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The Influence of Liquidity, Solvability, and NPF to the Profitability and the Size of Company as a Moderation Variable

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Abstract

This research is motivated by the instability of profitability experienced by Islamic Commercial Banks in Indonesia over the past five years. This paper aims to analyze the effect of liquidity, solvency, and Non-Performing Financing (NPF) on profitability with company size as a moderating variable in Islamic Commercial Banks in Indonesia from 2019-2023. The data used in this study are secondary data obtained from the financial statements of banks registered with the Financial Services Authority (OJK). The analysis method used in this study is panel data regression with Moderated Regression Analysis (MRA). The study results indicate that liquidity and solvency have a positive and significant effect on profitability, while NPF has a negative and significant effect on profitability. Firm size can moderate the relationship between liquidity and profitability and the relationship between solvency and profitability, but firm size cannot moderate the relationship between NPF and profitability. The implications of this study indicate the importance of liquidity management, debt control, and management of problematic financing in improving the profitability performance of Islamic banks.

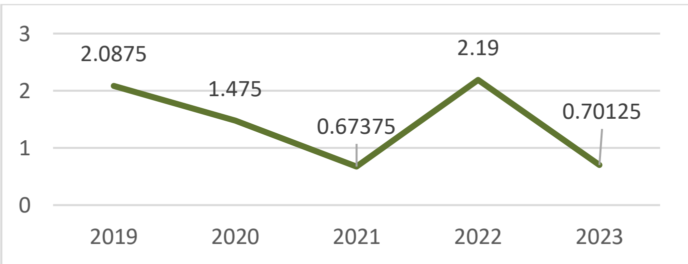
Keyword: Likuiditas; Solvabilitas; *NPF*; Profitabilitas; Size of Company

INTRODUCTION

The progress of a national economy can be seen from the banking sector in that country. Banking plays an important role and is one of the pillars of a national economic stability. This is because banks serve as institutions that mediate financial matters between those who need money and those who have excess cash. Its operations include funding and lending to the community effectively and increasing working capital, consumption, and investment (Sari, 2022) .

It is undeniable that financial institutions compete to be at the forefront by providing convenience in meeting consumptive and productive needs. The Islamic banking industry's small market share compared to conventional banks can also affect Islamic banking income. It can illustrate how Islamic banking performs, and one of them can be measured by the financial ratio, namely the profitability ratio (Fatmawati & Hakim, 2020) .

The return on assets (ROA) ratio, which focuses on the rate of return on assets utilized in the firm, is a common way to gauge a firm's profitability. Banks should be attention to their profits because they can provide insight into how efficiently financial institutions convert their assets into revenue. The reason researchers chose ROA is because that type of ratio that can assess a firm's ability to acquire profits from used asset (Lameo et al., 2023) . In addition, ROA as a dependent variable reflects the bank's management capabilities because ROA gauges how well a business generates income or profits from asset management and general managerial performance. (Liong et al., 2024) .



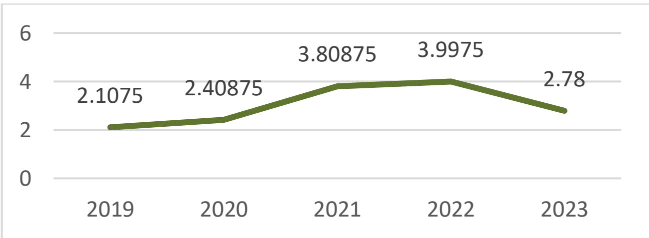
Source: BUS) Financial Report

Figure 1 BUS’ ROA in Indonesia

The graph shows that the ROA BUS in Indonesia has been unstable for five years. Following a notable decrease in 2020 and 2021 due to COVID-19, there was a rather sharp increase in 2022. However, this condition did not last long because 2023 the average ROA of BUS in Indonesia will decline again. This is due to economic dynamics and policies that affect the profitability of BUS in Indonesia (Pertiwi et al., 2024) .

Liquidity problems are essential problems in companies that are relatively difficult to solve. From the creditor's perspective, a company with high liquidity is good because the short-term funds of creditors borrowed by the company can be guaranteed by relatively more significant current assets (Marpaung et al., 2023) . Liquidity is a business's capacity to convert its assets into cash to settle its current liabilities. (Trisnayanti & Wiagustini, 2022) .

The current ratio can be used to determine the level of liquidity and how much working capital the company allocates for operations. In this instance, the current ratio was selected because it may evaluate the company's ability to settle its short-term debts with its current assets.



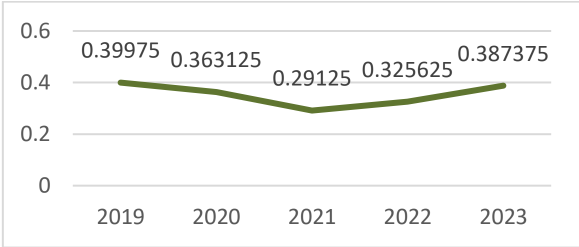
Source: BUS Financial Report

Figure 2Average *Current Ratio* of BUS in Indonesia

The graph show that current ratio of BUS in Indonesia has increased from 2019 to 2022. This increase in liquidity indicates that the bank's condition has good liquidity. However, in 2023, there was a decline in several factors, such as a decrease in current assets or an increase in liabilities. If the ratio is too high, it indicates that the assets owned by the bank are idle (Fathurrahman, 2022) .

Another issue that needs to be considered is solvency, where the solvency ratio measures the company's capacity to meet its responsibilities by making timely payments on short-term and long-term loans. Solvency is the ability of the company to pay off all of its debts if liquidated. (Lestari, 2020) . Eliza et al., (2022) stated that the solvency ratio is reflected in the Debt-to-

Asset Ratio (DAR), which describes the firm's ability to fulfil its obligations through its assets.

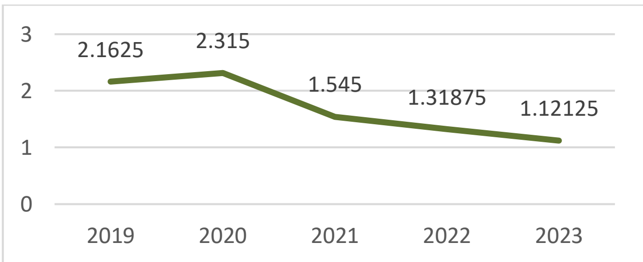


Source: BUS Financial Report

Figure 3Average DAR's BUS in Indonesia

The data above shows that BUS average DAR has decreased from 2019 to 2021. It shows that the bank is reducing its debt to other banks and Bank Indonesia and improving its capital structure by using its assets as its operations. However, in 2023, there was an increase in DAR, which could indicate the need for additional funds or an increase in business activity. The reason for using the DAR in this study is to measure how much of the assets are financed by debt (Alfakhirah & Jaya, 2024) .

The most considerable risk faced by banking is one of the risks of financing. In this case, financing risk is proxied by NPF, which is what is known as problematic financing. Problematic financing is bad financing that occurs in a bank due to debtors not paying or there is a delay in payment (Fahlevi, 2022) .



Source: BUS Financial Report

Figure 4Average NPF's BUS in Indonesia

The Figure 4 shows that despite an increase in NPF in 2020, a quality of BUS financing in Indonesia has consistently improved from 2021 to 2023, with a significant decrease in the NPF level. It indicates a reduction in the risk of problematic funding from banks (Agusty & Budianto, 2024) .

Furthermore, this study uses firm size as a moderating variable. Firm size can be seen from total assets, total sales, and the total of employees (Jaya, 2020). In this study, the Natural Logarithm (LN) of total assets serves as a proxy for firm size. The reason for using firm size is because it is considered that this firm size has an advantage in the level of stability from one period to the next compared to other proxies (Natasya, 2023) .

This research has been conducted previously by (Almunawwaroh & Marliana, 2018; Astivasari & Siswanto, 2018; Fathoni & Syarifudin, 2021; Lorenza & Anwar, 2021; Luckieta et al., 2021; Muslih, 2019; Natasya, 2023; Pusaka & Takarini, 2023; Sastrawan, 2023; Solehah, 2023; Sormin et al., 2023; Subekti & Wardana, 2022) and provided different research results that showed inconsistencies. Therefore, further research is needed.

Based on description, although the profitability of BUS in Indonesia is unstable, previous studies have shown different results in each study on the impact of liquidity, solvency, and NPF on profitability with firm size as a moderating variable. Profitability studies are essential because profitability is a projection of the company's profits. Profitability plays a vital role in the survival of the company.

RESEARCH METHODS

A quantitative methodology is employed in this study to ascertain cause and effect and the presence of influence. (Alfakhirah & Jaya, 2024). The secondary data used in this study was gathered from financial publication reports found on the websites of each bank and OJK. This study's population consists of Indonesian BUS. A purposive sample was used as the sampling strategy for this study, and BUS that met the OJK registration requirements and released complete financial reports between 2019 and 2023 were included. Namely, there are 10 banks, including:

Table 1.

BUS Sample

No	Bank Name
1.	Bank Muamalat
2.	Victoria Syariah Bank
3.	Panin Dubai Islamic Bank
4.	Mega Syariah Bank
5.	Bank Jabar Banten Sharia
6.	Bukopin Sharia Bank
7.	Central Asia Syariah Bank
8.	Sharia Pension State Savings Bank
9.	Bank Aceh Syariah
10.	NTB Sharia Bank

Panel data regression is the method of analysis employed in this study. Panel data consists of information from multiple individuals observed throughout a specific period (Savitri et al., 2021) . This study also uses Moderated Regression Analysis to obtain moderating variables effect. According to Sulistiyo & Yuliana, (2019) One unique use of multiple linear regression is called "moderated regression analysis," in which the regression equation incorporates interaction components (multiplication of two or more independent variables). The MRA formula according to Rivanda & Budianto, (2024) is as follows:

$$ROA_{it} = \alpha + \beta 1CR_{it} + \beta 2DAR_{it} - \beta 3NPF_{it} + \beta 4CR^{*}LN(TA)_{it} + \beta 5DAR^{*}LN(TA)_{it} + \beta 6NPF^{*}LN(TA)_{it} + e_{it}$$

Information :

ROA = *Return On Assets*
α = Constant
β = Regression coefficient
i = Individual Index i (*cross section*)
t = Time Index t (*time series*)
CR = *current ratio*
DAR = *Debt to Assets Ratio*
NPF = *Non-Performing Financing*

LN(TA) = Natural Logarithm of Total Assets
CR*LN(TA) = Interaction of the influence *current ratio* with total asset moderation
DAR*LN(TA)= Interaction of DAR influence with total asset moderation
NPF*LN(TA) = Interaction of NPF influence with total asset moderation
e = *error* / nuisance variable

RESEARCH RESULTS AND DISCUSSION

Model Selection Test

1. **Chow Test**

Based on the following factors, the Chow test determines which CEM and FEM is a better strategy (Nani, 2022) .

a. If the probability is more significant than 0.05, CEM is the best strategy.

b. If the probability is less than 0.05. As a result, FEM becomes the best strategy.

Table 2.

Chow Test Results

Effect Test	Statistics	Prob
Cross-section Chi-Square	194.903959	0.0000

FEM is the best model according that the prob. value is 0.0000 < 0.05.

2. **Hausman test**

The Hausman test is a statistical test as a foundation for deliberating between FEM and REM (Nengsih & Martaliah, 2022) .

a. REM is the best strategy if the probability is more significant than 0.05.

b. If the probability is less than 0.05. As a result, FEM becomes the best strategy.

Table 3.

Hausman Test Results

Effect Test	Statistics	Prob
Random cross section	56.658975	0.0000

FEM is the best model according to prob. statistic 0.0000 > 0.05.

Classical Assumption Test

1. **Normality Test**

The normality test regulate if the model's standardized residual values follow a normal distribution. If they are primarily near their average values, they are said to be regularly distributed. (Hardani, 2020).

Table 4.

Normality Test Results

Jarque-Bera	2.599862
Probability	0.272551

Source: data processed by researchers, 2024

Based on table 4 prob. Jarque-bera is 0.272551 > 0.05, which means that the data is normally distributed.

2. **Heteroscedasticity Test**

The heteroscedasticity test is used to determine if the variance of the residuals in the regression model varies from one observation to the next. The predicted regression model is the residual from one observation to the next that is homoscedastic or constant. (Hardani, 2020).

Table 5.
Heteroscedasticity Test Results

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	0.723942	0.261348	2.770029	0.0062
CR	-0.133396	0.114968	-1.160290	0.2475
DAR	-0.318183	0.280496	-1.134357	0.2582
NPF	0.072331	0.064327	1.124428	0.2624

Based on the result using the Glejser model, the CR value was obtained at 0.2475, DAR at 0.2582, and NPF at 0.2624. The data does not experience heteroscedasticity, and the data was homoscedasticity.

3. Multicollinearity Test

The multicollinearity test establishes if the independent variables have a strong linear connection. If the VIF score is less than 10, then there is no multicollinearity (Hardani, 2020).

Table 6.

Multicollinearity Test Results

Variables	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.019504	29.08828	NA
CR	0.004158	6.062779	1.373420
DAR	0.015825	14.97143	2.759152
NPF	0.000709	7.185846	2.484819

Based on the multicollinearity test, the current ratio's VIF value is 1.373420, DAR is 2.759152, and NPF is 2.484819, which shows less than 10. It means the model in this study doesn't have multicollinearity.

Hypothesis Testing

1. Panel data linear regression test (t-test)

The t-test is employed to assess the regression line coefficient. Each independent variable's ability to affect the dependent variable in research is tested using this method (Sugiyono, 2021) . The level of significance is 5% or 0.05.

Table 7.

Panel Data Linear Regression Test Results

Variables	t-statistic	Prob.
CR	3.828969	0.0002
DAR	3.366083	0.0009
NPF	-6.523638	0.0000

From the t-test in the table above, it can be seen that:

H1: *Current ratio* has an influence on ROA

Current ratio has a probability value of 0.0002, a t count of 3.828969 and a t table of 1.97220. The Current ratio significantly influences ROA because of the probability value of 0.0002 <0.05 and t count of 3.828969> t table of 1.97220. As a result, H1 is accepted.

H2: DAR has an influence on ROA

DAR has a probability value of 0.0009, a t count of 3.366083 and a t table of 1.97220 because the probability value of 0.0009 < 0.05 and the calculated t of 3.366083 > t table of 1.97220, then H2 is accepted.

H3: NPF has an influence on ROA

NPF has a probability value of 0.0000, a t count of -6.523638 and a t table of 1.97220 because the probability value of 0.0000 < 0.05 and the calculated t of -6.523638 < 1.97220, then H3 is accepted.

2. ***Moderating Regression Analysis* (MRA) Test**

According to Sulistiyo & Yuliana, (2019) One unique use of multiple linear regression is called "moderated regression analysis," in which the regression equation incorporates interaction components.

Table 8.

MRA Test Results

Variables	t-statistic	Prob.
CR*M	2.414219	0.0168
DAR*M	-2.393396	0.0177
NPF*M	0.435289	0.6639

From the MRA test results, it can be seen that:

H4: Firm size moderates CR on ROA

The relationship current ratio and firm size (CR*M) shows a value of 2.414219 > 1.97220. The probability value is 0.0168 < 0.05. It indicates that the hypothesis is accepted so that the firm size variable can moderate the effect of the current ratio on ROA.

H5: Firm size moderates DAR on ROA

The relationship DAR and firm size (DAR*M) shows a value of -2.393396 < 1.97220. The probability value is 0.0177 < 0.05. It shows that the hypothesis is accepted, so it can be concluded that the firm size variable can weaken the effect of DAR on ROA.

H6: Firm size moderates NPF on ROA

The relationship NPF and firm size (NPF*M) shows a value of 0.435289, < 1.97220. The probability value is 0.6639 > 0.05. This indicates that the hypothesis has been rejected, so it can be concluded that the firm size variable cannot moderate the effect of NPF on ROA.

Coefficient of Determination Test

The regression model's fit quality is evaluated using the Determination Coefficient (R^2). This test gauges the extent to which the model can account for the variance in the dependent variable.

Table 9.

Determination Coefficient Test Result

R squared	0.935189

The results show that R-squared of 0.935189 or 93.5%, which means that the CR, DAR, and NPF factors influence 93.5% of ROA, while external variables influence the remaining 6.5%.

Discussion

The Effect of Current Ratio on ROA

The results show that the current ratio positively and significantly affects ROA. This result contradicts research conducted by Lorenza & Anwar, (2021); Ratih et al., (2019) which state that the current ratio negatively affects ROA. If the current ratio higher, the greater the company's placement of funds on the current assets side. Placing too much funds on the assets side causes the loss of opportunities to gain additional profits.

However, the results obtained are in accure with research by Kurniawati, (2021); Marpaung et al., (2023); Trisnayanti & Wiagustini, (2022) which stated that the current ratio has a positive effect on ROA. This means that if there is an increase in liquidity in BUS in Indonesia, the banks' profitability will also increase. An increase in the current ratio will increase liquidity, increasing the financial turnover in BUS. Quick money turnover will boost its earnings. Additionally, higher profits will enable it to pay its short-term debts on schedule. High liquidity is a sign of sound financial health, which will boost Islamic commercial banks' profitability.

The Effect of DAR on ROA

The results show that DAR has a positive and significant effect on ROA. These results differ from those of the research by Fathoni & Syarifudin, (2021); Pangestika et al., (2021) stated that DAR has a negative effect on ROA. Using debt for an extended period might raise the solvency ratio since excessive debt entails significant financial risk.

However, the results of this study are in line with the study by Luckieta et al., (2021) which stated that DAR has a positive effect on ROA because the more debt obtained through third parties, the greater firm's profit due to the circulation of funds received from the debt. Islamic commercial banks will utilize as much debt obtained from third parties as possible. This means that the higher the DAR ratio, the ROA of BUS is greater.

The Effect of NPF on ROA

The results indicate that NPF has a negative and significant effect on ROA. The results differ from the studies conducted by Nahar et al., (2020); Sapa & Awaluddin, (2022); Subekti & Wardana, (2022) which stated that the NPF variable does not affect ROA. This is because the Islamic banking financing is not optimal and there is a problem when distribute funding to customers. Hence, the risk of problematic financing in Islamic banks is still not too high, so it doesn't impact on ROA of Islamic Commercial Banks.

However, the results are in accordance with research by Almunawwaroh & Marliana, (2018); Ekinci & Poyraz, (2019); Pravasanti, (2018) which states that NPF has a negative effect on ROA. Problematic financing will reduce bank income that should be obtained from financing profit sharing. High problem financing causes a reduction in profits obtained by the bank.

Firm size Moderates *Current Ratio* to ROA

The results of MRA test show that the firm size variable can moderate the effect of the current ratio on ROA. This result differs from the research conducted by Natasya, (2023); Sormin et al., (2023) obtained that firm size cannot moderate the effect between liquidity and profitability.

However, according to research conducted by Pusaka & Takarini, (2023); Setiawan & Suwaidi, (2022) which states that firm size can moderate the relationship between the current ratio and ROA. Banks with limited assets find it challenging to pay off their short-term commitments in this scenario, decreasing their chances of making a lot of money. Conversely, banks with many assets will make it easier to meet their short-term obligations. Banks that make good use of their short-term obligations will increase their income.

Firm size Moderates DAR Against ROA

Based on the results of the MRA test show that the firm size variable can weaken the effect of DAR on ROA. In other words, when the firm size increases, the impact of DAR on ROA decreases or weakens. This result is different from the research by Fathoni & Syarifudin, (2021); Widiasih et al., (2024) which state that solvency supported by firm size as a moderating variable can strengthen the relationship between solvency and profitability. Banks use their capital and debt to carry out their operational activities. Companies with larger sizes are more straightforward in gaining trust because they have a better reputation, so they will encourage many customers to save their funds, which can affect the increase in liabilities. The amount of debt used to fund productive investments can increase company profits.

However, this result is in line with the research by (Widyaswari & Utomo, 2024) which found that firm size can negatively moderate. Firm size can weaken the relationship between DAR and ROA because the total assets obtained are likely not from liabilities but from equity, so the influence of DAR is reduced for companies with significant total assets.

Firm size Moderates NPF Against ROA

The MRA test showed that the firm size variable couldn't moderate the effect of NPF on ROA. This is in contrast to previous research conducted by Solehah, (2023) who found that NPF supported by firm size as a moderating variable can strengthen the relationship between NPF and profitability to be positive. Large companies find it easier to deal with the risk of problematic financing because they have advantages in minimizing risk and diversification, which can reduce the bad impact of NPF on profitability.

However, according to research conducted by Sari, (2022) , firm size cannot moderate the relationship between NPF and ROA. Although large companies can manage risk better, the risk of problematic financing cannot be avoided, resulting in decreased ROA. NPF reflects poor financing quality, and funding problems can reduce profit-sharing income and increase the burden of loss provisions, which directly depresses ROA. Firm size may help in managing operational or other financial risks. Still, in the context of problematic financing, the firm's size is not enough to reduce the negative impact of NPF on ROA. Therefore, high NPF will still reduce ROA in large and small companies.

CONCLUSION

As measured by the Current Ratio, liquidity has a positive and significant effect on profitability. It because an increase in the current ratio will increase liquidity, increasing the financial turnover in Islamic commercial banks. As measured by DAR, solvency has a positive and significant effect on profitability. This is because the more debt obtained through third parties, the greater the company's profit due to the circulation of funds received from the debt. Firm size can moderate the effect of the Current Ratio on profitability. The firm's size can make it easier or more difficult for the company to pay its current liabilities. The NPF level has a negative and significant effect on profitability. Higher NPF reduces the bank's profits. Firm size can weaken the impact of DAR on ROA. This is because the total assets obtained are likely not from liabilities but equity. Firm size cannot moderate the effect of NPF on ROA. The firm's size is not enough to reduce the negative impact of NPF on ROA. The results of this study are expected to help maintain the profitability of Islamic Commercial Banks. This study is expected to provide data and suggestions for policies and decision-making regarding liquidity, solvency, and NPF factors. The suggestions given from this research are the addition of variables, periods and objects that have not been studied.

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