

THE EFFECT FROM NON PERFORMING LOAN, NET INTEREST MARGIN, SIZE AND LIQUIDITY TO CAPITAL ADEQUACY RATIO ON BANKING INDUSTRY THAT CHARTERED IN INDONESIA STOCK EXCHANGE YEAR 2013-2017

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ABSTRACT

Some cases that are happening at banks in Indonesia show that, in carrying out their operations, banks will face various risks. That risk has an impact on decreasing the Capital Adequacy Ratio (CAR). CAR is a ratio that shows how far the stakeholders equity can cover the risk assets, with the aim of assessing the security and health of the company in terms of the owner capital. Banks in Indonesia must fulfill the minimum capital requirements that is 9-12% before they can be given the permission to operate and have to maintain at that level along their lives. This study aims to examine and analyze the effect of non performing loan, net interest margin, size and liquidity on the capital adequacy ratio partially. The sample of this study are 36 companies selected by a purposive sampling method with the observation period for 5 years. Data used in this research was data obtained from the financial statements of Banking companies listed on the BEI in the period 2013-2017. The Data collection method is secondary data. The method of analysis is multiple regression analysis. The result of this research is non performing loan does not have an effect on capital adequacy ratio and net interest margin, size, liquidity have an effect capital adequacy ratio. Aside from the appropriateness of further research, it is advisable to use other variables and, extend the observation period to find a different result.

Keywords: non performing loan, net interest margin, size, liquidity, capital adequacy ratio

INTRODUCTION

Bank is not a foreign thing for the citizen in develop countries (Ismail, 2011, p. 1). Banks are the most visible financial intermediation in the economy (Cecchetti and Schoenholtz, 2015, p. 295). The core task of financial intermediation is to restructure risk in order to attract funds from the public for investment purposes in the real sector, in other words, mobilizing public funds into productive loans or loans (Herijanto, 2013, p. 57).

The bank is considered as a financial institution that is safe in carrying out various types of financial activities. The community believes that the funds placed in the security bank are more secure than those placed in another institution (Ismail, 2011, p. 1-2). In addition to security, the other goal is as a place to invest. By saving money in the bank, the customer will benefit from return on his savings, the amount of which depends on the policies of each bank. (Ismail, 2011, p. 4-5). But in running a business process, banks will actually face various risks such as credit risk, market risk, liquidity risk, and operational risk (including legal risk, compliance risk, reputation risk and strategic risk) (Ikatan Bankir Indonesia, 2016, p. 9). These risks if in fact occur, it will have a big impact on the economy and the welfare of the community or even the world, because there are many parties directly related to the bank.

Some of the risky problems often afflict the Banking Sector, such as problems related to Capital Adequacy Ratio (CAR) that afflict Bank Mutiara. According to Alamsyah (2014) as a member of the Board of Commissioners of the Financial Service Authority, explained that the drop in Bank Mutiara CAR was triggered by problems of financial difficulties due to the Antaboga case which harmed many costumers. The issue of CAR is repeated again at the national bank, PT Bank Bukopin Tbk. According to Brahmantya and Purwanto (2018) as the Director of Operations and Information Technology and Consumer Director of PT Bank Bukopin Tbk, state that there are at least 100.000 credit cards whose records are wrong. The company still recorded revenue from the credit card business even though in reality it was stuck so as to cover losses from the abnormalities, the company's capital was eroded and the company's Capital Adequacy Ratio (CAR) was at safe limit of 15.03 percent, but after the revision dropped to 11.62 percent. Another problem occurred in 2018 where Supangkat (2018) as Deputy Commissioner of Banking Supervision IV and Sarwono (2018), as Head of Regional OJK 2 of West Java, stated that the Financial Services Authority revoked PT. BPR Bintang Ekonomi Sejahtera and PT BPR Sinarenam Permai Jatiasih Bekasi because of CAR less than 0 percent and the financial condition of BPR is getting worse and statement of inability of the management and shareholders in healthy BPR.

Basically Banks must meet minimum capital requirements before they can be granted permission, and must have at least the minimum capital level required throughout their lives (Rose and Hudgins, 2013, p. 492). Minimum Capital Adequacy Ratio (CAR) is important ratios related to capital (Ikatan Bankir Indonesia, 2013, p. 176). In Indonesia the CAR standard is 9-12%. This ratio the extent to which shareholder's capital can cover risk assets. With the intention to assess the security and health of the company in terms of the capital of the owner (Harahap, 2015, p. 307). The importance of CAR in maintaining the health of a bank is not matched by the fact that there are still many banks that do not have CAR in accordance with the standards set by the FSA.

If capital is eroded due to unforeseen events, then for large banks it will be easier to gain access to the capital market so there will be more option to choose. While the choice for small banks is relatively limited and more dependent on the willingness of bank owners to increase capital (Ikatan Bankir Indonesia, 2016, p. 160). There are also another alternative in an effort to increase capital, namely reducing capital requirements by selling assets so that productive assets that require capital are reduced or rearrange the asset mix so that the capital requirements for the portofolio are reduced (Ikatan Bankir Indonesia, 2016, p. 160-161). The result of previous studies indicate that bank size is measured using natural logarithms of total assets affecting CAR (Bateni *et al*, 2014; Mekonnen, 2015; Shingjergji and Hyseni, 2015; Aktas *et al*, 2015; Oktaviana and Syaichu, 2016; Andhika and Suprayogi, 2017; Minh and Nga, 2018; Dewi and Yadnya, 2018). However, there are previous studies with different results where the size of the bank has no effect on CAR (Margaretha and Setiyaningrum, 2011; Thoa and Anh, 2017)

On the other side, the biggest asset item in the bank is loans and rent, which often reaches half to almost three-quarters of the total value of all assets (Rose and Hudgins, 2013, p. 134). If the credit disbursed by the bank can not be paid or paid in installment according to the agreement that has been signed, it means that the credit is included into the Non Performing Loan (NPL) category (Ismail, 2011, p. 123-124). Non-performing loans will result in the bank losses, namely losses due to non-receipt of funds that have been disbursed, or unacceptable interest income (Ismail, 2011, p. 124). If a loss occurs, it needs to be covered with a loan loss reserve which is an important component of bank capital (Cecchetti and Schoenholtz, 2015, p. 303). Some research that has been done shows the results that NPL has an influence on CAR (Shingjergji and Hyseni, 2015; Oktaviana and Syaichu, 2016; Dewi and Yadnya, 2018; Andhika and Suprayogi, 2016; Sari, *et al*, 2016; Putri and Anda, 2018). However, there are several research results which show that the NPL has no effect on CAR (Anjani and Purwanti, 2014; Margaretha and Setiyaningrum, 2011).

If the bank is rumored to have financial difficulties, the depositors will rush to withdraw funds (Apostolik *et al*, 2009, p. 41). These unexpected requests can reduce cash in the bank, very likely to cause the bank to become illiquid and eventually go bankrupt (Apostolik *et al*, 2009, p. 41). Therefore, for banks, a good capital position is the main thing in supporting a stable liquidity position (Weert, 2011, p. 39). Bank capital also having a role as functions to make depositors who save money in the bank feel calm that the money saved will be guaranteed to be returned in time (Ikatan Bankir Indonesia, 2016, p. 157). The relationship between liquidity and capital is supported by the results of previous research which shows that liquidity measured using Quick Ratio (QR) affects the Capital Adequacy Ratio (CAR) (Barus, 2011).

Basically, in carrying out a business or every activity, of course the hope that is first desired is to get a profit. The main advantage for banks based on conventional principles is based on the determined interest (Kasmir, 2010, p. 36-37). Banks take advantage of the difference between the interest rates they pay to depositors and the interest rates they receive from borrowers. That means, the return of their assets exceeds the cost of their obligation (Cecchetti and Schoenholtz, 2015, p. 312). The difference between the two is the bank's bet interest income (Cecchetti and Schoenholtz, 2015, p. 305).

Net Interest Margin (NIM) is a comparison between net interest income to productive assets average (Ikatan Bankir Indonesia, 2013, p. 179). NIM is a ratio used to measure management's ability to control costs (Kasmir, 2016, p. 238). Well-managed banks have higher net interest income and higher NIM. (Cecchetti and Schoenholtz, 2015, p. 305). If the level of profit is good, banks have greater strength to support operational development, support asset growth, and increase capital capacity (Ikatan Bankir Indonesia, 2016, p. 143). This is supported by previous research which shows that NIM has an influence on CAR (Anjani and Purwanti, 2014; Thoa and Anh, 2017; Yolanda, 2017; Dewi and Yadnya, 2018; Aktas *et al*, 2015; Margaretha and Setiyaningrum, 2011; Mekonnen, 2015).

RESEARCH PURPOSES

In connection with the background and formulation of the problems mentioned above, this study is intended to study and assess how much influence Non-Performing Loans, Net Interest Margin, Size and Quick Ratio on Capital Adequacy Ratio, while the purpose of this study is:

- 1) To test and analyse the effect of Non Performing Loan on the Capital Adequacy Ratio.
- 2) To test and analyse the effect of Net Interest Margin on the Capital Adequacy Ratio.
- 3) To test and analyse the effect of Size on the Capital Adequacy Ratio.
- 4) To test and analyse the effect of Likuidity on the Capital Adequacy Ratio.

THEORITICAL BASE

CAPITAL ADEQUACY RATIO (CAR)

The basic objectives of managing capital are: 1) To limit risk failure, 2) to maintain public trust, and 3) to limit losses to government and other institutions arising from deposit insurance claims. Banks must meet minimum capital requirements before they can be licensed, and must have at least the minimum capital level required throughout the life of the bank (Rose and Hudgins, 2013, p. 492). Upon the designated time limit, the target Capital Adequacy Ratio (CAR) is not reached, then the bank concerned will be penalized (Kasmir, 2016, p. 48). CAR is the Minimum Capital Adequacy Ratio that must be met by the bank, which is a minimum of 8% (eight percent) (Ikatan Bankir Indonesia, 2013, p. 176). The following are indicators that can be used to measure CAR (Harahap, 2015, p. 307):

$$CAR = \frac{\text{Stockholders Equity}}{\text{Total Risk weighted Assets (ATMR)}}$$

NON PERFORMING LOAN (NPL)

According to Ismail (2011, p. 122), banks carry out credit classification into two categories, namely performing and non-performing loans. Non-performing loans are loans which have been categorized as non-performing loans, because there are already arrears. (Ismail (2011, p. 123). Loans are placed in the non-performing category when repayments over 90 days. (Rose and Hudgins, 2013, p. 138). Non-performing loans are all loans to non-bank third parties with collectability that is substandard, doubtful and loss (Ikatan Bankir Indonesia, 2016, p. 36).

The following are indicators that can be used to measure NPL (Ikatan Bankir Indonesia, 2013, p. 177):

$$NPL = \frac{\text{Problematic Credit}}{\text{Total Credit}}$$

Problematic credit will result in bank losses, namely losses due to non-receipt of funds that have been distributed, or unacceptable interest income. That means, the bank loses the opportunity to get interest, which results in total decrease in income (Ismail, 2011, p. 124).

NET INTEREST MARGIN (NIM)

The main advantage for banks based on conventional principles is based on a predetermined interest (Kasmir, 2010, p. 37). The bank takes advantage of the difference between the interest rates the bank pays to the depositor and the interest rate the bank receives from the borrower (Cecchetti and Schoenholtz, 2015, p. 312).

Well managed banks will have higher net interest income and higher Net Interest Margin. (Cecchetti and Schoenholtz, 2015, p. 305).

The following are indicators that can be used to measure NIM (Ikatan Bankir Indonesia, 2016, p. 151):

$$NIM = \frac{(\text{Interest Income} - \text{Interest Expense})}{\text{Total Earning Assets}}$$

This ratio measures the ability of management to control the spread between interest income and the cost of fund (Harahap, 2015, p. 323). Interest income includes all income from lending, while interest fee includes all interest expenses on the source of funds. Productive assets that are taken into account are assets that generate interest both on the balance sheet and TRA (Ikatan Bankir Indonesia, 2016, p. 146).

SIZE

The size of a bank is a measure that shows the scale of a bank's business as seen from the number of assets or assets of a bank (Siringoringo, 2012). Bank size is very important because industry i) services / provide services for all sectors, especially the real economy, where some clients may want to do business only with large banks, and ii) because banks are a subject that balances risks that have a large potential market players and the overall economic welfare of the community (Schildbach, 2017).

According to Bateni et al (2014); Margaretha and Setyaningrum (2011); Mekonnen (2015); Shingjergji and Hyseni (2015); Aktas et al (2015); Oktaviana and Syaichu (2016); Thoa and Anh (2017); Andhika and Suprayogi (2017); Minh and Nga (2018) and Dewi and Yadnya (2018), The following are indicators that can be used to measure size:

$$\text{Size} = \text{Ln} (\text{Total Asset})$$

According to Schildbach (2017), total assets or total balance sheet is numbers taken from bank consolidated financial statements, which must be published regularly and formally audited by accounting firms. The total balance sheet is an indicator that is always available for almost all banks, either from individual company financial statements or from personal databases.

LIQUIDITY

Bank liquidity shows the ability of banks to provide cash to meet obligations at fair costs. Banks need to provide sufficient amounts of liquidity to be able to serve customers and operate efficiently. (Ikatan Bankir Indonesia, 2016, p. 48). In other words, the bank can pay back the disbursement of its depositors funds when billed and can fulfill the credit request that have been submitted. The greater the ratio, the more liquid (Kasmir, 2016, p. 221).

According to Barus (2011), The following are indicators that can be used to measure QR:

$$QR = \frac{(\text{Cash Assets})}{\text{Total Deposit}} \times 100\%$$

Quick ratio is a ratio that is used to measure the ability of banks to fulfill their obligations to depositors (deposit holders, savings, and deposits) with the most liquid assets owned by banks (Kasmir, 2016, p. 221-222).

PREVIOUS RESEARCH

No	Researcher's Name and Year	Research Title	Research Purpose	Research Methodology	Research Result
1.	Barus, A.C. (2011)	Analysis of Profitability and Liquidity on the Capital Adequacy Ratio (CAR) of Open Banking Institution on the Indonesia Stock Exchange	To obtain empirical evidence the effect of financial ratios consisting of profitability and liquidity represented by IML, ROE, LDR, and QR on the Capital Adequacy Ratio (CAR) in banking companies on the Indonesia Stock Exchange.	Multiple Regression	The results of this test prove that financial ratios consisting of IML, ROE, LDR, and QR simultaneously have a significant effect on Capital Adequacy Ratio (CAR). Partially, only ROE does not have a significant effect on the Capital Adequacy Ratio (CAR) of Open Banking Institutions on the Indonesia Stock Exchange.
2.	Margaretha, F., & Setiyaningrum, D. (2011)	Effects of Risk, Quality of Management, Size and Bank Liquidity on Capital Adequacy Ratio of Banks Registered on the Indonesia Stock Exchange.	To find out whether the effect of risk, the quality of management, the size of the bank and liquidity have an influence on the Capital Adequacy Ratio.	Multiple Regression with OLS	The test results of the Fixed Effect method found that: 1) The risk of Non-Performing Loans does not have a significant effect on CAR, 2) The risk of return on assets, risk index (ZRISK) has a negative and significant effect on CAR, 3) The quality of management in terms of the ability to generate profit / Net Interest Margin (NIM) has a negative and significant effect on CAR, 4) Banks size has no significant effect on CAR, 5) Asset liquidity seen from Liquid Asset to Total Deposit (LACSF) has a negative and significant effect on CAR, 6) Liability liquidity seen from Equity to Total Liabilities (EQTL) has a positive and significant effect on CAR.
3.	Anjani, D. A., & Purnawati, N. K. (2014)	Effects of Non-Performing Loans (NPL), Liquidity and Rentability on Capital Adequacy Ratio.	To examine the effect of Non-Performing Loans, loan to deposit ratio, return on equity and net interest margin on the capital adequacy ratio partially.	Multiple Regression	The results of the study explained that NPL had no significant effect on CAR. LDR has a negative and significant effect on CAR. ROE has a negative and significant effect on CAR. NIM has a positive and significant effect on CAR.
4.	Batani, L., Vakilifard, H., & Asghari, F. (2014)	<i>The Influential Factors on Capital Adequacy Ratio in Iranian Banks</i>	The main objective of this paper is to investigate empirically the factors that influence CAR in Iranian banks and their impact on the bank's financial position covered by the research	Multiple Regression	The result obtained show a negative relationship between bank size and bank capital adequacy ratio and a positive relationship between Loan Asset Ratio (LAR), Return on Equity (ROE), and Return on Assets (ROA), Equity Ratio (EQR) with capital adequacy. RAR and DAR do not have an impact on the capital adequacy ratio.

No	Researcher's Name and Year	Research Title	Research Purpose	Research Methodology	Research Result
5.	Shingjergji, A. & Hyseni, M. (2015)	<i>The Determinants of The Capital Adequacy Ratio In The Albanian Banking System During 2007 - 2014</i>	The purpose of this paper is to analyse the main determinants of the capital adequacy ratio in the Albanian banking system after the global financial crisis.	Multiple Regression	From the results of our study, it is found that profitability indicators such as ROA and ROE have no effect on CAR while NPL, LTD and EM have a significant negative effect on CAR in the Albanian banking system. Bank size has a positive impact on CAR, which means that large banks have higher CAR
6.	Aktas, R., Acikalin, S., Bakin, B., & Celik, G. (2015)	<i>The Determinants of Bank's Capital Adequacy Ratio: Some Evidence from South Eastern European Countries</i>	This paper aims to evaluate the impact of bank factors such as dimensions and environment on the bank's capital adequacy ratio in the South East European region (SEE).	Generalized Least Square (GLS) Regression Method with fixed effect model	The results of this study indicate that between Size, ROA, leverage, liquidity, net interest margin and risk have a statistically significant influence in determining CAR for banks in the region. Among environmental factors, economic growth rates, the euro zone stock market volatility index, and governance have a statistically significant influence in determining Car for banks in the SEE region.
7.	Mekonnen, Y. (2015)	<i>Determinants of Capital Adequacy of Ethiopia Commercial Banks</i>	The main objective of this study is to empirically investigate the determinants of CAR in Ethiopian commercial banks.	Panel Data Regression (FEM)	The results of the fixed effect model for research reveal that ROA, DEP, and SIZE have a positive influence on capital adequacy and ROE and NIM have a negative influence on capital adequacy but LIQ, LNTA, and LEV do not have a significant effect on capital adequacy
8.	Oktaviana, R. & Syaichu, M. (2016)	Analisis Pengaruh Size, Roa, Fdr, Npf and Bopo terhadap Capital Adequacy Ratio Pada Bank Umum Syariah Di Indonesia Periode 2010-2014	This study aims to analyse the effect of Size, Return of Assets (ROA), Financing to Deposit Ratio (FDR), Non Performing Financing (NPF), and Operating Expenses Operating Income (BOPO) to the Capital Adequacy Ratio (CAR). Case study on Indonesian Islamic banks in 2010 - 2014	Multiple Regression	This study found that Financing to Deposit Ratio (FDR) has a significant positive effect on Capital Adequacy Ratio (CAR). Meanwhile, Size and Non Performing Financing (NPF) are significant but negatively affected by the Capital Adequacy Ratio (CAR). On the other hand Return on Assets (ROA) and Operating Expenses Operating Income (BOPO) did not have a significant effect on the Islamic sharia bank's Capital Adequacy Ratio. Based on the coefficient of determination, the variable Size, Return on Assets (ROA), Financing to Deposit Ratio (FDR), Non Performing Financing (NPF), and Operating Expenses Operating Income (BOPO) have a 64,3% effect on the Capital Adequacy Ratio.
9.	Sari, R. R. W., Widarno, B., & Suharno. (2016)	Effect of Asset Quality, Liquidity and Profitability on Banking Capital Adequacy Levels.	To analyze: 1) Impact of asset quality on bank capital adequacy, 2) Effect of liquidity on bank capital adequacy, 3) The influence of profitability on bank capital adequacy, and 4) The	Multiple Regression	The results show that asset quality had a significant negative effect on bank capital adequacy. Liquidity has a positive but not significant effect on bank capital adequacy. Profitability has a positive and significant effect on bank capital adequacy. Asset quality, liquidity and profitability simultaneously have a significant effect on bank capital

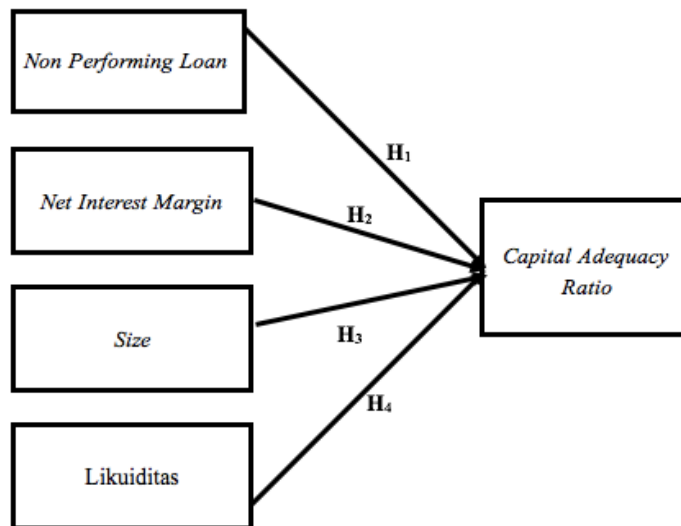
No	Researcher's Name and Year	Research Title	Research Purpose	Research Methodology	Research Result
			influence of asset quality, liquidity and profitability simultaneously on bank capital adequacy.		adequacy.
10.	Andhika, Y. D., & Suprayogi, N. (2016)	Factors affecting Capital Adequacy ratio (CAR) of Islamic Commercial Banks in Indonesia.	This study aims to determine the specific variables of Islamic banks that affect the Capital Adequacy ratio (CAR).	Panel Data Regression	Both simultaneously and partially, the four independent variables (LNSIZE, NPF, ROE, and FDR) had an effect on CAR, thus LNSIZE, NPF, ROE, and FDR could be said to be factors that influence CAR at Islamic commercial banks (BUS) in Indonesia during the 2011 – 2015 periods.
11.	Thoa, P. T. X., & Anh, N. (2017)	The Determinants of Capital Adequacy Ratio: The Case of the Vietnamese Banking	To empirically investigate the relationship between financial ratios and capital adequacy ratios; to analyze and evaluate the factors that influence the capital adequacy ratio; to investigate the bank's capital component and to establish a pattern of estimates of capital adequacy that would be beneficial for the authorities and the banking system in general to formulate information action course.	Panel Data Regression (FEM)	The results show, based on the data, that NIM and LIQ have a significant influence on CAR. On the other hand, Size and LEV do not seem to have a significant influence on CAR. The NIM variable, LIQ has a positive influence on CAR, whereas the LLR and LOA variables have a negative influence with CAR.
12.	Yolanda (2017)	<i>Capital Adequacy Ratio and Its Influencing Factors On The Islamic Banking In Indonesia</i>	To find out the determinants of adequacy capital from Islamic banks in Indonesia.	Multiple Regression	The findings of this study indicate a positive relationship between capital adequacy and profitability (ROA, ROE, NIM) and liquidity (FDR).
13.	Dewi, A. R., & I Yadnya, P. (2018)	Effect of Size, Liquidity, Credit Risk and Rentability on Capital Adequacy Ratio.	This study aims to determine the effect of Size of the bank, Loan to Deposit Ratio (LDR), Non Performing Loan (NPL) and Net Interest Margin (NIM) terhadap Capital Adequacy Ratio (CAR).	Multiple Regression	The results of the analysis indicate that bank size has a significant negative effect on CAR. LDR and NIM have a significant positive effect on CAR. NPL has a significant negative effect on CAR.

No	Researcher's Name and Year	Research Title	Research Purpose	Research Methodology	Research Result
14.	Putri, N. P. S. W., & Anda, I. M. (2018)	Effect of NPL, Liquidity and Rentability on CAR on National Scale Conventional Rural Banks in Indonesia.	To analyse the effect of Non Performing Loan (NPL), Loan to Deposit Ratio (LDR), Return on Equity (ROE), and Return on Assets (ROA) to the Capital Adequacy Ratio (CAR) partially to National-scale Conventional Rural Banks in Indonesia in the November period 2014 – 2016.	Multiple Regression	This study found that NPL and ROA had a significant positive effect on CAR. LDR has a positive but not significant effect on CAR, and ROE has a significant negative effect on CAR.
15.	Minh, T. D., & Nga, L. P. (2018)	<i>Factors Affecting the Capital Adequacy Ratio (CAR) of the Commercial Banks Listed on the Vietnam Stock Market</i>	The purpose of this paper is to determine the factors that affect the capital adequacy ratio of commercial banks registered in the Vietnam Stock Market.	Panel Data Regression	The results of the study show that factors including: DEP, ROA, ROE, and SIZE affect the Capital Adequacy Ratio (CAR) with a significance level of 5 %. However, this study has not found quantitative evidence of liquidity (LIQ) and the ratio of loans to assets (LOA) which affects the capital adequacy ratio of commercial banks registered in Vietnam Stock Market.

Source : Researcher's Observation Results

RESEARCH HYPOTHESIS

The research model is as follows :



Source: Researcher's Observation Results

Figure 1 Research Model

- H₁ : Non Performing Loan affect the Capital Adequacy Ratio.
- H₂ : Net Interest Margin affect the Capital Adequacy Ratio.
- H₃ : Size affect the Capital Adequacy Ratio.
- H₄ : Likuiditas affect the Capital Adequacy Ratio.

RESEARCH METHODOLOGY

The type of this study is causal explanation because this study aims to examine and analyze the effect of non-performing loans, net interest margin, size and liquidity on capital adequacy ratio. The independent variable (X) in this study is a non-performing loan (X₁), net interest margin (X₂), size (X₃) and liquidity (X₄). The dependent variable (Y) in this study is the capital adequacy ratio. These variables will be measured by scaling ratio scale for each variable. The ratio scale is the interval scale and has an irreversible base value (Ghozali, 2016, p. 6).

The population in this study is that all companies go public listed on the Indonesia Stock Exchange (IDX) which are engaged in the Banking Sector, namely as many as 43 companies. Some of the reasons for the need for sampling are increasing the efficiency of research, increasing the accuracy of research, reducing damage to objects studied and population research is not possible (Suliyanto, 2009, p. 90-92). The sampling technique in this study used non-probability sampling with purposive sampling method.

According to Barus (2011), the criteria of this study are as follows:

- 1) Number of banking companies listed on the Indonesia Stock Exchange (IDX) in the 2013-2017 pre-period.
- 2) Having completeness and issuing audited financial statements.

Based on the criteria discussed earlier, this study took a sample of 36 companies engaged in the banking sector, and will be examined for 5 years (2013-2017), bringing a total of 180 data.

The data collection technique used in this study is secondary data obtained from the Indonesia Stock Exchange (IDX) and available at www.idx.co.id in 2013-2017. The data in this study are grouped with descriptive statistic and analyzed by multiple regression analysis with classic assumption test stages (normality, outliers, multicollinearity, heteroscedasticity, autocorrelation), hypothesis testing (F statistical test, statistical test T and coefficient of determination) and produce a regression equation as follows

$$CAR = a + b_1 NPL + b_2 NIM + b_3 Size + b_4 QR + e$$

Information:

CAR = Capital Adequacy Ratio

a = Constants or Intercepts (are Y values if X = 0).

b = Regression coefficient or slope (slope of the regression line: increase or decrease in Y for each change of one unit X).

NPL = Non Performing Loan

NIM = Net Interest Margin

Size = Bank size

QR = Liquidity with the Quick Ratio indicator

e = Residual Error

Multiple regression is used if the researcher intends to predict how the dependent variable (fluctuations) (criteria) uses two or more independent variables (predictors) (Eriyanto, 2013, p. 379). Based on the previous research, the study has further strengthened the use of multiple regression as a data analysis tool.

RESULT AND DISCUSSION

DESCRIPTIVE STATISTICAL ANALYSIS

Table 1: Descriptive Statistics Analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NPL	115	.002	.069	.023	.014
NIM	115	.012	.093	.051	.016
Size	115	27.882	34.252	31.131	1.633
QR	115	.109	.381	.216	.056
CAR	115	.073	.296	.186	.035
Valid N (listwise)	115				

Based on the descriptive statistical analysis table above can be explained as follows:

- 1) Companies that have the highest Non Performing Loans (NPLs) are companies with the issuer code of BKSW in 2016, while the companies that have the lowest Non Performing Loans (NPLs) are companies with the 2014 DRAGON issuer.
- 2) Companies that have the highest Net Interest Margin (NIM) are companies with the 2017 BDMN issuer code, while the companies that have the lowest Net Interest Margin (NIM) are companies with the code of issuance in 2017 BKSW.
- 3) Companies that have the highest size are companies with BBKA issuer code in 2017, while companies that have the lowest size are companies with the code of issuance of DRAGON on 2013.
- 4) Companies that have the highest Liquidity (QR) are companies with the 2014 AGRS issuer code, while the companies that have the lowest Liquidity (QR) are companies with the 2016 issuer code.

- 5) Companies that have the highest Capital Adequacy Ratio (CAR) are companies with the issuer code AGRO in 2017, while companies that have the lowest Capital Adequacy Ratio (CAR) are companies with the 2015 NISP issuer code.

CLASSIC ASSUMPTION TEST

Table 2: Data Outlier

Code Emiten	NPL	NIM	QR	CAR
ARTO			√	
BABP	√			
BBHI	√			
BBKP	√			
BBMD			√	√
BCIC	√	√		
BEKS	√	√		
BGTG				√
BINA				√
BNLI	√			
BSWD	√			√
BTPN		√		
NOBU				√

The table above shows that there are 13 companies affected by outliers and must be disposed of. In this study, the company's financial statements were observed for 5 years starting from 2013-2017, so that the data wasted was 65 data. This causes the remaining data and is used for further testing of 115 data.

Table 3: Normality Test Results After Removing Data Outliers

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		115
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.02740212
Most Extreme Differences	Absolute	.072
	Positive	.072
	Negative	-.043
Kolmogorov-Smirnov Z		.770
Asymp. Sig. (2-tailed)		.593

a. Test distribution is Normal.

b. Calculated from data.

Based on the result of testing the normality of the data above, it is known that the significance value of the residual variable obtained is $0.593 \geq 0.05$ which indicates that the data used has a normal distribution. In other words the assumption of data normality is fulfilled.

Table 4: Multicollinearity Test result

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	NPL	.954	1.048
	NIM	.821	1.218
	Size	.826	1.211
	QR	.956	1.047

a. Dependent Variable: CAR

The table above shows the results of multicollinearity test data. From the data presented in the table above, it can be seen that the tolerance value obtained by each independent variable is ≥ 0.1 and Variance Inflation Factor (VIF) ≤ 10 . This shows that the data is free from multicollinearity.

Table 5: Heteroscedasticity Test Result
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.012	.033		.370	.712
	NPL	-.135	.120	-.109	-1.126	.263
	NIM	-.053	.114	-.048	-.464	.644
	Size	.000	.001	.033	.320	.750
	QR	.014	.031	.044	.454	.651

a. Dependent Variable: Abs

Based on the results of the above, it is known that the significance value obtained by each variable $\geq 0,05$ indicates that the error variance is homoscedasticity, so it can be concluded that the data is free from heteroscedasticity.

Table 6: Autocorrelation Test Results
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.627 ^a	.393	.370	.02790	1.087

a. Predictors: (Constant), QR, NPL, Size, NIM

b. Dependent Variable: CAR

Based on the results of the autocorrelation test, the Durbin Watson value of 1.087 was obtained. This value is between 1 and 3 so that it is in accordance with the provision that there is no customer autocorrelation. Of the four classic assumptions test above, there is no violation of classical assumptions, so multiple linear regression analysis can be used.

HYPOTHESIS TEST

Table 7: Test Result for F Statistic
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.055	4	.014	17.774	.000 ^b
	Residual	.086	110	.001		
	Total	.141	114			

a. Dependent Variable: CAR

b. Predictors: (Constant), QR, NPL, Size, NIM

Based on the results of data processing above, it can be seen that the significance value obtained is $0.000 < 0.05$. In accordance with the hypothesis testing criteria that H_0 is rejected and H_a is accepted. This means that at least one independent variable (NON-Performing Loan, Net Interest Margin, size and liquidity) has an effect on the Capital Adequacy Ratio.

Table 8: Statistical Test Result T
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.107	.052		-2.068	.041
	NPL	.083	.186	.034	.446	.656
	NIM	.694	.178	.320	3.898	.000
	Size	.007	.002	.318	3.884	.000
	QR	.202	.048	.320	4.215	.000

a. Dependent Variable: CAR

THE EFFECT OF NON PERFORMING LOAN ON CAPITAL ADEQUACY RATIO

Based on the table 8, it is known that the significance value obtained by the Non Performing Loan does not affect the Capital Adequacy Ratio (CAR). This result is supported by previous research conducted by Anjani and Purwanti (2014) and Margaretha and Setiyaningrum (2011).

Providing credit by banks has a maximum percentage set by the regulator. Generally, it calculated from collateral pledged by the borrower, when the value of the assets pledged is 1 billion, the maximum credit limit that can be received by the borrower is approximately 800 million. If one day the borrower is unable to pay the loan and requires a legal settlement, the costs that will

come out can be borne by the remaining 200 million, so as not to disrupt the loan principal. This regulation is to anticipate losses if the credit is problematic.

Non Performing Loans (NPL) are all loans to non-bank third parties with collectability that is substandard, doubtful and loss (Ikatan Bankir Indonesia, 2016, p. 36). Customers who fall into the category of substandard and doubtful means that there is still a possibility that borrowed funds can be billed. The bank usually takes a number of actions to save the credit so that their status is not reduced to bad credit.

Rescue of credit is the efforts made by banks against non-performing loan debtors who still have prospects and business performance and ability to pay, with the purpose of minimizing the possibility of losses to the bank and rescuing credit that has been given. The act of rescuing credit can be done is credit restructuring and other credit rescue actions, such as the takeover of debtor / collateral-taken assets (Ikatan Bankir Indonesia, 2013, p. 145-147).

The last alternative if there is still a loss, you can use insurance to claims at risk or claim assets to credit guarantee. The two alternatives are the last source of funds for repayment owned by the bank. Credit guarantee with insurance risk assets have similarities which aim to reduce the risk for the bank due to credit failures, but there is difference that the credit guarantor functions to take over the risk of temporary credit failure, while the insurance function becomes the risk guarantor because the bank has paid the premium every time agreed.

THE EFFECT OF NET INTEREST MARGIN ON CAPITAL ADEQUACY RATIO

Based on the table 8, it is known that the significance value obtained by the Net Interest Margin (NIM) variable is $0.000 < 0.5$ which indicates that Net Interest Margin affects the Capital Adequacy Ratio (CAR). The result in line with several previous studies, namely what has been done by Anjani and Purwanti (2014); Thoa and Anh (2017); Yolanda (2017); Dewi and Yadnya (2018) and Aktas *et al* (2015); Margaretha and Setiyaningrum (2011) and Mekonnen (2015).

The main advantage for banks comes from interest. Interest expense is the interest the bank gives to depositors and interest income is the interest earned by the bank from the recipient of the credit. If the interest income is greater than the interest expense, it will generate profits. The fact is that the bank does not only rely on interest as its sole income, because the bank's requirements are not only as fund collector and distributors. The bank also has a third function, namely the provision of other services that will provide an income. However, interest is still the main and biggest income expected by all banks to date.

The magnitude of the effect of net interest income on the total profit of the bank, requires management to manage interest expenses properly. Net Interest Margin (NIM), is a ratio that can describe management performance in managing interest expense, resulting in higher returns on earning assets. When NIM rises, it means describing the success of management in an effort to generate profits on higher interest. This will have an impact on the increase in running profits. When successfully obtaining a good running rate, banks can have greater strength to support operational development, support asset growth, and increase capital capacity (Ikatan Bankir Indonesia, 2016, p. 143). Capital capability will increase because one of the components of capital is profit remaining. Remaining earnings can be held if there is an agreement between shareholders.

THE EFFECT OF SIZE ON CAPITAL ADEQUACY RATIO

Based on the table 8, it is known that the significance value obtained by the variable size is $0.000 < 0.05$ which indicates that the size affects the Capital Adequacy Ratio (CAR). This result is in line with several previous studies, namely what has been done by Bateni *et al* (2014); Mekonnen (2015); Shingjergji and Hyseni (2015); Aktas *et al* (2015); Oktaviana and Syaichu (2016); Andhika and Suprayogi (2017); Minh and Nga (2018); Dewi and Yadnya (2018).

The size of a bank is described by the number of assets owned. Assets in banking are divided into two, namely interest bearing assets and non interest bearing assets (assets that do not generate interest or fixed assets). If the bank can make the right composition of the assets mix, it will generate large profits for the bank and make high returns for shareholders. Return is an attraction for most investors and potential investors.

Large banks will be easier to gain an access to the capital market so that there will be more option. The choice for small banks is relatively limited and depends more on the willingness of bank owners to increase capital (Ikatan Bankir Indonesia, 2016, p.160).

THE EFFECT OF LIQUIDITY ON CAPITAL ADEQUACY RATIO

Based on the table 8, it is known that the significance value obtained by the Liquidity (QR) variable is $0.000 < 0.05$ which indicates that liquidity has an effect on the Capital Adequacy Ratio (CAR). This result is in line with previous research, namely what has been done by Barus (2011).

When the owner of a bank deposits capital and third party funds (savings, deposits, demand deposits) are collected, it will make cash accumulate. The cash will be channelled into loans, investment instrument, building purchases, equipment and the remainder will be deposited at the bar, at other banks and Bank Indonesia (BI) as Minimum Required Reserves with a percentage determined by the regulator. If there is withdrawal of funds by the depositor, then the one that will be accessed first is the current

account with BI. Since the cash is a mixture of third party funds and the owner’s capital, withdrawal of funds will affect capital. Especially for small banks where owner’s capital will also be channelled into credit because it is not enough to rely solely on third party funds.

Demand for funds will increase if there is a crisis. Banks can obtain liquidity by selling assets, seeking short-term and long-term loans, or increasing loan limits from third parties. In addition, banks can increase capital to increase liquidity and keep it from being affected by liquidity risk (Ikatan Bankir Indonesia, 2016, p. 49). Bank capital also functions so that depositors who save money in the bank feel calm that the money saved will be guaranteed to be returned in time (Ikatan Bankir Indonesia, 2016, p. 157).

**Table 4.10: Result of the Determination Coefficient
Model Summary^b**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.627 ^a	.393	.370	.02790

a. Predictors: (Constant), QR, NPL, Size, NIM

b. Dependent Variable: CAR

Based on the output above, it can be seen that the adjusted R² value obtained is 0.370 or 37%. This shows that the four independent variables consisting of Non-Performing Loans (NPL), Net Interest Margin (NIM), size and liquidity contribute to the Capital Adequacy Ratio (CAR) of 37%, while the remaining 63% is a contribution from other variables which is not examined.

REGRESSION EQUATION

$$CAR = -0,107 + 0,083 NPL + 0,694 NIM + 0,007 Size + 0,202 QR$$

From the results of multiple linear regression equation above, each variable can be interpreted as follows:

- The constant of -0.107 shows that when the four independent variables are zero (0) and there is no change, the Capital Adequacy Ratio (CAR) is predicted to be worth -0.107 times.
- Non-Performing Loans (NPL) has a regression coefficient of 0.083, indicating that when Non Performing Loans (NPL) are increased, it is predicted to increase the Capital Adequacy Ratio (CAR) by 0.083 times.
- Net Interest Margin (NIM) has a regression coefficient of 0.694 indicating that when Net Interest Margin (NIM) is increased, it is predicted that it will increase Capital Adequacy Ratio (CAR) by 0.694 times.
- Size has a regression coefficient of 0.007 indicating that when size is increased, it is predicted that it will increase the Capital Adequacy Ratio (CAR) by 0.007 times.
- Liquidity (QR) has a regression coefficient of 0.202 indicating that when Liquidity (QR) is increased, it is predicted that it will increase the Capital Adequacy Ratio (CAR) by 0.202 times.

CONCLUSION

This study uses 115 data and is analysed by using multiple regression to answer the hypotheses that have been formulated previously from the existing problem identification. Based on aim of the research, result of testing the hypothesis and the discussion that has been described, some conclusions can be drawn as follows:

- 1) Non-Performing Loan do not affect the Capital Adequacy Ratio.
- 2) Net Interest Margin affects Capital Adequacy Ratio.
- 3) Size affects Capital Adequacy Ratio.
- 4) Liquidities affects Capital Adequacy Ratio.

Suggestion

Based on the discussion and conclusions discussed earlier, then below are suggestions that can be given in the hope of providing input both theoretically and practically, among others:

- 1) For the next researcher, it is better if the observed sample uses a longer observation period and if you want to retest the NPL, it is recommended to use net NPL instead of gross NPL or use NPL growth. This NPL growth is expected to change the findings of further research related to the effect of NPL on CAR. If further research wants to try to use other variables, it is recommended to try to test from the side of the effect of Good Corporate Government (GCG), the amount of collateral, the insurance or not, and the credit guarantor to the CAR.
- 2) It is recommended for investors and potential investors not only to focus on the NPL in assessing the possibility of a bank’s CAR declining because almost all banks must have an NPL even though with a low percentage and this study proves that the NPL does not affect CAR. However, if the NPL rises unnaturally so that it approaches or exceeds the safe limit set by the OJK. Investors and potential investors should start being vigilant. To better understand the NPL, investors and prospective

investors can also pay attention to the annual report, which in general is discussed regarding the composition of credit status, which explains how many percent of the loans included in the category of substandard, doubtful and loss. This can help in assessing the true potential of a bank's credit.

- 3) For bank management, a large asset investment will in fact strengthen CAR. This study proves that the rising NPL does not directly impact eroding CAR and return on interest (NIM) from risk assets (credit) will strengthen CAR. This means that investment in risk assets is not always frightening or has a negative impact, as long as the NPL can be kept stable and tends to be low, even though it cannot be up to 0%. The thing that needs to be considered by bank management is a strategy that can be used to minimize losses before the loss erodes CAR, namely by insuring risk assets, cooperating with credit guarantors.
- 4) For bank management, in maintaining liquidity risk, it is recommended not only to rely on cash assets (cash, currently accounts with Bank Indonesia, current accounts with other banks and liquid assets in foreign currencies) in covering up your third party withdrawals that can occur at any time, because if at one time you withdraw a lot and the cash assets are inadequate, it will reduce liquidity, this will directly have an impact on the decrease in CAR. Prevention efforts are that management is advised to project your needs for the next several months starting from now considering that banks actually have alternatives to sell fixed assets (including collateral seized) to get you liquid, but selling fixed assets requires a longer time, that early projection is needed so that liquidity is not disturbed even though the conditions are not good.

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