THE ROLE OF INTEREST RATES ON THE EFFECT OF NON-PERFORMING LOANS AND CAPITAL ADEQUACY RATIOS ON BANKING PROFITABILITY (CASE STUDY ON CONVENTIONAL COMMERCIAL BANKS LISTED ON THE INDONESIA STOCK EXCHANGE 2016-2020)

Oleh
Maria Safitri[1], Vicky Oktavia[2]
[1,2]Economics and Business Faculty, University of Dian Nuswantoro, Semarang, Indonesia
E-mail: [1]mariasafitri@dsn.dinus.ac.id, [2]vicky.oktavia@dsn.dinus.ac.id

Abstract: *The purpose of this study was to determine the effect of Non Performing Loans (NPL), Capital Adequacy Ratio (CAR) on Profitability (ROA) moderated by Interest Rates (RATE). The population of the data taken in this study were 41 conventional commercial banks. Based on the purposive sampling technique, 190 data samples were obtained from 38 conventional commercial banks listed on the IDX from 2016 to 2020. This study used path analysis with the Warp PLS 7.0 application. The results of this study prove that NPL has a negative and significant effect on ROA, CAR has a positive and significant effect on ROA, interest rates are able to moderate the effect of NPL on ROA of conventional commercial banks as evidenced by the coefficient value of -0.272 with p-value <0.001.*
However, interest rates are not able to moderate the effect of CAR on ROA of conventional commercial banks.

INTRODUCTION

Bank is a business entity that collects funds from the public in the form of savings and distributes them to the public in the form of credit and or other forms in order to improve the standard of living of the people at large. Banks as financial institutions play the biggest role in the economy which also serves as a place to store funds needed by companies, government agencies and the private sector. In addition, banks also meet financing needs through credit activities and various services provided, as well as initiating payment system mechanisms for all economic sectors (Heri and Kholis, 2016).

As a state financial institution with a very important contribution to the country's economy, banks need good performance. A good level of bank performance can increase public interest and confidence in using bank financial services (Yuliana and Pratiwi, 2020). The health and stability of a bank is very important for the country's economy as well as for the business sector and customers. The soundness of a bank can be assessed through bank financial ratios. Bank Indonesia is more concerned with assessing profitability which is measured using assets where most of the funds come from third party funds which are public savings funds (Ali and Dhiman, 2019), (Candraningrat et al., 2021), and (Sjahrifa et al., 2018).

The level of bank profitability is generally measured using the Return on Assets (ROA) ratio which describes the ability of a bank to earn earnings from its operational activities. ROA is said to be important for banks because ROA is used to measure the effectiveness of the company in generating profits by utilizing its assets. This value reflects the company's return on all assets (funding) given to the company. A positive ROA indicates that of the total assets used to operate, the company is able to generate profits. Conversely, a negative ROA indicates that from the total assets used, the company gets a loss. The greater the ROA, the better the company's performance, because the level of profit achieved by the bank is getting better in terms of asset use (Ali and Laksono, 2017).

Several factors that have an influence on bank profitability include the CAR and NPL ratios. Capital Adequacy Ratio (CAR) is a capital adequacy ratio that is useful to accommodate the risk of loss that may be faced by the bank. The Capital Adequacy Ratio shows the extent to which the bank contains risks (credit, statements, securities, bills) which are also financed by public funds. The higher the Capital Adequacy Ratio, the more capable the bank has to bear the risk of any risky credit/productive assets. If the value of the Capital Adequacy Ratio is high, then the bank can finance operational activities and make a sizeable contribution to profitability. Increasing the Capital Adequacy Ratio can improve customer security which can indirectly increase customer confidence in the bank, which can then have a positive impact on increasing bank profitability (Febrianti & Ladinus, 2019). This is in line with previous studies that tested the effect of CAR on ROA including the research of EPendi & Suhikmat (2016), Mariam & Mergu (2019), Setyarini (2020) and Mukaromah & Supriono (2020) which stated that CAR had a significant positive effect on ROA. However, the results of this study contradict those of Susilowati et al. (2019), Dini & Manda (2020) and Fauziah (2021) who prove that CAR has a negative and significant effect on ROA.

The NPL ratio is a reflection of non-performing loans. If the NPL ratio is high, it means that non-performing loans have a high amount of total loans extended to debtors. Non-Performing Loans (NPLs) are caused by several obstacles due to errors from the banking sector in conducting analysis before channeling credit or the customer not paying his obligations during the agreed period. The maximum limit for a bank's Non-Performing Loan (NPL) is not more than 5 percent. Bad loans or non-performing loans occur because the bank is too expansive so that the bank continues to pursue credit distribution targets without paying attention to the level of prudence. If a bank has a high Non-Performing Loan (NPL), it will disrupt the bank's performance, namely the bank's profit will decrease so that the Return on Assets (ROA) will be low (Andrayani, 2018). This condition is in line with research conducted by Janrosl & Yuliani (2017), Liode et al. (2019), and Isalina et al (2020) who prove that NPL has a negative effect on ROA. Meanwhile, research conducted by Nuryanto et al. (2020) and Anggraini & Prasetyo (2020) show different results where NPL has no effect on ROA in banks.

Another thing that cannot be ignored for the banking world is macroeconomic conditions. One of the macroeconomic factors that affect a bank's CAR, NPL and ROA is the interest rate of Bank Indonesia. If the banking interest rate is raised by Bank Indonesia, it will affect the amount of savings and have a larger interest difference so that it will increase income for banks. The relationship between credit interest rates and CAR is positive, where if a bank's credit interest rate increases, the CAR will also increase (Purmami & Kali, 2018).

For NPLs, interest rates have a positive effect on NPLs. An increase in the SBI interest rate may result in an increase in deposit interest rates. This can lead to an increase in costs incurred by the bank. If it is associated with loan interest rates, an increase in loan interest rates makes it increasingly difficult for debtors to fulfill their obligations to banks in the form of installment payments. This has an impact on the higher non-performing loans of banks as indicated by the higher NPL ratio. The results of this study support Skenderi, et al (2016) and Pertiwi, et al (2020) which also prove that interest rates partially have a significant positive effect on NPLs in banks. While the effect of interest rates on ROA, the higher the interest rate set by Bank Indonesia, the effect on credit interest rates which causes an increase in interest expense from loans, so that interest income increases, when interest income increases, the bank's profit or profitability will increase. Research conducted by Delsy & Wiagustini (2014) shows that interest rates have a positive effect on ROA, while research conducted by Wibowo & Syaichu (2013) shows that interest rates have no effect on ROA.

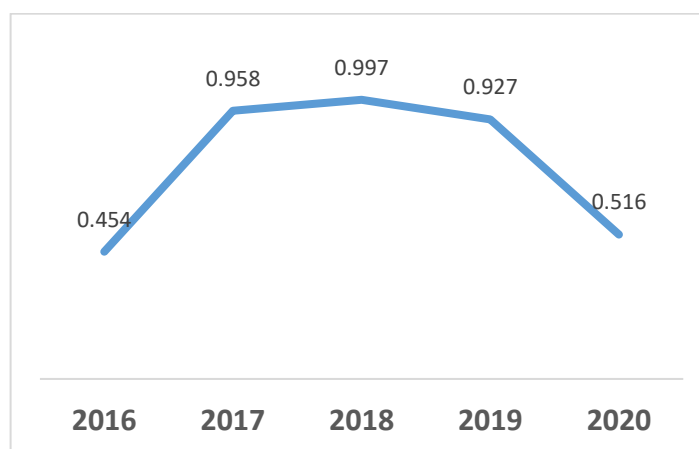Fluctuations in banking profitability in Indonesia over the last five years can be seen in the graph below:

Figure 1. Graph of Average Banking ROA
Source : Indonesia Stock Exchange (2020, processed)

In the Covid-19 pandemic situation, especially in 2020 the ability of banks to print profits was eroded. The Financial Services Authority (OJK) stated that the impact of the Covid-19 pandemic had suppressed the profitability of banks. This is not without reason, the slowing demand for credit coupled with a high risk of making the banking profit-making machine not function optimally. In other words, the banking sector cannot freely channel its credit, this is due to the higher risk of default from creditors because most people, both individuals and companies, tend to experience a decrease in income during the Corona virus pandemic, which is indicated by the high ratio of CAR and NPL.

Given the research gap and phenomena that have occurred over the last 5 years, the authors are interested in further researching the effect of CAR and NPL on ROA at conventional commercial banks listed on the Indonesia Stock Exchange in 2016-2020 with interest rates as a moderating variable

LITERATURE REVIEW
Definition of Bank

The definition of a bank according to Law No. 10 of 1998 article 1 paragraph 2 is a business entity that collects funds from the public in the form of savings and distributes them to the public in the form of credit and or other forms in order to improve the standard of living of the people at large. According to Kasmir (2012: 11) bank is a financial institution whose main activity is to collect funds from the public and channel these funds back to the community and provide other banking services.

Profitability

Profitability is a measure of a company's ability to profit from its activities. There are two kinds of general factors that can affect bank profitability, including factors that can be controlled and factors that cannot be controlled by management. The factors that can be controlled by management are policies or decisions of the bank's management itself, such as fundraising, various managements such as capital management, liquidation management and cost management. While the factors that cannot be controlled by bank management are external factors which include regulation, market structure, inflation rate, interest rates, and market growth (Menicucci & Paolucci, 2016). Profitability analysis is an analysis of financial ratios to measure the company's ability to earn profits as measured by percentages to assess the extent to which the company is able to generate profits. In this study, the authors use the ratio of Return on Assets (ROA) to measure the profitability of conventional commercial banks. ROA is a ratio to measure the net income generated by each bank's assets, so that ROA is more effective in calculating the ability of bank management to obtain overall profits.

Interest Rate

A new interest rate policy called the BI 7 Days (Reverse) Repo rate (BI7DRR) was issued by Bank Indonesia in August 2016 to replace the previous benchmark interest rate, namely the BI Rate. Changes in interest rate policy are carried out to strengthen the framework for monetary operations, which is usually carried out by a country's central bank and is an international best practice in the implementation of monetary operations. BI7DRR (BI 7-Days Reverse Repo Rate) was enacted to replace the old interest rate policy on the grounds that it could have the right influence on the money market, banking sector, and could also have an impact on the real sector. The main expected impact of the use of the BI7DRR instrument as a new interest rate policy is the strengthening of monetary policy signals, with its effect on movement in money market interest rates and BI7DRR banking interest rates are also expected to increase the effectiveness of monetary policy transmission. The third impact that is expected to occur with the use of BI7DRR as the new benchmark interest rate is the formation of a deeper financial market, especially in transactions and the formation of the interest rate structure in the Interbank Money Market (www.bi.go.id, 2020). Several studies on the effect of interest rates on profitability have been carried out. Sahara (2013) conducted research related to the effect of interest rates on ROA of Islamic banks and the results showed that interest rates had a negative effect on ROA of Islamic banks. It is different with the results of research conducted by Ridhwan (2016) which states that the interest rate of Bank Indonesia has a positive influence on the ROA of Islamic banks. Meanwhile, research conducted by Wibowo & Syaichu (2013) and Nainggolan & Sitorus (2021) proves that interest rates have no significant effect on banking ROA on the Indonesia Stock Exchange.

Non Performing Loan (NPL)

The definition of NPL based on Bank Indonesia Regulation No. 11/25/PBI/2009, the

risk of failure of the debtor or other party in fulfilling their obligations to the bank. Credit risk from risk activities and other commitments arises because the debtor is unable to fulfill his obligations to the bank upon arrival. Customer obligations to banks that do not result in losses because they do not receive the estimated income (Rahman and Deannes, 2019). The higher the NPL value, the worse the financial bank's performance. The bank bears the risk of bad credit or non-payment where the credit that was bad will be used as bad credit. If the number of non-performing loans increases, the analysis must be watched out because banks can face challenges (Mamduh Hanafi, 2014: 331). Banks have an asset quality assessment and determine credit quality in 5 types, namely loss, doubt, substandard, special mention, and current. Non-performing loans to non-bank third parties are classified as bad, doubtful and substandard. Meanwhile, total credit is credit to non-bank third parties. This is based on OJK Circular Letter No.14/SEOJK.03/2017. Bank Indonesia has set a maximum limit for NPLs or bad loans, which is 5 percent. To calculate NPL, you can use the following formula:

$$NPL = \frac{Troubled\ Credit}{Total\ Credit}\ X\ 100\%$$

If the NPL condition of a bank is high, the credit quality will be worse, which means the total non-performing loans are also getting bigger, thus making the bank potentially experience losses that can affect the level of profitability of a bank. This theory is supported by research by Astohar (2018), Chandra & Anggraini (2020), Fanny et al. (2020) which states that NPL has a negative and significant effect on ROA

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a bank performance ratio that assesses the extent to which the capital owned by the bank is able to face the risk of credit failure faced by the bank. If the number of CAR ratios owned by the bank is getting bigger then the bank is able to face the risk of credit failure, and vice versa. Based on bank indonesia regulation Number 15/12/PBI/2013 concerning the Minimum Capital Adequacy Requirement for Commercial Banks, the minimum CAR value is 8% and in assessing the capital aspect there are two financial ratios that can be used, namely the Capital Adequacy Ratio (CAR) and Fixed Assets. Against Capital. The ratio that is often used is the Capital Adequacy Ratio (CAR) or the ratio of capital to Risk Weighted Assets (RWA). To calculate this ratio, you can calculate the following formula::

$$CAR = \frac{Capital}{Risk\ Weighted\ Assets}\ X\ 100\%$$

Capital Adequacy reflects the bank's capital, because the greater the CAR, the greater the rate of return on assets. In the case of CAR, banks must have large capital so that bank management is more free to place their funds in investment activities which of course can generate profits (Fanny et al., 2020). CAR is a ratio used to measure the extent to which a bank's capital adequacy is in bearing risk-weighted assets. Therefore, the greater the CAR ratio, the stronger the bank is to bear from any productive assets that have risk. So that the bank can finance its operations to obtain profits that contribute significantly to the profitability of the bank. This research supports the findings of Heri Susanto and Nur Kholis (2016), Dalimunthe and Nofryanti (2017), Rini Indarti and Minanari (2019) which state that CAR has a positive and significant effect on ROA

Hypothesis Development

Based on the theoretical basis described above, the hypotheses that will be developed

by the author are:
1. H1: Non-Performing Loans (NPL) have a negative and significant effect on the Return On Assets (ROA) of conventional commercial banks listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period.
2. H2: Capital Adequacy Ratio (CAR) has a positive and significant effect on the Return On Assets (ROA) of conventional commercial banks listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period
3. H3: Interest rates can moderate the effect of CAR on ROA of conventional commercial banks listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period.
4. H4: Interest rates can moderate the effect of NPLs on ROA of conventional commercial banks listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period.

RESEARCH METHODS
The population of the data taken in this study were 41 conventional commercial banks listed on the Indonesia Stock Exchange for the 2016-2020 period. While the sampling in this study used a purposive sampling technique, namely the technique of determining the sample with certain considerations (Sugiyono, 2016). The criteria that will be sampled are:
1. Conventional Commercial Banks listed on the Indonesia Stock Exchange (IDX) during the 2016-2020 period.
2. Conventional commercial banks that present annual financial reports for the 2016-2020 period.
Based on the above criteria, the sample data obtained are 38 conventional commercial banks. with a total of 190 data for the 2016-2020 financial statements. The analytical method used in this research is descriptive statistics. Descriptive statistics is a data analysis technique used to describe the condition of research variables (Widodo, 2019, p. 76). The collected data were analyzed using warpPLS 7.0. software. WarpPLS is used because it has several advantages, including being able to test direct moderating variables (Solihin and Ratmono, 2013). Therefore this software is in accordance with the research model built in this study.

RESULTS AND DISCUSSION
Descriptive statistical results
From table 1, it is known that the company's profitability variable as measured by ROA has the highest value of 4.02 and the lowest value of -11.15 and an average value of 0.77. Non Performing Loan maximum value is 22.27 and minimum value is 0.00 00 with an average value of 3.63. In the Capital Adequacy Ratio variable, the maximum value is 77.76 and the minimum value is 2.00 with an average value of 23.23. The interest rate variable has a maximum value of -2.83, a minimum value of -3.16 and an average value of -2.98%.

Tabel. 1 Descriptive Statistics

Descriptive Statistics					
Variabel	N	Minimum	Maximum	Mean	Std. Deviation
NPL	190	.00	22.27	3.6268	2.66234
CAR	190	2.00	77.76	23.2271	9.95437

ROA	190	-11.15	4.02	.7705	2.15315
RATE	190	-3.16	-2.83	-2.9866	.12379
Valid N (listwise)	190				

Source: data processing warpPLS 7.0

Partial Least Square Analysis
Coefficient of determination test results

Tabel 2. R- Squared Test Result

Variabel Laten	R Square
Return On Asset	0.566

Source: data processing warpPLS 7.0

Table 2 shows that the return on assets variable can be explained by the variability of non-performing loans and the capital adequacy ratio moderated by an interest rate of 0.566 or 56.6%, while the remaining 43.4% is explained by other variables outside the research model. This means that the effect of non-performing loans and capital adequacy ratio moderated by interest rates on return on assets is a strong model because the R-Square value is above 0.45.

Model fit index

Tabel 3. Research Model Test Results

Information	Value	Ideal
Average path coefficient (APC)	P<0.001	<= 0.05
Average R-squared (ARS)	P<0.001	<= 0.05
Average adjusted R-squared (AARS)	P<0.001	<= 0.05
Average block VIF (AVIF)	1.431	<= 3.3
Average full collinearity VIF (AFVIF)	1.334	<= 3.3
Sympson's paradox ratio (SPR)	1	1
R-squared contribution ratio (RSCR)	1	1
Statistical suppression ratio (SSR)	1	>= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	1	>= 0.7

Source: data processing warpPLS 7.0

From Table 3 above, it can be seen that each value in APC (P<0.001), ARS (P<0.001), AARS (P<0.001), AVIF (1.431), AFVIF (1.334), SPR (1), RSCR (1), SSR (1), NLBCDR (1) which meet the ideal criteria indicate that the overall research model is good (appropriate).

Hypothesis Testing Results

Table 4. Path Coefficient and P-Value Results

Path	Coefficient	*P-value*
NPL →ROA	-0.476	<0.001***
CAR →ROA	0.252	<0.001***
NPL*RATE →ROA	-0.272	<0.001***
CAR*RATE →ROA	-0.021	0.387

Source: data processing warpPLS 7.0

The test results for the first hypothesis indicate that NPL significant effect on the ROA as evidenced by the NPL coefficient value of - 0.476 and p-value <0.001, at which hypothesis

1 is accepted. To test the second hypothesis, namely the effect of CAR on ROA, a p-value of 0.252 is obtained and a CAR coefficient of <0.001 which means that CAR has a positive and significant effect on ROA, thereby proving that hypothesis 2 is correct. The results of testing the third hypothesis indicate that interest rates have a negative and significant effect on the effect of NPL on ROA which can be seen from the coefficient value of -0272 with p-value <0.001. The test results indicate that interest rates are able to weaken the effect of NPL on ROA. This test confirms the third hypothesis that interest rates are able to moderate the effect of NPL on banking ROA. The results of the fourth hypothesis test show that the interest rate variable does not moderate the relationship between CAR and ROA. this can be proven from the results of hypothesis testing which shows the path coefficient value of -0021 with p - value 0.387 > 0.05, thus the fourth hypothesis is rejected.

The result of testing the complete examination model, which depicts the causal link between factors, is shown in Figure 2, where NPL and CAR are independent variables and ROA is the dependent variable moderated by RATE.
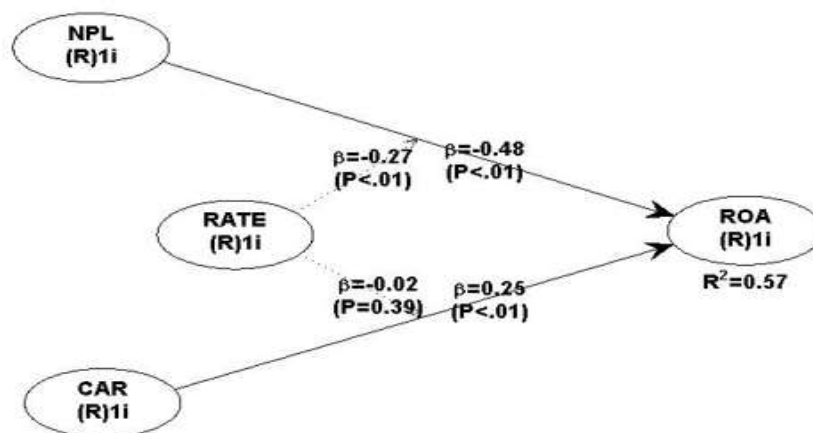

Figure 2. Full Research Model

Effect of NPL on ROA

In the research that has been done, that NPL has a negative and significant effect on ROA, which is indicated by the coefficient value of -0.476 and a significance value of <0.01 which is less than 0.05. This is supported by the results of research by Astohar (2018), Indarti & Minanari (2019), and Chandra & Anggraini (2020) which state that NPL has a negative and significant effect on profitability (ROA). The higher the NPL of a bank, the worse the credit quality means that the total non-performing loans are also getting bigger, so it can cause the bank to suffer losses that can affect the level of profitability owned by a bank.

Effect of CAR on ROA

The results of the study prove that CAR has a positive and significant effect on ROA as indicated by a coefficient value of 0.252 and a significance value of < 0.01 which is smaller than 0.05. Thus, if the CAR is higher, the ROA owned by conventional commercial banks will also increase. This study confirms the results of research by Heri Susanto and Nur Kholis (2016), Dalimunthe and Nofryanti (2017), Rini Indarti and Minanari (2019) and Fanny et al.,(2020).

The moderating role of interest rates for the effect of non-performing loans (NPL) on the profitability (ROA) of conventional commercial banks

The results of this study found that interest rates were able to moderate the effect of NPL on ROA of conventional commercial banks as evidenced by the coefficient value of -0.272 with p-value <0.001. This condition is in accordance with the phenomenon that occurred during the research period, where Bank Indonesia has lowered its benchmark interest rate several times, but it does not necessarily reduce the ratio of non-performing loans, because the impact of the corona virus outbreak has hit the economy so much in various sectors which has resulted in business players. become burdened with turnover which is also declining at this time. With the decline in interest rates, as a result, the demand for bank credit from the business world of all sectors is likely to increase. Meanwhile, the number of non-performing loans has not changed much from time to time. This is what makes the amount of NPL can actually increase. If the NPL is increasing, it indicates that the bank is not professional in managing its credit which will have an impact on bank losses.

The moderating role of interest rates for the effect of the capital adequacy ratio (CAR) with the profitability (ROA) of conventional commercial banks

The results of this study found that interest rates are not able to moderate the effect of CAR on ROA of conventional commercial banks which can be proven from the coefficient value of -0.021 with a p-value of 0.387.

CONCLUSIONS AND RECOMMENDATIONS
Conclusions

This study aims to determine the effect of non-performing loans (NPL) and capital adequacy ratio (CAR) on the profitability (ROA) of conventional commercial banks with the variable interest rate (RATE) as the moderating variable. Based on the results of hypothesis testing using the warpPLS 7.0 application, the following results were obtained:

1. NPL has a negative and significant effect on ROA, which means that if NPL increases, ROA will decrease, and vice versa.
2. CAR has a positive and significant effect on ROA, thus if the CAR is higher, the ROA owned by conventional commercial banks will also increase.
3. Interest rates are able to moderate the effect of NPL on ROA of conventional commercial banks which can be proven from the coefficient value of -0.272 with p-value <0.001.
4. Interest rates are not able to moderate the effect of CAR on ROA of conventional commercial banks

Recommendations

For further research related to banking profitability, it is better to add several independent variables that are different from research such as NIM, BOPO, LDR and consider other macro variables such as inflation, exchange rates, money supply, and so on. For potential investors in the capital market, it is necessary to consider the factors that affect profitability before investing in conventional commercial banks listed on the Indonesia Stock Exchange..

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