

# **ANALYSIS OF THE EFFECT OF CAPITAL RATIO, ASSET QUALITY, EARNING, LIQUIDITY, AND SENSITIVITY TO MARKET RISK ON BANKING FINANCIAL PERFORMANCE REGISTERED IN INDONESIA STOCK EXCHANGE**

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**Abstract:** This research was conducted with the aim of testing and analysing the effect of Capital, Asset Quality, Earning, Liquidity, and Sensitivity To Market Risk ratios which are proxied by financial ratios of Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Net Interest Margin (NIM), Operating Expenses Operating Income (OEOI or BOPO), Loan To Deposit Ratio (LDR), and Interest Rate Risk (IRR) on the financial performance of banks listed on the Indonesia Stock Exchange which is proxied by the financial ratio of Return on Assets (ROA). The population in this study were all banking companies listed on the Indonesia Stock Exchange in the period 2008 to 2018 of 22 banks and made the entire population a research sample, so that the number of observations in the study was 242 observations. Data is processed and tested through panel data regression using Eviews statistical test equipment. The results obtained in this study indicate that CAR, NPL, NIM, OEOI, LDR, and IRR simultaneously have a significant effect on ROA, whereas partially it is known that CAR and NIM have significant positive effect on ROA, NPL and OEOI significantly negative effect on ROA, LDR does not have a significant negative effect on ROA, and finally IRR has no significant positive effect on ROA.

**Keywords:** Capital Adequacy Ratio, Non Performing Loans, Net Interest Margins, Operational Expenses Operating Income, Loan To Deposit Ratio, Interest Rate Risk, and Return On Assets.

## **1. INTRODUCTION**

In line with the banking function as an intermediary institution that is in good condition with an accelerated level of bank credit growth as of September 2019 of 9.92% year over year (LPIP OJK, Quarter II 2019), the real challenge facing banks is the occurrence of intense competition in among banking industry peers who usually have similarities in the products and services offered. For this reason, the company must know the condition of its financial performance is a reflection of the financial condition of the company within a certain period of time which is an output of individual decisions that are determined continuously by management (Sucipto, 2003). Information about a bank's financial performance has a very important role for investors to use as a tool in making decisions in investing. The financial performance itself must also be able to describe going-concern information and promising returns to stakeholders that can be measured by return on assets (ROA). This is based on the policy of the Indonesian bank that prioritizes the value of ROA compared to other ratios as a proxy of banking financial

performance, because Bank Indonesia prioritizes the profitability of a bank as measured by the assets it has successfully acquired.

Measurement of financial performance can be assessed through several important aspects, namely capital aspects, asset quality, financing, liquidity and market sensitivity (sensitivity to market risk) regulated in PBI No.6 / 10 / PBI / 2004 issued on 12 April 2004 by Bank Indonesia which can be assessed using financial ratios. The capital aspect can be assessed by the financial ratio of the Capital Adequacy Ratio (CAR), the aspect of asset quality through the Non-Performing Loan ratio (NPL), the earning aspect through the Net Interest Margin (NIM) ratio and the Operating Expenses Operating Income (OEOI or BOPO), the liquidity aspect through the Loan ratio to Deposit Ratio (LDR), while the aspect of market sensitivity is measured by the ratio of Interest Rate Risk (IRR). In assessing the financial performance of banks in the future, these financial ratios have good predictive power (Elfira, 2017).

The following shows the trends in the financial performance of banking companies listed on the Indonesia Stock Exchange from 2008 to 2018.

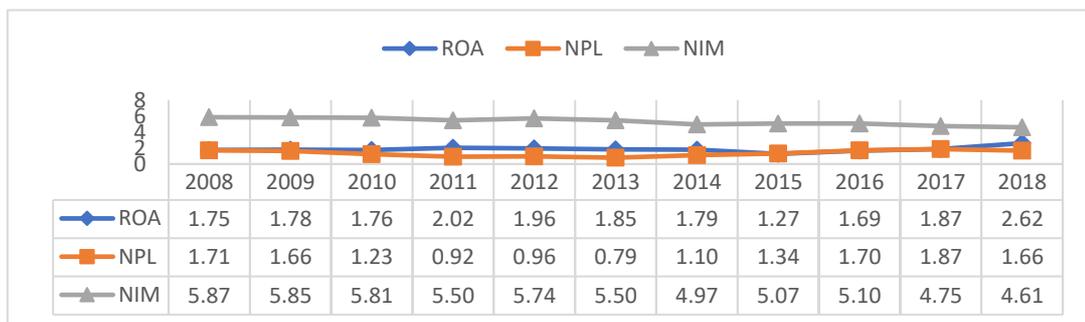


Figure 1. Trend of ROA, NPL, and NIM (in 2008-2018)

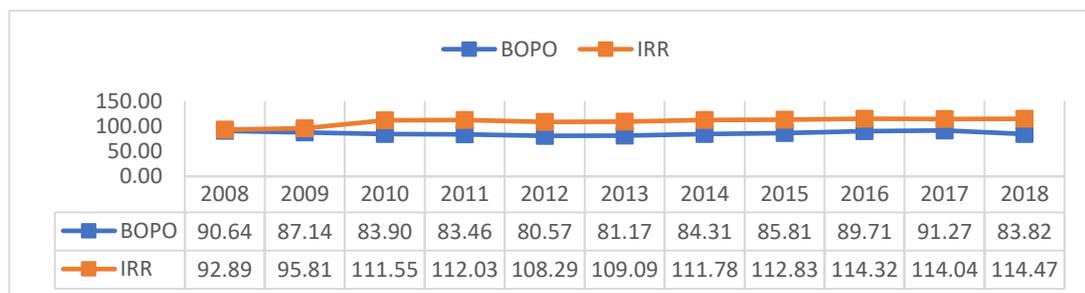


Figure 2. Trend of OEOI or BOPO and IRR in 2008-2018



Figure 3. Trend of CAR in 2008-2018

From Figure 1 to Figure 3 regarding the trends in banking financial performance in 2008-2018 above, the Return On Assets variable fluctuates from

year to year. The phenomenon that every increase in ROA is not always followed by an increase in CAR, NIM and IRR and every decrease in ROA is not always followed by a decrease in the value of NPL, OEOI/BOPO, and LDR, it is necessary to conduct further research to determine the direction of influence between the real variables.

## **2. LITERATURE REVIEW**

### **2.1. Agency Theory**

Agency theory is a terrorist concept that explains the relations of interests that occur between principals and agents. The principal is the owner of the company who mandates the agent to carry out all activities on behalf of the principal with the capacity as a decision maker (Jensen and Meckling, 1976).

### **2.2. Signalling Theory**

Signalling theory is a theory that explains the importance of measuring the financial performance of a company that requires the agent to signal the output of the financial performance to the principal (Spence, 1973).

### **2.3. Market Power Theory**

Market power theory is a traditional industrial model embedded in The Structure Conduct Performance theory which was first introduced by Bain (1951). This theory argues that a company's financial performance depends on the implementation and operational structure of the company. The level of profitability to be received by companies depends on the level of market concentration.

### **2.4. Efficient Structure Theory**

This statement states that the relationship between market structure and banking financial performance is determined by the bank's operational efficiency (Peltzman, 1977). Banking with superior management and good technology will have low costs, so the profit or profit generated is large.

### **2.5. Buffer Theory of Capital Adequacy**

This theory predicts that banks that achieve minimum capital in accordance with regulations will have incentives to increase capital and reduce risk to avoid regulatory fines for violating compliance with bank capital requirements (Calem and Rob, 1996).

### **2.6. Credit Default Theory**

This theory states that there is an indirect relationship between credit default and financial performance of banks (Sy, 2007). This theory helps in explaining that loan risk automatically impacts the financial stability of a company which impacts on the increase or decrease in the company's financial performance.

## 2.7. Banking Financial Performance

The bank's financial performance can be seen through its published financial statements. The ROA criteria based on SEOJK NO.14 / SEOJK.03 / 2017 are as follows:

No	Interval	Category
1	$ROA > 1,5\%$	Excellent
2	$1,25\% < ROA \leq 1,5\%$	Good
3	$0,5\% < ROA \leq 1,25\%$	Fair
4	$0\% < ROA \leq 0,5\%$	Poor
5	$ROA \leq 0\%$	Bad

## 2.8. Capital

In this research, capital aspects are measured using the Capital Adequacy Ratio (CAR) financial ratio. According to the Codification of Bank Indonesia Regulation (2013), banks that have a CAR value of 8% are banks with a healthy rating.

No	Interval	Category
1	$CAR > 12\%$	Excellent
2	$9\% < CAR \leq 12\%$	Good
3	$8\% < CAR \leq 9\%$	Fair
4	$6\% < CAR \leq 8\%$	Poor
5	$CAR \leq 6\%$	Bad

## 2.9. Asset Quality

In this study, the aspect of asset quality is measured using a Non Performing Loan (NPL) financial ratio. The following are good NPL criteria according to Bank Indonesia.

No	Interval	Category
1	$0\% < NPL \leq 2\%$	Excellent
2	$2\% < NPL \leq 5\%$	Good
3	$5\% < NPL \leq 8\%$	Fair
4	$8\% < NPL \leq 11\%$	Poor
5	$NPL > 11\%$	Bad

## 10. Earning

This study uses NIM and OEOI or BOPO as a proxy for earnings aspects (profitability). The following are good NIM criteria according to Bank Indonesia:

No	Interval	Category
1	$NIM > 3\%$	Excellent
2	$2\% < NIM \leq 3\%$	Good
3	$1,5\% < NIM \leq 2\%$	Fair
4	$1\% < NIM \leq 1,5\%$	Poor
5	$NIM \leq 1\%$	Bad

Operating Expenses Operating Income is a ratio that illustrates the efficiency of banks in carrying out their activities. Interest costs given by banks to customers are operational expenditure, while operational income is interest earned by banks from customers.

### 2.10. Liquidity

This study uses the Loan to Deposit Ratio as an indicator of the measurement of liquidity aspects. The LDR criteria according to Bank Indonesia are as follows:

No	Interval	Category
1	$50\% < \text{LDR} \leq 75\%$	Excellent
2	$75\% < \text{LDR} \leq 85\%$	Good
3	$85\% < \text{LDR} \leq 100\%$	Fair
4	$100\% < \text{LDR} \leq 120\%$	Poor
5	$\text{LDR} \leq 120\%$	Bad

### 2.11. Sensitivity to Market Risk

In this study, Interest Rate Risk is proxied as an aspect that can measure sensitivity to market risk. Interest Rate Risk (IRR) is a ratio that can be used to measure bank business risk by looking at the amount of interest that a bank might get from a customer is greater than the amount of interest that banks must pay to customers.

### 2.12. Research Hypothesis

- H1: Capital Adequacy Ratio (CAR) has a positive effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H2: Non Performing Loans (NPLs) have a negative effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H3: Net Interest Margin (NIM) has a positive effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H4: Operating Expenses Operating Income (OEOI) have a negative effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H5: Loan to Deposit Ratio (LDR) has a negative effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H6: Interest Rate Ratio (IRR) has a positive effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).
- H7: CAR, NPL, NIM, OEOI, LDR and IRR variables simultaneously have a significant effect on the financial performance of banks listed on the Indonesia Stock Exchange (IDX).

## 3. RESEARCH METHODS

This research is a causal research design, which is a study that is able to identify possible causal relationships that occur between variables. The data analysis technique in this study was panel data regression which was tested using the Eviews 10 application.

## 4. RESULTS AND DISCUSSION

### RESULT

#### 1. Chow Test Results

Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	20.233025	-21,214	0
Cross-section Chi-square	264.690355	21	0

Based on the table it can be seen that the cross section F value is 20.23 and the chi square value is 264.69 with a probability value of 0.00 which is smaller than the significance level of 0.05. Therefore, it can be concluded that  $H_a$  is accepted, ie research data is more appropriate using the Fixed Effect model.

#### 2. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.34464	6	0.6301

From table above, the random cross section value in the test is 4.344 with a probability of 0.631 which is greater than the significance level of 0.05  $\alpha$ , so it can be concluded that  $H_0$  is accepted, the most appropriate model used in this study is the random effect model. Thus, testing classic assumptions is not required in studies that use random effects models.

#### 3. Partial T-test

Partially, the relationship between the dependent variable ROA as a proxy of the financial performance of banking companies listed on the Indonesia Stock Exchange from 2008 to 2018 on the independent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.79758	0.623735	10.89818	0
CAR	0.02292	0.007754	2.955786	0.0034
NPL	-0.11211	0.049366	-2.27103	0.0241
NIM	0.257819	0.04008	6.432556	0
OEOI	-0.05831	0.003228	-18.0672	0
LDR	-0.00345	0.004209	-0.81938	0.4134
IRR	0.004785	0.002814	1.700697	0.0903

Statistics from the t test results shown in the table and with a t-table value of 1.970 with probabilities of 0.05 ( $\alpha = 5\%$ ,  $df = 235$ , two tailed) can be interpreted as follows:

- CAR has a positive t-value of 2.955 with a probability level of 0.003 indicating that the CAR has a statistically significant positive effect in predicting the value of ROA.
- NPL has a negative t-value of -2,271 with a probability level of 0.024 indicating that NPL has a statistically significant negative effect in predicting ROA values.

- c. The NIM has a positive t-value of 6.432 with a probability level of 0.000 indicating that the NIM has a statistically significant positive effect in predicting the value of ROA.
- d. OEOI has a negative t-value of -18.067 with a probability level of 0.000 indicating that OEOI has a statistically significant negative effect in predicting ROA values.
- e. The LDR has a negative t-value of -0.8193 with a probability level of 0.413 indicating that the LDR has a statistically insignificant negative effect in predicting ROA values.
- f. IRR has a positive t-value value of 0.004 with a probability level of 0.090 indicating that the IRR has a statistically insignificant positive effect in predicting ROA values.

#### 4. Simultaneous Test (F-test)

Simultaneously, the relationship between the dependent variable ROA as a proxy of the financial performance of banking companies listed on the Indonesia Stock Exchange from 2008 to 2018 on the independent variables CAR, NPL, NIM, OEOI, LDR and IRR can be seen in the table below:

Weighted Statistics			
R-squared	0.686024	Mean dependent var	0.379267
Adjusted R-squared	0.678008	S.D. dependent var	0.9277
S.E. of regression	0.526418	Sum squared resid	65.12213
F-statistic	85.57752	Durbin-Watson stat	1.580148
Prob(F-statistic)	0		0

Based on the simultaneous test results above, it is known that the F-table value is 85.577 with a probability of 0,000 which indicates that all independent variables CAR, NPL, NIM, OEOI, LDR, and IRR simultaneously have a significant effect in predicting financial performance that is proxied by ROA . The F-count value is 0.2712 with a probability of 0.05 ( $\alpha = 5\%$ ,  $df1 = 6$ ,  $df2 = 242$ ).

#### 5. Determiration Coefficient Test

The coefficient of determiration is known to be 68.6%. This indicates that the independent variable is able to explain the dependent variable well ( $R = 68.6\% > 50\%$ ). Meanwhile, the remaining 31.4% is explained by other variables not included in the equation in this study.

### DISCUSSION

#### 1. The Effect of CAR on Banking Financial Performance

The results showed that the CAR had a statistically significant positive effect in predicting the value of ROA. These results are consistent with the first hypothesis in this study, which is supported by the results of research conducted by previous researchers, namely Syinta et al. (2018), Mohanty et al. (2018). The results in this study are also in accordance with the theory of the Buffer Theory of Capital Adequacy (Calem & Rob, 1996) which has been described previously which states that banks will meet the minimum capital adequacy of their companies to obtain

high expected returns which have an impact on improving the bank's financial performance in order comply with regulatory rules set by the authorities in deciding the minimum capital adequacy policy. This indicates that the greater the CAR value of a company, the greater the ROA owned by the company. This is due to the higher capital owned by the bank to fund productive assets, the low cost of funds will ultimately make the value of ROA increase.

## **2. The Effects of NPLs on Banking Financial Performance**

The results showed that NPL had a significant negative effect on financial performance of banks. These results are consistent with the second hypothesis in this study, namely NPL has a significant negative effect on ROA supported by previous research conducted by Mittal (2017), Kirui (2013) and Nimalathasan (2008) which also states that NPL has a significant negative effect on ROA. The results of this study are also in accordance with the Credit Default Theory (Sy, 2007) which states that bad loans faced by banks will have an impact on the decline in the bank's financial performance as a result of the decreased level of profitability obtained by banks. This means that the greater the NPL value of a company, the smaller the value of ROA owned by the company. This is assumed when banks face the risk of bad credit, the funds available to banks become idle money which has the potential to reduce the value of ROA. If a bank has a low NPL value, this illustrates that the burden of loss losses on the decline in the bank's credit value is also low, which will have an impact on the maximum profit generated. That is, the bank's financial performance is maintained in good condition.

## **3. The Effect of NIM on Banking Financial Performance**

In this study, the results showed that NIM has been tested to have a significant positive significant effect on the financial performance of banks. These results are in accordance with the third hypothesis supported by the results of previous studies conducted by Luh et al. (2018), Lartey et al. (2013), Nimesh (2016), and Chaffi et al. (2016). These results are also in accordance with the Efficient Structure Theory (Peltzman, 1977) which states that the success of management in carrying out efficiency or operational activities will affect the financial performance of the bank. This efficiency can be in the form of the effectiveness of the use of productive assets owned by banks to obtain the expected profit. The more efficient a company, the more returns will be obtained, meaning that the bank's financial performance will also increase. In other words, it can be stated that the greater the NIM value of a company, the greater the ROA that the company has. This indicates that the greater the net interest income received by the bank, it will increase the profit received by the bank which reflects that the bank has a good ability to maintain the condition of the company's financial performance.

## **4. The Effect of OEOI on Banking Financial Performance**

After testing the data in this study, it is known that OEOI has a negative and significant effect on the financial performance of banks, namely ROA. These results are consistent with the fourth hypothesis in this study, which is supported

by the results of previous studies conducted by Syinta et al. (2018), Luh et al. (2018), and Adler (2015). This result is also in accordance with the Efficient Structure Theory (Peltzman, 1977) which states that financial performance is influenced by the operational efficiency of the business it does. This illustrates that when banks are able to make efficiency of their operational costs, the level of profits obtained will be maximal. The role of management in making efficient business activities of the bank becomes an important part for the achievement of the main objective of a bank's business continuity, which is to get a high expected return or profit. The indications reflected through the theory and results of this study are that if a bank has a small OEOI value, it means that the management has succeeded in carrying out the company's operational efficiency which shows that the bank is in a condition of good financial performance, because operational costs incurred can be covered by operating income generated, so that the decline in the value of OEOI will be followed by an increase in the value of ROA of banking companies. Vice versa, if the OEOI increases, it will be followed by a decrease in the ROA value of the bank.

#### **5. The Effect of LDR on Banking Financial Performance**

The results obtained in this study indicate that the LDR has a statistically insignificant negative effect in predicting the value of ROA. These results are not in accordance with the fifth hypothesis in this study, namely LDR significantly negative effect on ROA. It is assumed that in the period 2008 to 2018 banks listed on the Indonesia Stock Exchange maintain a high LDR value, the higher the LDR value of the bank, the bank's ability to meet its short-term obligations will decrease, therefore the LDR is not significant in affecting the value ROA. This result is also supported by the results of a study conducted by Adler (2015) which states that LDR does not significantly influence bank ROA.

The direction of the LDR effect on ROA which is marked negative is in accordance with the Credit Default Theory (Sy, 2007) which states that banks will face risks to their loans that affect the stability and financial performance of the bank. It is assumed that when a bank faces bad credit, it will automatically increase the allowance for impairment losses that have an impact on the decline in credit collection that the bank will produce. In other words, when a bank has an LDR that is too high, it will have an impact on the bank's financial performance because the company is not in a condition of having adequate liquidity.

#### **6. The Effect of IRR on Banking Financial Performance**

In this study, the results obtained indicate that IRR has a statistically insignificant positive effect in predicting the financial performance of banking banks proxied by ROA for the period 2008 to 2018. These results are not in accordance with the sixth hypothesis in this study, namely IRR significant positive effect on ROA. It is assumed that banking companies listed on the Indonesia Stock Exchange from 2008 to 2018 maintain high IRR values. Changes in the value of IRR will have an impact on economic decision making for customers, namely whether it is better to consume or save. Interest Rate Risk that is usually faced by a bank can come from a central bank that acts as a monetary authority that will affect

the movement of the interest rate, which in turn will have an impact on the cost of funds and the level of the bank's Return On Assets.

The direction of IRR's effect on ROA which is positive in this study is in accordance with Market Power Theory (Bain, 1951) which states that the financial performance of banking companies depends on the level of concentration and fluctuations that occur in the market. If the IRR increases, it will be followed by an increase in the value of ROA. It is assumed that the movement that occurs in the market makes banks have an interest in asset sensitive higher than the interest on sensitive liabilities owned by the banking company.

## **5. CONCLUSION AND SUGGESTION**

### **5.1. Conclusion**

Based on the results of data analysis and discussions that have been carried out, it can be concluded, that partially the CAR and NIM variables have a significant positive effect on ROA, while the NPL, OEOI variables have a significant negative effect on ROA. Meanwhile, the LDR variable has no significant negative effect and the IRR variable has no significant positive effect on ROA. Then, simultaneously CAR, NPL, NIM, OEOI, and IRR have a significant effect on the financial performance of banks which are proxied by Return On Assets for banking companies listed on the Indonesia Stock Exchange for the period 2008 to 2018.

### **5.2. Research Limitations**

The limitations in this study, namely the observation period used in this study is not long, only 11 and only uses six independent variables, namely CAR, NPL, NIM, OEOI, LDR, and IRR.

### **5.3. Suggestion**

The suggestions that can be given based on the conclusions and limitations of the above research are as follows:

- a. For further researchers it is recommended to extend the study period in analyzing the financial performance of banks listed on the Indonesia Stock Exchange, preferably for 20 years. Then, it is expected to add another variable as an independent variable so that the coefficient of determination can reach 90%.
- b. For companies, it is recommended to keep the CAR, NPL, NIM, BOPO, LDR, and IRR values within the interval determined by Bank Indonesia and the Financial Services Authority, because the fluctuations of the six variables significantly influence the company's financial performance. Then, it is expected to pay more attention to the value of the Net Interest Margin because it is in accordance with the results of the study that the variable has a greater influence on Return On Assets compared to other variables used in the study.
- c. For investors, it is advisable to first pay attention to the value of NIM and NPL owned by a bank before making an investment with the aim of knowing that the bank has good financial performance, so that the possibility of getting a return on the investment is greater.

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