimating financial distress, with an accuracy rate of 85.71%. The Springate Score method proved to be the most accurate prediction method in determining financial distress conditions. Springate Model:

$$S\text{-}score = 1.03A + 3.07B + 0.66C + 0.4D$$

d. Liquidity Ratio

According to Prayuningsih et al (2021) liquidity ratio is a ratio used to measure the company's liquidity level. The company's liquidity reflects its ability to fund operations and meet short-term obligations. If the company relies too much on debt, future liabilities will increase, which can make the company more vulnerable to *financial distress*.

Agustini & Wirawati (2019) liquidity ratio is the ability of an entity to meet its current obligations using its current assets. These current liabilities can include debts that are due immediately, employee salaries, debt for the purchase of raw materials, payment of electricity bills, water needed in the production process, and others. Financing to Deposit Ratio (FDR) is the ratio between total loans disbursed and total third party funds collected from the public, which consists of current accounts, savings, and time deposits.

e. Profitability Ratio

Rahma (2020) profitability ratio is a financial ratio used to assess the company's ability to generate profits. Profitability ratios can be analyzed by comparing various components in the financial statements, especially the balance sheet and income statement. This measurement can be carried out for several operating periods with the aim of seeing the company's development over a certain period of time, both increase and decrease, and identifying the causes of these changes (Sutra & Mais, 2022) .

The profitability ratio shows the company's ability to generate profits during a certain period related to sales, total assets, or equity. This ratio measures the level of effectiveness and efficiency of company management (Agustini & Wirawati, 2019) . The higher the profitability ratio value, the better the condition of the company based on its

profitability measure. The efficiency of the company in managing its assets can be measured through the *Return on Asset Ratio* (ROA).

f. Non-performing Loan Ratio

This condition occurs when customers are no longer able to fulfill some or all of their obligations to the bank according to the agreement. According to Bank Indonesia regulations, non-performing loans are classified into Substandard, Doubtful, and Bad Debt collectability. According to Aminah et al (2019) *Non Performing Financing* (NPF) is a ratio used to assess credit quality by comparing the amount of *non-performing* loans to total loans granted.

g. Effectiveness Ratio

The effectiveness ratio shows the company's ability to achieve planned revenue compared to the target that has been set. According to Aminah et al (2019) BOPO ratio is the ratio of operating costs to operating income, which serves as an indicator of operational efficiency and is often used as a standard by Bank Indonesia.

Syakhrun et al (2019) BOPO is a ratio that compares operating expenses with operating income. The lower the BOPO ratio, the better the performance of bank management, because it shows higher efficiency in utilizing company resources. This ratio is used to compare operating expenses with operating income

h. Non-performing Loans in Islamic Perspective

In the Islamic perspective, non-performing loans are viewed not only as a financial issue, but also as an ethical and moral issue. The principles of fairness, responsibility, and transparency are the main basis for credit transactions. Islam emphasizes ethical behavior, rejects usury, and encourages fair debt management (Adlan, 2016) . Accountability and open communication between borrowers and lenders are also considered important to prevent and handle non-performing loans fairly and harmoniously for the welfare of society. As found in surah Al-Baqarah verse 245 which reads:

مَنْ ذَا الَّذِيْ يُقْرِضُ اللّٰهَ قَرْضًا حَسَنًا فَيُضٰعِفَهٗ لَهٗٓ اَضْعَافًا كَثِيْرَةً ۗوَاللّٰهُ يَقْبِضُ وَيَبْصُۜطُ ۖ وَاِلَيْهِ تُرْجَعُوْنَ .

"Who will give a good loan to Allah? He will multiply (the repayment of the loan) for him many times over. Allah constricts and expands (provision). It is to Him that you are returned." (Qs. Al-Baqarah: 245)

One example of this behavior is actions that result in financial problems, such as non-performing loans due to dishonesty in managing funds and violating the principles of justice. This irresponsibility not only harms the lender, but also has the potential to damage the overall social and economic order (Adlan, 2016). Loans that cannot be repaid by debtors have the potential to reduce the financial performance of institutions and threaten the stability of the financial system. In dealing with this problem, Islamic ethical principles can provide important guidance, one of which is through the hadiths of the Prophet Muhammad SAW, which teach the importance of mutual assistance and justice in transactions. One relevant hadith is narrated by al-Bukhari, which states,

وَمَنْ كَانَ فِي حَاجَةِ أَخِيهِ كَانَ اللَّهُ فِي حَاجَتِهِ، وَمَنْ فَرَّجَ عَنْ مُسْلِمٍ كُرْبَةً، فَرَّجَ اللَّهُ عَنْهُ كُرْبَةً مِنْ كُرَبِ يَوْمِ الْقِيَامَةِ

"Whoever helps his brother's needs, Allah will help his needs. And whoever relieves a Muslim's hardship, Allah will relieve his hardship on the Day of Judgment."

The scholars unanimously agree that qard (loans) are permissible. This agreement is based on the fact that humans cannot live without helping one another. No individual can fulfill all their needs without the help of others. Therefore, the practice of lending and borrowing has become part of daily life. Islam, as a religion, pays great attention to and fulfills the various needs of its followers.

2. Conceptual Framework

The conceptual framework aims to describe how independent variables influence dependent variables, thereby facilitating understanding in this study.

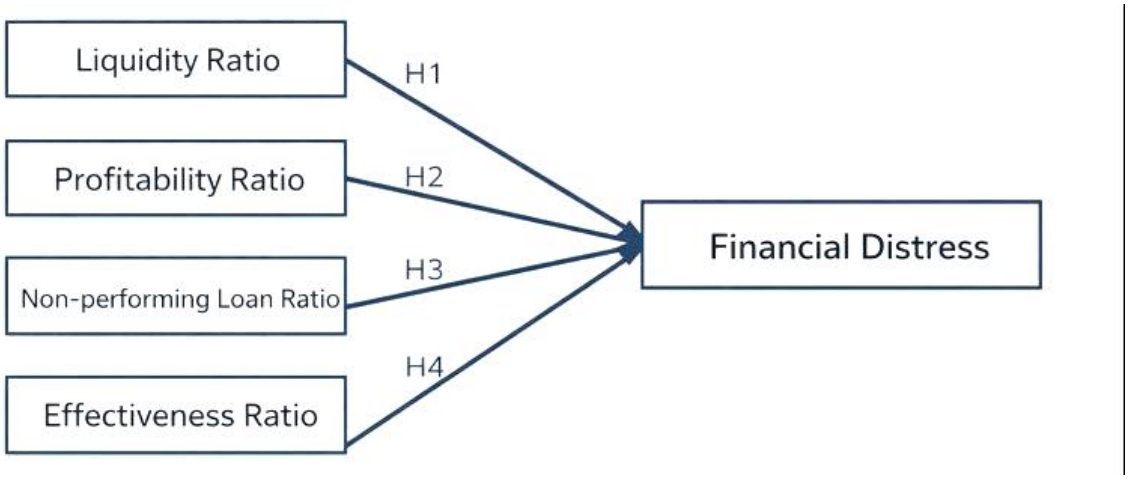

Figure 1. Conceptual Framework

3. Research Hypothesis

a. Effect of Liquidity Ratio on *Financial Distress*

Liquidity ratios are important indicators in assessing a company's financial health. Based on signal theory, companies with good financial conditions will send positive signals to investors and the market through healthy financial ratios, including liquidity ratios. High liquidity ratios provide confidence that a company is able to pay its short-term debts and has good cash management, making it less likely to experience financial distress. Research by Khoirinnisa & Lestiningsih (2024) shows that liquidity has a positive effect on financial distress; the higher the liquidity ratio, the lower the likelihood of a company experiencing a financial crisis. Conversely, a low liquidity ratio can worsen a company's financial condition. Research by Fia Afriyani & Nurhayati (2023) indicates that liquidity ratios influence financial distress. This suggests that liquidity can be used as an indicator to predict the likelihood of financial distress in a company.

H1 : Liquidity ratio has an influence on financial distress in rural banks (BPR) in Central Java.

b. Effect of Profitability Ratio on *Financial Distress*

Based on signal theory, companies that are able to record profits in a given period will send positive signals to the market and investors regarding their financial stability and prospects. In this context, profitability ratios are key indicators for measuring a company's efficiency in generating profits from its assets and operations. High profitability values reflect sound operational performance, thereby reducing the likelihood

of the company experiencing financial distress. Rahma (2020) states that profitability has a significant influence on financial distress. This is because this ratio shows how efficiently a company generates profits from its assets and operations. Sutra & Mais (2022) concluded that profitability affects financial distress. A high profitability ratio in a company indicates that the return on investment from the company's assets is in very good condition.

H2 : Profitability ratio has an influence on financial distress at Rural Banks (BPR) in Central Java.

c. The Effect of Nonperforming Loan Ratio on *Financial Distress*

Based on signaling theory, financial information of a company, including non-performing loan ratios or *Non-Performing Financing* (NPF), serves as a signal to investors and external parties regarding the company's financial health. A low NPF ratio reflects the debtor's ability to meet its obligations to the bank, which ultimately sends a positive signal that the company is in a stable financial condition and is not experiencing financial distress. Conversely, a high NPF ratio indicates a high risk of default, which can lead to liquidity pressures and increase the potential for a financial crisis within the company. Suot et al (2020) that *Non Performing Financing* (NPF) has a positive and significant influence on the prediction of *financial distress* conditions. This shows that fluctuations in NPF during the study period have a significant impact on *financial distress* conditions.

H3 : The ratio of non-performing loans has an influence on financial distress at Rural Banks (BPR) in Central Java.

d. Effect of Effectiveness Ratio on *Financial Distress*

Based on signaling theory, companies that demonstrate high operational efficiency will send positive signals to the market, especially to investors and creditors, that the company is in a healthy financial condition and is free from *financial distress*. One indicator of such efficiency is the effectiveness ratio measured by BOPO (Operating Expenses to Operating Income). The lower the BOPO value, the more efficient the company is in generating revenue, reflecting good cost management and supporting business continuity. A high BOPO ratio, on the other hand, indicates cost inefficiency that could potentially lead to financial pressure and, in the long term, cause financial distress. Suot et al (2020) that Operating Expenses to Operating Income (BOPO) has a positive and significant effect on *financial distress*. This indicates that both an increase and decrease in BOPO will be followed by an increase in *financial distress*. Sriyanto & Agustina (2020) The ratio of Operating Expenses to Operating Income (BOPO) shows a significant effect on unstable *financial distress*.

H4 : The effectiveness ratio has an influence on financial distress in rural banks (BPR) in Central Java.

C. METHODOLOGY

This research uses quantitative methods with a descriptive approach. Quantitative research method is a research approach that is rich in the use of numbers in data collection techniques in the field (Djollong, 2014) . According to Syahrizal & Jailani (2023) descriptive method is an effort to find facts with appropriate interpretation,

descriptive research analyzes issues in society as well as prevailing norms, including certain situations, descriptive research aims to describe the object or subject under study in accordance with its reality.

The object of this research is Central Java Province, with a focus on Islamic People's Financing Banks (BPRS) registered with the Financial Services Authority (OJK). This study covers BPRS that published financial reports from 2019-2023 and experienced financial difficulties during that period. The researcher's objective is to determine the effect of financial ratios on financial difficulties in BPRS in Central Java.

The sample in this study was determined using the *Purposive Sampling* method, which is a sample selection method based on certain criteria in accordance with the research objectives. The sample of this study is Islamic People's Financing Banks that publish their financial reports and experience *financial distress* during 2019-2023 totaling 18 companies.

Table 2. Sampling Criteria and Sample Size

No.	Sample Criteria	Total
1.	Sharia People's Financing Bank (BPRS) located in Central Java Province.	79
2.	Islamic People's Financing Banks (BPRS) in Central Java that did not publish their Financial Statements during 2019-2023.	(15)
3.	Sharia People's Financing Banks (BPRS) that *are* in a profit condition registered with the Financial Services Authority (OJK) in the 2019-2023 period.	(46)
	Total	18
	Number of Samples in the Study (18 x 5)	90

Source: Financial Services Authority, 2024.

The data used in this research is secondary data. Secondary data is data whose information is obtained indirectly or from other parties that have been processed in the form of publications, such as financial reports and sustainability reports. The data source used is the publication of the financial statements of the Sharia People's Financing Bank (BPRS) which has been audited and registered with the Financial Services Authority (OJK). This financial report data was obtained through the official website of the Financial Services Authority, namely www.ojk.co.id, during the period 2019 to 2023.

In this study, the data collection method used is the documentation method from data published by the Financial Services Authority (OJK) with panel data type. This study has two types of variables, namely independent variables and dependent variables. The dependent variable used is *financial distress*, while the independent variables are liquidity ratio, profitability ratio, non-performing loan ratio, and effectiveness ratio.

The four independent variables in this study use different measurement indicators. The liquidity ratio uses the Financing to Deposit Ratio (FDR) measurement indicator. The profitability ratio uses ROA (Return On Assets) as an indicator. The non-performing loan ratio uses NPF as a measurement indicator. The effectiveness ratio uses Operating Expenses to Operating Income (BOPO).

This study uses four data analysis techniques, namely descriptive statistical analysis, panel data regression analysis method, panel data regression equation, and hypothesis testing. Descriptive statistical analysis is used to provide an overview of the variables used. This analysis presents general information about the characteristics of

each research variable, seen from the average, maximum, and minimum values. The panel data regression analysis method is a regression method that combines *time series* and *cross-section* data. *Time series* data is data collected periodically over time on an object, while *cross-section* data is data collected at one specific time from several individuals or objects. The hypothesis tests used in this study are the *coefficient of determination* (R2) and the Partial Test (T-Test).

Table 3. Operational Definition of Variables

No.	Variable and Source	Indicator	Measurement	Measurement Scale
Independent Variables (X)				
1.	Liquidity Ratio (Sriyanto & Agustina, 2020)	LDR	LDR = Loans Disbursed / Total Funds Collected × 100%	Ratio
2.	Profitability Ratio (Sriyanto & Agustina, 2020)	ROA	ROA = Net Income / Total Assets × 100%	Ratio
3.	Non-Performing Loan Ratio (Sriyanto & Agustina, 2020)	NPL	NPL = Non-Performing Loans / Total Financing × 100%	Ratio
4.	Effectiveness Ratio (Syakhrun et al., 2019)	BOPO	Operating Expenses / Operating Income × 100%	Ratio
Dependent Variable (Y)				
1.	Financial Distress (Kason et al., 2020b)	Springate (S-score)	Score = 1.03A + 3.07B + 0.66C + 0.40D	Ratio

Source: Financial Services Authority, 2024.

In this study, panel data analysis was conducted using the Common Effect Model (CEM) with the help of EViews software. CEM assumes that there are no individual effects or time effects, so all observations are treated uniformly. To maintain the validity of the results, a series of diagnostic tests were conducted, including a heteroscedasticity test using Breusch-Pagan and an autocorrelation test using Durbin-Watson. If indications of heteroscedasticity are found, robust standard errors are used to produce consistent variance estimates. The potential for endogeneity is minimized by ensuring that the independent variables are exogenous and theoretically relevant, as well as by testing for multicollinearity using the Variance Inflation Factor (VIF). Although CEM is a basic approach, these steps are expected to maintain the reliability and accuracy of the estimation results.

D. RESULT

1. Descriptive Statistical Analysis

The results of the descriptive statistical analysis test are as follows:

Table 4. Statistical Analysis Results

	X1	X2	X3	X4	Y
Mean	90.18689	13.66222	16.41056	203.7280	0.366489
Median	59.45500	4.485000	11.70000	140.8300	0.589500
Maximum	1578.530	567.0000	100.0000	1607.760	0.855800
Minimum	0.000000	0.000000	0.000000	0.000000	-7.625400
Std Dev	181.2007	59.96536	17.13251	201.7902	0.994445

Source: Eviews output13 (2025)

According to the information presented in the table above, collected data on research variables, namely the liquidity ratio has a minimum value of 0.000000 and a maximum of 1578.530, with an average of 90.19, a median of 59.46, and a standard deviation of 181.20. The profitability ratio has a minimum value of 0.000000 and a maximum of 567.0000, with an average of 13.66, a median of 4.49, and a standard deviation of 59.97. The Non-Performing Loan Ratio has a minimum value of 0.000000 and a maximum of 100.0000, with an average of 16.41, a median of 11.70, and a standard deviation of 17.13. The Effectiveness Ratio has a minimum value of 0.000000 and a maximum of 1607.760, with an average of 203.73, a median of 140.83, and a standard deviation of 201.79. Financial Distress shows a minimum value of -7.625400 and a maximum of 0.855800, with an average of 0.37, a median of 0.59, and a standard deviation of 0.99.

2. Model Selection Results

a. Chow Test

Table 5. Chow Test Results

Effect Test	Statistic	d.f	Prob
Cross-section F	1.116399	(17,68)	0.3575
Cross section Chi-square	22.154093	17	0.1789

Source: Eviews output13 (2025)

Based on the table above, it can be seen that the Cross-section F value is greater than the probability value of 0.05 with a value of 0.3575 ≥ 0.05 and the Cross section Chi-square value of 0.1789 ≥ 0.05, so that the CEM is chosen. Then the next test is the Hausman test.

b. Hausman Test

Table 6. Chow Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Cross-section random	3.472666	4	0.4820

Source: Eviews output13 (2025)

From the Hausman Test results in the table shows the prob value. 0.4820> 0.05. With a prob value. 0.4820> α 0.05. Then the significant value indicates that the selected model is REM. Then the next test is the Lagrange Multiper (LM) Test.

c. Lagrange Multipler Test

Table 7. Lagrange multiplier results

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-pagan	0.033724	0.050682	0.084407
	(0.8543)	(0.8219)	(0.7714)

Source: Eviews output13 (2025)

From the Lagrange Multipler Test results in the table shows the prob value. 0.8543> 0.05. With a prob value. 0.8543> α 0.05. Then the significant value indicates that the selected model is CEM. From the data results in the Chow Test, Hausman Test and Breush-Pagan LM, it can be seen that the Chow Test common effect model is more suitable. In the Hausman Test, the random effect model is more appropriate. And also

with LM Breush-Pagan the common effect model is more appropriate. So it can be concluded that the best model in this study is the common effect model. The following are the estimation results with the common effect model test:

Table 8. *Common Effect Model* Test Results

Variable	Coefficient	t-Statistic	Prob.
C	0.484934	2.458087	0.0160
Liquidity	-0.000129	-0.217643	0.8282
Profitability	0.003496	1.915721	0.0588
Non-performing Loans	0.003143	0.515389	0.6076
Effectiveness	-0.001105	-2.037719	0.0447
Adjusted R-squared	0.067258		
F-statistic	2.604410		
Prob(F-statistic)	0.0411436		

Source: Eviews output13 (2025)

3. Panel Data Regression Test Results

Table 9. Regression Analysis Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.549858	0.188995	2.909385	0.0046
Liquidity	0.000213	0.000560	0.380046	0.7049
Profitability	-0.003720	0.001762	-2.111684	0.0376
Non-performing Loans	0.004039	0.006006	0.672509	0.5031
Effectiveness	0-.001070	0.000520	-2.059217	0.0425
Adjusted R-squared	0.083541			

Source: Eviews output13 (2025)

From the table above, it can be seen that the relationship between the independent variable and the dependent variable can be formulated in the following equation:

Y = 0.549858 + 0.000213*Liquidity - 0.003720*Profitability + 0.004039*Problem Credit - 0.001070*Effectiveness

Based on the regression equation, it can be interpreted as follows, the constant coefficient value is 0.549858 at a probability value of 0.0046, indicating that the constant is significant at a significant level of 0.5%. This means that when the other dependent variables are considered 0.0046, the average value of the dependent variable is 0.549858. The coefficient value of the liquidity variable is 0.000213. This means that every 1% increase in liquidity will increase *financial distress* by 0.213%, assuming other variables are constant.

The coefficient value of the profitability variable is -0.003720. This means that every 1% increase in profitability will reduce financial distress by 0.37% assuming other variables are constant. The coefficient value of the non-performing loan variable is 0.004039. This means that every 1% increase will increase *financial distress* by 0.40%, assuming other variables are constant. The coefficient value of the effectiveness variable is -0.001070. This means that every 1% increase in effectiveness will reduce *financial distress* by 0.10%, assuming other variables are constant.

4. Hypothesis Test

a. Partial Test (T-Test) / Partial

Table 10. Regression Analysis Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.549858	0.188995	2.909385	0.0046
Liquidity	0.000213	0.000560	0.380046	0.7049
Profitability	-0.003720	0.001762	-2.111684	0.0376
Non-performing Loans	0.004039	0.006006	0.672509	0.5031
Effectiveness	-0.001070	0.000520	-2.059217	0.0425

Source: Eviews output13 (2025)

Based on the data contained in the table, the hypothesis test results can be explained in the test results below:

1) The liquidity ratio value has a t-statistic value of 0.380046 at a probability value of 0.7049> 0.05, these results explain that the liquidity ratio variable has a positive and insignificant effect on *financial distress*. So that the first hypothesis (H1) in this study is rejected.
2) The profitability ratio value has a t-statistic value of -2.111684 at a probability value of 0.0376 <0.05, these results explain that the profitability ratio variable has a negative and significant effect on *financial distress*. So that the second hypothesis (H2) in this study is accepted.
3) The value of the non-performing loan ratio has a t-statistic value of 0.672509 at a non-performing loan value of 0.5031> 0.05, these results explain that the non-performing loan ratio variable has a positive and insignificant effect on *financial distress*. So that the third hypothesis (H3) in this study is rejected.
4) The effectiveness ratio value has a t-statistic value of -2.059217 at an effectiveness value of 0.0425 <0.05, these results explain that the effectiveness ratio variable has a negative and significant effect on *financial distress*. So that the fourth hypothesis (H4) in this study is accepted.

b. Coefficient of Determination (R2)

Table 11. Determination Coefficient Test Results

Variable	Coefficient
R-Squared	0.124730
Adjusted R-aquared	0.083541
S.E of regression	0.952000
Sum squared resid	77.03590
Log likelihood	-120.7053
F. Statistic	3.028224
Prob (f-statistic)	0.021900

Source: Eviews output13 (2025)

It can be interpreted that the R-Square value in the *common effect model* is 0.083541. This shows that 8.3% of the variation in *financial distress* can be explained by the liquidity ratio variable, profitability ratio, non-performing loan ratio and effectiveness ratio. While the remaining 91.7% is explained by other variables not examined in this study.

B. DISCUSSION

1. Effect of Liquidity Ratio on *Financial Distress*

Based on the results showed that the liquidity ratio variable has a positive and insignificant effect on the *financial distress* variable so that the first hypothesis (H1) in this study is rejected. This means that the higher the liquidity and the higher the value of *financial distress*, the higher the indication of *financial distress*. This ratio is used to determine the company's ability to meet its short-term obligations.

From an Islamic perspective, liquidity reflects trust in the management of funds entrusted by the community. Sharia emphasizes the importance of prudence and honesty in managing funds and the obligation to fulfill the rights of others in a timely manner (QS. Al-Ma'idah: 1). Therefore, although statistically liquidity does not significantly affect financial distress, Islamic principles still emphasize that liquidity management must be carried out professionally and responsibly. Additionally, maintaining healthy liquidity reflects the principles of justice (‘adl) and public interest (maslahah) in financial transactions, so Islamic banks are expected to maintain liquidity as part of their moral and social responsibility in building a stable Sharia-based financial system.

This research is supported by previous research Kareem et al (2022) concluded that the *Financing to Deposit Ratio* (FDR) has no effect on Financial Distress in banking companies listed on the Indonesia Stock Exchange from 2016 to 2020. Prayuningsih et al (2021) shows that liquidity has no effect on *financial distress*. The liquidity variable is not an appropriate predictor in measuring *financial distress*. The size of liquidity has no effect on *financial distress*, this is because the determination of *financial distress* can be seen from the composition of debt, the company's ability to maximize its investment potential.

This research is not in line with Syakhrun et al (2019) FDR has a positive effect on the profitability of Islamic commercial banks in Indonesia. These results indicate that the higher the FDR ratio, it will reflect that Islamic Commercial Banks are more effective in channeling their financing. Assuming that this ratio is within the limits set by Bank Indonesia.

2. Effect of Profitability Ratio on *Financial Distress*

The results showed that the profitability ratio variable had a negative and significant effect on *financial distress*. So that the second hypothesis (H2) in this study is accepted. Calculation of the profitability ratio in this study by comparing net income with total assets.

By maximizing the use of assets to generate halal profits, BPRS not only ensures its operational continuity but also enhances customer and business partner trust, which, in signaling theory, has a positive impact on long-term financial stability. Furthermore, in Islam, profit is not merely viewed as a business objective but also as a means to distribute social benefits, such as through zakat, infaq, and productive social programs. With good profitability, institutions like BPRS can contribute more significantly to poverty alleviation programs and the development of the Muslim community's economy. Thus, healthy profitability not only reduces the risk of financial distress but also supports Islamic social objectives.

This research is in line with research conducted by Agustini & Wirawati, (2019) shows that the profitability ratio has a negative effect on *financial distress*. A high profitability ratio can show the company's ability to use and manage its assets effectively and efficiently to generate profits thereby reducing costs incurred by the company. Prayuningsih et al., (2021) states that *return on assets has* a negative effect on *financial distress*.

This research is not in line with Sriyanto & Agustina, (2020) the results of the logistic regression test found that the independent variable Return on Assets (ROA) had no significant effect on the financial distress of BUMN Banks on the IDX in 2011 - 2018. This means that ROA does not really affect financial distress.

3. The Effect of Nonperforming Loan Ratio on *Financial Distress*

Based on the research results, the non-performing loan ratio variable has a positive and insignificant effect on *financial distress*. This means that the higher the ratio of non-performing loans, the higher the *financial distress* value where the high *financial distress* value indicates bankruptcy. So that the third hypothesis (H3) in this study is rejected.

In the context of NPF, although the results of the study show no significant effect on financial distress, the high ratio of non-performing loans remains an indication of weak risk management and financing monitoring, which theoretically and practically could potentially lead to distress if not addressed. This indicates that Islamic financial institutions need to strengthen their business assessment systems, customer education, and Sharia-based supervision to maintain the quality of financing.

Thus, Islamic studies emphasize the importance of moral responsibility and accountability in financing management, as well as the need for a more proactive approach in anticipating the risks of non-performing financing. These results indicate that Islamic values such as trustworthiness, justice, and prudence still need to be further internalized in the operational practices of Islamic rural banks to prevent the potential negative impact of non-performing financing on overall financial health.

This research is in line with research conducted by Kareem et al., 2022) Based on the results of hypothesis testing, it shows that partially *Non Performing Financing* (NPF) has no effect on Financial Distress in banking companies listed on the Indonesia Stock Exchange from 2016 to 2020. Aminah et al., (2019) *Non Performing Financing* (NPF) has no significant effect on *Financial Distress* in banking companies listed on the Indonesia Stock Exchange.

This research is not in line with Syakhrun et al (2019) NPF negatively affects bank profitability This result reflects the credit risk faced by Islamic Commercial Banks. The higher this NPF ratio, the worse the bank's credit quality because the number of non-performing loans is getting bigger.

4. Effect of Effectiveness Ratio on *Financial Distress*

Based on the research results, the effectiveness ratio variable has a negative and significant effect on *financial distress*. So that the fourth hypothesis (H4) in this study is accepted. The effectiveness ratio shows how operational performance to generate revenue. In this study, it can be interpreted that the higher the effectiveness ratio, the lower the *financial distress*.

From an Islamic perspective, research findings indicating that the effectiveness ratio has a negative and significant impact on financial distress are consistent with the principles of efficiency, accountability, and trustworthiness in resource management. In this context, the effectiveness ratio, measured through BOPO (operating expenses to operating income), reflects how well financial institutions manage costs to generate income. The lower the ratio, the more efficient the bank's performance and the lower the risk of financial distress.

This research is in line with Suot et al., (2020) shows that BOPO has a positive and significant effect on financial distress. This shows that an increase or decrease in BOPO will be followed by financial distress. Agustini & Wirawati, (2019) that the effectiveness ratio has a negative effect on *financial distress*. The higher the turnover of total assets illustrates the more effective the company's total assets generate sales.

This research is not in line with Aisyah et al (2020) activity ratio has no influence on financial distress. This shows that both companies that have a large or small total assets turnover value can experience financial distress. The higher the total asset turnover, illustrating the more effective the company's total assets generate sales, but the costs incurred in sales also need to be considered.

C. CONCLUSION

This study uses secondary data in the form of financial reports from Sharia Rural Banks (BPRS) available at the Financial Services Authority (OJK) during the period 2019 to 2023. By testing the variables of liquidity ratio, profitability, non-performing loans, and effectiveness against financial distress, this study found that profitability and effectiveness ratios have a significant effect on financial distress, while liquidity ratio and non-performing loan ratio are not significant. The theoretical implications of these findings suggest that financial distress in BPRS is more sensitive to operational efficiency and profit-generating capacity than to liquidity levels or non-performing loan risk. This emphasizes the importance of strengthening managerial aspects in the financial management of Islamic banks, particularly in maximizing assets and operational cost efficiency.

Practically, the results of this study provide important input for BPRS to improve performance through more effective risk management, particularly in maintaining operational efficiency (reducing the BOPO ratio) and increasing profitability. Banks also need to be cautious in disbursing financing, ensuring that funds provided to customers do not exceed third-party funds mobilized, to minimize mismatch risks. Thus, the operational sustainability of banks and public trust in Islamic banking can be maintained. However, this study has several limitations, including not considering the potential for endogeneity or heterogeneity among panel data units, which could affect the accuracy of the analysis results. Additionally, financial distress is measured solely through financial ratios, without considering macroeconomic variables or non-financial factors such as corporate governance and management quality. This study is also limited to BPRS data available from the OJK, so it cannot be generalized to all BPRS in Indonesia.

Based on these limitations, it is recommended that future research use a more complex panel data approach, such as fixed effect or random effect with the Hausman

test to select the best model. Further research could also add macroeconomic variables such as inflation or interest rates, as well as non-financial factors such as corporate governance indices to obtain more comprehensive results. A mixed methods approach could also be used by combining quantitative and qualitative analysis, enabling researchers to capture dynamics that are not visible through numerical data alone. Additionally, the scope of the research should be expanded, both geographically and in terms of the types of financial institutions, such as comparing the performance between BPRS and Islamic Commercial Banks (BUS). With these developments, it is hoped that future research will be able to provide broader and deeper contributions to the study of Islamic finance and banking risk management.

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