

# The Effect of Credit Interest Rates, Loan to Deposit Ratio and Capital Adequacy Ratio on Non-Performing Loan in Commercial Banks Registered on IDX 2016-2019 Period

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**Abstract:** Banks can be said to be like the heart of a country, especially for developing countries. One of the bank activities is channeling funds in the form of credit. An increase in the amount of credit will also be followed by the possibility of credit uncollectibility and entanglement in non-performing loans. To measure a bank's ability to overcome credit default by debtors, the Non-Performing Loan (NPL) ratio can be used. The purpose of this study is to obtain empirical evidence of the effect of credit interest rates, LDR and CAR on NPLs. This research uses signal theory. This research was conducted at banking companies listed on the Indonesia Stock Exchange (IDX) using the non-participant observation method. The population of this research is 45 banks. The sample selection method used nonprobability sampling method with purposive sampling technique, the sample was obtained as many as 34 banks in 4 years of observation. The data analysis technique used is multiple linear regression analysis techniques. The results show that credit interest rates have no effect on NPL. This means that the increase or decrease in the credit interest rate charged by the bank does not affect the NPL ratio. LDR has no effect on NPL. This means that high or low total loans disbursed compared to total third party funds held by banks do not affect the NPL ratio. CAR has a negative effect on the NPL. This means that the higher the CAR ratio of the bank, the lower the NPL ratio.

**Keyword:** Credit interest rates, LDR, CAR and NPL.

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## I. INTRODUCTION

Banks can be said to be like a heart for a country, especially for developing countries. As a driver of the national economy of a country, banks will be better for an economy if they are in good health (Barus & Erick, 2016). Banks accept money deposits from the public (third party funds) in the form of savings, current accounts and time deposits. Then the funds can be returned in the form of credit to the public. Banks in Indonesia generally rely on loan interest income as the main income in financing their operations. Credit is an operational activity that has the greatest role in contributing income to banks. Lending to the public will provide high interest income if the bank is able to provide large funds to the public (Ari & Wilatini, 2019). In reality, not all of the loans extended are free from risk, some of which have considerable risk and can threaten the health of the bank. The increase in the amount of credit will also be followed by the possibility of uncollectible credit and entanglement in non-performing loans.

High non-performing loans can lead to a risk of lowering the performance of the banking sector (Saputro et al., 2019). Non-performing loans are a problem faced by banks and have an impact on business continuity. So to measure a bank's ability to overcome credit default by debtors, a non-performing loan (NPL) ratio that occurs in a bank can be used. Diansyah (2016) said that the lower the NPL ratio, the lower the level of non-performing loans, which means the better the condition of the bank. Bank Indonesia determines that a bank must have an NPL value of less than 5 percent. Bank Indonesia (BI) reports that the ratio of non-performing loans (NPL) to banks increased at the beginning of 2020. Central

bank data shows that the NPL ratio in February 2020 was recorded to have increased to a level of 2.77 percent (gross). This figure increases when compared to the realization of NPL at the end of 2019 which amounted to 2.53 percent. (Source: Kompas.com).

Previously, a study was conducted that examined the factors that influence Non-Performing Loans at Commercial Banks in Indonesia by Barus and Erick (2016). The results of his research indicate that partially LDR, NIM, OCOI, SBI interest rates and company size have a significant positive effect, while inflation has a significant negative effect on NPL, while CAR does not have a significant effect on NPL. Other research on the influence of internal and external factors on Non-Performing Loans was also conducted by Diansyah (2016). The results of his research indicate that partially the CAR and size variables have a significant negative effect on NPL and the inflation and interest rate variables have a significant positive effect on NPL, while the LDR and GDP variables have no significant effect on NPLs. Different research results are shown by Setiawan, et al., (2017). The results of his research indicate that the LDR variable has no significant effect on NPL. The variables CAR, OCOI, interest rates have a positive and significant effect on NPL. The NIM variable has a significant effect on the NPL, while inflation has no significant effect on the NPL. Changes in exchange rates have a negative and significant effect on NPL. Judging from the root of the problem, there are two factors that cause non-performing loans, namely internal factors and external factors (Saputro et al., 2019). Internal factors that are thought to affect the level of Non-Performing Loans (NPLs) are credit interest rates, Loan to Deposit Ratio and Capital Adequacy Ratio. These three variables were chosen because previous findings showed the most inconsistent results, so further research is needed.

If the interest charged is very high, it will be difficult to return the credit, if the debtor has difficulty repaying the credit, it is likely to trigger an NPL (Dewi & Suryanawa, 2015). The Loan to Deposit Ratio (LDR) describes credit reliability as a source of bank liquidity as a reflection of the bank's ability to make repayments of depositors' customer withdrawals (K. Dewi & Ramantha, 2015). The high level of LDR indicates the high amount of funds needed by banks to finance credit, this indicates the low liquidity capacity of the bank. On the other hand, a low LDR level indicates a bank is not maximal in carrying out its intermediation function, as indicated by the low level of bank credit expansion compared to the amount of funds it receives. Research conducted by Dewi and Ramantha (2015) shows that LDR has a negative effect on NPL, this is inversely proportional to research conducted by Astrini et al., (2018) which shows that LDR has a positive and partially significant effect on NPL. Capital Adequacy Ratio (CAR) is a ratio to measure capital and reserves for write-offs in covering credit, especially the risk that occurs because interest is not collected (Kasmir, 2014: 295). The higher the CAR, the better the bank's ability to bear the risk of any credit or risky earning assets.

## **II. CONCEPTUAL MODEL AND HYPOTHESES**

Signal Theory is a theory that can be used to understand everything that happens in the financial management of a company. Basically, a signal can be interpreted as a signal made by the company (management) to outside parties (investors), where the signal can be directly observed or a deeper study must be carried out to find out (Gumanti, 2009). The relationship between this theory and this research is that Signal Theory is related to the information provided by banks. The main information to attract investors and creditors is the profit and also the company's performance. High profits and good company performance will attract investors to invest in shares and creditors will easily save their funds in the bank. NPLs are related to company performance, especially banking. High Non-Performing Loan (NPL) is often seen as a signal for investors or creditors in assessing the good and bad performance of a bank. The higher the NPL value of a bank, the bank is said to be unhealthy, so this creates a negative signal for investors, third parties and customers to save their money in the bank.

### **The Effect of Credit Interest Rates on Non-Performing Loans**

Changes in direct interest rates can have an impact on the ability to pay of borrowers where an increase in interest rates means the higher the obligations that the borrower must pay to the bank (Messai & Jouini, 2013). Therefore, if the interest charged is very high, it will be difficult to return the credit, if the debtor is difficult to return the credit, it will trigger a Non-Performing Loan (Dewi & Suryanawa, 2015). Previously, research was conducted that examined the effect of credit interest rates on Non-Performing Loans by Barus & Erick (2016); Anjom & Karim (2016); Dewi & Suryanawa (2015) and Saputro et al., (2019) which show that credit interest rates have a positive effect on Non-Performing Loans.

**H<sub>1</sub>: Credit interest rates has a positive effect on non-performing loans**

**The Effect of Loan to Deposit Ratio on Non-Performing Loans**

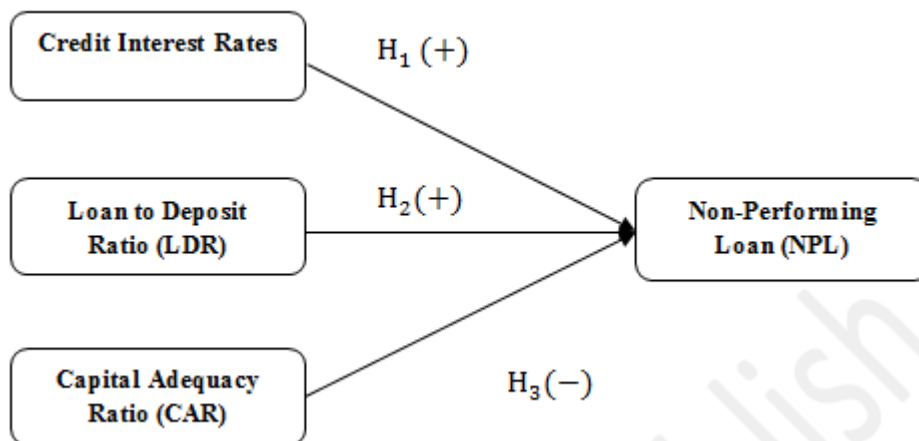
Loan to Deposit Ratio (LDR) describes credit reliability as a source of bank liquidity as a reflection of the bank's ability to make repayments of depositors' customer withdrawals (K. Dewi & Ramantha, 2015). Lending is the main activity of banks, therefore the main source of income for banks comes from this activity. The greater the credit disbursed compared to the public deposits in a bank, the consequence is the greater the risk that must be borne by the bank. So that it will also increase the likelihood of NPLs occurring. Previously, a study was conducted that examined the effect of the Loan to Deposit Ratio (LDR) on NPL by Barus & Erick (2016) which showed that LDR had a significant positive effect on NPL. In addition, research has also been carried out by (Astrini et al., 2018) which concluded that the internal factor variable, namely the Loan to Deposit Ratio (LDR), has a positive effect on Non-Performing Loans (NPL). The results of research by Palupi & Fika Azmi (2019) also show the same results, namely LDR has a significant positive effect on NPL.

**H<sub>2</sub>: Loan to deposit ratio has a positive effect on non-performing loans**

**The Effect of Capital Adequacy Ratio on Non-Performing Loans**

Capital Adequacy Ratio (CAR) is the capital adequacy ratio that serves to accommodate the risk of loss that a bank may face. The higher the CAR, the better the bank's ability to bear the risk of any credit or risky earning assets. The results of research conducted by Barus and Erick (2016) which examined the effect of interest on NPL, showed that CAR had no significant effect on NPL. The results of research conducted by (Kusuma & Haryanto, 2016) also state that CAR has a negative effect on NPLs. Likewise research conducted by Astrini et al., (2018) which states that CAR has a partially negative and significant effect on NPL.

**H<sub>3</sub>: Capital adequacy ratio has a negative effect on non-performing loans**



**Figure 1: Conceptual Model**

**III. RESEARCH METHODS**

This study uses a quantitative approach in an associative form. This research was conducted at commercial banks listed on the Indonesia Stock Exchange (BEI) which are still operating in Indonesia for the 2016-2019 period. The population of this research is 45 banks. The sample selection in this study was carried out by nonprobability sampling method with purposive sampling technique. Data collection methods used were non-participant observation and documentation methods. Data is obtained from Commercial Bank Publication Financial Reports which can be accessed through the official website of the Financial Services Authority ([www.ojk.go.id](http://www.ojk.go.id)) and also accessed through the official website of the Indonesia Stock Exchange ([www.idx.co.id](http://www.idx.co.id)). The data analysis technique used in the study is a regression test that is multiple linear regression analysis.

NPL is a measure to assess whether a bank is healthy or not. If the NPL increases, the bank is said to be in an unhealthy or bad condition. Conversely, if the NPL has decreased, the bank is in good condition too. In the Bank Indonesia regulations, each bank should keep its NPL below 5%.

$$NPL = \frac{\text{Credit in substandard, doubtful and bad quality}}{\text{Total credit}} \times 100\% \dots\dots\dots(i)$$

Bank Indonesia states that the interest rate is the price or remuneration paid by the public to the bank for credit services that have been provided for a certain period of time. The bank loan interest rate or commonly known as the Prime Lending Rate is the lowest interest rate used as the basis for banks in determining the loan interest rates charged to Bank customers (SE No.15 / 1 / DPNP, 2013).

$$\text{Credit Interest Rates} = \frac{\text{Total interest income}}{\text{Amount of credit granted}} \times 100\% \dots\dots\dots(ii)$$

LDR is the ratio between total credit and total funds received. Funds received by banks consist of; 1) Current accounts, time deposits and public savings; 2) Non-bank loans with maturities of more than 3 months excluding subordinated loans; 3) Time deposits and loans from other banks with maturities of more than 3 months; 4) Securities issued by a bank with a maturity of more than 3 months; 5) Core capital; 6) Loan capital.

$$\text{LDR} = \frac{\text{Total credit}}{\text{Total third party funds}} \times 100\% \dots\dots\dots(iii)$$

Capital Adequacy Ratio (CAR) is the capital adequacy ratio that serves to accommodate the risk of loss that a bank may face. CAR is obtained by comparing total capital with Risk Weighted Assets. Bank capital consists of core capital (paid-up capital and additional capital reserves) and supplementary capital (fixed asset revaluation reserve, PPAP general reserve, loan capital, subordinated loans, an increase in the value of participation in the portfolio available for sale by a maximum of 45%.

$$\text{CAR} = \frac{\text{Capital}}{\text{Risk Weighted Assets}} \times 100\% \dots\dots\dots(iv)$$

#### IV. RESULTS AND DISCUSSION

The banking companies selected for research in this study used purposive sampling technique in accordance with predetermined criteria and obtained 136 samples in 4 years of observation. The sample selection process in this study is shown in Table 1.

**TABLE 1: SAMPLE SELECTION CRITERIA**

Criteria	Total
1 The population of state-owned and private-owned banking companies listed on the Indonesia Stock Exchange from 2016 to 2019.	45
2 State-owned and private-owned banking companies that do not publish complete consecutive financial reports for 2016-2019.	(11)
3 The number of selected banking companies was sampled	34
4 Number of years of research observation	4
5 <b>Total sample in the four years of the study</b>	136
6 <b>Outlier Data</b>	(4)
7 <b>Final sample total</b>	<b>132</b>

Source: [www.idx.co.id](http://www.idx.co.id)

Based on Table 1, it can be seen that there were 11 banks that did not publish complete and consecutive financial reports during 2016-2019, namely banks AGRS, ARTO, BBNP, BBYB, BEKS, BRIS, BTPN, BTPS, DNAR, PNBS dan INPC.

**TABLE 2: THE RESULT OF MULTIPLE LINEAR REGRESSION ANALYSIS**

Coefficients <sup>a</sup>							
Model	Unstandardized Coefficients				F	Sig.	Adjusted R Square
	B	Std. Error	t	Sig.			
(Constant)	3.912		2.112	0.037			
Credit Interest Rates (X1)	0.102	0.094	1.087	0.279			
Loan to Deposit Ratio (X2)	0.001	0.011	0.108	0.914			
Capital Adequacy Ratio(X3)	-0.101	0.027	-3.709	0.000			
Regression					5.401	0.002	0.092

Source: Data processed, 2020

The results of multiple linear regression analysis in Table 2 can be made the following equation:

$$Y = 3,912 + 0,102X_1 + 0,001X_2 - 0,101X_3 + e \dots\dots\dots(v)$$

Based on the regression equation above, it can be explained as follows:

- 1) The constant value ( $\alpha$ ) is positive at 3,912, it means that if there is no effect from other variables or the independent variable has a constant value of zero (0), then the value of the Non-Performing Loan variable is 3,912.
- 2) The coefficient ( $\beta_1$ ) of the variable credit interest rate is positive at 0.102, meaning that if the credit interest rate increases by 1%, the Non-Performing Loan will increase by 0.102%, so it can be concluded that credit interest rates have a positive effect on Non-Performing Loans.
- 3) The coefficient ( $\beta_2$ ) of the Loan to Deposit Ratio variable has a positive value of 0.001, which means that if the Loan to Deposit Ratio value increases by 1%, the Non-Performing Loan will increase by 0.001% so it can be concluded that the Loan to Deposit Ratio has a positive effect on Non-Performing Loans .
- 4) The value of the coefficient ( $\beta_3$ ) of the Capital Adequacy Ratio variable is negative at -0.101, it means that if the Capital Adequacy Ratio value increases by 1%, the Non-Performing Loan will decrease by 0.101% so it can be concluded that the Capital Adequacy Ratio has a negative effect on Non-Performing Loans.

### **The Effect of Credit Interest Rates on Non-Performing Loans**

The first hypothesis ( $H_1$ ) states that credit interest rates have a positive effect on Non-Performing Loans. The results of the analysis show that the regression coefficient is positive at 0.102, meaning that if the credit interest rate increases by one unit, the Non-Performing Loan will increase by 0.102, so it can be concluded that the credit interest rate ( $X_1$ ) has a positive effect on Non-Performing Loans ( $Y$ ). However, the results of the t statistical test show that the credit interest rate variable has a positive coefficient value of 1.087 with a significant value of 0.279 this value is greater than 0.05, so it can be concluded that there is no partially significant effect between the credit interest rates in the Non-Performing Loan. So the first hypothesis which states that credit interest rates have a positive effect on Non-Performing Loans is rejected.

Based on the results of this study, credit interest rates have no effect on non-performing loans, meaning that the fluctuation of credit interest rates charged by banks to customers does not affect the ratio of non-performing loans in banking companies. This can be due to the fact that the borrower will make every effort to fulfill his obligations in returning the credit and interest that has been agreed between the borrower and the bank. Thus, an increase or decrease in credit interest rates charged by banks to customers does not affect the ability to pay bank credit customers, so that credit interest rates do not affect Non-Performing Loans.

The results of this study are in accordance with the results of research by Martina & Prastiwi (2014) which states that credit interest rates have no effect on non-performing loans. Banks that implement policies by raising credit interest rates have certainly considered the things that will happen with the policy. The bank will implement a policy that does not cause customers to be too burdened by an increase in loan interest rates so that it also does not really affect the Non-Performing Loan ratio.

### **The Effect of Loan to Deposit Ratio on Non-Performing Loans**

The second hypothesis ( $H_2$ ) states that the Loan to Deposit Ratio has a positive effect on Non-Performing Loans. The results of the analysis show that the regression coefficient is positive at 0.001, meaning that if the Loan to Deposit Ratio value increases by one unit, the Non-Performing Loan will increase by 0.001 so it can be concluded that the Loan to Deposit Ratio ( $X_2$ ) has a positive effect on Non-Performing Loans ( $Y$ ). However, the results of the t statistical test show that the Loan to Deposit Ratio variable has a positive coefficient value of 0.108 with a significant value of 0.914, this value is greater than 0.05 so it can be concluded that there is no partially significant effect between the Loan to Deposit Ratio in Non-Performing Loans. . So the second hypothesis which states that the Loan to Deposit Ratio has a positive effect on Non-Performing Loans is rejected.

Based on the results of this study, the Loan to Deposit Ratio has no effect on the Non-Performing Loan, meaning that the high or low amount of credit extended by banks compared to the amount of public funds or their own capital owned by the bank does not affect the Non-Performing Loan ratio in banking companies. The high Loan to Deposit Ratio, however, if it is followed by the application of the principles of good prudence by the bank when conducting analysis on prospective debtors, the Non-Performing Loans will not increase. So the size or size of the Loan to Deposit Ratio owned

by the bank does not affect the repayment ability of bank credit customers, so the Loan to Deposit Ratio has no effect on the Non-Performing Loan. The results of this study are in accordance with the results of research from Diansyah (2016) and Shafira et al., (2016) which state that the Loan to Deposit Ratio has no effect on Non-Performing Loans.

#### **The Effect of Capital Adequacy Ratio on Non-Performing Loans**

The third hypothesis ( $H_3$ ) states that the Capital Adequacy Ratio has a negative effect on Non-Performing Loans. The results of the analysis show that the regression coefficient is negative at -0.101, it means that if the value of the Capital Adequacy Ratio increases by one unit, the Non-Performing Loan will decrease by 0.101 so that it can be concluded that the Capital Adequacy Ratio ( $X_3$ ) has a negative effect on Non-Performing Loans (Y). The results of the t statistical test show that the Capital Adequacy Ratio variable has a negative coefficient value of -3,709 with a significant value of 0,000, this value is less than 0.05, so it can be concluded that the Capital Adequacy Ratio has a partially negative effect on Non-Performing Loans. So the third hypothesis which states that the Capital Adequacy Ratio has a negative effect on Non-Performing Loans is accepted.

Based on the results of this study, the higher the CAR ratio of the bank, the lower the NPL ratio and vice versa. This indicates that bank capital, represented by the CAR ratio, is able to cover the business risks faced by banks, including the risk of losses arising from non-performing loans. The higher the capital provided by the bank, the greater the bank's ability to minimize the risk of non-performing loans or the decline in non-performing loans. Therefore, the level of Non-Performing Loans will not be high if the Capital Adequacy Ratio or capital adequacy is met. The results of this study are in accordance with the results of research by Astrini et al., (2018) and Harutiyanisari (2018) which state that CAR has a partially negative and significant effect on NPL.

### **V. CONCLUSION AND SUGGESTIONS**

Credit interest rates have no effect on Non-Performing Loans. This means that an increase or decrease in loan interest rates does not affect the ratio of non-performing loans in banking companies. This can be due to the fact that even though the credit interest rate rises, the borrower will do everything possible to fulfill his obligations to return the credit and the interest that has been agreed between the borrower and the bank. Loan to Deposit Ratio has no effect on Non-Performing Loans. This means that the high or low total loans disbursed compared to the total third party funds held by banks does not affect the ratio of non-performing loans in banking companies. The high Loan to Deposit Ratio, however, if it is followed by the application of the principles of good prudence by the bank when conducting analysis on prospective debtors, the Non-Performing Loans will not increase. Capital Adequacy Ratio has a negative effect on Non-Performing Loans. This means that the higher the Capital Adequacy Ratio in the bank, the bank is considered able to accommodate the risk of loss from any risky credit.

Researchers suggest that banking companies be able to lower their Non-Performing Loan ratio by increasing their CAR ratio, because if a bank has a high Non-Performing Loan ratio, it will have an impact on the doubt of third parties to invest, which can harm the bank itself. For further research it is suggested to use a combination of other variables that may affect the Non-Performing Loan which was not examined in this study and to use a larger sample or to use all banking companies on the Indonesia Stock Exchange and to extend the observation period so that the scope of the research object becomes greater than.

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