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Financial Health and Financial Distress: The Moderating Role of Firm Size in Islamic Banks (2021–2023)

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ABSTRACT

The purpose of this study is to use the Risk Profile, Good Corporate Governance, Earnings, and Capital (RGEC) technique to examine the financial health of Indonesian Islamic commercial banks from 2021 to 2023. Firm size is used as a moderating variable for financial distress. Using secondary data from Islamic commercial banks' annual financial reports, the investigation looked at the correlations between the variables using moderation regression methods. The findings indicate that while the Operational Cost to Operational Income Ratio (CIR) has a large favorable impact on financial hardship, the Capital Adequacy Ratio (CAR) has a considerable negative impact. However, as their values are below the table, Non-Performing Financing (NPF), Good Corporate Governance (GCG), Financing to Deposit Ratio (FDR), and Return on Assets (ROA) have no discernible impact. The association between financial hardship and NPF, GCG, and ROA is moderated by firm size, but not by other factors. The model well describes the variability of financial hardship, as evidenced by the determination coefficient of 91.6%. This study highlights the importance of firm size in mitigating financial distress and offers insights for regulators and bank management to enhance financial performance and reduce financial distress risks.

Keywords: RGEC, financial distress, firm size, islamic bank.

INTRODUCTION

As public health responses and vaccination programs strengthened, the World Health Organization (WHO) ended the global emergency status on May 5, 2023. Indonesia—like many other countries—has managed COVID-19 as part of a sustainable infectious disease surveillance and control system.[1] This situation has caused turmoil in the global and national economies. The deteriorating economy increased the burden on company performance and led to the risk of

[1] Fadhila Meithasari Nurtjahjo, Tita Nursyamsiah, and Mohammad Iqbal Irfany. "Financial Distress Before and During Pandemic Covid-19: Is Islamic Banking in Indonesia Resilience?" *Falah: Jurnal Ekonomi Syariah* 7, no. 2 (2022): 14–26. https://ejournal.umm.ac.id/index.php/JES/article/view/20115

bankruptcy, marked by the emergence of financial distress symptoms.[2] Financial distress itself can be understood as financial depreciation that occurs before a company actually goes bankrupt.

The stability of the financial system has a significant impact on national economic development. Often, financial distress triggers a deterioration in economic conditions, which leads to a loss of public confidence, disruption of macroeconomic stability, and an increased risk of bankruptcy in the financial sector.[3] The COVID-19 pandemic has further exacerbated the situation, with many Islamic companies experiencing a decline in profitability, a decline in revenue, and liquidity difficulties. In companies listed on the Jakarta Islamic Index (JII), for example, it was found that the profitability ratio was the dominant variable affecting the potential for financial distress throughout the pandemic.

Global conditions are also under tremendous pressure. The International Monetary Fund (IMF) predicts that global economic growth will decline by 3% in 2020, with a decline of 6.1% in developed countries and 1% in developing countries.[4] World trade is expected to contract by 13%–32% due to the COVID-19 pandemic, which has disrupted global economic activity. Meanwhile, the World Economic Outlook (2020) notes a global inflation rate of 3%, with inflation in developed countries at around 0.5% and in developing countries reaching 4.6%.[5] In fact, UNCTAD (2021) projects foreign direct investment (FDI) flows to decline by up to 40% during 2020–2021, reaching their lowest point in decades.[6]

In Indonesia, the impact of the pandemic has been felt by both conventional and Islamic banks. Statistics from the Financial Services Authority (OJK, 2023) show that in 2023 there were 173 Islamic Rural Banks (BPRS), 20 Islamic Business Units (UUS), and 13 Islamic Commercial Banks (BUS). The existence of these Islamic banks is expected to maintain the stability of the financial sector and support national economic recovery.[7]

In 2020, the emergence of COVID-19 made a big challenge for banking in Indonesia, both conservative banks and sharia-compliant banks, to maintain

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[2] Faizzal Abdullah and Maylia Pramono Sari Sari. "Pengaruh Leverage, Likuiditas, dan Profitabilitas terhadap Financial Distress dengan Ukuran Perusahaan sebagai Variabel Moderasi pada Perusahaan Subsektor Transportasi yang Terdaftar di Bursa Efek Indonesia." *Business and Accounting Education Journal* 5, no. 1 (2024): 108–130. https://doi.org/10.15294/baej.v5i1.3509.

[3] Media Labita and Siska Priyandani Yudowati. "Analisis Penilaian Kesehatan Bank Berbasis RGEC terhadap Financial Distress (Studi pada Perusahaan Perbankan yang Terdaftar di Bursa Efek Indonesia pada Tahun 2014–2018)." *Jurnal Mitra Manajemen* 4, no. 8 (2020): 1249–1262. https://doi.org/10.52160/ejmm.v4i8.449.

[4] International Monetary Fund (IMF), 'World Economic Outlook, April 2020: The Great Lockdown', *International Monetary Fund*, 2020, doi:https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020.

[5] World Trade Organization (WTO). *World Trade Statistical Review 2021.* Geneva: World Trade Organization, 2020.

[6] United Nations Conference on Trade and Development (UNCTAD). *World Investment Report 2021: Investing in Sustainable Recovery.* Geneva: United Nations, 2021.

[7] Otoritas Jasa Keuangan. "Statistika Perbankan Syariah, Desember 2023." *Sharia Banking Statistic*, December 2023, 19–119.

health, stability, and sustainability. Various risks arise, such as the closure of several units in banking operations. To manage operational risk, bank services or sub-branch offices are relocated to large branch offices. In addition, several banks have a split operation strategy, where 50% of employees work from home while the rest continue to carry out their duties as usual. In the same year, operational management in the banking sector increased Praqtiko & Afiq[8], including Islamic banking.[9] The financial crisis han an impact on consumers ability to meet their obligations, as seen by the increase in the non-performing financing ratio. The rise in the ratio of non-performing financing during the crisis period implies that Islamic banks experienced an increase in potential losses due to non-performing financing. It has the potential to cause an increase in the proportion of operating expenses to income and decrease the bank's capital adequacy level.[10]

In Kusumaningrum,[11] it was revealed that the performance of Bank Aceh Syariah in the period 2016 to 2020 was in good condition. Most aspects of risk profile, earnings, and capital are in the very healthy category, although some indicators are still in the healthy category. In addition, the implementation of GCG has increased from a "fairly good" assessment to "good." Assessment of financial distress through ROA and CAR indicators shows that during this period, Bank Aceh Syariah did not face the risk of *financial distress*. Meanwhile, Pratikto and Afiq[12] research claims that the health status of BNI Syariah from 2015 to 2020 based on the RGEC and Zmijewski methodologies is considered very stable and healthy, and there are no signs of financial distress. As a result, BNI Syariah has performed impressively in overcoming the adverse effects of changing market conditions. A study conducted by Labita& Yudowati[13] revealed how the CAR factor, ROA, percentage of independent commissioners, and lousy credit factor as a whole had a significant effect on financial difficulties. However, the percentage of independent commissioners and characteristics related to non-performing loans do not significantly affect financial difficulties. Financial

[8] Muhammad Iqbal Surya Pratikto and Mohammad Khoiruzi Afiq. "Analisis Tingkat Kesehatan Bank dan Potensi Financial Distress Menggunakan Metode RGEC dan Zmijewski pada Bank BNI Syariah Tahun 2015–2019." *Jurnal Ekonomi Syariah Teori dan Terapan* 8, no. 5 (2021): 570–581. https://doi.org/10.20473/vol8iss20215pp570-581

[9] Heftika Nur Fauziah, Aini Nur Fakhriyah, and Abdurrohman. "Analisis Risiko Operasional Bank Syariah pada Masa Pandemi Covid-19." *Al Intaj: Jurnal Ekonomi dan Perbankan Syariah* 6, no. 2 (2020): 38–45.

[10] Ayu Alvidianita and Lucky Rachmawati. "Pengaruh RGEC terhadap Financial Distress pada Bank Muamalat Indonesia." *Jurnal Ekonomi Islam* 2, no. 2 (2021): 97–109.

[11] Kusumaningrum, Dwi, 'Analisis Tingkat Kesehatan Bank Dan Potensi Financial Distress Menggunakan Metode Rgec Pada Bank Aceh Syariah Tahun 2016-2020', *Moneter: Jurnal Keuangan Dan Perbankan*, 10.1 (2022).

[12] Muhammad Iqbal Surya Pratikto and Mohammad Khoiruzi Afiq. "Analisis Tingkat Kesehatan Bank dan Potensi Financial Distress Menggunakan Metode RGEC dan Zmijewski pada Bank BNI Syariah Tahun 2015–2019." *Jurnal Ekonomi Syariah Teori dan Terapan* 8, no. 5 (2021): 570–581.

[13] Labita & Yudowati, Analisis Penilaian Kesehatan…

distress is positively and significantly affected by the return on assets and capital adequacy variables.

This study offers a new perspective by examining the health of Islamic Commercial Banks (ICBs) during the 2021–2023 period, a time marked by the COVID-19 pandemic and global economic uncertainty. Unlike previous studies, it integrates the RGEC method with operational risk, profitability, capital adequacy, and Good Corporate Governance (GCG) to provide a comprehensive assessment of bank health. In addition, the research introduces firm size as a moderating factor, highlighting how operational capacity influences a bank's ability to prevent financial distress. Finally, the study provides insights into the role of Islamic banks in maintaining economic stability.

Literature Review

Risk Profile

The regulation issued by the Authority for Financial Services is identified as Regulation Number 8/POJK.03/2014 copy's Article 7, paragraph (1), lists 10 risk assessment profiles that include financing, market, liquidity, operational, legal, strategic, compliance, reputation, return, and investment risks.[14]

Financing risk utilizes the calculation of NPF or non-performing financing ratio:

$$NPF = \frac{Non - performing\ financing}{Total\ financing}\ X\ 100\%$$

A way to calculate the liquidity ratio is to consider the financing-to-deposit ratio (FDR):

$$FDR = \frac{Total\ financing}{Total\ third-party\ funds}\ x\ 100\%$$

Good Corporate Governance

PBI number 13/1/PBI/2011 on the evaluation of the state of heath commercial banks serves as the foundation for the GCG factors assessment. Among these are an assessment of the following: the board of directors' and commissioners' roles and responsibilities; the completion and execution of committee tasks; conflict of interest management; compliance; internal and external audit; risk management; openness about financial and non-financial circumstances; GCG implementation reports and internal reporting; and the bank's strategic plan.[15]

[14] 8/POJK.03/2014 Peraturan Otoritas Jasa Keuangan Nomor, 'Peraturan Otoritas Jasa Keuangan Nomor 8/POJK.03/2014 Tentang Penilaian Tingkat Kesehatan Bank Umum Syariah Dan Unit Usaha Syariah', *Otoritas Jasa Keuangan*, 2014, pp. 1–14.

[15] Bank Indonesia. *Peraturan Bank Indonesia Nomor 13/1/PBI/2011 tentang Penilaian Tingkat Kesehatan Bank Umum.* Jakarta: Bank Indonesia, 2011.

Earnings

Measuring profitability this speaks to the banks capacity to generate benefit. Calculating profitability is critical to determining a bank's financial success over a certain period. Because the surplus earned in a designated period is often one component of good performance management, this capacity to generate profits allows banks to develop and continue to operate.[16] Return on assets (ROA) and cost-to-income ratio (CIR) are ratios used to determine profitability.

ROA uses the following equation:

$$ROA = \frac{EBIT}{Average\ total\ assets}\ x\ 100\%$$

The cost-to-income ratio is calculated using the formula below:

$$CIR = \frac{Operating\ expenses}{Operating\ income}\ X\ 100\%$$

Capital

Capital is the capital owned by Islamic banks. Capital assessment in banking comprises the quality and sufficiency of capital management.[17] Capital adequacy following the banking rules set by Basel of 8% is critical. Bank Indonesia regulations also demand a minimum of 8% capital adequacy, as stated in the Capital Adequacy Ratio (CAR). This minimum capital must be maintained for banks to remain stable and hazard-resilient. Banks must be able to make money in order to avoid losses and get through the crisis. A measure of a bank's operational stability based on risk-weighted assets (RWA) is the availability of capital used for financing. Credit or funding risk weighting is the most important factor in RWA. Because credit or financing is the provision of money to the public, which is expected to have a low rate of return, this will pose a risk to the bank. So, lending or credit has the most significant risk weight, 100%.[18] CAR is the ratio used for *capital* calculation.

[16] Selfi Afriani Gultom and Saparuddin Siregar. "Penilaian Kesehatan Bank Syariah di Indonesia dengan Metode RGEC." *Jurnal Ilmiah Ekonomi Islam* 8, no. 1 (2022): 315–327. https://doi.org/10.29040/jiei.v8i1.4593.

[17] Helmina Ardyanfitri, Muhammad Iqbal Surya Pratikto, and Enha Arini Khusnul Faizah. "Analisis Kesehatan Bank dan Potensi Financial Distress Menggunakan Metode RGEC pada Bank BTPN Syariah Tahun 2014–2018." *Jurnal MEBIS (Manajemen dan Bisnis)* 4, no. 2 (2020): 131–141. https://doi.org/10.33005/mebis.v4i2.63.

[18] Gultom and Siregar. Penilaian Kesehatan Bank Syariah…

The formula for determining the CAR ratio is as follows

$$CAR = \frac{Equity}{Risk - wighted\ assets}\ X\ 100\%$$

Firm Size

The term "firm size" describes the scope or magnitude of an organization, often determined by market capitalization, total assets, or total sales.[19] Company size is used as a moderating variable because company expansion naturally increases its assets, making it better able to manage financial challenges.[20]

Company size is calculated using the equation:

$$Firm\ Size = Ln\ Total\ Assets$$

Financial Distress

Financial distress begins with a strong financial foundation and is a slow and cumulative process.[21] Adverse external circumstances or poor internal financial management can result in distress.[22] It leads to lower revenue and less-than-ideal sales. As a result, the business experiences operational losses.[23] When a business is in financial distress, it will attempt to increase its value to lower its current risk and start implementing risk controls to prevent expenses that could potentially arise from the situation.[24] The Altman, Springate, Zmijewski, and Grover methods are some of the techniques used to assess financial distress and estimate the likelihood of a company going bankrupt.

The Springate is utilizied in this study method to identify Islamic Commercial Banks in Indonesia in *financial distress* between 2021 and 2023. Gordon L.V. Springate is the originator of the *Springate* model. Its method extends using the Altman Z-Score technique to predict corporate financial failure.[25] Used 19 widely used financial ratios in his study. However, after re-

[19] Sol S. Shalit and Ulaganathan Sankar. "The Measurement of Firm Size." *The Review of Economics and Statistics* 59, no. 3 (1977): 290–298.

[20] Efrinal and Afia Hil Efrinal and Afia Hilda Chandra. "Akrual Jurnal Akuntansi dan Keuangan." *Jurnal Akuntansi dan Keuangan* 2, no. 2 (2020): 135–148. da Chandra, 'Akrual Jurnal Akuntansi Dan Keuangan Vol. 2 No. 2', 2.2 (2020), pp. 135–48.

[21] Qian Zhuang and Lianghua Chen. "Dynamic Prediction of Financial Distress Based on Kalman Filtering." *Discrete Dynamics in Nature and Society* (2021). https://doi.org/10.1155/2014/370280.

[22] Zhi Yuan Li. "Enterprise Financial Distress Prediction Based on Backward Propagation Neural Network: An Empirical Study on the Chinese Listed Equipment Manufacturing Enterprises." *UPB Scientific Bulletin, Series C: Electrical Engineering and Computer Science* 77, no. 1 (2020): 27–38.

[23] Jenny Pratiwi Assaji and Zaky Machmuddah. "Rasio Keuangan dan Prediksi Financial Distress." *Jurnal Penelitian Ekonomi dan Bisnis* 2, no. 2 (2021): 58–67.

[24] Hazem B. Al-Khatib and Alaa Al-Horani. "Predicting Financial Distress of Public Companies Listed in Amman Stock Exchange." *European Scientific Journal* 8, no. 15 (2020).

[25] Dimas Priambodo and Adeng Pustikaningsih. "Analisis Perbandingan Model Altman, Springate, Grover, dan Zmijewski dalam Memprediksi Financial Distress pada Perusahaan

testing, in the end, four ratios were used to determine the criteria for companies that were stable or at risk of bankruptcy. The Springate model in predicting potential bankruptcy has an accuracy rate of 92.5%. This statement is reinforced by relevant research from Priambodo & Pustikaningsih,[26] which proves that the Springate model has the highest level of accuracy, which is 84.21%, in contrast to other prediction models.

$$S = 1{,}03\ A + 3{,}07\ B + 0{,}66\ C + 0{,}4\ D$$

Description:

S: Index score

A: The proportion of net working capital to total assets

B: The proportion of total assets to profits before taxes and interest

C: The ratio of pre-tax earnings to total current liabilities

D: The proportion of sales to total assets

METHODS

This study employs a quantitative method to understand and analyze the cause and-effect relationship between various variables.[27] Secondary data from yearly reports was used in this research, which will be used to conduct a more in-depth analysis of Islamic commercial banks. This study consists of three variables, independent variables: NPF, FDR, GCG score, ROA, CIR, and CAR. Financial distress is the dependent variable, and the moderating variable is firm size. Thirteen Islamic commercial banks included in the OJK report are used as the research population. consists of eleven representative samples chosen by purposive sampling according to predetermined standards. Eviews 12 is used for data processing in this work. It performs panel data regression analysis using the Chow and Hausman tests, partial test (t test), simultaneous test (F test), MRA test, and descriptive statistical tests.

RESULT AND DISCUSSION

Descriptive Statistical Test

Tabel 1. Descriptive statistical test results

	Y	Z	X1	X2	X3	X4	X5	X6
Mean	0.147651	21.41041	2.246667	6466.593	2.111111	11.35741	77.36677	26.76334
Median	0.061479	19.68375	1.420000	7372.000	2.000000	1.790000	76.24000	23.47000
Maximum	2.359474	30.17025	9.540000	9568.000	3.000000	91.79000	206.1900	66.14000
Minimum	0.003570	14.59169	0.000000	80.00000	1.000000	-7.130000	0.000000	0.205000
Std. Dev.	0.446076	4.791115	2.386853	2947.469	0.506370	28.90623	46.13841	16.71604
Skewness	4.766085	0.378631	1.795095	-1.079927	0.223607	2.383983	0.603275	0.517344
Kurtosis	24.14627	2.114917	6.018486	3.084503	3.750000	6.870890	4.650098	3.139238
Jarque-Bera	605.2802	1.526419	24.75081	5.256123	0.857812	42.43195	4.700909	1.226212
Probability	0.000000	0.466168	0.000004	0.072218	0.651221	0.000000	0.095326	0.541666
Sum	3.986576	578.0811	60.66000	174598.0	57.00000	306.6500	2088.903	722.6102
Sum Sq. Dev.	5.173582	596.8242	148.1238	2.26E+08	6.666667	21724.82	55347.58	7265.075
Observations	27	27	27	27	27	27	27	27

Source: Data processing (2024)

Pertambangan yang Terdaftar di Bursa Efek Indonesia Periode 2012–2015." *Jurnal Profita: Kajian Ilmu Akuntansi* 6, no. 4 (2020): 1–10.

[26] Priambodo, Analisis Perbandingan Model Altman…

[27] Sugiyono, 'Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif Dan R&D', 2020.

The descriptive analysis reveals imbalances in credit risk (NPL/NPF) and profitability (ROA), indicated by high skewness and kurtosis, suggesting uneven distributions among banks. This finding aligns with Setiawan (2021), who emphasizes that Islamic banks' financing risk is strongly affected by macroeconomic conditions, leading to volatility.[28] The wide variation in bank size supports Sutrisno & Widarjono, showing that larger banks tend to maintain higher capital buffers, although greater size does not necessarily ensure higher efficiency.[29] In terms of liquidity, most banks display stability, consistent with Widarjono & Misanam, who highlight the importance of profit margins, efficiency, and NPF control in sustaining capital.[30] Moreover, capital adequacy ratio (CAR) proves significant in supporting profitability, in line with Sjarief et al., who report that CAR positively influences ROA while NPF reduces it.[31] Thus, the results confirm that a bank's risk profile is a complex interplay of credit risk, capital, and liquidity, requiring integrated management to ensure stability and financial performance.

Panel Data Regression Analysis

Chow test

Table 2. Calculation Results with Chow test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	20.630013	(9,10)	0.0000
Cross-section Chi-square	80.293816	9	0.0000

Source: Data processing (2024)

Table 2 presents the results of the Chow test, which is used to determine whether the appropriate panel data estimation model should follow the Common Effect Model (CEM) or the Fixed Effect Model (FEM). Based on the results, the probability value for both the Cross-section F test (0.0000) and the Cross-section Chi-square test (0.0000) is less than the significance level of 5% (0.05). This indicates that the null hypothesis (H_0), which assumes that the CEM is appropriate, is rejected, while the alternative hypothesis (H_a), which assumes that the FEM is more suitable, is accepted.

[28] Iwan Setiawan. "The Impact of Financing Risk on Islamic Banking Performance in Indonesia." *Share: Jurnal Ekonomi dan Keuangan Islam* 10, no. 2 (2021): 208–229.

[29] Sutrisno and Agus Widarjono. "Determinants of Capital Buffer in Islamic Banks: The Lesson from Indonesia." *Cogent Business & Management* 11, no. 1 (2024): 1-15.

[30] Agus Widarjono and Munrokhim Misanam. "Determinants of Bank Capital in Indonesian Islamic Banks." *Shirkah: Journal of Economics and Business* 9, no. 3 (2024): 290–302.

[31] Lidia Sjarief, Muhammad Abdul Ghoni, and Muchammad Taufiq Affandi. "The Role of Financial Performance on the Profitability of Indonesian Islamic Banks." *Jurnal Ekonomi & Keuangan Islam* (2023): 277–285..

Thus, this study applies the Fixed Effect Model (FEM) as the estimation technique. The next step is to conduct the Hausman test to further confirm whether the FEM remains the best model compared to the Random Effect Model (REM).

Hausman test

Table 3. Calculation results utilizing the Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	179.051849	7	0.0000

Source: Data processing (2024)

Table 3 reports the Hausman test results (Chi-Sq = 179.0518; d.f. = 7; p = 0.0000). Because the p-value is well below 0.05, the null hypothesis of the random effects model is rejected and the Fixed Effect Model (FEM) is preferred. This decision implies the presence of time-invariant, unit-specific effects that correlate with the regressors, so FEM better accounts for unobserved heterogeneity across banks. The adoption of FEM following a significant Hausman test is standard practice in recent panel studies of bank performance and stability (examples include Heliyon and Risks articles that run Chow → Hausman and select FEM when $p < 0.05$) - The impact of economic uncertainty on bank efficiency—the moderating role of country governance.

Classical Assumption Tests

Table 4. Multicolinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.001033	8.8575060...	5.4336200...
X1	2.51023	1.692847	1.57546
X2	1.33608	1.729505	1.27085
X3	4.0169888	3.550268	1.911732
X4	1.786261	1.253176	1.115989
X5	1.54647	5.565782	5.548883
X6	7.314734	5.780092	5.175988
Z	7.440802	4.403663	1.260309

Source: Data processing (2024))

The multicollinearity test was conducted using the VIF to ensure the independence of explanatory variables in the regression model. The results indicate that all independent variables have Centered VIF values ranging 1.51 to 5.54, which are well below the conventional threshold of 10. This suggest the

absence of multicollinearity among the variables. Furthermore, the relatively small coefficient variances indicate stable nd reliable regression estimates. The model is considered free from multicollinearity issues, ensuring the validity and consistency of subsequent regression analysis.

Tabel 5. Heteroskedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.078393	0.892978	2.456223	0.240339
X1	0. 254485	0.145177	0.175292	0.862453
X2	1.231825	1.329986	0.926191	0.364395
X3	0.210827	0.069129	0.304972	0.763253
X4	0.000291	0.213062	1.367258	0.185352
X5	2.111508	3.394954	0.621954	0.540364
X6	0.880871	0.087650	0.076072	0.979434
Z	0.067583	0.113647	1.490457	0.150303

Source: Data processing (2024)

The heteroskedasticity test was conducted to verify that the regression model does not suffer from non-constant variance in the residuals. Based on the results (e.g., Glejser or White test), the probability values of each variable are greater than the 0.05 significance level. This indicates that the regression model is free from heteroskedasticity, meaning that the residuals are homoscedastic. Therefore, the estimated coefficients are consistent and reliable for further interpretation.

Panel Regression Analysis Model

Table 6. Findings from the coefficient of determination test

Cross-section fixed (dummy variables)			
R-squared	0.965753	Mean dependent var	0.147651
Adjusted R-squared	0.910958	S.D. dependent var	0.446076

Source: Data processing (2024)

One way to understand how much the independent variable can describe the variance of the dependent variable is to look at the coefficient of determination.[32] This study calculates the quantity of NPF, FDR, GCG score, ROA, CIR, CAR, and company size in relation to financial distress, with an explanation index of around 0.9109 or 91.09%, along with 8.91% impacted by independent variables not discussed in this study.

[32] Gilang Pandu Palagan and B. Fisher Darto. *Analisis Data Statistik Menggunakan SPSS*. Yogyakarta: Deepublish, 2018.

Table 7. Simultaneous test results

F-statistic	17.62484	Durbin-Watson stat	2.929203
Prob(F-statistic)	0.000030		

Source: Data processing (2024)

A number of factors, including non-performing financing (X1), the financing to deposit ratio (X2), the good corporate governance score (X3), return on assets (X4), operating expenses to operating income (X5), the capital adequacy ratio (X6), and the company size to financial distress, are tested simultaneously to see how they affect the dependent variable. According to the test findings, the computed F value is 17.62484 > F table 2.4047, and the P-value is 0.000030 <0.05. As a result, Ha is accepted while Ho is rejected. This situation suggests that all of these causes have a considerable simultaneous impact on financial distress.

Table 8. Partial test results

Variable	Coefficient	Std Error	t-Statistic	Prob.	Descriptive
C	19.78594	1.733813	11.41181	0.0000	
X1	0.043209	0.030226	1.429521	0.1833	Rejected
X2	-1.53E-05	1.53E-05	-0.994898	0.3432	Rejected
X3	0.171824	0.096597	1.778762	0.1056	Rejected
X4	0.049874	0.027414	1.819260	0.0989	Rejected
X5	0.006663	0.001604	4.154494	0.0020	Accepted
X6	-0.011544	0.003249	-3.552745	0.0052	Accepted
Z	-0.970201	0.093119	-10.41891	0.0000	Accepted

Source: Data processing (2024)

By conducting a partial test, it can be seen how each independent variable compares to the dependent variable.[33] The table above reveals that the variables NPF, FDR, GCG Score, and ROA do not affect financial distress with a P-value > 0.05. While CIR, CAR, and moderation size have a P-value < 0.05, they affect Financial Distress.

Table 9. MRA test results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Descriptive
X1Z	0.001339	0.000479	2.798243	0.0124	Accepted
X2Z	6.37E-05	5.99E-05	1.062926	0.3027	Rejected
X3Z	0.008428	0.002393	3.521901	0.0026	Accepted
X4Z	0.001216	0.000570	2.131971	0.0479	Accepted
X5Z	0.000115	5.65E-05	2.027274	0.0586	Rejected
X6Z	4.56E-05	4.20E-05	1.086602	0.2924	Rejected

Source: Data processing (2024)

[33] Imam Ghozali. *Aplikasi Analisis Multivariete dengan Program IBM SPSS 23*. Semarang: Badan Penerbit Universitas Diponegoro, 2016.

The aforementioned data table demonstrates how firm size moderates the effects of NPF, ROA, and GCG score on financial distress. However, the impact of the CAR, FDR, and CIR on financial distress cannot be lessened by an organization's size.

Discussion

The insignificance of Non-Performing Financing (NPF) suggests that financing quality is not the primary driver of financial distress in Islamic banks during the observed period. Although theory posits that higher NPF should increase default risk, the result implies that Islamic banks may have already internalized risk mitigation through contract diversification (*murabaha, mudaraba, musharaka*) and risk-sharing mechanisms. This aligns with the notion that Islamic banking resilience does not rely solely on credit quality but on structural stability. From a *maqasid al-shariah* perspective, this reflects the principle of hifz al-mal, where systemic safeguards protect wealth even when individual financing risks exist. For instance, Muannasa found that NPF had a positive and significant impact on the financial distress of Islamic banks in Indonesia (2017-2022).[34] Similarly, Hadiani and Sari confirmed that NPF strongly determines bank profitability and stability, with higher NPF reducing ROA.[35]

However, when firm size (Z) is considered a moderating factor, the analysis demonstrates that the company's size significantly moderates the connection between NPF and financial distress, with an interaction t-statistic value of 2.798 (more significant than the t-table). That indicates that for banks with larger sizes, the impact of NPF on financial distress becomes more critical. Large banks generally have more assets and financing exposure and will be more vulnerable to the adverse effects of non-performing loans. Thus, large banks need to manage NPF carefully to avoid financial distress.

The Financing to Deposit Ratio (FDR) variable or X2 has a t-statistic value of -0.994, which is smaller than the t-table (2.404). FDR is usually used to measure liquidity management in Islamic banks. A high FDR may indicate aggressive financing expansion, which could trigger liquidity risks. However, the insignificance here suggests that banks may have strong liquidity buffers or central bank facilities to mitigate risks. Rosidi et al. (2023) showed that FDR becomes risky only when coupled with weak governance.[36] Financing-to-Deposit Ratio (FDR) was found insignificant, contradicting the assumption that liquidity distribution capacity affects bank vulnerability. This may indicate that liquidity

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[34] Aulia Muannasa, Eliya Najma Muntazeri, and Lilik Rahmawati. "The Influence of NPF, ROA, CAR, and FDR on the Financial Distress of Sharia Banks in Indonesia, Period 2017–2022." *Jurnal BAABU AL-ILMI: Ekonomi dan Perbankan Syariah* 8, no. 1 (2023): 33–45. https://doi.org/10.29300/ba.v8i1.11059.

[35] Fatmi Hadiani and Elva Oktavia Sari. "Non-Performing Financing pada Bank Umum Syariah dengan Faktor Determinan ROA, BOPO, CAR, dan FDR." *Journal of Applied Islamic Economics and Finance* 3, no. 2 (2023): 266–274. https://doi.org/10.35313/jaief.v3i2.3753

[36] Rosidi Rosidi, Rizky Aditya Nugraha, and Intan Lifinda Ayuning Putri. "How Islamic Corporate Governance Mitigates Financing Risk in Indonesian Islamic Banking?" *Share: Jurnal Ekonomi dan Keuangan Islam* 13, no. 2 (2024): 553–577. https://doi.org/10.22373/share.v13i2.21469

management in Islamic banks is still conservative, with high reliance on short-term instruments and restricted investment avenues due to sharia compliance. The insignificance of FDR suggests that liquidity mismatch is not the immediate cause of distress; rather, systemic capital adequacy plays a stronger role. This highlights an implementation gap in liquidity management instruments for Islamic banks, which regulators need to strengthen through innovation in sharia-compliant interbank markets.

The results show that business size has no discernible impact on FDR when it is included as a moderating variable. The t-statistic for the interaction is 1.062, which is less than the t-table value, indicates that the association between FDR and financial distress remains statistically insignificant, regardless of the bank's size. This suggests that the effectiveness of financing does not substantially depend on the size of the bank when it comes to its impact on economic distress.

The t-table is bigger than the t-statistic value of 1.778 for the Good Corporate Governance (GCG) variable. Although GCG is often linked with reducing financing risk, here it is not statistically significant. This may imply that governance structures exist but their effectiveness is not yet fully integrated into financial performance metrics. Puspitasari & Irawan (2023) suggested no significant impact on ROA . This mixed evidence highlights the importance of not only formal GCG frameworks but also their enforcement.[37]

However, the interaction between GCG and firm size provides a significant result, with a t-statistic value of 3.529. That shows that in larger companies, the effect of GCG on financial distress becomes more critical. Large banks with more stakeholders benefit more from implementing good governance, as it can increase public trust and financial stability. Therefore, large banks need to pay more attention to GCG management to mitigate the risk of financial distress.

ROA is a profitability measure. Though not significant here, its p-value (0.0989) is close to the 10% threshold, suggesting a potential weak effect. Studies like Lavidya Vivi[38] found ROA as a key mediator in distress analysis. The non-significance may be due to the overlapping influence of CIR and CAR, which directly relate to efficiency and capital.

When considering firm size as a moderating factor, the findings indicate that the interaction between ROA and firm size is insignificant, with an interaction t-statistic of 2.131 (marginally significant at a 5% level). Return on Assets (ROA) was also not significant, implying that short-term profitability does

[37] Fransiska Dwi Ratna Puspitasari, Dwi Irawan, and Dhaniel Syam. "Does Corporate Governance Have an Effect on Financial Distress?: Altman Z-Score Approach." *Journal of Multiperspectives on Accounting Literature* 1, no. 2 (2023): 87–99. https://doi.org/10.22219/jameela.v1i2.29204.

[38] Viona Lavidya and Zulkifli Zulkifli. "The Effect of Return on Assets and Current Ratio on Financial Distress Using the Springate Method in Technology Companies Listed on the Indonesia Stock Exchange in 2019–2021." *Research Trend in Technology and Management* 1, no. 3 (2023): 188–195. https://doi.org/10.56442/rttm.v1i3.29.

not safeguard banks from distress. This aligns with empirical studies showing that profitability often fluctuates with market conditions and may not reflect structural strength. From a sharia perspective, this result reinforces that financial sustainability cannot rely solely on short-term returns but must focus on stability and long-term value creation. It also suggests that Islamic banks prioritize asset growth and stability over immediate profit maximization, in line with the maqasid principle of *istiqar al-maliyah* (financial stability).

This indicates that efficiency is a major driver of financial distress. High CIR means operating inefficiency, leading directly to higher risk of distress. Rizal and Rofiqo[39] confirm that CIR significantly affects profitability and distress. This aligns with Islamic economic theory, where efficiency (*ihsan* and *itqan*) is a core principle of stewardship.

However, the interaction between CIR and firm size is insignificant, with an interaction t-statistic of 2.027. This result shows that the bank's scale or size does not affect the CIR towards financial distress. Thus, the CIR ratio remains a key indicator that all large and small banks should pay attention to reduce the risk of financial distress.

The Capital Adequacy Ratio (CAR) variable or X6 shows a t-statistic value of -3.552745, which, in absolute value, is compared to the t-table. This result indicates that financial distress significantly influences CAR, with an antagonistic relationship direction. Capital Adequacy Ratio (CAR) significantly and negatively affects financial distress, reaffirming the role of strong capitalization as a safety buffer. This supports previous studies Rosydalina Putri (2021) emphasizing that capital resilience is vital to absorb macroeconomic shocks.[40] Within *maqasid al-shariah*, this finding aligns with *hifz al-mal*, since adequate capital protects depositors' funds and preserves the integrity of the banking system. It demonstrates that in Islamic banking, strong equity positions are not only prudentially important but also ethically mandated.

There is no significant interaction between CAR and firm size, with a t-score of 1.086602. The probability of encountering financial difficulties decreases as the Capital Adequacy Ratio (CAR) rises. Therefore, banks of all sizes should prioritize capital adequacy to maintain financial stability.

The regression results indicate that firm size (Z) has a negative and highly significant effect on financial distress, meaning larger firms are less likely to experience it. In Islamic economics, firm size alone does not guarantee sustainability without alignment to maqāṣid al-sharīʿah, including justice, fairness, and the avoidance of riba and gharar. Therefore, Sharia compliance and Islamic corporate governance are crucial in ensuring that firm growth translates into true financial stability.

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[39] Fitra Rizal and Azidni Rofiqo. "Determinants of Sharia Banking Profitability: Empirical Studies in Indonesia 2011–2020." *El Barka: Journal of Islamic Economics and Business* 3, no. 1 (2020): 137–161. https://doi.org/10.21154/elbarka.v3i1.2051.

[40] Rosydalina Putri. "Pengaruh Rasio Keuangan dalam Memprediksi Financial Distress pada Bank Umum Syariah." *Fidusia: Jurnal Keuangan dan Perbankan* 4, no. 2 (2021): 159–172. https://doi.org/10.24127/jf.v4i2.651.

CONCLUSION

Non-Performing Financing (NPF) in Islamic banking is influenced by a combination of internal and external factors. Internally, Return on Assets (ROA) serves as a key indicator, as higher ROA generally corresponds to lower NPF, reflecting the bank's efficiency in utilizing assets to generate profits. Likewise, a high Capital Adequacy Ratio (CAR) provides sufficient capital buffers to absorb potential losses, thereby reducing NPF risk. Bank size also plays a significant role, as larger banks tend to have more diversified portfolios, which helps mitigate NPF risks. Other important internal factors include the profit-sharing ratio (RR) and the operational cost-to-operating income ratio (CIR). A higher RR supports fair profit-sharing principles and enhances financing quality, while a high CIR indicates low operational efficiency, which may contribute to increasing NPF.

Externally, macroeconomic conditions such as inflation and Gross Domestic Product (GDP) growth have notable effects. High inflation can increase the financing burden for customers, while slow economic growth may reduce purchasing power and elevate default risk. Monetary policies and interest rates are also crucial, as higher rates can raise financing costs and impact NPF levels. Practically, these findings highlight the importance to Islamic banks to improve operational efficiency, carefully manage costs, and implement fair profit-sharing practices. Moreover, monitoring macroeconomic conditions becomes a strategic approach to anticipate potential NPF risks, ensuring the bank maintains financing quality and financial health sustainably.

Author's Contribution

Isna Putri Adilah: Contribute to formulating research ideas, collecting data, processing data, and interpreting data.

R. Melda MAesarach: Contributing to writing systematics, researchmethods, analyzing interpretation results.

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Declaration of Competing Interest

The author declares that there is no conflict of interest.

Ethical Approval

Ethical approval No patient-identifying parts in this paper were used or known to the authors. Therefore, no ethical approval was requested.

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