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# Pandemic Effects in the Influence of Growth of Credit, CAR, LDR and Credit Interest on NPL on Commercial Banks in Indonesia

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## Abstract

*This study aims to analyze the effect of credit growth, adequate capital ratio (CAR), loan to deposit ratio (LDR), credit interest and the impact of the COVID-19 pandemic on Non-Performing Loans (NPL) at commercial banks in Indonesia. The population of this study is all banks in Indonesia, amounting to 120 in 2014 to 107 in 2021. The data analysis method uses multiple linear regression analysis. The results of the study found that credit growth, Capital Adequacy Ratio (CAR), Loan-to-Deposit Ratio (LDR), credit interest and the pandemic effect had a partial effect on Non-Performing Loans (NPL), namely CAR, LDR and the pandemic effect had a significant effect while credit growth and loan interest had no significant effect. The increase in CAR, LDR and the pandemic makes NPL also increase. The implications of this research are discussed in the article.*

Keywords
Multiple linear regression; NPL; LDR; CAR; credit growth, credit interest; the covid-19 pandemic

## I. Introduction

Banks in carrying out their operations certainly cannot be separated from various kinds of risks. Bank's business risk is uncertainty regarding a result that is estimated or expected to be received. Non-Performing Loan (NPL) It is a financial ratio related to credit risk. NPL is the ratio between total non-performing loans and total loans given to debtors. A bank is said to have a high NPL if the number of non-performing loans is greater than the amount of credit given to debtors. If a Bank has a high NPL, it will increase costs, both the cost of reserves for productive assets and other costs, in other words, the higher the NPL of a Bank, it will disrupt the performance of the Bank. Loan to Deposit Ratio (LDR) is a ratio that measures the Bank's ability to meet obligations that must be fulfilled. So that the higher the LDR, the bank's profit will increase (assuming the bank is able to channel its credit effectively), with the increase in bank profit, the bank's performance will also increase, thus the size of the LDR ratio of a bank will affect the bank's performance.

Credit risk is the main focus of this research. Credit risk in the form of customers' inability to pay off loans and interest due to various factors and is often measured by the size of non-performing loans (NPL). Financial statements are basically a source of information for investors as one of the basic considerations in making capital market investment decisions and also as a means of management responsibility for the resources entrusted to them (Prayoga and Afrizal 2021) . Financial performance is a measuring instrument to know the process of implementing the company's financial resources. It sees how much management of the company succeeds, and provides benefits to the community. Sharia banking is contained in the Law of the Republic of Indonesia No.21 of 2008 article 5, in which the Financial Services Authority is assigned to supervise and supervise banks. (Ichsan, R. et al. 2021)



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Tanaskovic and Jandric (2015) divide the causes of NPLs into three factors, namely macroeconomic factors, bank internal factors, and institutional or institutional factors. Macro variables that are considered to be able to influence NPL are GDP growth, unemployment rate, currency exchange rates, inflation rates, interest rates, and housing prices (Tanaskokovic and Jandric, 2015, 50). Bank internal factors as the cause of NPL are generally associated with poor management (Rajha, 2016, 127). The influence of institutional factors on NPL is related to inefficient banking supervision, legal system, and supporting institutions.

Since the end of 2020, the Covid-19 pandemic has undeniably devastated the world economy, including Indonesia. According to data from the World Health Organization, more than 220 countries have felt the painful impact of Covid-19. Globally, patients infected with Covid-19 continue to increase and as of September 12, 2021, there have been 224,511,226 people infected with Covid-19 and more than 4,627,540 of them have died. While in Indonesia, Covid-19 patients as of September 13, 2020, there were 4,167,511 people with 138.889 deaths. The problems caused by the Covid-19 pandemic then developed no longer related to health problems but expanded into economic and social problems. Lockdown policies or large-scale social restrictions to reduce the rate of increase in Covid-19 cases have implications for a significant decrease in economic activity in various countries, including Indonesia. Several developed and developing countries recorded negative economic growth throughout 2020.

The weakening of the national economy due to the Covid-19 pandemic had a major impact on the real sector (corporations, households, Micro, Small and Medium Enterprises (MSMEs)). In addition to MSMEs that fell the deepest, many corporations also experienced business disruptions and laid off their employees or terminated their employment. Households are at risk of losing income and decreasing purchasing power. The national banking sector continues to experience growth and is maintained in the midst of severe challenges that continue to come from the weakening economy due to the trade war, geopolitical turmoil, and the Covid-19 pandemic. Intermediation performance continued to improve and key financial ratio indicators were maintained at controlled levels. Synergy policies from the OJK, the government, Bank Indonesia, and other authorities are able to oversee the resilience of the national banking system to continue to support the national economy.

**Table 1.** Performance of Commercial Banks (in IDR Trillion)

| Indikator | Dec-15 | Dec-16 | Dec-17 | Dec-18 | Dec-19 | Mar-20 | Jun-20 | Sep-20 |
|---|---|---|---|---|---|---|---|---|
| CAR (%) | 21.39 | 22.93 | 23.18 | 22.97 | 23.40 | 21.67 | 22.55 | 23.52 |
| Kredit | 4,092 | 4,413 | 4,782 | 5,358 | 5,684 | 5,782 | 5,618 | 5,602 |
| NPL Gross (%) | 2.487 | 2,864 | 2,070 | 3,011 | 2,690 | 3,006 | 3,738 | 4,163 |
| LDR (%) | 92.11 | 90.70 | 90.04 | 94.78 | 94.43 | 92.55 | 89.10 | 83.46 |
| ROA (%) | 2.32 | 2.23 | 2.45 | 2.55 | 2.47 | 2.57 | 1.94 | 1.76 |

*Source: Indonesian Banking Statistics*

Credit growth for Commercial Banks continues, although not as big as growth in third party funds. Loans grew by an average of 7.21% per year for the last five years. In the third quarter of 2020, credit was recorded at Rp. 5,782 trillion, an increase of 37% compared to the fourth quarter of 2015 which was recorded at Rp. 4,092 trillion. The Loan to Deposit Ratio (LDR) also appears to be declining because banks are having difficulty disbursing loans.

However, credit in the third quarter of 2020 decreased by 2.83% compared to the previous quarter. In general, both productive and consumptive loans contracted. Investment Credit (KI) still recorded a growth of 3.90% (yoy) slowing compared to the previous year, while Working Capital Credit (KMK) which is the largest credit component, and Consumer Credit (KK) contracted in the third quarter of 2020. This decline was mainly due to the impact of the Covid-19 pandemic which caused a decrease in credit demand from business actors and the public.


*Source: Indonesian Banking Statistics*
***Figure 1.*** *Credit Growth for Commercial Banks*

Non-performing loans for Conventional Commercial Banks are still relatively well-maintained as reflected in the gross non-performing loan (NPL) ratio, which is still below the limit of 5% but appears to have increased during 2020 to 2020. with the third quarter. This is due to a decrease in the ability of business actors and the public to pay credit installments due to a decrease in income accompanied by reduced demand for new loans due to the impact of the Covid-19 pandemic.


*Source: Indonesian Banking Statistics*
***Figure 2.*** *NPL Developments for Commercial Banks*

Previous research has analyzed the factors that influence NPLs, which still shows a research gap. Saputro, Sarumpaet, and Prasetyo (2019) found that each of the variables; Credit growth, type of credit and interest rates on bank loans have a positive effect on non-performing loans, while inflation has a negative effect on non-performing loans, while

Poerba and Kurniasih (2019) found loan growth had a significant negative effect on NPL. Sugiharto, Azimkulovich and Misdiyono (2021) show that there are 3 (three) indicators affected by the COVID-19 pandemic, namely non-performing financing (NPF), return on assets (ROA), financing to deposit ratio (FDR), and net operating margin. (NOM, while unić, Kozarić, Dželihodžić (2021) stated that the pandemic had not yet affected NPL due to the loan motarium policy. Prawira and Wiryono (2020) stated that CAR had a negative and insignificant effect on NPL, while Yulianti, Aliamin, and Ibrahim (2018) found that CAR has an effect on NPL.

From the differences in the results of previous studies, researchers are interested in further researching the impact of the covid-19 pandemic on credit growth, capital adequate ratio (CAR), loan to deposit ratio (LDR), credit interest affecting NPL of commercial banks by using Indonesian Banking Statistics (SPI) published by the Financial Services Authority (OJK), so the author takes the title: “PANDEMIC EFFECTS IN THE INFLUENCE OF CREDIT GROWTH, CAR, L DR AND LOAN INTEREST ON NPL IN COMMERCIAL BANKS IN INDONESIA”.

## II. Review of Literature

Non-performing loans according to Bank Indonesia regulations are loans classified into Substandard (KL), Doubtful (D) and Bad (M) collectibility. Meanwhile, the assessment or classification of a credit into a certain level of credit collectibility is based on quantitative and qualitative criteria. The criteria for assessing collectibility quantitatively are based on the condition of credit payments by customers as reflected in the bank's bookkeeping records, which include the accuracy of payment of principal, interest and other obligations.

The assessment of these payments can be seen based on historical data (past performance) of each loan account. Furthermore, the historical data is compared with the standard collectibility assessment system, so that the collectibility of a loan account can be determined. Meanwhile, the criteria for assessing collectibility qualitatively are based on the business prospects of the debtor and the financial condition of the debtor's business. In determining the "judgment" of the debtor's business, what is assessed is the ability of the debtor to repay the loan from the results of his business (as a first way out) according to the agreement.

The Non Performance Loan (NPL) ratio is an indicator of the health of a bank's asset quality. The NPL used is the net NPL, namely the adjusted NPL. Asset quality assessment is an assessment of the condition of the Bank's assets and the adequacy of credit risk management. Thus, the NPL ratio is a key indicator to assess the performance of bank functions.

This is because a high NPL is an indicator of a bank's failure to manage its business, including liquidity problems (inability to pay third parties), profitability (uncollectible debts), and solvency (decreased capital). The declining profit is one of the effects because banks practically lose their source of income besides having to set aside reserves according to credit collectibility. The NPL ratio also reflects credit risk, the higher the NPL level, the greater the credit risk borne by the bank.

### 2.1 Effect of credit growth on NPL

Banks with high liquidity levels and idle funds will continue to increase their lending to the public (companies and households), regardless of whether the community has sufficient economic capacity to repay loans, with the aim of maximizing the use of their funds. The greater the credit disbursed by the Bank; the credit growth will also increase. Good credit growth will increase the Bank's profit growth in the form of Bank interest income. Therefore, credit management must be carried out as well as possible, starting from planning the amount of credit, determining interest rates, lending procedures, credit analysis analysis, to controlling bad loans. Saputro, Sarumpaet, and Prasetyo (2019) stated that credit growth has an effect on non-performing loans as evidenced in their research that when banks carry out high credit growth in a fast time, banks tend to lower standards in choosing their customers.

### 2.2 Effect of CAR on NPL

CAR is an indicator of a bank's ability to cover a decline in its assets as a result of bank losses caused by risky assets with adequate capital (Dendawijaya, 2005). The higher the CAR, the stronger the bank's ability to bear risks. of any risky loans or earning assets. Or in other words, the higher the capital adequacy to bear the risk of bad loans, so that the bank's performance is getting better, and it can increase public confidence in the bank concerned which leads to increased profits (ROA) (Ruslim, 2012).

### 2.4 Effect of LDR on NPL

Loan to Deposit Ratio, hereinafter abbreviated as LDR, is the ratio of loans extended to third parties in Rupiah and foreign currencies, excluding loans to other banks, to third party funds which include demand deposits, savings, and time deposits in Rupiah and foreign currencies , excluding interbank funds. The higher the LDR, the bank's profit will increase provided that the bank is able to channel loans effectively, so the number of bad debts will be small.

Kasmir (2012) states "Loan to Deposit Ratio is a ratio to measure the composition of the amount of credit given compared to the amount of public funds and own capital used". Kasmir (2012) suggests that the LDR, the higher the ratio indicates the lower the liquidity capacity of the bank concerned. Based on Bank Indonesia Regulation Number 17/11/PBI/2015 concerning amendments to Bank Indonesia Regulation Number 15/15/PBI/2013 concerning Statutory Reserves for Commercial Banks in rupiah and foreign currencies for Conventional Commercial Banks, all mentions of loan to deposit ratio or LDR read as Loan to Funding Ratio or LFR since August 3, 2015. Bank Indonesia (BI) lowered the upper limit of the range of provisions for the credit to deposit ratio (LFR) from 78-100% to 78-92%.

### 2.5 Effect of Credit Interest on NPL

Interest rates have a positive impact on NPL. High interest rates will have an impact on increasing interest on deposits and loans. The higher the loan interest, the more difficult it is for customers to pay their obligations to the bank. This has an impact on the higher non-performing loans and causes the NPL to increase. Evi Sistiyarin (2021) in his research proves that one of the causes of NPL is the interest rate on loans.

### 2.6 The Influence of the Pandemic on NPLs

The problems caused by the Covid-19 pandemic are no longer related to health problems but have expanded to become economic and social problems. Lockdown policies or large-scale social restrictions to reduce the rate of increase in Covid-19 cases have implications for a significant decrease in economic activity in various countries, including Indonesia. Many corporations have experienced business disruptions and laid off employees or laid off their jobs. Households are at risk of losing income and decreasing purchasing power. MSMEs lose turnover due to difficulties in marketing their products and even stop their production. This condition triggers a spillover effect on increasing bank credit risk due to the weakening ability of debtors to repay debts or loans. Haryanti and Aziz (2021) in their research stated that the pandemic significantly affects the NPL.

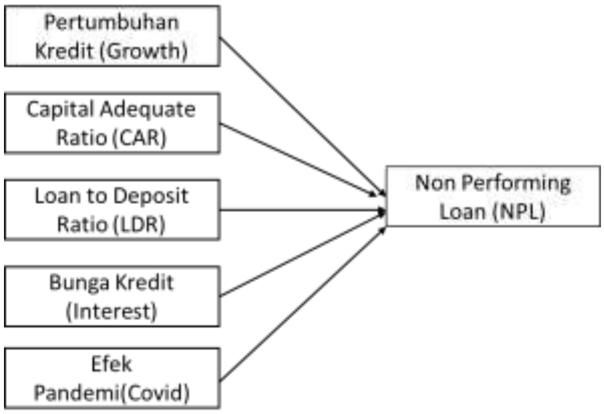


***Figure 1**. Conceptual Framework*

For Capital owned by banks can be seen in the Capital Adequacy Ratio (CAR). CAR shows how big the total bank assets that contain risk and are financed from their own capital. Capital Adequacy Ratio (CAR) is a ratio to measure capital and allowance for write-offs in underwriting loans, especially the risk that occurs because interest fails to be collected (Kasmir, 2008: 295).

Hypothesis: credit growth has a positive effect on Non-Performing Loans (NPL) at commercial banks in Indonesia

LDR is a traditional measurement that shows time deposits, current accounts, savings and others that are used and fulfill customer loan applications. Kasmir (2012) suggests that the LDR, the higher the ratio indicates the lower the liquidity capacity of the bank concerned.

Hypothesis: loan to deposit ratio (LDR) has a negative effect on Non-Performing Loans (NPL) in commercial banks in Indonesia

High credit growth in a fast time, banks tend to lower standards in choosing their customers (Keeton, 1999). Meanwhile, from the type of credit disbursed based on its use, credit is divided into two types, namely; 1) consumer credit where the source of payment is generally obtained from the customer's salary or other income, not from the object it finances and 2) commercial credit whose source of payment comes from the business it finances (Indonesian Bankers Association and Banking Professional Certification Institute, 2013); thus, Payment certainty will be better maintained on consumer credit.

Hypothesis: Credit growth has a negative effect on Non-Performing Loans (NPL) at commercial banks in Indonesia.

Interest rates are remuneration provided by banks based on conventional principles to customers who buy or sell their products (Kamsir, 2013). Interest rates can be interpreted as return paid on money borrowed. Therefore, as a borrower's expense, when interest rates increase, many companies and individuals will not be able to repay loans. This will cause the NPL to increase.

Hypothesis: credit interest has a positive effect on Non-Performing Loans (NPL) at commercial banks in Indonesia

The Covid-19 pandemic has resulted in an economic crisis, global finance and a decline in people's purchasing power. The existence of Large-Scale Social Restrictions weakens the business world, especially in the tourism sector which results in a reduced ability to pay debtors.

Hypothesis: The Covid-19 pandemic has a positive effect on Non-Performing Loans (NPL) at commercial banks in Indonesia

## III. Research Method

This study uses multiple linear regression analysis method because the independent variable is more than one. The variable that influences is called the Independent Variable (independent variable) and the variable that is affected is called the Dependent Variable (the dependent variable). This study consists of five independent variables, namely Credit Growth (Growth), Capital Adequate Ratio (CAR), Loan to Deposit Ratio (LDR), Credit Interest (Interest) and Pandemic Effect (Covid) while the dependent variable is Non-Performing Loans (NPL).

Definitions of research variables must be formulated to avoid errors in collecting data. In this study, the operational definition of the variable is as follows:

a) Credit Growth

Mathematically calculating the percentage of credit growth is by subtracting the total credit for the current month period by the total credit for the previous month divided by the total credit for the previous month multiplied by 100

$$\frac{\text{Credits}_{t} - \text{Loans}_{t-1}}{\text{Loans}_{t-1}} \times 100$$

b) Capital Adequate Ratio (CAR)

Capital is the main factor for a bank to be able to develop its business growth. Meeting the needs of the Bank's Minimum Capital Ratio or known as CAR is determined by the BIS (Bank for International Settlement) of 8%. The CAR ratio is obtained using the formula: (Capital: RWA) x 100%. Capital consists of Core Capital (Tier 1) and Supplementary Capital (Tier 2), where the amount of Supplementary Capital is calculated at a maximum of 100% of the amount of Core Capital. If market risk and operational risk are included, then these two risks will increase the RWA.

c) Loan to Deposit Ratio (LDR)

Loan to Deposit Ratio (LDR) is the ratio between the total volume of loans disbursed by banks and the amount of funds received from various sources. Another definition of LDR is the financial ratio of banking companies related to the liquidity aspect. LDR is calculated using the formula:

$$\frac{\text{Total Non-Bank Loans}}{\text{Total Third-Party Funds}} \times 100$$

d) Credit Interest (Interest)

The loan interest rate is a certain price that must be paid by the customer to the bank as compensation for the loan obtained. The loan interest rate used in this study is a weighted credit interest rate.

e) Pandemic Effect (Covid)
The pandemic effect is a dummy variable with a value of 0 (zero) for the period before the covid-19 pandemic and 1 (one) during the pandemic.

f) 's Non-Performing Loans (NPLs)
explained that NPLs were loans of substandard, doubtful and bad quality. NPL also refers to a condition where the debtor cannot pay his obligations to the bank, namely the obligation to pay the installments that have been promised at the beginning. The formula for calculating the NPL ratio is:

$$\frac{\text{Kredit Bermasalah}}{\text{Total Kredit}} \times 100$$

The data in this study uses secondary data, namely the Indonesian Banking Statistics data published by the Financial Services Authority (OJK). The data taken is January 2014 to June 2021.

The population of commercial banks studied in this study is the number of commercial banks in January 2014 as many as 120 banks and in July 2021 as many as 107 banks.

In this study, researchers used quantitative data analysis techniques, namely data that can be realized by numbers obtained from secondary data. In quantitative research based on an assumption that a symptom can be classified, and the relationship of symptoms is causal (causation), the researcher can conduct research by focusing on only a few variables. The pattern of the relationship between the variables to be studied is hereinafter referred to as the research paradigm.

So, the research paradigm is a mindset that shows the relationship between the variables to be studied which also reflects the type and number of problem formulations that need to be answered through research. This research paradigm consists of one independent and dependent variable.

The quantitative data was analyzed by the author using statistics. By looking at the theoretical framework, the data analysis method used in this study is multiple linear regression analysis, with the following equation:

$$\text{NPLt} = \alpha\alpha + \beta\beta 1 \text{ Growth t} + \beta\beta 2 \text{ CAR t} + \beta\beta 3 \text{ LDR t} + \beta\beta 4 \text{ Interest t} + \beta\beta 5 \text{ Covid t}$$

Where:
NPL=Non-Performing Loan
Growth= Credit Growth
CAR= Capital Adequate Ratio
LDR= Loan to Deposit Ratio
Interest= Loan Interest

Here Covid is a dummy variable, namely Covid = 1 for March 2020 onwards and Covid = 0 for before March 2020 If the coefficient significantly, the NPL during the Covid period was higher. If the coefficient is not significant then the NPL during the Covid period is no different from the previous NPL. The notation t in the above equation shows the month.

## IV. Result and Discussion

### 4.1 Population Policy During Turki Utsmani 1512-1566 M

Testing the Regression Coefficient (t-test) results as follows:

| Variable | $t_{table}$ | $t_{count}$ or t-statistic | | Prob | Conclusion |
|---|---|---|---|---|---|
| Growth | 1.986 | 1.9887 | | 0.05 | significant effect on alpha 10% |
| CAR | 1.986 | 10.369 | | 0.0 | significant effect |
| LDR | 1.986 | 7.0783 | | 0.0 | significant effect |
| Interest | 1.986 | 0.17 | | 0.86 | no significant effect |
| Covid 1.986 | 3.955 | 0.0002 | | significant | influence |

Dependent Variable: NPL
Method: Least Squares
Date: 03/25/22 Time: 19:37
Sample: 2014M01 2021M07
Included observations: 91

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -32239.63 | 4921.707 | -6.550498 | 0.00000 |
| Growth | 82.84008 | 41.67828 | 1.987608 | 0.0501 |
| CAR | 744.5230 | 71.79666 | 10.36988 | 0.00000 |
| LDR | 190.9219 | 26.97279 | 7.078314 | 0.0000 |
| Interest | 28.39127 | 166.6078 | 0.170408 | 0.88651. 103 |
| _ | _ | _ | _ | _ |

| | | | |
|---|---|---|---|
| _ | _ | _ | _ |
| _ | _ | _ | _ |
| _ of regression | 564.0669 | Akaike info criterion | 15.57188 |
| Sum squared resid | 27044579 | Schwarz criterion | 15.73743 |
| Log likelihood | -702.5207 | Hannan-Quinn criter. | 15.63867 |
| F-statistic | 88.51286 | Durbin-Watson stat | 0.620774 |
| Prob(F-statistic) | 0.000000 | | |

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| Prob(F-statistic) | 0.000000 | | |

Coefficient for the loan growth variable (Growth) is 82.84, CAR is 744.52, LDR is 190.92, credit interest (interest) is 28.39 and effects pandemic (Covid) of 1581.9. All of the regression coefficients are positive, meaning that when the percentage of the independent variable increases, the NPL will also increase. Likewise, when the percentage of the independent variable decreases, the percentage of NPL also decreases.

For the record, because Covid is a dummy variable which has a value of 1 for the Covid period and a value of 0 for outside the Covid period, a significant Covid coefficient means that: The constant for the period outside of Covid is -32239.63 and the constant for the Covid period is -32239.63 + 1581.902 This means that the NPL in the Covid period is greater than the period outside of Covid.

## V. Conclusion

Based on the results of research on the effects of the pandemic on the effect of credit growth, CAR, LDR and credit interest on NPL at commercial banks in Indonesia.following conclusions can be drawn:

1) Credit growth, Capital Adequacy Ratio (CAR), Loan-to-Deposit Ratio (LDR), credit interest and the effect of the pandemic (Covid) partially affect Non-Performing Loans (NPL). CAR, LDR and the effect of the pandemic (Covid) have a significant effect on NPL, while credit interest and credit growth have no significant effect.
2) Based on the results of the comparison of the regression coefficients of each variable, it can be seen the magnitude of the influence of these variables, for credit growth of 82.84, CAR of 744.52, LDR of 190.9, credit interest of 28.39 and the effect of pandemic (Covid) of 1581.9. Thus, it can be concluded that the pandemic effect has the greatest influence on NPLs for commercial banks in Indonesia. In other words, the NPL during the pandemic is higher than the NPL outside the Covid 19 pandemic.

After studying, analyzing and concluding the results of the research that has been carried out, several suggestions are proposed which include:

1) For the Government, the Financial Services Authority and Bank Indonesia, the results Research shows that the pandemic effect has the greatest influence on NPLs at commercial banks in Indonesia. In formulating policies to mitigate the impact of COVID-19 for the banking industry, the Government, the Financial Services Authority

and Bank Indonesia must work together to create appropriate policy strategies to reduce the impact of rising NPLs by examining the causes.

2) For Banks, the results of this study can help banks to manage risk mitigation appropriately. This is because high NPL is an indicator of a bank's failure to manage business, including liquidity problems (inability to pay third parties), profitability (uncollectible debts), and solvency (reduced capital). The declining profit is one of the effects because the bank practically loses its source of income in addition to having to set aside reserves according to credit collectibility. The NPL ratio also reflects credit risk, the higher the NPL level, the greater the credit risk borne by the bank.
3) For further researchers, it is expected to use other banking performance variables that affect Non-Performing Loans (NPL)

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