

THE EFFECT OF INTEREST RATES AND OPERATING COSTS ON BANKING PROFITABILITY

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A B S T R A C T

Abstracts The background of declining profitability reflects the urgency to evaluate the determinants of a company's success in generating profits, particularly in banking. External factors such as interest rates and internal factors such as operational costs can influence business activities in obtaining profits for a bank. Fluctuations in interest rates affect the cost of funds and interest income, while operational cost efficiency determines a bank's competitiveness. The aim of this research is to test and prove the influence of interest rates and operational costs on banking profitability both partially and simultaneously. The research sample consists of conventional banks listed on the Indonesia Stock Exchange for the period 2021-2023, totaling 33 banks. The sampling technique used is purposive sampling. The research method employed is quantitative research with a causal associative approach using multiple linear regression analysis with SPSS 22. The results of this study indicate that: (1) Interest rates have a positive and insignificant effect on banking profitability, (2) Operational costs have a negative and significant effect on banking profitability, and (3) Interest rates and operational costs simultaneously have a significant effect on banking profitability. The conclusion of this research underscores the importance of contributing to regulators, bank management, and investors in maintaining stability and performance in the banking sector in Indonesia.

INTRODUCTION

At present, human economic activities are closely related to the role of banks. In accordance with Law Number 7 of 1992 concerning banking, which was later amended by Law Number 10 of 1998, a bank is defined as a business entity that functions to collect funds from the public and redistribute them in the form of credit or other instruments in order to improve the standard of living of the broader community (Undang-Undang RI, 1998). In carrying out its functions, every bank is oriented toward achieving its main goal, namely obtaining optimal profits. These profits are then measured through the level of profitability. Profitability is a ratio used to measure a company's ability to generate profit through its normal business activities (Agnes et al., 2025). Return on Assets (ROA) is one of the profitability ratios that measures the comparison between net income and total assets used to generate profit. Thus, Return on Assets (ROA) can be defined as a ratio that illustrates the extent to which a company is able to earn profits from all the assets it owns (Leo & Herman, 2022).

Table 1 Indonesia's Economic Growth in 2021–2023

Year	GDP (Trillion Rp)	GDP per Capita (Rp)	Economic Growth
2020	15.434,2	56,9 Million	-2.07%
2021	16.970,8	62,2 Million	5,2%
2022	20.892,4	75,0 Million	5,5%
2023	22.139,0	78,6 Million	5,03%

Source: (Statistik, 2024)

The reciprocal relationship between banking and the economy in Indonesia is clearly reflected in the phenomenon shown in Table 1 above, where the weakening of the banking sector in a certain region has an impact on the decline of the national economy. Conversely, obstacles in the economy also affect the performance of the banking sector. Based on data from the Central Bureau of Statistics (BPS), the national economy in 2023 showed a slowdown in Indonesia's economic growth, reaching 5.03 percent (%) compared to 5.05 percent (%) in 2022, although it remained positive. However, the

achieved economic growth has not yet directly increased the profitability of the banking industry, as this sector still faces several challenges that affect its performance.

The Financial Services Authority (OJK) reported that in February 2022, banking profitability declined compared to January. This decrease was reflected in the Net Interest Margin (NIM) ratio, which fell by 13 basis points, from 4.60 percent (%) to 4.47 percent (%). In addition, the Return on Assets (ROA) also decreased by 21 basis points, reaching 2.32 percent (%) (Agnes et al., 2025). It can be observed that profitability experienced a slight decline, as reflected in the movements of NIM and ROA (Ritonga et al., 2024)

Developments in the banking industry have created competition that has implications for the level of bank profitability, as shown in previous research (Nugraha & Manda, 2021) In conventional commercial banks listed on the Indonesia Stock Exchange (IDX) with a sample of 85 banks, this study employs multiple linear analysis. Based on the descriptive statistical test, the average banking profitability was found to be 2.6816. Research results from (Agnes et al., 2025) With a population of banking companies included in the Infobank 15 Index for the period 2018–2022, the research data were obtained from annual reports and other official sources, with a sample of 66 observations as the research objects. The method used was a quantitative explanatory approach with multiple linear analysis using SPSS version 25. Based on the results of descriptive statistical data processing, it was found that the average banking profitability reached 1.2554. In the study conducted by (Fitria & Suhendi, 2025) Using a population of banking companies listed on the Indonesia Stock Exchange (IDX) for the 2021–2023 period, a total of 123 banking companies were taken as research objects. The research method applied was multiple linear analysis. Based on the results of descriptive statistics, the average banking profitability was found to be 1.2457.

Table 2 Previous Research Results

Period	Researcher	Banking Profitability Research Results
2016-2020	(Nugraha & Manda, 2021)	2,6816
2018-2022	(Agnes et al., 2025)	1,2554
2021-2023	(Fitria & Suhendi, 2025)	1,2457

Based on the previous explanation, it can be concluded that banking profitability during the periods 2016–2020, 2018–2022, and 2021–2023 experienced a decline. This condition affects the role of banking and creates risks in the event of business failure. Therefore, ratio analysis is needed to detect or minimize emerging problems. Ratio analysis is also important in assessing financial performance, enabling companies to obtain information regarding their financial position, which supports the selection of appropriate strategies.

The profitability of a company, particularly in the banking sector, is greatly influenced by macroeconomic conditions and internal efficiency. External factors such as interest rates and internal factors such as operational costs can affect business activities in generating bank profits. Fluctuations in interest rates impact both interest expenses and income, while the efficiency of operational costs determines the bank's competitiveness. This is supported by research from (Suharno, 2021) and (Kusumawardhana et al., 2021), which found that the BI interest rate variable has a negative and significant effect on profitability. On the other hand, (Situmorang, 2024) found that the BI interest rate variable has a positive effect on profitability. Similar findings were also reported by (Situmorang, 2024) and (Trisia & Rofi, 2022), stating that the Operational Expense to Operating Income ratio (BOPO) positively affects profitability. However, the studies by (Binasthika et al., 2025) and (Anggraeni, 2020) showed contrasting results, indicating that BOPO actually has a negative and significant effect on profitability.

METHODOLOGY

This research is classified as quantitative research using a causal associative approach. The population observed in this study consists of all conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during the 2021–2023 period, totaling 48 banks. The sample used consisted of 33 banks based on observations. The study was conducted on banking companies listed on the Indonesia Stock Exchange (IDX), with data obtained through the official website www.idx.co.id. The research was carried out from May 2025 to July 2025. The sample was

determined using the purposive sampling method with several criteria, while the research data were obtained through documentation techniques and analyzed using multiple linear regression analysis.

Table 3 Sampling Criteria

No	Criteria	Total
1	All conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during the period 2021–2023	48
2	Conventional bank financial statements that were inaccessible during the 2021–2023 period	(6)
3	Indonesian conventional commercial banks that were delisted from the Indonesia Stock Exchange	(0)
4	Banking companies that experienced losses during 2021–2023	(9)
Conventional banks that met the criteria		33
Research period 2021–2023		3
Number of observations (42 x 3)		99

Source: Processed Data (Author, 2025)

RESULTS & DISCUSSION

Descriptive Statistical Test

Descriptive statistical analysis in this study provides an overview of each variable. The independent variables used are interest rates and Operating Costs (BOPO). Profitability (ROA) is used as the dependent variable. Based on the descriptive statistical analysis conducted, the research results can be presented as follows:

Table 4 Descriptive Statistical Test Results

	N	Minimum	Maximum	Mean	Std. Deviation
Interest Rate	99	3.53	5.81	4.4300	.99725
BOPO (Operating Costs)	99	21.05	102.36	65.3377	19.54850
ROA (Return on Assets)	99	.04	4.73	1.5792	1.24510

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on Table 4 above, it can be seen that the descriptive statistical results with a total study data (N) of 99 samples during the period 2021–2023 are as follows: the interest rate (X1) shows a minimum value of 3.52, a maximum value of 5.81, and an average value of 4.4300 with a standard deviation of .99725. Operating Costs on Operating Income (BOPO) (X2) show a minimum value of 21.05, a maximum value of 102.36, and an average value of 65.3377 with a standard deviation of 1.954850. ROA (Y) shows a minimum value of .04, a maximum value of 4.73, and an average value of 1.5792 with a standard deviation of 1.24510.

Classical Assumption Test

Normality Test

The normality test is used to determine whether the independent and dependent variables in the regression model are normally distributed or not (Ghozali, 2016) In this study, the normality test was carried out using the One-Sample Kolmogorov-Smirnov Test method. The results of the normality test obtained are as follows:

Table 5 Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		99
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.94899140
Most Extreme Differences	Absolute	.075
	Positive	.075
	Negative	-.075
Test Statistic		.075
Asymp. Sig. (2-tailed)		.200 ^c

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on the Kolmogorov-Smirnov test, the normality test results for the interest rate variable (X1), operating costs (X2), and profitability (Y) obtained an Asymp. Sig. (2-tailed) value of 0.200. Since the significance value exceeds 0.05, the research data can be considered normally distributed.

Multicollinearity Test

In this study, the multicollinearity test aims to determine whether or not there is a strong correlation between the independent variables. The data are considered to meet the requirements if the tolerance value is above 0.10 and the VIF value is less than 10. If these two indicators are not met, the data indicate symptoms of multicollinearity and are not suitable for use in the study. The results of the multicollinearity test are presented as follows:

Table 6 Multicollinearity Test Results
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>Tolerance</i>	<i>VIF</i>
1	(Contant)	3.53	5.81			
	Interest Rate	21.05	102.36	.130	1.000	1.000
	BOPO (<i>Operating Costs</i>)	.04	4.73	-.635	1.000	1.000

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Referring to Table 6, it can be seen that the Variance Inflation Factor (VIF) value for the interest rate variable (X1) as well as the operating cost variable (X2) is $1.000 < 10$, with a tolerance value of $1.000 > 0.01$. This indicates that the independent variables in this study are free from multicollinearity issues, meaning there is no correlation among the independent variables.

Heteroscedasticity Test

The heteroscedasticity test is conducted to examine whether there is an unequal variance of residuals across observations in the regression. If the residual variance from one observation to another remains constant, it is called homoscedasticity, whereas if the variance differs, it is called heteroscedasticity. The results of the heteroscedasticity test are as follows:

Table 7 Heteroscedasticity Test Results
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>sig</i>
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
1	(Contant)	0.76	.025		3.018	.003
	Interest Rate	-.003	.004	-.061	-.602	.549
	BOPO (<i>Operating Costs</i>)	.000	.000	-.124	-1.225	.224

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on Table 7 above, it can be observed that the independent variables, namely interest rates and operating expenses, have significance values of $0.549 > 0.05$ and $0.224 > 0.05$, respectively. Thus, the test results indicate that this regression model is free from heteroscedasticity symptoms.

Multiple Linear Regression Analysis Test

This study analyzes the relationship between independent and dependent variables through the effect of interest rates (X1) and operating expenses (X2) on banking profitability (Y). Multiple linear regression analysis is applied to measure the extent to which these independent variables influence the dependent variable. The results of the multiple linear regression analysis are presented as follows:

Table 8. Results of Multiple Linear Regression Test
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>sig</i>
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
1	(Contant)	3.505	.545		6.434	.000

Suku Bunga	.162	.097	.130	1.670	.098
BOPO	.040	.005	-.635	-8.167	.000

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on Table 8 above, the regression equation can be expressed as follows:

$$Y = a + b_1X_1 + b_2X_2$$

where Y is profitability, X1 is interest rate, X2 is operating expenses, a is the constant, and b1 and b2 represent the effect of each independent variable on the dependent variable.

$$Y = 3,505 + (0,162X_1) + (-0,040X_2)$$

The explanation of the above equation is as follows:

1. The constant value $a = 3.505$ indicates that if the interest rate (X1) and operating expenses (X2) are zero or do not change, the profitability (Y) is predicted to be 3.505 units.
2. b_1 (regression coefficient of X1) = 0.162 shows that each 1% increase in the interest rate will increase Return on Assets (ROA) by 0.162%, assuming that other independent variables remain constant. This coefficient indicates a positive relationship. In other words, the interest rate (X1) has a positive but not significant effect on profitability (Y).
3. b_2 (regression coefficient of X2) = -0.040 indicates that each 1% increase in operating expenses results in a decrease in ROA by 0.040%, assuming that other independent variables remain constant. This coefficient indicates an inverse relationship. In other words, operating expenses (X2) have a negative effect on profitability (Y).

Hypothesis Testing

Partial Test (t-Test)

The t-test is conducted to determine the extent of the influence of a single variable individually (independent variable) on the dependent variable(s). Below are the SPSS results from the t-test that has been performed.

Table 9 Partial Test Results (t-Test)

		Coefficients ^a			
Model		Unstandardized Coefficients		Standardized Coefficients	
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>
1	(Constant)	3.505	.545		6.434
	Suku Bunga	.162	.097	.130	1.670
	BOPO	.040	.005	-.635	-8.167

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on Table 9, it can be seen that the interest rate variable (X1) has a significance value of 0.098, which is greater than 0.05, and a calculated t-value of 1.670, which is smaller than the table t-value of 1.984. This indicates that X1 has a positive effect on the dependent variable (Y), but it is not statistically significant. Meanwhile, the operational cost variable (X2) has a significance value of 0.000, which is smaller than 0.05, and a calculated t-value of -8.167, which is greater than the table t-value of 1.984. Thus, X2 has a negative and significant effect on the dependent variable (Y).

Simultaneous Test (F-Test)

The F-test is conducted to assess whether all independent variables collectively have a significant effect on the dependent variable in a multiple linear regression model. The purpose is to determine whether the regression model is suitable for explaining the variation in the dependent variable.

Tabel 10 Hasil Simultan (Uji F)
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	63.670	2	31.628	34.628	.000 ^b
	Residual	88.257	96	.919		
	Total	151.928	98			

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on Table 10 above, it can be seen that the significance value is $0.000 < 0.05$, with a calculated F-value of $34.628 > 3.309$. From these results, it can be concluded that the interest rate and operational cost variables simultaneously have a significant effect on the profitability variable.

Coefficient of Determination Test (R^2)

The coefficient of determination (R^2) is used to assess the extent to which the independent variables can explain the dependent variable. The R^2 value ranges from zero to one. A low R^2 indicates that the dependent variable has considerable limitations in explanation. Conversely, an R^2 value close to 1 indicates that the independent variables account for most of the data needed to predict the variation in the dependent variable (Ghozali, 2016). The coefficient of determination obtained in this study can be presented as follows:

Table 11 Coefficient of Determination Test Results (R^2)
Model Summary^b

Model	R	R Square	Adjusted R	Std. Error of the Estimates
1	.647 ^a	.419	.407	.95883

Source: Secondary Data SPSS 22 (Processed by the Author, 2025)

Based on the results of the determination test in Table 11, the Adjusted R^2 value obtained is 0.407. This means that 40.7% of the variation in profitability in the banking sector is jointly explained by the interest rate and operational cost variables. The remaining variance, which is 59.3% (100% - 40.7%), is attributed to other factors outside the scope of this study.

The Effect of Interest Rates on Banking Profitability

Based on the results of the partial analysis using the t-test, the effect of interest rates on banking profitability in testing Hypothesis 1 of this study was conducted to examine the influence of interest rates on banking profitability. The regression results show a calculated t-value of $1.670 < \text{table t-value } 1.984$, with a significance value of $0.098 > 0.05$. Therefore, it can be concluded that interest rates have a positive but not significant effect on banking profitability. This means that H_0 is accepted and H_1 is rejected.

These findings indicate that interest rates have a positive but statistically insignificant effect on profitability. Although interest rates do not have a statistically significant impact, the positive direction of the effect suggests a potential role of interest rates. This aligns with Keynesian theory (Keynes, 1963), which states that interest rates result from the supply and demand for money. The higher the interest rate, the lower the demand for money for speculative purposes. "Interest rates affect investment and consumption, which in turn impact corporate income and profits, including in the banking sector."

This study's results are consistent with the research of (Nugraha & Manda, 2021) which showed that the interest rate variable has a positive but insignificant effect on banking profitability.

These findings demonstrate that interest rates have a positive but not significant effect on banking profitability. This indicates that, although interest rates contribute to increasing profitability, their effect is not yet strong enough to produce a statistically significant impact. Therefore, the results of this study suggest that the role of interest rates, as explained by Keynesian theory, is not fully confirmed in the context of banking during the research period, as bank profitability is more determined by internal factors than by changes in interest rates.

The Effect of Operational Costs on Banking Profitability

Based on the results of the partial analysis using the t-test, the effect of operational costs on banking profitability in testing Hypothesis 2 of this study was conducted to examine the influence of operational costs on banking profitability. The regression results show a calculated t-value of $-8.167 < \text{table t-value } 1.984$, with a significance value for operational costs (X_2) of $0.000 < 0.05$. Therefore, it can be concluded that operational costs (X_2) have a

negative and significant effect on banking profitability. This means that H_2 is accepted and H_0 is rejected.

These findings indicate that operational costs play a very important role in improving banking profitability. This is consistent with stakeholder theory proposed by Freeman (1984), which states that BOPO (operational cost to operating income ratio) is an indicator used to assess the comparison between operational costs and operational income. In this context, employees as one of the stakeholders have a crucial contribution. When employees are able to optimize operational income by minimizing costs as much as possible, the bank's efficiency level increases, thereby increasing profits. This process naturally involves support from other internal units, including managers.

These results are in line with the study by (Anggraeni, 2020), which showed that operational costs have a negative and significant effect on banking profitability.

These findings emphasize that operational costs play an important role in increasing banking profitability. According to stakeholder theory, a company has responsibilities not only to shareholders but also to other parties such as employees, suppliers, the government, customers, and the community. Therefore, efficient management of operational costs is essential, as it not only supports increased profitability for capital owners but also creates added value for other stakeholders, for example by maintaining competitive product prices, employee job stability, and tax contributions to the government.

The Effect of Interest Rates and Operational Costs on Banking Profitability

Based on the results of the simultaneous test or F-test, the variables of interest rates and operational costs have a positive and significant effect on bank profitability. The regression results show a calculated F-value of $34.628 > 3.09$ and a significance value of $0.000 < 0.05$. Therefore, it can be concluded that interest rates and operational costs have a significant effect on profitability. Accordingly, H_3 is accepted and H_0 is rejected.

These findings indicate that companies, particularly conventional commercial banks, that can manage their finances optimally can influence the determination of interest rates and operational costs, which in turn affect bank profits. Efficient financial statement management can support the achievement of the company's competitiveness, which is then reflected in improved financial performance.

The results of this analysis are consistent with the findings of (azzahra, N., 2024), which show that the variables of interest rates and operational efficiency, when tested simultaneously, have an effect on banking profit achievement.

Findings with a high level of significance simultaneously indicate that the combination of interest rates and operational costs has a strong influence on banking profitability. External factors such as interest rates affect funding costs and interest income, while internal factors such as operational efficiency impact the bank's competitiveness. Both factors can influence business activities in achieving banking profits.

CONCLUSION

Based on the t-test or partial test, the interest rate variable (X_1) obtained a significance value of 0.098 at a 0.05 significance level, with a calculated t-value of $1.670 < 1.984$. From these research findings, interest rates have a positive implication but do not have a significant effect on the profitability variable. The operational cost variable (X_2) obtained a significance value of 0.000, which is smaller than the 0.05 significance level, with a calculated t-value of $-8.167 > 1.984$. These findings indicate that operational costs have a negative and significant effect on profitability.

Based on the simultaneous test or F-test, the significance value obtained is $0.000 < 0.05$, with a calculated F-value of $34.628 > 3.09$. Therefore, the test results indicate that interest rates and operational costs have a positive and significant effect on profitability.

The limitations of this study are that it entirely relies on secondary data sourced from published annual financial reports of conventional banks, profitability is measured only using the Return on Assets (ROA) ratio, and only two independent variables are analyzed, namely interest rates and operational costs.

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