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The Effect Capital Adequacy, Liquidity and Credit Risk to Profitability of Commercial Banks

Chairunnisah Ramadhanti [a] *, **Marlina** [a], **Siti Hidayati** [a]

[a] Faculty of Economics and Business, Universitas Pembangunan Nasional Veteran Jakarta, Indonesia.

ARTICLE INFORMATION

ABSTRACT

This study aims to determine the effect of Capital Adequacy proxied with Capital Adequacy Ratio (CAR), Liquidity proxied by Loan to Deposit Ratio (LDR), and Credit Risk proxied by Non Performing Loans (NPL) toward Profitability proxied by Return on Asset (ROA). Population in this study are banking companies listed on the Indonesia Stock Exchange (IDX) 2015-2017. The technique of determination of the sample using the method of purposive sampling and obtained 27 banking companies with a research period of three years to obtain 81 units of samples. Data analysis was done using Microsoft Excel 2010 and hypothesis testing in this research using Data Panel Regression Analysis with the E-Views 9.0 program and a significance level of 5%. The results of the research shows that (1) capital adequacy (CAR) has a significant positive effect on profitability (ROA), (2) liquidity (LDR) has a positive and significant effect on profitability (ROA), (3) credit risk (NPL) has a negative effect and significant to profitability (ROA).

* **Corresponding author**.
E-mail address: ramadhantichairunnisah@gmail.com

INTRODUCTION

Bank activities in collecting unemployed funds from the public and companies then channeled into productive efforts for various economic sectors will increase national income and community income. The main purpose of banks in achieving optimal levels of profitability will be in line if the activities of raising funds and channeling funds to banks are carried out optimally and efficiently.

One of the bank's main activities in maintaining and increasing profitability is the provision of credit. In addition to being a source of bank income, lending activities have a high risk which can be one of the main causes of banks facing problems. The problem in credit activities that is common is the inability of customers to carry out their obligations to lenders. When a bank does its job of channeling funds, namely providing loans to customers, but customers fail to fulfill their obligations, bad credit will increase.

Liquidity management is a fairly complex problem in bank operations, this is because funds managed by banks are mostly short-term funds from the public. Liquidity is the ability of the bank's management to provide sufficient funds to fulfill its obligations at any time. This means that if the company is billed, the company will be able to fulfill the money, especially debt that is due.

In addition to paying attention to credit and liquidity risks, banks must also pay attention to capital adequacy. Capital adequacy is the bank's ability to manage its assets for the development of the company and is able to bear all the burdens of bank activities. Adequate capital adequacy can secure a bank when experiencing losses from unexpected activities. The role of capital adequacy is very important where bank operations can run smoothly.

LITERATURE REVIEW
Profitability

The health condition of a bank can be seen from the bank's performance which can be analyzed from the financial statements presented by the bank. From these financial statements, it can be seen whether the bank can achieve a good level of efficiency by managing existing funding sources to obtain optimal profit.

High profitability shows the prospect of the company is good, so that the parties concerned will respond positively to the signal. According to Sitanggang (2014:28), profitability is the company's ability to acquire depending on which profits and capital are taken into account.

According to Taswan (2010:165), the ratio used to measure the level of business efficiency and profitability achieved by the bank, usually uses a Profitability Ratio which is often also called business profitability. From the explanation above about Profitability, it can be concluded that Profitability is the company's ability to obtain profits or profits in using the resources owned by the company such as assets, capital and debt.

Capital Adequacy

According to Taswan (2010:214) affirms that Bank Capital is funds invested by the owner in the framework of establishing a business entity intended to finance the Bank's business activities in addition to fulfilling regulations set by the monetary authority.

The capital that must be owned by the bank must be in accordance with banking regulations that establish a framework for how banks must handle their capital, which is called bank capital adequacy. According to Taswan (2010:224) explains that, Capital is one of the important factors for the Bank in developing its business and accommodating the risk of loss.

The level of capital adequacy depends on the portfolio of assets. The greater the placement of funds in high-risk assets, the lower the capital adequacy ratio (assuming there is no proportional capital addition). Technically the minimum capital adequacy / capital adequacy obligation is measured by a certain percentage of risk-weighted assets.

The higher the capital adequacy ratio indicates the more healthy the bank is (Taswan, 2010:166). The higher the capital adequacy, the Bank has sufficient capital to support its needs and to bear the risks posed, including credit risk. The high capital adequacy makes banks able to channel more credit, because banks have the ability to generate optimum profits from their main activities. So that the bank's profitability will increase due to effective capital management.

Liquidity

According to Silvanita (2009:20), liquidity management is the duty of bank managers to optimally fulfill customer fund withdrawals. For

this reason, banks must have sufficient excess reserves, so that withdrawal of funds does not interfere with other posts from their balance sheet. But high reserves will reduce bank profits, because the reserves stored in the safe do not provide returns.

Liquidity can be interpreted as the company's ability to fulfill its obligations that must be paid immediately (Taswan, 2010:246). In a banking company the level of public trust is very important, therefore it is also important for the Bank to manage its liquidity itself by paying attention to the issues on two sides of the balance sheet of the Bank.

According to Taswan (2010:167), the greater the liquidity indicates the bank is more aggressive in its liquidity, on the contrary the smaller this ratio is also the greater the third party funds that are not used for credit placement (many unemployed funds). This means that when the liquidity increases, it can be seen that the funds given to the community in the form of credit have increased as well, with the increase in loans given, the Bank will get a return on the loan interest, so that profitability will increase as well.

Credit Risk

According to article 1 of Law No. 10 of 1998 concerning amendment to Law No. 7 of 1992 concerning banking, namely credit is the provision of money or bills that can be matched with it, based on a loan agreement between the Bank and another party requiring the borrowing party to repay the debt after a certain period of time with interest (Indonesia. Law, 1998:5).

According to Pandia (2012:199), stating risk is a threat or the possibility of an action or event that has an impact that is opposite to the goal to be achieved.

Banks, as institutions that have permission to carry out many activities, have a very wide opportunity to earn income (income / return). In carrying out activities, to obtain banking income is always faced with risks. Based on Bank Indonesia Circular Letter Number 13/24 / DPNP in 2011, Credit Risk is a risk due to failure of debtors and / or other parties to fulfill obligations to the Bank. For banks, once credit is given to the borrower, a risk will arise, namely the possibility that the loan cannot be returned by the borrower in time which will become a non-performing loan. According to

Latumaerissa (2014:162), non-performing loans can be defined as credit return the principal debt and interest obligations are not in accordance with the requirements or conditions set by the bank, and have the risk of receiving income and even have the potential to lose.

Non-performing loans will have a negative impact because they will cause losses to the Bank itself. The losses suffered by the Bank itself are in the form of no return of previously channeled funds and unearned interest income. That is, the Bank will lose the opportunity to earn interest, which results in a total decrease in income.

METHOD
Population and Sampling Techniques

The population that will be used as objects in this study are banking companies listed on the Indonesia Stock Exchange (IDX) during the period 2015-2017. The sampling technique used is Purposives sampling technique, the population that will be sampled in this study is the National Public Bank registered at the Exchange Indonesia Securities (IDX) for the 2015-2017 period. The criteria for the sample are:

1. National Commercial Banks that are listed on the Stock Exchange during the period 2015-2017.
2. The National Commercial Bank that issues financial reports for the period 2015-2017.
3. National Commercial Banks that earn profits during the period 2015-2017.

Then the research sample is as follows:

No.	Company Code	Company Name
1	AGRO	Bank Rakyat Indonesia Agroniaga Tbk
2	BACA	Bank Capital Indonesia Tbk
3	BBKP	Bank Bukopin Tbk
4	BBMD	Bank Mestika Dharma Tbk
5	BINA	Bank Ina Perdana Tbk
6	BBRI	Bank Rakyat Indonesia (Persero) Tbk
7	DNAR	Bank Dinar Indonesia Tbk
8	BVIC	Bank Victoria International Tbk
9	BMRI	Bank Mandiri (Persero) Tbk
10	MAYA	Bank Mayapada Internasional Tbk
11	MCOR	Bank China Construction Bank Indonesia Tbk
12	BTPN	Bank Tabungan Pensiunan Nasional Tbk
13	BBTN	Bank Tabungan Negara Tbk
14	BDMN	Bank Danamon Indonesia Tbk
15	BMAS	Bank Maspion Indonesia Tbk
16	BNBA	Bank Bumi Arta Tbk
17	BNGA	Bank CIMB Niaga Tbk
18	BNII	Bank Maybank Indonesia Tbk
19	BGTG	Bank Ganesha Tbk
20	BSIM	Bank Sinarmas Tbk
21	BBCA	Bank Central Asia Tbk
22	BBNI	Bank Negara Indonesia Tbk
23	INPC	Bank Artha Graha Internasional Tbk
24	MEGA	Bank Mega Tbk
25	NAGA	Bank Mitraniaga Tbk
26	NISP	Bank OCBC NISP Tbk
27	BBYB	Bank Yudha Bhakti Tbk.

Operational Definition and Variable Measurement

The following are the operational resolutions that will be used in this study:

1. Dependent Variable (Y): Profitability
   Profitability is proxied in Return On Assets (ROA), which measures the ability of banks to obtain profits that generate profits generated from the total assets of the bank.
   $$ROA = \frac{Earning\ Before\ Tax}{Total\ Asset} \times 100\%$$

2. Independent Variables (X):
   a. Capital Adequacy (X1)
      Capital adequacy in this study is proxied in Capital Equity Ratio (CAR), which is to measure the capital adequacy owned by banks to support assets that contain or produce risks.
      $$CAR = \frac{Bank\ Capital}{ATMR} \times 100\%$$

   b. Liquidity (X2)
      Liquidity in this study is proxied in the Loan to Deposit Ratio (LDR), which is the ability of banks to repay liabilities to customers who have invested their funds with loans given to their debtors.
      $$LDR = \frac{Total\ Credit}{Third\text{-}Party\ Funds} \times 100\%$$

   c. Credit Risk (X3)
      Credit risk in this study is proxied by Non Performing Loans (NPL), which is to measure the ability of banks to manage non-performing loans channeled by banks.
      $$NPL = \frac{Non\ Performing\ Loan}{Total\ Credit} \times 100\%$$

Hypothesis Analysis and Test Techniques

The analysis technique in this study uses panel data regression analysis methods. According to Ariefanto (2012:4) 'Panel is used if data is taken from various units in a period of time'. Data Panel or pooled data is a combination of timeseries and cross section data (Ajija, et al., 2011:51). Time series data (flat knees time) is data taken from a period of time, for example the annual ROA level for the 2015-2017 period, while the Cross Section (cross data) is data taken from various units.

There are three methods that can be used to work with panel data as follows:

1. Pooled Least Square (PLS), estimating panel data with theOLS method. Simply pooled all timeseries and cross-section data

2. Fixed Effect (FE), adding a dummy model to the panel data takes into account the possibility that researchers face the problem of ommitted-variables, which might bring changes to the intercept time series or cross-section. The model with FE adds a dummy variable to allow changes to this intercept.

3. Random Effect (RE), taking into account the dummy model in panel data improves the least square process efficiency by taking into account the errors of cross-section and time series. The RE model is an estimate of generalized Least Square (GLS).

Of the three panel data method approaches, two approaches that are often used to estimate regression models with panel data are the approaches of FE and RE. The following are the stages of testing the panel data method:

1. Restricted F test
   The F Restricted Test is a test to determine the approach between PLS and FEM.

2. Hausman Test
   The Hausman test is used to determine the model between the approach to Fixed Effect Model (FEM) and Random Effect Model (REM).

3. Test the Lagrange Multiplier
   The Lagrange Multiplier test is used to determine the RE and PLS model approaches.

This study is used to test hypotheses with the help of regression analysis methods through E-views version 9. To answer the hypotheses that have been made, you can use the following methods:

Partial Test (T Test)
   Decision making rejects or accepts hypotheses based on the criteria below, namely:
   a. Based on the comparison of the tcount and t table the basic decision making are:
      1) If t hitung < t table, then H0 is accepted and Ha is rejected (there is no effect).
      2) If t hitung > t table, then H0 is rejected and Ha is accepted (there is effect).
   b. Based on the probability value (significant) the basis for decision making are:
      1) If significance> 0.05 then H0 is accepted and Ha is rejected (not significant).

2) If the significance is <0.05 then H0 is rejected and Ha is accepted (significant).

2. Determination Coefficient Test (R2)
According to Ghozali (2016:95) the coefficient of determination (R2) essentially measures how far the model's ability to explain the variation of the dependent variable. In other words, in this study the coefficient of determination test (R2) shows how much the dependent variable (Profitability) can be explained by its independent variables (Capital Adequacy, Liquidity and Credit Risk).

RESULT AND DISCUSSION
Descriptive Statistics

Table 1. Descriptive Statistics Results

	ROA	CAR	LDR	NPL
Mean	0.015464	0.212538	0.849797	0.025108
Median	0.014770	0.194940	0.868560	0.025820
Maximum	0.038860	0.664280	1.192270	0.070230
Minimum	0.001150	0.105230	0.420200	0.002100
Std. Dev.	0.009615	0.072803	0.147907	0.013610
Skewness	0.737133	3.168016	-0.626651	0.689780
Observation	81	81	81	81

Source: *Output E-Views* 9.0

Hypothesis Analysis and Test Techniques

Selection of Analysis Methods:
a. Test F Restricted (Pooled Least Square vs. Fixed Effect Model)
Restricted F test is done to see the best and right model that will be used in this study, which is between Pooled Least Square and Fixed Effect Model. In the previous explanation in chapter III, the hypotheses that will be used in the Restricted F test are as follows:
H0 = Pooled Least Square (PLS)
H1 = Fixed Effect Model (FEM)
From the above hypothesis, H0 is rejected if the Chi-Square Cross Section probability value <0.05 and H0 is accepted if the Chi-Square Cross Section probability value is> 0.05. The Restricted Test Results are as follows:

Table 2. Restricted F Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	20.487039	(26.51)	0.0000
Cross-section Chi-square	197.437349	26	0.0000

Source: *Output E-Views* 9.0

Based on table 2 above, the probability of Cross Section Chi-Square for this study is $0.0000 < 0.05$. Then H0 is rejected and H1 is accepted, so the best model used in the study between Pooled Least Square and Fixed Effect Model is the Fixed Effect Model.

b. Haussman Test (Fixed Effect Model vs. Random Effect Model)
The Hausman test is done to see which model is better between Fixed Effect Model with Random Effect Model. The hypotheses used in the Hausman Test are as follows:
H0 = Random Effect Model (REM)
H1 = Fixed Effect Model (FEM)
From the above hypothesis, H0 is rejected if the Cross Section Random probability value <0.05 and H0 is accepted if the Cross Section Random probability value is> 0.05. Hausman Test Results as follows:

Table 3. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.569063	3	0.9035

Source: *Output E-Views* 9.0

Based on table 3 above, the Cross Section Random probability value for this study is $0.9035 > 0.05$. Then H0 is accepted and H1 is rejected, so the best model used in the study between Fixed Effect Model with Random Effect Model is the Random Effect Model.

c. Lagrange Multiplier Test (Pooled Least Square vs. Random Effect Model)
The Lagrange Multiplier test is done to see which model is better between Pooled Least Square and the Random Effect Model. The hypotheses used in the Lagrange Multiplier Test are as follows:
H0 = Pooled Least Square (PLS)
H1 = Random Effect Model (REM)

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From the above hypothesis, H0 is rejected if the Cross Section Random probability value <0.05 and H0 is accepted if the Cross Section Random probability value is> 0.05. Lagrange Multiplier Test Results as follows:

Table 4. Lagrange Multiplier Test Results

Test Summary	Test Cross Section	Hypotesis T.	Prob.
Breusch-Pagan	60.11946 (0.0000)	(0.3242)	(0.0000)

Source: *Output E-Views* 9.0

Based on table 4 above, the Cross Section Random probability value for this study is 0.0000 <0.05. Then H0 is rejected and H1 is accepted, so the best model used in the study between Pooled Least Square and Random Effect Model is the Random Effect Model.

Hypothesis Testing

Based on the F Restricted Test, the Hausman Test and the Lagrange Multiplier Test that have been done before, it can be concluded that the model to be used in this study is the Random Effect Model. The estimation results of the analysis of the influence of independent variables on the dependent variable can be seen in the following table:

Table 5. Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000348	0.007109	0.049002	0.9610
CAR	0.016861	0.007685	2.193982	0.0313
LDR	0.018164	0.007611	2.386692	0.0195
NPL	-0.155467	0.038941	-3.992338	0.0001

Source: *Output E-Views* 9.0

a. T test (Partial)

Hypothesis testing using t test aims to determine the effect of independent variables namely Capital Adequacy (X1), Liquidity (X2) and Credit Risk (X3) on the dependent variable namely Profitability (Y). Taking hypothesis decisions in this t test can be measured by comparing the significance values with their critical values.

If the significance value is <0.05 then H0 is rejected and Ha is accepted, which means that the independent variable has a significant effect on the dependent variable. Whereas if the significance value is> 0.05 then H0 is accepted and Ha is rejected, which means that the independent variable has no effect on the dependent variable.

To see the effect it can also compare t table with t count. If t table> t count then H0 is accepted and Ha is rejected. table is seen in the statistical table at 0.05 significance with degrees df = number of observations (N) - number of variables (K).

1) Effect of Capital Adequacy (CAR) on Profitability (ROA)

Based on the results of the analysis in table 5 above, the results of Capital Adequacy measured by Capital Adequacy Ratio (CAR) show a significance value smaller than α, that is 0.0313 < 0.05 with a coefficient of 0.016861 and a t_hitung greater than t_table ie 2.193982 > 1. 919 with df = 81 - 4 = 77 and a significance level of 5%, then H0 is rejected and H1 is accepted. So that it can be interpreted that Capital Adequacy (CAR) has a positive significant effect on Profitability (ROA).

The positive relationship obtained in this study implies that capital adequacy (CAR) is directly proportional to bank profitability (ROA), where if the higher the CAR the stronger the bank's ability to bear the risk of each credit or bank profitability (ROA) increases or improve. This is in accordance with the theory conveyed by (Saiful et al, 2013 p.179).

Capital Adequacy Ratio (CAR) is a ratio to measure the capital adequacy of a bank to support assets that contain or produce risks. The results of the tests that show the magnitude of the Capital Adequacy Ratio (CAR) ratio have a significant positive effect on Return on Assets (ROA), because the CAR research period in table 9 shows that the average CAR value in the 2015-2017 period is 21.25%. With an average of 21.25%, it shows that national commercial banks are very healthy. The greater the Capital Adequacy Ratio (CAR), the higher the ability of the bank's capital adequacy in maintaining the possibility of risk arising from its business activities, so that the bank's profitability will increase. The high CAR

also shows that the higher the capital alone to fund productive assets, the lower the cost of funds issued by the bank, the increasing changes in profits of national commercial banks. On the other hand, the high level of CAR can also increase public confidence in national commercial banks, because the guarantee of funds for the community is getting higher.

2) Effect of Liquidity (LDR) on Profitability (ROA)

Based on the results of analysis in table 13 above, the results of Liquidity as measured by Loan to Deposit Ratio (LDR) show that the significance value is smaller than α $0.0195 < 0.05$ with a coefficient of 0.018164 and t_hitung is greater than t_table ie $2.386692 > 1.919$ with df = 81 - 4 = 77 and a significant level of 5%, then H0 is rejected and H2 is accepted. So that it can be interpreted that Liquidity (LDR) has a significant positive effect on Profitability (ROA).

The positive relationship obtained in this study implies that the LDR is directly proportional to the bank's profitability (ROA), where if the higher the LDR, the bank's profit increases. This is in accordance with the theory conveyed by (Taswan, 2010:167). The LDR ratio is used to measure the ability of the bank to pay its obligations and be able to fulfill the proposed credit request. The LDR ratio is the ratio between the total amount of credit given to third party funds. The amount of credit given will determine the Bank's profit. If the Bank is not able to channel credit while the funds are collected a lot, it will cause the Bank to suffer losses (Kasmir, 2004).

The higher the LDR ratio indicates the more the amount of third party funds channeled in the form of credit. This will provide greater interest income which will increase profitability.

3. Effect of Credit Risk (NPL) on Profitability (ROA)

Based on the results of the analysis in table 13 above, the results of Credit Risk as measured by Non Performing Loans (NPL) show a significance value greater than α $0.0001 > 0.05$ with a coefficient of -0.155467 and t_hitung greater than t_table which is $3.992338 > 0.1919$ with df = 81 - 4 = 77 and a significant level of 5%, then H0 is rejected and H3 is accepted. So that it can be interpreted that Credit Risk (NPL) has a negative and significant effect on Profitability (ROA).

The negative relationship obtained in this study implies that NPL is inversely proportional to bank profitability (ROA), according to the theory presented (Tawan, 2010 p.166) where the higher the NPL, the worse the credit quality that causes bank profitability to decline.

Non Performing Loans (NPL) is a ratio that compares between non-performing loans and total loans provided by banks. The results of the tests that show the magnitude of the Non Performing Loan (NPL) ratio have a significant negative effect on Return on Assets (ROA), because the NPL research period in table 9 shows that the average NPL value in the 2015-2017 period is still low, which is 2.51 %. With an average of 2.51%, it shows that national commercial banks are in good health, so that the bank needs to be careful in carrying out its functions. Risks in the form of difficulties in returning credit by a debtor with a sufficiently large amount can affect the bank's profitability. The existence of non-performing loans causes the loans disbursed to be unable to produce results. The high NPL also results in the emergence of larger reserves, so that in the end the bank's capital will decrease. The amount of NPL is one of the obstacles to channeling bank credit.

The increase in non-performing loans in large quantities can cause problems for the health of the bank. Therefore banks are required to always maintain credit not in high non-performing loan positions. Non-performing loans can result in reduced bank revenue. Reduced income will directly affect bank profitability.

b. Determination Coefficient Test (R2)

The results of the adjusted coefficient of determination (adjusted R2 test) are shown in the following table:

Table 6. Coefficient of Determination (R2)

R-squared	0.251279
Adjusted R-squared	0.222108
S.E. of regression	0.003122
F-statistic	8.614011
Prob(F-statistic)	0.000053

Source: *Output E-Views* 9.0

Based on table 6 above the Adjusted R-squared value of 0.222108 the number gives the meaning that 22.21% ROA can be explained or influenced by the three independent variables namely Capital Adequacy, Liquidity and Credit Risk 22.21%, while the remaining 27.79% can be explained by other factors outside the research model.

CONCLUSION

The purpose of this study was to determine the effect of Capital Adequacy, Liquidity and Credit Risk on bank profitability. The sample used in this study is the National Commercial Bank which is listed on the Indonesia Stock Exchange (BEI) for the period 2015 - 2017. The method used in this study is purposive sampling, which is a technique used in sampling based on certain criteria.

Based on the results of research and hypothesis testing through panel data regression analysis in the discussion of chapter IV, the authors can draw conclusions as follows:

a. The results of testing the Capital Adequacy variable as measured by Capital Adequacy (CAR) shows the results stating that Capital Adequacy (CAR) has a significant positive effect on the Profitability of National Commercial Banks Tbk. Thus, the research hypothesis is proven.

b. The results of testing the Liquidity variable as measured by the Loan to Deposit Ratio (LDR) shows the results stating that Liquidity (LDR) has a significant positive effect on the Profitability of National Commercial Banks Tbk. Thus, the research hypothesis is proven.

c. The results of the testing of Credit Risk variables as measured by Non Performing Loans (NPL) show the results stating that Credit Risk (NPL) has a significant negative effect on the Profitability of National Commercial Banks Tbk. Thus, the research hypothesis is proven.

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