

THE EFFECT OF PROFITABILITY, INCOME DIVERSIFICATION, BANK CAPITAL, BANK EFFICIENCY ON NON-PERFORMING LOAN IN THE BANKING SECTOR COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE 2021-2023

Yola¹, Elsa Imelda^{2*}

^{1,2} Faculty of Economy and Business, Universitas Tarumanagara, Jakarta, Indonesia
Email: elsai@fe.untar.ac.id

*Corresponding Author

Submitted: 09-02-2025, Revised: 13-03-2025, Accepted: 26-04-2025

ABSTRACT

The stability of the banking sector acts as key factor in maintaining the sustainability of the financial system, bank's operating income will be greater if many customers pay loans and interest, but it will be problem if borrower cannot return the credit. This study aims to determine the effect of profitability, income diversification, bank capital, and bank efficiency on NPLs banking companies listed on the IDX 2021-2023. Total sample obtained was 30 samples of banking companies. This test uses multiple linear regression based on panel data using Eviews 12 software. The results of this study indicate the variables that have significant effect on NPL are profitability negatively and bank efficiency positively. Bank capital and income diversification variables have an insignificant relationship with NPLs. Based on the results of this study, it's expected the company can maintain good level of profitability so that it can defend from NPLs, the company suggested to maintain the level of capital owned, carry out cost management efficiency considerably, besides that banks also advised to have other sources income as a form of diversification and not depend on one source while using careful evaluation therefore not create NPL risks. In addition, the purpose of this study also to prove influence factors that contribute to NPLs to be more consistent and expected to contribute to all academics as well practitioners regarding the results affecting NPLs and used as basis for research and banks in implementing more effective management strategies so that national financial health could maintained.

Keywords: *Non performing loan, profitability, income diversification, bank capital, bank efficiency*

1. INTRODUCTION

In the middle of global economic dynamics, the stability of the banking sector is one of the key factors in maintaining the sustainability of the financial system. In practice, to maintain regulation over international banks, a global regulation was created, once known as the Basel regulation issued by BCBS. The Basel I regulations were introduced in 1988 to address the erosion of banking capital standards amid increasing international credit risk. It emphasized the importance of capital adequacy ratios proportionate to the risks that banks bear, with the primary objective of maintaining the stability of the global banking system. Further developments came with Basel II in 2004, but the 2007-2009 global financial crisis revealed existing banking weak points, which led to the introduction of Basel III in 2010. Basel III emphasizes on improving the quality of capital, the application of leverage ratios, and liquidity requirements to deal with difficult financial situations. The ultimate goal is to strengthen the resilience of banks in the face of market uncertainty. Playing such a crucial role, banks are subject to more stringent regulations than other industries. Banking regulations in Indonesia are created and supervised by the Financial Services Authority and Bank Indonesia to ensure that all financial institutions operate in a healthy, transparent manner that protects the interests of all parties. As a crucial intermediary financial institution, There is no denying that the banking sector is a fundamental component of the economy, and its performance is instrumental in encouraging investment and fostering economic growth

(Menicucci and Paolucci, 2021). Bank capital is a crucial component that is assessed when a bank is operating and reflected in various financials as a result of the performance of the annual and quarterly financial statements published. Capital is considered to be sufficient to operate so that the process of financial transactions in its operations can be guaranteed and resistant to various kinds of risks that may have to be faced. Bank capital will increase from its operating activities, the main activities and operating income of the bank can be seen from interest, namely interest received on loans made to customers and interest paid on deposits entrusted to the bank.

The bank's operating income will be greater if many customers pay loans and interest, but it will be a problem if the borrower cannot repay the loan that has been given. Bad debts will arise for the bank, and the greater the bad debts, the lower the bank's income and operations. According to prior research, the significant growth in non-performing loans is one of the primary causes of the banking crisis (Khan et al, 2020). The heightened demand for loans and the banks' willingness to take on greater risks to meet this demand increases the chances of loans turning into non-performing loans (Erdas & Ezanoglu, 2022). One example of a bad credit case can be seen in 2023, Bank OCBC NISP sued and confiscated collateral for loans given to PT HIS because it could not pay its credit of Rp 232 billion and which was not physical in the amount of Rp 1 trillion which resulted in an increase in the NPL ratio owned by OCBC NISP and the bank's rating based on credibility at BI also decreased. If traced deeper, in 2018 quoted from CNBC Indonesia reported a bad credit case involving the Tirta Amarta company, causing losses to the state of Rp 1.83 trillion because it could not repay the loans that had been given and after being traced it was caused by irregularities in the purchase of credit facilities.

Therefore, lending is crucial for banks because it will ensure their operational activities. The results of a bank's lending performance can be reflected in the financial ratio of Non-Performing Loan (NPL) or bad debts. This ratio is often used as a determinant in assessing how many loans are problematic against all loans granted, so the greater this ratio tends to be more risky for the bank. The IMF (International Monetary Fund) states that a loan is categorized as NPL if it does not generate interest and principal payments within a minimum of 90 days and Hazen (2001, as cited Khan et al, 2020) states that a loan can be considered an NPL if principal and interest payments are not paid when due and there is no hope of payment in the future. The level of NPLs is one of the key indicators that illustrate the quality of a bank's active structure. (Kabatas & Karamustafa, 2019:2 as cited Erdas & Ezanoglu, 2022). Financial institutions that businesses functioning steadily in a favorable market and enjoying strong economic growth usually exhibit low NPL ratios. On the contrary, businesses that exhibit poor efficiency ratios and operate in markets with low competition show a tendency to have high NPL levels (Ferreira, 2022). Non-performing loans can occur due to a variety of factors involving both the lender and the borrower. Ensuring that banks have sufficient liquidity reserves can help banks better manage their cash flows and prevent liquidity crises that could worsen the impact of non-performing loans.

The NPL situations in Indonesia are evident from the decline in the middle-class economy, according to data from the Central Statistics Agency (BPS) which recorded an increase in the population in the lower economic group to 24.23% by 2024. This situation has an impact on slowing down the growth of savings in the lower middle class while the number of customers from the upper class has increased significantly. The decline in purchasing power causes people to focus more on using their savings to fulfill their daily needs, which in turn can lead to non-performing loans (NPLs). This condition is exacerbated by political uncertainty ahead

of the simultaneous regional head elections and the transition process of the new government. According to OJK, Indonesia's NPL ratio rose to 2.35% in 2024, up from 2.19% in December 2023. A similar rise occurred in the property sector, where Bank Indonesia reported that the sector's NPLs reached 2.68% in July 2024.

Agency theory deals with the contractual relationship between principals (superiors) and agents (subordinates) and the problems that arise due to differences in interests and information asymmetry between them (Jensen & Meckling, 1976). The relationship between principals and agents in the banking context is influenced by the regulator Bank Indonesia. Looking at the complexity of the capital structure owned by banks creates at least 3 agency relationships that can lead to information asymmetry, namely the interaction between depositors, banks, and regulators; the relationship between owners, managers, and regulators; and the relationship between borrowers, managers, and regulators (Aji, 2022). In this context, control in the banking sector not only involves principals, but also involves creditors or depositors. In the banking context, ineffective information management can lead to increased credit risk. When banks do not have an adequate understanding of the borrower's risk profile, this can result in less informed decisions in lending, which in turn increases the number of non-performing loans (Laryea et al, 2016). The concept of credit risk theory was first laid by Robert Merton in 1974 through his theory of the default model which is the basis of credit risk (Folajimi & Dare, 2020). The main driver of credit risk is default risk, which arises when the counterparty neglects to fulfill its contractual duties. This risk will be borne by the lender and can include the loss of principal and interest.

NPLs or non-performing loans are non-current loans ranging from substandard to bad debts (Royani et al, 2023: 8). NPL is a metric that evaluates the proportion of non-performing loans against overall debt. Banks must conduct a thorough and accurate analysis of each credit application from prospective debtors. A significant amount of non-performing loans harms the banking sector because it illustrates the high risk of default. This risk causes an increase in borrowing costs and reduces the bank's expected profit. This means a high level of non-performing loans signals elevated default risk in the banking sector, leading to higher borrowing costs and lower anticipated profits for banks. This ultimately affects their stability and growth potential. This study uses the dependent variable NPL with independent variables consisting of profitability, income diversification, bank capital, and bank efficiency.

Profitability is a ratio of assessment or comparison of proficiency in generating profits from sales, assets, and equity based on defined measurements (Fitriana, 2024: 45). The Return on Asset ratio measures the return on assets used in the company (Fitriana, 2024: 47). Several studies show that profitability as measured by ROA has a negative relationship with NPL (Kartikasary et al, 2020; Prawira et al, 2020; Ahmed et al, 2021). Banks with high profitability tend to avoid risky investments so that the higher the profitability, the lower the potential for non-performing loans (NPLs). Conversely, an increase in NPLs can reduce the quality of bank assets, reduce profits, and increase liquidity risks that disrupt the stability of bank operations. So based on this statement, a hypothesis is formulated:

H₁: Profitability has a significant negative relationship with NPLs. (See Figure 1)

Income diversification is intended as a source of income received by the bank will have two income components, namely interest income and non-interest income (Le et al, 2022). Salas et al. (2024) in their findings showed that diversification has no significant effect on NPL. This result is congruent with research by Khan et al. (2020) who identified a negative but insignificant interaction between income diversification and NPLs. On the other hand,

Ahmed et al. (2021) showed a positive relationship between diversification and NPLs which shows a different perspective. Banks that have diverse sources of income tend to be less selective in lending. This happens because the bank becomes less dependent on loan income, the bank may be trapped in a situation where risk management of the loan portfolio becomes less stringent, increasing the possibility of bad debts. So based on this statement, a hypothesis is formulated:

H₂: Income diversification has a significant positive relationship with NPLs. (See Figure 1)

Bank capital shows the organization's ability to survive in the face of unexpected losses, demonstrating the organization's strength and stability during crises (Khan et al, 2020). The level of bank risk aversion is measured through Equity to total assets which reflects how much the bank tends to avoid risk (Bhowmik & Sarker, 2024). Research by Kartikasary et al. (2020) shows that increasing capital can reduce NPLs, indicating that banks with adequate capital have a better ability to bear risk. However, this finding contradicts the opinion of Ayaydin et al. (2021) which states that an increase in equity has a significant impact on increasing the NPL ratio. Banks that have a high level of capital tend to make the lending process easier because they believe that the loan will not lead to bankruptcy. Strong capital will be believed to be resilient in the face of loans that may fail to be paid, thus raising the possibility of NPLs in the future. So based on this statement, a hypothesis is formulated:

H₃: Bank capital has a significant positive relationship with NPLs. (See Figure 1)

Operational efficiency can be measured in a ratio comparing the value of non-interest expense to non-interest income, where the greater the result of this ratio, the lower the level of efficiency. Bank efficiency is a cost function that assumes that banks increase revenue or vice versa, but not only focuses on increasing revenue but also how to reduce costs at all levels of output (Khan et al, 2020). The link between bank efficiency and NPL has been addressed in numerous studies where Khan et al. (2020) stated that efficiency has a negative impact on NPLs. The empirical study of Boussaada et al. (2020) emphasized that internal factors such as liquidity, capital regulation, profitability, inefficiency, and income diversification significantly affect NPLs. However, research by Prawira et al. (2020) provides different results, namely that bank efficiency actually has a positive influence on NPLs. Banks that focus on short-term cost efficiency are at risk of facing credit management problems due to budget reductions for the approval and supervision process, which can reduce the quality of loan risk evaluation and increase the sum of NPLs. Conversely, if a bank has a high cost expenditure to ensure strict supervision of loans, it tends to have a low NPL ratio. So based on this statement, a hypothesis is formulated:

H₄: Bank efficiency indicators have a significant positive relationship with NPLs. (See Figure 1)

The theoretical framework describing the research relationship regarding how profitability, income diversification, bank capital, and bank efficiency affect NPLs displayed as follows:

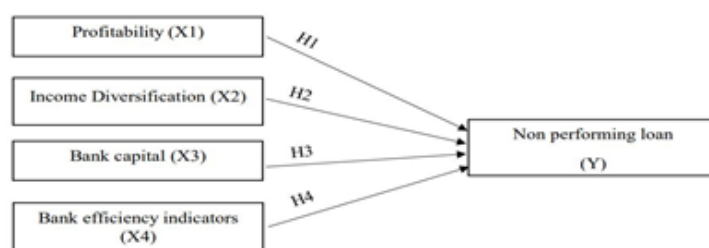


Figure 1. Research Framework

2. RESEARCH METHOD

This investigation was conducted within banking companies listed on the Indonesia Stock Exchange by taking samples in 2021-2023. The technique used is purposive sampling and data processing using Eviews 12 software. In this study, the criteria set in selecting samples are as follows (1) Banking sector companies listed on the IDX, (2) Banking sector companies that have IPO on the IDX before 2021, (3) Banking companies that publish financial reports in IDR currency consistently from 2021 - 2023.

This study uses the dependent variable non-performing loans and independent variables including ROA, income diversification, bank capital, and bank efficiency. This study is also carried out with model tests and classical assumption test evaluations which include normality, heteroscedasticity, multicollinearity and autocorrelation tests. The variables' operationalization is detailed in the following table:

Table 1. Summary Operationalization of Variable.

Variable	Indicator	Scale
Non Performing Loan	Non Performing Loan/ Total Loan	Ratio
Profitability	Net Income/ Total Assets	Ratio
Income Diversification	Non Interest Income/ Total Income	Ratio
Bank Capital	Total Equity/ Total Assets	Ratio
Bank Efficiency Indicator	Non Interest Expense/ Non Interest Income	Ratio

3. RESULTS AND DISCUSSIONS

Descriptive Statistics

Table 2. Descriptive statistics
 Source: Generated from Eviews 12

	NPL	ROA	DIV	CAP	EF
Mean	0.024594	0.012846	0.122476	0.224610	7.015901
Median	0.026050	0.010979	0.110484	0.168505	3.627221
Maximum	0.047000	0.041398	0.312297	0.925082	80.17217
Minimum	0.000100	-0.020895	0.002903	0.057565	0.793721
Std. Dev.	0.011362	0.010860	0.078230	0.164584	10.89287

Based on the descriptive statistical results in table 2, NPLs have a lowest value ranging from 0.000100 owned by BBHI in 2022 to a maximum of 0.047000 owned by MAYA in 2022. The average value of the non-performing loan variable is 0.024594, indicating that overall, the companies analyzed have relatively low cases of NPLs. The amount standard deviation of NPL is 0.011362 which states that the spread of data around the average is relatively small.

Profitability as measured by ROA (Return on Assets) has a minimum value ranging from -0.020895 recorded by BCIC in 2021 to a maximum of 0.041398 achieved by BBHI in 2021. The mean value of the ROA variable is 0.012846, which shows that banking companies can convert 1.23% of their assets into profit. The value of the standard deviation of ROA is 0.010860, which denotes that the spread of data around the average is relatively small.

The income diversification variable attains its lowest point ranging from 0.002903 recorded by BBSI in 2023 with a maximum value of 0.312297 achieved by BBNI in 2022. The average income diversification of 0.122476 means that the companies analyzed as a whole

are diversified or have sources of income other than loan interest as much as 12.2% when compared to total income or in general banking companies still rely on interest income as the main source of income. The value of the standard deviation is 0.078230 which states that the spread of data around the average is relatively small.

Bank capital has a minimum value around 0.057565 owned by BBTN in 2021 and a maximum of 0.925082 owned by BBSI in 2022. The average bank capital is 0.224610 or banking companies as a whole have 22.46% equity compared to their total assets to support operational activities. The value of the standard deviation is 0.164584 which states that the spread of data around the average is relatively small.

The bank efficiency minimum value of the variable is observed around 0.793721 owned by BBHI in 2021 and a maximum value of 80.17217 owned by BBSI in 2023. The average bank efficiency is 7.015901 or almost all banks in this study have greater non-interest expense expenses when compared to income or bank efficiency is still low when viewed from the high expenditure of non-interest expenses. The value of the standard deviation is 10.89287, which implies that spread of data around the average is relatively large.

Normality testing is done with Jarque-Bera with a probability of 0.651800 or more than the 5% significance level so that the data is normally distributed. Each variable does not show any symptoms of multicollinearity as shown in table 3, with the value between variables less than 0.8 so it is concluded that there is no statistically significant association between the variables.

Table 3. Multicollinearity test
 Source: Generated from Eviews 12

	ROA	DIV	CAP	EF
ROA	1.000000	0.435804	0.236417	-0.084131
DIV	0.435804	1.000000	-0.348527	-0.532813
CAP	0.236417	-0.348527	1.000000	0.584586
EF	-0.084131	-0.532813	0.584586	1.000000

Heteroscedasticity test is done by looking at the probability value. Variable X1 is 0.1124 > 0.05, variable X2 is 0.5306 > 0.05, variable X3 is 0.9500 > 0.05, variable X4 is 0.9873 > 0.05, so there are no symptoms of heteroscedasticity. Subsequently, an autocorrelation test is performed with the Durbin-Watson test based on the table with the provisions if $DU < DW$ Stats < 4-DU, with the number of observation data 90 then $1.7508 < 1.774508 < 2.2492$, so it is evident that the data is free from autocorrelation.

The table below outlines the results of the hypothesis test and F-test. The model used in this study after the Chow test, Hausman test, and LM test is the random effect model (REM).

Table 4. Tests Results
 Source: Generated from Eviews 12

Variable	Coefficient	Std. Error	t-Statistik	Prob.
C	0.027347	0.003678	7.436403	0.0000
ROA	-0.571683	0.115249	-4.960413	0.0000
DIV	0.034982	0.018309	1.910643	0.0594
CAP	-0.015202	0.008767	-1.734022	0.0865
EF	0.000530	9.01E-05	5.884810	0.0000

Based on table 4, the correlation between the independent and dependent variables can be demonstrated in the regression equation as follows:

$$\text{NPL} = 0.027347 - 0.571683\text{ROA} + 0.034982\text{DIV} - 0.015202\text{CAP} + 0.000530\text{EF} + \mu$$

Based on the regression equation, the constant value of 0.027347 signifies that if the independent variables are omitted or equal to 0, the non-performing loan variable will be 0.027347. The outcomes of the multiple linear regression analysis between the variables and hypotheses are summarized in the following table:

Table 5. Regression analysis result

Source: processed by researcher

Hypothesis	Variable	Coefficient	t-Statistik	Sig.	Result
H ₁	ROA	-0.571683	-4.960413	0.0000	Accepted
H ₂	DIV	0.034982	1.910643	0.0594	Rejected
H ₃	CAP	-0.015202	-1.734022	0.0865	Rejected
H ₄	EF	0.000530	5.884810	0.0000	Accepted

Effect of Profitability on Non Performing Loan

Drawn from table 5, the profitability variable proxied by ROA measurement shows a constant worth of - 0.571683, hence imply that a one unit increase in the ROA variable will cause a decrease of 0.571683 units in NPL. Reviewing from the table, the p-value is less than the significance level of 0.05, so the relationship between profitability and NPL is significantly negative so that H₁ is accepted. Profitability reflects organization's aptitude for generating net income, which is an important measure of operational performance. In the context of banking, banks that succeed in achieving high net income show management capabilities that are not only measured by the amount of income but also the success of managing assets. Banks with high profitability tend to maintain strict standards in their ability to generate net income and thus are more cautious in giving confidence to potential borrowers. In other words, banks will not easily approve loan applications without rigorous evaluation especially in identifying high-risk borrowers. The bank's ability to maintain management performance with high profitability has a direct influence on risk management, especially in credit policy. Banks that are consistently profitable will be more assertive and careful in overseeing credit policies so that management performance does not decline so that it can meet the expectations of bank management, owners, and the public which in turn may attract customers with better credit profiles. This means that banks will implement strict procedures in evaluating credit risk for each approved loan so as to reduce overall credit risk.

This result supports research from (Prawira et al, 2020; Khan et al, 2020). Banks that have a high level of profitability prefer stable investment choices so that the higher the profitability, the lower the potential for non-performing loans (NPLs). This implies that profitability can negatively influence NPLs at any level, suggesting that banks' management should focus on increasing profitability to reduce NPLs. Increasing profitability means that banks must improve their sales performance and manage their assets more effectively. Increased profitability can be achieved by better revenue management. Banks must be able to implement strategies that can increase revenue such as product and service development. Theoretically, this finding supports the concept that a healthy bank with a high level of profitability can defend the bank from NPL risk. In addition, for analysts, profitability can be used as one of the consideration factors in assessing NPLs because of its significant effect.

Effect of Income Diversification on Non Performing Loan

Drawn from table 5, the income diversification has a constant value of 0.034982. This implies that a one unit increase in the income diversification variable will cause an increase of 0.034982 in the NPL unit. Based on the t-statistic results and significance in the table, the value of income diversification is 0.0594 or more than the significance level of 0.05 or 5%, so it consequently, it can be inferred that there is a positive and insignificant relationship between income diversification and NPL so that H_2 is rejected. Income diversification shows that banks will open sources of income other than credit such as commissions, securities transactions, and foreign exchange transactions, and others. This income diversification is done to optimize various other sources of income so as not to depend solely on credit income. If sources of income other than credit show productive and profitable results, the overall income of the bank will increase. However, the bank's focus and supervision of credit is neither reduced nor increased by diversification. The bank will continue to carry out credit policies and supervision with the same standards or maintain credit evaluation and supervision as before. Bank management must still perform its main duties in credit supervision and lending according to established policies. As the bank's income will increase, management will begin to see the bank's overall performance and not just from loans. In addition to focusing on other income, bank management must also continue to do its main job in providing bank credit. So that income diversification will make the bank's overall income increase but have no effect on non-performing loans which depend more on the credit policy provided and the probability of the debtor repaying the loan in the future.

The results of this study are in line with research (Salas et al, 2024) showing an insignificant relationship between income diversification and non-performing loans. Income diversification is a form of corporate strategy in adding sources of income other than credit, as additional income and reserves, this does not affect the bank's performance in maintaining the level of credit provided. This implies that income diversification has no effect on NPLs. Even though banks try to diversify their income to the maximum will not have an effect on reducing NPLs because the effect is insignificant, if banks want to reduce NPLs then bank's management should focus more on controlling credit policies that have a direct effect on screening the quality of borrowers and can guarantee that loans can be returned. Therefore, bank management and analysts should focus more on strengthening credit risk management and credit quality analysis rather than relying on income diversification to control NPLs.

Effect of Bank Capital on Non Performing Loan

According with table 5, a constant of - 0.015202 is shown by the bank capital variable, this means that each one unit increase in the bank capital variable will cause a decrease of 0.015202 in the NPL unit. Based on the value shown in the table, the value of bank capital is 0.0865 or more than the significance level of 0.05 so consequently, it can be inferred that the relationship between bank capital is negative and insignificant to NPL so that H_3 is rejected . The level of bank capital serves as a buffer to withstand the overall risk for bank activities, a high level of capital will reflect the certainty and readiness of the bank to face various risks as a whole so that the bank must remain stable even in uncertain financial conditions, in this case the risk that is considered is not only credit risk. Banks must be conscientious in making decisions and considering the repercussions on different stakeholders according to agency theory, so that banks can also use their capital for broader productive and investment purposes. Banks can use other reserve elements besides capital in anticipating credit risk according to the strategy set. Thus, a well-capitalized bank does not warrant close supervision or policy changes in the loan granting and underwriting process. Banks with high capital do

not always prioritize loan supervision because this capital is seen by management as an overall risk reserve and planned goal, so bank capital has no direct relationship to NPLs.

These results support research from Prawira et al (2020) and Stefano et al (2022) where bank capital has no significant and negative effect on NPLs. Bank capital is a sign of the resilience and health of the bank in supporting its overall operational activities. This implies that bank capital does not directly affect NPLs at all levels. The implication is that strong capital is desirable but it cannot control the level of NPLs in real terms. If the bank wants to maintain its credit quality or NPL ratio then maintaining the capital level is not the effective calculation, management can consider other factors that have a significant effect such as profitability. Strong capital can be used as a foundation in maintaining bank stability in its operations but does not guarantee that non-performing loans do not occur. Users of financial statements or analysts can use this to analyze the bank's financial statements against the NPL level at large to see the factors that contribute directly, other than bank capital.

Effect of Bank Efficiency Indicators on Non Performing Loan

According table 5, the bank efficiency variable presents a constant value of 0.000530 that implies that in every one unit increase in bank efficiency, it will have an impact on an increase of 0.000530 in NPL units. Based on the significance value in the table, the value of bank efficiency is less than the significance level of 0.05 consequently, it can be inferred that bank efficiency has a positive and significant relationship with NPL so that H_4 is accepted. Cost efficiency in banking is measured by the ratio between costs and revenues. All companies, especially banks, certainly strive to have a low efficiency ratio. A low efficiency ratio indicates that the bank can keep expenses relatively small compared to the income generated and can reflect good operating performance. This measurement can be an indicator for investors, regulators, and borrowers to assess the efficiency of bank operations and determine their trustworthiness. To achieve this goal, banks often seek to reduce short-term expenses that do not affect their immediate performance such as reducing underwriting costs or credit monitoring costs. This cost reduction is done by simplifying the credit evaluation and monitoring process, for example by relying on debtor reports without field verification or in-depth checks. At first, this approach may seem efficient and even beneficial to the bank as the high volume of loans disbursed may create a positive perception in the eyes of the public and enhance the bank's reputation. In the long run, however, this cost reduction may pose a major risk. Lack of adequate supervision of loans makes banks vulnerable to defaults when the loan matures due to loopholes for less viable debtors that are not detected at an early stage, resulting in an increased NPL ratio due to inappropriate cost efficiency.

These results support the research of Prawira et al (2020) in accordance with the skimping hypothesis that bank efficiency has a positive and significant relationship with NPL. This implies that bank efficiency indicators affect NPL levels. The implication for bank management may require more complex and careful calculations, in accordance with the skimping hypothesis if spending more in the underwriting process can control NPL levels. However, this may indicate an unfavorable NPL ratio or low efficiency figures. Therefore, bank management must be careful in implementing the strategy that wants to be done in reducing its burden, not in reducing underwriting but other costs that are considered less effective if done continuously where if the cost is stopped it is also not detrimental to the bank in the long term. Bank efficiency is a challenging thing so management must be careful and balanced with effective risk mitigation. This can be utilized by the management and stakeholders of the bank to ensure that in the effort of efficiency in the planning set, credit

quality is maintained. In addition, the effect of the independent variables simultaneously can be described in the following table:

Table 6. Statistic Results
 Table source: Generated from Eviews 12

Mean dependent var	0.008921	Adjusted R-squared	0.373864
S.D. dependent var	0.006661	S.E. of regression	0.005271
Sum squared resid	0.002362	F-statistik	14.28540
Durbin-Watson stat	1.774508	Prob(F-statistic)	0.000000

The results of this study are under the premise that all other variables are considered constant. The simultaneous significance test results shown in table 6 show that the probability value of F-statistics is 0.00000. This value is smaller than the significance level of 5%, which means that all explanatory variables, specially profitability, income diversification, bank capital, and bank efficiency indicators simultaneously have a significant effect pertaining to the value of banks listed on the IDX for the period 2021-2023. Then there is a test of the coefficient of determination which can be seen in the table for the adjusted R^2 number, from the regression model formed, it demonstrates that the independent variables included, namely profitability, income diversification, bank capital, and bank efficiency, are able to explain changes that occur in the NPL variable by 37.39% while the remaining 62.61% is conditioned by other variables.

4. CONCLUSIONS AND SUGGESTIONS

According to the analysis conducted, it can be consequently, it can be inferred that profitability as proxied by ROA shows a negative and significant relationship, income diversification has a positive and insignificant relationship, bank capital has a negative and insignificant relationship to NPL, while the last variable, which is bank efficiency shows positive and significant results on NPL. Considering these outcomes, it is suggested that banks increase their profitability through the right strategy to reduce NPLs. In addition, in diversifying income banks must remain cautious and ensure that credit risk remains well managed. Increasing bank capital remains important to strengthen financial stability, although its effect on NPL is not significant in this study but still shows a negative relationship. Meanwhile, operational efficiency must be balanced with adequate risk management to prevent NPLs from increasing. With these measures, it is expected that banks can minimize NPLs and enhance overall financial performance. This study is limited to data collected solely from banking companies listed on the IDX over a three-year period without analyzing long-term trends and primarily focuses on variables that are largely within the companies control. Additionally, this research relies exclusively on data published by the banks, which may present limitations in terms of completeness and accuracy. Aside from this, the results in adjusted R square that there are still other factors that contribute 62.61% in the variation of NPLs that have not been explained by this model. Subsequent research is encouraged to include other variables such as macroeconomic factors that may also affect NPLs combining with other variable or proxied could be used depend on economic situation in long term trends.

REFERENCES

- Ahmed, S., Majeed, M. E., Thalassinou, E., & Thalassinou, Y. (2021). The impact of bank specific and macro-economic factors on non-performing loans in the banking sector: Evidence from an emerging economy. *Journal of Risk and Financial Management*, 14(5), 217. DOI: <https://doi.org/10.3390/jrfm14050217>
- Aji, Sapto Bayu. (2022). LIKUIDITAS, KREDIT MACET DAN KINERJA KEUANGAN BPRS DI INDONESIA. *Measurement: Jurnal Akuntansi*, 16 (2), 189-200. DOI: <https://doi.org/10.33373/mja.v16i2.4731>
- Ayaydin, H., Pilatin, A., & Barut, A. (2021). MACROECONOMIC, FINANCIAL AND BANK-SPECIFIC DETERMINANTS OF NON-PERFORMING LOANS: THE CASE OF TURKEY. *International Journal of Economic and Administrative Studies*, 33, 1-24. DOI: <https://doi.org/10.18092/ulikidince.1013685>
- Bhowmik, P. K., & Sarker, N. (2024). Non-performing loans (NPLs) and non-performance: evidence from South Asian banks. *International Journal of Research in Business and Social Science* (2147-4478), 13(2), 197–206. DOI: <https://doi.org/10.20525/ijrbs.v13i2.3235>
- Bisnis.com. <https://finansial.bisnis.com/read/20230821/90/1686645/kasus-kredit-macet-ocbc-nisp-gugat-sita-jaminan-harta-bos-gudang-garam>, last accessed 2024/10/8
- Bisnis.com. <https://finansial.bisnis.com/read/20240314/90/1749044/rasio-kredit-macet-bank-awal-tahun-merangkak-naik-ada-apa>, last accessed 2024/10/19
- Boussaada R, Hakimi A, Karmani M. (2020). Is there a threshold effect in the liquidity risk–non-performing loans relation ship? A PSTR approach for MENA banks. *Int J Finance Econom* 27(2):1886–1898 V. DOI: <https://doi.org/10.1002/ijfe.2248>
- CNBC Indonesia. <https://www.cnbcindonesia.com/market/20240910162406-17-570698/alarm-kredit-macet-berbunyi-dipicu-hidup-kelas-menengah-makin-susah>, last accessed 2024/10/19
- CNBC Indonesia. <https://www.cnbcindonesia.com/news/20180521122305-4-15826/kasus-kredit-macet-tirta-amarta-negara-rugi-rp-183-t>, last accessed 2024/10/9
- Erdas, M. L., & Ezanoglu, Z. (2022). How do bank-specific factors impact non-performing loans: Evidence from G20 countries. *Journal of Central Banking Theory and Practice*, 11(2), 97–122. DOI: 10.2478/jcbtp-2022-0015
- Ferreira, C. (2022). Determinants of non-performing loans: A panel data approach. *International Advances in Economic Research*, 28, 133–153. DOI: <http://dx.doi.org/10.1007/s11294-022-09860-9>
- Fitriana, Aning. (2024). Analisis Laporan Keuangan. Banyumas: CV. Malik Rizki Amanah
- Folajimi, F. A., & Dare, Otolaiye. E. (2020). CREDIT RISK AND FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY OF DEPOSIT MONEY BANKS IN NIGERIA. *European journal of accounting, Auditing and finance research* 8 (2): 38-58. DOI: <https://doi.org/10.37745/ejafr/vol8.no2.pp38-58.2020>
- Jensen & Meckling. (1976). Theory of The Firm: Managerial Behavior and Ownership Structure. *Journal of Financial Economics*: 305-360. DOI: [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Khan, M. A., Siddique, A., & Sarwar, Z. (2020). Determinants of non-performing loans in the banking sector in developing state. *Asian Journal of Accounting Research*, 5(1), 135–145. DOI : <http://dx.doi.org/10.1108/AJAR-10-2019-0080>
- Kontan.co.id. <https://keuangan.kontan.co.id/news/duh-npl-perbankan-di-sektor-properti-mulai-naik>, last accessed 2024/10/10
- Kontan.co.id. <https://keuangan.kontan.co.id/news/hati-hati-kredit-macet-npl-properti-kembali-merangkak-naik>, last accessed 2024/10/19

- Kontan.co.id. <https://keuangan.kontan.co.id/news/rasio-kredit-macet-perbankan-mulai-melandai-di-juni-2024>, last accessed 2024/10/9
- Laryea, E., Ntow-Gyamfi, E., & Alu, A. A. (2016). Non-performing loans and bank profitability: evidence from an emerging market, African. DOI: <http://dx.doi.org/10.1108/AJEMS-07-2015-0088>
- Le, T., T, Nguyen, Q., A, Ngoc Vu, T., M, Phuong Do, M., & Tran, M., D. (2022). Impact of income diversification on the default risk of Vietnamese commercial banks in the context of the COVID-19 pandemic. *Cogent Business & Management*, 9:1, 2119679. DOI: <http://dx.doi.org/10.1080/23311975.2022.2119679>
- Menicucci E, Paolucci G. (2021). Gender diversity and bank risk-taking: an empirical investigation in Italy. *Corp Gov Int J Bus Soc* 22(2):317–339. DOI: 10.1108/CG-11-2020-0498S. DOI: <http://dx.doi.org/10.1108/CG-11-2020-0498>
- Merton, R.C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *Journal of Finance* 29: 449–470. DOI: <https://doi.org/10.2307/2978814>
- Prawira, R., Wiryono, S., K. (2020). Determinants of non-performing loans in state-owned banks. *Jurnal Akuntansi dan Auditing Indonesia* 24(2). DOI: <https://doi.org/10.20885/jaai.vol24.iss2.art9>
- Royani, E., Arifin, E. S., Fardiah, A. N., Wijaya, Y. C., & Ghazalba, M. Z. (2023). *Kupas Tuntas Restrukturisasi Kredit Macet*. Banyumas: Amerta Media.
- Salas, Mb., Lamothe, P., Delgado, E., Fernández-Miguélez, A. L., & Lucia Valcarce. (2024). Determinants of Nonperforming Loans: A Global Data Analysis. *Computational Economics*. DOI: <http://dx.doi.org/10.1007/s10614-023-10543-8>
- Saliba, C., Farmanesh, P., & Athari, S.A. (2023). Does country risk impact the banking sectors' non-performing loans? Evidence from BRICS emerging economies. *Financ Innov* 9, 86. DOI: 10.1186/s40854-023-00494-2
- Stefano, J., Dewi, S., P. (2022). Determinants of Non-Performing Loans: Banking Sector Listed in Indonesia Stock Exchange. *Jurnal Ekonomi, SPESIAL ISSUE* (119-138). DOI: <https://doi.org/10.24912/je.v27i03.869>