

## Bank Stability, Covid-19, and Islamic Bank Financing in Indonesia

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### Abstract

*The financial performance of Islamic banks is strongly influenced by the bank's ability to disburse their funds. The purpose of this study is to analyze the influence of Islamic bank fundamentals in influencing financing. Islamic bank fundamentals consist of stability, size, profitability, equity, efficiency, and financing risk. This study uses quarterly data to examine 13 Islamic commercial banks from 2014 to 2020. The method used is static panel data regression with unbalanced panel data of 334 observations. The results show that the Z-score, assets, ROA, and NPF have a positive effect on the financing of Islamic commercial banks. Meanwhile, the CAR and income cost ratio has a negative effect on the financing of Islamic commercial banks. Furthermore, the economic slowdown because of Covid-19 has reduced Islamic commercial bank financing. These findings indicate that profit, bank size, and stability are the main Islamic bank fundamentals that significantly influence the amount of Islamic bank financing.*

**Keywords:** Bank stability, covid-19, financing, and Islamic commercial banks

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### 1. INTRODUCTION

The practice of Islamic banking in Indonesia started in 1991 as Muamalat Bank applied the principle of profit-loss sharing contracts in disbursing its funds. Islamic banks, like conventional banks, are financial intermediary institutions that collect funds and then distribute these funds in the form of financing. Islamic bank financing consists of two types, namely profit-loss sharing financing and non-profit-loss sharing financing. The former type of financing consists of Mudharaba and Musyaraka, while the latter type of financing consists of Murabaha, Istisna, Salam, Ijarah, and Qard (Widarjono & Rudatin, 2021). Islamic banks in Indonesia encompass Islamic commercial banks (13 Islamic banks) and Islamic business units (19 Islamic banks).

The success of Islamic banks as financial intermediaries depends on the performance of Islamic banks in managing their financing. Banks have two strategies for disbursing their financing, encompassing diversification and concentration

strategies (Tabak et al., 2011); . Whatever strategy is chosen, the amount of financing depends on the fundamental condition of the bank (Lin & Yang, 2016). If the fundamental condition of the bank is sound and strong, then an expansionary financing strategy must be carried out to optimize the funds that have been collected to generate high income and profits. Consequently, banks can pay well their customers who have already deposited their funds (Caporale et al., 2020; Meslier et al., 2020).

Many previous studies have analyzed the determinants of Islamic bank financing. Some studies have examined the determinants of total Islamic bank financing without distinguishing between profit-loss sharing and non-profit-loss sharing financing. Sudarsono and Ash Shiddiqi (2022), using aggregate data on Islamic banking in Indonesia, revealed that third-party funds, equity, and PLS financing positively affect financing but inefficiency negatively affects financing. Another study using data from 12 Islamic commercial banks in Indonesia documented that Islamic bank financing is influenced by liquidity,

efficiency, and financing risk (Alsahrin et al., 2018). Šeho et al. (2020) suggested that bank size is very dominant in influencing the amount of Islamic bank financing in the case of 17 Islamic commercial banks in 13 countries

The core business of Islamic banks is profit-loss-sharing financing. However, profit-loss sharing financing has not been the main choice of Islamic banks in their financing strategy due to complex procedures. Some researchers explored the determinants of profit-loss sharing financing. Risfandy et al. (2020), using Islamic commercial banks data in Indonesia, showed that competition, stability, profitability, and inefficiency negatively affect profit-loss-sharing financing, while bank size positively links to profit-loss-sharing financing. Sudarsono and Ash Shiddiqi (2022), using aggregate data for Islamic banks, show that profitability, inefficiency, and bank size negatively affect Mudharaba and Musyaraka financing.

This study investigates fundamental bank factors in influencing Islamic bank financing in Indonesia. Fundamental factors include stability, bank size, profitability, equity, efficiency, and financing risk. This research contributes to the Islamic banking literature in several ways. First, this study includes the stability of Islamic banks in influencing the amount of financing. Bank stability greatly influences the type and amount of Islamic bank financing (Risfandy et al., 2020). However, a few previous studies have included the stability variable in influencing Islamic bank financing. Second, this study also includes the Covid-19 outbreak. Covid-19 has caused Indonesia's economic growth to experience negative growth. As a result, the economic downturn causes a decrease in Islamic bank financing. However, a few previous studies have addressed this issue, particularly in Indonesian Islamic banks.

We investigate the determinants of Indonesian Islamic bank financing for the case of Islamic commercial banks. The samples in this study are all Islamic commercial banks, as many as 13 Islamic banks. The research period is from 2014 to 2020, using quarterly data. The data used is panel data with unbalanced panel data of 334 observations. There are several reasons for choosing Islamic commercial banks in this study. First, Islamic commercial banks dominate the Islamic banking market in Indonesia in terms of assets. Second, they are separated business units from their conventional parent banks.

## 2. RESEARCH METHOD

The method used in this research is the panel data regression method with unbalanced panel data. There are two types of panel data regression, consisting of static and dynamic panel regression. This study uses static panel regression, considering that the cross-sectional unit is small, totaling 13 Islamic commercial banks, while the dynamic panel regression produces a better estimator if the cross-sectional observation is very large (Ibrahim & Law, 2019). This study follows previous studies in which the amount of Islamic bank financing depends on Islamic bank fundamentals, consisting of capital adequacy, liquidity, management, profitability, and asset quality (Risfandy et al., 2020; Šeho et al., 2020). The static panel regression equation can be written as follows:

$$LFIN_{it} = \delta_0 + \delta_1 Z - score_{it} + \delta_2 Lasset_{it} + \delta_3 ROA_{it} + \delta_4 CAR_{it} + \delta_5 ICR_{it} + \delta_6 NPF_{it} + \delta_7 Covid_{it} + e_{it} \quad (1)$$

Where FIN is total financing, Z-score represents Islamic bank stability, assets indicate Islamic bank size, return on assets (ROA) measures Islamic banks' profitability, Capital adequacy ratio (CAR) indicates Islamic banks' equity, income cost ratio (ICR) measures operating efficiency, non-performing financing (NPF) shows the level of financing risk and Covid-19 representing the economic shock in the second quarter of 2022. The variables for total financing and total assets are in the form of natural logarithms. The stability is calculated using the Z-score (Abedifar et al., 2013; Ibrahim et al., 2017):

$$Z - score = \frac{ROA + CAR}{SDROA} \quad (2)$$

where ROA is the return on asset, CAR stands for capital adequacy ratio, and SDROA is the standard deviation of ROA.

Based on equation (1), Islamic bank financing is affected by fundamental bank conditions. The first Islamic bank fundamental is stability as measured by the Z-score. Higher Z-score indicates strong stability and low insolvency (Čihák & Hesse, 2010). Thus, banks with higher Z-scores are likely to take more risk by disbursing more financing. Therefore, we hypothesize that stability positively affects Islamic bank financing.

Assets measure Islamic bank size, meaning that the greater the assets, the larger the Islamic bank. Large banks will be able to operate efficiently because of economies of scale (Hamid, 2017). Operating efficiency lowers Islamic bank intermediation costs

(Trinugroho et al., 2018). As a result, the low price of financing can encourage banks to channel more financing to generate optimal income. Large assets are likely predicted to enhance Islamic bank financing. This study hypothesizes that assets have a positive influence on Islamic bank financing.

The profitability of Islamic banks, which is measured by ROA indicates the bank's ability in financing management (Widarjono et al., 2022). Profitability is the foundation for managers to distribute funds in some prospective financing. Higher ROA suggests that the Islamic bank has strong financial performance. Consequently, banks with strong performance allow banks to take excessive financing (Risfandy et al., 2020). Therefore, this study expects that profitability positively affects Islamic bank financing.

The capital adequacy ratio is the own capital divided by risk-weighted assets. The Indonesian Financial service authority requires a minimum CAR of 8% (Widarjono et al., 2020). This minimum CAR is intended to anticipate losses that may arise (Bougatef & Korbi, 2019). The higher the CAR, the greater the risk faced by the bank in running its business. In other words, CAR shows the degree of risk-averse (M. Sutrisno, 2018). This research expects that CAR will negatively affect Islamic bank financing.

Operational efficiency is measured by the income-cost ratio (ICR). The high ICR shows that the bank is more efficient in running its business, and conversely, the low ICR shows that the bank is not efficient in its operations (Risfandy et al., 2022). Efficient operations encourage banks to increase financing, and inefficiency will reduce financing. Therefore, we predict that efficiency increases Islamic bank financing.

NPF that indicates the financing risk is the ratio of non-performing financing to total financing. This NPF shows the magnitude of the financing risk (Widarjono & Rudatin, 2021). The higher NPF means higher unpaid financing. As a result, the high NPF causes Islamic banks to reduce financing because of the high financing risk. This study hypothesizes that NPF negatively affects Islamic bank financing.

Covid-19 has caused the production of goods and services to decrease due to the lockdown. The fall in domestic output further reduces economic growth. Low economic growth has resulted in banks being unable to channel their funds to the business sector. As

a result, Islamic bank financing has decreased (Alabbad & Schertler, 2022). This research predicts that covid-19 negatively affects Islamic bank financing.

There are two approaches to estimating static panel regression in equation (1) (Widarjono & Anto, 2020). First, the method assumes that the behavior of objects in the data cross-section is the same. Second, the method presumes that the behavior of objects in the data cross-sections is different. The first method is estimated using pooled ordinary least squares (OLS). The second method consists of fixed effects and random effects. The fixed effect assumes that there is no autocorrelation in one object at different times, while the random effect assumes that there is an autocorrelation problem. Choosing the best method follows the F test, Bruesch-Pagan (B-G) test, and Hausman test. The F test checks the method between pooled OLS and the fixed effect. The B-G test examines the method between pooled OLS and random effect. The Hausman test selects the method between the random effect and the fixed effect.

### **3. RESULTS AND DISCUSSION**

#### **3.1. Summary statistics and correlation**

Table 1 displays summary statistics comprising the average, minimum, maximum, and data variations. The minimum and maximum value of financing was IDR 0.9965 trillion and 130 trillion, with an average financing of IDR 23.6 trillion and a standard deviation of IDR 27.6 trillion. These results indicate that there is a high financing disparity between Islamic banks. These findings are supported by the high asset disparity between Islamic banks, where the average was IDR 22.7 trillion, but the standard deviation was also high (IDR 25.7 trillion). The minimum and maximum Z-scores were 0.033% and 280.55%, with an average of 47.17% and a standard deviation of 56.86%. This Z-score suggests a high stability gap between Islamic banks. The average profit was 1.23%, with a minimum and maximum value of -10.77% and 13.58%, where the variation in profits between banks was low (2.84%). Based on the criteria of financial services authority with a profit rate of 1.23%, Islamic banks are categorized as healthy banks. The minimum and maximum CAR values were 10.16% and 49.44%, respectively, with an average of 20.83% and low variation (7.7%). This capital adequacy is above the threshold of 15%. The average rate of operating efficiency (ICR) was 110.33%, with a minimum and

maximum value of 46% and 182.32%, and with a low level of variation (15.27%). The average NPF was 4.05%, with a low NPF variation (3.41%). This NPF

is below the upper threshold of 5%, meaning that financing risk for Islamic banks is still controllable.

**Table 1 Summary Statistics**

| Variable             | Average | Minimum | Maximum  | Standard deviation |
|----------------------|---------|---------|----------|--------------------|
| Fin (IDR trillion)   | 23.6000 | 0.9965  | 130.0000 | 27.6000            |
| Z-score              | 0.4717  | 0.0033  | 2.8055   | 0.5686             |
| Asset (IDR trillion) | 22.7000 | 1.2000  | 130.0000 | 25.7000            |
| ROA                  | 0.0123  | -0.1077 | 0.1358   | 0.0284             |
| CAR                  | 0.2083  | 0.1016  | 0.4944   | 0.0770             |
| ICR                  | 1.1033  | 0.4600  | 1.8232   | 0.1527             |
| NPF                  | 0.0405  | 0.0012  | 0.2229   | 0.0341             |
| Covid-19             | 0.1168  | 0.0000  | 1.0000   | 0.3216             |

Table 2 presents the correlation between the independent variables being studied to determine whether there is a multicollinearity problem. The multicollinearity problem occurs if the correlation coefficient between the independent variables is  $\pm 1$ .

If the correlation value is  $\pm 1$ , then perfect multicollinearity occurs so that one of the regression coefficients containing perfect multicollinearity cannot be estimated. The results present that all correlation coefficients are less than  $\pm 1$ .

**Table 2 Correlation Matrix**

|          | LFin    | Z-score | Lasset  | ROA     | CAR     | ICR     | NPF     |
|----------|---------|---------|---------|---------|---------|---------|---------|
| LFin     | 1       |         |         |         |         |         |         |
| Z-score  | 0.0018  | 1       |         |         |         |         |         |
| Lasset   | 0.9816  | 0.0066  | 1       |         |         |         |         |
| ROA      | 0.0129  | -0.0453 | 0.0897  | 1       |         |         |         |
| CAR      | -0.3271 | 0.4513  | -0.2833 | 0.4822  | 1       |         |         |
| ICR      | 0.1363  | 0.0389  | 0.2107  | 0.8981  | 0.5056  | 1       |         |
| NPF      | 0.0102  | -0.3241 | -0.0462 | -0.4692 | -0.3665 | -0.5392 | 1       |
| Covid-19 | 0.0641  | 0.0221  | 0.0903  | 0.0102  | 0.1553  | 0.0528  | -0.0767 |

### 3.2. Results

The static model estimation results are shown in Table 3. Based on the LM test, we reject the null hypothesis so that the fixed effect model is better than pooled OLS. The BG test reveals that the null hypothesis is rejected, so the random effects model is better than pooled OLS. The last test is the Hausman test to find out the best method between fixed and random effects. The results indicate that we reject the null hypothesis, implying that the fixed effect is more suitable than the random effect.

Table 3 presents the outcomes of the baseline results without including the effect of Covid-19 on the amount of Islamic bank financing. The Z-score is a positive sign and significant at  $\alpha=5\%$ , as predicted by the first hypothesis. Bank size, as measured by total assets, is a negative sign and significant at  $\alpha=1\%$ , as expected in the second hypothesis. ROA, which measures profitability, is a positive sign and

significant at  $\alpha=1\%$ , so this finding is in accordance with the third hypothesis. Furthermore, CAR is a negative sign and significant at  $\alpha=1\%$ , as predicted in the fourth hypothesis. The operating efficiency (ICR) is a negative sign and significant at  $\alpha=1\%$ , and this result is not following the fifth hypothesis. NPF, which measures financing risk, is a positive sign and significant at  $\alpha=1\%$ , where this result is not in line with the sixth hypothesis.

**Table 3 Baseline Regression**

| Variable | Pooled OLS          | Fixed effect        | Random effect       |
|----------|---------------------|---------------------|---------------------|
| Z-score  | 0.0184<br>0.0252    | 0.2121**<br>0.0922  | 0.0918*<br>0.0565   |
| Lasset   | 0.9835***<br>0.0119 | 1.1432***<br>0.0373 | 1.0433***<br>0.0244 |
| ROA      | -2.2229**<br>0.9041 | 3.2994***<br>1.2436 | 2.6315**<br>1.1520  |
| CAR      | -0.2517             | -1.1719***          | -0.5552**           |

| Variable        | Pooled OLS | Fixed effect | Random effect |
|-----------------|------------|--------------|---------------|
|                 | 0.2238     | 0.3287       | 0.2602        |
| ICR             | 0.0222     | -0.6527***   | -0.6114***    |
|                 | 0.1867     | 0.2038       | 0.1960        |
| NPF             | 0.9061**   | 1.1391***    | 1.0966***     |
|                 | 0.4070     | 0.4121       | 0.4151        |
| Cons            | 0.3102     | -1.5302**    | 0.0035        |
|                 | 0.2234     | 0.6113       | 0.4095        |
| R-squared       | 0.9700     | 0.7746       | 0.7720        |
| No. Obs.        | 334        | 334          | 334           |
| No. bank        | 13         | 13           | 13            |
| Diagnostic test |            |              |               |
| F-test          | 13.34***   |              |               |
| B-G-test        | 171.80***  |              |               |
| Hausman test    | 32.59***   |              |               |

Note: \*\*\*, \*\*, and \* denote significant at  $\alpha=1\%$ ,  $\alpha=5\%$ , and  $\alpha=10\%$ . The standard error is shown in parentheses.

Covid-19 has caused Indonesia's economic growth to decline, even negative economic growth. This economic downturn caused a slowdown in domestic outputs, so Islamic bank financing has also experienced a slowdown in financing. This study includes the Covid-19 variable to find out whether the economic downturn has a negative effect on Islamic bank financing.

Table 4 presents the results of the static panel regression by including the covid-19 outbreak. According to the F test, B-G test, and Hausman tests, the fixed effect is the best estimation. The Z-score, asset, and ROA are positive and significant according to the proposed hypothesis. As predicted by the hypothesis, CAR is negative and significant. Efficiency is negative and significant but not in line with the hypothesis, and NPF is positive and significant but not in line with the hypothesis. The results of these tests are consistent with previous results without including Covid-19. Meanwhile, the Covid-19 variable has a negative sign and is significant at  $\alpha=1\%$  following our hypothesis.

**Table 4 Impact of Covid-19 on Islamic Bank Financing**

| Variable | Pooled OLS | Fixed effect | Random effect |
|----------|------------|--------------|---------------|
| Z-score  | 0.0095     | 0.1936**     | 0.0852*       |
|          | 0.0254     | 0.0901       | 0.0592        |

| Variable        | Pooled OLS | Fixed effect | Random effect |
|-----------------|------------|--------------|---------------|
| Lasset          | 0.9886***  | 1.2026***    | 1.0732***     |
|                 | 0.0120     | 0.0392       | 0.0264        |
| ROA             | -2.3991*** | 2.8441**     | 2.5612***     |
|                 | 0.9029     | 1.2188       | 1.1517        |
| CAR             | -0.1230    | -1.0445***   | -0.4358*      |
|                 | 0.2305     | 0.3223       | 0.2676        |
| ICR             | 0.0103     | -0.6694***   | -0.6503***    |
|                 | 0.1858     | 0.1990       | 0.1943        |
| NPF             | 0.8202***  | 0.8851***    | 0.9356**      |
|                 | 0.4067     | 0.4069       | 0.4132        |
| Covid-19        | -0.0747**  | -0.1239***   | -0.0907***    |
|                 | 0.0348     | 0.0303       | 0.0303        |
| Cons            | 0.2320     | -2.4713***   | -0.4459       |
|                 | 0.2252     | 0.6395       | 0.4388        |
| R-sq: within    | 0.9704     | 0.7860       | 0.7829        |
| No. Obs.        | 334        | 334          | 334           |
| No. bank        | 13         | 13           | 13            |
| Diagnostic test |            |              |               |
| F-test          | 14.82***   |              |               |
| BG-test         | 176.12***  |              |               |
| Hausman test    | 57.07***   |              |               |

Note: \*\*\*, \*\*, and \* denote significant at  $\alpha=1\%$ ,  $\alpha=5\%$ , and  $\alpha=10\%$ . The standard error is shown in parentheses.

### 3.3. Discussion

Based on the estimation results, bank fundamental variables have a fairly strong influence on Islamic bank financing. The Z-score has a positive effect on financing, which indicates the more stable the bank, the greater the bank's financing. Banks with high Z-scores represent a high level of stability, and conversely, banks with low stability are indicated by low Z-scores. Banks with high Z-scores imply that the level of bankruptcy is low (Iqbal et al., 2021). As a result, Islamic banks disburse more financing to generate high profits due to low insolvency. Meanwhile, from the customer side, customers prefer to borrow funds from banks that have high stability. This research supports previous research on which

stable Islamic banks tend to increase their financing (Risfandy et al., 2020).

The second fundamental bank is assets. Assets have a positive impact on financing, meaning that the larger the bank size, the higher the level of bank financing. There are two reasons. First, large banks have greater capacity to channel their funds. Second, large banks have an optimum scale of operations because of economies of scale, resulting in cheap intermediation costs (Naseri et al., 2020). Low intermediation costs encourage banks to increase their financing capacity to bank customers. This finding confirms previous research using aggregate data on Islamic banking in Indonesia (Alsyaahrin et al., 2018).

The profitability, as measured by ROA, has a positive effect on Islamic bank financing. This finding shows that the higher the level of profit, the greater the funds channeled to bank customers. Higher ROA indicates that the bank has a strong balance sheet. Consequently, a bank with a strong balance sheet permits them to expand their financing portfolios and likely generate more income and profit (Kim & Sohn, 2017). This finding is in line with Sudarsono and Ash Shiddiqi (2022), who document that profit has a positive effect on Murabaha financing, where Murabaha financing is the largest portion of Islamic bank financing. However, profits have a negative effect on profit-loss financing (Mudaharaba and Musyaraka) since these two financings pose a high financing risk due to asymmetric information and moral hazard (Sutrisno & Widarjono, 2022).

CAR has a negative effect on Islamic bank financing, meaning that the higher the CAR, the lower the financing. CAR represents the bank's ability to protect declining assets because of losses incurred by the bank. CAR is affected by the bank's capability to earn profits as well as the composition of allocating funds to assets in accordance with each level of risk. Banks with high CAR face high financing risks. The existence of this high financing risk leads Islamic banks to be reluctant to expand financing. Anggraini and Nugroho (2021) also found that CAR had a negative effect on financing from BRPS in Indonesia.

Covid-19 caused a negative effect on the financing of Islamic commercial banks, suggesting that covid-19 has reduced financing. Covid-19 caused economic growth to decline, even negative growth occurred in the third quarter of 2020. This decline in domestic products was due to supply and demand shocks. A supply shock occurs because production

cannot be optimal due to a lockdown, while a demand shock occurs because people's purchasing power has decreased. Covid-19 has caused sluggishness in the business sector so that Islamic banks cannot optimally channel their funds to them. Fajri et al. (2022) found that Covid-19 had reduced the profits of Islamic banking in Indonesia because Islamic bank financing had decreased.

The operating efficiency, as measured by the ratio of income to costs, has a negative effect on financing. The negative link between financing and efficiency may be inferred that Islamic commercial banks have optimized their resources in generating income and profit. They have provided more electronic services to customers in dealing with financing, such as e-banking (Sudarsono & Ash Shiddiqi, 2021). NPF has a positive effect on Islamic bank financing. There are two reasons for the positive relationship between financing and NPF. First, Islamic banks are the latest players in the banking system in Indonesia. Taking more risk by providing more financing is the main objective for them to compete with conventional banks. Second, this expansive policy occurred because the level of non-performing financing for Islamic banks was still relatively low at .405%, below the maximum limit of 5% required by the Indonesian financial service authority.

#### **4. CONCLUSION**

Our research aims to examine the impact of Islamic bank fundamentals on Islamic bank financing by taking a sample of Islamic commercial banks. This study uses static panel regression with unbalanced panel data. The findings reveal that stability, bank size, profits, and financing risk have a positive effect on financing, while equity and efficiency have a negative effect on financing. The economic downturn due to the Covid-19 outbreak has also reduced Islamic bank financing.

The findings from this study are very important for Islamic banks and financial service authorities as policymakers. Profits, assets, and stability are some Islamic bank fundamentals that greatly affect the amount of Islamic bank financing. Islamic bank profits can be increased if Islamic banks are able to reduce intermediation costs which are relatively high compared to conventional banks. Intermediation costs can be reduced if banks are able to achieve economies of scale by increasing their assets. Furthermore, high

profits will be able to encourage banks to have strong stability.

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