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"Entrepreneurship on Global Economics Development in the Era of Society 5.0"

Analysis of the Determinants of the Level Profitability of Commercial Banks in Indonesia 2017-2021**Rani Indiarti^{1*}, Yuni Prihadi Utomo¹**¹University of Muhammadiyah Surakarta

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***Email:** b300190010@student.ums.ac.id**ABSTRACT**

This study aims to measure the direction and magnitude of the effect of Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE) on Return on Assets (ROA) of commercial banks in Indonesia. The empirical study in this study is 32 banking companies listed on the Indonesia Stock Exchange (IDX) for the period 2017-2021. The research method uses panel data analysis with the Random Effect Model (REM) selected model. The results showed that Loan to Deposit Ratio (LDR) and the number of bank offices (SIZE) had a positive effect on Return on Assets (ROA), Operational Efficiency Ratio (BOPO) had a negative effect on Return on Assets (ROA), while Non-Performing Loan (NPL) and Capital Adequacy Ratio (CAR) had no effect on Return on Assets (ROA).

Keywords: Profitability, Commercial Bank, Loan to Deposit Ratio, Capital Adequacy Ratio

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INTRODUCTION

Banking plays an important role in the economic development of this modern era in various countries including Indonesia. Banks are business entities that collect public funds in the form of deposits and distribute them in the form of credit. Bank credit contributes to the business world, will have an impact on the productive activities of loan funds which will increase production activities and new jobs will emerge, so as to improve people's lives. (Parhusip & Cakranegara, 2021) Therefore, public trust in banks in managing funds collected and distributed is very important. So the bank must maintain its financial performance.

The bank's financial performance can be seen in the financial statements that show the bank's financial ratios in carrying out its activities. Financial ratios are financial analysis tools that can provide an explanation of financial performance between two or more types of financial data and the results are numbers (percentage or time). The financial ratio that shows the bank's efficiency in making a profit is the profitability ratio. (Stanley et al. 2020) When the level of profitability increases, it can increase retained earnings. The increase in retained earnings also increases services to customers by opening bank facilities and infrastructure such as branch offices in various regions.

Profitability in the banking industry is usually seen from the financial ratio Return on Assets (ROA). Bank Indonesia considers that ROA shows the better financial performance of a bank because ROA analyses income compared to assets where in assets there are third party funds collected from the public, besides being able to describe the bank's ability to manage its assets also reflects the level of public trust. (Arumastuti & Sampurno, 2016) The greater the ROA, the better the bank's performance in managing assets to generate profits.

Conventional banks are banks that carry out business activities conventionally by referring to national and international agreements and based on the formal laws of the state. Conventional banks are in great demand by the public in conducting various financial transaction activities so that they can make continuous profits. This makes the development of assets and the number of conventional bank offices increase every year. There are several types of conventional banks, namely government-owned banks, national private banks, foreign banks, mixed banks, and foreign exchange banks and non-foreign exchange banks. The movement of ROA of conventional commercial banks in Indonesia from 2017 to 2021 is presented in Graphics 1.

Graph 1. shows that the Return on Assets (ROA) of commercial banks during 2017-2021 generally decreased. From 2017 to 2018 the level of Return on Assets (ROA) of commercial banks increased but from 2019 to 2020 the level of Return on Assets (ROA) of commercial banks decreased. In 2020 there was a significant decline due to economic delays caused by the covid-19 pandemic that hit Indonesia in March 2020. Then, in 2021 the level of Return on Assets (ROA) of commercial banks began to increase.

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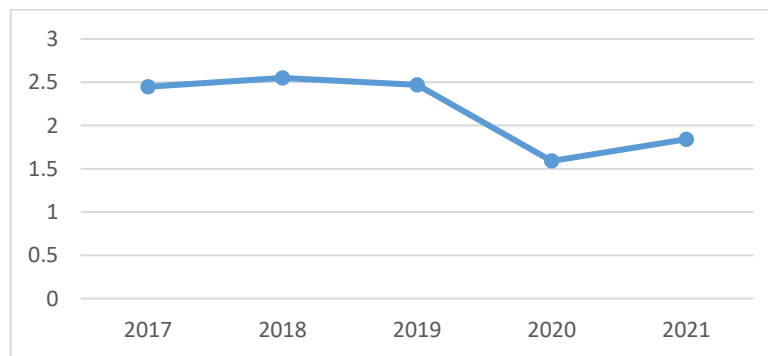


Figure 1. Rate of Return on Assets of Commercial Banks for the Period 2017-2021

Source: Financial Services Authority, processed

Kasmir states that profitability is a ratio to assess the company's ability to seek profit. Profitability can provide useful clues to assess the effectiveness of the company's operations which will show the combination of the effects of liquidity, debt and asset management in earning profits. The goal is to see the development of the company in a certain period, both increase and decrease while looking for the cause of the company. (Sutama & Lisa, 2018)

According to Brigham and Houston, profitability is the return on the end result of a set of corporate policies and decisions. Profitability indicators are a set of indicators of the combined impact of liquidity, asset and liability management on operating income, total assets and return on common stock equity. (Nirawati et al. 2022)

According to Weygandt, Kimmel and Kieso, the profitability ratio is used to measure the income or business success of a company in a certain period of time. Substandard earnings will affect the company's ability to control debt and equity financing. In addition, revenue also affects the liquidity of the company and illustrates the company's ability to grow. (Setiawati & Lim, 2018)

Research conducted by Purnamasari (2019) shows that LDR has a positive effect on ROA and NPL has a negative effect on ROA and CAR has no effect on ROA. Research by Zaman & Musdholifah (2018) found that CAR, LDR have a positive effect on ROA and NPL has a negative effect on ROA. This research is in line with research conducted by Ramadhanti et al. (2019) found CAR, LDR has a positive effect on ROA and NPL has a negative effect on ROA. According to Dewi & Badjra (2020) shows LDR has a positive effect on ROA and NPL, BOPO has a negative effect on ROA. Research by Setiawan (2017) found that LDR has a positive effect on ROA and BOPO has a negative effect on ROA and NPL, CAR has no effect on ROA. Research conducted by Wardhani (2020) shows that LDR has a positive effect on ROA. In addition, Yuhasril (2019) found that NPL, BOPO had a negative effect on ROA and CAR, LDR had no effect on ROA.

Research conducted by Maghfiroh & Dewi (2017) found that BOPO and SIZE have a positive effect on ROA while CAR, NPL, and LDR have no effect on ROA. According to Yuliana & Pratiwi (2020), LDR and BOPO have a negative effect on ROA while CAR and NPL have no effect on ROA. Husin & Purnamasari (2021) found that SIZE has a positive effect on ROA and LDR has a negative effect on ROA. According to Handayani & Putra (2016) found SIZE has a positive effect on ROA. Research by Bandara et al. (2021) shows that NPL has a negative effect on ROA and LDR has no effect on ROA. Mandagie (2021)

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found that CAR has a positive effect on ROA and CAR has a negative effect on ROA. In addition, research conducted by Arumastuti & Sampurno (2016) shows that LDR has a negative effect on ROA and CAR has no effect on ROA.

Based on the above background, this study will observe the effect of Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE) on Return on Assets (ROA) of commercial banks listed on the Indonesia Stock Exchange for the period 2017-2021.

METHOD

The analytical tool used in this study is panel data regression with the following econometric model:

$$ROA_{it} = \beta_0 + \beta_1 BOPO_{it} + \beta_2 NPL_{it} + \beta_3 LDR_{it} + \beta_4 CAR_{it} + \beta_5 SIZE_{it} + \varepsilon_{it}$$

where:

ROA	= Return on Assets (%)
BOPO	= Operational Efficiency Ratio (%)
NPL	= Non-Performing Loan (%)
LDR	= Loan to Deposit Ratio (%)
CAR	= Capital Adequacy Ratio (%)
SIZE	= Number of Bank Offices (unit)
ε	= Error term (error factor)
β_0	= Constant
$\beta_1 \dots \beta_5$	= Independent variable regression coefficient
i	= bank
t	= year t

The econometric model above is a combination of the Dewi & Badjra (2020), Maghfiroh & Dewi (2017), and Zaman & Musdholifah (2018) models. Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR) and SIZE are expected to have a positive effect on Return on Assets (ROA), while Non-Performing Loan (NPL) and Operational Efficiency Ratio (BOPO) are expected to have a negative effect on Return on Assets (ROA).

The data used in this study is panel data, which is a combination of time series and cross section. Time series data from 2017-2021, while the cross-section data used are commercial banks listed on the Indonesia Stock Exchange. The data source is obtained from the annual report which can be seen on the website of each bank.

The estimation stage of panel data regression analysis will include estimation of econometric model parameters with the Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) approaches; selection of the best estimated model with the Chow test and Hausman test and if necessary the Lagrange Multiplier test; model goodness test on the selected estimated model; and testing the validity of the effect of independent variables on the selected estimated model.

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RESULT AND DISCUSSION

The estimation results of the econometric model in advance with the Pooled Least Square (PLS), Fixed Effect Model (FEM) and Random Effect Model (REM) approaches along with the model selection test results are summarized in Table 1.

Tabel 1. Panel Data Regression Econometric Model Estimation Results - Cross Section

Variables	Regression Coefficient		
	PLS	FEM	REM
<i>C</i>	6,629162	5,723637	6,529208
<i>BOPO</i>	-0,072874	-0,070808	-0,072090
<i>NPL</i>	0,097056	-0,007878	0,081858
<i>LDR</i>	0,005974	0,009806	0,006259
<i>CAR</i>	0,011068	0,025270	0,012399
<i>SIZE</i>	0,000118	0,000489	0,000119
<i>R</i> ²	0,802168	0,855536	0,787908
Adjusted <i>R</i> ²	0,795947	0,813449	0,781238
Statistik <i>F</i>	128,9427	20,32741	118,1347
Prob. Statistik <i>F</i>	0,000000	0,000000	0,000000
Model Selection Test			
(1) Chow			
Cross-section $F(32, 127) = 1,4661$; Prob. $F(32, 127) = 0,0709$			
(2) Hausman			
Cross section random $\chi^2(5) = 6,9260$; Prob. $\chi^2(5) = 0,2262$			

Source: Bank Annual Report, processed.

The Chow test and Hausman test show that the Random Effects Model (REM) is selected as the best estimated model, as seen from the probability or empirical significance of the *F* statistic and the χ^2 statistic which are 0,0709 (< 0,1) and 0,2262 (> 0,1), respectively. The complete estimation results of the Random Effects Model (REM) are presented in Table 2. and Table 3.

Tabel 2. Random Effect Model (REM) Estimation Model

$ROA_{it} = 6,529208 - 0,072090 BOPO_{it} + 0,081858 NPL_{it} + 0,006259 LDR_{it} + 0,012399 CAR_{it}$				
	(0,0000)*	(0,2053)	(0,0594)***	(0,1671)
$+ 0,000119 SIZE_{it}$				
	(0,0152)**			
$R^2 = 0,787908$; $DW = 1,313668$; $F = 118,1347$; Prob. $F = 0,0000$				

Source: Appendix 1: *Significant at $\alpha = 0,01$; ** Significant at $\alpha = 0,05$; *** Significant at $\alpha = 0,10$; Numbers in parentheses are probability t-statistic values.

From Table 2., it can be seen that the Random Effect Model (REM) estimated model with the probability or empirical significance of the *F* statistic is worth 0,0000 (< 0,01) with

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a coefficient of determination (R^2) value of 0,787908; which shows that the Random Effect Model (REM) estimated model has high predictive power. However, this predictive power must be interpreted critically, because separately from the five variables in the econometric model, it turns out that only three variables, namely the variable Operational Efficiency Ratio (BOPO), Loan to Deposit Ratio (LDR), and the number of bank offices (SIZE) have an influence on Return on Assets (ROA) with probability or empirical significance of t statistics of 0,0000 ($< 0,01$); 0,0594 ($< 0,1$); and 0,0152 ($< 0,05$).

The Operational Efficiency Ratio (BOPO) variable, has a regression coefficient of -0,072090, with a linear-linear relationship pattern. This means that if Operational Efficiency Ratio (BOPO) increase by 1%, then Return on Assets (ROA) will decrease by 0,072090%. Conversely, if Operational Efficiency Ratio (BOPO), decrease by 1%, then Return on Assets (ROA) will increase by 0,072090%.

The Loan to Deposit Ratio (LDR) variable has a regression coefficient of 0,006259, with a linear-linear relationship pattern. This means that if the Loan to Deposit Ratio (LDR) increases by 1%, the Return on Assets (ROA) will increase by 0,006259%. Conversely, if the Loan to Deposit Ratio (LDR) decreases by 1%, the Return on Assets (ROA) will decrease by 0,006259%.

The variable number of bank offices (SIZE), has a regression coefficient of 0,000119, with a linear-linear relationship pattern. This means that if the number of bank offices (SIZE) increases by 1 unit, then Return on Assets (ROA) will increase by 0,000119%. Conversely, if the number of bank offices (SIZE) decreases by 1 unit, then Return on Assets (ROA) will decrease by 0,000119%.

The constant value of each commercial bank can be seen in Table 3. The highest constant value is owned by Bank KB Bukopin, which is 6,986136. This means that in relation to the influence of the variable Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE) on Return on Assets (ROA), Bank KB Bukopin tends to have a higher Return on Assets (ROA) than other commercial banks. After Bank KB Bukopin, the four banks with the largest constant are Bank Mega, Bank Danamon, Bank BTPN and Bank BCA.

Tabel 3. Bank Securities and Constants

No	Bank	Effect	Constant
1	BRI	-0,060351	6,468857
2	Mandiri	-0,008654	6,520554
3	BNI	-0,024488	6,504720
4	BTN	-0,084262	6,444946
5	Danamon	0,170975	6,700183
6	BCA	0,137583	6,666791
7	Maybank	-0,002339	6,526869
8	Cimb Niaga	0,042572	6,571780
9	Sinarmas	0,132742	6,661950
10	Bank Mega	0,232004	6,761212
11	KB Bukopin	0,456928	6,986136

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12	Permata Bank	-0,028028	6,501180
13	BTPN	0,158878	6,688086
14	MNC Bank	-0,176987	6,352221
15	Jtrust Bank	-0,140260	6,388948
16	Mayapada	-0,035489	6,493719
17	KEB Hana	-0,092711	6,436497
18	Bumi Arta	-0,010400	6,518808
19	OCBC NISP	-0,003152	6,526056
20	Maspion	0,008656	6,537864
21	Artha Graha	-0,057472	6,471736
22	Victoria Inter	-0,102712	6,426496
23	Raya Indonesia	-0,125622	6,403586
24	Capital Indonesia	0,054935	6,584143
25	UOB Indonesia	0,002313	6,531521
26	Woori Saudara	-0,115783	6,413425
27	Multiarta Sentosa	-0,002059	6,527149
28	Nationalnobu	-0,030384	6,498824
29	Ganesha	-0,086093	6,443115
30	Ina Perdana	-0,130741	6,398467
31	Commonwealth	0,016721	6,545929
32	China Construction	-0,212371	6,316837
33	Mestika Dharma	0,116050	6,645258

Source: Appendix 2, processed.

Tabel 4. Validity Test Results of the Influence of Independent Variables

Variables	t	Sig. t	Criteria	Conclusion
BOPO	-22,4008	0,0000	< 0,01	Significant at $\alpha = 0,05$
NPL	1,27173	0,2053	> 0,1	Insignificant
LDR	1,89905	0,0594	< 0,1	Significant at $\alpha = 0,1$
CAR	1,38783	0,1671	> 0,1	Insignificant
SIZE	2,45391	0,0152	< 0,05	Significant at $\alpha = 0,05$

Source: Appendix 3, processed.

The lowest constant value is owned by China Construction Bank, which is 6,316837. Related to the influence of Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE) on Return on Assets (ROA), China Construction Bank tends to have a lower Return on Assets (ROA) compared to other commercial banks. Before Bank China Construction, the four banks with the lowest constant are MNC Bank, Jtrust Bank, Bank Ina Perdana and Bank Raya Indonesia.

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DISCUSSION**Effect of BOPO on ROA**

The negative effect of Operational Efficiency Ratio (BOPO) indicates that the smaller the ratio of Operational Efficiency Ratio (BOPO), the higher the bank's Return on Assets (ROA) and conversely the greater the ratio of Operational Efficiency Ratio (BOPO), the lower the Return on Assets (ROA). This is due to the instalment of working costs, so that the profit generated by the bank will decrease. If operating costs are getting bigger, the bank's operating income will decrease. The difference between income and costs is profit, so the greater the difference, the greater the profit earned. This affects the reduction of the bank's total profit before tax and ultimately there is a decrease in Return on Assets (ROA).

The results of this study are supported by previous research conducted by Yuliana & Pratiwi (2020) and Yuhasril (2019), finding that Operational Efficiency Ratio (BOPO) have a negative effect on Return on Assets (ROA).

Effect of NPL on ROA

Non-Performing Loan (NPL) has no effect, indicating that the higher the Non-Performing Loan (NPL), the higher the cost of providing productive assets and other costs, thereby disrupting bank performance. The high level of non-performing loans causes delays in bank income that should be received, thereby reducing the level of Return on Assets (ROA). Non-performing loans owned by small banks do not affect Return on Assets (ROA) because banks have high capital so that existing credit risks can be overcome with the capital owned by the bank.

The results of this study are supported by previous research conducted by Maghfiroh & Dewi (2017) and Rohman (2020), finding that Non-Performing Loan (NPL) has no effect on Return on Assets (ROA).

Effect of LDR on ROA

The positive effect of Loan to Deposit Ratio (LDR) shows that the higher the Loan to Deposit Ratio (LDR) the more the amount of third-party funds channeled in the form of credit, this will provide greater interest income so that it will increase bank profitability. Of course, provided that the bank still maintains the principle of prudence and suppresses the incidence of bad debts.

The results of this study are supported by previous research conducted by Purnamasari (2019), Ramadhanti et al. (2019), and Zaman & Musdholifah (2018) found Loan to Deposit Ratio (LDR) has a positive effect on Return on Assets (ROA).

Effect of CAR on ROA

Capital Adequacy Ratio (CAR) has no effect, indicating that the higher the Capital Adequacy Ratio (CAR) value identifies that the bank is less likely to place its assets into risky activities. The lack of optimal capital causes a lot of idle cash and does not provide adequate profit and can even cause costs. In addition, Bank Indonesia regulations on Capital Adequacy Ratio (CAR) state that the Capital Adequacy Ratio (CAR) of commercial banks is at least 8%. This condition makes banks always maintain that the Capital Adequacy Ratio (CAR) is always fulfilled.

The results of this study are supported by previous research conducted by Arumastuti & Sampurno (2016) and Setiawan (2017), finding the Capital Adequacy Ratio (CAR) has no effect on Return on Assets (ROA).

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Effect of SIZE on ROA

The positive effect of the number of bank offices (SIZE) shows that the more the number of bank offices will increase the bank's Return on Assets (ROA). The increase in the number of bank offices will make it easier for people to transact through the bank so that the activities of collecting and distributing funds to the public will have a wider scope. This can increase bank profitability.

The results of this study are supported by previous research conducted by Husin & Purnamasari (2021) which found that the number of bank offices (SIZE) has a positive effect on Return on Assets (ROA).

IMPLICATIONS

A decrease in the ratio of Operational Efficiency Ratio (BOPO) will increase the profitability of commercial banks in Indonesia. Therefore, banks need to improve the efficiency of their cost utilisation. Costs that need to be minimized are those spent on internal events that are not necessary.

An increase in the Loan to Deposit Ratio (LDR) will increase the profitability of commercial banks in Indonesia. Therefore, commercial banks in Indonesia need to use the precautionary principle in lending and suppress the incidence of bad debts.

An increase in the number of bank offices (SIZE) will increase the profitability of commercial banks in Indonesia. Therefore, it is important for commercial banks in Indonesia to increase the number of bank offices. Of course, to increase the number of bank offices, it is necessary to increase its capital by attracting many investors to invest their funds in the form of bank shares.

CONCLUSION

The results of panel data regression testing concluded that ROA can be explained by 78.79% by Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE). While the rest is explained by other variables outside the study. The results of the F test show that the variable Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and the number of bank offices (SIZE) simultaneously affect Return on Assets (ROA). The T statistical test results show that Operational Efficiency Ratio (BOPO) has a negative effect on Return on Assets (ROA). Loan to Deposit Ratio (LDR) and the number of bank offices (SIZE) have a positive effect on Return on Assets (ROA). While Non-Performing Loan (NPL) and Capital Adequacy Ratio (CAR) have no effect on Return on Assets (ROA).

For the general banking industry, this research can be used as a consideration in making decisions to increase bank profitability by paying attention to financial ratios, namely Operational Efficiency Ratio (BOPO), Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Capital Adequacy Ratio (CAR), and paying attention to the number of bank offices (SIZE). For customers or prospective customers, this research can be used as input in decision making by assessing the level of bank health as seen from bank profitability. For further researchers, this research can be used as reference material and data for those interested in this field of study.

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