

Conference Paper

Investigating the Determinants of Non-Performing Loan: Loan Monitoring As a Moderating Variable

Muhammad Khafid, Fachrurrozie, and Indah Anisykurlillah

Department of Accounting, Economics Faculty, Universitas Negeri Semarang - Indonesia

Abstract

The objectives of the study are: 1) to analyze the effects of Capital Adequacy Ratio (CAR), Credit Risk, Loan to Deposit Ratio (LDR), and Net Interest Margin (NIM) to Non-Performing Loan (NPL); 2) to analyze the role of loan monitoring in moderating the effects of CAR, credit risk, LDR, and NIM on NPL.

It was a quantitative study. The subject of the study was the Republic of Indonesia Employee Cooperative (KPRI) which had saving and loan business units. Data were collected by conducting documentation (to collect data on CAR, Credit Risk, LDL, NIM, and NPL) and distributing questionnaires (to collect data on loan monitoring). Then, data were analyzed by moderated regression.

The results showed that CAR and NIM did not influence NPL, credit risk and LDR had a positive effect on NPL; Then, loan monitoring moderated the effects of NIM on NPL. However; loan monitoring did not succeed to moderate the effect of CAR, credit risk, and LDR on NPL.

Based on the results of the study, the cooperatives engaged in the provision of credit need to consider loan monitoring as a very strategic variable to suppress NPL. Thus; it is suggested for the future research to analyze the effectiveness of loan monitoring system at each loaning institution to suppress NPL.

Keywords: Capital Adequacy Ratio, Credit Risk, Loan to Deposit Ratio, Net Income Margin, Non-Performing Loan.

Corresponding Author:

Muhammad Khafid

muh_khafid@mail.unnes.ac.id

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1. Introduction

Saving and Loan Cooperatives have a fundamental role in economic growth in Indonesia. Cooperative banks have been traditionally organized to meet the needs of their members and comply with the key cooperative principle of 'one person-one vote', regardless of the size of the members' savings or loans balances (Battaglia, 2010). The basic role can only be done if the Saving and Loan Cooperatives have good performance. A Saving and Loan Cooperative receives deposits from the public or the third party. The funds are returned in the form of credit to the community.

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In fact, not all disbursed loans are free-risk, some have substantial risks and can threaten the performance of the cooperative. According to Patersson and Wadman (2004), bad credit is defined as a bad loan and cannot be collected. Bad loans generally refer to loans that for a relatively long period of time and do not generate income. It is because Loan principal and interest are not paid for at least 90 days (Fofac, 2009). To measure the ability of cooperatives in overcoming the failure of credit taking by debtors, Non-Performing Loan (NPL) ratio can be used. Determinants of problem loans at home and overseas are the main themes in the academic literature of bad credit (Skarica, 2014; Louzis et. al., 2012; Nkusu, 2011).

There are several factors lead to NPL. Gorter and Bloem (2002) argue that bad credit is mainly caused by a number of inevitable wrong economic decisions, as well as economic conditions, inflation, and price changes. Saving and Loan Cooperatives can reduce the risk of credit problems by providing funds for business development needs and accommodating the risk of loss of funds caused by cooperative operations called the Capital Adequacy Ratio (CAR). The higher the CAR, the greater the bank's ability to minimize credit risk which occurs, meaning that the bank is able to cover the credit risk which occurs with the amount of reserve funds obtained from the comparison of capital and Risk Weighted Assets (RWA).

Loan to Deposit Ratio (LDR) is a ratio which describes the comparison between loans issued with funds collected by banks, in this case; third party fund. The size of the LDR of a bank is able to illustrate the possibility of credit. The greater the amount of credit given, the more consequences the risk should be borne by the bank concerned. It means that the higher the LDR of a bank, the higher the chance of credit risk that will occur, and vice versa.

Valsamakis et. al. (2005), Credit Risk is the risk that a financial contract will not be concluded according to the agreement. It is the risk that the counterparty to an asset will default. Credit risk is the level of fluctuations in the value of debt instruments due to changes in the credit quality of borrowers.

In addition to these factors, the ratio of Net Interest Margin (NIM) is also one of the factors affecting NPL in banks or cooperatives. NIM will influence the profit and loss of the cooperative which ultimately affects the performance of the cooperative. So, when the NIM ratio is high, then this can prevent problems from being addressed, which are mainly about the problem of bad credit. The standard set by Bank Indonesia for the NIM ratio is 6% or more. The greater this ratio, the increase in interest income on earning assets managed by banks causes smaller problems.

The objectives of the study are: 1) to analyze the effects of Capital Adequacy Ratio (CAR), Credit Risk, Loan to Deposit Ratio (LDR), and Net Interest Margin (NIM) to Non-Performing Loan (NPL); 2) to analyze the role of loan monitoring in moderating the effects of CAR, credit risk, LDR, and NIM on NPL.

2. Literature Review and Hypotheses Development

CAR is a capital adequacy ratio in measuring solvency and the ability to reduce risk. It is used to protect storage and demonstrate stability and efficiency in the financial system (Wood & Skinner, 2018). Based on The Commercial Loan Theory, it focuses on assets from the balance sheet in meeting the bank's liquidity needs. The decrease in the number of CARs is a result of the decrease in the amount of cooperative capital or the increase in the number of Risk Weighted Assets (RWA). The small amount of cooperative capital is caused by a decrease in profits earned. One of the decreases in profits which occur in cooperatives is due to an increase in Non-Performing Loans or poor credit quality.

CAR Ratio shows capital from cooperatives should be able to cover all business risks faced by cooperatives, including the risk of losses incurred as a result of non-performing loans. This result is supported by the results of research by Djiogap & Ngomsi (2012) showing that Capital Adequacy Ratio (CAR) has a significant impact on Non-Performing Loans (NPL). The higher the CAR, the greater the ability of cooperatives to minimize credit risk which occurs so Non Performing Loans which occur in cooperatives will be lower. It is supported by the results of research by Dhar & Bakshi (2015) and Ozili (2019). On the other hand Alexandri & Santoso (2015), Radivojevic & Javovic (2017) and Wood & Skinner (2018) state that Capital Adequacy Ratio has a positive effect on Non Performing Loans. However, the results of research from Shingjergj (2013), EL-Maude, et. al. (2017), and Lozidis, et. al. (2010) state that Capital Adequacy Ratio does not effect significantly Non-Performing Loans.

LDR is the ratio of the amount of funds channeled to the community (credit) with the amount of public funds and the capital used. This ratio illustrates the ability of banks to repay withdrawals made by depositors' customers by relying on loans provided as a source of liquidity. The relationship of LDR and NPL is consistent with The Liability Management Theory, where the theory explains how banks can manage their passives in such a way that the liability of bank funds is the bank's business in obtaining funds in order to finance its operations. To support the activities of banks as parties to provide loans, banks should first raise funds so from the difference in interest the bank gains.

According to Misra and Dahl (2010), LDR has a positive effect on NPL. If Loan to Deposit Ratio (LDR) is more than 110%, the company is at risk, so the bank is currently advised not to fulfill Loan demand because it is feared that there will be a delay in the payment of credit. It is supported by the results of research by Greenidge & Grosnevior (2010), Swamy (2012), Ahmad & Bashir (2013) and EL-Maude, et. al. (2017). On the other hand, Ranjan & Chandra (2013) state that Loan to Deposit Ratio has a significant negative effect on NPL. However, the research results done by Loizis, et. al. (2010) and Makri, et. al. (2014) show the different results; that Loan to Deposit Ratio does not have any significant effect on Non Performing Loans (NPL).

Saving and Loan Cooperatives have two functions, they are as recipients of deposits and credit providers. (Kolapo, 2012). Therefore; this cooperative has risks due to the credit given. According to Chen and Pan (2012), credit risk is the level of fluctuation in the value of debt and derivative instruments because of changes in the underlying credit quality of borrowers and opposing parties. Coyle (2000) defines credit risk as a loss from refusal or the inability of credit customers to pay what is owed in full and continuously. Credit risk (Credit Risk) is the risk of loss associated with the possibility of the debtor failing to pay off his liabilities, in other words it is the risk of the debtor not paying his debt.

The main sources of credit risk include, limited institutional capacity, inappropriate credit policies, unstable interest rates, poor management, improper law, low capital and liquidity levels, direct loans, massive bank licensing, poor loan guarantees, weak valuations credit, poor lending practices, government disruption and inadequate supervision by central banks (Kithinji, 2010). Increasing bank credit risk gradually leads to liquidity and solvency problems (Kolapo, 2012).

The relationship of Credit Risk to NPLs is consistent with The Anticipated Income Theory. The theory is a theory which is motivated by the low credit application which results in excess liquidity and low profits obtained by the bank. The theory encourages banks to be more aggressive in providing long-term loans. According to Ozili (2019), Credit Risk is a variable which has a significant effect on NPL. In addition, according to Saada (2019), Credit Risk also affects NPL, where the opinion is also consistent with Laryea, et. al. (2016).

The research results done by Abid, et. al. (2016) show that Net Interest Margin (NIM) has a positive relationship with NPL. It happens because a higher NIM will increase interest expense. It is in line with Macit (2012) which states that Net Interest Margin (NIM) has a positive relationship to Non Performing Loans (NPL). It means that cooperatives with higher net interest margins are thought to have a higher NPL ratio. Cooperatives

with higher interest margins generally charge a higher interest rate. Therefore, it is very normal that these cooperatives tend to have higher Non Performing Loans.

Research by Shingjergj (2013) shows that Net Interest Margin (NIM) has a significant positive impact on Non Performing Loans (NPL) which proves that when banks tend to have high NIMs, it will cause a decrease in asset quality. It is in line with the results of Panta's research (2018) show that Net Interest Margin has a positive effect on Non-Performing Loans. It is possible because creditworthiness of debtors has deteriorated, thereby increasing NPL. It is supported by the results study of Laryea, et. al. (2016), and Kumar, et. al. (2018).

The function of loan monitoring is part of quality credit to ensure credit facilities are provided. There is a lot of research on loan monitoring activities but there are differences of opinion among researchers about which actions constitute loan monitoring. According to Aremu et. al.. (2010) loan monitoring is managerial work. The essence of each loan monitoring is to ensure the compliance of Loan agreement such as ensuring that Loan is used for purposes that meet the requirements, the quality of Loan will be maintained in the future and the source of payment. There are various tools used by cooperatives in monitoring loans, such as; monitoring transaction accounts, management, requirements, loan agreements. Dermine (2013) argues that directly loan monitoring is influenced by regulation. There are several studies that prove that loan monitoring is important for lending banks (for example, Mester et. al., 2007; Aremu et. al., 2010; Intrater, 2002; Treacy and Carey, 2000; Nakamura and Roszbach, 2013).

Based on the description above, the research hypotheses are:

H1: CAR has a negative effect on NPL

H2: Credit risk has a positive effect on NPL

H3: LDR has a positive effect on NPL

H4: NIM has a positive effect on NPL.

H5: Loan monitoring moderates the effect of CAR on NPL.

H6: Loan monitoring moderates the effect of credit risk on NPL.

H7: Loan monitoring moderates the effect of LDR on NPL.

H8: Loan monitoring moderates the effect of NIM on NPL.

3. The Research Methods

It was a quantitative research. The population of the study was 109 Saving and Loan Cooperatives in Semarang City. It used a purposive sampling technique with criteria: the

cooperatives were more than 5 years old, had assets above IDR 500,000,000.00, and there were available data needed for the study. Based on these criteria, there were 34 cooperatives which were the samples of the study. Explanation of each variable used in the study is presented on table 2 as follows:

TABLE 1: Operational Definitions of Research Variables.

No	Variables	Operational Definitions	Measurements
1	Capital Adequacy Ratio (CAR)	The ratio between the amount of capital held and risk-weighted assets	$\frac{\text{Capital}}{\text{Weighted Assets According to Risiko}} \times 100\%$
2	Credit Risk (CR)	The ratio between bad credit and the amount of credit disbursed	$\frac{\text{Bad credit}}{\text{Total Credit}} \times 100\%$
3	Loan to Deposit Ratio (LDR)	The ratio between total loans given to total third party funds.	$\frac{\text{Total Credit}}{\text{Third-party funds}} \times 100\%$
4	Net Interest Margin (NIM)	The ratio between net interest income and productive assets	$\frac{\text{Net interest income}}{\text{Average Earning Assets}} \times 100\%$
5	Non Performing Loan (NPL)	The ratio of total non-performing loans to disbursed total loans	$\frac{\text{Non Current Credit}}{\text{Credit}} \times 100\%$
6	Role of Loan Monitoring	Credit supervision is a monitoring / monitoring activity on the stages of the credit granting process. Credit supervision can be carried out by external parties and internal parties of the cooperative	Credit supervision by the debtor, the financial condition of the debtor, the development of the debtor's business activities, credit administration and fulfillment of the obligations of the debtor to provide credit. Credit supervision can be carried out by external parties and internal parties of the cooperative

Source: Processed Various References, 2019

The research data were collected by documentation and interviews. The documentation is used to get cooperative financial statements getting data on CAR, credit risk, LDR, NIM, and NPL. The interview method is used to collect data on loan monitoring.

Data analysis techniques used regression with moderating variables. The Classic assumption test included normality test, multicollinearity test, and heteroconstasticity test. The research model is as follows: $NPL = \alpha + \beta_1car + \beta_2cr + \beta_3ldr + \beta_4nim + \beta_5car*Im + \beta_6cr*Im + \beta_7ldr*Im + \beta_8nim*Im + e$

4. Results and Discussion

The results of the descriptive statistical analysis to present the profile of the research variables are presented on table 3.

The results of data analysis using Moderated Regression Analysis got the adjusted R2 value was 0.511. It means the variables formed in this research model are able to explain variations in NPL for 51.1%, whereas; 48.9% is explained by variables which were

TABLE 2: The Results of Descriptive Statistics Analysis.

	N	Minimum	Maximum	Mean	Std. Deviation
CAR	34	.45	.81	.6644	.08407
CR	34	.09	.43	.2044	.07199
LDR	34	139.00	321.00	224.7647	52.85490
NIM	34	.08	.19	.1312	.03198
NPL	34	.13	.34	.2106	.05903
LM	34	45.00	76.00	59.2647	9.46544
Valid N (listwise)	34				

Sumber: *Output SPSS, 2019*

not tested in the study. The summary results of hypothesis testing are presented on table 4.

TABLE 3: Summary of Hypotheses Testing Results.

	Hypotheses	Regression Coefficients	t	Sig	Results
H ₁	CAR has a negative effect on NPL	-.855	-.832	.414	Rejected
H ₂	CR has a positive effect on NPL	.625	2.427	.023	Accepted
H ₃	LDR has a positive effect on NPL	2.782	2.338	.028	Accepted
H ₄	NIM has a positive influence on NPL	.247	.313	.757	Rejected
H ₅	Loan monitoring moderates the effect of CAR on NPL	1.342	1.038	.310	Rejected
H ₆	Loan monitoring moderates the effect of credit risk on NPL	1.369	.877	.389	Rejected
H ₇	Loan monitoring moderates the effect of LDR on NPL	-.254	-.738	.468	Rejected
H ₈	Loan monitoring moderates the effect of NIM on NPL	-3.398	-2.485	.020	Accepted

Source: Processed secondary data, 2019

Based on Table 4, it can be seen that the result of testing hypothesis 1; the significance is 0.414 so hypothesis 1 is rejected. It means that CAR does not affect NPL. The result study is in line with the findings of Shingjergj (2013), EL-Maude, et. al. (2017), and Loizis, et. al. (2010); they state that CAR does not have any effect Non-Performing Loans significantly.

The results of testing hypotheses 2 and 3 state that CR and LDR are proven to have a positive effect on NPL. It shows that cooperatives with high credit risk tend to have high NPLs as well. The higher the LDR of the cooperative, the higher NPL. The result is in line with the results of Ozili's (2019) and Saada (2019) researches. The results of

testing hypothesis 4 state that NIM does not affect NPL. It means that the amount of interest charged to customers does not affect NPL.

The role of loan monitoring in moderating the effect of variable CAR, Credit risk, LDR, and NIM on NPLs is formulated in hypotheses 5,6,7, and 8. From a number of these hypotheses, only hypothesis 8 is accepted. It means that Loan monitoring can strengthen the effect of the NIM on NPL.

5. Conclusion and Suggestion

The results showed that:

1. CAR did not have any effect on NPL.
2. Credit risk had a positive effect on NPL.
3. LDR had a positive effect on NPL.
4. NIM did not have any effect on NPL.
5. Loan monitoring did not succeed in moderating the effect of the CAR on NPL.
6. Loan monitoring did not succeed in moderating the effect of credit risk on NPL.
7. Loan monitoring did not succeed in moderating the effect of LDR on NPL.
8. Loan monitoring moderates the effect of the NIM on NPL.

Based on the results of these studies, the cooperatives engaged in the provision of credit need to pay attention to Loan monitoring variable as a very strategic variable in suppressing NPL. The future research needs to be conducted to analyse the effectiveness of Loan monitoring system owned by each lending institution in suppressing NPL.

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