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The Influence of Internal and External Factors on Non-Performing Financing at Islamic Commercial Banks in 2018-2022

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ABSTRACT

Financing is one of the main functions in Islamic banking, the risk that can occur in such financing is Non-Performing Financing (NPF). This study aims to determine the factors that affect the NPF of Islamic commercial banks in the period 2018-2022, the variables used in this study are Capital Adequacy Ratio (CAR), Financing to Deposit Ratio (FDR), Inflation, and Gross Domestic Product (GDP), this study uses a quantitative approach, using panel data regression analysis with the Generalized Least Square (GLS) estimation method. Partially, the CAR variable has a positive effect on NPF, the FDR variable hurts NPF, while the Inflation and GDP variables do not affect NPF. Based on analysis and discussion, the Capital Adequacy Ratio (CAR) hurts Non-Performing Financing (NPF). This indicates that the higher the CAR of a bank, the more credit can be given to the public. Banks can finance their assets with higher CARs without the risk of bad loans affecting the health of Islamic banks.

Introduction

People are becoming more interested in Islamic banks due to their interest-free system and use of profit-sharing mechanisms. The various types of financing and fundraising options provide customers with many choices. The services offered adhere to Islamic law and are free from elements of usury (riba), uncertainty (gharar), and haram (prohibited). Financing in Islamic banks is a primary source of income. However, the distribution of financing carries various risks, such as economic crises that may cause customers to be unable to pay or delay payments.

Islamic banks channel customer funds through investments and financing. The financing products offered by Islamic banks can be utilized by customers in need of funds and who meet the specified requirements. The increasing growth in financing becomes a major driver of the bank's profits and profit-sharing system. Larger funds from cost-sharing contribute to the profitability of Islamic banks. (Effendi et al., 2017).

As a business entity, Islamic banks aim to optimize profits that can be achieved by expanding distribution and reducing costs. Distribution expansion can be an effective strategy for increasing market share and customer reach. However, credit risks may arise during distribution expansion if the bank is not careful in conducting risk analysis and taking measures to mitigate such risks.

The Non-Performing Financing (NPF) ratio is used to evaluate how well the management of an Islamic bank handles problematic financing by balancing productive assets. NPF is also a comparison between the amount of bad credit and the total financing provided by the bank (Ratugfirli & Sugiyanto, 2020).

The Capital Adequacy Ratio (CAR) illustrates the bank's capacity to bear losses from its risky assets. The purpose of CAR is to ensure that the bank has sufficient capital to cover losses due to bad loans, fulfill obligations to customers, and maintain financial stability.

The Financing to Deposit Ratio (FDR) is a liquidity component. FDR explains how a bank compares Third-Party Funds (DPK) to the amount of loans provided, and this can be calculated using this ratio (Tsania et al., 2022).

Inflation is a phenomenon of a continuous increase in prices, bringing negative consequences for society. Rising inflation results in a decrease in real income, causing the purchasing power of the public to decline, which has implications for reducing the ability of the public to meet basic needs and fulfill financial obligations (Nuraliyah, 2021). Such fluctuations are a normal part of everyday life.

Gross Domestic Product (GDP) is an economic measure that calculates the market value of all final products, namely goods and services made within a country over a certain period. A country's economic well-being is reflected by GDP. An increase in GDP indicates higher productivity, which drives sales and boosts trade. (Soekapdjo et al., 2019). Economic improvement alongside rising public income encourages debtors to repay loans to banks. Increased repayment rates will reduce bad credit. (Purba & Darmawan, 2018).

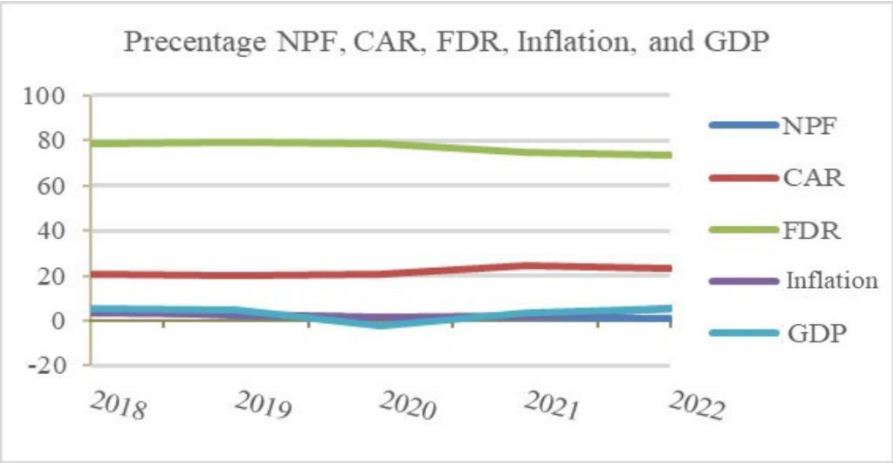


Figure 1
NPF, CAR, FDR, Inflation, and GDP Graph in Islamic Commercial Banks

According to the figure above, the NPF ratio tends to decrease from 2018 to 2022. In 2018, it stood at 4.27%, which is considered a good indicator as it remains below 7%. In the following years, the ratio stayed below 7%, indicating that the bank's condition was still healthy and performing well. However, credit risk can arise, potentially increasing the NPF value. Financing risk occurs when the debtor or another party fails to fulfill their obligations to the bank. One of the factors contributing to the decline in NPF in Islamic Commercial Banks (BUS) is the increase in financing, the decrease in inflation, and the stability of interest rates.

Many studies have examined the influence of various NPF variables. Research by (Wijaya, 2023)Found that the CAR variable affects NPF, while Purnamasari & Mushdholifah (2016) found no effect. (Wijaya, 2023) Found that the FDR variable influences NPF, while research by Fatimah & Izzaty (2022) showed no effect. (Nugrohowati & Bimo, 2019) Demonstrated that inflation has no impact on NPF, while other studies, such as (Bakhtiar Purkon et al., 2023), indicated that inflation does influence NPF. Studies by Damahur et al. (2018) and Arinda et al. (2022) found that GDP affects NPF, whereas Kuswaharini et al. (2022) and Purwaningtyas (2020) found no significant effect of GDP on NPF.

Previous studies have identified several variables influencing the NPF of Islamic commercial banks. To fully understand these factors, further research is necessary. The purpose of this study is to determine the influence of CAR, FDR, Inflation, and GDP on NPF in Islamic Commercial Banks during 2018-2022.

Method

This study is basic research, using a quantitative approach. The data was processed using EViews 12 through panel data regression analysis. Panel data combines cross-sectional and time-series data. (Basuki & Suwarno, 2021). The best model approach for estimating panel data regression, namely the Random Effect Model (REM), was determined through a series of statistical tests, including the Chow Test, Hausman Test, and Lagrange Multiplier Test. The REM was selected after considering alternative models, including the Common Effect Model (CEM), Fixed Effect Model (FEM), and REM itself.

This research utilized the annual financial reports of Islamic Commercial Banks for 2018–2022. Data was collected through literature reviews, journals, articles, bank financial reports, and publications from BPS (Statistics Indonesia) and OJK (Financial Services Authority). The study sample consists of 10 Islamic Commercial Banks out of the 13 registered with OJK. These banks were selected based on the availability of complete financial reports for the 2018-2022 period and the completeness of the necessary research data.

This study investigates various internal and external bank components. The independent variables used in this research include internal bank factors, such as Capital Adequacy Ratio (CAR) (X_1) and Financing to Deposit Ratio (FDR) (X_2). External bank factors include Inflation (X_3) and Gross Domestic Product (GDP) (X_4). The dependent variable in this study is Non-Performing Financing (NPF).

Descriptive Analysis

Descriptive analysis is a research method used to describe, present, and summarize the data.

Panel Data Regression Model Selection Test

1. Chow Test

This test compares and determines whether to use the Common Effect Model or Fixed Effect Model for panel data analysis, based on the hypothesis:

H0: Common Effect Model.
H1: Fixed Effect Model.

The null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted, as the value of F hit > Fα, indicating the Fixed Effect Model (FEM) is the chosen model.

2. Hausman Test

In this step, statistical tests are used to determine the most suitable model between the Fixed Effect Model and the Random Effect Model. The hypothesis is as follows:
H0: Fixed Effect Model.
H1: Random Effect Model.

The result shows H hit < Chi-Square, leading to the selection of the Random Effect Model (REM).

Lagrange Multiplier (LM) Test

The Lagrange Multiplier (LM) Test is used to determine whether the Random Effect Model is more suitable than the Common Effect Model for panel data analysis. The hypothesis is as follows:
H0: Random Effect Model.
H1: Common Effect Model.

The Breusch-Pagan probability value is 0.0000 < 0.05, indicating that the best model to use is the Random Effect Model (REM).

Random Effect Model (REM)

Panel data is estimated using this model, where the disturbance variables may be correlated between individuals or across time. Each company accommodates error terms within the REM. The advantage of using REM is that it eliminates heteroskedasticity. This model is also known as the Error Component Model (ECM) or Generalized Least Square (Basuki, 2021).

Panel Data Regression Equation

The panel data regression equation for this research is:

$$NPF_{it} = \alpha_{it} + \beta_1 CAR_{it} + \beta_2 FDR_{it} + \beta_3 INFLATION_{it} + \beta_4 GDP_{it} \epsilon_{it}$$

i = Cross-sectional unit
t = Period year

Classical Assumption Test

Since this research uses the Generalized Least Square (GLS) estimation method, the classical assumption tests used are only normality and multicollinearity.

Normality Test

This test ensures that the linear regression model can be used for confirmation or prediction. It is important to test the normality of the residual data distribution.

Multicollinearity Test

Multicollinearity indicates a strong correlation ($r > 0.90$) between two or more independent variables within a model.

Hypothesis Testing (T-Test)

After formulating the hypothesis, hypothesis testing is conducted. This involves using sample data to test the statistical hypothesis of a population (Niuryadi et al., 2017).

Coefficient of Determination (R^2)

The coefficient of determination (Adjusted R^2) is a measure of how much the independent variables explain the dependent variable's behavior (Ghazali, 2018). The larger the value of the coefficient of determination, the better the independent variables explain the dependent variable's behavior.

This study employs the following research model:

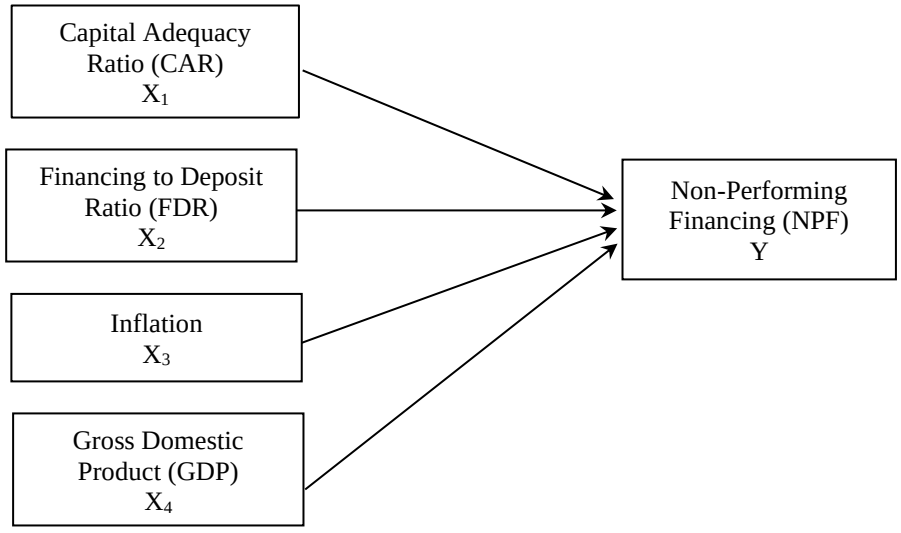


Figure 2
Research Model

Results and Discussion

Descriptive Analysis

Table 5
Descriptive Analysis Results

	NPF	CAR	FDR	INFLATION	GDP
Mean	0.015938	0.295040	0.849710	0.028080	0.034260
Median	0.011650	0.240300	0.865850	0.030300	0.050200
Max.	0.049500	1.496800	1.967300	0.042100	0.053100
Min.	0.000200	0.123400	0.383300	0.015600	-0.020700
Std. Dev.	0.015123	0.203348	0.219361	0.009385	0.028361
Skewness	0.662028	4.306034	2.294996	0.107289	-1.355107
Kurtosis	2.116673	25.62854	15.04901	1.788644	3.027963
Jaque-Bera	5.277898	1221.288	346.3473	3.152971	15.30425
Prob.	0.071436	0.000000	0.000000	0.206700	0.000475
Sum	0.796900	14.75200	42.48550	1.404000	1.713000
Sum Sq. Dev.	0.011207	2.026162	2.357842	0.004316	0.039413
Observation	50	50	50	50	50

a. As seen in the table above, the CAR variable (X_1) has a minimum value of 0.1234 and a maximum value of 1.4968. The mean value is 0.2950, and the standard deviation is 0.2033.
b. The FDR variable (X_2) has a minimum value of 0.3833 and a maximum value of 1.9673. The mean value is 0.8497, and the standard deviation is 0.2193.
c. The Inflation variable (X_3) has a minimum value of 0.0156 and a maximum value of 0.0421. The mean value is 0.0280, and the standard deviation is 0.0093.
d. The GDP variable (X_4) has a minimum value of -0.0207 and a maximum value of 0.0531. The mean value is 0.0342, and the standard deviation is 0.0283.

Panel Data Regression Model Selection Test

Table 6
Chow Test Results

ffect Test	Statistic	d.f.	Prob.
Cross-section F	15.897316	(9,36)	0.0000
Cross-section Chi-square	80.214525	9	0.0000

Based on the data analysis, the fixed effect model is more appropriate than the common effect model. This is based on the results of the Chow test, which shows a probability value of 0.000 < 0.05, indicating that the null hypothesis is rejected. Furthermore, the probability values of cross-section F and Chi-square are both less than alpha 0.05, suggesting that the fixed effect model is better suited for explaining the analyzed data. A Hausman test is conducted to confirm this conclusion and ensure that the fixed effect model is the most appropriate.

Hausman Test

Table 7
Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random	0.397601	4	0.9827

Through the Hausman test, we can compare and select the most suitable model between fixed effect and random effect models. This decision is based on the probability value of the cross-section random test. If the p-value < 0.05, the chosen model is the random effect model. The Hausman test is used to compare or choose the best model between the fixed effect and random effect models, done by looking at the probability value for the cross-section random to select the best model.

Lagrange Multiplier (LM) Test

Table 8
Lagrange Multiplier (LM) Test Results

	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	54.06833	2.594293	56.66262
	(0.0000)	(0.1072)	(0.0000)
Honda	7.353117	-1.610681	4.060515
	(0.0000)	(0.9464)	(0.0000)
King-Wu	7.353117	-1.610681	2.738608
	(0.0000)	(0.9464)	(0.0031)
Standarized Honda	7.924388	-0.958856	2.495227
	(0.0000)	(0.8312)	(0.0063)
Standarized King-Wu	7.924388	-0.958856	1.236342
	(0.0000)	(0.8312)	(0.1082)
Gourieroux, et al	-	-	54.06833
			(0.0000)

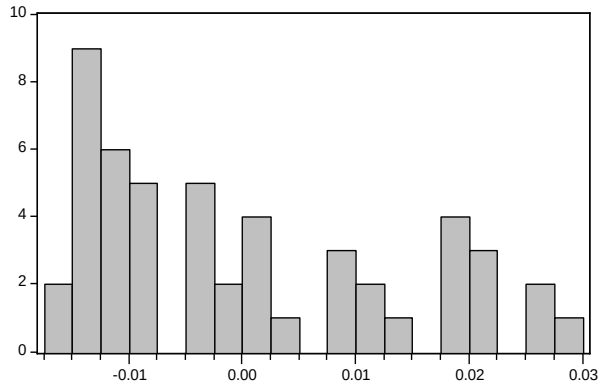
According to the table above, the Breusch Pagan (BP) probability value is 0.0000, lower than the alpha value of 0.05. This indicates the rejection of the null hypothesis. As a result, based on the LM test, the random effect model is the most appropriate to use.

Panel Data Regression Equation $Y = 0.009507 + (-0.016577)\ X_1 + 0.014109\ X_2 + 0.021398\ X_3 + (-0.037019)\ X_4$

a. The constant value is 0.009507, meaning that without the CAR (X_1), FDR (X_2), Inflation (X_3), and GDP (X_4) variables, the NPF (Y) variable will increase by 1%.
b. Based on the data processing results, the partial beta coefficient value of the CAR variable (X_1) is -0.016577. If other variables remain constant and decrease by 1%, NPF (Y) will decrease by 2%. Conversely, if X_1 increases by 1%, NPF (Y) will increase by 2%.
c. The beta coefficient value of the FDR variable (X_2) is 0.014109. If other variables remain constant and X_2 increases by 1%, NPF (Y) will decrease by 1%. Conversely, if X_2 decreases by 1%, NPF (Y) will increase by 1%.
d. The beta coefficient value of the Inflation variable (X_3) is 0.021398. If other variables remain constant and X_3 increases by 1%, NPF (Y) will decrease by 2%. Conversely, if X_3 decreases by 1%, NPF (Y) will increase by 2%.

e. The beta coefficient value of the GDP variable (X_4) is -0.037019. If other variables remain constant and X_4 decreases by 1%, NPF (Y) will decrease by 4%. Conversely, if X_4 increases by 1%, NPF (Y) will increase by 4%.

Normality Test



Series: Standarized Residuals	
Sample 2018 2022	
Observation 50	
Mean	2.10e-18
Median	-0.003086
Max.	0.028946
Min.	-0.017219
Std. Dev.	0.013812
Skewness	0.592835
Kurtosis	2.007304
Jaque Bera	4.981789
Prob.	0.082836

Figure 3
Normality Test Graph

Multicollinearity Test

Table 9
Multicollinearity Test Results

	X_1	X_2	X_3	X_4
X_1	1.000000	0.000346	0.132462	0.025448
X_2	0.000346	1.000000	-0.065809	-0.184226
X_3	0.132462	-0.065809	1.000000	0.579489
X_4	0.025448	-0.184226	0.579489	1.000000

The correlation coefficient between X_1 and X_2 is 0.000346 < 0.85, X_1 and X_3 is 0.132462 < 0.85, X_2 and X_3 is 0.065809 < 0.85, X_2 and X_4 is -0.184226 < 0.85, and finally, X_3 and X_4 is 0.579489 < 0.85. Thus, it can be concluded that the data is free from multicollinearity.

Table 10
Hypothesis Testing Results

Variable	Coefficient	Std. rror	t-Statistic	Prob.
C	0.009507	0.008071	1.177928	0.2450
X_1	-0.016577	0.006195	-2.675772	0.0104
X_2	0.014109	0.006590	2.140911	0.0377
X_3	0.021398	0.136403	0.156875	0.8760
X_4	-0.037019	0.045873	-0.806989	0.4239

a. The t-test results for the CAR variable (X_1) show a t-count value of 2.675772 > t-table value of 2.010635, and the significance value is 0.0104 < 0.05, indicating that H0 is rejected and H1 is accepted, meaning that CAR has a significant negative effect on the NPF of Islamic Commercial Banks in Indonesia.

b. The t-test results for the FDR variable (X_2) show a t-count value of 2.140911 > t-table value of 2.010635, and the significance value is 0.0377 < 0.05, indicating that H0 is rejected and H2 is accepted, meaning that FDR has a significant positive effect on the NPF of Islamic Commercial Banks in Indonesia.
c. The t-test results for the Inflation variable (X_3) show a t-count value of 0.156875 < t-table value of 2.010635, and the significance value is 0.8760 > 0.05, indicating that H0 is accepted and H3 is rejected, meaning that inflation does not significantly affect the NPF of Islamic Commercial Banks in Indonesia.
d. The t-test results for the GDP variable (X_4) show a t-count value of 0.0806989 < t-table value of 2.010635, and the significance value is 0.4239 > 0.05, meaning it does not significantly affect the NPF of Islamic Commercial Banks in Indonesia.

Coefficient of Determination (R^2) Test

Table 11
R^2 Test Results

R-squared	0.253651
Adjusted R-squared	0.187309
S.E. of regression	0.007040
F statistic	3.823371
Prob(F-statistic)	0.009284

With a coefficient of determination value of 0.187309, or 18.73%, the independent variables consisting of CAR, FDR, inflation, and GDP can explain 18.73% of the NPF variable in Islamic commercial banks. Other variables not included in this research model account for 81.27% (100-adjusted R-squared).

Effect of Capital Adequacy Ratio (CAR) on Non-Performing Financing (NPF)

The Capital Adequacy Ratio (CAR) variable has a significant negative effect on Non-Performing Financing (NPF), with a significance value of 0.0104 < 0.05. The NPF will decrease with a higher CAR. CAR is a bank's solvency ratio that shows how effectively a bank achieves its goals. The higher the CAR, the more credit can be provided to the public and to finance productive assets, reducing the impact of bad credit or NPF on the health of Islamic Commercial Banks in Indonesia.

Effect of Financing to Deposit Ratio (FDR) on Non-Performing Financing (NPF)

Based on the research results, the FDR variable has a significant positive effect on NPF, with a significance value of 0.0377 < 0.05. This aligns with (Wijaya, 2023), who found that FDR positively affects NPF. A higher FDR leads to an increase in NPF for Islamic Commercial Banks. The higher the FDR, the better a bank’s liquidity, while a lower FDR indicates inefficiency in distributing financing. The Financing Deposit Ratio (FDR) is a benefit for banking, but business involves risks and profits. If the FDR is managed carefully, it can be profitable. The level of FDR in Islamic banking is highly influenced by high levels of Non-Performing Financing (NPF). Without proper oversight, financing can become more difficult or slower.

Effect of Inflation on Non-Performing Financing (NPF)

The results show that inflation does not significantly affect NPF, with a significance value of 0.8760 > 0.05. Inflation reflects rising costs of goods and services. In this study, inflation does not affect NPF significantly, as Islamic banks generally have a profit-sharing system that can be adjusted according to customer needs. Islamic banks also use fixed installment credit that does not follow inflation, helping customers plan their finances and avoid payment defaults, thus not burdening customers with rising inflation.

Effect of Gross Domestic Product (GDP) on Non-Performing Financing (NPF)

The GDP variable, based on the partial test results, shows no significant effect on NPF, with a significance value of 0.4239 > 0.05. This aligns with previous studies by (Safitri & Suselo, 2023) and (Purwaningtyas et al., 2020), which found that GDP does not influence NPF. GDP reflects the increase and decrease in public income, which impacts the economy. According to the research, GDP does not affect NPF. Household consumption has increased as a result of Indonesia's economic growth, including major components of spending on education and health. Therefore, when linked to NPF, GDP has no effect because most household spending in Indonesia is allocated to education and health. Based on this analysis, GDP growth does not affect the size of NPF as the growth is uneven across sectors, meaning that GDP does not impact NPF.

Conclusion

Based on the analysis and discussion, the Capital Adequacy Ratio (CAR) hurts Non-Performing Financing (NPF). This indicates that the higher the CAR of a bank, the more credit can be provided to the public. The bank can finance its assets with a higher CAR without the risk of bad credit affecting the health of Islamic banks. The Financing to Deposit Ratio (FDR) has a positive effect on Non-Performing Financing (NPF). This shows that a higher FDR indicates better liquidity, while a lower FDR indicates inefficiency in financing distribution. Inflation does not affect NPF. This is explained by the fact that Islamic banks have a profit-sharing system and fixed installments, so customers are not burdened with rising inflation. Gross Domestic Product (GDP) does not affect NPF, as household consumption is mostly allocated to education and health, and thus GDP fluctuations have no significant impact on NPF.

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