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The Determinants of Islamic Banks' Non-Performing Financing in the Small-Medium Enterprises (SMEs) Sector

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Abstract: The performance of Islamic banks in financing activities is determined by many factors, including macroeconomic variables and internal factors, such as the financial performance of the bank. The study investigates the determinant of non-performing financing (NPF) of Islamic banks in Indonesia, particularly in Small-Medium Enterprises (SMEs) sector. Adopting the panel data analysis, the data comprise 33 provinces in Indonesia starting from 2016m1 to 2021m07, equal to a 2211 observation period. The study reveals that the size of the bank's asset and financing to deposit ratio (FDR) of Islamic banks has a significant relationship to NPF value in SMEs sector, and the impact remains unchanged in the period before and during the COVID-19 pandemic. From the regional viewpoint, the size of the bank's assets also has a significant influence on NPF in the provinces located in Java but not outside of Java. As a policy implication, the study suggests that the size of a bank's assets must be enhanced with prudent risk management in financing activities in the SME sector. Surely, the policy can be implemented in a top-down approach through government and financial authority; then it also can be applied bottom-up approach through the bank's business activities. Finally, as the limitation of the research, the study only utilizes limited variables and uses a single-country analysis which can be improved and extended for future study.

Keywords: Islamic bank; SMEs; Panel Data Analysis; NPF
JEL Classification: E00; G00; G20

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Introduction

As an intermediary institution, Islamic banks have a pivotal role in channeling the funds from the deficit unit to the surplus unit. This role can also ascertain how Islamic banks can support the deficit units to perform an economic activity. However, during the current economic turmoil due to the COVID-19 pandemic effect either in the financial and real sectors, the performance of economic players, including Islamic banks in the financial system is then questioned on how the performance of Islamic banks financing to the deficit units, especially in response to the regional inflation. Theoretically, Haberler (1974) stated that inflation is a reflection of an increase in the price of goods and services. In terms of the relationship between inflation and the business cycle, Haberler (1974) added that a moderate level of inflation possibly increases the level of economic growth as long as the price of goods and services in the market is still above the

cost of production. Moreover, Kiyotaki and Moore (1997) explained that the economic condition affects the credit activities performed by the borrowers and lenders. During unstable financial circumstances, borrowers' ability to return their loans is uncertain, whereas during a stable and growing economy, the ability to return the loan will be higher.

In contrast, Bernanke, Gertler, and Gilchrist (1998) argued that credit activities are the one that influences macroeconomic conditions, referring to the 1930s great depression experience in which the credit market exacerbated the macroeconomic condition at that time. Both arguments show that macroeconomic conditions can influence credit risk, but at the same time, NPLs at a certain level can also worsen the economic condition.

From the perspective of business performance, internal financial performance determines how a financial institution, such as banking performance, responds to the economic circumstance. For instance, Boyd and Runkle (1993) stated that bank size has a pivotal role in banking performance. The term "too big to fail" explains that a big-size bank is less likely to be bankrupt compared to the smaller one. The big-size bank has the power to diversify the financing activities, better liquidity to manage the asset as well as possibly create a contagious effect when it is bankrupt, and then the bank also tends to be protected by the government. In the opposite argument, a big-size bank possibly takes a position as a risk-taker which means the bank has more risk exposure than a smaller one (Boyd & Runkle, 1993). Therefore, big-size bank has more risk, and it potentially creates an adverse effect on banking performance, such as a high non-performing financing rate when the bank fails to manage the risk. Regarding the issue of the bank's risk performance, the question is then arising of how the bank can manage the risk, particularly in the non-performing risk in the SMEs' financing.

Therefore, this study is aimed to investigate the determinant of Indonesian Islamic banks' non-performing financing in the SME sector. The reasons to select Indonesia as the object of study is spurred by three reasons; (1) Indonesia is considered to have a robust financial system that can be seen from the global financial crisis history in which the country could defend and recover well from the crisis either in global financial crisis 2008 and Asian financial crisis 1997/1998 (Khattak et al., 2021). (2) Indonesia had a dual banking system since the first establishment of the non-interest-based bank in 1992 (Islamic bank was renowned as bank performing non-interest banking activity at that time by the formal regulation under National Law No.7 of 1992). Currently, Islamic banks are comprehensively regulated under National Law No. 21 of 2008 and also have a market share of more than 5% in the Indonesian banking industry (Khattak et al., 2021). (3) Furthermore, Indonesia is one of the most developed countries in Islamic finance development, including in the Islamic banking sector (Ernst and Young, 2016), and Indonesia is also confirmed as the most populous moslem country that makes the country has a prospective market for the growth of the Islamic finance development (Trinugroho et al., 2018). (4) SMEs in Indonesia have a significant role in economic development where about 90% of employment is created in the SMEs sector, and the contribution of SMEs to Economic growth reaches roughly 10% (Asmy et al., 2020).

The contribution of the study consists of two aspects. Firstly, the study comprehends the previous literature conducted by Iriani & Yuliadi (2015), Ibrahim & Rahmati (2017), who stated that the bank's non-performing loan is influenced by macroeconomic variables, including the inflation rate. The aforementioned findings are also the same as Lin et al. (2016), who studied the Indonesian banking industry and concluded that Islamic banks' non-performing financing did not have a significant relationship to the inflation rate but not to the conventional bank. On the other hand, Aviliani et al. (2015), Nursechafia and Abduh (2014), Erdinç and Gurov (2016), and Firmansyah and Gunardi (2018) found that inflation has a negative and significant effect on Islamic banks' non-performing financing. In contrast, Klein (2013) and Abid et al. (2014) found it has a positive and significant relationship to the bad loan of banks. In addition, a study that concerns the issue of financing activities in SMEs is already conducted by Raza et al. (2017), who adopted a qualitative approach that emphasizes the issue of the opportunity of the Islamic banking sector to finance SMEs. The similar issues are also studied by Fakhrunnas (2020) and Priyadi et al. (2021), who concluded that inflation and economic growth affect SMEs' financing. However, the studies only focus on Islamic rural bank operation, which has less dominant financing to SMEs compared to an Islamic bank.

Moreover, Widarjono et al. (2020) stated that a larger Islamic bank has more benefits in diversifying the financing activities. Hence, the bank is considered to have better risk management compared to a smaller bank, particularly in Java Island. Other related financial performances, such as financing to deposit ratio and asset size of the banks, possess a pivotal role in determining the Islamic bank performance, particularly in NPF value (Sutrisno et al., 2020; Anto et al., 2022). The impact of Islamic banks' assets on banking performance is also highlighted by Ibrahim and Rizvi (2017), who employed cross countries analysis and the impact of financial performance on Islamic bank financing for SMEs studied by Aysan et al. (2016) in the case of Turkey. Most of the previous empirical studies above mentioned the measurement of the bad loan performance by the banks that were generally carried out during stable economic conditions but not in a turmoil situation.

Secondly, the study is expected to contribute for a new perspective in assessing the determinant of Islamic banks' NPF. In terms of the previous literature that analyzed Islamic banks' bad loans amidst the COVID-19 pandemic, Elnahass et al. (2021) found that Islamic banks suffered from the COVID-19 pandemic that can be seen from lower financial performance as well as facing higher asset risk. The finding is similar to Sutrisno et al. (2020), who also highlighted the negative impact of the COVID-19 pandemic on Islamic banks' performance in Indonesia. Moreover, Fakhrunnas et al. (2021) and Anto et al. (2022) attempted to explain the relationship between Islamic banks' non-performing financing in home financing to regional inflation before and during the COVID-19 pandemic with adopting a dynamic panel data. However, the prior studies did not explain how Islamic banks' performance in the SME sector by covering before and during the outbreak as well as analyzing the regional approach in the case of Indonesia. Therefore, to the best of our knowledge, the study of the determinant of Islamic bank's NPF remains meagre and need to be examined properly.

The motivation of the study is also expected to provide empirical information for Islamic banks' stakeholders on how Islamic banks reacted before and during the Covid-19 period. Therefore, the stakeholders, especially the financial authority, is able to issue appropriate policy to respond to the current situation.

In terms of the sequence of the study, the next sections discuss data and method then it is continued with the result and discussion. Finally, the conclusion is the end of the section that depicts the findings of the study as well as suggests the necessary financial policy for the betterment of the Islamic finance industry.

Research Method

In order to examine the determinant of Indonesian Islamic banks' non-performing financing in the SME sector, the study utilizes panel data retrieved from Indonesian financial service authority and Indonesian statistics. The data is taken on monthly bases from January 2016 to July 2021 at the province level. With a total number of 33 provinces, the study consists of a 2211-observation period. Moreover, to examine the impact of the COVID-19 pandemic, then the data is separated into two periods which are October 2018-February 2020 (Before the COVID-19 pandemic) and March 2020-July 2021(During the COVID-19 pandemic).

The model of the study is adapted from Kiyotaki and Moore (1997) and Boyd and Runkle (1993), who stressed the theory of business cycle and internal financial performance, which affect the bank's risk management. In addition, the estimation of the model is explained as follows;

$$NPF_{it} = \beta_0 + \beta_1 INF_{it} + \beta_2 FDR_{it} + \beta_3 ASST_{it} + \varepsilon_{it}$$

Where,

NPF_{it} : The percentage of non-performing financing compared to total financing in Islamic banks in the time *t* and province *i*

INF_{it} : The percentage of regional inflation rate at the province level in the time *t* and province *i*

FDR_{it} : The percentage of total financing to the total deposit of Islamic banks in the time *t* and province *i*

$ASST_{it}$: The total asset of Islamic banks in the time *t* and province *i*

ε_{it} : Error term

In detail, the variable of NPF is then separated into two, which are Islamic bank's NPF in equity financing (NPFE) and in investment financing (NPFI) for SMEs. In the analysis, both NPFE and NPFI are grouped as Model 1 and Model 2, respectively.

In addition, panel data analysis using Fixed Effect Model (FEM) is adopted in this study to assess the determinant of Islamic banks' NPF in the SME sector concerning the outbreak and regional approach. Then, following Ibrahim and Rizvi (2017) and Elnahass et al (2021),

the study utilizes the robustness check that is applied to check the consistency of the result using the Generalized Method of Moment (GMM) as suggested by Holtz-Eakin et al., (1988) and Arellano and Bond (1991).

Result and Discussion

Table 1 explains the description of all-period data before and during the COVID-19 pandemic. According to the table, it can be seen that both NPF in equity and investing have a higher percentage during the COVID-19 pandemic compared to all periods and before the outbreak. It reflects that during the pandemic, the bank is facing higher risk exposure which results in a higher percentage of NPF. Moreover, the percentage of inflation during the COVID-19 pandemic is considered to be low, at 0.26%, averagely, which possibly reflects a decrease in purchasing power by society during the outbreak. In contrast, the financing activities compared to the deposit ratio remains stable in all periods with an average of 108%-109%, and the size of Islamic banks has been growing time by time, including during the COVID-19 pandemic period.

Table 1 The Result of Data Description

Variable	All Period				Before Outbreak				During Outbreak			
	Mean	**Max**	**Min**	**Std. Dev.**	**Mean**	**Max**	**Min**	**Std. Dev.**	**Mean**	**Max**	**Min**	**Std. Dev.**
NPFE	7.3%	100%	0%	6.6%	6.8%	420%	0%	5.8%	0.075	420%	0%	6%
NPFI	6.2%	100%	0%	5.2%	6.1%	260%	0%	4.6%	0.067	280%	0%	5.5%
INF	0.29%	4.2%	-3.03%	0.66%	0.31%	3.22%	-2.74%	0.66%	0.26%	3.6%	-1.88%	0.62%
FDR	108%	277%	25%	44.7%	108%	238%	29%	44.6%	109%	241%	26%	45.6%
ASSET	IDR 7.9	IDR 13.0	IDR 5.1	IDR 1.6	IDR 7.9	IDR 13.0	IDR 5.1	IDR 1.5	IDR 14,220.4	IDR 434,579.6	IDR 175.3	IDR 43,732.8
Note: The amount of the asset is in IDR Billion												

Table 2 The Result of Correlation Test

Variable	NPFE	NPFI	INF	FDR	ASST
NPFE	1.000	0.276	0.035	-0.004	-0.176
NPFI	0.276	1.000	0.051	0.039	-0.154
INF	0.035	0.051	1.000	-0.061	0.094
FDR	-0.004	0.039	-0.061	1.000	-0.200
ASST	-0.176	-0.154	0.094	-0.200	1.000

In terms of correlation analysis, table 2 exhibits that the highest correlation value is 0.2 between FDR and ASSET, it means both variables have the strongest relationship compared to others. Moreover, there is no correlation value between the two variables, which has the same or more than 0.8. From the result, it can be interpreted that there is no correlation issue among the observed variables.

Table 3 The Result of Fixed Effect Regression

Variable	All Period		Before Outbreak		During Outbreak	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
INF	0.001	0.002	-0.003*	-0.005**	0.005	0.006
	(0.595)	(1.205)	(-1.903)	(-2.137)	(0.912)	(1.594)
FDR	0.001	0.004**	-0.009*	0.000	-0.005	0.002
	(0.184)	(2.241)	(-1.751)	(0.156)	(-1.203)	(0.591)
ASSET	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(-7.411)	(-9.700)	(-3.128)	(0.000)	(-5.225)	(-6.640)
C	0.075***	0.059***	0.082***	0.063***	0.083***	0.066***
	(15.054)	(29.300)	(13.960)	(0.003)	(16.711)	(21.229)
R-squared	0.061	0.063	0.146	0.153	0.043	0.038
F-statistic	1.353**	1.387***	1.057	0.236	2.222**	1.963**

Note: The symbols of ***, ** and * reflect the significance level at 1%, 5% and 10% for each. The number in the bracket expresses the t-statistic value.

Furthermore, the result of FEM is explained in Table 3. According to the finding, during all periods, inflation does not have a significant influence on NPF in all models. The finding is different from Fakhrunnas et al. (2021), and Anto et al. (2022) stated that inflation is the determinant of NPF's value in the Indonesian Islamic bank. Moreover, FDR has a positive and significant impact on NPF in investment financing. It reflects that a higher percentage of NPF in investment financing tends to increase NPF. In line with Sutrisno et al. (2020), with a lack of risk management in performing financing activities, the risk of financing tends to be higher, and it directly impacts banking performance.

In addition, the size of Islamic banks has a positive and significant relationship to NPF in all models of SME financing. A positive relationship indicates that when the bank's asset size increases, the value of NPF in equity and investment financing for SME sectors increase as well. The finding is in contrast to Ibrahim and Rizvi (2017), who stated that Islamic banks tend to have a better performance if the bank has a higher size. Similar to Boyd and Runkle (1993) argument, by possessing a higher size, the bank possibly tends to be a risk taker, and only the bank has a lack of risk management potentially

underperformed. It means in all periods, an Islamic bank is possibly not prudent when giving equity and investment financing to SMEs.

Before and during the outbreak, the asset of Islamic banks has the same influence as it occurs in all periods, either in model 1 or model 2, in which a higher size of Islamic bank tends to have a higher NPF in the SME sector. Once no other variable has a significant relationship in both models during the outbreak except the asset of the Islamic bank, inflation has a negative and significant relationship to NPF in all models. It indicates that lower inflation is possibly due to less purchasing power possessed by society to buy products and services provided by SMEs. As a result, such condition creates a higher possibility for SMEs to return the financing amount to the Islamic bank (Fakhrunnas et al., 2021). The finding is also in line with what was found by Aviliani et al. (2015), Nursechafia and Abduh (2014), Erdinç and Gurov (2016), and Firmansyah and Gunardi (2018), who concluded that inflation has a negative and significant effect stated that inflation has a negative relationship to Islamic banks' NPF.

Regarding the negative impact of FDR on NPF in equity financing before the pandemic occurs, an increase of 1% FDR will decrease 0.009% of NPF in equity financing for SMEs. It indicates that a higher percentage of FDR lessens the non-performing financing in the SME sector. The finding is also the same as Sutrisno et al. (2020), who found FDR is the determinant of Islamic banking performance. Moreover, that negative relationship also portrays the condition before the outbreak in which Islamic bank performed better risk management in channeling the funds through SMEs equity financing compared to other periods.

Considering the regional performance of Islamic banks' financing for SMEs, the study divides the analysis into two separate samples; (1) Islamic banks located in Java Island that consist of six provinces and (2) Islamic banks located outside Java Island that consist of twenty-seven provinces. In general, Islamic bank size has a positive and significant relationship in Java Island. It confirms that size becomes the determinant of NPF in SMEs. However, Islamic banks consider its positive effect because a higher asset size of an Islamic bank tends to worsen the performance of NPF. The condition is possibly due to imprudent financing activities of Islamic banks, and as mentioned by Boyd and Runkle (1993), the excessive financing might be the reason why the bank possessing a higher asset size has excessive risk exposure. In contrast, Islamic banks' NPF outside Java Island has no significant relationship to NPF. As mentioned by Widarjono et al. (2020), this circumstance is possibly caused by the small amount of asset size of Islamic banks outside Java Island, which only contribute roughly 40% of economic activities to the Indonesian economy.

Moreover, FDR becomes the determinant of the Islamic bank's NPF in Java Island as it is outside Java Island in model 2 during the observation of all periods. The finding is supported by Sutrisno et al. (2020), who found the same result. However, the influence of FDR on Java Island negatively affects NPF, while outside Java Island has the opposite influence. It portrays that in terms of total financing to deposit ratio, the Islamic bank in Java Island performs better in tackling imprudent issues compared to all provinces

Table 4 The Result of Fixed Effect Regression (Regional Approach)

Variable	JAVA						OUTSIDE JAVA					
	All Period		Before Oubreak		During Outbreak		All Period		Before Oubreak		During Outbreak	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
INF	0.000	0.007	-0.001	0.000	0.016	-0.001	0.002	0.002	-0.001	-0.002	0.005	0.008**
	(-0.031)	(1.340)	(-0.200)	(-0.004)	(0.705)	(-0.047)	(1.034)	(1.134)	(-0.265)	(-0.590)	(1.048)	(2.028)
FDR	-0.024*	0.013	-0.032**	-0.019	-0.053**	0.070**	0.000	0.005*	-0.008	0.004	-0.003	0.001
	(-1.689)	(0.867)	(-2.094)	(-1.522)	(-2.293)	(2.355)	(-0.040)	(1.897)	(-1.289)	(0.783)	(-0.580)	(0.096)
ASSET	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**	0.000	0.000	0.000	0.000	0.000	0.000
	(-6.200)	(-5.696)	(-5.069)	(-4.884)	(-2.739)	(-2.613)	(-0.463)	(-0.701)	(-0.314)	(-0.247)	(0.382)	(-0.455)
C	0.091***	0.054***	0.096***	0.077***	0.112***	0.016	0.077	0.058***	0.081***	0.059***	0.082**	0.065***
	(6.530)	(3.895)	(6.077)	(5.870)	(6.160)	(0.552)	(18.484)	(18.701)	(10.413)	(9.727)	(10.719)	(9.756)
R-squared	0.165	0.152	0.290	0.253	0.227	0.199	0.021	0.023	0.035	0.024	0.017	0.023
F-statistic	2.044***	1.854***	3.609***	2.994***	2.468***	2.089**	1.066	1.158	1.433	0.978	0.697	0.959

Note: The symbols of ***, ** and * reflect the significance level at 1%, 5% and 10% for each. The number in the bracket express t-statistic value.

Table 5 The Result of GMM Test

Variable	Model 1	Model 2
NPF(-1)	0.038	0.046
	(1.322)	(0.950)
INF	0.001	0.002
	(0.224)	(0.622)
FDR	-0.008	-0.001
	(-1.814)	(-0.211)
ASSET	0.000***	0.000***
	(-3.139)	(-3.626)
J-Statistic	30.071	28.015
AR (2)	1.122	1.183

Note: The symbols of ***, ** and * reflect the significance level at 1%, 5% and 10% for each. The number in the bracket express t-statistic value.

outside Java Island. It may occur because financing activities on Java Island have more diversification in terms of the use of the contract compared to those outside Java Island (Widarjonoet al., 2020). Outside Java Island, the Islamic bank's NPF for investment financing in the SMEs sector also still has exposure to inflation risk. Nevertheless, it does not occur on Java Island.

Finally, a robustness check is conducted to examine whether the same result is present when the different analytical tools are implemented. By adopting the GMM approach, as proposed by Hotz-Eiken, Newey, and Rosen (1998) and Arellano and Bond (1991). According to the GMM result, the size of the Islamic bank has a positive and significant influence on the Islamic bank's NPF in both models. Generally, the result emphasizes the FEM's finding, which stated that the size of Islamic banks becomes the determinant of Islamic banks' NPF in the SME sector.

Conclusion

The paper aims to investigate the determinant of the Islamic bank's non-performing financing in SME sectors, particularly in equity and investment financing. The finding of the study reveals that the size of Islamic banks' assets consistently influence NPF in SME sector in all periods, before and during the pandemic. Moreover, inflation negatively influences NPF in all models before the pandemic only, and it is the same for the financing-to-deposit ratio.

From the regional viewpoint, Islamic banks' size has a positive and significant relationship to NPF in Java Island during all periods, before and during the pandemic, while the financing-to-deposit ratio also impacts NPF even though it has a diverse direction in a certain period. Only inflation affects the Islamic banks' NPF in the SME sector for investment financing during the COVID-19 pandemic outside Java Island, while other variables have no significant effect. The robustness check through the GMM approach generally explains that the size of an Islamic bank's asset has a positive relationship with non-performing financing value in the SME sector.

According to the findings, the study contributes to the development of Islamic banking and finance studies in two ways; (1) comprehend the previous literature regarding how the performance of non-performing financing in Islamic banks and (2) provide a new insight to highlight the determinants of NPF in SMEs sector with comparing before and during the COVID-19 outbreak. As an implication of the results, a higher size of Islamic bank has a higher rate of NPF in the SME sector. The findings indicate that an Islamic bank possessing a bigger asset tends to be a risk taker compared to a smaller Islamic bank. Moreover, a bigger size of Islamic bank may not have proper risk management, which lets the bank for having more NPF value. According to the findings, Islamic bank needs to have a robust risk management system in financing SME sectors. Since SME financing is riskier, financing criteria need to be tightened to ensure that SMEs can return the financing funds as well as share the profit. For the policy maker, the financial authority needs to supervise

the Islamic banking performance, particularly in SME financing. Some regulations are required to strengthen the risk management process of Islamic banks.

Lastly, the paper still has limitations, particularly in the use of limited variables. Therefore, the future study needs to increase the number of observed variables and build more robust empirical research model to examine the determinant of Islamic banks' NPF in the SME sector. These improvements are believed to be needed to bring the study to the next level.

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