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DOES THE SIZE OF A BANK MODERATE THE RELATIONSHIP BETWEEN CKPN, BOPO, AND NPL TOWARD BANK FINANCIAL PERFORMANCE?

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Abstract: *This study aims to determine the effect of Allowance for Impairment Losses (CKPN), Operational Expenses (BOPO) and Non-Performing Loans (NPL) on Bank Performance with Bank Size as a moderating variable. The population of this research is financial services companies, banking subsectors listed on the Indonesia Stock Exchange (IDX) in 2019 and 2022. According to the purposive sampling method, the number of samples for this research is 35 banks, with a total of 140 data observations. The results of the analysis are that banking performance proxied by return on assets (ROA) will decrease if the CKPN, BOPO and NPL variables increase, CKPN has a significant negative effect on financial performance, BOPO has a significant negative effect on financial performance, NPL has a significant negative effect on financial performance, Bank Size weakens the relationship between CKPN and BOPO on financial performance and Bank Size cannot moderate the relationship between NPL and financial performance.*

Keywords: *Allowance for Impairment Losses, Company Size, Financial Performance, Non-Performing Loans, Operational Expenses*

INTRODUCTION

Amidst the current global economic circumstances, several major banks across the United States and Europe are facing a worrying crisis. The slowdown in global economic growth, coupled with persistent uncertainty, has led to the collapse of some of these banks. Factors such as the lingering effects of the post-Covid-19 pandemic, rising global inflation, and the ongoing conflict between Russia and Ukraine have contributed to this crisis. Additionally, the crypto market remains volatile. In Indonesia, banking actors are closely monitoring these developments. They are working to strengthen capital reserves and mitigate credit risks to ensure the continued health of the banking sector (Keuangan 2021). Based on Figure 1, it becomes evident that the early years of the Covid-19 pandemic (2020) had a significant impact on both global banks and Indonesian commercial banks. During this period, the Return on Assets (ROA) for these institutions hit its lowest point, reaching only 1.5%. However, a divergence in performance emerges in 2022: Indonesian commercial banks experience a notable recovery, with their ROA rising to 2.45%, while the World Bank's ROA declines to 1.69% compared to the previous year.

Financial performance serves as a crucial yardstick for evaluating a company's quality based on its ability to generate profits

(Effendi and Siahaan 2023 and Calvina and Istimawani 2021).

This assessment involves analyzing financial reports (Saifi 2019; Nurul Aisyah Rachmawati, Gani, and Rossieta 2017). Overall bank performance reflects the bank's achievements in managing various operational aspects, including finances, fund collection and distribution, marketing, technology, and human resources. Banks actively strive to accumulate funds from the public (Ponziani 2022 and Ananda 2022). The more funds a bank can amass, the greater its capacity to extend credit, resulting in increased interest income. Conversely, smaller fund collections lead to reduced credit provision and, consequently, lower bank income. An uptick in income derived from total assets owned by a bank provides insights into the bank's overall health and management prowess. Consequently, the research will focus on the banking subsector as an object of study. Its aim is to investigate the operational dynamics of financial performance within these companies and explore the factors that impact their overall effectiveness in the banking industry.

Several factors can influence the banking industry in achieving good financial performance. Allowance for Impairment Losses (CKPN) is one of the influencing factors. CKPN, based on PSAK 71, applies recording using the *Expected Credit Loss* (ECL) method by establishing reserves at the beginning of the period. CKPN will have a direct effect on the profit and loss recorded by the entity (Sibarani 2021). Another factor is Operational Expenses towards Operating Income (BOPO). The BOPO ratio is often called the efficiency ratio, where this ratio is used to measure bank management's ability to control operational expenses towards operational income. The smaller the BOPO value, the greater the possibility that the bank can increase its profits (Rachmandinur and Purwanto 2016).

Then another factor that influences bank financial performance is *Non-Performing Loans* (NPL). NPL is the risk of non-performing loans compared to total credit. NPL is a ratio used to measure the ability of bank management to manage non-performing loans provided by the bank. NPL reflects credit risk, the smaller the NPL, the smaller the credit risk covered by the bank. On the other hand, a high NPL will increase the costs of both providing reserves for productive assets with other costs that will potentially cause bank losses (Nurkhofifah, Rozak, and Apip 2019).

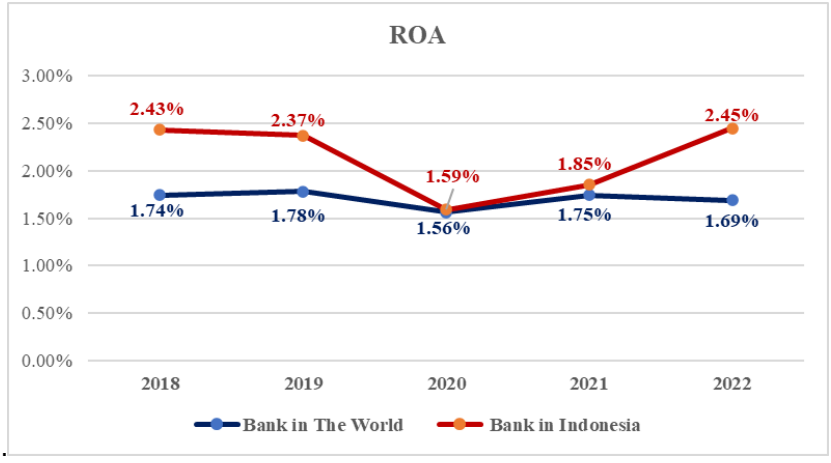

Figure 1. Performance of Commercial Banks and Banks in the World 2018–2022
Source: Financial Services Authority (OJK) data, ojk.go.id and Orbis Data (Bureau Van Dijk), bvdinfo.com (Data processed, 2023)

The size of a Bank is projected using total company assets (N. A. Rachmawati et al. 2019; 2022; N. A. Rachmawati and Martani 2017). In the theory of economies of scale, banks with large assets will have lower average operational expenses compared to banks with relatively small assets. This happens because banks are able to increase the amount of credit disbursed, which will reduce the average operational expenses and lead to decreasing the interest rate on loans provided by banks (Damayanti and Mawardi 2022).

Previous research to examine the correlation between CKPN and ROA found that CKPN failed to have a significant influence on ROA, while previous research showed that CKPN had a negative and significant relation to bank profitability (Kasanah, Abidillah, and Rusgianto 2022), and other research showed a negative relation but is not significant (Nurdiani et al. 2023).

The examination between BOPO and ROA correlation according to research by (Maryadi and Basuki 2014; Fajari and Sunarto 2017; Nusantara 2009) for go-public banks, (Ningsih and Dewi 2020; Damayanti and Mawardi 2022 and Martini 2022) show that there is a significant negative relation on ROA, (Prena and Nareswari 2022) show that there is a negative relation but not significant on ROA, and (Nusantara 2009) for banks that do not go-public failed to have a significant influence on ROA.

Testing the relationship between NPL and ROA according to the research results of (Maryadi and Basuki 2014; Nusantara 2009) for go-public banks, (Ningsih and Dewi 2020; Prena and Nareswari 2022; Damayanti and Mawardi 2022) shows a negative relationship significant on ROA (Dewi and Suryanawa 2018). (Widyadana, Marlina, and Mulyantini 2021) obtained an insignificant negative relationship on ROA, while (Fajari and Sunarto 2017) and (Martini 2022) showed a significant positive relationship on ROA. This is also different from the research results of (Nusantara 2009), for banks that did not go public; they failed to give a significant influence on ROA.

According to (Hasan, Manurung, and Usman 2020), their research strongly suggests that assets significantly moderate the relationship between BOPO and ROA. Assets, as a moderating variable, have a significant influence on bank profitability. (Olivia et al. 2022) state that simultaneously, bank size significantly moderates the influence of NPL and BOPO on ROA. (Wulandari and Rofiuddin 2022) in their research show that BOPO has a positive effect on profitability, and bank size as a moderating variable weakens the effect of BOPO on profitability.

The relationship between CKPN and ROA has moderated by the bank size. It has to be researched because CKPN is like two sides of a coin. CKPN is needed by banks to face the risk of impairment losses in the future, but on the other hand, budgeted CKPN has the opportunity to reduce the assets owned by the bank (Arindi and Mawardi 2017). From this point, researchers assume that the size of the bank, which is assessed from total assets, is needed as a moderating variable where the bank is expected to be able to manage the assets needed to obtain high profitability to anticipated credit risks in the bank.

The aim of this research is to analyze whether there is an impact of CKPN, BOPO and NPL on the financial performance of banks listed on the BEI and to analyze whether bank size has an effect on the relationship between CKPN, BOPO, and NPL towards financial performance of banks listed on the BEI.

The research gap is that this research includes a moderating variable in the form of bank size, which is measured based on the value of total assets. This moderating variable will impact the direct relationship between the independent variables in the form of CKPN, BOPO and NPL and the dependent variable in the form of ROA. This effect can weaken or strengthen the direct relation between the

independent variable and the dependent variable. This research also uses data from 2019 to 2022, which has not been carried out before, where in that year Indonesia experienced the COVID-19 pandemic, which affected the economic conditions of a country. There is an application of PSAK 71, which is an adoption of the Annual Improvements to IFRS 2018-2020 concerning Amendments to IFRS 9 Financial Instruments, which is effective January 1, 2020, with an earlier application permitted (2019).

Expected Income Theory or known as *the Anticipated Income Theory* is a theory that states that banks should provide long-term credit whose repayment, namely in the form of loan principal installments and interest, can be expected and scheduled in the future according to the time period that has been determined (Sarwendah 2013). This theory stated by HV Prochanov in 1044 is based on the practice of providing term loans by commercial banks in the United States. This theory stated that regardless of the nature and features of the borrower's business, banks plan the liquidity of term loans from the expected income from the loan. This theory encourages banks to be more aggressive in providing long-term credit and states that banks must be able to provide long-term credit and repay the loan principal along with loan interest that can be expected within a specified time period. The weakness of this theory is that it assumes that all loans can be collected according to the time scheduled without providing the possibility or risk of the debtor's failure to pay due to external and/or internal invoices.

Financial analysis is needed by various parties, such as shareholders or investors, creditors, and managers, because through this financial analysis they will know the related company's position compared to other companies in one industrial group. Profitability is the ability of a company to generate profits during a certain period. One way to measure profitability is to use the *return on assets* (ROA) ratio. ROA describes asset turnover measured by sales volume. ROA is a ratio that shows the results (return) on the use of company assets in creating net profit, so this ratio is an important ratio for the company because the greater the ROA, the more efficient the company is in using its assets to gain profits by utilizing its assets (Dangnga and Haeruddin 2018).

Based on Article 1 number 20 of the Financial Services Authority Regulation (POJK) number 40/POJK.03/2019 concerning Asset Quality Assessment for Commercial Banks, it is stated that CKPN is an allowance made for the decline in the value of financial instruments in accordance with accounting standards. *Allowance for Impairment Losses*, often referred to as CKPN, is a reserve created by banks to face the risk of loss if there is objective evidence that the debtor has failed to pay. If a bank does not have CKPN, then the bank is unable to anticipate the risk of loss (Fitriana and Arfianto 2015).

In measuring how much the efficiency and ability a bank has in carrying out its operational activities, banks usually compare operational expenses with operational income. This comparison in financial ratios is called BOPO or Operational Expenses towards Operational Income. The smaller this ratio means, the more efficient the operational expenses incurred by the bank concerned (Harun 2016). In BI Circular Letter No. 6/23/DPNP issued on May 31, 2004, it was stated that a good efficiency level ratio ranges from 94% to 96%.

Quoting the OCBC website (ocbc.id) in 2022, written by the OCBC NISP Editorial Team explains that *Non-Performing Loans* (NPL) are a problem in the loan payment process. Based on Article 2 paragraph (2) letter g, Bank Indonesia Regulation number 6/9/PBI/2004 concerning Follow-up Supervision and Determination of Bank Status, stated that one of the Bank indicators that is considered to have potential difficulties that could endanger its business continuity is a bank that has loans issued (NPL) on a net basis is more than 5% of total credit.

Bank size is a scale where the size of the company can be classified according to various ways, including total assets, log size, sales, market capitalization, etc. To identify the size of a bank, it can be seen from the total assets and resources owned by the company, large companies tend to have large assets and also have quality human resources (Waluyo, Basri, and Rusli 2015).

Research Framework

Based on Figure 2, it can be explained that the dependent variable in this research is *return on assets* (ROA), while the independent variables consist of Allowance for Impairment Losses (CKPN), Operational Expenses (BOPO) and *Non-Performing Loans* (NPL). The moderating variable in this research is Bank Size (SIZE).

Several factors can affect the banking industry in obtaining good financial performance. CKPN is one of the factors that affect it. There has been the implementation of the new Statement of Financial Accounting Standards (PSAK) 71 since January 2020 in credit reserves to anticipate debtors failing to pay credit installments using the *Expected Credit Loss* (ECL) method, which is reserved by banks at the beginning of the period. This makes the formation of reserves larger so that it will cause a decline in banking financial performance (ROA) because reserves are considered a burden. Research by (Nurdiani et al. 2023) shows that CKPN has a negative but not significant relationship to ROA, and research by (Kasanah, Abidillah, and Rusgianto 2022) shows that CKPN has a negative and significant relationship to bank profitability, so the author sets the first hypothesis of this research as follows: H_1: CKPN has a negative effect on financial performance.

A factor that can influence the banking industry in obtaining good financial performance is measuring Operational Expenses against Operating Income (BOPO). BOPO is used by banks to measure the extent to which management can manage its operational expenses in generating operational income. The smaller the BOPO value, the greater the possibilities that the bank can increase its profits. Research by (Nurdiani et al. 2023; Maryadi and Basuki 2014; Fajari and Sunarto 2017; Ningsih and Dewi 2020; Martini 2022; Olivia et al. 2022) shows that there is a significant negative relation on ROA, and (Prena and Nareswari 2022) show that there is a negative but not significant connection on ROA, so the authors set the second hypothesis of this study as follows: H_2: BOPO has a negative effect on financial performance. Another factor that influences bank financial performance is *Non-Performing Loans* (NPL).

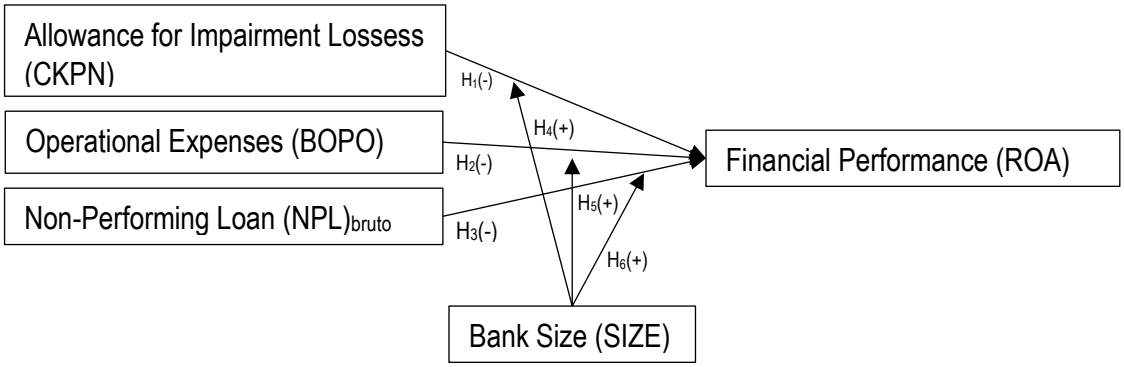

Figure 2. Research Framework

NPL is the risk of non-performing loans compared to total credit. NPL is a ratio used to measure the ability of bank management to manage problem loans provided by the bank. The occurrence of non-performing loans will have an impact on the income that should be obtained by banking companies, where income is the result of operational activities to gain profits. So the higher the NPL ratio will reflect that banks have not been able to manage their financial performance well because the company did not receive the income that should have been received. Research by (Maryadi and Basuki 2014; Ningsih and Dewi 2020; Prena and Nareswari 2022) shows a significant negative connection on ROA, (Dewi and Suryanawa 2018 and Widyadana, Marlina, and Mulyantini 2021) obtained an insignificant negative connection on ROA, so the authors determined the third hypothesis of this research as follows: H_3: NPL has a negative effect on financial performance.

In the theory of economies of scale, banks with large assets will have lower average operational expenses compared to banks with relatively small assets. This happens because banks can increase the amount of credit disbursed, which will reduce the average cost of operations they have and lead to a decrease in the interest rate on loans provided by banks.

Companies that have large total assets have good prospects in the future because they are stable in generating profits. In addition, companies that have a large amount of total assets have a bigger possibility than companies that have small assets to avoid the risk of default on the company's debts as a source of income that portrayed how large the company's activities are (Rochmah and Asyik 2015). According to (Hasan, Manurung, and Usman 2020), assets significantly moderate the connection between BOPO and ROA. (Olivia et al. 2022) stated that simultaneously bank size significantly moderates the effect of NPL and BOPO on ROA. (Wulandari and Rofiuddin 2022) in their research showed that BOPO has a positive effect on profitability and bank size as a moderating variable weakens the effect of BOPO on profitability. (Kasanah, Abidillah, and Rusgianto 2022) showed that CKPN has a negative and significant connection to bank profitability.

Low profitability causes banks to have to create reserves for losses due to increased credit risk. Based on this, banks must be able to maintain their performance by managing credit risk effectively and efficiently in forming reserve funds and distributing credit or financing. Large banks have the ability in terms of assets to manage their productive asset portfolios for their flexibility in managing their portfolios efficiently and optimally. The larger the size of the bank, the greater the business scope or market share controlled so that it can increase efficiency. Based on this, the author determined the fourth, fifth, and sixth hypotheses in this research as follows:

- H_4: Bank size weakens the effect of CKPN on financial performance;
- H_5: Bank size weakens the effect of BOPO on financial performance;
- H_6: Bank size weakens the effect of NPL on financial performance.

RESEARCH METHODS

Object of research

The author will research Financial Services Sector Companies with the Banking subsector listed on the Indonesia Stock Exchange in 2019-2022. The variables to be studied are CKPN, BOPO, and NPL towards financial performance (ROA), with bank size as a moderating variable.

Table 1. Sampling Results

No	Description	Amount
1.	Banks registered on the IDX in 2019-2022	47
2.	Banks not in the qualification	(2)
3.	Bank in the qualification	45
4.	Outliers	(10)
5.	Number of Banks as Samples for Data Processing	35
6.	Amount of Observation (4 years * number of banks)	140

The sampling technique in this research uses a *purposive sampling technique,* which is part of a non-*probability technique of sampling to* obtain samples that suit the research objectives. *Purposive sampling* is a technique for determining samples with certain considerations. The reason for selecting samples using *purposive sampling* is that not all of the samples have qualifications that match those specified by the author. The results of sampling based on population data are presented in Table 1.

Data analysis method

The data analysis method in this research uses Regression Analysis with Panel Data and Interaction Test, often called *Moderated Regression Analysis* (MRA). This research uses regression analysis with panel data because it uses *time series data,* for 4 years, from 2019 to 2022, and *cross-section data* where in this research are banking subsector companies found on the BEI with a sample of 35 bank companies with a total number of observations as many as 140 data.

To minimize bias, this study differentiates research models without using moderating variables (Equation I) and research models moderating variables (Equation II). Equation I is used to test H_1, H_2, and H_3, whereas the influence of the independent variable on the dependent variable can be known without any moderation effect that can strengthen or weaken the connection. Equation II is used to test H_4, H_5, and H_6, whereas the influence of the independent variable on the dependent variable can be determined by the presence of a moderating effect, which can strengthen or weaken the connection. For this reason, the regression model used in this research is as follows:

Equation I

$$ROA_{it} = \alpha + \beta_1 CKPN_{it} + \beta_2 BOPO_{it} + \beta_3 NPL_{it} + e_{it}$$

Equation II

$$ROA_{it} = \alpha + \beta_1 CKPN_{it} + \beta_2 BOPO_{it} + \beta_3 NPL_{it} + \beta_4 SIZE_{it} + \beta_5 CKPN*SIZE_{it} + \beta_6 BOPO*SIZE_{it} + \beta_7 NPL*SIZE_{it} + e_{it}$$

Operational Definition of Variables

Operational Definition of Variables are presented in Table 2.

Table 2. Operational Definition of Variables

No	Variable	Variable Type	Operational definition	Formula	Scale
1.	Financial Performance (ROA)	Dependent	measured by the ROA Ratio	$ROA = \frac{net\ profit\ before\ tax}{total\ asset}$	Ratio
2.	Allowance for Impairment Losses (CKPN)	Independent	measured by CKPN on productive assets (based on Circular Letter OJK No.12/SEOJK.03/2021)	$CKPN = \frac{Allowance\ for\ Impairment\ losses}{Total\ Earning\ Assets}$	Ratio
3.	Operational Expenses (BOPO)	Independent	be measured with BOPO ratio (based on Circular Letter OJK No.12/ SEOJK.03 /2021)	$BOPO = \frac{Operational\ Costs}{Operational\ Incomes}$	Ratio
4.	*Non-Performing Loans* (NPL)	Independent	measured by the NPL ratio (based on BI Regulation No. 23/2/PBI/2021)	$NPL = \frac{Non\ Performing\ Loan}{Total\ Credit}$	Ratio
5.	Bank Size (SIZE)	Moderator	measured by the total value of assets). Bank size uses Ln Total Assets.	$SIZE = Ln\ Total\ Asset$	Natural Logs

RESULTS

Table 3. Descriptive Statistics

Variable	Number of Samples (n)	Mean	Standard Deviation	Minimum	Maximum
ROA	140	0.010	0.017	-0.058	0.047
CKPN	140	0.023	0.016	0,000	0.067
BOPO	140	0.871	0.280	0.134	2,092
NPLs	140	0.031	0.020	0,000	0.117
SIZE	140	13,814	0.721	12,403	15,299

Descriptive Statistics Results

Descriptive statistics were used in this research to determine a number of data (n) as variables used to show the results of the highest value (maximum), the lowest value (minimum), the average value (mean), and the standard deviation of each variable. The statistics for each variable studied are as follows:

From the results of Table 3, it was explained that the ROA variable has an average value of 0.010. This means that for every RP. 1.00 of total banking assets, you will get a profit before tax of RP. 0.01. The standard deviation value of ROA is 0.017, bigger than the average value of the ROA variable. The result indicates that the ROA data in this sample has high variations during the observation period. The lowest ROA value was -0.058, while the highest value was at Allo Bank at 0.047.

The CKPN variable has an average value of 0.023. This means that for every Rp.1.00 of productive banking assets, Rp.0.023 will be reserved as CKPN. The standard deviation value of CKPN is 0.016, smaller than

the average value of CKPN. This showed that the data variation in the CKPN variable is low, whereas the lowest CKPN value is 0.00 and the highest value is 0.067. The BOPO variable has an average BOPO ratio value of 0.870. This means that every Rp.1.00 in operational income generated by the bank is obtained using operational expenses of Rp.0.87. The BOPO standard deviation value is 0.280, smaller than the average BOPO value. It showed that the data variation in the BOPO variable is low during the observation period. The lowest BOPO value is 0.134 while the highest value is 2.093.

The NPL variable has an average value of 0.031. This means that for every Rp.1.00 of third-party credit distributed by the bank to debtors, there is a problem credit of Rp.0.031 or 3.1%. This figure also shows that the average bank registered on the IDX based on Bank Indonesia standards is in the healthy category, namely those with a gross NPL value below 5%. The NPL standard deviation value is 0.020, smaller than the average NPL value. It showed that the variation in NPL data is low during the observation period. The lowest value of NPL is 0.00 while the highest value is 0.117.

The moderating variable is bank size, which is measured using the natural logarithm of Total Assets (Ln Total Assets) (SIZE), has an average value of 13.814. The SIZE standard deviation value is 0.721, smaller than the average SIZE value. This shows that the variation in SIZE data is low during the observation period. The lowest value for SIZE is 12,403, while the highest value is 15,299. The distance between the average value of SIZE and the lowest value and the largest value is not too far, namely only a difference of around 1.4, thus illustrating that SIZE is in the same size category.

Correlation Analysis

The results of the correlation analysis are presented in Table 4. Based on Table 4, it is known that the independent variable CKPN has a correlation of -0.070 to the dependent variable ROA. This means s that the relation between the CKPN variable and the ROA variable is a negative connection, whereas if there is an increase of the CKPN value, it is followed by a decrease in the ROA value. This result is in line with the first hypothesis (H_1).

The independent variable BOPO has a correlation of -0.920 to the dependent variable ROA. This means that the relation between the BOPO variable and the ROA variable is a negative connection, whereas if there is an increase in the BOPO value, it is followed by a decrease in the ROA value. This result is in line with the second hypothesis (H_2).

The independent variable NPL has a correlation of -0.562 to the dependent variable ROA. This means that the relation between the NPL variable and the ROA variable is a negative connection, whereas if there is an increase in the NPL value, it is followed by a decrease in the ROA value. This result is in line with the third hypothesis (H_3).

In Table 5, the results of correlation analysis, apart from being used to show the correlation between independent variables and the dependent variable, are also used to test the connection between independent variables and detect multicollinearity problems. Table 5 shows that the correlation between independent variables is smaller than 0.8. This means that there is no multicollinearity problem.

Multicollinearity Test Results

Multicollinearity Test Results are presented in Table 5. Based on Table 5. The results of the multicollinearity-VIF test showed that the coefficient value between variables is less than 10. The results of the multicollinearity test show that there is no multicollinearity problem, in line with the results of the correction analysis in Table 5.

Heteroscedasticity Test Results

The results of heteroscedasticity testing (Breusch–Pagan/Cook–Weisberg test) of sample data are presented in Table 6. Based on

the test results, it is known that the p-value is 0.736, so the p-value is bigger than 0.05, so the null hypothesis is accepted, so that the model variance structure is homoscedastic or there is no heteroscedasticity problem.

Table 4. Correlation Analysis Results

	ROA	CKPN	BOPO	NPLs	SIZE
ROA	1,000				
CKPN	-0.070	1,000			
BOPO	-0.920	0.015	1,000		
NPLs	-0.562	0.425	0.483	1,000	
SIZE	0.391	0.562	-0.379	-0.137	1,000

Table 5. Multicollinearity Test Results – VIF

Variable	VIF	Tolerance (1/VIF)
CKPN	2.34	0.428
BOPO	1.50	0.473
NPLs	1.91	0.524
SIZE	2.11	0.667
Mean VIF	1.97	

Table 6. Heteroscedasticity Test Results

chi2	Prob > chi2
0.11	0.736

Table 7. Results of Regression Analysis with Panel Data and t Test without Moderating Variables

Amount Observation (Number of obs)					140
Amount Groups (Number of groups)					35
R-squared (overall)					0.835
F(3.102)					136.96
Prob > F					0,000
ROA	**Sign Prediction**	**Coefficient**	**Std. error**	**t**	**P>(t)**
CKPN	H_1 (-)	-0.172	0.060	-5.72	0.003
BOPO	H_2 (-)	-0.046	0.003	-33.38	0,000
NPLs	H_3 (-)	-0.070	0.037	-3.76	0.032
Constant		0.056	0.002	46.24	0,000
rho		0.587			
F test that all u_i =0: F(34.102) = 3.78					**Prob > F = 0.0000**

Analysis Results Regression with Panel Data

Analysis Results Panel Data Regression without Variable Moderation

Based on panel data regression model approach without moderation variable with carried out the Chow test and Hausman test using STATA 17 application shows that the best model that can be used in this research is *the Fixed Effect* Model (FEM). Regression results with panel data and t test are presented in Table 7 below:

In Table 7 it is known that the effect test results Simultaneous (F-test) is Prob > F = 0.000 (F = 0.000 < 0.01). This value means that the independent variables in this study simultaneously have a significant effect on the dependent variable at the 99% confidence level. The results of the coefficient of determination test (R^2) show that the R-squared (overall) is 0.835. This means that 83.5% of the variation in Financial Performance (ROA) values can be explained by CKPN, BOPO, and NPL while the remaining 16.5% is explained by other variables not included in this model of research.

Analysis of the Effect of CKPN on Financial Performance

The results of the analysis of the influence of CKPN on financial performance in banking subsector companies listed on the Indonesia Stock Exchange for the first hypothesis (H_1) produce a significance of 0.003 < 0.05 with a t value of -5.72. It indicates that CKPN has a significant negative effect on Financial Performance at the 95% confidence level. The initial hypothesis H_1 proposed by the researcher is that CKPN has a negative effect on financial performance so **H_1 is accepted**. Coefficient 1 (β_1) amounting to -0.172 stated that every 1 unit increase in CKPN will reduce Financial Performance by 0.172.

The results of this research are in line with research by (Kasanah, Abidillah, and Rusgianto 2022) which stated that CKPN has a negative and significant effect on bank profitability.

Analysis of the Effect of BOPO on Financial Performance

The results of the analysis of the influence of BOPO on financial performance in banking subsector companies listed on the IDX for the second hypothesis (H_2) produced a significance of 0.000 < 0.0 with a t value of -33.38. It indicates that BOPO has a significant negative effect on Financial Performance at the 99% confidence level. The initial hypothesis H_2 proposed by the researcher is that BOPO has a negative effect on financial performance so **H_2 is accepted.** Coefficient 2 (β_2) of -0.046 stated that every 1 unit increase in BOPO will reduce financial performance by 0.172.

The results of this research are in line with research by (Nurdiani et al. 2023; Maryadi and Basuki 2014; Fajari and Sunarto 2017; Ningsih and Dewi 2020; Martini 2022; Olivia et al. 2022) whereas BOPO showed a significant negative relation towards Financial Performance (ROA).

Analysis of the Effect of NPL on Financial Performance

The results of the analysis to determine whether the effect of NPL on financial performance in banking subsector companies listed on the IDX for the third hypothesis (H_3) produces a significance of 0.032 <0.05 with a t value of -3.76. It indicates that NPL has a significant negative effect on Financial Performance at the 95% confidence level. H_3 proposed is that NPL has a negative effect on financial performance so **H_3 is accepted**. Coefficient 3 (β_3) of -0.070 stated that every 1 unit increase in NPL will reduce financial performance by 0.070.

The results of this research are in line with the research results of (Maryadi and Basuki 2014; Ningsih and Dewi 2020; Prena and Nareswari 2022) showing that NPL has a significant negative effect on ROA.

Results of Panel Data Regression Analysis with Moderating Variables

Based on the panel data regression model approach with moderating variables by carrying out the Chow test and Hausman test using the STATA 17 application, it showed that the more appropriate regression model used in this research is the *Fixed Effect* Model (FEM). The panel data regression results and t-test are presented in Table 8.

In Table 8. it is known that the effect test results simultaneous (F-test) is F = 0.000 < 0.1. This value means that the independent variables in this study simultaneously influence the dependent variable at a confidence level of 99%. The results of the coefficient of determination test (R^2) showed that the R-squared (overall) is 0.8241. This means that 82.41% of the variation in the value of Financial Performance (ROA) can be explained by Allowance for Impairment Losses (CKPN), Operational Expenses (BOPO), and *Non-Performing Loans* (NPL) while the remaining 17.59% is explained by other variables not included in this model of research.

Analysis of Bank Size Moderating CKPN Value on Financial Performance

The results of the analysis to determine whether bank size moderates the influence of CKPN on financial performance in banking subsector companies listed on the IDX for the fourth hypothesis (H_4) produce a significance of 0.026 < 0.05 with a t value of -3.94. There is a difference in sign in the coefficient of the influence of CKPN on Financial Performance when it does not interact with Bank Size, namely 2.276, and when it interacts with Bank Size, it is -0.172. This means that there is a difference in the connection between CKPN and financial performance in large and small companies. In banks that have a large size, the connection between CKPN and financial performance will be weaker compared to banks that have a small size.

Table 8. Results of Panel Data Regression Analysis and t Test with Moderating Variables

Amount Observation (Number of obs)					140
Amount Groups (Number of groups)					35
R-squared (overall)					0.824
F(7.98)					71.67
Prob > F					0,000
ROA	**Sign Prediction**	**Coefficient**	**Std. error**	**T**	**P>(t)**
CKPN	H_1 (-)	2,276	1,232	3.70	0.034
BOPO	H_2 (-)	-0.228	0.050	-9.06	0,000
NPLs	H_3 (-)	-0.830	0.833	-2.00	0.161
SIZE		-0.009	0.005	-3.54	0,000
CKPN*SIZE	H_4 (+)	-0.172	0.087	-3.94	0.026
BOPO*SIZE	H_5 (+)	0.013	0.004	7.24	0,000
NPL*SIZE	H_6 (+)	0.058	0.062	1.88	0.176
Constant		0.179	0.071	5.02	0.007
rho	0.681				
F test that all u_i =0: F(34.98) = 3.20					**Prob > F = 0.0000**

The larger the size of the Bank, the bigger the ability to weaken the relationship between CKPN and Financial Performance. This indicates that Bank Size significantly weakens the relationship between CKPN and Financial Performance at the 95% confidence level so that the negative influence of CKPN will be reduced on Financial Performance. H_4 proposed by the researcher is that bank size weakens the negative influence of CKPN on financial performance so **H_4 is accepted**. The results of this study accept the researcher's initial hypothesis, namely that bank size can moderate the influence of CKPN on financial performance, whereas bank size weakens this connection.

Analysis of Bank Size Moderating BOPO on Financial Performance

The results of the analysis to determine whether bank size moderates the effect of BOPO on financial performance in banking subsector companies listed on the IDX for the fifth hypothesis (H_5) produced a significance of 0.000 < 0.01 with a t value of 7.24. It indicates that bank size significantly weakens the connection between BOPO and financial performance at the 99% confidence level so that the negative influence of BOPO will be reduced on financial performance. H_5 proposed is that bank size weakens the negative influence of the BOPO relationship on financial performance, so **H_5 is accepted**.

The results of this research are in line with the research results of (Wulandari and Rofiuddin 2022) whose research showed that BOPO has a positive effect on profitability and bank size as a moderating variable weakens the influence of Operational Expenses on Financial Performance. The results of this research also support and/or explain further the results of previous research where according to (Hasan, Manurung, and Usman 2020), based on the results of research, stated that assets (Bank Size) significantly moderate the connection between Operational Expenses and Financial Performance and (Olivia et al. 2022) stated that simultaneously bank size significantly moderates the effect of BOPO on ROA.

Analysis of Bank Size Moderating NPL on Financial Performance

The results of the analysis are to determine whether bank size moderates the effect of NPL on financial performance in banking subsector companies listed on the IDX for the sixth hypothesis (H_6) produced a significance of 0.176 > 0.05 with a t value of 1.88. It indicates that bank size cannot moderate the NPL connection on Financial Performance. H_6 proposed is that bank size weakens the relationship between NPL and financial performance so **H_6 is rejected**.

The results of this research are different from the research results of (Olivia et al. 2022) where based on the results of their research; it stated that simultaneously bank size significantly moderates the influence of NPL on ROA (Financial Performance).

The researcher's initial hypothesis is that bank size weakens the connection between NPL and financial performance so that bank size can reduce the impact of a negative connection on a bank's financial performance. This cannot be proven in this research where bank size cannot moderate the NPL relation on Financial Performance is an indication that the size of the Bank is not the main factor influencing the correlation between NPL and Financial Performance. NPL recorded outside of the profit and loss report or financial position report is part of a separate note presented in the Notes to Financial Reports (CALK) to meet *stakeholder needs*. Problematic credit will directly affect the statement of financial position or reduce the value of assets if it becomes a credit that is truly uncollectible or written off. This is an initial indication that bank size cannot moderate the relationship between NPL and financial performance.

CONCLUSION

The results of research and discussions carried out on 35 banking subsector companies listed on the IDX in 2019–2022 with a total of 140 data observations concluded that CKPN, BOPO, and NPL had a significant negative effect on financial performance. When using Bank size in the form of total assets as a moderating variable in banking subsector companies listed on the IDX, it can be concluded that Bank size weakens the influence of CKPN and BOPO on Financial Performance, but Bank size is unable to moderate the influence of NPL on Financial Performance.

The theoretical implication of the results of this research is that bank size in the form of total assets reduces the negative influence of CKPN and BOPO so that the bank's financial performance gets better. This means that banks that have greater total assets will be able to maintain financial performance if the bank forms CKPN and the bank is still able to divide productive assets between incurring operational expenses and providing credit to third parties so that the bank has operational income, one of which is interest income and the above will be reduced BOPO ratio.

The managerial implications of this research are that it is hoped that regulators or banking supervisors such as the Financial Services Authority (OJK) or Bank Indonesia (BI) can set a threshold for the value of CKPN on Productive Assets upon the enactment of PSAK 71 so that financial performance in the form of ROA can be presented fairly and reasonable among banking companies.

In this study, total assets cannot moderate the correlation between NPL and ROA. This is an indication that the size of a bank's total assets is not the main factor influencing the connection between NPL and financial performance. NPL recorded outside of the profit and loss report or financial position report is part of a separate note presented in the Notes to Financial Reports (CALK) to meet *stakeholder needs*. Problematic credit will directly affect the statement of financial position or reduce the value of assets if it becomes a credit that is truly uncollectible or written off. For this reason, there is a need for a new measurement or ratio that can describe how much the write-off value of third-party credit distributed by banks is so that the write-off actions carried out by banks for truly uncollectible problem loans can be measured as the financial performance of a bank.

In this research, the researcher has several limitations which may make this writing less than perfect, including, namely, that the Non-Performing Loan (NPL) variable in this research is measured based on the value of non-performing loans presented in the Notes to the Financial Report on third party credit which is an asset and has been recorded in the statement of financial position. The NPL value does not include non-performing loans in the commitment and contingency report which is presented in the financial position report in the form of estimated commitment and contingency losses. Commitments and contingencies are types of banking transactions that are classified as off-balance transactions or transactions that cannot be included in the profit and loss statement or financial position statement. The researcher does not include estimates of commitment losses and contingencies as part of the NPL.

In this study, the correlation between CKPN and NPL and financial performance is limited to the relationship in the same year. The relationship between CKPN and NPL has not yet been measured for long-term effects on financial performance.

Based on the things mentioned above, several suggestions that need to be conveyed by the researcher to future researchers are to include estimates of commitment and contingency losses in calculating the NPL value or adding variable estimates of commitment and contingency losses to the framework of similar research;

It is recommended that further research examine the long-term relationship between

CKPN and NPL on financial performance considering that CKPN was formed as part of banking to avoid the risk of debtor default in the long term and NPL is a recording carried out by the bank to record failure to pay based on the time that scheduled so that there is a risk that the bank will not get back the credit that has been given to the debtor in the future.

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