

**THE EFFECT OF EFFICIENCY RATIO, BAD CREDIT AND PROFITABILITY TO  
CAPITAL ADEQUACY RATIO AT SHARIA COMMERCIAL BANKS IN INDONESIA  
YEAR 2014-2018**

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**ABSTRACT**

*This study aims to determine the effect of efficiency ratios, non-performing loans, and profitability on the capital adequacy ratio in Islamic Commercial Banks in Indonesia 2014-2018. This research is a quantitative study with secondary data from financial reports. Purposive sampling is a sampling technique use in this study so that there are 14 samples of Islamic commercial banks during the 2014-2018 period. The data analysis used is multiple linear regression analysis with the SPSS application. The results obtained by two dependent variables, the efficiency ratio and non-performing loans have an influence on the capital adequacy ratio. Meanwhile, profitability partially has no effect on the capital adequacy ratio.*

**Keywords:** *Efficiency ratio BOPO; Non Performing Loan (NPL); Profitability; Capital Adequacy Ratio, Sharia Commercial Bank*

**PRELIMINARY**

Islamic economic development is synonymous with the development of Islamic financial institutions. Sharia banks as financial institutions have become the center for the development of Islamic economic theories and practices in depth. The improvement of Law No. 7 of 1992 became Law No. 10 of 1998 which explained that in Indonesia there are two banking systems (dual banking system) namely conventional banking system and sharia banking system established several sharia banks including Bank IFI, Bank Syariah Mandiri, Bank Niaga, Bank BTN, Bank Mega, Bank BRI, Bank Bukopin, BPD Jabar and BPD Aceh. Based on Sharia Banking Statistics According to Sharia Banking Statistics in 2019, Sharia commercial banks that already operate become as many as 14 banks. The number of Sharia Commercial Banks has increased annually as seen from table 1, from the last five years the increase occurred in 2016 by 13 units from the previous year of 12 units in 2015, and in 2018 there was an increase of 14 units. However, based on the publication of the central bank, it shows that the market share of Islamic banking is still below 6% of the total national banking market share. The development of Sharia banking is considered slow by the central bank due to capital constraints and the lack of reach of Sharia activities such as education and socialization of Sharia banking (Source: nasional.sindonews.com).

Table 1. Data on Number of Sharia Commercial Bank Offices in 2014-2018.

	2014	2015	2016	2017	2018
Sharia Commercial Banks	12	12	13	13	14
Sharia Business Unit	22	22	21	21	20
Number of Offices	2.483	2.301	2.201	2.169	2.229
Sharia People's Financing Bank	163	163	164	167	166
Number of Offices	439	446	453	441	495

Source: Islamic Banking Statistics (2018)

Based on signaling theory that explained that information issued by banks or companies is a signal for external parties banks (Novalia & Nindito, 2016). The signal can be in the form of information on capital adequacy which is an indicator of the health of the bank. According to Maya & Anggun (2016) said that the capital aspect for national banks is very important because a very large capital strength is needed in global competition. According to Bank Indonesia, the bank's capital adequacy level can be maintained by paying attention to the capital adequacy ratio (CAR), which is the most important indicator in maintaining the bank's capital level. According to Bukian & Sudiarta, (2016) one of the factors affecting CAR is the BOPO efficiency ratio. BOPO ratio is a comparison between operating expenses and operating income in measuring the level of efficiency and ability of banks in conducting their operations (Rivai, Basir, Sudarto, & Veithzal, 2013). While according to (Azizah & Taswan, 2019) factors that affect CAR are NPL and profitability. NPL (*Non Performing Loan*) or bad credit is one of the measurements of the bank's business risk ratio that shows the amount of non-performing credit risk in a bank (Darmawi, 2011). Profitability is a ratio that measures the effectiveness of management as a whole indicated by the size of the ability gained in relation to sales and investments (Fahmi, 2012). The better the profitability ratio, the better it will describe the company's high profitability.

Yuliani et al.'s previous research (2015) showed that variable yields on bad loans and profitability had no effect on capital adequacy ratios while Natasia (2015) showed NPL or bad credit results and profitability had an effect on capital adequacy ratios. Research related to efficiency ratio by ( Oktaviana & Syaichu, 2016 ) shows that BOPO efficiency ratio has no effect on CAR while Bukian & Sudiarta research, (2016) BOPO has an influence on Capital Adequacy Ratio (CAR). Based on the description of the importance of capital adequacy ratio and the difference in results in previous research, this study examines aspects that can affect the capital adequacy ratio, namely efficiency ratio, bad credit and profitability. The purpose of this study is to determine the effect of efficiency ratio, bad credit and profitability to capital adequacy ratio.

## LITERATURE REVIEW

### Signaling Theory

Signal theory explains that the information released by the company is a signal for decision making (Novalia & Nindito, 2016). Signaling theory emphasizes the importance of information released by the company to investment decisions of parties outside the company. The attachment that

occurs in this research with Signaling theory is sharia banks issue signals or all information related to bank performance, such as efficiency ratio, bad credit, profitability and capital adequacy.

### **Economies of Scale**

According to Christensen & Greene (1976) the theory of the Economy of Scale of a bank can be said to achieve economies of scale when the bank is able to produce more output with a relatively smaller proportion of cost increases. In contrast, a bank does not reach economies of scale, or so-called diseconomies of scale, when the proportion of rising costs is relatively greater to produce more output. That is, banks that are able to achieve economies of scale more efficiently.

### **Capital Adequacy Ratio**

Capital adequacy is a banking regulation that establishes a framework for banks and storage institutions on how to handle their capital (Frida, 2020). The level of capital adequacy of banks is stated by a ratio called capital adequacy ratio (Andrianto & Firmansyah, 2019). CAR (Capital Adequacy Ratio) describes the bank's ability to cover the risk of losses from its activities and the bank's ability to fund its operations (Fahmi, 2012). Meanwhile, according to Cashmere (2015) CAR is a comparison between the ratio of capital to Risk-Weighted Assets (ATMR) and in accordance with government regulations.

### **Efficiency Ratio**

Bank efficiency is the ability of banks to use production factors effectively that can be measured by the ratio of Operating Income Operating Expenses (BOPO). BOPO is a ratio of comparison of operating expenses to operating income used to measure the bank's ability in the effectiveness of its operational activities (Fatimah, 2014). Meanwhile, Rivai et al., (2013), according to him, BOPO ratio is a comparison between operating expenses and operating income in measuring the level of efficiency and ability of banks in carrying out their operations.

### **Bad Credit**

Cashmere (2015) said that non-performing loans (NPLs) are non-performing loans or bad loans are loans in which there are obstacles caused by 2 elements, namely from the bank in analyzing and from the customer who intentionally or unintentionally in his obligations do not make payments. NPL is a ratio used to measure banks' ability to cover the risk of credit repayment failure by debtors. NPL reflects credit risk, the smaller the NPL the less credit risk borne by the bank (Cashmere, 2015). Meanwhile, according to Yuliani et al., (2015) bad loans are loans that have difficulty paying off due to intentional factors and or factors beyond the company's ability.

### **Profitability**

According to Cashmere (2016) the profitability ratio is a ratio to assess the company's ability to seek profit, this ratio also provides a measure of the effectiveness of management or the company in using its assets. The better the profitability ratio, the better it will describe the company's high profitability. At banks, profitability is the ability of banks to make a profit by utilizing assets owned by the bank (Mainata & Ardiani, 2017). Profitability can be proxied with Return On Assets (ROA). ROA is calculated by comparison of profit after tax with total assets owned by the company.

Table 2. ROA Component Rating Criteria

ROA	Risk Value	Predicate Risk
$ROA > 1,5\%$	1	Excellent
$1,25\% < ROA \leq 1,5\%$	2	Good
$0,5\% < ROA \leq 1,25\%$	3	Enough
$0\% < ROA \leq 0,5\%$	4	Not good
$ROA \leq 0$	5	Very Bad

## **HYPOTHESIS DEVELOPMENT**

### **Effect of Efficiency Ratio to Capital Adequacy Ratio**

According to Christensen & Greene (1976) a bank can be said to achieve economies of scale when it is able to produce more output with a relatively smaller proportion of fee increases so that it can be interpreted that the bank's performance has been efficient. Bank efficiency is the bank's ability to effectively use production factors that can be measured by the ratio of Operating Expenses of Operating Income or BOPO (Frida, 2020). BOPO shows a comparison between operating costs and bank operating income. A high BOPO ratio can reduce the capital held by the bank because the operational costs borne by the bank are higher than the income so that the bank has to cover the costs - the excess operational costs of the bank are borne. Therefore, a large BOPO will lower the Capital Adequacy Ratio (CAR), and a low BOPO will increase the Capital Adequacy Ratio (CAR). Research conducted by Yuliani et al., (2015) and Bukian & Sudiarta, (2016) showed results that BOPO negatively affects CAR. Thus, the hypotheses developed in this study are:

H1: Efficiency ratio negatively affects capital adequacy ratio

### **Effect of Bad Credit on Capital Adequacy Ratio**

Based on signal theory that explains the importance of information issued by banks such as non-performing loans (NPL). Yuliani et al., (2015) bad loans are loans that have difficulty paying off. The increase in Non Performing Loans (NPLs) indicates an increase in non-performing loans to the total loans held by the Bank. If non-performing loans increase, the interest income obtained by the bank from the credit will be reduced, resulting in the bank's profit also decreasing. With a decreased profit can have an impact on the capital adequacy ratio because profit is one of the constituent components of capital (Yuliani et al., 2015). The development of this research hypothesis is supported by the research of Oktaviana & Syaichu (2016) and Andhika & Suprayogi (2017), Natasia (2015) with the results of their study NPL has a negative influence on the capital adequacy ratio (CAR).

H2: Bad credit negatively affects capital adequacy ratio

### **The Effect of Profitability on Capital Adequacy Ratio**

Based on signal theory, profitability is one of the important information or signals for external parties of the bank. Profitability is a ratio to assess the company's ability to make a profit, this ratio also provides a measure of the effectiveness of management or the company in using its assets (Cashmere, 2016). If the ROA increases it can be interpreted that the company's performance in generating profit with its assets is getting better so that CAR which is an indicator of the bank's health

is also increasing. This is also supported by the research results of Jaya (2017) and Azizah & Taswan (2019) namely profitability as measured by ROA positively affects the capital adequacy ratio (CAR).  
H3: Profitability has a positive effect on capital adequacy ratio

## RESEARCH METHODS

### Types of Research and Data Sources

The research approach in this study is quantitative approach using independent variables and dependent variables. Quantitative method can be interpreted as research method based on philosophy of positivism, used to research on population or in certain samples, data collection using research intrusion, data analysis is quantitative / statistical, with the aim to test the hypothesis that has been applied (Sugiyono, 2015). The type of data used in this study is secondary data. Data obtained from financial statements sourced from the web of each sharia commercial bank.

### Population and Sample

One of the steps taken in the research is to determine the object to be studied and the size of the existing population. The population in this study is all sharia commercial banks in Indonesia year 2014-2018 which can be seen in table 3. Once the population is determined then the next is to determine the sample. Sampling in this study used purposive sampling technique. The use of purposive sampling because not all samples have criteria that match the one the author has specified. Therefore, the author chose purposive sampling techniques by establishing certain considerations or criteria that must be met and can be used in this study. With the following criteria:

- a. Sharia Commercial Banks that issued complete financial report data for the period 2014-2018.
- b. Sharia Commercial Banks that do not merge or acquisition with other banks.

**Table 3. List of Sharia Commercial Banks in Indonesia Year 2014-2018**

No	Name Bank
1	Bank BCA Syariah
2	Bank BJB Syariah
3	Bank BNI Syariah
4	Bank BRI Syariah
5	Bank Bukopin Syariah
6	Bank Maybank Syariah
7	Bank Mega Syariah
8	Bank Muamalat Syariah
9	Bank Syariah Mandiri
10	Bank Panin Syariah
11	Bank Victoria Syariah
12	Bank Tabungan Pensiunan Nasional Syariah
13	Bank Aceh Syariah
14	Bank Nusa Tenggara Barat Syariah

## Research Variables and Operational Definitions

### Efficiency Ratio (X1)

In this study the efficiency ratio was measured using BOPO. Rivai et al., (2013) according to bopo ratio is a comparison between operating expenses and operating income in measuring the level of efficiency and ability of banks in carrying out their operations. Bopo efficiency ratio is calculated by using the formula:

$$BOPO = \frac{\text{Operating Cost}}{\text{Operating Income}} \times 100\%$$

### Bad Credit (X2)

Cashmere (2016) said non-performing loans or bad loans are loans in which there are obstacles caused by 2 elements, namely from the bank in analyzing or from the customer who intentionally or unintentionally in his obligations do not make payments. Bad credit in this study was measured using non-performing loan (NPL) ratio. NPL ratios can be calculated by using the formula:

$$NPL = \frac{\text{Bad Credit}}{\text{Total Credit}} \times 100\%$$

### Profitability (X3)

According to Cashmere (2016) the profitability ratio is a ratio to assess the company's ability to make a profit, it also provides a measure of the effectiveness of management or the company in using its assets that can be calculated using the formula:

$$ROA = \frac{\text{earning after interest and tax}}{\text{total aset}}$$

### Capital Adequacy

The capital adequacy ratio can be calculated using CAR (Capital Adequacy Ratio). According to Cashmere (2015) said that CAR is a comparison between the ratio of capital to Risk-Weighted Assets (ATMR) and in accordance with government regulations that can be calculated using the formula:

$$CAR = \frac{\text{Owners Equity}}{\text{ATMR}} \times 100\%$$

## Data Analysis Techniques

Data analysis used is descriptive statistical analysis and multiple linear regression analysis with SPSS. Multiple linear regressions are used to study the relationship between two or more variables, primarily to trace relationship patterns whose models are not yet perfectly known (Ghozali, 2016). In multiple linear regressions there are classical assumption tests, coefficients of determination, simultaneous tests and partial tests.

## ANALYST RESULTS AND DISCUSSIONS

### Analyst Results

#### Descriptive Statistical Analysis

The results of this study's descriptive statistical analysis can be seen in table 4. Based on table 4 variables efficiency ratio has a minimum value of 62.40, a maximum value of 217.40 with an average of 97.5157 and standard deviation of 27.85997. In bad credit variables, the minimum value is 0.00, the maximum value is 7.85 with an average of 2.6067 and the standard deviation is 1.82335. In profitability variables, the minimum value is -20.13, the maximum value is 12.40 with an average of

0.6277 and the standard deviation is 4.39735. In the Capital Adequacy variable, the minimum value is 11.51, the maximum value is 163.07 with an average of 24.3870 and the standard deviation is 20.06574.

**Tabel 4 Statistik Deskriptif Variabel Penelitian**

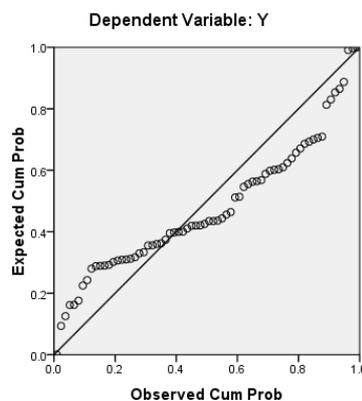
	N	Minimum	Maximum	Mean	Std. Deviation
BOPO	70	62.40	217.40	97.5157	27.85997
NPL	70	.00	7.85	2.6067	1.82335
ROA	70	-20.13	12.40	.6277	4.39735
CAR	70	11.51	163.07	24.3870	20.06574

Source: SPSS output, author-processed data

## Classic Assumption Test

### Test Normality

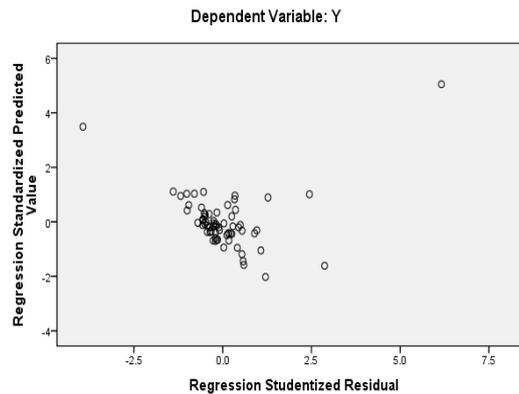
The normality test aims to test whether in the regression model the bully or residual variable has a normal distribution as it is known that the t and F tests assume that residual values follow the normal distribution (Ghozali, 2016). To be able to test the normality of the regression model, the study used the Normal P-P Plot of Regression Standardized Residual method. In figure 1. normality test results in the graphic image show that the spread of data (points) on the diagonal axis of the graph does not spread far from the diagonal line or follow the direction of the diagonal line, then the regression model meets the assumption of normality.



**Pictures 1. Normal P-P Plot of Regression Standardized Residual**

### Heteroscedasticity Test

Heteroscedasticity test aims to detect the occurrence of relevant values that differ from each variant of free variables namely Efficiency Ratio (BOPO), Bad Credit (NPL), and Profitability (ROA) in the regression model. In figure 2 of the heteroscedasticity test results, it is seen that scatterplot does not form a particular pattern so there is no heteroscedasticity. Here are scatterplot results obtained from spss output.



**pictures 2. Uji Heteroskedastisitas**

### Multicollinierity Test

Multicollinierity tests are used to test whether or not there is co-ornuation between variables (Ghozali, 2016). Variables are free from multicollinierity if tolerance value  $> 0.1$  and Variance Invlation Factor (VIF) value  $< 10$ , then there is no multicollitas. Based on table 5 below, the tolerance value of all variables is more than 0.1 and the variance inflation factor (VIF) value is less than 10. So it can be concluded that this research data does not experience multicolliation between free variables.

Table 5 Multicollinierity Test Results

Model	Collinearity Statistics	
	Tolerance	VIF
BOPO	0.289	3.457
NPL	0.759	1.318
ROA	0.262	3.817

Source: Source: SPSS output, **author-processed data**

### Multiple Linear Regression Analysis

Regression analysis is used to determine the effect of Efficiency Ratio (BOPO), Bad Credit (NPL), and Profitability (ROA) on bound variables namely Mpdal Adequacy Ratio (CAR). Table 10 contains the values of coefficient of determination, partial test (t test), and simultaneous test (F test). The RSquare value of the determination test indicates the RSquare value is 0.337 or 33.7%. This value shows capital adequacy (Y) is influenced by variable Efficiency Ratio (BOPO), Bad Credit (NPL2), and Profitability (ROA) the remaining 66.3% is influenced by other variables not studied in this study. Furthermore, the partial test, two independent variables namely Efficiency Ratio (BOPO) and Bad Credit (NPL) has an influence on the Capital Adequacy Ratio. While in the variable Profitability (ROA) has no effect on the Capital Adequacy Ratio. The last test is a simultaneous test that has the result that the three independent variables namely Efficiency Ratio (BOPO), Bad Credit (NPL), and Profitability (ROA) jointly affect the Capital Adequacy Ratio.

Table 6 Multiple Regression Test Results

Type of testing	BOPO	NPL	ROA
Coefficient of Determination ( $R^2$ )			
Value R Square		0.337	
<b>Uji Parsial (Uji t)</b>			
Value Koefisien regresi	0.586	-4.487	1.716
Value Signifikansi	0.000	0.001	0.059
<b>Uji Simultan (Uji F)</b>			
Value Signifikansi		0.000	

Source: SPSS output, author-processed data

## DISCUSSION

### Effect of Efficiency Ratio to Capital Adequacy Ratio

Based on the results of statistical calculations with t-test shows that BOPO partially has a significant positive influence on CAR this means that if BOPO increases then CAR increases as well as vice versa if the VALUE of BOPO decreases car value also decreases. due to sharia banks experiencing a decrease in BOPO which means that the increase in operating costs is smaller than the decrease in operating income, which causes a smaller increase in operating costs than the increase in operating income. Thus the bank's profit increased, bank capital increased and CAR also increased. When the proportion of the cost increases is relatively greater to produce more output. This means that the bank is able to achieve economies of scale more efficiently. The results of this study are consistent with the results of research (Fatimah, 2014) namely BOPO has a positive effect on CAR. High BOPO then CAR will increase, and vice versa when BOPO down CAR will decrease. This is because the high BOPO indicates the inefficientness of banks in generating their profits using operational costs, so it can be seen that capital is not used in the bank's efforts to streamline operating income through operating costs.

### Effect of Bad Credit on Capital Adequacy Ratio

Bad credit (NPL) in this research partially negatively affected CAR. Based on signal theory that explains the importance of information issued by banks, one of which is non-performing loans (NPL). Bad loans (NPLs) in this research have a negative effect, it can be interpreted that if the NPF increases, it can be said that there is an increase in non-performing loans to the total credit held by the bank. The non-performing loans will hinder the receipt of interest income so that the bank's income decreases and causes the cost of credit reserves for the NPL to increase (Natasia, 2015). Declining revenues make the bank use its capital for the bank's operational activities. The higher the NPL, the higher the capital used for operations and lower the number of CAR (Oktaviana & Syaichu, 2016). The results of this research are consistent with the research results of Oktaviana & Syaichu (2016), Natasia (2015), Andhika & Suprayogi (2017) namely bad loans affecting the capital adequacy ratio.

### The Effect of Profitability on Capital Adequacy Ratio

Profitability (ROA) in this research partially had no effect on the capital adequacy ratio (CAR). Profitability as measured by ROA in this research has no effect because the high value of CAR is not only derived from profit but the main one comes from the owner's deposited capital and

the value of Risk Weighted Assets (ATMR) (Yuliani et al., 2015). Capital is used to maintain the bank's operational continuity and also to cover the losses of problematic productive assets. The smaller the placement of funds on risky assets, the higher the capital adequacy ratio. In one of the research samples, the highest value of CAR at Maybank Syariah in 2018 with negative ROA value, although the negative profitability value (ROA) of CAR value remains high due to the use of capital and third party funds to encourage effective business growth for Sharia banks as reflected by the high CAR. Based on this, CAR is not influenced by profitability but by other factors, one of which is the use of capital and third party funds. The results of this research are supported by research Yuliani et al., (2015) which has a variable result of profitability has no influence on the capital adequacy ratio.

## CONCLUSION

Based on the results of research and discussion on the effect of efficiency ratio, bad credit and profitability to capital adequacy ratio, it can be concluded that the efficiency ratio has a positive effect because the increase in operating costs is smaller than the decrease in operating income so that sharia banks still profit and profit affect CAR. Furthermore, bad loans negatively affect the capital adequacy ratio due to bad loans resulting in the cost of credit reserves and interest income receipts being hampered so that banks use their capital for operations, thus affecting the capital adequacy ratio. Profitability in this research has no effect on the capital adequacy ratio because a high CAR not only comes from profit but the main one comes from the owner's deposited capital and the value of Risk Weighted Assets (ATMR).

The advice for further research is first, increase the research period to make the results more accurate and use proxies other than those used in this study to measure research variables. Second, it can replace or add dependent variables with other variables and it is recommended for bank management to pay attention to variables that are proven to affect CAR, namely variable efficiency ratio and bad credit. Finally, the bank should maintain its capital (CAR) to remain at 8% in accordance with BI regulations in addition to maintaining public confidence in the bank's health.

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