

The Effect of Lending and Capital Adequacy on Profitability PT Bank Pembangunan Daerah Jawa Barat and Banten TBK with Credit Risk as a Moderating Variable

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ABSTRACT

This study examines the effect of Lending and Capital Adequacy on the profitability of PT Bank Pembangunan Daerah Jawa Barat and Banten Tbk, with Credit Risk as a moderating variable. Profitability is an important indicator of banking performance because it reflects the bank's ability to generate profits and maintain financial sustainability. In the banking industry, lending activities and adequate capital management are considered crucial factors influencing profitability, while credit risk may strengthen or weaken these relationships. Therefore, this research aims to analyze the influence of Loan to Deposit Ratio (LDR) and Capital Adequacy Ratio (CAR) on Return on Assets (ROA), as well as to examine the moderating role of Non-Performing Loans (NPL). The study employed a quantitative research method using secondary data obtained from the annual financial statements of PT Bank Pembangunan Daerah Jawa Barat and Banten Tbk during the 2015–2024 period. Data analysis techniques included descriptive analysis, Augmented Dickey-Fuller (ADF) stationarity testing, and moderated regression analysis. The findings indicate that CAR has a negative and significant effect on profitability, while LDR does not significantly affect profitability. Meanwhile, NPL has a positive and significant effect on profitability. Furthermore, the moderation analysis reveals that credit risk does not significantly moderate the relationship between LDR, CAR, and profitability. In conclusion, effective capital management and credit risk control are essential for maintaining bank profitability and financial stability.

Keywords: Lending, Capital Adequacy, Profitability, Credit Risk

INTRODUCTION

Economics is the science of the basics of production, distribution, and consumption of goods and services, then the science of trade, industry and finance, and also economics is related to the value of money, time and energy for the economy in a country. Banks are financial institutions that have an important position as a support for the economic growth of a country, especially in Indonesia (Akilah, 2024; Santoso et al., 2019; Widjaja, 2026). In Indonesia, banking plays a very vital role in managing public finances and the community is very dependent on banks. Undang-Undang Republik Indonesia No. 10 Tahun 1998 dated November 10, 1998 concerning Banks, a bank is a business entity that collects funds from the public in the form of deposits and distributes them to the public in the form of credit or other forms in improving people's lives.

Budisantoso and Nuritomo (2017) in their book explain the three important roles of banking as Agent of Trust, Agent of Development and Agent of Services. The role of banks as Agents of Trust means that the main basis of banks is trust. Where people entrust funds to be managed by banks properly. Bank as Agent of Development means that it contributes to the economic development of a society by channeling and collecting funds. Agent of Service means that banks provide other banking services to the community in addition to collecting and channeling funds.

These three functions can be carried out optimally when supported by adequate capital. So it is important for banks to always maintain and maintain a high level of profitability, namely by looking at their financial performance ratios (Amalia & Nugraha, 2021; Maguni et al., 2020). PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk or referred to as Bank BJB is a BUMD bank owned by the Provincial Government of West Java and Banten which is headquartered in Bandung. Bank BJB's initial goal was to generate the most profit while reducing losses that could jeopardize its existence.

Profitability is the company's ability to generate profits in a certain period. Profitability also has an important meaning for a business entity in order to maintain its long-term survival, because profitability shows how important the business entity has good prospects in the future (Haneef et al., 2012). Profitability is also a ratio to measure the company's financial performance to seek profit in a certain period (Kasmir, 2012). The importance of examining profitability is that with the profits obtained, the company can manage company activities so it is important for companies to manage or maintain profitability to expand their business. If the company has a high level of profitability, the company has two choices where the company can distribute dividends to shareholders or choose to be used for business expansion (Purwanti, 2020). One way to assess the profitability of a bank is to look at its profitability using return on assets (ROA). Return on assets, is one of the ratios used by bank management to measure its ability to generate overall profits (Athik Hidayatul Ummah, 2021).

One of the activities carried out by banks is lending. The activity of lending is a profit for banks that comes from interest income. The more often the bank extends credit, the more the bank's interest income will increase, so that it will have an impact on increasing profitability. The bank will provide credit to the customer if he is able to return the loan he receives in accordance with the term and conditions that have been set. Lending by banks can be seen through the Loan to Deposit Ratio (LDR). The amount of LDR will affect profits through credit creation. One indicator that shows the level of credit expansion can also be seen from the LDR ratio so that LDR can be used to measure the running or not of a bank's intermediation activities, one of which is channeling funds in the form of credit. LDR shows the level of the bank's ability to distribute third party funds raised by the bank (Utami, 2016).

Another important factor for a company to operate is to have sufficient capital to finance the company's operational activities. Capital is one of the factors that play an important role in the performance of a company. The capital owned by the bank serves to bear the risks and losses experienced by the bank, so the bank is required to have sufficient capital in the sense of being able to bear these risks and losses. The capital adequacy of banking companies can be seen from the Capital Adequacy Ratio (CAR) figure. CAR is the main ratio of the Financial Services Authority in assessing the Level of Financial Health and Bank Stability, CAR is used to measure the extent to which banks have adequate capital to cover risks that may arise. (Rahmad et al, 2024) In addition, CAR also shows the Ability to Grow and Develop, if the CAR ratio is high, the bank is considered to have a better ability to grow and develop its business, especially in providing credit and managing risks arising from its operational activities, so that profitability will increase.

Parenrengi and Hendratni's research (2018) shows that Loan to Deposit Ratio (LDR) has a positive and significant effect on ROA, while Capital Adequacy Ratio (CAR) has no significant effect on ROA. Based on the results of previous studies, there are inconsistent results regarding the effect of lending and capital adequacy on profitability. The difference in research results can occur due to several internal and external factors that affect lending and capital adequacy. One of the internal factors that can affect lending and capital adequacy is credit risk (Novita, 2016). The reason credit risk was chosen as a moderating variable is because the main function of the bank is to distribute credit, because in distributing credit, of course, the bank will not be separated from the credit risk that arises so it can be assumed that high credit risk will have an impact on lending and capital adequacy so that bank profitability will decrease. Based on this, it needs to be re-examined by adding a moderating variable, namely credit risk, which is thought to be able to strengthen or weaken the relationship between these variables.

Lending activities carried out by banks contain the risk of non-current credit payments or non-performing loans, which in banking terms are known as Non Performing Loan (NPL) ratios. NPL is defined as a loan that has difficulty repaying from the debtor or is often called bad credit at the bank. Non-performing loans increase due to lack of risk management, thus threatening bank profitability (Haneef et al., 2012). Inflation, exchange rates and interest rates are also factors that affect non-performing loans in the banking sector (Farhan, 2012). If the credit risk is high, then the management of the credit is considered poor, so that it will have an impact on reducing profitability.

Based on the background and problems described, this study aims to analyze the effect of Lending and Capital Adequacy on Profitability at Bank BJB, as well as to examine the role of Credit Risk as a moderating variable in these relationships. Specifically, this research seeks to determine whether Lending and Capital Adequacy have a significant effect on Profitability, and whether Credit Risk significantly moderates the effect of Lending and Capital Adequacy on Profitability. The results of this study are expected to provide useful contributions both to the development of scientific knowledge, particularly in the fields of finance and banking, and to practical aspects as a consideration for management in decision-making.

METHOD

In this research we have the research flowchart as follows:

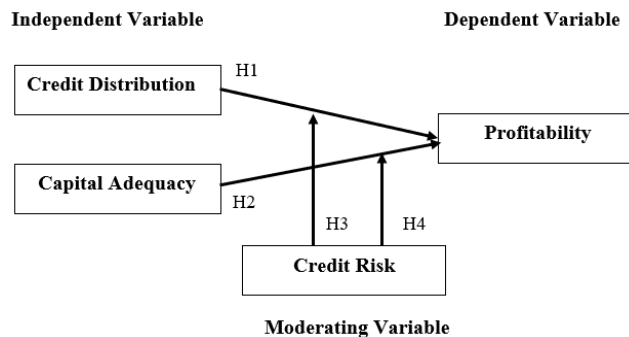


Figure 1. The Research Flowchart

Research Object

The object of research is something that is of concern in a research activity. This research object is the target in research to get answers or solutions to problems that occur (Sugiyono, 2013). The object of this research is the Effect of Lending and Capital Adequacy on Profitability of PT Bank Pembangunan Daerah Jawa Barat and Banten Tbk with Credit Risk as a Moderating Variable. The object of research is the focus of analysis and observation of researchers to determine the results carried out from the application of the things to be studied.

Sources and Methods of Data Collection

The data used in this study is secondary data, which is a source that does not directly provide data to data collectors. Secondary data used in this study is sourced from Bank BJB's financial report data for the period 2015 - 2024 which is obtained through the official website, www.bankbjb.co.id.

The method of data collection is very important in research because it aims to obtain data. Data collection is done using literature and documentation methods. Literature study is a data collection from various sources in the form of notes, books and journals. While data collection with documentation in this study was obtained using Bank BJB's financial statements for the period 2015 - 2024 through the official website www.bankbjb.co.id.

Descriptive Analysis

Descriptive data analysis is carried out to provide an overview of the data characteristics of each research variable. Statistical measures used in descriptive analysis include minimum, maximum, average (mean), and standard deviation values. This analysis aims to determine the tendency of the data used, as well as to see the distribution of values on each variable before further inferential analysis is carried out.

Stationarity Test

Stationarity testing is a crucial step in time series data analysis, as many statistical models assume that the properties of the data (such as mean and variance) do not change over time (Mushtaq, R., 2011). The Augmented Dickey-Fuller (ADF) test is one of the most widely used methods to check whether a time series is stationary or has unit roots (non-stationary).

Stationarity means that the statistical properties of a time series (mean, variance, autocorrelation) remain constant over time. Non-stationary data can lead to misleading or incorrect results in modeling and forecasting. According to Schlitzer (1996), stationarity tests are used to determine whether a time series is stationary or not. Commonly used tests include Dickey-Fuller test, Augmented Dickey-Fuller (ADF) test, and KPSS test. However, in this study, the test used is the ADF test.

The ADF test is an extension of the Dickey-Fuller test, which is designed to check for unit roots in time series, indicating non-stationarity (Steffen, J., 2014). The test works by estimating whether the series can be represented as a random walk (nonstationary) or a return to the mean (stationary). The "augmented" part refers to the inclusion of lagged variable differences to account for higher-order autocorrelation, making this test more robust to real-world data.

The hypothesis tested in the ADF test following Guo, Z. (2023) can be written as follows:

H₀: The data contains a unit root or in other words the data is not stationary

H₁: Data does not contain a unit root or in other words the data is stationary

A unit root indicates that the time series is nonstationary and that shocks to the system have a lasting impact. Detecting the unit root is essential for proper time series modeling and avoiding misleading statistical conclusions (Zuo, X. 2019).

Regression Analysis with Moderation

Regression analysis with moderation is used to test whether the moderating variable (Z) affects or strengthens / weakens the relationship between the independent variables (X₁ and X₂) on the dependent variable (Y).

The moderation regression model used in this study is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Z + \beta_4 (X_1 \times Z) + \beta_5 (X_2 \times Z) + \varepsilon$$

Where:

Y : Dependent variable

X : Independent variable

Z : Moderating variable

β : Regression coefficient

ε : *Error*

(Partial) t-test

The t-test is an inferential statistic used to determine whether there is a significant difference between the means of two groups and how they are related. The t-test for statistical hypothesis testing uses t-statistics, t-distribution values and degrees of freedom to determine the significance of each variable studied. The t-statistic test uses software called SmartPls and can use Bootstrapping so that the Path Coefficient will be obtained. Partial hypothesis testing uses the t formula which is explained as follows (Sugiyono, 2019):

$$t = \sqrt{\frac{n - (k + 1)}{1 - r^2}}$$

Where:

n = Number of samples

r = Partial correlation value

k = Number of independent variables

RESULT AND DISCUSSION

Data Description

The data used in the study is secondary data in the form of ratios of 120 observations from 2015 to 2024 (Appendix 1). The variables used in this study include Lending (LDR) and Capital Adequacy (CAR) as independent variables, Profitability (ROA) as the dependent variable, and

Credit Risk (NPL) as a moderating variable. Descriptive analysis of the data shows the results according to Table 1.

Tabel 1. Descriptive Analysis

Variable	Minimum	Maximum	Mean	Standard Deviation
ROA (Y)	0,00744	0,02702	0,01724	0,00461
NPL (Z)	0,01073	0,04477	0,01818	0,00772
LDR (X ₁)	0,64578	0,9607	0,83806	0,06101
CAR (X ₂)	0,1443	0,2114	0,17767	0,01419
Z1 (NPL x LDR)	0,01	0,04	0,015	0,00544
Z2 (NPL x CAR)	0	0,01	0,0032	0,0012

Source: Processed secondary data from Bank BJB Annual Reports (2015–2024)

From Table 1, the value of Return on Assets/profitability (ROA) as the dependent variable shows an average of 0.01724 with a range of values between 0.00744 to 0.02702, indicating a relatively stable level of bank profitability in the research sample. Credit risk as measured by Non-Performing Loan (NPL) has an average of 0.01818 with a minimum value of 0.01073 and a maximum of 0.04477, indicating a significant variation in credit quality between banks. For the independent variable, Loan to Deposit Ratio (LDR) recorded an average of 0.83806 with a wide range from 0.64578 to 0.9607, illustrating the relatively large differences in lending policies among the banks studied. Capital Adequacy Ratio (CAR) as an indicator of capital adequacy has an average of 0.17767 with a narrower range of values between 0.1443 to 0.2114, showing capital stability at an adequate level. While the interaction variables as a form of moderation, namely NPL multiplied by LDR (Z1) and NPL multiplied by CAR (Z2), show a small average value and limited variation, with Z1 ranging from 0.01 to 0.04 and Z2 between 0 to 0.01. This indicates that the moderating effect of credit risk on the relationship between lending and capital adequacy with profitability tends to be in the range of relatively small values, which will be further analyzed in the regression test.

Stationerity Test

The data stationarity test was conducted using the Augmented Dickey-Fuller test method. As stated earlier, this test assumes that the average and variance of the data do not change over time. In this study, it means that the assumption that must be achieved is that the average value and variance of the data do not change in the time span from 2015 - 2024. The test criteria for the ADF test is if the p-value obtained is less than 0.05, it can be stated that the data is stationary. Conversely, if the p-value obtained is greater than 0.05, it is stated that the data is non-stationary. The results of the ADF test calculation can be seen in the table:

Tabel 2. Stationerity Test

Variable	Statistics Value	p-value
Y	-6,2055	0,000

Variable	Statistics Value	p-value
Z	-7,1722	0,000
X1	-5,4503	0,000
X2	-3,4961	0,04561

Source: Processed research data using ADF test results

Based on table 2, the results of the calculations that have been carried out for the stationarity test show that the p-value for variables Y, Z, X1, and X2 are 0.000, 0.000, 0.000, and 0.04561, respectively. Based on the results obtained, all test results for each variable have a p-value of less than 0.05. This means that the data in this study both from variables Y, Z, X1, and also X2 are all stationary data.

Linear Regression Analysis Without Moderation Variable

At this stage, linear regression analysis is conducted to determine the effect of the independent variables, namely Lending (LDR) and Capital Adequacy (CAR) on the dependent variable, namely Profitability (ROA), without involving moderation variables. This analysis aims to see the extent to which LDR and CAR directly affect bank profitability. The results of this analysis are the basis for understanding the basic relationship between variables before considering the moderating role of Credit Risk (NPL) in subsequent tests. The results of the analysis are shown in Tables 3.

Table 3. Linear Regression Analysis Without Moderation Variables

Model	Coefficient	t-value	p-value
Constant	0,084	0,948	0,345
LDR (X ₁)	-0,044	-0,444	0,658
CAR (X ₂)	-0,469	-5,023	0,000*
NPL (Z)	0,284	2,278	0,025*

Source: Processed research data from regression analysis results.

Based on Table 3, the partial regression analysis results show the effect of each independent variable on profitability (ROA). The CAR (Capital Adequacy) variable has a negative coefficient of -0.469 with a p-value of 0.000, which means it is significant at the 5% level. This means that partially CAR has a negative and significant effect on profitability. Where, the higher the CAR, the profitability tends to decrease. Similarly, the NPL (Credit Risk) variable has a positive coefficient of 0.284 with a p-value of 0.025, also significant at the 5% level. This indicates that NPL has a positive and significant effect on profitability. Meanwhile, the LDR (Loan Disbursement) variable has a coefficient of -0.044 and a p-value of 0.658, which is far above 0.05. This indicates that partially, LDR has no significant effect on profitability. Thus, in this model only CAR and NPL have a significant effect on profitability, while LDR has no significant effect. Based on the test results, the R² value is 0.318, which means that about 31.8% of the variation in profitability (ROA) can be explained by the variables of Lending (LDR) and Capital Adequacy

(CAR) in the model. While the remaining 68.2% is influenced by other factors outside the model or variables that have not been included in this study. This R² value indicates that the model has sufficient explanatory ability, but there is still room to include other variables in order to improve the accuracy of predicting profitability. This evaluation is also supported by a significant F test, so the regression model is statistically acceptable as a representation of the relationship between these variables.

Linear Regression Analysis With Moderation Variable

After knowing the direct effect of the variables of Lending (LDR) and Capital Adequacy (CAR) on Profitability (ROA), the next stage is to conduct a moderation test. This moderation test aims to test the role of the Credit Risk (NPL) variable as a moderating variable that is thought to strengthen or weaken the effect of LDR and CAR on profitability. In other words, this test will see whether the level of credit risk reflected in NPL affects the relationship between the independent variable and the dependent variable. The results of the moderation analysis are shown in Table 4.

Table 4. Moderation Analysis

Model	Coefficient	t-value	p-value
NPL × LDR	0,199	1,870	0,064
NPL × CAR	-0,045	-0,358	0,721

Source: Processed research data from moderation analysis results

Based on the moderation analysis results in Table 4, the interaction between NPL and LDR shows a positive coefficient of 0.199 with a p-value of 0.064. Although the p-value is slightly above the significance limit of 0.05, this indicates a tendency that NPL can strengthen the relationship between LDR and profitability, although the effect cannot be said to be statistically significant at the 5% level. Meanwhile, the interaction between NPL and CAR has a negative coefficient of -0.045 with a p-value of 0.721, which indicates that the moderating effect of NPL on the relationship between CAR and profitability tends to be weak and insignificant. Thus, it can be concluded that the credit risk variable (NPL) does not act as a significant moderating variable in influencing the relationship between lending (LDR) and capital adequacy (CAR) to bank profitability in this model.

The data analysis of this study shows a fairly comprehensive picture of the relationship between Lending (LDR), Capital Adequacy (CAR), Credit Risk (NPL), and Profitability (ROA) in banks during the period 2015-2024. From the descriptive analysis, it can be seen that the variables studied have different variations and levels of stability, with ROA and CAR being relatively stable, while LDR and NPL show wider variations. This reflects the reasonable dynamics in credit activities and risks experienced by the banks in the study sample.

The regression assumption tests conducted ensure that the data meets the requirements of classical linear regression analysis. The normality test shows that the data is normally distributed, there is no multicollinearity problem between independent and moderation variables, and no heteroscedasticity is found that can interfere with the validity of the model. Although there are

indications of positive autocorrelation, this is quite common in time series data and does not reduce the value of interpreting the relationship between variables.

Simultaneous regression analysis confirmed that the variables of Lending and Capital Adequacy together have a significant effect on bank profitability. However, partial testing revealed more specific results, where only CAR and NPL have a significant influence on ROA. CAR shows a significant negative relationship with profitability, indicating that too large an increase in capital might depress bank profits as the capital is not optimized for productive activities. In contrast, NPL has a significant positive effect on profitability, which may indicate that in the context of this study, well-managed credit risk may encourage efficiency and risk management which has a positive impact on profits. Lending (LDR) showed no significant effect, which may indicate that the variation in lending over the period was not strong enough to affect profitability directly.

Evaluation of the model with a coefficient of determination (R^2) value of 0.318 indicates that the independent variables are able to explain about 31.8% of the variation in profitability, which indicates this model has sufficient explanatory power but there is still room to include other variables that can enrich the understanding of the factors that affect profitability.

The moderation test conducted to see the role of credit risk (NPL) as a moderating variable on the effect of LDR and CAR on ROA shows insignificant results. The interaction of NPL with LDR has a positive coefficient with a p-value close to the significance limit, indicating a tendency that credit risk can strengthen the relationship between lending and profitability, although this effect cannot be statistically confirmed at the 5% level. Meanwhile, the interaction of NPL with CAR does not show a significant moderating effect. This indicates that in the context of the model and data used, credit risk cannot be confirmed as a variable that significantly changes the relationship between capital adequacy and lending and profitability.

Overall, the results confirm the importance of efficient capital management and credit risk management in maintaining bank profitability. Lending, although important, does not necessarily affect profit directly without considering credit quality and capital structure. Therefore, banks need to continue to closely monitor and manage credit risk and maintain optimal capital adequacy in order to sustainably improve financial performance. Meanwhile, the moderating role of NPL that has not been significant opens up opportunities for further research with other variable approaches or broader data to explore the dynamics of this relationship in more depth.

CONCLUSION

Based on the results of research on the effect of Lending (LDR) and Capital Adequacy (CAR) on Profitability (ROA) with Credit Risk (NPL) as a moderating variable in banks during the period 2015 – 2024 can conclude that simultaneously, Lending (LDR) and Capital Adequacy (CAR) have a significant effect on bank profitability. The regression model built is able to explain about 31.8% of variations in profitability. Partially, Capital Adequacy (CAR) has a negative and significant effect on profitability, which indicates that an increase in capital adequacy tends to reduce the level of bank profitability. Meanwhile, Lending (LDR) has no significant partial effect on profitability. Credit Risk (NPL) has a positive and significant effect on profitability, which

indicates that changes in credit risk also affect bank performance. The moderation test shows that Credit Risk (NPL) does not act as a significant moderating variable in influencing the relationship between Lending (LDR) and Capital Adequacy (CAR) on bank profitability. Although there is an indication of a moderating trend in the interaction of NPL and LDR, the effect is not statistically significant.

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