Factors Affecting Non-performing Loans at PT BPR Pijer Podi Kekelengen

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Abstract. PT Bank Perkreditan Rakyat Pijer Podi Kekelengen serves the community through the banking intermediation function. This bank receives funds from the public in form of deposits and re-disburses them in the form of credit. Credit given to the public has a risk in returning installments to the bank. Banks must manage loans with the principle of prudence so as not to become problematic. The credit given can become problematic if the return is in arrears and will cause a Non-Performing Loan (NPL). The higher the NPL ratio, the greater the number of non-performing loans, so the possibility of banks being in problematic conditions increases. The performance of banks can be seen from the quality of their loans where the greater the loans that are less current, doubtful, and bad, will form NPLs which will be a negative indicator for banks. Banks will try to find solutions in order to solve non-performing loans. Factors that affect NPL in this study were the credit growth ratio, capital adequacy ratio (CAR), return on asset (ROA), return on equity (ROE), operating income operating expenses (BOPO), and loan-to-deposit ratio (LDR) as independent variables at PT BPR Pijer Podi Kekelengen using regression with Eviews 11 tools with a population of 100 data on a quarterly basis from 2016 to 2020 in five offices. There are three models tested, namely the common effect model, fixed model effect, and random effect model. The model with the best model results was the random effect model. The results of this study showed that the credit growth ratio had a negative and significant effect on NPLs, the CAR ratio had a negative and significant effect on NPLs, and the BOPO ratio had a positive and significant effect on NPLs, while the ratios simultaneously affected NPL.

Keywords: Capital Adequacy Ratio · Credit Growth · Non-Performing Loan · Operating Income Operating Expenses

1 Introduction

Bank Perkreditan Rakyat Pijer Podi Kekelengen is a financial institution that functions to serve credit and savings for customers, especially in North Sumatra Province, which started its operations to the public on January 11, 1993. On December 31, 2020, PT BPR Pijer Podi Kekelengen had assets of IDR 268.7 billion and provided loans of IDR 205.8 billion to 6,602 debtors with an NPL quality of 4.85%. During the COVID-19 pandemic, many bank customers experienced an economic downturn, so debtors could not pay the installments that had been agreed upon with the bank.

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In the first quarter of 2020, the distribution of loans with bad quality is getting higher. This will result in a decrease in income and an enlarged burden on credit risk. The increase and decrease in the ratios to the credit quality of PT BPR Pijer Podi Kekelengen are due to the impact of the pandemic.

Hiring others in the management of the company's activities and delegating work to others is an agent theory. Regulators in Indonesia through Bank Indonesia and the Financial Services Authority are related partners of the bank. Regulators issue rules that bind the bank so that the bank carries out its activities in accordance with the legislation. The relationship between shareholders must also be managed properly. Shareholders will provide the bank with the capital paid to the bank and the bank will provide proceeds in the form of dividends to shareholders. Relationships with depositors that are well-established will provide sufficient funds for the bank to manage.

The word credit comes from the Italian "credere" which means belief. The credit distribution is based on the trust given by the creditor to the debtor that the debtor will return the loan along with the interest in accordance with the agreement of both parties [1]. The credit recipient gets the trust of the party who gives the loan, so the creditor is obliged to return the credit he has received [2]. Crediting is an activity carried out by a bank to process the capital owned and funds raised to provide loans to debtors by taking advantage of payments in the form of interest from debtors [3].

Non-performing loan (NPL) is a ratio that shows how much the bank's business risk is related to credit given to debtors. Credit becomes problematic due to non-current payment of the principal and interest which can directly lower the bank's income and cause the bank to be inefficient. The NPL ratio can be calculated by:

$$Non\ Performing\ Loan = \frac{Non\ Performing\ Loan}{Total\ Loan}\ x\ 100\%$$

The smaller the NPL ratio indicates the less the number of non-performing loans, and the smaller the bank's risk, the greater this ratio. The greater the number of non-performing loans, the greater the bank risks.

Credit Growth

Credit growth is the difference from the change in the amount of credit from the previous period. The increase in loan demand is also called credit growth. This is an important indicator of economic activity. From credit growth, it is expected that the bank can increase the bank's interest income.

$$\text{Credit Growth} = \frac{Total\ Credit\ m - Total\ Credit\ m-1}{Total\ Credit\ m-1}$$

Note:

Total Credit m = Total credits of period m

Total Credit m-1 = Total credits of the previous period

CAR (Capital Adequacy Ratio) is used as a measure of the bank to accommodate the risks faced by banks, namely credit and liquidity risks. According to [4], CAR is a comparison between the ratio of the amount of core capital and complementary capital to Risk-Weighted Assets.

The following formula for calculating the Capital Adequacy Ratio (CAR) is as follows:

$$CAR = \frac{Capital}{Risk\ \ Weighted\ \ Assets\ \ (ATMR)}\ x\ 100\%$$

Return on Asset (ROA)

According to [4], ROA is a ratio that expresses the number of proceeds obtained from a number of assets managed by the bank. ROA is used to see to what extent the investment that has been given is able to provide benefits that are in accordance with what is expected and the value of the investment. Here's the formula:

$$ROA = \frac{Profit\ \ Before\ \ Tax}{Average\ \ Total\ \ Assets}\ x\ 100\%$$

ROE is considered a representation of the results of the shareholders' wealth or the value of the company. According to [4], return on equity (ROE) shows the ratio of the net profit earned by the bank to the capital that has been deposited by shareholders. The following formula for calculating return on equity (ROE) is as follows:

$$ROE = \frac{Net\ \ Income}{Total\ \ Core\ \ Equity}\ x\ 100\%$$

The BOPO ratio shows the bank's efficiency ratio, which is a comparison between the bank's operating costs and the bank's operating income during a certain period. The BOPO assessment is carried out to find out how efficient the activities carried out are in accordance with the bank's business objectives. The ratio formula is as follows:

$$BOPO = \frac{Total\ \ Bank\ \ Operation\ \ Costs}{Total\ \ Bank\ \ Operating\ \ Income}\ x\ 100\%$$

Loan-to-deposit ratio (LDR) shows the ratio between the amount of credit a bank gives to the debtor with the funds raised and the bank's capital. From this ratio, the bank will see how the pace of lending is with the growth rate of funds received by the bank [5]. Here's the formula for calculating the ratio:

$$LDR = \frac{Credit}{Third\ \ Party\ \ Funds}\ x\ 100\%$$

Here are the hypothesis in this study.

1. H1: Credit growth has a negative and insignificant effect on non-performing loans (NPLs) at PT BPR Pijer Podi Kekelengen
2. H2: Capital adequacy ratio (CAR) has a positive and significant effect on non-performing loans (NPL) at PT BPR Pijer Podi Kekelengen
3. H3: Return on asset (ROA) has a negative and significant effect on non-performing loans (NPLs) at PT BPR Pijer Podi Kekelengen.
4. H4: Return on equity (ROE) has a negative and significant effect on non-performing loans (NPL) at PT BPR Pijer Podi Kekelengen

5. H5: Operating costs and operating income (BOPO) have a positive and significant effect on non-performing loans (NPLs) at PT BPR Pijer Podi Kekelengen
6. H6: Loan-to-deposit ratio (LDR) has a positive and significant effect on non-performing loans (NPL) at PT BPR Pijer Podi Kekelengen

The variables studied in this study were credit growth, CAR, ROA, ROE, BOPO, LDR, and their effect on NPLs at BPR Pijer Podi Kekelengen. Based on the results and background of the study, this study was conducted with the title "Factors Affecting Non-Performing Loans at PT BPR Pijer Podi Kekelengen". Based on the background and research problems at PT BPR Pijer Podi Kekelengen, the research problems were formulated as follows:

a. How is the partial effect of the ratio of Credit Growth, CAR, ROA, ROE, BOPO, and LDR on Non-Performing Loans (NPLs) on PT BPR Pijer Podi Kekelengen?
b. How is the credit growth, capital adequacy ratio (CAR), return on asset (ROA), return on equity (ROE), operating costs and operating income (BOPO), loan to deposit ratio (LDR), and non-performing loan (NPL) at PT BPR Pijer Podi Kekelengen.

2 Methods

This research is a quantitative type that aims to analyze the influence of free variables on bound variables, namely NPL ratios. Causality research design is a research design that is compiled to examine the possibility of causal relationships between variables.

The population used in this study was all data from financial statements and financial ratios at PT BPR Pijer Podi Kekelengen consisting of 5 (five) offices; 1 (one) Head Office and 4 (four) Branch Offices, namely Berastagi Branch Office, Simpang Pos Branch Office, Hamparan Perak Branch Office, and Simpang Selayang Branch Office with the financial reporting time period from 2016 to 2020, such as published annual financial statements, ratios, and other financial data. The research samples used were financial statements and financial ratios at PT BPR Pijer Podi Kekelengen from 2016 to 2020. Samples were collected from 5 (five) offices, namely 1 (one) Head Office and 4 (four) Branch Offices with a total of financial statements during the quarter period of 5 (five) years, starting from 2016 to 2020, with $5 \times 5 \times 4 = n$, the sample size was 100.

The use of analytical techniques in this study was descriptive statistical analysis, where the presentation of the data was collected first, then then the hypothesis was determined, and then the data were presented in the form of tables and graphs [6]. For data analysis, the data panel method was used, which was a combination of time series and cross-section data from Eviews 11. The Ordinary Least Square method was used in Eviews 11, which is one of the methods in multiple regression analysis, so it can determine the influence of free variables on non-free variables.

3 Results and Discussion

3.1 Descriptive Statistical Analysis

Descriptive statistical analysis was used to know the data seen at the maximum value, minimum value, value (mean), and standard deviation value. The variables used in this study were descriptive statistical calculations, namely independent variables, which are

Table 1. Descriptive Statistics of Research Variables

	X1_PKREDIT	X2_CAR	X3_ROA	X4_ROE	X5_BOPO	X6_LDR	Y_NPL
Mean	0.035171	0.190253	0.015759	0.240401	0.805754	0.911656	0.045882
Median	0.028312	0.194198	0.013471	0.110669	0.828862	0.906063	0.039950
Maximum	0.187374	0.351259	0.092000	2.922987	1.081653	1.029016	0.114800
Minimum	−0.054271	0.092896	−0.010805	−0.115181	0.603810	0.774000	0.021455
Std. Dev.	0.046911	0.064735	0.016144	0.425778	0.112208	0.056773	1.089774
Skewness	0.606465	0.316558	1.425867	3.625532	−0.073951	−0.254273	3.967030
Kurtosis	3.430987	2.329476	7.000360	19.57347	2.062845	2.447615	23.68992
Jarque-Bera	6.903946	3.543490	100.5636	1363.575	3.750557	2.348955	0.000007
Propability	0.031683	0.170036	0.000000	0.000000	0.153312	0.308980	4.588200
Sum	3.517096	19.02527	1.575946	24.04006	80.57538	91.16556	0.045570
Sum Sq. Dev	0.217866	0.414878	0.025802	17.94737	1.246482	0.319099	0.021455
Observation	100	100	100	100	100	100	100

Credit Growth, CAR, ROA, ROE, BOPO, and LDR, while the dependent variables were NPLs. The results of the descriptive statistical analysis obtained an overview of the data variables as follows.

Based on Table 1, the data presented show that the average credit growth is 0.035, and the standard deviation value from credit growth is 0.046 with a minimum value of credit growth of −0.054 and a maximum credit growth value of 0.187.

The value of average, standard deviation, maximum and minimum values of CAR, ROA, ROE, BOPO, LDR, and NPL can be seen in Table 1.

In the interpretation of descriptive statistics of the research variables, the average NPL is influenced by the rise and fall of credit growth, CAR, ROA, ROE, BOPO and LDR on factors that affect NPLs at PT BPR Pijer Podi Kekelengen.

3.2 Test of Classical Assumptions

Normality Test

In the normality test to residual *Jarque-Fallow* (J-B) test was employed. Detection of normal or unprovincial distributed data can be done by comparing the calculated *Jarque-Bera* probability value with the Alpha level, using the significance level used $\alpha = 0.05$ (Fig. 1).

Based on the residual normality test, the *Jarque-Fallow* value is 13.761 which is greater than the significant level of 0.05. It means that the residual is normally distributed.

The multicollinearity test function to examine whether in the regression model there is a correlation between one independent variable and another independent variable. The results of the multicollinearity test are shown in Table 2.

Based on Table 2, the correlation value between the credit growth variable (X1), the CAR variable (X2), the ROA variable (X3), the ROE variable (X4), the BOPO variable (X5), and the LDR variable (X6) < 0.90, which means that there is no multicollinearity between fellow independent variables.

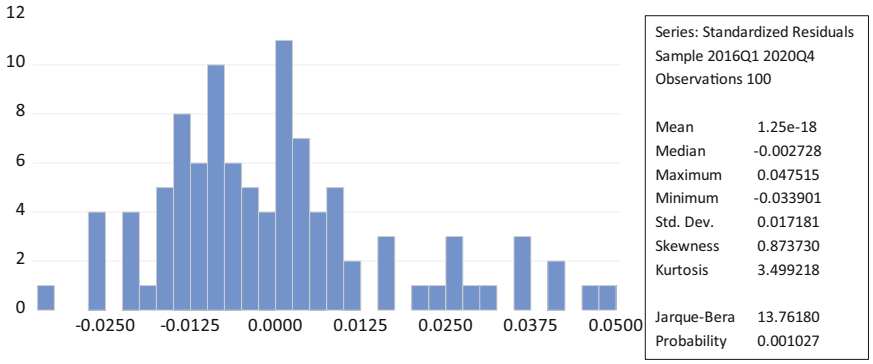

Fig. 1. Jarque-Fallow Normality Test

Table 2. Multicholinearity Test

X1_PKREDIT	X2_CAR	X3_ROA	X4_ROE	X5_BOPO	X6_LDR
1.000000	−0.144071	0.059706	0.028086	−0.098583	0.055080
−0.144071	1.000000	−0.589417	−0.425850	0.242154	−0.116453
0.059706	−0.589417	1.000000	0.655532	−0.457980	0.039395
0.028586	−0.425850	0.655532	1.000000	−0.601308	0.381736
−0.098583	0.242154	−0.457980	−0.601308	1.000000	−0.196933
0.055080	−0.116453	0.039395	0.381736	−0.196933	1.000000

The Heteroskedasticity Test is performed with *Test: White* i.e. if Prob. Chi-Square > 0.05 then heteroskedasticity does not occur.

Based on Table 3, the Prob values. Chi-Square of $0.484 > 0.05$ then there is no problem of heteroskedasticity.

Based on Table 4, the value from *durbin- Watson* statistics is 1,757. It can also be seen that the values of dL and dU at $T = 100$ and $k = 7$, which shows that the values

Table 3. Heteroskedasticity Test

Heteroskedasticity			
Null hypothesis: Homoskedasticity			
F –statistic	0.967296	Prob. F(27,72)	0.5219
O bs*R-squared	26.61822	Prob. Chi-Square(27)	0.4845
Scaled explained SS	23.14103	Prob. Chi-Square(27)	0.6774

Table 4. Durbin Watson Autocorrelation Test

Log likelihood	303.1834	Hannan-Quinn criter	−5.788776
F –statistic	6.619903	Durbin-Watson stat	1.757270
Prob (F –statistic)	0.000001		

of dL = 1.5279 and dU = 1.8262. Value *(Durbin- Watson)* d = 1.757, then value (4 − 1.757) = 2.243.

Autocorrelation detection is d: 2.243 > dU: 1.8262, then there is no positive autocorrelation. It can be interpreted that there are no symptoms of high autocorrelation in residuals.

The use of the dor panel is a combination of time series data and cross-section data. The Lagrange Multiplier test is used to test whether the model is the best of common effects or random effects decisions:

- if the both values <0.05 then REM model is selected
- if the both values >0.05 then CEM model is selected

The results based on the Lagrange Multiplier test using *Eviews 11* are shown in Table 5. Based on the results of the Lagrange Multiplier test showing both 0.000 (significance < 0.05), then what was used in the research of Factors Affecting Non-Performing Loans at PT BPR Pijer Podi Kekelengen was a model of random effects.

The following are the elected models that will be tested for hypothesis in the Model Interplay Table 6.

Coefficient of Determination Analysis

Based on Table 6, it is known that the value of the coefficient of determination (Adjusted R-squared) = 0.7459. This value can be interpreted that credit growth, CAR, ROA, ROE, BOPO, and LDR simultaneously or jointly affect the NPL of PT BPR Pijer Podi Kekelengen by 74.59%, while the remaining 24.41% is influenced by other factors or variables.

Simultaneous Influence Significance Test (F Test)

The F test aims to test the influence of free variables together or simultaneously on dependent variables (NPLs). Based on the REM Model table, it is known that the probability value (F-statistics) is 0.000 < 0.05. It can be concluded that all free variables, namely total credit growth, CAR, ROA, ROE, BOPO, and LDR simultaneously have a significant effect on the NPL of PT BPR Pijer Podi Kekelengen.

Panel Data Regression Equation and Partial Significance Test (T-Test)

To find out how much influence the variables of credit growth, CAR, ROA, ROE, BOPO, and LDR have on the NPL of PT BPR Pijer Podi Kekelengen, the regression equation is obtained as follows:

$$NPL = 0{,}057 - 0{,}099\ P.Credit_{it} - 0{,}228\ CAR_{it} - 0{,}244\ ROA_{it} + 0{,}006\ ROE_{it} + 0{,}064\ BOPO_{it} - 0{,}015\ LDR_{it} + \xi_t.$$

Table 5. Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects			
Null Hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided			
(all others) alternatives			
	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	10.60088	10.01430	20.61518
	(0.0011)	(0.0016)	(0.0000)
Honda	3.255900	3.164538	4.539935
	(0.0006)	(0.0008)	(0.0000)
King-Wu	3.255900	3.164538	4.278969
	(0.0006)	(0.0008)	(0.0000)
Standardized Honda	8.425833	3.542920	2.338724
	(0.0000)	(0.0002)	(0.0097)
Standardized King-Wu	8.425833	3.542920	3.887186
	(0.0000)	(0.0002)	(0.0001)
Gourieroux, et al.	--	--	20.61518
			(0.0000)

1. The coefficient of the credit growth variable is -0.099 with a negative value. This value can be interpreted that the credit growth variable negatively affects the factors affecting non-performing loans at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is -2.721, while probability is 0.007, which is <0.05, then the credit growth variable has a negative and significant effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen at a significance level of 5%.
2. The coefficient of CAR is -0.228, which is a negative value. This can be interpreted as a negative effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is -3.760, while the probability value is 0.0003, which is < 0.05, then the CAR variable has a negative and significant effect on non-performing loans at PT BPR Pijer Podi Kekelengen at a significance level of 5%.
3. The coefficient of ROA is -0.244, which is negative. This value can be interpreted as a negative effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is -1.781, while the probability value is 0.078, which is >0.05, then the ROA variable has a negative and insignificant effect on non-performing loans at PT BPR Pijer Podi Kekelengen at a significance level of 5%.
4. The coefficient of ROE is 0.006, which is a positive value. The value can be interpreted as a positive effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is 1,263, while the probability

Table 6. Model Interplay

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.057293	0.043758	1.309327	0.1938
X1 PKREDIT	−0.099340	0.036499	−2.721700	0.0078
X2 CAR	−0.228473	0.060752	−3.760777	0.0003
X3 ROA	−0244937	0.137523	−1.781070	0.0783
X4 ROE	0.006511	0.005155	1.263106	0.2099
X5 BOPO	0.064546	0.021890	2.948704	0.0041
X6 LDR	−0.015536	0.037269	−0.416855	0.6778
Effects Specification				
			S.D.	Rho
Cross-section fixed (dummy variables)				
Period random			0.009230	0.4560
Idiosyncratic random			0.010081	0.5440
Weighted Statistics				
Root MSE	0.009395	R-squared		0.771638
Mean dependent var	0.045882	Adjusted R-squared		0.745979
S.D dependent var	0.019758	SE of regression		0.009958
Sum squared resid	0.008826	F-statistic		30 07320
Durbin-Watson stat	0.892663	Prob(F-statistic)		0.000000
Unweighted Statistics				
R-squared	0.657656	Mean dependent var		0.045882
Sum squared resid	0.015601	Durbin-Watson stat		1.186313

value is 0.209, which is > 0.05, then the ROA variable has a positive and insignificant effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen at a significance level of 5%.

5. The coefficient of BOPO is 0.064, which is a positive value. This value means that the BOPO variable has a positive effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is 2.948, while the probability value is 0.004, which is < 0.05, then the BOPO variable has a positive and significant effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen, at a significance level of 5%.
6. The coefficient of LDR is -0.015, which is negative. The value of the LDR coefficient can be interpreted as a negative effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen. It is known that the calculated t value is -0.416, while the probability value is 0.677, which is > 0.05, then the LDR variable has a negative and insignificant effect on the non-performing loan variable at PT BPR Pijer Podi Kekelengen at a significance level of 5%.

4 Conclusions

The purpose of the study was to determine and analyze the factors that affected credit growth, CAR, NPL, ROA, ROE, BOPO, and LDR on NPLs at PT BPR Pijer Podi Kekelengen. From the series of research data analysis, hypothesis testing, and research discussion, the following conclusions can be drawn:

1. It partially showed that credit growth had a negative and insignificant effect on NPL at PT BPR Pijer Podi Kekelengen.
2. It partially showed that CAR had a negative and significant effect on NPL at PT BPR Pijer Podi Kekelengen
3. It partially indicated that ROA had a negative and insignificant effect on NPL at PT BPR Pijer Podi Kekelengen
4. It partially indicated that ROE had a positive and insignificant effect on NPL at PT BPR Pijer Podi Kekelengen
5. It partially showed that BOPO had a positive and significant effect on NPL at PT BPR Pijer Podi Kekelengen
6. It partially showed that LDR had a negative and insignificant effect on NPL at PT BPR Pijer Podi Kekelengen
7. Simultaneously, Credit Growth, CAR, ROA, ROE, BOPO, and LDR had a significant effect on NPLs at PT BPR Pijer Podi Kekelengen

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