IMPACT OF FINANCIAL DISTRESS SHOCK AGAINST FINANCIAL PERFORMANCE IN BANK MUAMALAT INDONESIA: TWO-STAGE LEAST SQUARE METHOD

M. Fauzan[1], Dede Ruslan[2], Muhammad Fitri Rahmadana[3]
[1]Universitas Islam Negeri Syekh Ali Hasan Ahmad Addary Padangsidimpuan
[2,3]Universitas Negeri Medan
Corresponding E-mail: fauzan@uinsyahada.ac.id

Abstract

Bank Muamalat Indonesia is able to maintain the overall stability of its financial system; however, the bank's distress level ranges from 0.10 to 0.65, and a score below 1.81 indicates a high risk of bankruptcy. The purpose of this research is to determine the simultaneous relationship between the financial performance and financial distress level of Bank Muamalat Indonesia. This research uses secondary data from 2010 to 2023, utilizing quarterly data. The analysis employs a quantitative method with simultaneous equation techniques using the Two Stage Least Square (TSLS) method. Based on the simultaneous test results, there is a simultaneous relationship between the financial performance model and financial distress, which is identified as over-identified. In the Financial Performance (ROA) equation model, financial distress has a significant negative effect, whereas CAR and NPF are not significant. However, FDR has a significant positive effect. In the Financial Distress (Z-Score) model, NPF and FDR have a significant impact, while Financial Performance (ROA) and economic growth have a significant negative impact. The implication is the importance of financial risk management and the financial health of banks. Recommendations include enhanced supervision and financial risk management, as well as policies that support stable economic growth.

Keywords: *Financial Performance, Financial Distress, Two-Stage Least Square*

1. Introduction

The bank's response to financial pressure arises from economic instability or internal issues in financial management (Cengiz & Özeren, 2018). As financial institutions operating in often uncertain environments, banks, including Bank Muamalat Indonesia, face the challenge of maintaining financial stability while adapting to changes in the market and the fluctuating economic environment, such as the global economic situation during the COVID-19 pandemic (Khoerulloh & Puneri, 2023; Rahmadana & Sagala, 2020). Bank Muamalat Indonesia and other banks face significant challenges. The drastic decline in economic activity, travel restrictions, and financial market uncertainty threaten the stability of the banks. Bank Muamalat Indonesia must contend with increased credit risk from borrowers struggling to repay loans due to lost income or business bankruptcies. Additionally, sharp fluctuations in the financial markets have led to a decline in the value of the bank's assets, placing additional pressure on the bank's liquidity and capital. As an Islamic financial institution, Bank Muamalat Indonesia should be able to maintain the overall stability of the bank's financial system. Previous phenomena have shown that the financial performance of Islamic banks can be stable. For instance, during the monetary crisis of 1998, most conventional banks faced significant pressure due to the crisis (Basri, 2018; King, 2001), but Islamic banks, including Bank Muamalat Indonesia, were relatively more stable. Similarly, during the global financial crisis of 2008 (Bresser-Pereira, 2010; Nützenadel, 2021). Banks worldwide, including Islamic banks such as Bank Muamalat Indonesia, faced significant financial pressure due to the subprime mortgage crisis in the United States. Banks encountered various challenges, including reduced liquidity, increased credit risk, and a decline in asset values (Needham & Needham, 2023; Rahmadana dkk., 2019). The appropriate and effective response from Bank Muamalat Indonesia in facing these shocks is crucial in maintaining its financial health and preventing more significant negative impacts on the overall financial system.

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This can be explained by the Shariah economic principles that underpin the operations of Bank Muamalat Indonesia, such as the principle of prudence in lending, real asset-based transactions, and risk-sharing between the bank and its customers. In an unstable monetary crisis, these Shariah-based business strategies help Bank Muamalat Indonesia remain resilient and even contribute to maintaining the stability of the overall financial system. Based on the distress level of Bank Muamalat Indonesia using the Altman Z-Score, it shows that the bank experienced fluctuations in its distress level during the period from 2010 to 2023. Most of the data falls within the range of 0.10 to 0.65, and a score below 1.81 indicates a high risk of bankruptcy. This serves as a warning for Bank Muamalat Indonesia to take appropriate preventive measures to reduce the risk of bankruptcy.
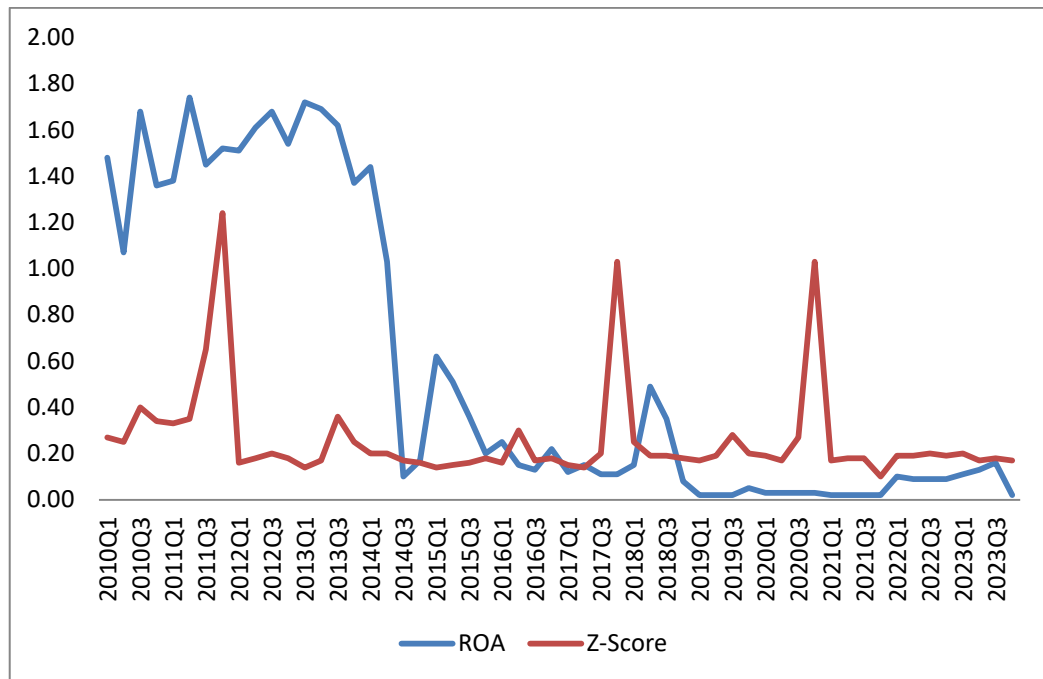

Figure 1. Financial Performance and Distress Level of Bank Muamalat Indonesia
Sumber: Bank Muamalat Indonesia (2024)

The high distress level, as indicated by Bank Muamalat Indonesia's score, represents a serious risk to financial health. The impact is directly observable in the bank's financial performance: the higher the distress level, the greater the likelihood that the institution will face serious financial issues, such as difficulties in debt repayment or bankruptcy, leading to a decline in profitability. Understanding how Bank Muamalat Indonesia manages distress and responds to shocks to its financial performance is crucial. The bank needs to take appropriate preventive measures through improved risk management to strengthen its long-term position. By comprehending the trends and patterns in this research issue, Bank Muamalat Indonesia should respond swiftly to changes in financial conditions and take the necessary steps to maintain its long-term stability. This will help identify effective strategies for maintaining financial health and minimizing negative impacts. Therefore, this study aims to investigate the impact of financial distress shocks on the financial performance of Bank Muamalat Indonesia using a simultaneous equation approach.

2. Theoretical Study

A. Financial Distress

Financial distress is a condition in which a company or financial institution experiences serious financial difficulties, endangering its continuity (Ikpesu et al., 2020). This condition is often caused by various factors such as poor management, declining income, or increased debt burden (Guan et al., 2022). One of the theories commonly used to understand financial distress is the trade-off theory. The trade-off theory illustrates that companies must balance between benefits and costs by using debt (Adair & Adaskou, 2015). In this case, the use of debt can provide benefits in the form of leverage, which amplifies returns for shareholders. However, the use of debt also carries risks, especially when the company cannot meet its debt repayment obligations. This is the critical point that can lead to financial distress. To maintain economic stability, monetary authorities will implement policies that involve trade-offs. In other words, to ensure that the financial liquidity of the public remains stable, Bank Indonesia will adjust its policy by raising the domestic banking interest rates. This effort is intended to provide incentives for the public to keep their funds in the national banking sector. With this condition, the deepening of the financial sector in the national economy will remain intact (Ruslan, 2011; Ruslan et al., 2018).

Additionally, there is also the insolvency theory, which states that financial distress occurs when the value of a company's assets is no longer sufficient to cover its debt obligations (Emilie Ghio et al., 2023; Haris & Sandra, 2023; Mokal, 2005). In this condition, the company can no longer fulfill its debt payments, and the risk of bankruptcy becomes apparent. Other factors that can cause financial distress include declining income due to intense market competition, changes in industry regulations, or changes in overall economic conditions. In facing financial distress, companies typically engage in financial restructuring, asset sales, or seek additional funding to overcome the financial crisis. In the context of banks, financial distress can have broader implications, as banks play a crucial role in the financial system. Banks experiencing financial distress may face large-scale withdrawals by customers, which can trigger systemic liquidity crises. Therefore, effective supervision and risk management are essential in preventing financial distress in the banking sector. The Altman Z-Score method is one of the commonly used methods to assess the risk of bankruptcy for a company. This method was developed by Professor Edward I. Altman in 1968 and is used to predict the likelihood of a company's bankruptcy within a certain period based on a series of financial ratios (Altman et al., 2014). The Altman Z-Score utilizes five weighted financial variables to generate a final score. This score is then used to categorize companies into three categories: safe, cautionary, or at high risk of bankruptcy. The Altman Z-Score measurement is based on five main financial variables (Altman dkk., 2014):

1) Working Capital to Total Assets Ratio: This ratio measures the company's ability to meet its short-term obligations using its assets.
2) Working Capital to Sales Ratio: This ratio indicates how much working capital is needed by the company to support the existing level of sales.
3) Earnings Before Interest and Taxes (EBIT) to Total Assets Ratio: This ratio measures the company's ability to generate earnings before interest and tax payments based on its total assets.
4) Equity to Total Liabilities Ratio: This ratio shows the proportion of the company's equity compared to its total liabilities or debts.
5) Retained Earnings to Total Assets Ratio: This ratio measures the extent to which earnings accumulated by the company are retained and invested in its total assets.

After calculating the values of these variables, the Altman Z-Score produces a final score that can be interpreted as follows: a score below 1.81 indicates a high risk of bankruptcy, a score between 1.81 and 2.99 indicates a cautionary condition, while a score above 2.99 indicates a low risk of bankruptcy. By using the Altman Z-Score, financial analysts can identify companies at risk of experiencing financial distress and take appropriate preventive measures to reduce this risk.

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B. Financial Performance

The theory of financial performance encompasses a number of concepts and indicators used to evaluate the financial health and operational performance of banks. The financial performance of Islamic banks can be measured through various methods and unique financial ratios specific to Shariah-based financial institutions (Abdullah & Nasirin, 2022; Fauzan et al., 2023; R. Lubis et al., 2023; Sari & Syamsul Bahri, 2024). One of the key indicators in assessing the financial performance of Islamic banks is Profitability. Profitability reflects the bank's ability to generate earnings from its operations. In Islamic banks, this includes profits from Shariah-compliant transactions such as mudharabah, musyarakah, and murabahah. Additionally, ratios such as Return on Assets (ROA) and Return on Equity (ROE) are often used to assess the efficiency of asset and equity utilization by Islamic banks (R. Lubis et al., 2023; M.kamil & Nainggolan, 2023; Rukiah, 2023). In addition to Profitability, Liquidity is also a crucial concern in the financial performance of Islamic banks. Liquidity reflects the bank's ability to meet its short-term financial obligations without difficulty (M. Z. M. Lubis et al., 2022; Rukiah, 2023). Islamic banks must maintain a balance between the supply and demand of funds to ensure adequate liquidity to support daily operations and business growth. Furthermore, Asset Quality is another important aspect in assessing the financial performance of Islamic banks. Asset quality encompasses the bank's ability to minimize credit risk and ensure that its loan and investment portfolios are of high quality and sustainable. Islamic banks must carefully monitor and manage the quality of their assets to avoid losses due to problematic loans. In addition to these aspects, Sustainability also becomes a focus in the theory of financial performance of Islamic banks. Islamic banks must integrate Shariah economic principles into their business practices to ensure operational sustainability and sustainable growth. This involves not only achieving a balance between financial and social objectives but also ensuring compliance with Shariah principles underlying the bank's activities. Overall, the theory of financial performance of Islamic banks emphasizes the importance of integrating Shariah principles into financial management and bank operations to achieve an optimal balance between profitability, liquidity, asset quality, and long-term sustainability.

3. Research Method

The research was conducted using secondary data obtained from the financial reports of Bank Muamalat Indonesia from 2010 to 2023, collected on a quarterly basis. The variables used in this study include:

1) Endogenous variable: (Y1 = Financial Performance (ROA), and Y2 = Financial Distress (Z-Score).
2) Predetermined variable: (X1 = CAR), (X2 = NPF), (X3 = FDR), (X4 = Economic Growth).

The research analysis employs a quantitative method, utilizing simultaneous equation techniques with the Two Stage Least Square (TSLS) method. The analysis steps used in this study are as follows:

1) Determination of the simultaneous equation model Y1 = Financial Performance (ROA), and Y2 = Financial Distress (Z-Score).
2) Transformation of the structural equations into reduced form.
3) Simultaneous test.
4) Identification of the model with the order condition.
5) Estimation of parameter of simultaneous equation model.
6)

4. Result and Discussion

1) Simultaneous Equation Model

The simultaneous equation model determination in this study from the Financial Performance (ROA) and Financial Distress (Z-Score) equations is as follows:

$$Y_{1t} = a_{10} + a_{11}Y_{2t} + b_{12}X_{2t} + b_{13}X_{3t} + b_{14}X_{4t} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots (i)$$

$$ROA_{1t} = a_{10} + a_{11}ZSC_{2t} + b_{12}\,CAR_{2t} + b_{13}\,NPF_{3t} + b_{14}\,FDR_{4t} + \varepsilon_t \dots\dots\text{(ii)}$$
$$Y_{2t} = a_{20} + a_{21}Y_{1t} + b_{22}X_{2t} + b_{23}X_{3t} + b_{14}X_{4t} + \varepsilon_t \dots\dots\text{(iii)}$$
$$ZSC_{1t} = a_{20} + a_{21}ROA_{2t} + b_{22}\,NPF_{3t} + b_{23}\,FDR_{4t} + b_{14}\,\boldsymbol{PEK}_{4t} + \varepsilon_t \dots\dots\text{(iv)}$$

2) Reduced Forms
Transformation of the structural equations into reduced form is as follows:
$$Y_{1t} = \pi_0 + \pi_1 + \pi_2 + \pi_3 + \pi_4 + \pi_5\varepsilon_t \dots\dots\text{(v)}$$
$$Y_{2t} = \pi_6 + \pi_7 + \pi_8 + \pi_9 + \pi_{10} + \pi_{11}\varepsilon_t \dots\dots\text{(vi)}$$

3) Simultaneous Test
The simultaneous test in this study is conducted to determine whether there is simultaneous correlation between the two existing equations:

Table 1. Simultaneous Test Results for ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.808173	1.086867	0.743580	0.4604
ZSC	0.664863	0.429071	1.549541	0.0271

Tabel 2. Simultaneous Test Results for Z-Score

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.327462	0.120885	19.25346	0.0000
ROA	0.064030	0.041322	1.549541	0.0271

Based on the simultaneous test results in table 1 and 2, which indicate that the probability values are less than 0.05, it can be concluded that the Hausman test shows there is a simultaneous relationship between the models.

4) Model Identification
After conducting the simultaneous test, the next step is model identification. This is aimed at determining whether the parameter estimates of the structural equations can be derived from the coefficients of the reduced form or estimated. Here are the results of the model identification:

Tabel 3. Model Identification

Equation	K	k	m-1	Classification	Status
Y1	4	3	1	2>1	OverIdentified
Y2	4	3	1	2>1	OverIdentified

The results of the model identification indicate that both equations are Over Identified. Therefore, we can use a method called Two Stage Least Squares (2SLS).

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5) Estimation using 2SLS

The simultaneous test using Two Stage Least Squares (2SLS) to estimate the parameters of the simultaneous equations in this study is as follows:

Tabel 4. 2SLS Estimation Results for ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-83.26465	30.03238	-2.772495	0.0077
ZSC	-4.450264	3.789892	-2.174245	0.0458
CAR	3.407712	1.961123	1.737633	0.0883
NPF	-1.069600	0.560014	-1.909953	0.0618
FDR	6.836232	2.461232	2.777565	0.0076

Here is the simultaneous equation model for the ROA variable in this study:

$$ROA_{1t} = -83,26 - 4,45\,ZSC + 3,41\,CAR - 1,07\,NPF + 6,84\,FDR + \varepsilon_t \quad \text{(vii)}$$

With $R^2 = 0{,}506$

Based on the equation, it is known that in the Financial Performance equation approximated by ROA, the results are as follows:

a) There is an influence of financial distress on the financial performance of Bank Muamalat Indonesia. The coefficient of financial distress is negative at 4.45. This means that if financial distress increases by 1%, financial performance decreases by 4.45%, and vice versa.

b) There is no influence of CAR on the financial performance of Bank Muamalat Indonesia. The coefficient of CAR is positive at 3.41. This means that if CAR increases by 1%, financial performance increases by 3.41%, and vice versa.

c) There is no influence of NPF on the financial performance of Bank Muamalat Indonesia. The coefficient of NPF is negative at 1.07. This means that if NPF increases by 1%, financial performance decreases by 1.07%, and vice versa.

d) There is an influence of FDR on the financial performance of Bank Muamalat Indonesia. The coefficient of FDR is positive at 6.84. This means that if FDR increases by 1%, financial performance increases by 6.84%, and vice versa.

The coefficient of determination for the Financial Performance equation approximated by ROA is 0.506 or 50.6%. This means that the contribution of financial distress, CAR, NPF, and FDR to the financial performance of Bank Muamalat Indonesia is 50.6%. The remaining 49.4% is influenced by other variables not mentioned in this study.

Tabel 5. 2SLS Estimation Results for Z-Score

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.929908	4.721928	1.044046	0.0014
ROA	-0.014997	0.138764	-2.108075	0.0144
NPF	0.065238	0.172888	2.377346	0.0075
FDR	0.227704	0.677654	2.336019	0.0382
PEK	-0.542606	0.585637	-1.926524	0.0585

Here is the simultaneous equation model for the Z-Score variable in this study:

$$ZSC_{1t} = 4,93 - 0,015\,ROA + 0,065\,NPF + 0,23\,FDR - 0,54\,PEK + \varepsilon_t \text{(viii)}$$

With R^2 = 0,708

Based on the equation, it is known that in the Financial Distress equation approximated by Z-Score, the results are as follows:

a) There is an influence of financial performance on the financial distress of Bank Muamalat Indonesia. The coefficient of financial performance is negative at 0.015. This means that if financial performance increases by 1%, financial distress decreases by 0.015%, and vice versa.

b) There is an influence of NPF on the financial distress of Bank Muamalat Indonesia. The coefficient of NPF is positive at 0.065. This means that if NPF increases by 1%, financial distress increases by 0.065%, and vice versa.

c) There is an influence of FDR on the financial distress of Bank Muamalat Indonesia. The coefficient of FDR is positive at 0.23. This means that if FDR increases by 1%, financial distress decreases by 0.23%, and vice versa.

d) There is an influence of economic growth on the financial distress of Bank Muamalat Indonesia. The coefficient of economic growth is negative at 0.54. This means that if economic growth increases by 1%, financial distress decreases by 0.54%, and vice versa.

The coefficient of determination for the Financial Distress equation approximated by Z-Score is 0.708 or 70.8%. This means that the contribution of financial performance (ROA), NPF, FDR, and economic growth to the Financial Distress of Bank Muamalat Indonesia is 70.8%. The remaining 29.2% is influenced by other variables not mentioned in this study.

5. Conclusion

Based on the simultaneous test results, there is a simultaneous relationship between the financial performance and Financial Distress models. Model identification indicates that both equations in this study are over-identified, allowing for the use of the Two Stage Least Square (2SLS) method for estimation. In the model of financial performance equation (ROA), financial distress has a significant negative effect, while CAR and NPF are not significant. However, FDR has a significant positive effect. In the Financial Distress model (Z-Score), NPF and FDR have significant effects, while financial performance (ROA) and economic growth have significant negative effects. The implications of this study emphasize the importance of financial risk management and banking financial health, as well as the need to pay attention to external factors such as economic growth. Policy recommendations include enhancing supervision and financial risk management, as well as policies supporting stable economic growth.

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