DETERMINANTS OF THE INFLUENCE OF CAR, NIM, NPL, LDR, BOPO AND TOTAL CREDIT ON ROA IN CONVENTIONAL COMMERCIAL BANKS: ARDL APPROACH

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Abstract. Introduction: The health of the banking system is the main thing that needs to be considered so that it does not cause problems in the financial system. This research examines the quality and health of conventional banks in Indonesia, where the better the quality of banking, the more it will encourage trust and increase the flow of capital and financial assets. This research aims to assess and determine the influence of Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Non-Performing Loans (NPL), Loan Deposit Ratio (LDR), Operational Costs on Operating Income (BOPO), and Total Credit against Return on Assets (ROA). This research uses quantitative data and secondary data sourced from the Financial Services Authorization for the period 2018 to 2022 with the autoregressive distribution lag (ARDL) approach and tests stationarity with the unit root test of the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) approaches. The results of this research show that in the short term, all independent variables have a significant effect on ROA, meaning that every change that occurs in the percentage of CAR, NIM, NPL, LDR, BOPO, and Total Credit will affect the ROA percentage of conventional commercial banks. Meanwhile, only the Loan to Deposit Ratio variable significantly affects ROA in the long term. The implication is that the financial sector can monitor internal and external factors that could disrupt monetary stability..

Keywords: ROA, CAR, NIM, LDR, BOPO, NPL, Credit.

1. INTRODUCTION

Global economic development is going in a positive direction and shows that Indonesia's economy will increase yearly after the pandemic. National economic growth is very linear, with banking performance proliferating. The positive development of the federal banking sector does not mean that no banking health issues need to be identified. In the banking world, it is often synonymous with various risks that will be faced. Risk is often associated with deviations or differences from outcomes obtained against planned expectations (Khoirudin, 2017).

The maximum level of bank health can be seen from the bank's ability to get aggregate profit from the results of banking activities. One indicator used in measuring the quality of a bank's performance or health is Return on Assets (ROA). According to Sawir (2004) That Return on Asset is the ability of banking management to get maximum profit as a whole. This means that the higher the percentage of ROA, the better the management of the bank's management and assets. Assets must be distributed and utilized optimally to support sustainable economic development (Khoirudin et al., 2021). Comparing profit before tax and average total assets with a classification range of ROA ≤ 0% – > 1.5% = Unhealthy – Very healthy

Table 1. Development of Return on Assets at Indonesian Commercial Banks for the period 2018-2022

No.	Year	Return On Asset (%)	Growth
1	2018	2,47	
2	2019	2,49	1%
3	2020	2,05	-18%
4	2021	1,91	-7%
5	2022	2,41	26%
Rata-rata	**2,26**	**1%**	

Source: Processed, Otorisasi Jasa Keuangan, 2024

Table 1 explains that in the 2019-2022 period, Return on Assets fluctuated. This is due to various external conditions in the financial sector. The most significant decline was in 2020, down to 18%, due to the pandemic factor, which caused the Indonesian economy to fall; then, many bank sectors had difficulty finding debtors and creditors due to the paralysis of the economy as a whole. After that, in 2021, it continued to decline again by 7%, with the smallest ROA value in the last five years, namely 1.91%. However, Indonesia continues to prove that it can rise after the pandemic in 2022; the ROA of Indonesian public banks began to increase again with a growth of 26% and ROA of 2.41%, meaning that Indonesian banks are in good health. However, in addition to external factors, internal factors need further research.

2.LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

Based on PBI No: 6/10/PBI/2004, bank health level is an assessment of various aspects that affect the performance condition of a bank through an evaluation of capital, asset quality, management, profitability, liquidity, and sensitivity to market conditions. Triandaru and Santoso

(2013) it is stated that bank health is the ability of banks to carry out banking activities usually and carry out obligations by applicable bank regulations. There are at least three assessment factors, namely Risk Profile (NPL, LDR), Earning (ROA, NIM, BOPO, Total Credit) and Capital (CAR). As we all know, the bank size variable states that the greater the equity and ability of the bank to manage its finances, the more willing it is to take significant market risk (Salim & Suripto, 2023).

Based on previous research by Fernando and Dewi (2019) Namely, the Analysis of the Effect of DPK, BOPO, CAR, LDR, and NPL on Financial Performance in the Banking Sector Listed on the Indonesia Stock Exchange shows that CAR and NIM statistically have no significant effect on ROA. In contrast, BOPO, NPL, and LDR substantially affect ROA. Then, research by Anggraeni dan Citarayani, (2022) examined the impact of CAR (X1), NPL (X2), NIM (X3), BOPO (X4), and LDR (X5) on ROA (Y) multiple linear regression methods comparing common effect and fixed effect tests, with the results of CAR, NIM, LDR not affect ROA while NPL and BOPO have a significant adverse effect and for all variables together have an impact on ROA.

The difference in the research developed is that it includes all variables that affect the health of banks, namely CAR, NIM, NPL, LDR, BOPO, and Total Credit. The variable different from previous research is the addition of the Total Credit variable in this study. There needs to be research on the relationship between the amount of credit and the bank's ROA level because of the psychological factor of how much the public trusts the bank concerned; the greater the number of loans, the higher the level of public trust as well as the health of the bank. Then, credit is closely related to the influence of people's income. When a person's income decreases, including large and small businesses, it will impact the banking system (Nasir et al., 2022). The research contribution measures and analyzes the health of Conventional Banks and assesses the banking sector for the benefit of the community and sound financial services.

3. RESEARCH METHODOLOGY

This research aims to test the hypothesis, namely to test whether there is a fundamental relationship and answer the research questions posed, and this research uses quantitative type data (Yuniarti & Sukarniati, 2021). The study uses data on the performance of commercial banks. Data in the form of secondary data sourced from the publication date Otorisasi Jasa Keuangan on the site www.ojk.co.id for all research models. The data is a monthly time series for 2018-2022. Time series data often cause non-stationary data problems, so the models are not interconnected. (Widarjono, 2019). Non-stationary data means that the model does not have a short-term balance, but there is a possibility of using a cointegration test to find the long-term balance. The calculation method of analysis uses the Autoregressive Distribution Lag (ARDL) Model test, which can test the simultaneity of short-term and long-term relationships in time series data. Cointegration test to estimate the long-term coefficient with the F test. The F-statistic will be compared with the lower bound and upper bound values. In this case, the requirement for long-run equilibrium is that the F-statistic value must be greater than the lower and upper bounds.

Unit root test is a method in time series data to check stationarity problems. The data in the study must avoid stationarity problems. The approaches used are Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) both at the level of first deference and operating trends. The requirement to pass the unit root test is that the t-statistic value of the regression results must be greater than the ADF test value on a scale of 1%, 5%, and 10%.

Furthermore, the ARDL model uses the Error Correction Model (ECM) model using the short-run adjustment and correction method to obtain the long-run balance (Pesaran et al., 2001). Then, the ARDL analysis requires classical assumption testing: Normality, serial correlation, and Heteroskedasticity. When the model has avoided the problem of classical assumptions, then the analysis and conclusion of the regression results can be continued. To ensure that this ARDL model remains stable, it is necessary to have a stability test. This stability structure test uses the sum of squares of recursive residuals (CUSUMQ) and cumulative sum (CUSUM). If the location of the curve is at a value of 5% and does not come out of the upper and lower lines, it is considered stable, but if the curve crosses the upper and lower line boundaries, it is declared unstable.

The equation used in this research method is:

$$ROA_t = \beta_0 + \beta_1 CAR_t + \beta_2 NIM_t + \beta_3 NPL_t + \beta_4 LDR_t + \beta_4 BOPO_t + \beta_5 lCredit_t + e_t \quad (1)$$

Where: all variables are in percentage form except Total Loans in l=logarithm form, and e is the error term.

Based on equation (1), the ARDL equation model is obtained, namely:

$$\begin{aligned}\Delta ROA_t &= \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta ROA_{t-i} + \sum_{i=0}^{n} \alpha_{2i} CAR_{t-i} + \sum_{i=0}^{n} \alpha_{3i} NIM_{t-i} + \sum_{i=0}^{n} \alpha_{4i} NPL_{t-i} \\ &+ \sum_{i=0}^{n} \alpha_{5i} LDR_{t-i} + \sum_{i=0}^{n} \alpha_{6i} BOPO_{t-i} + \sum_{i=0}^{n} \alpha_{7i} lCredit_{t-i} + \beta_1 ROA_{t-1} + \beta_2 CAR_{t-1} \\ &+ \beta_3 NIM_{t-1} + \beta_4 NPL_{t-1} + \beta_5 LDR_{t-1} + \beta_6 BOPO_{t-1} + \beta_7 LCredit_{t-1} \\ &+ e_t \end{aligned} \quad (2)$$

Where Δ the first difference, the coefficient ($\alpha_1 - \alpha_7$) shows the short-term model while the coefficient ($\beta_1 - \beta_7$) is a description of the long-term relationship. The equation above is a cointegration test using the ARDL model by testing the F-statistic value. The initial hypothesis where no cointegration occurs is described by (H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$). Furthermore, the F-statistic value will be compared with the lower and upper-bound critical values by classifying I(1) and I(0). Based on this test, we can analyze if the F-statistic > the upper limit, then H0 is rejected or indicates a long-term relationship.

Based on equation (2), the error correction model of the ARDL model can be constructed, namely:

$$ROA_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\Delta ROA_{t-i} + \sum_{i=0}^{n} \alpha_{2i}CAR_{t-i} + \sum_{i=0}^{n} \alpha_{3i}NIM_{t-i} + \sum_{i=0}^{n} \alpha_{4i}NPL_{t-i} + \sum_{i=0}^{n} \alpha_{5i}LDR_{t-i} + \sum_{i=0}^{n} \alpha_{6i}BOPO_{t-i} + \sum_{i=0}^{n} \alpha_{7i}lCredit_{t-i} + \gamma ECT_{t-1} + e_t \quad (3)$$

Where γ The speed adjustment parameter and ECT are the residuals from the estimated cointegration model equation (2).

4. RESULT AND DISCUSSION

Stationarity Test

This study uses the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) approaches with comparisons using levels and first differences as well as trends and without trends. According to Kurniawan et al., (2023) The difference between the ADF and PP methods is that the PP method contains corrections to heteroskedasticity problems in the data. Table 2 shows that all variables in both the ADF and PP methods at I(0) have stationarity problems both in the trend and without trend, except for the CAR variable in the PP method, the I(0) trend passes the test at 10%. Furthermore, at the first difference level test, both ADF and PP, all variables are accessible from unit root test problems. This means that all variables avoid the problem of stationarity in I(1). The study does not use the unit root test form I(2) because it can cause false and biased regression.

Table 2 ADF and PP Unit Root Test Results

Variable	ADF		PP	
	Trend	No Trend	Trend	No Trend
			Level/I(0)	
ROA (Y)	-1,966158	-2,058505	-1,787513	-1,901018
CAR (X1)	-2,953270	-0,832760	-3,206735*	-1,033782
NIM (X2)	-2,146736	-2,593551	-2,008981	-2,15929
NPL (X3)	-2,560710	-1,077085	-2,695747	-1,039953
LDR (X4)	-2,855678	-0,151317	-2,293998	-0,363764
BOPO (X5)	-2,210638	-2,232431	-2,065274	2,100047
Total Credit (X6)	-1,6040072	-1,817624	-1,604072	-1,842809
			First Difference/I(1)	
ROA (Y)	-9,715165***	-9,760212***	-9,738007***	-9,760212***
CAR (X1)	-6,511566***	-6,515801***	-6,503607***	-6,505119***
NIM (X2)	-9,232486***	-9,262045***	-9,239869***	-9,268803***
NPL (X3)	-7,299336***	-7,348214***	-7,378518***	-7,437272***

LDR (X4)	-3,358396*	-3,331015**	-6,294198***	-6,135520***
BOPO (X5)	-9,165918***	-9,194902***	-9,532177***	-9,353117***
Total Credit (X6)	-7,803217***	-7,694291***	-7,823428***	-7,694477***

Note: ***, ** and * Indicates the level of statistical significance at the 1%, 5%, and 10% levels

Cointegration Test

The cointegration test is applied to analyze the long run of all independent variables on the dependent variable. Table 3 illustrates the effect of commercial bank health variables (independent) on the ROA variable (dependent) fluctuates using the upper and lower limits of the Schwarz-Bayesian Criterion (SBC), meaning that this approach is to obtain the optimal lag developed model. The optimal lag results in this study are (1, 6, 6, 2, 5, 6, 5). Furthermore, the table also shows that the F-statistic value is greater than the lower and upper limit critical values, meaning that all variables have a long-term relationship.

Table 3 Cointegration Test Results

F-statistic	**%**	***Lower Bound* I(0)**	***Upper Bound* I(1)**
		Distribution Lag (1, 6, 6, 2, 5, 6, 5)	
4,439022***	90%	1,99	2,94
	95%	2,27	3,28
	99%	2,55	3,61

*Note: ***, ** and * It indicates statistical significance at 1%, 5%, and 10%, respectively.*

Estimasi Autoregressive Distribution Lag (ARDL)

The next stage is to analyze the data with the ARDL method of coefficient estimation test in the short term and long term. What is the effect of each variable on the period? In this case, the cointegration test will be carried out from each independent variable to the dependent variable. Furthermore, another important thing is the estimation of the error correction term (ECT) model; the requirement to pass this test is that the ECT coefficient is negative from 0 to <1 and has a probability of 0.000, which means the estimated model is valid. In this study, the counter/ECT value is -0.99, which indicates that the speed of achieving long-term equilibrium is 99% per quarter.

The results showed that all independent variables significantly affected Return on assets in the long term, while only the LDR variable had an impact on ROA in the long term. This is closely related to the activities of auditors and the anticipation of the health level of banks that must always be verified in a routine period. (Khotibul Umam dan Setiawan Budi Utomo, 2016) all coefficients in the short-run model are dynamic correlations in the short-run model.

The test results of the ARDL method on CAR to ROA in the short term, with a total of 5 lags and a significant adverse effect on lag 1, with a prob. level of 0.0073, means that it substantially affects ROA. In lag 1, which shows the relationship between CAR and ROA, the coefficient value is -0.201023, indicating that a decrease in CAR will cause an increase in ROA. The thing that is likely to affect this is the strong relationship of risk weight derived from credit. Ultimately, an increase in credit will increase the value of risk-weighted assets (RWA), reducing CAR. This is linear with research conducted by Tony Sudirgo, (2019) the decrease in CAR level due to the increase in credit causes more significant interest income, and the rise in profit before tax causes ROA to increase significantly. In the long term, CAR does not influence ROA. This

is basically because Bank Indonesia regulations generally use the target amount of CAR of >8% to adjust and anticipate international banking conditions. Therefore, the amount of CAR will not significantly affect ROA.

Furthermore, the analysis of NIM on ROA, Table 4 shows that all five lags from 0-5 significantly influence ROA in the short term. At lag 0-2, it offers a positive effect until at lag 3-5, it becomes a significant adverse effect. The most considerable lag with a prob. value of 0.0007 and a coefficient value of 1.073789 means that any increase in NIM will cause an increase in ROA. This is based on NIM, which is a function of banking management that can manage its current assets to earn net interest income. Net interest income is generated from interest income minus interest expense. This result will cause better asset management and a minor problem rate. This is in accordance with the research Rosandy (2022), and Fajri (2018) The more significant the change in NIM, the more it will cause an increase in ROA generated by a bank, which means that banking performance is improving. On the other hand, when there is a significant decrease in NIM, it will cause an automatic decrease in ROA. While in the long term, NIM has no significant effect, this is in line with research conducted by Susanto Salim (2020). NIM sometimes does not have a long-term effect due to differences in the amount of credit activity in the bank. As a result, the certainty in analyzing changes in interest income from creditors will be interpreted in the short term.

The following analysis is about the effect of NPL on ROA. In the short term and lag 0, NPL still has no significant impact, but lag 1 shows a significant positive effect with prob. 0.0011 and a coefficient of 0.009080. Although with a minimal coefficient, this is due to the capital reserves made by the bank so that minor problems in credit can still be resolved. NPL itself is the bank's ability to manage problematic credit management. This is linear with research conducted by Stephani et al. (2017); Muttaqin (2017); Which has an influence but is not significant. In the long term, NPL does not impact ROA because credit is hazardous to the bank's health. It is necessary to have a stable reserve on credit risk. Therefore, based on five years, this study has no significant effect in the long term.

Furthermore, the analysis of the effect of LDR on bank ROA. LDR is a tool to see the level of health and performance of banks, so it is mandatory to pay attention to the level of LDR in channeling funds to the public (Ginoga dan Syahwani, 2022). In the short term, it shows that at lag 0-1, LDR has no influence on ROA, but at lag 2-4, LDR has a positive and significant impact on changes in ROA. This is also supported by long-term data, which shows the relationship results and has a substantial and positive effect on ROA. This is linear with previous research (Hamidah et al., 2023) that LDR has a positive and significant influence on ROA. Thus, the higher the LDR, the better the bank's health level.

Further analysis of the intensity of the influence of BOPO on bank ROA. BOPO is a ratio that describes the bank's ability to manage operations against income. In this study, in the short term, BOPO has a significant positive effect on lag 1 and 2 on ROA. This means that the higher the BOPO value, the lower the bank's profit and the decreased ROA. This is supported by previous research by (Pratama, 2021) and (Lestari, 2021) which shows that BOPO has a significant effect on ROA. While on lag 3, BOPO shows no significant effect in the short term, this is linear with research conducted by (Panjawa et al., 2017) This means that BOPO, in the short term, does not impact changes in profit. Then, lags 4 and 5 show a negative and significant effect, while BOPO has no significant impact in the long term. This is because it is possible to use bank operating costs, which sometimes have become routine expenses that have been budgeted for each working period so that the effect on the increase in credit and interest income received does not

affect ROA. This opinion is supported by previous research (Iswandi dan Susilo, 2020) which states that BOPO does not influence bank ROA.

The following explanation concerns the variable amount of credit related to ROA. The amount of credit in the short term on lag 2 shows a positive and significant effect with a coefficient value of 3.098061, meaning that when the amount of credit increases, it will affect the intensity of acceleration of ROA income. This is linear with the research conducted (Saputra Eka Putu I, Wayan Cipta, 2018) The amount of credit will positively and significantly affect profitability. In contrast, the amount of credit does not have a significant effect in the long term due to the risk factor caused by uncontrolled credit. Therefore, there needs to be clear accommodation related to lending to the community in the long term.

Table 4 Short-run and Long-run Estimation Results of the ARDL Method

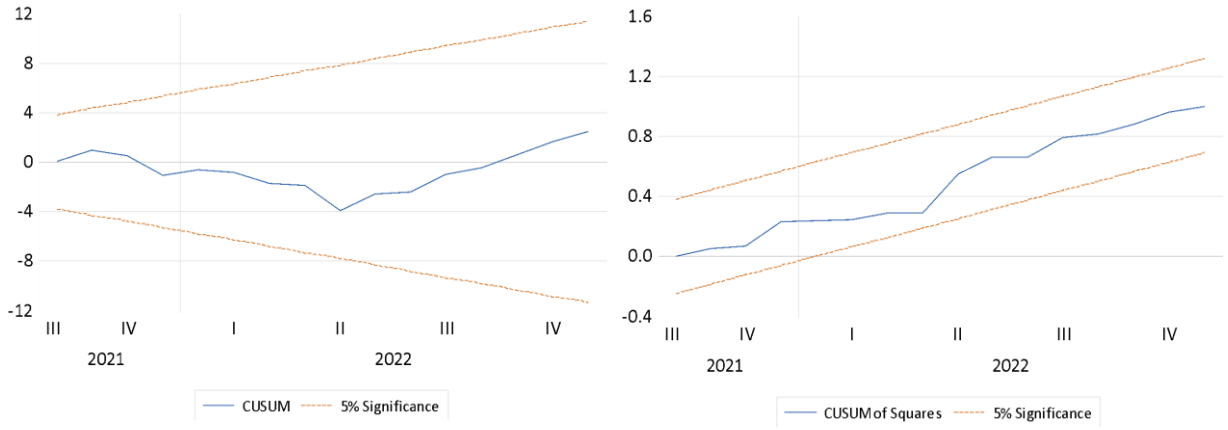
Variables	***Coefficient*** **(t-*statistic*)**	***Variables***	***Coefficient*** **(t-*statistic*)**
	Short-run		*Long-run*
ΔCAR	-0,090197	CAR	0,199416
	(-1,465863)		(1,087953)
ΔCAR (−1)	-0,201023	NIM	-0,378711
	(-3,072258)***		(-0,922546)
ΔCAR (−2)	0,036214	NPL	-0,007355
	(0,770866)		(-1,663503)
ΔCAR (−3)	0,042075	LDR	0,084468
	(0,932586)		(2,189640)**
ΔCAR (−4)	0,123715	BOPO	0,048550
	(2,680461)**		(0,943394)
ΔCAR (−5)	0,133878	LCredit	1,992948
	(2,825014)**		(1,1100915)
ΔNIM	1,073789	Constanta	-42,64126
	(4,179375)***		(-1,149591)
ΔNIM (−1)	1,187780		
	(3,898558)***		
ΔNIM (−2)	0,892982		
	(2,953903)***		
ΔNIM (−3)	-0.720491		
	(-2,522664)**		
ΔNIM (−4)	-1,086128		
	(-3,692098)***		
ΔNIM (−5)	-0,810879		
	(-3,332218)***		
ΔNPL	-0,000367		
	(-0,168677)		

ΔNPL (−1)	0,009080
	(3,978293)***
ΔLDR	0,018574
	(0,765955)
ΔLDR (−1)	-0,014156
	(-0,510095)
ΔLDR (−2)	0,074588
	(3,020869)***
ΔLDR (−3)	0,188722
	(5,265142)***
ΔLDR (−4)	0,109978
	(3,283374)***
ΔBOPO	0,021402
	(1,170874)
ΔBOPO (−1)	0,034071
	(1,807343)*
ΔBOPO (−2)	0,117290
	(4,718071)***
ΔBOPO (−3)	0,002757
	(0,133006)
ΔBOPO (−4)	-0,062004)
	(-3,318145)***
ΔBOPO (−5)	-0,048035
	(-3,158811)***
ΔLKredit	-0,914059
	(-1,155288)
ΔLCredit (−1)	-0,267538
	(-0,320650)
ΔLCredit (−2)	3,098061
	(3,267835)***
ΔLCredit (−3)	-0,543697
	(-0,730973)
ΔLCredit (−4)	-1,389804
	(-7,144841)**
ECT	-0,996642
	(-7,144841)***
Diagnostic Tools	
Normality Test	0,2164
Serial Correlation	0,0665
Heteroskedasticity Test	0,2304

ARDL estimation also requires OLS estimation or classical assumptions of Normality, Autocorrelation, and Heteroscedasticity tests. This test will also support the validity of the estimation to avoid classical assumption problems. This assumption test is provided that the probability value exceeds the significance limit of 0.05. This means that all of these tests must have a probability of more than 0.05, as in the table above, with a Normality test value of 0.2164, then autocorrelation of 0.0665, and Breusch Pagan Godfrey heteroscedasticity with prob. Chi-square 0.2304. This shows that the ARDL estimation has passed the classical assumption problem, and the model can be used.

Stability Test

To analyze the long-term stability of the influence of all independent variables on the dependent variable, this study tests the CUSUM and CUSUMQ approaches. The estimate is considered stable when the graph reaches a critical value of 5% or is tough on the threshold and bottom lines. Otherwise, the forecast is considered unstable if the line crosses the upper and lower limits. The figure below shows that the ARDL estimates are stable or pass the CUSUM and CUSUMQ tests.



5. CONCLUSION

Based on research using the ARDL analysis method with data in 2018-2022, it shows differences in influence on each variable both in the short term and long term. In the short term, all independent variables affect the dependent variable, ROA, even though it is at one or more lags. CAR has a significant negative effect on ROA at lag one, while in the long term, CAR has no effect. Then, NIM has a positive and significant effect on lag 0 to 2, while NIM has no impact on ROA in the long run. Furthermore, NPL has a positive but insignificant impact on lag one in the short term, while in the long term, NPL does not affect ROA.

The LDR variable is a variable that has a close relationship with ROA because, in the short and long term, LDR has a positive and significant effect on ROA. Then, BOPO has a negative and significant impact in the short term but does not affect ROA in the long term. Furthermore, the amount of credit where more credit will increase banking profits, and in this study, in the short term, shows a positive and significant influence, while in the long term, it does not influence ROA.

IMPLICATION/LIMITATION AND SUGGESTIONS

Based on the conclusion above, all independent factors, namely CAR, NIM, NPL, LDR, BOPO, and Total Credit, significantly affect ROA changes. There is a negative or positive effect, which means that this variable can be used to measure bank health, especially in banking profitability. Meanwhile, the average independent variable has no significant impact on the long term except for the ROA variable. Therefore, it will take time to identify the bank's health in the long run.

Based on the explanation of the results of this study, the advice that researchers can give is for bank companies to increase profitability and bank performance by utilizing assets, debt, and capital optimally and efficiently. InvestorsInvestors should be able to examine in advance the health of banks that want to be used as a place to invest to reduce future risks. Furthermore, researchers should use more concrete data and be careful in using numbers, economic conditions, political conditions, and others so that data and hypothesis deviations do not occur.

REFERENCES

Agnes, S. (2004). Analisis Kinerja Keuangan dan Perencanaan Keuangan Perusahaan. In Jakarta : PT. Gramedia Pustaka Utama (Vol. 2).

Fajri, G. R. (2018). THE IMPACT OF THE FINANCIAL RATIOS AS THE MEASUREMENT UPON THE PERFORMANCE OF RETURN ON ASSETS AT THE PUBLIC BANKS IN INDONESIA (The Empiric Study upon The Banking Companies Registered at BEI in 2012-2015). The Accounting Journal of Binaniaga, 2(1), 39–50. https://doi.org/10.33062/ajb.v2i1.9

Ginoga, L. F., & Syahwani, A. K. I. (2022). Analisis Dampak Npl, Ckpn, Ldr Dan Suku Bunga Kredit Terhadap Penyaluran Kredit Perbankan Pada Masa Pandemi Covid-19. Ekonomi & Bisnis, 21(1), 49–58. https://doi.org/10.32722/eb.v21i1.4569

Hamidah, F. K., Tristiarini, N., Minarso, B., & Prajanto, A. (2023). Pengaruh Kinerja Keuangan Terhadap Profitabilitas Bank Umum Indonesia Di Masa Pandemi Covid-19. Jurnal Riset Terapan Akuntansi, 7(1), 52–64.

Iswandi, D. S., & Susilo, W. H. (2020). The Predict of The Stock Return on The Commercial Banks: Insight The Signalling Theory Perfective. International Journal of Recent Scientific Research, 11(02), 37471–37472.

Khoirudin, R. (2017). Penilaian Saham Pt Pembangunan Perumahan Properti Dalam Rangka Initial Public Offering. Jurnal Keuangan Dan Perbankan, 21(1), 37–46. https://doi.org/10.26905/jkdp.v21i1.1225

Khoirudin, R., Wahyuni, S., & Nugraha, C. B. (2021). Distribution of Optimized Public Assets Utilization in Yogyakarta Province. Jurnal Analisis Bisnis Ekonomi, 19(1), 48–62. https://doi.org/10.31603/bisnisekonomi.v19i1.3757

Khotibul Umam, & Setiawan Budi Utomo, H. 1982-. (2016). Perbankan syariah : dasar-dasar dan dinamika perkembangannya di Indonesia / Khotibul Umam; co-author, H. Setiawan Budi Utomo. 1–346. https://books.google.co.id/books?id=5z7YjwEACAAJ

Kurniawan, M. L. A., Khasanah, U., & Baharudin, S. 'Aisyah. (2023). Determinant of Property Price Through The Monetary Variables: An ARDL Approach. Jurnal Ekonomi Pembangunan: Kajian Masalah Ekonomi Dan Pembangunan, 24(1), 12–23. https://doi.org/10.23917/jep.v24i1.20588

Lestari, M. D. (2021). Pengaruh Biaya Operasional Pendapatan Operasional (Bopo) Dan Risiko Kredit (Npl) Terhadap Profitabilitas (Roa). COMPETITIVE Jurnal Akuntansi Dan Keuangan, 5(2), 132. https://doi.org/10.31000/competitive.v5i2.4314

Muttaqin, H. F. (2017). Pengaruh CAR, BOPO, NPL, dan LDR terhadap ROA pada Bank Konvensional di Indonesia" eJournal Administrasi Bisnis, 2017, 5 (4): 1229-1240. E-Journal Administrasi Bisnis, 5(4), 1229–1240.

Panjawa, J. L., Kurniawan, M. L. A., & Hasanah, L. lak N. El. (2017). Analisis determinan kinerja Bank Pembiayaan Rakyat Syariah di Indonesia (pendekatan Direct Error Correction Model). Jurnal Ekonomi & Keuangan Islam, 3(2), 65–72. https://doi.org/10.20885/jeki.vol3.iss2.art2

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289–326. https://doi.org/10.1002/jae.616

Pratama, M. S. (2021). Pengaruh BOPO, LDR, CAR, dan NPL terhadap Profitabilitas Sektor Perbankan Indonesia. I-Finance: A Research Journal on Islamic Finance, 7(1), 43–55. https://doi.org/10.19109/ifinance.v7i1.8189

Rosandy, N., & Sha, T. L. (2022). Pengaruh Car, Nim, Ldr, Dan Bopo Terhadap Roa Pada Perbankan Di Bei. Jurnal Paradigma Akuntansi, 4(4), 1566–1576. https://doi.org/10.24912/jpa.v4i4.21373

Saputra Eka Putu I, Wayan Cipta, N. N. Y. (2018). Pengaruh Dana Pihak Ketiga (DPK), Penyaluran Kredit, Dan Kredit Bermasalah Terhadap Profitabilitas Pada Lembaga Perkreditan Desa (LPD) Kecamatan Karangasem. E-Journal Bisma Universitas Pendidikan Ganesha, 9(1).

Stephani, R., Adenan, M., & Hanim, A. (2017). Analisis Pengaruh Rasio Keuangan Terhadap Kinerja Bank Umum di Indonesia. E-Journal Ekonomi Bisnis Dan Akuntansi, 4(2), 192. https://doi.org/10.19184/ejeba.v4i2.5825

Susanto Salim, L. R. (2020). Pengaruh Roa, Ldr, Nim, Dan Npl Terhadap Capital Adequacy Ratio (Car). Jurnal Paradigma Akuntansi, 2(3), 1114. https://doi.org/10.24912/jpa.v2i3.9537

Tony Sudirgo, S. (2019). Analisis CAR, BOPO, NPL, Dan LDR Terhadap ROA Perusahaan Perbankan. Jurnal Paradigma Akuntansi, 1(3), 863. https://doi.org/10.24912/jpa.v1i3.5590

Widarjono, A. (2019). Ekonometrika : Pengantar dan Aplikasinya Disertai Panduan EViews. In Yogyakarta : UPP STIM YKPN. http://repository.ut.ac.id/3891/1/EKSI4417-M1.pdf

Yuniarti, D., & Sukarniati, L. (2021). Penuaan Petani dan Determinan Penambahan Tenaga Kerja di Sektor Pertanian. Agriekonomika, 10(1), 38–50. https://doi.org/10.21107/agriekonomika.v10i1.9789