

# The Effect of Macroeconomics on Non-Performing Loans with Credit Growth as an Intervening Variable at PT. Bank SUMUT

Oppie Meisya Tanjung<sup>1</sup>, Isfenti Sadalia<sup>2</sup>, Nisrul Irawati<sup>2</sup>

<sup>1,2</sup>Master of Management Study Program on Postgraduate School of University of Sumatera Utara

Corresponding Author: Oppie Meisya Tanjung

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## ABSTRACT

Macroeconomics in Indonesia is a system for analyzing changes in the country's economy that can affect markets, companies and society. Macroeconomics can also explain the shape of changes in economic conditions in Indonesia. The formulation of the problem in this study are: (1) Does the inflation rate, interest rate and exchange rate have a partial effect on Non Performing Loans at PT. Bank SUMUT; (2) Does Non-Performing Loan affect credit growth at PT. Bank SUMUT; (3) Does the inflation rate, interest rate and exchange rate have a partial effect on Non Performing Loans through credit growth at PT. Bank SUMUT. The type of research used in this study is a causal research method using a quantitative approach, using quantitative data carried out by classical assumption tests, multiple regression analysis, and path analysis using Eviews 10. The results show that (1) Inflation and interest rates have a positive and significant effect on Non-Performing Loans, this indicates that the higher the inflation rate and interest rates, the higher the Non-Performing Loans, while the Rupiah exchange rate has a positive but not significant effect. to Non Performing Loans, this shows that the higher the Rupiah exchange rate does not affect the Non Performing Loans; (2) Credit growth has a negative and significant effect on Non-Performing Loans, this indicates that the higher the credit growth, the lower the Non-Performing Loans; (3) The inflation rate and interest rates have a significant effect on credit growth and credit growth also has a significant effect on Non Performing Loans, so this shows that credit growth can mediate the relationship

between inflation rates and interest rates on Non Performing Loans, while the exchange rate Rupiah has no effect on credit growth but credit growth has a significant effect on Non-Performing Loans, so this shows that credit growth cannot mediate the relationship between the Rupiah exchange rate and Non- Performing Loans.

**Keywords:** Inflation Rate, Interest Rate, Rupiah Exchange Rate, Credit Growth, Non-Performing Loans.

## BACKGROUND

The Bank benefits from the funds collected and paid, meaning that the Bank's gross profit is the difference between the interest on deposits charged and the interest on loans received. The more credit a bank offers, the greater the credit growth. Therefore, credit needs to be done properly, from the start planning your credit score, so that it can be called bad credit or non-performing loans (NPL). According to Arifin and Hadi (2012), several indicators have an impact on the rise and fall of the value of Non-Performing Loans in a bank, caused by changes in macroeconomic factors such as inflation, exchange rates and interest rates. These variables are the main contributors to the increased risk of bad loans. One of the wheels of a country's economy is influenced by macroeconomic variables, so if there are restrictions on community activities, such as slowing down the pace of the economy. The lower-middle-

class people who cannot work face economic difficulties due to a lack of income and savings, so they only expect financial assistance from the government. Domestic consumption, exports and imports also slowed and growth in the gross domestic product (GDP) slowed, which of course would slow down Indonesia's economic growth. Every policy implemented has a major impact on the country's economy. The emergence of excessive demand for goods and services, especially those that support restrictions on public activities, has led to a constant increase in commodity prices leading to rising inflation.

According to Fahmi and Hadi (2009, p.21), inflation is a condition in which the value of the country's currency decreases and product prices rise which occurs regularly. In addition to the inflation rate, interest rates can also affect non-performing loans.

Bank Indonesia stated that the BI rate is a regulation that describes the behaviour of financial regulations that have been agreed upon by Bank Indonesia and announced in a public manner. The development of interest rates is generally followed by an increase in deposit interest and credit interest. According to Aryaningsih (2008), the interest rate is the amount of rupiah paid to use money as compensation. Changes in interest rates are changes in money (credit). An increase in interest rates causes a decrease in the aggregate demand or cost of investment. On the other hand, an increase in interest rates has led to an increase in aggregate demand.

The exchange rate of the Rupiah against the US Dollar according to the exchange rate, September 30, 2020, has reached Rp. 14,918 per USD, which is weaker than the global economic downturn in 2008 with a

maximum value of the Rupiah against the Dollar at 12,600. According to Murni (2006), exchange rates can change if there is an exchange of tastes, exchange of import and export prices, inflation, exchange of interest rates, return on investment, and economic development. According to Madura and Jeff (2006), factors that have an impact on changes in exchange rates include relative inflation, relative interest rates, relative income levels, government control, and market forecasts.

The US dollar is the world's most liquid currency. With US dollars, you can solve all your problems - from trading, investing, and paying debts to dividends. The demand for the dollar and its value will increase. The significant decline in imports and exports also made the rupiah exchange rate weaken. Bank Indonesia (BI) is responsible for the weakening of the rupiah as the person in charge of national finance. BI and the government continue to stabilize the weakening of the rupiah and prevent it from weakening. The inflation rate decreased in 2016 by 0.33% followed by the Rupiah exchange rate of Rp. 359, then the inflation rate increased in 2017 by 0.59% followed by the Rupiah exchange rate of Rp. 112. In 2018 the rate of inflation again decreased by 0.89% but the Rupiah exchange rate increased by Rp. 933. In 2019 the inflation rate still decreased by 0.4%, followed by the Rupiah exchange rate of Rp. 580. Meanwhile, the increase in bank interest at PT. Bank SUMUT decreases every year.

In this study, the authors analyze the percentage of Non Performing Loans and credit growth in 2015 – 2020 at each conventional branch of PT. SUMUT Bank. The following is attached to the level of NPL and credit growth at branch offices that are experiencing unfavorable conditions.

**Table 1**  
**Extrem Value of Non Performing Loan on 2015 – 2020**

Year	Branch Offcie	NPL (%)
2015	Tebing Tinggi Branch	13,33
2016	Simpang Kuala Branch	14,27
2017	Simpang Kuala Branch	15,65
2018	Simpang Kuala Branch	13,15
2019	Tembung Branch	12,03
2020	Tembung Branch	11,12

Decreases and increases in inflation and exchange rates will be followed by interest rates and will affect Non-Performing Loans and credit growth for banking companies. According to Linda et al. (2015), there are several indicators that have an impact on increasing and decreasing bank Non-Performing Loans, influencing factors such as the movement of macroeconomic factors such as inflation, exchange rates and interest rates.

According to Haryati (2009), macroeconomic balance is the most important condition for creating a balance in the financial system, an imbalance in the financial system (lack of money), as well as affecting the ability of banks to settle their obligations, can push high non-performing loans causing slow credit growth and financing, therefore banks are required to be more Be careful in disbursing credit. An increase in Non-Performing Loans can have an impact on banking losses with the imposition of sanctions from Bank Indonesia in the form of Stop Selling, which requires banks to resolve bad credit problems by focusing on collecting debts that have matured, such as improving loan quality. The increase in Non-Performing Loans will also cause banks to strengthen their capital structure so as to reduce the ability of banks to expand credit. The reduced ability to carry out credit expansion has a negative impact on the economy. Reducing the ability of banks to expand credit can have an impact on credit growth. Good credit developments led to increased growth in bank profits, namely interest rate income, while declining credit growth could increase bank awareness in managing the risk of increasing Non-Performing Loans. When the NPL ratio increases if the credit supply factor is too large, the credit supply factor will decrease so that it will widen the credit supply gap compared to the previous period which will lead to unstable credit growth rates.

### **Inflation Rate Against Non-Performing Loans**

Inflation is a lower exchange rate or an increase in the price of goods and services (Megawati and Kesuma, 2014). Inflation is characterized by a steady increase in the price of goods and services (Nanga and Muana, 2005). Inflation can occur due to excess demand for various goods or services and increase world commodity prices; an increase in inflation will inevitably follow an increase in interest rates such as savings and loans, so that the value of the bank's NPL will increase; This situation occurs because the interest costs that must be paid by the debtor are relatively increased (Sukirno and Sadono, 2008). Based on the results of previous research by Linda et al. (2015) concluded that inflation has a positive and significant effect on Non-Performing Loans.

### **Interest Rates on Non-Performing Loans**

The interest rate is the amount given as a result of the use of funds as a reward. The exchange rate of interest means a change in the demand for money (credit). An increase in interest rates reduces the total claims or investment costs. An increase in interest rates will increase overall demand (Aryaningsih, 2008). The interest rate is the amount of profit received by the bank or its customers. For banks, the loan interest rate determines the bank's profit, and for commercial banks, the customer's interest rate drives the amount of the customer's profit. Therefore, higher interest rates increase the risk of bad loans (Dhendavidjay, 2008). Based on the results of previous research by Ahmadi et al. (2015) concluded that interest rates have a positive and significant effect on NPL non-performing loans.

### **Rupiah Exchange Rate Against Non-Performing Loans**

The exchange rate is the nominal at which people in two countries agree to trade with one another (Mankiw and Gregory, 2006). The value of one currency is another

currency (Mishkin and Frederick, 2011). The exchange rate is the exchange rate of two currencies that are not the same, so that the value or price of the two currencies can be compared (Nopiri, 2013).

The exchange rate is the country's exchange rate. If the exchange rate decreases, the value of the country's currency will decrease. If this happens, the value of loans given to bank borrowers will increase. (Dhendawidjaya, 2008). Based on the results of previous studies by Astuti et al. (2016), concluded that the exchange rate has a positive and significant effect on NPL.

### **Credit Growth Against Non-Performing Loans**

The increase in borrowing is an internal factor that acts in increasing profits. It can happen that loans can be the main source of income for the bank. Loan growth describes the growth rate of loans disbursed to third parties over a certain period of time. (Suputra and Eka 2014). Credit growth will explain the increase or decrease in the amount of debt taken over a certain period of time (percentage). If there is an increase, it is a fairly natural phenomenon as a result of the deepening of the economy. An increase in aggregate demand for potential products can cause the economy to heat up, while bad loans tend to accumulate due to increased accumulation of debt for risk groups (Utari et al., 2012). Based on the results of previous research by Prasetyo (2019), concluded that credit growth has a positive and significant effect on NPL.

### **Inflation Rate on Credit Growth**

Inflation means a decrease in the exchange rate or an increase in the price of goods and services. Thus, inflation has an impact on interest rates, which in turn affects the amount of bank debt (Megawati and Kesuma, 2014). When inflation is high, people's purchasing ability declines, but their daily needs are met, so people can ask for credit applications to complete their daily needs. Furthermore, inflation expectations will fall again increasing

demand for long-term loans, so that when banks lend, the value of money is lower than debt, and this benefits consumers (Megawati and Kesuma, 2014). Based on the results of previous research by Megawati and Kesuma (2014), concluded that the inflation rate has a positive and significant effect on credit growth.

### **Interest Rates on Credit Growth**

The interest rate is the price at which money is used, expressed as a percentage (Boediono, 2007). The higher interest rates offered by banks discourage consumers from using these banking services and switch to other banks that may offer lower interest rates. (Supiano et al, 2010). In terms of lending to the public, changes in interest rates will have an impact on the number of loans granted. High credit interest rates, low debt behavior, is also known as positive effect. On the other hand, if interest rates are low, the amount of debt paid will increase and is known as negative effect. (Rahmi, 2000). Based on the results of previous research by Supiatno et al. (2010), concluded that interest rates have a positive and significant effect on credit growth.

### **Rupiah Exchange Rate Against Credit Growth**

The exchange rate is the domestic cost of a foreign currency (Hendry, 2011). The exchange rate against foreign currencies characterizes Indonesia's economic stability. The stronger the rupiah exchange rate, the better the country's national economy (Mutamimah and Chasanah, 2012). The exchange rate is a form of dynamics in Indonesia, and a decline in the exchange rate affects borrowing, because a decline in the exchange rate will increase production costs, especially the capital requirements of producers who use imported raw materials. (Suhardjono, 2002). Based on the results of previous research by Rompas (2018), concluded that the exchange rate has a positive and significant effect on credit growth.



### **Inflation Rate on Non-Performing Loans Through Credit Growth**

Inflation is defined as a general and continuous increase in prices. An increase in the price of some commodities is not an increase in inflation unless it extends to (or causes a price increase) in other commodities. (Bank Indonesia, 2013). If inflation increases and uncontrolled, bank efforts to collect public funds will be difficult and credit distribution will stop and decrease (Astuti and Ati, 2013). The more loans extended by banks, the higher the loan growth. An increase in good credit in the form of bank income increases an increase in bank income. So the credit process must be carried out as well as possible, from planning the loan amount, setting interest rates, analyzing lending procedures, loans and controlling bad loans (Novianto et al, 2015). Based on the results of previous research by Abundanti and Sari (2016), it was concluded that the inflation rate had a positive and significant effect on credit growth. Previous research by Adicondro and Pangestuti (2015) concluded that credit growth has a positive and significant effect on NPL.

### **Interest Rates on Non-Performing Loans Through Credit Growth**

The interest rate is the price or time value of an investment or fund that must be paid with the ability to buy money (Niode, 2019). The amount of interest is the amount paid as a result of using money as a reward. A change in interest is a change in demand (money). Raising interest rates has an impact on decreasing demand or spending investment. Conversely, an increase in interest rates increases demand (Aryaningsih, 2008). If the bank wants to create a credit wave by reducing its position, because in the event of a quick loan crisis, the number of unsecured loans will increase. This means that debt

growth has a positive effect on bad loans (Saputro et al, 2019). Based on the results of previous research by Rai and Purnawati (2017), it was concluded that interest rates had a positive and significant effect on credit growth. Previous research by Adicondro and Pangestuti (2015) concluded that credit growth has a positive and significant effect on NPL.

### **Rupiah Exchange Rate Against Non-Performing Loans Through Credit Growth**

Exchange rate growth has a significant impact on economic activity, where a higher domestic currency rate that should generate \$1 will increase the likelihood of a higher NPL ratio. This situation is caused by a collective economic downturn, and high lending rates by borrowers engaged in international trade and companies that need to store raw materials at a cost in dollars (Naibaho and Rahayu, 2018). Changes in exchange rates have an impact on banking systematics, the exchange rate of foreign currencies (US dollars) against the Rupiah makes people more inclined to convert to US dollars (withdraw and convert to US dollars), so that the Rupiah currency decreases. Thus, lending affects banking operations (Haryati, 2009). According to Bank Indonesia regulations, the risk that is the basis for determining bank soundness is less than 5% of unsecured loans. Non-performing loans are the ratios used to assess the bank's function to meet the credit risk of borrowers. The higher the loan amount, the greater the risk for the bank (Kusali et al, 2017). Based on the results of previous research by Widjaja (2008), it was concluded that the exchange rate had a positive and significant effect on credit growth. Previous research by Prasetyo (2019), concluded that credit growth has a positive and significant effect on NPL.

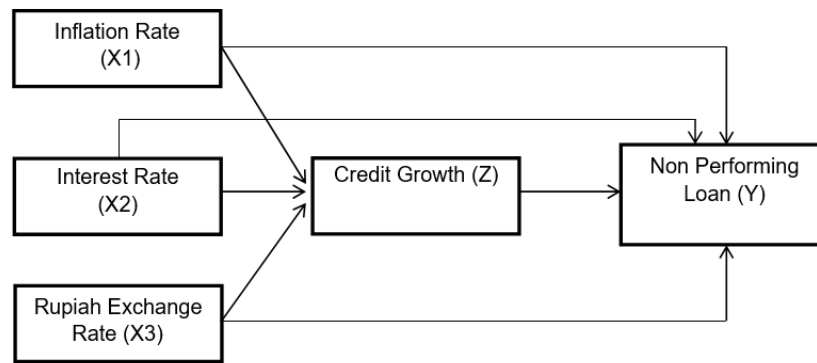


Figure 1. Conceptual Framework

### Hypotheses

1. Inflation rate, interest rate and exchange rate partially positive effect on Non Performing Loan at PT. SUMUT Bank
2. Non-Performing Loans have a positive effect on credit growth at PT. SUMUT Bank.
3. Inflation rate, interest rate and exchange rate partially positive effect on Non Performing Loan through credit growth at PT. SUMUT Bank.

### RESEARCH METHOD

This study uses a quantitative approach and the method used is causal. The population used in this study is the branch office of PT. Bank SUMUT in 2015-2020, totaling 34 branches. The sample used purposive sampling method. Terms of Sampling based on the following conditions:

1. Branch offices that are actively operating in 2015-2020
2. Branch offices that have complete data on interest rates, lending and NPL

The number of samples is 34. Data collection techniques carried out by

observation and documentation techniques were carried out at PT. Bank SUMUT Medan Head Office and Bank Indonesia, namely: Observation, data collection methods such as observing objects directly and financial reports for 2015-2020 PT. Bank SUMUT the development of the Rupiah exchange rate in the US Dollar and inflation from 2015-2020. testing using data processing software Eviews which is a computer program used for statistical analysis.

### RESULT AND DISCUSION

Determination of Common Effect Model (CEM) and Fixed Effect Model (FEM) Estimation Models with Chow Test To determine the estimation model that will be used in establishing the regression model is to use CEM or FEM. Here are the hypotheses to be tested:

1. H0: CEM model is better to use than FEM model
2. H1: FEM model is better to use than CEM model

The following is the data from the Chow Test using the EViews 10 application.

Table 2 Results of the Chow Test

Redundant Fixed Effects Tests			
Pool : DPANEL			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.255675	(33,166)	0.1779
Cross-section Chi-Square	45.459601	33	<b>0.0729</b>

the probability value is 0.0729 because the probability value is  $0.0729 > 0.05$ , so CEM can be used as an estimation model.

### Determination of the Estimated Model Between the Common Effect Model (CEM) and the Random Effect Model

### (REM) through the Lagrange Multiplier Test

When building a regression model, use the Lagrange multiplier test used to choose which model to estimate is CEM or REM. The following results are based on the Lagrange multiplier test using Eviews 10.

Table 3 Results of the Lagrange Multiplier Test

Breusch-Godfrey Serial Correlation LM Test:			
F-Statistic	1.058676	Prob.F(2,197)	0.3489
Obs*R-squared	2.169273	Prob.Chi-square (2)	0.3380

Probability value of 0.6089. The estimation model that can be used is the Common Effects Model (CEM) because the probability value is  $0.3380 > 0.05$ .

### Path Analysis

Table 4 Path Analysis (Substructure I)

Dependent Variable : Z?				
Method: Pooled Least Squares				
Date: 06/13/21 Time: 13:11				
Sample: 2015 2020				
Includes observations: 6				
Cross-sections included: 34				
Total pool (balanced) observations: 204				
Variable	Coefficient	Std. Error	t-statistic	Prob.
TI	6.436763	1.841385	3.495610	0.0006
TSB	-7.968230	2.251336	-3.539334	0.0005
NTR	-0.001006	0.003809	-0.264233	0.7919
C	84.53071	62.73645	1.347394	0.1794
R-squared	0.081900	Mean dependent var		5.070833
Adjusted R-squared	0.068128	S.D. dependent var		18.16297
S.E. of regression	17.53335	Akaike info criterion		8.585499
Sum squared resid	61483.64	Schwarz criterion		8.650560
Log likelihood	-871.7209	Hannan-quinn criter		8.611818
F-statistic	5.947060	Durbin Watson stat		1.387487
Prob (F-statistic)	0.000664			

1. The coefficient of inflation rate on credit growth is 6,436, which is positive. We have a great idea to ensure creditworthiness. We can't use more than  $0.0006 < 0.05$ , but it can make a significant positive contribution to the credit rating.
2. The Interest Rate Coefficient of Credit Growth is -7,968, which is a negative value. We can no longer give you credit. We cannot use more than  $0.0005 < 0.05$  but it can have a significant credit growth value.
3. The coefficient value of the rupiah exchange rate for credit growth is -0.001, which is negative. This value means that the rupiah exchange rate has a negative impact on credit growth. Close to the potential amount, which is  $0.7919 > 0.05$ , so the prime rupiah exchange rate does not have a negative effect on PK, but it is not significant.

The coefficient of determination (R-Square) is known as 0.0819. This value can be interpreted as inflation, interest rates and

exchange rates rupiah which can affect remaining 91.81% is influenced by other credit growth up to 8.19%, while the factors.

Table 5 Path Analysis (Substructure II)

Dependent Variable: Y?				
Method: Pooled Least Squares				
Date: 06/13/21 Time: 13:11				
Sample: 2015 2020				
Included Observations: 6				
Cross-sections included: 34				
Total pool (balanced) observations: 204				
Variable	Coefficient	Std. Error	t-statistic	Prob.
TI	0.224626	0.101055	2.222812	0.0274
TSB	0.262836	0.123643	2.125771	0.0348
NTR	0.000308	0.000203	1.516279	0.1310
PK	-0.008822	0.003767	-2.341770	0.0202
C	-7.635450	3.357514	-2.274138	0.0240
R-squared	0.101124	Mean dependent var		-0.035356
Adjusted R-squared	0.083056	S.D. dependent var		0.975504
S.E. of regression	0.934115	Akaike info criterion		2.725771
Sum squared resid	173.6417	Schwarz criterion		2.807097
Lok Likelihood	-273.0286	Hannan-quinn criter.		2.758669
F-statistic	5.596915	Durbin-watson stat		1.762189
Prob (F-statistic)	0.000273			

1. The coefficient value of the NPL inflation rate is 0.224 which is positive. This value can be interpreted that the inflation rate has an effect on positive for non-performing loans. The Prob value is known to be 0.0274 <0.05, therefore it can be concluded that the inflation rate has a positive and significant effect on non-performing loans.
2. The coefficient value of the non-performing loan interest rate is 0.262 which is positive. This value can be interpreted in such a way that TSB (X2) has a positive effect on non-performing loans. It is known that the probability value is 0.0348 <0.05, therefore it can be concluded that interest rates have a positive and significant effect on non-performing loans.
3. The coefficient of the rupiah exchange rate for non-performing loans is 0.0003 which is a positive value. This value can be interpreted that the rupiah exchange rate has a positive effect on credit growth. Because it is known that the probability value is 0.1310 > 0.05, it can be concluded that the rupiah exchange

- rate has a positive effect on credit growth, but it is not important.
4. The value of the non-performing loan growth coefficient is -0.00088 which is negative. This value means credit growth will have a negative impact on bad loans. By knowing the probability value of 0.0202 <0.05, it can be concluded that credit growth has a significant negative effect on bad loans.

It is known that the coefficient of determination (r-square) is 0.1011. This value can be interpreted that the inflation rate, interest rate, rupiah exchange rate and credit growth can affect the NPL by 10.11%, the rest of 89.89% is influenced by other factors.

### Mediation Test

In addition, indirect effects were tested. Then, whether the inflation rate and the rupiah exchange rate have a major impact on bad loans by increasing credit distribution. In other words, does a significant increase in loans show a relationship between inflation, interest rates and the rupiah exchange rate for "bad debt"



Table 6 Mediation Test Results

Direct Effect		Indirect Effect	
X1	6,437 (Significant)	X1 -> Z -> Y	6.437 (Significant) x -0.008 (Significant) = -0.051 (Significant)
X2	-7,968	X2 -> Z -> Y	-7.968 (Significant) x -0.008 (Significant) = 0.064 (Significant)
X3	(Significant)	X3 -> Z -> Y	-0.001 (Not Significant) x -0.008 (Significant) = 0.000008
Z	-0.001 (No		

1. The indirect effect of the inflation rate on non-performing loans through credit growth is  $6.437 \times -0.008 = -0.051$ . It is known that the direct influence of the Inflation Rate on Credit Growth is significant and also the direct influence of significant credit development, so that it is concluded that Credit Growth is significant in mediating the relationship between the Inflation Rate and Non-Performing Loans.
2. The indirect effect of interest rates on NPL through credit growth is  $-7.968 \times -0.008 = 0.064$ . It is known that the direct effect of interest rates on loan growth is significant and the direct impact of credit growth on non-performing loans is significant, so it can be concluded that credit growth is significant in mediating the relationship between interest rates and NPLs.
3. The indirect effect of the Rupiah Exchange Rate on Non-Performing Loans through Credit Growth is  $-0.001 \times -0.008 = 0.000008$ . It is known that the direct influence of the Rupiah Exchange Rate on Credit Growth is not significant, while the direct effect of Credit Growth on Non-Performing Loans is significant, so it can be concluded that Credit Growth is not significant in mediating the relationship between Rupiah Exchange Rate and Non-Performing Loans.

## CONCLUSION

1. Inflation and interest rates have a positive and significant effect on non-performing loans. This shows that the increase in inflation and interest rates

- will increase the NPL while the rupiah exchange rate has a positive but not significant effect on NPL, meaning that the higher the value. The value of Rupiah does not affect the NPL at PT. Bank SUMUT 2015 - 2020.
2. Credit growth has a negative and significant effect on non-performing loans. This shows that the higher the credit growth, the lower the NPL at PT. Bank SUMUT 2015 - 2020.
3. Inflation and interest rates have a significant effect on credit growth and credit growth also has a significant effect on non-performing loans, it can be explained that credit growth can mediate the relationship between inflation and interest rates on NPLs, while the Rupiah exchange rate has no effect on credit growth because credit growth has an effect significant effect on NPL, it can be explained that credit growth cannot mediate the relationship between the Rupiah exchange rate and Non-Performing Loans.

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