

Analysis of Factors Affecting Financial Sustainability in Islamic Commercial Banks in Indonesia for the Period 2018-2023

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Abstract. The banking sector is highly dependent on public trust, so that when there are issues regarding the bank's unstable condition, the public will collectively withdraw their funds from the bank, which will affect the sustainability of a bank. This research aims to analyze the factors that influence financial sustainability in Sharia Commercial Banks in Indonesia in the 2018-2023 period using the independent variables Financial to Deposit Ratio (FDR), Capital Adequacy Ratio (CAR), and Non-Performing Financing (NPF), while the moderating variable is Return On Assets (ROA). The method used in this research is descriptive quantitative by analyzing secondary data processed using Eviews 12 with multiple linear regression methods with the MRA test and using annual panel data from 2018-2023. The results of the research are that FDR has an insignificant positive effect on FSR. CAR has an insignificant negative effect on FSR. NPF has a significant negative effect on FSR. ROA can moderate the influence of FDR on FSR. ROA can moderate the influence of CAR on FSR. ROA cannot moderate the influence of NPF on FSR.

Keywords: FDR; CAR; NPF; FSR; ROA

1. Introduction

The banking sector plays an important role in the success of a country's economy. Banks, as *financial intermediaries*, can be used as a benchmark to determine a country's progress (Simatupang, 2019). The banking sector is used as a place for capital investment and fund collection, so it is highly dependent on the trust of the public as users of banking services (Widyastuti, 2021). Therefore, when there are issues regarding the instability of banks, the public will collectively withdraw their funds from banks, which will affect the sustainability of a bank and worsen its condition.

OJK data shows that as of June 2023, the growth of Islamic financial assets in Indonesia reached IDR 2,450.55 trillion or around USD 163.09 billion as of June 2023. This figure shows a growth of 13.37 percent (yoy) with a *market share* of 10.94% of the national finance sector. This development shows that the Islamic finance sector plays an important role in economic growth, despite a slight slowdown. This is also evidenced by the growth of the Islamic banking market share by 7.31% of the national banking industry. This development is a contribution from 13 BUS, 20 UUS, and 117 BPRS. With a distribution of 65.78% BUS, 31.68% UUS, and 2.54% BPRS. Therefore, from this distribution, the researcher chose BUS as the object of research because BUS is the largest contributor to *the Islamic banking market share* in Indonesia.

Financial performance can be used as a measure to assess the development of banking in terms of *finance* by maintaining the health of banks and implementing good risk management (Widyastuti, 2022). This analysis was carried out because financial reports provide important information related to the condition and prospects of the company in the future (*sustainability*). Banks must continue to be *sustainable* or experience financial sustainability in an effort to support the Indonesian economy. *The Financial Sustainability Ratio* (FSR) is used as a measure of the sustainability of BUS. Therefore, FSR plays a very important role for a party to determine the level of sustainability in the future. Financial sustainability is considered good if the value exceeds 100%, which means that a bank's income must exceed its expenses (Saputri, 2019).

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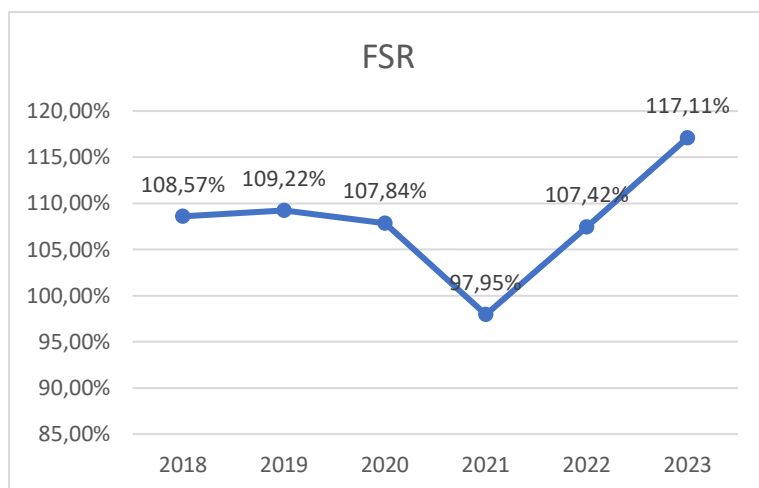


Figure 1. FSR BUS Statistical Data (2018-2023)

Financial sustainability measured using the FSR ratio at BUS is still unstable, as can be seen in Figure 1, which shows that there are still FSR ratios with values less than 100%, meaning that the amount of expenses incurred is greater than the amount of income. Saputri (2019) explains that although Islamic bank financing has increased, this increase has not been accompanied by positive performance, causing problematic financing to increase, which will have an impact on declining financial sustainability.

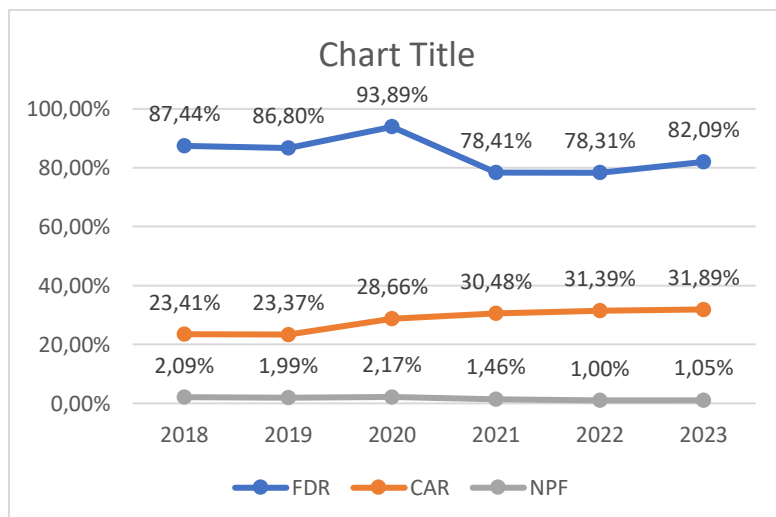


Figure 2. FDR, CAR, NPF BUS Statistical Data (2018-2023)

Financing carried out by Islamic banks certainly has risks that can cause liquidity problems. BUS uses the *Financial to Deposit Ratio* or FDR to estimate liquidity risk. Bank Indonesia has set the FDR at 80% to 100%. Therefore, when the FDR value is above or below 80%-100%, the bank is considered incapable of performing its role as an intermediary, as it could endanger customer deposits, thereby affecting the company's sustainability. In line with the research by Munandar & Aravik (2022), which states that FDR has a positive effect on FSR. However, this contradicts Saputri (2019), who shows that FDR has a significant negative effect on FSR.

The FDR value over a period of 6 years has been relatively unstable, as we can see in Figure 2, which shows that the FDR value at BUS has relatively decreased. Even so, the Islamic banking sector has the right structure and tools to fulfill its long-term responsibilities. Islamic banks consistently maintain their liquidity levels, as evidenced by Islamic bank loans supported by sufficient third-party funds (DPK). This is reinforced by the existence of banks that are able to act as good intermediaries because their FDR values are in the range of 80- 100%.

Another factor that affects *sustainability* is the *Capital Adequacy Ratio* (CAR). CAR plays a role in accommodating all possible risks of loss that a bank will experience in the future. A high CAR indicates that a bank is better at bearing the risks of each loan. This is in line with the research by Munandar & Aravik (2022), which states that CAR can significantly positively affect FSR. However, this is contrary to the research by Nurhikmah & Rahim (2021), which states that CAR has a significant negative effect on FSR.

The CAR value over the last 6 years has relatively increased, as we can see in Figure 2, where the increase in CAR value from year to year shows that banks are able to maintain the risk of each credit and productive assets that have risks. The CAR value can also be used by investors, regulators, and financial analysts to assess the financial health of banks. Banks with high CAR values are considered more stable and better able to cope with economic vic

pressures. In addition to FDR and CAR, there is another indicator that affects FSR, namely *Non- Performing Financing* (NPF). In financing distribution, risk factors cannot be avoided, including the risk of non-performing financing. The higher the NPF value of a bank, the greater the amount of non-performing financing that the bank must bear. A higher NPF value will have an impact on the formation of higher loss reserves, lower operating profits, and lower capital additions. Meanwhile, the impact on DPK is low returns on funds, which will result in a lack of customer trust, potentially causing them to switch to other banks (Kuswahariani et al., 2020). According to Bank Indonesia regulations, an NPF value of $< 5\%$ indicates that a bank is in good condition.

The NPF value at BUS over a period of 6 years tends to be less stable, as shown in Figure 2, where these non-performing loans are caused by the inability of customers to fulfill all or part of their obligations to the bank. This means that if there are large non-performing loans, the amount of losses that must be borne by the bank will be greater, which will affect the sustainability of a bank. This is in line with the research by Himawan & Pertiwi (2022), which shows that the NPF value has a negative and significant effect on the FSR. However, this contradicts the research by Alim (2018), which shows that the NPF value has a positive effect on the FSR.

In the banking sector, ROA is very important because it reflects the ability to earn profits through the use of capital, utilization of assets, and all resource capacities obtained from sales. This ratio is useful in adding asset utility to the bank. A high ROA provides opportunities for the company to grow. This study provides new information regarding the ROA variable used as a moderating variable. Where an increase in the ROA ratio will increase the productivity of assets that generate net income, thereby affecting the attractiveness of the company from an investor's perspective (Anggraeni, 2022). Based on the issues described above, the author wishes to conduct research on factors that can influence financial sustainability so that this research can be used as a reference to determine the development of financial sustainability at BUS.

2. Literature Review

The literature review was conducted to clarify the relationship between the independent variables, namely FDR, CAR, and NPF, and the dependent variable, namely FSR, moderated by the ROA variable, as explained below:

Munandar & Aravik (2022) explain that FDR has a significant positive effect on FSR, CAR has a significant positive effect on FSR, and BOPO has a significant negative effect on FSR. Saputri (2019) found that profitability has a significant negative effect, capital adequacy (CAR) has a significant positive effect, operational performance efficiency (BOPO) has a significant negative effect, liquidity (FDR) has a significant negative effect, and non-performing financing (NPF) has a significant negative effect on the sustainability of Islamic Commercial Banks. Meanwhile, Yuliawati et al (2020) found that in particular, CAR has an insignificant positive effect on FSR, ROA has an insignificant positive effect on FSR, BOPO has a significant negative effect on FSR, and NCOM has an insignificant negative effect on FSR. Then Himawan & Pertiwi (2022) stated that inflation, exchange rates, and FDR have no effect on FSR in Islamic banks, while the NPF variable has a significant negative effect on FSR. Alim (2018) stated that CAR, NPF, and net profit together have a positive effect on FSR. Meanwhile, Ayuningtyas et al. (2018) argue that CAR partially has a positive effect on FSR, and OER partially has a negative effect on FSR. Pratiwi & Nabila (2022) show that ROA is unable to moderate the effect of DPK, CAR, and FDR on Islamic Commercial Banks. Meanwhile, Wulandari (2022) states that ROA can strengthen the relationship with CAR. Therefore, the researchers conclude that there are several differences in the research results of the independent variables studied in FSR. There are also several differences in the research results regarding how ROA can moderate independent variables.

The relationship between FDR and FSR is that FDR acts as an intermediary in Islamic banking. An increase in the FDR ratio will increase the allocation of funding to the community. Then, with an increase in the FDR ratio, the company's profit opportunities will also increase if the bank is able to optimize its credit channels. A good financing ratio accompanied by a large amount of Third Party Funds (DPK) will indicate that the bank is in a good and healthy condition because Islamic banks will generate profits from the funds they collect for profit sharing. An increasing FDR value will increase the funds that will be channeled to TFD. High TFD will also increase the FSR. Thus, the higher the FDR value, the better the company is at optimally managing its intermediary function. Conversely, if the FDR value is low, the bank is not yet able to manage the bank optimally. Therefore, the hypothesis in this study is that FDR has a positive effect on FSR.

The relationship between CAR and FSR is that the capital adequacy ratio is used as a measure of capital for a bank's risk-weighted credit exposure. This ratio can increase stability to achieve financial system efficiency and protect depositors. Thus, the relationship between the capital adequacy ratio and the financial sustainability ratio at BUS is that the higher the CAR value, the better the sustainability level (FSR) at the bank. This is because banks with a relatively high capital adequacy ratio will have increased cash reserves, which will also increase the amount of financing. Better management capabilities followed by an increase in capital will affect the bank's financial ability to quickly meet operational and other costs. The bank will be able to maintain its position, which can be measured through its financial sustainability. However, conversely, low capitalization in a bank means that the bank is experiencing problems. This means that the bank is unable to manage its financial performance well. This can hinder

the sustainability of the company's performance or FSR in the future. Therefore, the hypothesis in this study is that CAR has a positive effect on FSR.

The relationship between NPF and FSR is that bad debt in banks will increase the risk of loss. NPF is a ratio used to determine the level of a bank's credit distribution. A higher NPF indicates poor bank health and a low level of bank sustainability. This means that there is problematic financing in the bank's operational activities. Conversely, if the NPF value is relatively low, the bank's sustainability, as measured by FSR, will be higher. NPF has a negative effect on FSR because problematic financing will decrease if the amount of financing to be obtained is large, so that the losses to be borne by the bank will also be small, thereby increasing the income to be obtained and improving the bank's sustainability. Therefore, the hypothesis in this study is that NPF has a positive effect on FSR.

The relationship between FDR moderated by ROA on FSR, which is a measure of the bank's productivity in channeling financing to debtors, can be measured using the FDR ratio. FDR illustrates the bank's ability to fund customer withdrawals by utilizing financing as a source of liquidity. A low FDR indicates that the bank is unable to maintain its liquidity level, as can be seen from its credit and financing distribution. An increasing FDR value will illustrate the increasing profits that will be obtained by the bank, assuming that the bank can allocate its funds as financing efficiency. A bank's ROA can strengthen or weaken a variable. In this case, ROA can strengthen the relationship between FDR and FSR because higher profitability will increase FDR, which will make the bank more efficient in financing. Therefore, the hypothesis in this study is that ROA can moderate the effect of FDR on FSR.

The relationship between CAR moderated by ROA on FSR, namely a bank's capital adequacy, is used to support assets that can pose risks, such as loans to customers. The assessment of a bank's health can be seen from its ability to manage its capital adequacy ratio. Better management capabilities, followed by an increase in capital, will affect the bank's financial ability to quickly meet operational and other costs. The bank will be able to maintain its position, which can be measured through its financial sustainability. The higher the capital adequacy ratio, the greater the stability to achieve efficiency. If CAR is high and accompanied by an increase in profit (ROA), it will cause an increase in the capital obtained by the bank, which will have an impact on the increased financial sustainability of a bank. Therefore, the hypothesis in this study is that ROA can moderate the effect of CAR on FSR.

The relationship between NPF moderated by ROA on FSR, namely the high and low amount of non-performing financing, will affect the health of a bank's performance. Where NPF serves to determine the amount of financing that a bank will face. A decreasing NPF illustrates the high health of the bank and the high level of bank sustainability because the bank will receive more income. This means that there is no non-performing financing in the bank's operational activities. Therefore, lower non-performing loans will have an impact on increased profits, which will affect the stability of a good bank. If the bank has a good level of efficiency, it will indicate an increase in profitability (ROA), which will also increase financial sustainability (FSR). Therefore, the hypothesis in this study is that ROA is able to moderate the effect of NPF on FSR.

3. Research Methods

The type of research used is quantitative. Various research tools are used to collect data. The data is then analyzed using Eviews 12 software, which is used to test the formulated hypotheses. The purpose of this study is to measure how the variables FDR, CAR, and NPF affect FSR and how ROA moderates the relationship between FDR, CAR, and NPF on FSR. The type of information used is secondary data. The information was taken from the annual financial reports of each BUS published on the respective banks' websites from 2018 to 2023.

The population used is Islamic commercial banks in Indonesia for the period 2018-2023. This population is obtained from 14 banks that are classified as Islamic commercial banks. However, in 2021, three banks, namely Bank BRI Syariah, Bank BNI Syariah, and Bank Syariah Mandiri, merged into one entity, namely Bank Syariah Indonesia. Therefore, the population list included in the study consists of 13 Islamic commercial banks. This study also used purposive sampling in determining the sample, which used certain criteria and limitations in line with the study. Thus, a sample of 10 Islamic Commercial Banks was obtained.

Table 1. Sample List 2018-2023

No	Bank Umum Syariah
1.	PT. Bank Aceh Syariah
2.	PT. BPD Nusa Tenggara Barat Syariah
3.	PT. Bank Muamalat Indonesia
4.	PT. Bank Victoria Syariah
5.	PT. Bank Jabar Banten Syariah
6.	PT. Bank Tabungan Pensiunaan Nasional Syariah
7.	PT. Bank Mega Syariah
8.	PT. Bank Panin Dubai Syariah
9.	PT. Bank Syariah Bukopin
10.	PT. BCA Syariah

Source: OJK Statistics 2018-2023

This study also utilizes multiple linear regression analysis with MRA testing to analyze the data in this study and Eviews 12 as a statistical analysis tool to process the data. *Moderated Regression Analysis* (MRA) is used in panel data regression with the aim of seeing the relationship between variables that are influenced by the presence of moderating variables. Where there are elements of interaction in the equation (Ghozali, 2013). The basis of the panel data equation model can be formulated as follows:

$$FSR = \alpha + \beta_1 FDR + \beta_2 CAR + \beta_3 NPF + \beta_4 ROA + e$$

Explanation:

Y : *Financial Sustainability Ratio*

α : constant

β : *Standardized Regression Coefficient*

FDR : *Financing to Deposit Ratio*

CAR : *Capital Adequacy Ratio*

NPF : *Non-Performing Financing*

ROA : *Return on Assets*

e : *Error of Term or Disturbing Variable*

So, when applied to the research variables, the following formula is obtained: $FSR = \alpha + \beta_1 FDR + \beta_2 CAR + \beta_3 NPF + \beta_4 ROA + \beta_5 FDR * ROA + \beta_6 CAR * ROA + \beta_7 NPF * ROA + e$

4. Result and Discussion

4.1 Result

Using the statistical test results used to analyze the research data. This study also used stationarity tests, model selection tests, classical assumption tests (normality tests, multicollinearity tests, heteroscedasticity tests, autocorrelation tests), R2tests (coefficient of determination), F tests (simultaneous tests), T tests, and MRA tests. The following are the results of data management using descriptive statistics.

Table 2. Descriptive statistics

Variabel	Median	Maksimum	Minimum	Std. Dev.
FSR	110.4000	142.5700	49.01000	17.37290
FDR	85.88000	196.7300	38.33000	20.82664
CAR	24.14500	65.83000	12.34000	11.88336
NPF	0.915000	5.280000	0.000000	1.641252
ROA	1.100000	13.58000	-6.720000	3.383709

Source: Eviews 12, data processed in 2024

Table 2 shows that the maximum value of the FSR variable from 2018 to 2023 is 142.5700, while the lowest value is 49.01000. The median value of this variable is 110.4000, while the standard deviation is 17.31290. Then, the maximum value of the FDR variable from 2018 to 2023 is 196.7300, while the lowest value is 38.33000. The median value of this variable is 85.88000, while the standard deviation is 20.82664. Then, the maximum value of the CAR variable from 2018 to 2023 is 65.83000, while the lowest value is 12.34000. The median value of this variable is 24.14500, while the standard deviation is 11.88336. Then, the maximum value of the NPF variable from 2018 to 2023 is 5.280000, while the lowest value is 0.000000. The median value of this variable is 0.915000 with a standard deviation of 1.641252. The maximum value of the ROA variable from 2018 to 2023 is 13.58000, while the lowest value is -6.720000. The median value of this variable is 1.100000, while the standard deviation is 3.383709.

4.2.1 Stationarity test

The stationarity test was conducted using *the unit root test (Hadri)* with *an intercept* added. The results of the test showed that all data in this study passed at the *Level* stage. The following are the results of the stationarity test that has been conducted:

Table 3. Mapping the Role of Fintech in Poverty Alleviation

Variable	Probability	Level	Description
FSR	0.0000	Level	Stationary Data
FDR	0.0000	Level	Stationary Data
CAR	0.0000	Level	Stationary Data
NPF	0.0000	Level	Stationary Data
ROA	0.0000	Level	Stationary Data
FDR_ROA	0.0000	Level	Stationary Data
CAR_ROA	0.0000	Level	Stationary Data
NPF_ROA	0.0000	Level	Stationary Data

Source: Eviews 12, data processed in 2024

From Table 3, it can be understood that all variables have a probability value $<$ than 0.05. This indicates that all data in this study are stationary at the level and are suitable for testing at the next stage.

4.2.2 Panel Data Model Selection Test

a) Chow Test

The Chow test is used to determine which regression model will be selected between CEM and FEM. The selected model can be seen from its probability value. If the probability value is less than 0.05, then FEM is selected. However, if the probability value is greater than 0.05, then CEM is selected $>$ from 0.05, then CEM is selected. The results of the Chow test are as follows:

Table 4. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Period F	0.716904	(5.48)	0.6139
Period Chi-square	4.321240	5	0.5042

Source: Eviews 12, data processed in 2024

From Table 4, it can be concluded that the value of the *Period Chi-square* with a probability of 0.5042 is above 0.05, so it can be concluded that the selected regression model is CEM

b) Langrange Multiplier Test (LM)

The Langrange Multiplier Test is used in selecting the regression model for panel data between REM and CEM.

Table 5. LM Test Results

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.976292 (0.3231)	0.446972 (0.5038)	1.423263 (0.2329)

Source: Eviews 12, data processed in 2024

From Table 5, we obtain a *one-sided cross-section* value of 0.3231, which is above 0.05. Therefore, we can conclude that CEM is the appropriate regression model to use.

4.2.3 Classical Assumption Test

a) Normality Test

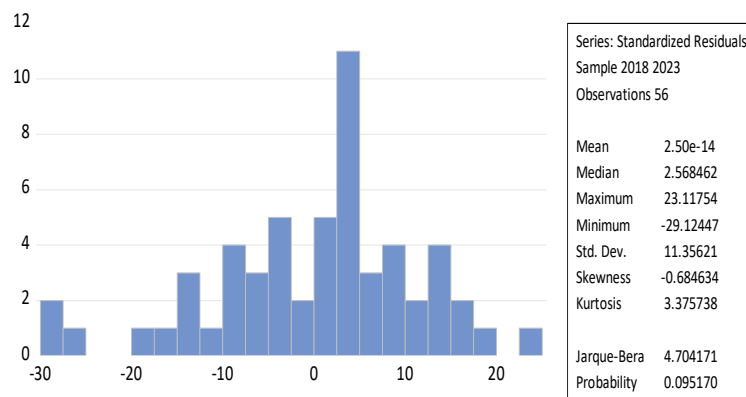


Figure 2. FDR, CAR, NPF BUS Statistical Data (2018-2023)

Figure 3 shows that the JB value is 4.704171 and significant with a Prob value of 0.095170, where Prob $>$ 0.05. Therefore, it can be concluded that after treatment, the residuals are normally distributed.

b) Multicollinearity Test

The Multicollinearity Test assumes the presence or absence of a linear relationship in the regression between the independent variables, namely FDR, CAR, NPF, and ROA. This test can show that if there is a strong correlation coefficient between independent variables in an observation, then this can be said to be a symptom of multicollinearity:

Table 6. Multicollinearity Test Results

Variable	FDR	CAR	NPF	ROA
FDR	1.000000	0.112897	0.205713	0.033407
CAR	0.112897	1.000000	-0.509110	0.593354
NPF	0.205713	-0.509110	1.000000	-0.441190
ROA	0.033407	0.593354	-0.441190	1.000000

Source: Eviews 12, data processed in 2024

From Table 6, it can be seen that this study did not find a high correlation between independent variables. All correlation values between independent variables are less than 0.9. Therefore, it can be concluded that this study did not find multicollinearity.

c) Heteroscedasticity Test

The heteroscedasticity test aims to examine and analyze a regression model that does not have the same variance of residuals from one study to another.

Table 7. Heteroscedasticity Test

Variable	Coefficient	Prob.
C	10.20724	0.1180
FDR	-0.104685	0.1173
CAR	0.161378	0.2565
NPF	0.720887	0.3299
FDR_ROA	0.003589	0.8311
CAR_ROA	-0.012492	0.7056
NPF_ROA	0.430032	0.2080

Source: Eviews 12, data processed in 2024

Table 7 shows that the heteroscedasticity test using the Glejser test indicates a probability value > 0.05 , so it can be said that this study does not have a heteroscedasticity problem.

d) Autocorrelation Test

The autocorrelation test can be performed to see if there is a relationship between errors at the time of observation. Autocorrelation occurs if the research is sequential in time and also related to each other in time series data.

Table 8. Autocorrelation Results

Hannan-Quinn criterion.	7.757469
Durbin-Watson statistic	1.494186

Source: Eviews 12, data processed in 2024

This study used three independent variables with a total of 60 observations. Thus, the DW value of 1.4941 is greater than D_L and less than D_U , which are 1.4201 and 1.7256, respectively. Therefore, the value of $D_L < DW < D_U$, so it can be concluded that there is no definite decision or that there is no positive or negative autocorrelation.

e) R^2 Test (Coefficient of Determination)

However, if the probability value is greater than 0.05, then CEM is selected > 0.05 , then CEM is selected. The results of the Chow test are as follows:

Table 9. R^2 Test

R-squared	0.693372
Adjusted R-squared	0.655825

Source: Eviews 12, data processed in 2024

From Table 9, it can be seen that the Adjusted R-squared value is 0.655825, which explains that 65.68% probability can be influenced by the FDR, CAR, NPF, and ROA variables. Meanwhile, 34.32% will be influenced by other variables outside those studied.

f) F Test (Simultaneous Test)

However, if the probability value is greater than 0.05, then CEM is selected > 0.05 , then CEM is selected. The results of the Chow test are as follows:

Table 10. F Test

F-statistic	18.46710
Prob(F-statistic)	0.00000

Source: Eviews 12, data processed in 2024

From Table 10, it can be seen that the F-statistic probability value is $0.000000 < 0.05$, so it can be concluded that the variables FDR, CAR, NPF, and ROA together have an effect on FSR.

g) T Test

Table 11. T Test

Variable	Coefficient	Prob
C	115.1693	0.0000
FDR	0.025868	0.7997
CAR	-0.218739	0.3186
NPF	-4.518666	0.0002

Source: Eviews 12, data processed in 2024

1) The Effect of FDR on FSR

As seen in Table 11, the FDR variable has a probability of $0.7997 > 0.05$ and a positive coefficient, so it can be concluded that FDR has a positive but insignificant effect on FSR.

2) The Effect of CAR on FSR

As seen in Table 11, the CAR variable has a probability of $0.3186 > 0.05$ and a negative coefficient, so it can be concluded that CAR has an insignificant negative effect on FSR.

3) The effect of NPF on FSR

As seen in Table 11, the NPF variable has a probability of $0.0002 < 0.05$ and a negative coefficient, so it can be concluded that NPF has a significant negative effect on FSR.

h) MRA Test

Table 11. MRA Test

Variable	Coefficient	Prob.
C	115.1693	0.0000
FDR_ROA	0.121029	0.0000
CAR_ROA	-0.180280	0.0009
NPF_ROA	0.066625	0.8987

Source: EvIEWS 12, data processed in 2024

1) The Effect of FDR on FSR moderated by ROA

Based on the results of variable testing, the probability obtained was $0.0000 < 0.05$ and the coefficient is positive, so it can be concluded that ROA is able to moderate and strengthen the relationship between FDR and FSR.

2) The Effect of CAR on FSR moderated by ROA

Based on the variable testing results, the probability is $0.0009 < 0.05$ and the coefficient is negative, so it can be concluded that ROA can moderate the relationship between FDR and FSR.

3) The effect of NPF on FSR moderated by ROA

Based on the variable testing results, the probability is $0.8987 > 0.05$ and the coefficient is positive, so it can be concluded that ROA does not moderate the relationship between FDR and FSR.

4.2 Discussion

4.2.1 The Effect of FDR on FSR

The results of the author's research indicate that the FDR coefficient value is 0.025868 and the probability value is 0.7997, which is greater than 0.05, meaning that FDR has a positive and insignificant effect. Therefore, the first hypothesis in this study is rejected. This is in line with the research by Ayuningtyas et al (2018), which explains that meeting liquidity limits can cause funds collected from third parties to not be distributed to the community in the form of financing, so that the profits obtained do not have much impact on financial sustainability. This is also reinforced by the research of Notoadmojo & Rahmawaty (2017), which states that high operational costs, followed by the suboptimal performance of Islamic banks in disbursing public deposits, will result in FDR not having a significant effect on FSR. However, this contradicts Munandar & Aravik (2022), who state that FDR has a significant positive effect on FSR, and Saputri (2019), who shows that FDR has a significant negative effect on FSR.

4.2.2 The effect of CAR on FSR

The results of the author's research show a CAR coefficient value of -0.21873 and a probability value of 0.3186, which is greater than 0.05, meaning that CAR has a negative and insignificant effect. Therefore, the second hypothesis in this study is rejected. This is in line with the research by Nurhikmah & Rahim (2021), which explains that BUS places more importance on allocating its capital to anticipate credit and market risks than channeling its capital into financing that can increase its profits and operating income. However, this contradicts Yuliawati et al (2020) and Alim (2018), who state that CAR has a positive and insignificant effect on FSR. Additionally, research by Munandar & Aravik (2022) shows that CAR has a significant positive effect on FSR.

4.2.3 NPF affects FSR

The results of the author's research show that the NPF coefficient value is -4.518666 and the probability value is 0.0002, which is less than 0.05, meaning that NPF has a negative and significant effect. Thus, the third hypothesis of this study can be accepted. This is in line with the studies by Himawan & Imanda (2022), Notoadmojo & Rahmawaty (2017), and Winny & Almilia (2005), which show that an increase in NPF will cause problems for a bank. An increase in NPF also indicates that BUS is less able to apply the principle of prudence properly. This results in many of the loans disbursed experiencing problems or defaults in the repayment process. Therefore, non-performing loans can be used as a reference that NPF has a significant effect on financial sustainability. However, this is different from the research by Alim (2018), which states that NPF has a negative and insignificant effect on FSR.

4.2.4 *The Effect of FDR on FSR Moderated by ROA*

The results of the author's research show that the coefficient value of FDR on FSR moderated by ROA is 0.121029 with a probability value of 0.0000, which is less than 0.05, indicating that ROA has a positive and significant effect, thus accepting the fourth hypothesis in this study. This is in line with the research by Pratiwi & Nabila (2022), which states that ROA can moderate the relationship between FDR and FSR. In this case, ROA is used as an indicator in measuring the effectiveness of a company in obtaining profits by utilizing its assets. Thus, in this case, the higher the amount of funds disbursed in the form of financing, the higher the bank's profitability. With higher profitability, banks will allocate funds for financing more efficiently and effectively, indicating an improvement in the bank's position and sustainability. However, this contradicts Damayanti & Annisa (2021), who state that ROA cannot strengthen the relationship between FDR and FSR.

4.2.5 *The effect of CAR on FSR moderated by ROA*

The author's research results show that the CAR coefficient value against FSR moderated by ROA is -0.180280 with a probability value of 0.0009, which is less than 0.05, indicating that ROA has a negative and significant effect, so that the fifth hypothesis in this study can be accepted. This is in line with Mudzakir's (2019) research, which explains that the higher the ROA, the greater the capital adequacy and the lower the financial sustainability, because BUS prefers to allocate its capital to anticipate credit and market risks rather than channeling its capital into financing. Thus, the higher the CAR, the more prepared a company is to face losses in its operations. This study also contradicts the research by Wulandari (2022) and Pratiwi & Nabila (2022), which states that ROA cannot moderate the relationship between CAR and FSR.

4.2.6 *The effect of NPF on FSR moderated by ROA*

The results of the author's research show that the coefficient value of NPF on FSR moderated by ROA is 0.066625 with a probability value of 0.8987, which is $>$ than 0.05 indicates that ROA has a positive and insignificant effect, so the sixth hypothesis in this study is rejected. This is in line with the research by Muliawati & Khoiruddin (2014), which explains that an increase in profit measured by ROA does not directly result in a decrease in NPF value in the same period. Thus, a high NPF will disrupt a bank's working capital turnover. Therefore, banks will evaluate their performance by temporarily stopping financing until the NPF value begins to decrease. Therefore, non-performing loans cannot directly affect the financial sustainability of a bank. This contradicts the research by Damayanti & Annisa (2021) and Himawan & Pertiwi (2022), which states that ROA can moderate the relationship between NPF and FSR.

5. Conclusion

Based on the analysis conducted, it can be concluded that FDR has a positive and insignificant effect on FSR. CAR has a negative and insignificant effect on FSR. NPF has a significant negative effect on FSR. ROA can moderate or strengthen the effect of FDR on FSR. ROA can moderate the effect of CAR on FSR. ROA cannot moderate the effect of NPF on FSR. This study also has limitations, namely that it only uses three independent variables, so it is still necessary to add other variables that were not included in this study. In addition, the population used in this study only includes Islamic banks that are included in the list of Islamic Commercial Banks in Indonesia.

The suggestion for future researchers is to add other variables that may affect financial sustainability (FSR) that were not included in this study, such as the Operating Expense to Operating Income (BOPO) and Net Core Operating Margin (NCOM) variables. Furthermore, future researchers can increase the population size so that it does not only include Islamic Commercial Banks but also covers all banks registered in Islamic banking in Indonesia.

REFERENCES

- Alim, M. (2018). The Effect of Capital Adequacy Ratio, Non-Performing Financing, and Net Profit on Financial Sustainability Ratio (in Islamic Banking Companies in Indonesia for the Period 2014-2018). *Balance Vocation Accounting Journal*, 4(1), 28–42.
- Ayuningtyas, R. D., Wati, R., & Safa'ah, F. (2018). Sustainability of sharia rural banks in Central Java. *Journal of Islamic Economics & Finance*, 4(2), 59–66. <https://doi.org/10.20885/jeki.vol4.iss2.art1>
- Damayanti, A. E. R. I., & Annisa, A. A. (2021). The effect of NPF, FDR, and BOPO on the profit sharing rate of mudharabah deposits: ROA as a moderating variable. *Journal of Accounting and Digital Finance*, 1(1), 36–48. <https://doi.org/10.53088/jadfi.v1i1.17>
- Ghozali, I. (2013). *Application of Multivariate Analysis with IMB SPSS 21 Edition Seven Program*. Diponegoro University

- Himawan, A. F., & Imanda Firmantyas Putri Pertiwi. (2022). The Influence of Inflation, Exchange Rate, Non-Performing Financing (NPF) and Financing to Deposit Ratio (FDR) on Financial Sustainability Ratio with Return on Assets (ROA) as Mediation. *Accounting and Finance Studies*, 2(3), 95–113. <https://doi.org/10.47153/afs23.3802022>
- Kuswahariani, W., Siregar, H., & Syarifuddin, F. (2020). Analysis of Non-Performing Financing (NPF) in General and in the Micro Segment at Three National Islamic Banks in Indonesia. *Journal of Business and Management Applications*, 6(1), 26–36. <https://doi.org/10.17358/jabm.6.1.26>
- Mudzakir, A. (2019). The Effect of CAR, NPF, and FDR on the ROA of Bank Mega Syari'Ah for the Period March 2007 – December 2014. *ADLIYA: Journal of Law and Humanity*, 10(2), 217–232. <https://doi.org/10.15575/adliya.v10i2.5156>
- Muliawati, S., & Khoiruddin, M. (2014). Determinants of Islamic bank profitability in Indonesia. *Management Analysis Journal*, 3(2), 1–6.
- Munandar, A., & Aravik, H. (2022). The Effect of Camel on Financial Sustainability Ratios in Islamic Commercial Banks from June 2014 to February 2022. *Ekonomica Sharia: Journal of Islamic Economic Thought and Development*, 8(1), 49–58. <https://ejournal.stebisigm.ac.id/index.php/esha/article/view/482>
- Muthia Anggraeni. (2022). The Influence of Service Quality and Product Excellence on Customer Satisfaction at Bank Muamalat Bandung. *Journal of Economic and Business Research*, 59–64. <https://doi.org/10.29313/jrieb.vi.825>
- Notoadmojo, I., & Rahmawaty, A. (2017). Analysis of Factors Affecting Financial Sustainability Ratios in Islamic Commercial Banks in Indonesia for the Period 2010–2014. *Equilibrium: Journal of Islamic Economics*, 4(1), 20. <https://doi.org/10.21043/equilibrium.v4i1.1836>
- Nurhikmah, S., & Rahim, R. (2021). The Influence of Financial and Non-Financial Factors on the Financial Sustainability Ratio of Banks. *Journal of Management and Business Review*, 18(1), 25–47. <https://doi.org/10.34149/jmbr.v18i1.214>
- Pratiwi, Y. I., & Nabila, R. (2022). The Effect of DPK, CAR, and FDR on Murabahah Financing with ROA as a Moderating Variable. *MALIA: Journal of Islamic Banking and Finance*, 6(1), 72. <https://doi.org/10.21043/malia.v6i1.13369>
- Saputri, K. O. (2019). Financial Performance on Corporate Sustainability. *Contemporary Accounting Research Journal*, 11(1), 24–32. <https://doi.org/10.23969/jrak.v11i1.1869>
- Simatupang, H. B., Islam, U., & Utara, S. (2019). The role of banking in improving the Indonesian economy. 6(2), 136–146.
- Widyastuti, E. (2021). FEASIBILITY STUDY OF SHARIA FINANCIAL INSTITUTIONS (Q. M. Bahjatulloh (ed.)). Research and Community Service Institute (LP2M) IAIN Salatiga.
- Widyastuti, E. (2022). Macroeconomic Instruments and Their Influence on the Financial Performance of Commercial Banks in Indonesia During the Covid-19 Pandemic. *Masharif Al-Syariah Journal: Journal of Economics and Islamic Banking*, 7(1), 212–230. <https://journal.umsurabaya.ac.id/index.php/Mas/article/view/9637/pdf>
- Windy Herdiniatyas, & Luciana Spica Almilia. (2005). Analysis of Camel Ratios in Predicting Problematic Conditions in Banking Institutions for the Period 2000–2002. *Journal of Accounting and Finance*, 7(2), 131–147. <http://puslit2.petra.ac.id/ejournal/index.php/aku/article/view/16448>
- Wulandari, R. (2022). ANALYSIS OF THE EFFECT OF LOAN TO DEPOSIT RATIO (LDR) AND CAPITAL ADEQUACY RATIO (CAR) ON STOCK RETURNS WITH PROFITABILITY AS A MODERATING VARIABLE Introduction Stock return is a ratio of profit enjoyed by an investor on their investment. <https://doi.org/10.32812/jibeka.v16i2.412>
- Yuliawati, Jensen, L., & Sumadianing Saputri, P. (2020). Analysis of Factors Affecting the Financial Sustainability Ratio of Islamic Banking in Indonesia for the Period 2010–2016. *AL-IQTISHADY: Journal Economics Syariah*, 1(2), 132–140. <https://ejournal.stainupacitan.ac.id/index.php/Al-Iqtishady/article/view/102/pdf>