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Macroeconomic Analysis and Financial Ratios on Sharia Commercial Bank Profitability: A Case Study of Indonesia

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Abstract

Introduction: Islamic banking and finance have experienced quite high growth in many different countries. This has never happened before, including in Indonesia. Islamic banks in Indonesia have experienced significant growth, even Islamic commercial banks in Indonesia have become one of the drivers of economic growth in Indonesia. This is an interesting topic to explore further what can affect the profitability from Islamic banking, especially in Indonesia.

Purpose/objective Study: This study aims to analyze the effect of macroeconomic and financial ratios on the profitability of Islamic commercial banks in Indonesia.

Design/Methodology/Approach: This study used secondary data from many sources in the 2011-2018 period. The methodology used is panel data with various independent variables such as Non-Performing Finance (NPF), Capital Adequacy Ratio (CAR), Financing to Deposit Ratio (FDR), Operational Efficiency Ratio (OER), Inflation, Domestic Product Growth (GDP), and Exchange Rates.

Findings: The results of this study explain that Non-Performing Finance (NPF), Capital Adequacy Ratio (CAR), Financing to Deposit Ratio (FDR), Operational Efficiency Ratio (OER) have a significant influence on Sharia Bank Asset Returns (ROA) in Indonesia. The opposite occurs in macroeconomic indicators, Domestic Product Growth (GDP) and Exchange Rate do not seem to have a significant effect on the Return on Assets (ROA) of Sharia Commercial Banks in Indonesia.

Paper Type: Research Article

Keywords: Financial Ratio; Macroeconomic Indicators; Panel Data, Indonesia

Introduction

In the last few decades, Islamic banking and finance have experienced quite high growth in countries with the largest Muslim populations or in countries with minorities (Saeed, 1996). In 2011, more than 75 countries in the world successfully operated more than 300 Islamic financial



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institutions¹. Based on research reports by Perry & Rehman (2011) Islamic financial institutions are developing throughout the world. Even the 2015 Report on Islamic banking and Financial Development states that the total Islamic financial assets reached approximately \$ 2 trillion, with 75% of that value represented by Islamic banking².

Islamic banking and finance have achieved a successful and unprecedented expansion in recent years. Not only is the astonishing high growth rate, but also many conventional banks have turned into Islamic banks. Islamic and conventional banks also differ in terms of principles, Islamic banking and finance are claimed to be free of interest, whereas conventional banking uses interest. Islamic banking and finance are also illuminated by Sharia values, ethics, and universal moral³

As the largest Muslim country in the world, Indonesia must be the center of Islamic economic and financial development. Facts from the things shown by the Global Islamic Financial Report⁴, Indonesia ranked fourth among other countries with total assets of US \$ 35.65 billion. Even experienced a growth of 56.6% in a period of 10 years, the highest growth in the world. According to Sharia Banking statistics at the Financial Services Authority (OJK) at the end of 2018, there were 14 Sharia Commercial Banks. This shows well development for Sharia Commercial Banks in Indonesia, or it can be said that the presence of Sharia Commercial Banks also participated in developing the economy in Indonesia (Swandayani & Kusumaningtias, 2012). In 2015, the Financial Services Authority (OJK) reported that total assets owned by Indonesian Sharia banks had reached Rp278.91 trillion with a marketplace of 4.67%. This value is still very small when compared to national banks⁵.

Table 1. Development of Sharia Commercial Banks from 2007-2018

Year	Number of Banks	Number of Offices
2007	3	401
2008	5	581
2009	6	711
2010	11	1215
2011	11	1401
2012	11	1745
2013	11	1887
2014	12	2163
2015	12	1990
2016	13	1869
2017	13	1825
2018	14	1875

Source: Financial Services Authority (OJK)

Website of Bank Negara Malaysia, 2007

² Website of Global Report of Islamic Finance

³ Website of Institute of Islamic Banking and Insurance

⁴ Website of Global Islamic Finance Report, 2014

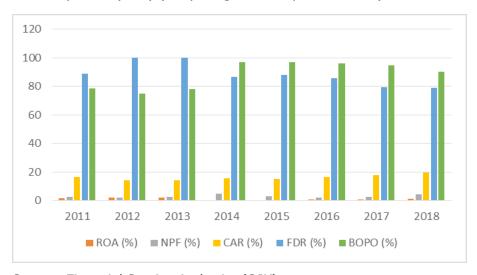
⁵ Website of Global Islamic Finance Report, 2015

Based on table 1.1 above, asset growth from Islamic banking continues to increase until its peak in 2014 of 12 banks and 2163 offices then tended to slow down until 2018. In addition to looking at the number of banks or offices owned, it is also important to see the profitability of the bank. The level of profitability of a bank can be measured using Return on Assets (ROA). The greater ROA from banks shows the company's performance is getting better (Orgore, 2013)

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ROA can show the effectiveness of the company in generating profits by optimizing the company's assets. The higher the profit generated by the company, the higher the ROA, which means that the company is more effective in using assets to generate profits (Prastiyaningtyas, 2012). In addition to the level of profitability, there are several other Islamic banking financial ratios that have a stake in maintaining bank performance, such as Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Operational Efficiency Ratio (OER) (Widyaningrum & Septiarini, 2015)



Source: Financial Service Authority (OJK)

Based on Figure 1.1 above, it shows that the average acquisition of ROA of a Sharia Bank tends to fluctuate. However, overall the difference does not seem to change much every year. Furthermore, the average NPF value is slightly larger than ROA, however, the change is not so large. Same as ROA and NPF, CAR also experiences the same thing that does not experience significant changes even though the value is greater than the ROA and NPF. Different from the others, FDR and OER have the highest values. FDR value is higher than OER until 2013 then OER began to take over until 2018.

The value of the figure above is certainly influenced by several factors. According to Ali, Akhtar, & Ahmed (2011) Sharia Banking in its operational activities is also inseparable from macroeconomic influences. Macroeconomic indicators in question are national income which includes

gross domestic product and gross national product, economic growth, the rate of change in prices or inflation, and the stability of the value of the domestic currency or exchange rate ((Khan, Kouser, & Abbas, 2015).

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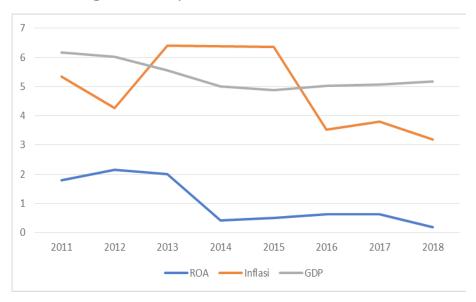


Figure 2. Comparison of Macroeconomic Factors

Source: Statistic of Bank Indonesia (Processed)

The value of inflation during the period 2011 to 2018 experienced volatility. Where in 2015 the value of inflation touched 5.35% and the value of ROA at 1.79%, then in 2012 the value of inflation fell to 4.27% and the value of ROA increased to 2.14%. Then in 2013 the value of inflation increased to 6.41% and ROA fell to 2%, the following year the inflation rate continued to decline. Until 2016 it became 3.52% and the value of ROA which also fell to 0.63%. Furthermore, there will be an increase from the inflation value in 2017 to 3.8% and ROA which remains stagnant at 0.63%. In 2018, the value of inflation will go down again to 3.19% and ROA which will increase by 1.18%.

The value of GDP in the period 2011 to 2018 tends to continue to decline. It can be seen in the graph that from 2011 GDP stood at 6.17%, then continued to decline until 2015 amounting to 4.88% followed by ROA which stood at 0.49%. Then in 2016 the value of GDP increased to 5.03% with ROA which also rose to 0.63%, until finally the value of GDP in 2018 increased from the previous year to 5.17% and ROA which also increased to 1.18%. Based on these data, it is interesting to discuss the impact caused by the macroeconomic situation. According to Tan & Floros (2012), they reported that Inflation greatly affects the country's economy in terms of exacerbating friction on credit markets, especially in developing countries. Intermediate ration credit will lead to lower investment. Current and future productivity can be disrupted, implying low economic activity (Boyd & Champ, 2006).

Gross Domestic Product is a macroeconomic indicator that also affects the profitability of Islamic banks. If the Gross Domestic Product rises, it will also be followed by an increase in public income which will affect consumption and saving. This increase in saving will increase the profitability of bank or vice versa (Ali, Mamoor, Yacoob, & Gill, 2018).

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Apart from inflation and GDP, increasing the value of foreign currencies against the rupiah will reduce the purchasing power, income and profits of any type of investment. The decline in investment will affect the operations of Islamic banks. With the decline in investment, demand for financing at Islamic banks will also decrease and ultimately profitability of Islamic banks will decrease (Effendi, 2015)

This study was conducted to examine the effect of macroeconomics and financial ratios on profitability of Islamic banking (ROA) in Indonesia from 2011 to 2018. The selection of financial ratio indicators is based on previous studies of Hesti (2010), Hakim & Rafsanjani (2016). According to (Aviliani, 2015) in the Qoyum & Fauziyyah study (2018), instability of the financial system can affect bank performance. The variables used by researchers were Inflation, Gross Domestic Product, Exchange Rate, Capital Adequacy Ratio (CAR), Non-Performing Finance (NPF), Financing to Deposit Ratio (FDR), and Operational Efficiency Ratio (OER). Profitability referred to in this study is ROA to determine the performance of Islamic banks in obtaining profits.

Methodology

The data in this study used secondary data in the form of panel data for the period 2011 to 2018 using 5 Sharia Commercial Banks, including BNI Syariah, BCA Syariah, Maybank Syariah Indonesia, Victoria Syariah Bank, and Banten Syariah Bank. In this study the dependent variable used is Return on Assets, while the independent variable used is Non-Performing Finance, Capital Adequacy Ratio, Financing to Deposit Ratio, Operational Efficiency Ratio (OER), Inflation, GDP, and Exchange Rates.

The data obtained comes from journals, annual statistical reports and official websites such as the Central Statistics Agency, Financial Services Authority (OJK), Bank Indonesia (BI), World Bank, and 5 Sharia Commercial Banks that have been registered with OJK.

This study uses panel data regression analysis to determine the effect of Non-Performing Finance (NPF), Capital Adequacy Ratio (CAR), Financing to Deposit Ratio (FDR), Operational Efficiency Ratio (OER). Inflation, Growth Domestic Product (GDP) and Exchange Rate for Return on Assets (ROA) from the Sharia Commercial Bank. From several variables used, the research model can be arranged as follows:

$$ROA_{it} = a + \beta_1 NPF_{it} + \beta_2 CAR_{it} + \beta_3 FDR_{it}$$

+ $\beta_4 OER_{it} + \beta_5 INF_{it} + \beta_6 GDP_{it} + \beta_7 KURS_{it} + e_{it}$

All the abbreviated variables above are in accordance with the previous explanation. While, i is the list of banks included in the study and t is the year of this study.

In estimating the regression model using panel data, there are three approaches such as Ordinary Least Square (OLS), Fixed Effect Model (FEM), and Random Effect Model (REM). OLS is a simple regression technique for estimating panel data that combines time series and cross sections regardless of time and individual dimensions. Because OLS estimators often cause severe heteroscedasticity and inconsistencies, it is better to continue with other estimators such as the Fixed Effects Model. In a fixed effect model, each country has country-specific differences that cannot be observed on its own and estimates separate constants for each country. However, the Fixed Effect Model has its own shortcomings, the fixed effect model is often biased if the writer uses several variables that contain time-invariants. Whereas the random-effects model assumes country-specific variables that do not follow the normal and constant distribution over the estimated period so the random effects model allows the observed variables to vary from time to time.

Using three types of tests in choosing the best estimator to use, the authors used the Chow Test to compare OLS and FEM, Hausman Test for FEM and REM, and Lagrange Multiplier Test for REM and OLS. The test continues to the heteroscedasticity test and the multicollinearity test to see if the data do not have a classical assumption problem.

Results and Discussion

Using panel data estimation, the authors investigate the effect of macroeconomic and financial ratios on sharia commercial bank profitability within period 2011-2018. This section contains the classic assumption test, model selection test, results estimation, and discussion.

Classic Assumption Test

Based on the classical assumption test, the heteroscedasticity test is a must to do, the value of the independent probability is not significant at a level of 5% indicating that there is an equal variance or homoscedasticity between the values of the independent variable with the residuals of each variable. Here are the results of the heteroscedasticity test using the white test:

Table 2. Heteroscedasticity Test

Chi ²	Pro-Chi ²
39.81	0.1928

Source: Stata (processed)

Based on the heteroscedasticity test above shows that the chi2 probability value of 0.1928, which is> 0.05 so that it can be concluded that the independent variable data is free from heteroscedasticity problems. Therefore, the test will proceed to the multicollinearity test. To find out multicollinearity in research data, it is necessary to test the correlation coefficient between research variables. A model is said to be good if there is no multicollinearity between the dependent variable and the independent variable (Gujarati, 2006)

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According to Daoud (2017) the smaller the correlation between independent variables, the regression model will be better. Significance in multicollinearity tests is said to be free of multicollinearity if the significance of the variables is <8.

Table 3. Multicollinearity Test

Variables	VIF (%)	1st VIF (%)
NPF	1,86	0,538578
CAR	4,13	0,242358
FDR	3,81	0,262285
OER	2,16	0,462399
Inflation	1,16	0,865631
GDP	7,94	0,126006
Exchange Rate	7,58	0,131859
Mean VIF	4,09	

Source: Stata (Processed)

Based on the multicollinearity test above, the VIF value between variables is <8 with an average VIF of 4.09. This shows that the data in this study are free from multicollinearity problems.

Model Selection Test

Chow Test is a test to determine the best model between Fixed Effect and Common Effect. If the results of the chow test state that they accept the null hypothesis, then the best model to use is the Common Effect model. However, if the results state that they reject the null hypothesis, then the best model used is the Fixed Effects model.

Table 4. Chow Test

Summary Test	Probability
F(4.28) = 1.88	0.1410

Source: Stata (processed)

Based on the chow test above, it was found that the probability value of F is higher than 0.05, this shows that OLS model is selected. Therefore, to select the best model between fixed effect and random effect, Hausman test will be the next step.

Table 5. Hausman Test

`Chi2	Prob > Chi2 (%)
9,74	0,2039

Source: Stata (processed)

Based on the Hausman test, it can be seen that the value of chi2 is greater than 0.05, so it can be said that the best model is the Random Effect.

Estimation Results

After conducting several tests including classic assumption test to get good data and to choose the best model, a random effects model was chosen as the table below.

Table 5. Random Effect Estimation

Variables	OLS	Fixed Effect	Random Effect
		TIXEU LITECT	Random Lifect
NPF	-0.254***	0.187**	-0.254***
	(0.049)	(0.082)	(0.049)
CAR	0.051**	0.115**	0.051**
	(0.025)	(0.042)	(0.025)
FDR	-0.021**	-0.030***	-0.021**
IDK	(0.009)	(0.010)	(0.000)
OER	-0.070***	-0.096***	-0.070***
OLIK	(0.016)	(0.022)	(0.016)
Inflation	0.061	0.139	0.061
	(0.166)	(0.170)	(0.166)
GDP	-1.175	-2.172	-1.175
	(1.997)	(1.954)	(1.997)
Evohango Dato	-0.071	-0.095	-0.07185
Exchange Rate	(0.128)	(0.122)	(0.128)
R-square	0.827	0.767	0.827

Note: ***= p-value <0.001, **= p-value <0.05%, and *= p-value<0.1

Based on the table 1.5 above, with significance level 1%, every 1% increases in NPA is expected to have a negative impact on ROA by

0.254%. This result is in line with paper by (Kingu, 2018) and (Hamid, 2015), they report that increasing the amount of capital issued by Islamic banking or conventional banking can increase the risk of loss if not carried out under close supervision. According to Baudino & Yun (2017), the high level of NPLs will have an impact on the financial system that stops functioning normally, and banks can no longer provide credit to the economy.

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Good NPF control can maintain financial ratio stability, especially in increasing bank profits. The ability of Islamic banks to manage non-performing loans is one indicator that must be considered in order to control the level of NPF. If the bank cannot keep the NPF in the range of 1-5%, the reserves owned by the bank will be used up resulting in the amount of capital owned will decrease and will affect the amount of financing that will be proposed later.

Meanwhile, Capital Adequacy Ratio (CAR) appears with positive significance sign. With a significance level of 5%, the higher the CAR that is collected, the higher the ROA the bank gets. A 1% increase in CAR will result in an increase in ROA of 0.051%, this result in line with paper by Yusuf & Surjaatmadja (2018), (Effendi, 2015), and (Wibowo & Syaichu, 2013).

By closely monitoring the amount of capital used for credit financing, this will increase bank profits. According to Yusuf & Surjatmadja (2018), to maintain the CAR ratio at the 8% (normal) limit, banks must manage Risk Weighted Assets (ATMR), because fixed assets and other assets do not contribute to bank income. therefore, if there is an increase in RWA, CAR and ROA will also increase.

The third variable is FDR, this variable's sign appears as expected. By looking at the p-value which are under 5%, it means that 1% higher in FDR will be affect the ROA by 0.021 decreases in average, the result is supported by Widyaningrum & Septiarini (2015), Nahar & Prawoto (2017) and Azizah & Diana (2019), they stated that FDR has a significant negative effect on ROA. The increase in the amount of profit from Islamic banking can be done by controlling credit or financing provided as liquidity. According to (Azizah & Diana, 2019), there are several ways to keep the FDR level within the normal limits set by Bank Indonesia, which is 85% to 100%.

The last variable that has an impact on ROA is Operational Efficiency Ratio (OER). By looking at the level of significance of OER, we can conclude that OER has a significant negative influence in increasing Return on Assets (ROA). An increase of 1% from OER will result in a decrease in ROA of 0.070%.

Similar results were made by Effendi (2015), Stiawan (2009), Nahar & Prawoto (2017) and Wibowo & Syaichu (2013), they stated that OER had a significant negative effect on ROA. An increase in the number of Islamic banking profits can be done by monitoring operational

costs incurred so that operating income can be increased, so that ROA profits will increase. According to Stiawan (2009), if operational costs are more efficient in its management, it will increase bank liquidity and bank operating income. So that the benefits obtained by banks are also increasing. Then Wibowo & Syaichu (2013) argues that operating income must be maximized so that the profit received by the bank becomes better, and the bank management must be better in determining its operational costs. For the remaining variables, inflation, GDP, and exchange rate do not appear to have a significant effect since the p-value of those variable are higher than 5%.

By looking at the R-square value, 83% of the ROA variants can be explained by all the variables in this paper. While the remaining 17% of the variants are outside the model.

Policy Recommendations

From the results of this paper, there are several options that might be important in establishing the policy in term of increasing the Return on Asset (ROA). First, Islamic bank stakeholders need to encourage their capital stock to cope with high-risk assets. In accordance to Bank Indonesia, sharia banks need to maintain their Capital Adequacy Ratio (CAR) more than 8% in term of making more profit. Second, Islamic banking must regulate the increase of Non-Performing Finance (NPF), Financing to Deposit Ratio (FDR), and Operational Efficiency Ratio (OER). so that the level of Return on Assets (ROA) might increase. Third, it is expected that a policy from Bank Indonesia in terms of helping the growth of Islamic banks, especially in Indonesia.

Conclusion

This research was conducted to examine the effect of macroeconomic and financial risks on the profitability of Islamic banking (ROA) in Indonesia using panel data from 5 Islamic commercial banks in the period 2011 to 2018. Ordinary Least Square (OLS), Fixed Effect Model (FEM), and Random Effect The model (REM) is used in testing the results of this paper. The Random Effect Model is the best estimator in explaining the effects of all variables included in this paper.

Based on the results of the analysis and discussion described in this study, it can be found that NPF, FDR and Operating Cost Revenues have a negative impact in reducing ROA on 5 Islamic banks in Indonesia. Meanwhile, Capital Adequacy Ratio (CAR) has a positive effect on Return on Assets (ROA) at five Sharia Commercial Banks in Indonesia. Then inflation, GDP, and exchange rates do not have any effect on ROA of 5 Islamic banks in Indonesia.

In terms of increasing the profitability of Islamic banks, it would be better for Islamic bank stakeholders to maintain their capital stock at normal levels. In addition, the role of Bank Indonesia is also important in helping Islamic banks to drive profits or even growth.

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Limitations of Study

In this paper, the author only took some variables in measuring the factors that affect the profitability of sharia banks. There are many other factors outside the model which actually can be involved in this paper such as OER, ROE, DPK, and many others. In terms of time, this paper collects data in the 2011-2018 period. As we know, the longer the data, the better the results will be presented. The number of Islamic banks is also a problem in this writing, there are about 14 Islamic banks in Indonesia according to the Financial Services Authority (OJK). However, in this paper the authors only take 5 Islamic banks. Therefore, it will be intriguing to do more research about it by adding more year and variables.

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