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Measuring Financial Distress of Islamic Banks Under Pandemic and Its Determinants: Random Effect Approach

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ABSTRACT

This study aimed to measure the financial distress level of banks and test the influence of fundamental factors and COVID-19 on the financial conditions. Data were collected from the quarterly financial reports of Islamic banks in Indonesia for 2019.1 to 2021.1 to find out financial conditions before and during the pandemic. Testing was carried out using a panel data regression test and the random effect model was obtained as the best for this study after going through several stages of selection. The results were essential to the empirical study repertoire during the pandemic. First, the Altman Z-Score test results varied from distress, a gray area, and safe from ten Islamic banks studied. Second, after several testing stages, it was found that capital adequacy, profitability, and financing proportion positively affected financial conditions. COVID-19 did not significantly affected the financial conditions of Islamic banks. This indicated that Islamic banks in Indonesia showed short-term stability during the pandemic. However, a more extensive observation is required to assess the long-term impact.

***Abstrak**: Penelitian ini bertujuan untuk mengukur tingkat kesulitan keuangan bank syariah dan menguji apakah faktor fundamental dan COVID-19 mempengaruhi kondisi keuangan bank. Data bersumber dari laporan keuangan triwulanan bank syariah di Indonesia periode 2019.1 hingga 2021.1 untuk mengetahui kondisi keuangan sebelum dan selama pandemi. Pengujian melalui uji regresi data panel, model acak diperoleh sebagai model terbaik untuk penelitian ini setelah melalui beberapa tahapan uji pemilihan model. Sementara itu, penelitian ini menghasilkan beberapa temuan penting untuk menambah repertoar penelitian empiris selama pandemi. Pertama, hasil uji Altman Z-Score bervariasi dari distress, area abu-abu, dan aman dari sepuluh bank syariah yang diteliti. Kedua, setelah beberapa tahap pengujian, ditemukan bahwa kecukupan modal, profitabilitas, dan proporsi pembiayaan mempengaruhi kesulitan keuangan bank, sedangkan COVID-19 tidak mempengaruhi keuangan bank syariah. Temuan ini menunjukkan bahwa bank*

syariah di Indonesia stabil selama pandemi untuk jangka pendek, sedangkan untuk pengaruh jangka panjang memerlukan lebih banyak observasi lanjutan.

Kata kunci: *kesulitan keuangan, bank syariah, kebutuhan modal, COVID-19*

INTRODUCTION

COVID-19 is an infectious disease that has exerted a significant impact not only on health but also on various aspects of human life, including the financial sector. In this situation, financial transactions are directed electronically, both for saving, borrowing activities, and transactions. The banking industry must adapt and innovate to ensure continued operation by exploring new methods. The digitalization of financial services has become a necessity to enable dynamic financial circulation. However, the termination of employment, the closure of some business sectors, and the decline in public income due to social restrictions are considered to affect increasing credit risk and bank financing.

Several previous studies investigated the impact of crises and pandemics on financial and banking performance. The 2007/2008 global crisis impacted the profitability, liquidity, and credit risk of Malaysian banks, but the result showed that Islamic banks had more liquid assets than other conventional financial institutions.[1] In Indonesia, Islamic banks are considered capable of dealing with financial crises and monetary policy shocks.[2] However, they are considered less profitable and vulnerable to credit risk, and less efficient than conventional banks (CB). A previous study showed that large Islamic banks (IB) performed better than large conventional banks after the crisis in Bahrain, Kuwait, Qatar, Saudi Arabia, UAE, and Malaysia during the 2007-2008 global financial crisis.[3] Islamic banks in the 7 countries were not affected by the 2007 financial crisis.[4] In some countries, Islamic banks have also maintained their efficiency during the global financial crisis.[5] The rapid spread of COVID-19 has dramatically impacted the financial sector worldwide, resulting in unusual risk and consequential losses to investors.[6] The cost of the epidemic of SARS and the coronavirus is not limited

[1]Mohamed Yusuf Abdulle and Salina H. Kassim, "Impact of Global Financial Crisis on the Performance of Islamic and Conventional Banks: Empirical Evidence from Malaysia," *Journal of Islamic Economics, Banking and Finance* 8, no. 4 (2012): 9–20.

[2]Ahmad Affandi, "Monetary Policy Shocks and Islamic Banks Deposits in Indonesian Dual Banking System After the Financial," *Jurnal Keuangan dan Perbankan* 14, no. 3 (2010).

[3]Feryel Ouerghi, "Are Islamic Banks More Resilient To Global Financial Crisis Than Conventional Banks?," *Asian Economic and Financial Review* 4, no. 7 (2014).

[4]Abdelkader Derbali, "Islamic Banking during the Financial Crisis of 2007," *Serbian Journal of Management* 10, no. 1 (2015): 89–108, http://scindeks.ceon.rs/Article.aspx?artid=1452-48641501089D.

[5]G. Erfani and Bijan Vasigh, "The Impact of the Global Financial Crisis on Profitability of the Banking Industry: A Comparative Analysis," *Economies* 6, no. 4 (December 11, 2018): 66, http://www.mdpi.com/2227-7099/6/4/66.

[6]Dayong Zhang, Min Hu, and Qiang Ji, "Financial Markets under the Global Pandemic of COVID-19," *Finance Research Letters* 36 (October 2020): 101528, https://linkinghub.elsevier.com/retrieve/pii/S1544612320304050.

to the medical aspect but also has a global sociological, psychological, and economic impact.[7]

In the context of bank financial distress, predictions are made as an early warning system to enable appropriate actions to protect the stability of banks.[8] The failure prediction model is crucial for the banking industry as a financing provider interested in minimizing the level of bad debts and the risk of default to maximize profits.[9] The Altman Z-Score model can serve both academic and practical purposes, being applied for various objectives, such as detecting problems, risks, and ratings.[10] It is considered the most popular in academic studies as a measure of financial distress. In this study, the terms "default", "bankruptcy", "insolvency", and "distress" are interchangeable and have the same meaning [11]. These terms need to be predicted because they have significant use for stakeholders.[12] In addition, the liability position shows the financial position that allows banks to diversify its investment portfolio, increase profits, and minimize risk [13]. Changes to non-performing loans also increase banks discipline in dealing with risk.[14]

Indonesia adopted a dual banking system involving the operation of both the conventional and Islamic banks, in the national financial system. Islamic banks are part of the global banking industry, which develops and participates in monetary circulation. They are forbidden to operate at fixed interest rates, either on the return on public deposits or loans, but are directed to implement

[7]Yongshi Yang et al., "The Deadly Coronaviruses: The 2003 SARS Pandemic and the 2020 Novel Coronavirus Epidemic in China," *Journal of Autoimmunity* 109 (May 2020): 102434.

[8]ZEYNEP TÜRKCAN, "Financial Failure Prediction in Banks: The Case of European Union Countries," *Journal of Business Research - Turk* 10, no. 2 (June 28, 2018): 554–569, http://www.isarder.org/2018/vol.10_issue.2_article30_full_text.pdf.

[9] Edward I. Altman et al., "Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's Z- Score Model," *Journal of International Financial Management & Accounting* 28, no. 2 (June 2017): 131–171, https://onlinelibrary.wiley.com/doi/10.1111/jifm.12053.

[10] Mehmet Apan, Ahmet Oztel, and Mehmet Islamoglo, "Comparative Empirical Analysis of Financial Failures of Enterprises with Altman Z-Score and VIKOR Methods: BIST Food Sector Application," *Australasian Accounting, Business and Finance Journal* 12, no. 1 (2018): 77–101, http://ro.uow.edu.au/aabfj/vol12/iss1/6/.

[11]Beata Szetela, Grzegorz Mentel, and Jacek Brożyna, "In Search of Insolvency among European Countries," *Economic Research-Ekonomska Istraživanja* 29, no. 1 (January 23, 2016): 839–856, https://www.tandfonline.com/doi/full/10.1080/1331677X.2016.1237301.

[12]Dragana Bešlić Obradović et al., "Insolvency Prediction Model of the Company: The Case of the Republic of Serbia," *Economic Research-Ekonomska Istraživanja* 31, no. 1 (January 23, 2018): 139–157, https://www.tandfonline.com/doi/full/10.1080/1331677X.2017.1421990.

[13]A. Bashir, A.F. Darrat, and M.O. Suliman, "EQUITY CAPITAL, PROFIT SHARING CONTRACTS, AND INVESTMENT: THEORY AND EVIDENCE," *Journal of Business Finance & Accounting* 20, no. 5 (September 1993): 639–651, https://onlinelibrary.wiley.com/doi/10.1111/j.1468-5957.1993.tb00281.x.

[14]Robert M. Bushman and Christopher D. Williams, "Accounting Discretion, Loan Loss Provisioning, and Discipline of Banks' Risk-Taking," *Journal of Accounting and Economics* 54, no. 1 (August 2012): 1–18, https://linkinghub.elsevier.com/retrieve/pii/S0165410112000390.

the profit-loss sharing principle.[15] Profits and losses are borne by both parties based on the contract agreement (*aqad*).

The Financial Services Authority (FSA) of Indonesia reported that as of March 2020, the performance of the industry was still positive, and the risk profile remained under control even though the economy was under pressure due to the COVID-19 pandemic. Banking performance contracted during the pandemic because national economic activities experienced several significant obstacles. The capital adequacy ratio of conventional banks in the second quarter of 2020 was high at 22.59%, and liquidity was maintained. In this case, the liquid assets of non-core deposits and fund ratios were strengthened to 130.53% and 27.74%, respectively. One of the strategies that banking sector can take during the COVID-19 pandemic is to secure existing credits in order to ensure smooth running smoothly and avoid the effect of debt reserves due to debtor arrears. To avoid financial distress, banks also need to maintain liquidity and rearrange their financial structure.

Financial distress in banking entities is a problem that prevents banks from fulfilling their obligations, requiring additional actions to continue operation. The ability of banks to predict factors that affect financial distress is carried out to determine the source of the problems. In several studies, CAMEL or CAMELS are the factors used to estimate the level of financial distress in banking.[16] [17] Distress in financial operations is considered a problem encountered by all entities. Consequently, it is important to conduct several empirical studies to determine the effects of Islamic banks. This study predicts the possible financial distress of Islamic banks during the COVID-19 pandemic.

METHODS

This evaluation predicted the financial distress level of Islamic banks during the COVID-19 pandemic. Altman model was adopted with the Multiple Discriminant Analysis (MDA) approach, which provided reasonable predictions in most countries [18]. Many models of detecting financial distress for conventional banks have been formulated but some modifications are required for application to Islamic banks.[19] Therefore, Altman revisited model was applied to Islamic

[15]Beng Soon Chong and Ming-Hua Liu, "Islamic Banking: Interest-Free or Interest-Based?," *Pacific-Basin Finance Journal* 17, no. 1 (January 2009): 125–144, https://linkinghub.elsevier.com/retrieve/pii/S0927538X08000036.

[16]H. Nurul Husna and R. Abdul Rahman, "Financial Distress–Detection Model for Islamic Banks," *International Journal of Trade, Economics and Finance* (2012): 158–163, http://www.ijtef.org/show-37-426-1.html.

[17]Jessica Paule-Vianez, Milagros Gutiérrez-Fernández, and José Luis Coca-Pérez, "Prediction of Financial Distress in the Spanish Banking System," *Applied Economic Analysis* 28, no. 82 (November 21, 2019): 69–87, https://www.emerald.com/insight/content/doi/10.1108/AEA-10-2019-0039/full/html.

[18] Edward I. Altman et al., "Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's *Z*- Score Model," *Journal of International Financial Management & Accounting* 28, no. 2 (June 2017): 131–171.

[19]Husna and Rahman, "Financial Distress–Detection Model for Islamic Banks."

banks with several adjustments due to contract variations. The revised Altman Z-Score model for non-manufacturing companies by using the ratios was combined into a single discriminatory score, and the analysis is still considered a valuable tool for determining the health of a company.[20] The formulation is as follows:

$$Z - \text{Score} = 6.56\text{WCTA} + 3.26\text{RETA} + 6.72\text{EBITTA} + 1.05\text{MVETL} \ldots (1)$$

An Altman Z-Score value less than 1.11 indicates that banks are in the distress (D) category and considered to have experienced financial distress. When the value ranges between 1.11 and 2.6, then banks are included in the gray area (G) category, indicating a likelihood of experiencing financial distress. Finally, a Z score > 2.6 shows that banks are in the safe (S) category or not experiencing financial distress.

Working Capital to Total Assets (WCTA) compares the difference between current assets and liabilities with the total assets of banks. This measurement is commonly used to measure banks liquidity in terms of the ability to meet short-term obligations. A lower WCTA indicates a higher chance of financial distress, and vice versa. Meanwhile, WCTA measurement is adjusted to the financial structure of Islamic banks because financial activities have two types of contracts, namely transactional and intermediation.[21] Transactional contracts relate to the basis of buying and selling or exchange, such as in *murabahah, ba'i salam, ba'i istishna,* or *ijarah* contracts. In intermediation contracts, financial institutions play a role in carrying out the capital function, such as in *mudharabah* and *musyarakah* agreements. The function of the partnership is a profit-sharing system between the holder of the capital (*shahibul maal*) and the entrepreneurs (*mudharib*) who bear the loss in the event of negligence or loss.

Based on the characteristics of this financial structure, in measuring working capital on the receivable elements, it is adjusted according to the financing contracts on the asset side. The liability side includes current, limited, and unlimited investment accounts. The Current Assets of Islamic banks include cash and equivalents, marketable securities, short-term investments, allowances for bad and doubtful financing, financing and receivables based on Islamic contracts, and other current assets. On the other hand, the financing and advances based on Islamic contracts consist of *mudharabah*, *murabahah*, *ba'i salam* (BS), *ijarah*, *istishna'*, and *Qardul Hasan*. The current liabilities of Islamic banks are deposits, deposits, placements of banks and other financial institutions, bills and acceptance payable, as well as other current liabilities.

[20]Solomon Samanhyia, Kofi Mintah Oware, and Frederick Anisom-Yaansah, "Financial Distress and Bankruptcy Prediction: Evidence from Ghana," *Expert Journal of Finance* 4 (2016): 52–65.

[21]Dahlia El-Hawary, Wafik Grais, and Zamir Iqbal, "Diversity in the Regulation of Islamic Financial Institutions," *The Quarterly Review of Economics and Finance* 46, no. 5 (February 2007): 778–800, https://linkinghub.elsevier.com/retrieve/pii/S1062976906000986.

Retained Earnings to Total Assets (RETA) expresses the capacity of business activity to generate and allocate profit as an internal funding source. This ratio also shows an effort to build a fundamentally solid financial foundation to maintain sustainability in the long term. A higher RETA indicates a less likelihood for banks to experience financial distress due to the low dependence on external sources of funds that can erode profits.

Earnings before Interest and Tax to Total Assets (EBITTA) is used to measure the ability of the company to generate profits. Some of the profit function is to finance banks operations, repay loans, as well as reserves to meet investment needs. Banks with sufficient profits will be less likely to experience financial distress. In addition, a high EBITTA is also an indicator of the ability of management to manage banks. In the case of financial structure in Islamic banks, because it does not apply the interest system, earning before tax is used to measure this variable.

Market Value of Equity to Book Value of Total Liability (MVETL) describes the ability of banks based on market value to cover their obligations. The market Value of Equity (MVE) of banks is the value of capital owned based on the assessment of market participants. Equity is also a measure of the amount of protection provided by banks to customers or second parties who have invested their funds. A high MVETL indicates the higher protection of Islamic banks for their stakeholders.[22] When Islamic banks do not use debt sources, shareholder equity becomes larger than in conventional banks.[23] Therefore, Islamic banks require a high proportion of equity to prevent the possibility of financial distress.

This study used banks accounting data per quarter during the 2019-2021 period in conditions before and during the COVID-19 pandemic. Data were collected from the financial reports published on the official website of Islamic banks. In this study, the Islamic banks studied had to meet the following criteria to be included in the samples. First, this study was conducted merely on commercial banks. Second, banks were required to have quarterly financial reports spanning from quarter 1, 2019 to quarter 1, 2021. Third, they should have assets of more than one trillion. The procedures produced panel data from 10 Islamic banks, spanning 2019 to 2021, with 90 observations. The 10 banks included Bank Aceh Syariah (BAS), Bank Nusa Tenggara Barat Syariah (NTBS), Bank Muamalah Indonesia (BMI), Bank Victoria Syariah (BVicS), Bank Jabar Banten Syariah (BJBS), Bank Mega Syariah (BMS), Bank Panin Dubai Syariah (PNBS), Bank Syariah Bukopin (BSB), Bank Central Asia Syariah (BCAS), and Bank Tabungan Pensiunan Nasional Syariah (BTPNS). The data were collected

[22]Abu Umar Faruq Ahmad and M. Kabir Hassan, "Regulation and Performance of Islamic Banking in Bangladesh," *Thunderbird International Business Review* 49, no. 2 (March 2007): 251–277, https://onlinelibrary.wiley.com/doi/10.1002/tie.20142.

[23]Dennis Olson and Taisier A. Zoubi, "Using Accounting Ratios to Distinguish between Islamic and Conventional Banks in the GCC Region," *The International Journal of Accounting* 43, no. 1 (March 2008): 45–65, https://linkinghub.elsevier.com/retrieve/pii/S0020706308000046.

from Financial Services Authority (OJK) that was published on the official website. The collected data were tested using a panel data approach by considering the common, fixed, and random effect models.

In this study, the variables predicted to influence the financial conditions of Islamic banks include Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Return on Assets (ROA), Operational Cost to Operational Income (OCOI), and Financing to Deposit Ratio (FDR). It also included a dummy variable, which is the COVID-19 pandemic, with 0 and 1 representing the before and after the pandemic. The formulation of the panel data model to examine other factors affecting the financial distress of Islamic banks in this study is as follows:

$$FINDIS_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NPF_{it} + \beta_3 ROA_{it} + \beta_4 OCOI_{it} + \beta_5 FDR_{it} + \beta_6 COVID19_{it} + \varepsilon_{it} \ldots\ldots\ldots (2)$$

Where:

β_0	: A constant,
i	: An individual Islamic bank,
t	: The year quarter,
FINDIS	: The value of the financial distress level of banks, which is measured by z-score,
CAR	: The formulation of two tiers of capital divided by risk-weighted assets,
NPF	: Non-performing financing to total financing,
ROA	: Net income to total assets,
OCOI	: Operational Cost to Operational Income,
FDR	: Total financing to third-party funds,
COVID-19	: A dummy variable, where 0 and 1 represent the period before and after the pandemic,
ε	: The error term.

The data were tested and analyzed using a panel data regression test. Models were selected based on the results of Chow, Hausman, and Lagrange Tests. Classical assumption tests on panel data comprised multicollinearity and heteroscedasticity. The coefficient of determination, simultaneousity, and hypothesis test (t-test) were also carried out.

RESULTS AND DISCUSSIONS

This study began by determining the Altman Z-Score (Z-Score), which was used to assess the value of potential financial distress of each bank.

TABLE 1: Altman Z-Score of 10 Islamic Banks in Indonesia

No	Bank	Altman Z-Score (Quarterly)								
		2019				2020				2021
		1	2	3	4	1	2	3	4	1
1	BAS	0.61	0.54	0.73	0.77	0.65	0.71	0.61	0.72	0.64
2	BMI	-0.08	-0.09	-0.08	-0.10	-0.13	-0.14	-0.15	-0.17	-0.16
3	BMS	0.84	0.85	0.90	0.91	0.82	0.75	0.55	0.74	0.37
4	PNBS	1.01	0.83	0.67	1.58	0.61	0.61	0.57	1.66	1.53
5	BSB	0.32	0.33	0.47	0.50	0.50	0.61	0.68	0.60	0.69
6	BTPNS	2.75	2.91	3.27	3.67	2.88	2.89	2.93	3.22	2.91
7	BVicS	-0.82	0.71	0.58	0.77	0.76	0.82	0.85	0.87	0.88
8	BCAS	1.14	1.23	2.08	1.85	1.95	1.94	1.96	2.13	2.19
9	BJBS	0.41	0.40	0.39	0.41	0.39	0.41	0.41	0.66	0.66
10	NTBS	1.18	1.18	1.09	1.36	1.02	0.95	0.92	1.05	0.88

D = Distress, when Z-Score ≤ 1.11; G = A gray area when Z-Score 1.11 ≤ Z ≤2.6; S = Safe, when Z-score > 2.6

The result showed that the majority of Islamic banks experienced financial distress (distress/D) in most quarters, with scores below 1.11. Meanwhile, one of the banks was at the safe level (S) because it scored above 2.6. Table 1 also showed the results of score mapping from each bank from the first quarter of 2019 before the pandemic until 2021. This score was extracted from the Altman model by including several elements, such as the proportion of WCTA, RETA, EBITTA, and MVETL

TABLE 2. Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev	Obs.
FINDIS	0.98376	0.74471	3.66572	-0.81786	0.88389	90
CAR	0.24322	0.20040	0.50700	0.12010	0.10517	90
NPF	0.03250	0.03250	0.07710	0.00480	0.01943	90
ROA	0.01785	0.00660	0.13580	0.00004	0.03253	90
OCOI	0.88702	0.93835	1.20000	0.00440	0.15039	90
FDR	0.89043	0.87995	1.96730	0.57040	0.23419	90
COVID19	0.55555	1.00000	1.00000	0.00000	0.49968	90

Table 2 shows the descriptive statistics of the data processed in this study, including the mean, median, maximum, minimum, and standard deviation of each variable. The highest and lowest average values were found in FINDIS and ROA variables, namely 0.98376 and 0.01785, respectively.

TABLE 3. Correlations

	CAR	NPF	ROA	OCOI	FDR	COVID19
CAR	1					
NPF	-0.64361	1				
ROA	0.64354	-0.43574	1			
OCOI	-0.49612	0.38547	-0.65505	1		
FDR	0.01773	0.39764	-0.01125	0.13954	1	
COVID19	0.10679	0.06338	-0.06771	0.08885	0.14746	1

Table 3 showed that there was no high correlation among the independent variables with the highest being 0.64354 between ROA and CAR. This result was lower than the required value of 0.7, indicating the absence of multicollinearity.

TABLE 4. Panel Data Regressions

	Common Effect Model		Fixed Effect Model		Random Effect Model	
Variables	Coeff.	t-stat (prob.)	Coeff.	t-stat. (prob.)	Coeff.	t-stat. (prob)
Constant	-1.12018	-3.23639 (0.001***)	-0.37159	-1.04504 (0.299)	-0.72164	-2.32640 (0.022***)
CAR	4.86100	8.49496 (0.000***)	3.53100	4.51868 (0.000***)	4.90776	8.39171 (0.000***)
NPF	-4.74067	-1.66399 (0.099*)	7.26435	1.17468 (0.243)	-2.92981	-0.87805 (0.382)
ROA	10.6252	6.35539 (0.000***)	1.89465	0.66389 (0.508)	8.34850	4.43573 (0.000***)
OCOI	0.31403	0.97624 (0.331)	0.06739	0.24175 (0.809)	0.07742	0.29014 (0.772)
FDR	0.71259	3.90969 (0.000***)	0.06739	1.10170 (0.274)	0.46328	2.62295 (0.010***)
COVID19	-0.05198	-0.70100 (0.485)	-0.04964	-0.83352 (0.407)	-0.04398	-0.75958 (0.449)
R-Squared		0.8655		0.9314		0.6931
Adjusted R-Squared		0.8557		0.9176		0.6709
F-Statistic (Prob)		89.029 (0.000***)		67.083 (0.000***)		31.249 (0.000***)

Coeff = coefficient; t-stat = t-statistics
*** Sig. at level 1%; ** Sig. at level 5%; * Sig. at level 10%

Based on the Common Effect Model, three variables were significant at the 1% significance level, while one was significant at the 10% in influencing the high score of FINDIS. These results showed that CAR, NPF, ROA, and FDR significantly affected the good and bad financial conditions of Islamic banks. A high CAR would increase the Z-score, indicating reduced stress and an improvement in the financial health of banks with sufficient capital. On the other hand, NPF had a negative effect on FINDIS, which signified that the higher the NPF, the lower the financial condition of banks. ROA also had a positive effect

on FINDIS indicating that a higher ability of banks to produce profits from its assets will increase the financial resilience and reduce the distress level. FDR had a positive effect on FINDIS and showed that a high financing ratio to third-party funds significantly improves the financial conditions of banks because it increases the potential for obtaining more income. Meanwhile, OCOI and COVID-19 had no significant effect on the financial condition of Islamic banks.

According to the Fixed Effect Model, only the CAR variable affected FINDIS, while others had no effect on the financial condition of banks. The three factors affecting the financial conditions of banks in the Random Effect Model are CAR, ROA, and FDR. These results showed that CAR was the most consistent factor that can keep banks from experiencing financial distress. Table 4 showed the adjusted R-squared value that the six factors in the model explained 67.097% of the financial condition of Islamic banks.

TABLE 5. Model Selection Test

Test	Model Hypothesis	Results	Conclusion
Chow Test	H_0: Common Effect H_1: Fixed Effect	The statistic of Cross-Section F is 7.9196 (Prob. 0.00 < 0.05)	The fixed effect is accepted.
Hausman Test	H_0 Random Effect H_1 Fixed Effect	The Chi-Square Statistic of Cross Section Random is 0.00 (Prob. 1.00 > 0.05)	A random effect is accepted.
Lagrange Multiplier Test	H_0: Common Effect H_1: Random Effect	Cross Section of Breuch-Pagan is 23.041 (Prob. 0.00 < 0.05)	A random effect is accepted.

A series of tests were carried out in this study to determine the right model, as shown in Table 5. In the Chow test, the statistic of cross-section F was 7.91961, with a probability of 0.000, which was less than the level of significance. Therefore, H_0 was rejected, denoting that the Fixed Effect Model was better than the Common Effect Model. In the next step, the Hausman test was carried out to determine the best Effect Model. The result showed a Chi-Square Statistics of Cross Section Random value of 0.000, with a probability of 0.001 being more significant than 0.05. It was then concluded that the Random was better than the Fixed Effect Model. In the last step, a test was carried out to determine whether the Common or Random Effect Model was better than the Lagrange Model test. The results showed that the Cross-Section of Breuch-Pagan value was 23.041, with a probability of 0.000 less than a significance level of 0.05. It was concluded that the Random Effect Model was better than the Common Effect Model. The results of the tests carried out showed that the Random Effect Model has the best fit for this study.

Based on the tests and results, it can be seen that three variables positively affected financial conditions, namely CAR, ROA, and FDR. On the other hand, NPF, OCOI, and COVID-19 did not affect the financial condition of Islamic banks. The coefficients of NPF and COVID-19 were negative, indicating the tendency of these two variables to reduce the financial condition of Islamic banks but still require further observation and testing.

The results of this study support the policy that CAR is an essential factor in the financial structure of Islamic banks. This policy on the importance of capital in banks aims to promote banks to have an optimal capital structure and distress resolution cost.[24] In this situation, the authorities regulate capital adequacy policies to cover banks positions and protect against losses arising from fluctuations in value.[25] Learning from the 2007-2009 crisis that left the Basel II policy failing in risk coverage, the Basel III policy was later issued. It contains a capital base with strengthening risk coverage that provides incentives for banks to assess credit portfolios and investment decisions.[26] This capital regulation is vital for banks performance and financial stability to overcome risks due to shocks in the economic system.[27] Another study showed that a high capital ratio was closely related to a decrease in bank risk.[28] Banks generally maintain a capital buffer to absorb losses arising from their loan portfolios, which may change over time.[29] According to a previous study, capital is negatively related to risk and the inefficiency of banks with lower capital.[30] Therefore, capital requirements must be appropriate to protect against losses that may arise in order to maintain banks credit.

According to a previous study, income diversity significantly affects banks stability.[31] The composition of equity and profit or working capital to total

[24]Clas Wihlborg, "Basel II and the Need for Bank Distress Resolution Procedures*," *Financial Markets, Institutions and Instruments* 14, no. 5 (December 2005): 359–369, https://onlinelibrary.wiley.com/doi/10.1111/j.0963-8008.2005.00112.x.

[25]Chong and Liu, "Islamic Banking: Interest-Free or Interest-Based?"

[26]Stefan Schwerter, "Basel III's Ability to Mitigate Systemic Risk," *Journal of Financial Regulation and Compliance* 19, no. 4 (November 15, 2011): 337–354, https://www.emerald.com/insight/content/doi/10.1108/13581981111182947/full/html.

[27]Samy Ben Naceur and Magda Kandil, "The Impact of Capital Requirements on Banks' Cost of Intermediation and Performance: The Case of Egypt," *Journal of Economics and Business* 61, no. 1 (January 2009): 70–89, https://linkinghub.elsevier.com/retrieve/pii/S0148619507000926.

[28]Kevin J. Stiroh, "New Evidence on the Determinants of Bank Risk," *Journal of Financial Services Research* 30, no. 3 (December 19, 2006): 237–263, http://link.springer.com/10.1007/s10693-006-0418-5.

[29]Mamiza Haq and Richard Heaney, "Factors Determining European Bank Risk," *Journal of International Financial Markets, Institutions and Money* 22, no. 4 (October 2012): 696–718, https://linkinghub.elsevier.com/retrieve/pii/S1042443112000273.

[30]Yener Altunbas et al., "Examining the Relationships between Capital, Risk and Efficiency in European Banking," *European Financial Management* 13, no. 1 (January 2007): 49–70, https://onlinelibrary.wiley.com/doi/10.1111/j.1468-036X.2006.00285.x.

[31]Martin Čihák and Heiko Hesse, "Islamic Banks and Financial Stability: An Empirical Analysis," *Journal of Financial Services Research* 38, no. 2–3 (December 1, 2010): 95–113, http://link.springer.com/10.1007/s10693-010-0089-0.

assets is a supporting factor for capital adequacy, thereby increasing the financial strength of banks.[32] However, this study showed a contradicting result, in which a high ratio of financing to deposits empirically increased the score of financial condition. This was not consistent with the result that loan growth or banks fund distribution had a negative effect on risk [33].

CONCLUSIONS

In conclusion, the holistic goal of establishing Islamic banks was to create an economic balance through the achievement of social welfare, creating job opportunities, and poverty alleviation in line with Islamic values. Islamic banks carried out business functions with the mandate of charity (*amaliah)* to achieve these goals. Furthermore, the swift spread of COVID-19 globally required Islamic banks to take strategic and tactical actions.

The result showed that CAR, ROA, and FDR are factors affecting the financial condition of Islamic banks. High banks profitability can also improve financial conditions at a better level. Furthermore, the operational system of Islamic banks was built on different contracts. In this case, a decrease in income in one contract can be complemented by the other. The result also showed that the primary source of banks income was financing channeled to the public. This indicated that higher financing will increase the financial condition of Islamic banks, even though it is prone to credit risk. One of the limitations of this study was the lack of observation range. To achieve more convincing results, future studies are recommended to add longer ranges of observations.

Authors' Contribution

Siti Amaroh: Contribute to formulating research ideas, collecting data, processing data, and interpreting data, systematics, researchmethods, and analyzing interpretation results, the language proofread.
Arif Nugroho: Contributing to the language proofread.

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Declaration of Competing Interest

The authors declare that there is no conflict of interest.

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