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Predicting Capital Adequacy Ratio of Islamic Rural Banks Based on FDR, NPF, ROA, and BOPO

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Abstract

Several financial ratios have been identified as factors that can determine the capital adequacy ratio (CAR) in a financial institution, including Financing To Deposit Ratio (FDR), Non-Performance Finance (NPF), Return On Asset (ROA), and Operating Expenses and Operating Income (BOPO). In previous studies, it was seen that there were inconsistencies in the results of the analysis when explaining the effect of these financial ratios on the Capital Adequacy Ratio (CAR). This study aims to examine the effect of FDR, NPF, ROA, and BOPO on Capital Adequacy Ratio (CAR), both partially and simultaneously. This research is quantitative research with a panel data regression analysis method. The data was collected through secondary sources in the form of financial statements from 18 BPRS in East Java and consistently published financial statements for the last three years (2020-2022). The results showed that the variables FDR, NPF, ROA, and BOPO together had a significant effect on CAR. This means that the four financial ratios are able to explain and predict any changes in the data on the CAR. However, in the t-test, it is known that of the four X variables, only one is able to have a negative and significant effect on CAR, namely NPF. This means that if the NPF gets smaller, the CAR gets better. At the same time, the other three variables are known to have no significant effect on CAR. The results of this study are limited only to Sharia People's Financing Banks, which, of course, are very different from Sharia Commercial Banks, both in terms of funding sources, financial services, and asset capacity. Therefore, for further researchers, it is essential to also examine financial ratios at Islamic Commercial Banks, which are very likely to obtain different results. The novelty of this study lies in the variables used, whereas previous studies generally used less variable X than this study.

Keywords: Financial ratios, Islamic financial institutions, Islamic banking, regression data panel.

I. INTRODUCTION

Financial statements, according to SAK No. 1, are part of the financial reporting process. Financial statements are records of financial information of a company in a certain period used to describe the performance of a company. Financial statements are a means of communicating financial information and company performance to interested parties in the company (Andriyani, 2015; Widarjo & Setiawan, 2009). Company performance can be measured by analyzing and evaluating past financial statements and used to predict future financial position and financial performance.



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Financial statements are reports that show the development of a company's financial position (Putra et al., 2021).

Several studies that utilize data and information in financial statements have been conducted. In addition to providing better information to interested parties, the study was also conducted to determine the ability of financial ratios to predict the financial condition of a company in the future. Even in some studies show that financial ratios can provide accurate information and predictive capabilities on the company's financial position and performance. Studies using financial ratios have been conducted in recent years to predict stock returns (Endri et al., 2019; Widagdo et al., 2020), Evaluate the financial performance of the bank (Rawan, 2019), Predict the Risk of Financial Statement Fraud (Izzalqurny et al., 2019), Predicting Stock Prices (Huy et al., 2020; Karamoy & Tulung, 2020; Setiawan & Rojasari, 2019; Wijaya & Yustina, 2019), Predicting bank profitability (Astuti, 2022; Simatupang & Franzlay, 2016; Sitompul & Nasution, 2019), and predict the bank's capital adequacy ratio (Cahyono & Anggraeni, 2015; Fitrianto & Mawardi, 2006; Pravasanti, 2018).

One financial ratio that is very important to explain and predict is the *capital adequacy ratio* (CAR). CAR is a ratio that shows capital adequacy, namely how much capital the bank has to support assets that contain or generate risk (Dendawijaya, 2003). CAR in the banking industry in accordance with applicable regulations in Indonesia, the amount is determined by how much capital is owned consisting of core capital and complementary capital, as well as how much risk-weighted assets, where each asset has been determined (Fitrianto & Mawardi, 2006). Bank operations can run smoothly if the bank has sufficient capital. If the bank experiences problems meeting liquidity, the bank will be in a safe position because it has sufficient capital reserves (Sorongan, 2020).

To fulfill capital adequacy, the Islamic Rural Bank (BPRS) should get more attention because BPRS has relatively more minor assets and capital than the Sharia Commercial Bank (BUS). Several studies show that between 2006 and 2017, 30 rural banks were liquidated. This is caused by several factors, including fraud, ignoring prudence, violations of BMPK (maximum credit limit), and CAR below 8% (Aprianti et al., 2021; Rustendi, 2019). It thus becomes apparent that a low capital adequacy ratio is a high risk for the resilience and health of BPRS.

CAR in BPRS has continued to fluctuate in recent years. In 2017, the BPRS CAR ratio was 20.81%; in 2018, there was a decrease of 1.48% to 19.33%. In 2019, it decreased by 1.34% to 17.99%. In 2020 it increased by 10.61% to 28.60%, and in 2021 it decreased by 4.81% to 23.79%. The development of BPRS showed improved



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performance in 2021 after experiencing a decline in 2020 as a result of the Covid-19 pandemic.

Several factors cause the increase and decrease in CAR. These factors have been identified in several previous studies, including Financing to Deposit Ratio (FDR), Non-Performance Financing (NPF), Return on Asset (ROA), and Operating Expenses And Operating Income (BOPO). However, several previous studies have shown different results regarding the effect of these financial ratios as an independent variable on CAR as a dependent variable. It is known from previous research that FDR has a positive and significant effect on CAR (Ali, 2019; Pravasanti, 2018; Setiarini & Yudiana, 2023; Yolanda, 2017; Yulistina & Ahiruddin, 2022). However, other studies have shown that FDR's effect on CAR is positive and insignificant (Sari et al., 2023), as well as negative and insignificant (Fajriati et al., 2021).

NPF was stated in previous studies as a positive and significant factor in CAR (Yokoyama & Mahardika, 2019). However, other findings show that NPF has a positive and insignificant effect (Pravasanti, 2018; Putri & Dana, 2018), negative and insignificant effect (Ali, 2019; Sorongan, 2020), and negative and significant effects (Andini & Yunita, 2015; El-Ansary et al., 2019; Sari et al., 2023; Setiarini & Yudiana, 2023). ROA is identified as a positive and significant influencing factor (Andini & Yunita, 2015; Asma & Khadidja, 2015; Cahyono & Anggraeni, 2015; Setiono, 2017; Yulistina & Ahiruddin, 2022). However, the results of other studies state that the effect is positive and insignificant (Rianto & Salim, 2020), as well as negative and insignificant (Putri & Dana, 2018). At the same time, BOPO is known to have a positive and insignificant effect (Cahyono & Anggraeni, 2015). Other studies state that BOPO has a negative and significant effect (Sorongan, 2020; Yulistina & Ahiruddin, 2022).

The inconsistency of the results shows that there is room for further research with more comprehensive and up-to-date data to provide affirmation regarding the ability of financial ratios to explain the Capital Adequacy Ratio (CAR). Some of these studies used cross-section data from one bank by making financial statements in recent years as samples and analyzed by multiple linear regression methods. So, this study was conducted to examine the effect of FDR, NPF, ROA, and BOPO on CAR, both simultaneously and partially, using panel data and panel data regression analysis. The panel data was analyzed using Eviews 13 software. The research was conducted using financial ratio data from all BPRS in East Java province that have consistently published financial statements in the last three years (2020-2022).



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II. LITERATURE REVIEW

Financial Ratios

Financial ratios are numbers obtained from the results of a comparison of one item of financial statements with other items that have a relevant and significant relationship. The goal is to evaluate the current situation and predict future financial conditions. The ratio describes a relationship between a certain amount and another amount. By using analytical tools, ratios can explain or provide an overview to analysts about the excellent condition or financial position of a company, especially if the ratio figure is compared with the ratio used as a standard.

Financial ratios also have the purpose of helping managers understand what the company needs to do with respect to information derived from a limited financial nature. By using specific ratios, managers will obtain information about the company's strengths and weaknesses in the financial field. From this information, managers can make important decisions in the future. For external parties, financial ratio analysis aims to obtain an overview of a company's financial development. Henceforth, they can decide whether to buy, hold, or sell shares of the company.

Financial ratios are generally classified into four types, namely liquidity ratio, solvency ratio, activity ratio, and profitability ratio. The liquidity ratio is a measurement of the ability of a company's assets to finance its short-term liabilities or debts. This liquidity ratio generally uses the financing-to-deposit ratio (FDR) ((Dewi et al., 2019; Rasyidin, 2016). The solvency ratio is the ability of the company to pay all its obligations. Solvency is generally indicated by the debt-to-equity ratio (DER) (Rianto & Salim, 2020). Activity ratios are defined as metrics or financial ratios used to measure how efficiently a company's assets are used to generate optimal revenue and cash. The ratio is most useful in the case of comparing two competitive businesses within the same industry (Arsyad et al., 2021; Gunadi et al., 2020), While the profitability ratio is a ratio used to measure the company's ability to generate profits during an accounting period and measure the level of operational efficiency in using its assets. The ratios commonly used to measure a bank's profitability performance are Return On Asset (ROA) and Return on Equity (ROE) (Rahman, 2017; Rutkowska-Ziarko, 2015, 2020).

Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a bank performance ratio to measure the adequacy of capital owned by banks to support assets that contain risk or generate risk (Pravasanti, 2018; Simatupang & Franzlay, 2016). CAR shows how far all bank assets that contain risk (credit, participation, securities, bills to other banks) are financed from



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own capital funds in addition to obtaining funds from sources outside the bank, such as funds from the public, loans, and others (Sitompul &; Nasution, 2019; Yolanda, 2017). The capital adequacy ratio is measured through a comparison between the amount of capital of a banking company with risk-weighted assets or ATMR. Bank Indonesia determines the ratio of capital to risk-weighted assets (ATMR). Capital adequacy can be determined by three components: credit risk, market risk, and operational risk (Rianto & Salim, 2020).

The following formula can calculate the capital adequacy ratio:

$$CAR = \frac{Bank \ capital}{ATMR} \ x \ 100\%$$

Financing To Deposit Ratio (FDR)

Financing to Deposit Ratio (FDR) is a ratio used to measure a bank's liquidity level that shows the bank's ability to meet financing demand using the total assets owned by the bank. The higher the FDR ratio means the greater the distribution of third-party funds channeled to customers, conversely, the lower the FDR indicates the bank's ineffectiveness in terms of financing (Permataningayu & Mahdaria, 2019). Because FDR is the ratio of total financing to total third-party funds (DPK), it also shows the bank's ability to meet its short-term obligations. The higher the FDR, the lower the bank's liquidity (Rasyidin, 2016; Syafrizal et al., 2023). Bank management must have the ability to manage its intermediation function well, namely collecting funds and redistributing them in the form of financing to the public. The goal is to increase revenue, which will ultimately increase bank profits (Astuti, 2022).

The financing to deposit ratio can be calculated by the following formula:

$$FDR = \frac{\text{Total Number of Financing}}{\text{Deposits}} \times 100\%$$

Non-Performance Financing (NPF)

Credit risk due to settlement risk arises from failure to deliver cash and financial instruments on the agreed settlement date from the sale and purchase of financial instruments (Yusuf & Surjaatmadja, 2018). Credit risk can be measured using the Non-Performing Financing (NPF) ratio. Non-Performing Finance (NPF) is a condition where customers are unable to pay obligations to the bank, which causes losses to the bank. Non-Performing Finance (NPF) can affect cost control and financing policies at banks. The Non-Performing Finance limit is below 5% in accordance with Bank



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Indonesia regulation No. 17/11/PBI/2015 (Nabella et al., 2023). NPF shows the ability of bank management to manage problems in the financing provided by the bank. The higher the NPF, the worse the bank's credit quality. The credit risk received by the bank is due to uncertainty in the return of loans that have been given (Suprayitno & Hardiani, 2021).

Non-Performance financing ratio (NPF) can be calculated by the following formula:

$$NPF = \frac{Non - performance Financing}{Total Number of Financing} \times 100\%$$

Return On Asset (ROA)

Return on asset (ROA) is a ratio that shows the ability of all existing assets and is used to generate profits (Husaini, 2012). In other words, ROA measures a company's ability to generate net income based on a certain level of assets. ROA focuses on the company's ability to earn income in its operations by utilizing the assets owned by the company (Maula et al., 2019). ROA is one of the indicators used to see financial performance in terms of profitability. The greater the Return on Assets (ROA) of a bank, the greater the level of profit achieved by the bank, and the better the position of the bank in terms of asset use (Mainata & Ardiani, 2017).

The following formula can calculate return on asset (ROA):

$$ROA = \frac{Return}{Total Number of Assets} \times 100\%$$

Operating Expenses and Operating Income (BOPO)

Operating expenses and operating income (BOPO) is the ratio between operating expenses and operating income (Khamisah et al., 2020). BOPO, which is often called the efficiency ratio, is used to measure the ability of bank management to control operational costs against operating income. So the smaller the BOPO, the more efficient the operational costs incurred by the bank, and the possibility of problems that the bank will face have a small risk and will increase profitability (Simatupang & Franzlay, 2016). The ideal ratio of BOPO ranges from 70%-80%, so if the percentage of BOPO exceeds the ideal ratio, the bank is said to be inefficient. The bank's inefficiency is due to very high Operating Costs and Operating Income that need to be higher (Pinasti & Mustikawati, 2018).

The following formula can calculate operating expenses and operating income (BOPO):



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BOPO = $\frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\%$

Research Hypothesis

Based on the theoretical basis above, the hypotheses proposed in this study are as follows:

H1: FDR, NPF, ROA, and BOPO have a significant effect on CAR.

H2: FDR has a significant effect on CAR.

H3: NPF has a significant effect on CAR.

H4: ROA has a significant effect on CAR.

H5: BOPO has a significant effect on CAR.

III.METHODOLOGY

This research is a type of quantitative research. The data used and analyzed are obtained from secondary sources, namely BPRS financial statements in the form of financial ratios and including panel data types. The population in this study is all Islamic Rural Banks (BPRS) located in Indonesia, precisely in East Java. From that population, researchers then took a portion as a sample. There are 18 Islamic Rural Banks registered with OJK, which are case studies in this study, namely PT. BPRS Bhakti Haji, PT. BPRS Amanah Sejahtera, PT. BPRS Al Mabrur Babadan, PT. BPRS Bhakti Sumekar, PT. BPRS Lantabur Tebuireng, PT. BPRS Bumi Rinjani Kepanjen, PT. BPRS Karya Mugi Sentosa, PT. BPRS Mandiri Mitra Sukses, PT. BPRS Sarana Prima Mandiri, PT. BPRS Annisa Mukti, PT. BPRS Madinah, PT. BPRS Artha Pamenang, PT. BPRS Rahma Syariah, PT. BPRS Unawi Barokah, PT. BPRS Magetan (Perseroda), PT. BPRS Bakti Artha Sejahtera Sampang, PT. BPRS Mitra Mentari Sejahtera, PT. BPRS Ngawi Regency. The 18 banks are Islamic rural banks that have consistently reported financial statements on the official website of the Financial Services Authority (OJK) in the last three years (2020-2022).

The analysis method used in the study was panel data regression using Eviews 13 software. Five financial ratios are used as variables in this study, namely FDR, NPF, ROA, and BOPO as independent variables and CAR as dependent variables. Data analysis is carried out in several stages, namely, determination of the estimation model, classical assumption test, and data analysis. The estimation model determines the best model between the Fixed Effect Model, Common Effect Model, or Random Effect Model (Septianingsih, 2022). In this case, three tests were carried out: the Chow test, the Hausman test, and the Lagrange Multiplier test. The following are the criteria used.



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Table 1: Criteria of Model Estimation

Test	Result	Selected Model
Charr	Prob > 0.05	CEM
Chow	Prob < 0,05	FEM
Hausman	Prob > 0,05	REM
	Prob < 0,05	FEM
Lagrange Multiplier	Prob > 0,05	CEM
Lagrangge Multiplier	Prob < 0,05	REM

Source: Processed from various sources.

Meanwhile, several classical assumption tests that will be used (depending on the model used) are normality, multicollinearity, autocorrelation, heteroscedasticity and linearity tests. The criteria used in the classical assumption test are as shown in the following table.

Table 2: Criteria of Classical Assumption Test

Test	Method	Justification Criteria
Normality	Kolmogorov-Smirnov	Asymp. Sig $(p) > \alpha$
Multicollinearity	-	Collinearity < 0,85
Heteroscedasticities	Glejser	Probality > 0,05

Source: Processed from various sources.

While the data analysis carried out is the coefficient of determination test (R^2) , multiple linear analysis, F-test, and t-test, the coefficient of determination (R^2) test is carried out to determine how far the independent variable model is able to explain the variation of the dependent variable. Multiple linear analysis is used to determine the relationship between the dependent variable and two or more independent variables. The F-test is performed to determine the effect of all independent variables together on the dependent variable. At the same time, the t-test is used to determine the influence of each independent variable on the dependent variable. The criteria used are $sig \leq 0.05$. If this criterion is met, then the hypothesis proposed is accepted.

IV. RESULT AND DISCUSSION

Model Estimation

The Chow test is used to determine the best model between the Fixed Effect Model and the Common Effect Model.



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Table 3: Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F Cross-section Chi-square	4.277203	(17,32)	0.0002
	64.016037	17	0.0000

Source: Processed from Eviews 13 output

The probability of the Chow test above is $0.000 \,(< 0.05)$. Thus, the Fixed Effect Model estimation is better than the Common Effect Model. Since the selected model was FEM, testing continued on the Hausman test. Here are the results of the Hausman test.

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.292711	4	0.0358

Source: Processed from Eviews 13 output

The probability of the Hausman test above is $0.0358 \ (< 0.05)$. Thus, the model used in this study is the Fixed Effect Model. In FEM, there are two classical assumption tests needed, namely heteroscedasticity test and multicollinearity test.

Heteroscedasticity Test

The heteroscedasticity test is used to test whether, in a regression, there is an inequality of variance from residuals from one observation to another. Here are the results of the heteroscedasticity test.

Table 5: Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	-1.751720	14.11547	-0.124099	0.9020
X1	0.092363	0.134659	0.685899	0.4977
X2	-0.100844	0.271114	-0.371963	0.7124
X3	-0.025407	0.168312	-0.150953	0.8810
X4	0.013096	0.034664	0.377785	0.7081

Source: Processed from Eviews 13 output

It is known from the above data that the probability of all variables exceeds the significance of 5%, which means that heteroscedasticity does not occur in the model.



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Multicollinearity Test

The multicollinearity test aims to test whether there is a high or perfect correlation among independent variables or not. Here are the results of the multicollinearity test.

Table 6: Multicollinearity Test

	X1	X2	X3	X4		
X1	1.000000	0.195615	-0.211095	-0.051267		
X2	0.195615	1.000000	-0.066353	0.183700		
X3	-0.211095	-0.066353	1.000000	0.368201		
X4	-0.051267	0.183700	0.368201	1.000000		

Source: Processed from Eviews 13 output

The table above shows that the correlation coefficients X1 and X2 are 0.195615 < 0.85, the correlation coefficients X1 and X3 are -0.211095 < 0.85, the correlation coefficients X1 and X4 are -0.051267 < 0.85, the correlation coefficients X2 and X4 are 0.183700 < 0.85 and the correlation coefficients X3 and X4 are 0.368201 < 0.85. Thus, the results of the analysis showed that there were no symptoms of multicollinearity in the model.

Coefficient of Determination Test

The coefficient of determination (R²) is to measure how far the independent variable is able to explain the variation of the dependent variable. The value of the coefficient of determination is between zero (0) and one (1). A small R² value means that the ability of independent variables to explain dependent variable variation is minimal. Here are the results of the coefficient of determination test.

Table 7: Test Coefficient of Determination

R-squared	0.753685
Adjusted R-squared	0.592042
S.E. of regression	20.78425
Sum squared resid	13823.52
Log likelihood	-226.3415
F-statistic	4.662628
Prob(F-statistic)	0.000050

Source: Processed from Eviews 13 output

It is known from the table above that the R-squared value is 0.754 or 75,4%. The value of the coefficient of determination shows that the independent variables consisting of FDR, NPF, ROA, and BOPO are able to explain the CAR variable by 75.4%. In



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comparison, the remaining 24.6% is explained by other variables that are not included in this research model.

Multiple Linear Regression Test

Multiple linear tests aim to test the relationship of dependent variables that have more than one independent variable. Here are the results of multiple linear regression tests.

Tabel 8: Uji Regresi Linear Berganda

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	Variable	Coefficient	Std. Error	t-Statistic	Prob.
	С	11.96789	32.51424	0.368082	0.7152
	X1	-0.427114	0.222174	-1.922429	0.0604
	X2	-1.463807	0.601067	-2.435349	0.0186
	X3	-0.283956	0.462863	-0.613477	0.5424
	X4	0.168395	0.079847	2.108959	0.0429

Source: Processed from Eviews 13 output

The results of the regression test above show that the value of the constant obtained is 91.24406. This means that if all variables X were 0, CAR would be 91.24406. The regression coefficient X1 is -0.427114, which means that if FDR decreases by one unit, then CAR will increase by 42.7%. The regression coefficient X2 is -1.463807. The data shows that a decrease in NPF by one unit will have an impact on the increase in CAR by 146.3807%. The correlation coefficient of X3 is -0.283956, which means that a decrease in ROA by one unit will be followed by an increase in CAR of 28.4%. At the same time, the regression coefficient X4 is 0.168395. This means that if there is an increase in BOPO by one unit, then CAR will experience an increase of 16.8%.

F-test

The F-test is a test to determine the effect of all independent variables on the dependent variable. Here are the results of the F-test.

Table 9: F Test

R-squared	0.753685	Mean dependent var	41.84370
Adjusted R-squared	0.592042	S.D. dependent var	32.54066
S.E. of regression	20.78425	Akaike info criterion	9.197835
Sum squared resid	13823.52	Schwarz criterion	10.00816
		Hannan-Quinn	
Log likelihood	-226.3415c	riter.	9.510346
F-statistic	4.662628	Durbin-Watson stat	1.627024
Prob(F-statistic)	0.000050		



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Source: Processed from Eviews 13 output

The data presentation above shows that the F-statistic value of 4.663 is greater than the F-table value of 2,790, and the sig value of 0.000 is smaller than 0.05. Thus, the hypothesis proposed in this study that the variables FDR, NPF, ROA, and BOPO together affect the CAR of BPRS in East Java is accepted.

T-Test

The t-test aims to determine the effect of each variable X partially on variable Y. Here are the results of the t-test.

Table 10: t-Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Hypothesis
С	11.96789	32.51424	0.368082	0.7152	
X1	-0.427114	0.222174	-1.922429	0.0604	Rejected
X2	-1.463807	0.601067	-2.435349	0.0186	Accepted
X3	-0.283956	0.462863	-0.613477	0.5424	Rejected
X4	0.168395	0.079847	2.108959	0.0429	Accepted

Source: Processed from Eviews 13 output

It is known from the table above that the FDR variable (X1) obtained a t-statistic value of -1.922429, smaller than the t-table value of 2,007, and a sig value of 0.0604 greater than 0.05. Thus, H2, which states that the FDR variable has a significant effect on BPRS CAR in East Java, is rejected. The NPF variable (X2) obtained a t-statistic value of 2.2435349, more significant than the t-table value of 2,007, and a sig value of 0.0186 smaller than 0.05. Therefore, it can be stated that H3, which says that NPF has a significant effect on CAR, is accepted. The ROA variable (X3) obtains a t-statistic value of 0.613477, smaller than the t-table value of 2,007, and a sig value of 0.5424 greater than 0.05. The results of this t-test showed that there is no significant effect of the ROA variable on CAR, so H4 is declared rejected. The BOPO variable (X4) obtained a t-statistic value of 2.108959, greater than the t-table value of 2,007, and a sig value of 0.0429 smaller than 0.05. These data show that the effect of BOPO on CAR is significant, so H5 is declared accepted.

Effect of Financing to Deposit Ratio (FDR), Non-Performance Financing (NPF), Non-Asset Return (ROA), and Operating Expenses and Operating Income (BOPO) on Capital Adequacy Ratio (CAR)



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The results of the analysis above show that all independent variables consisting of FDR, NPF, ROA, and BOPO together have a significant effect on CAR. This means that all of these independent variables are able to explain the CAR variables. Any change in data in the CAR can be predicted by all independent variables by 19.4%. This finding confirms that financial ratios as indicators of a company's performance can be interconnected, including capital adequacy ratios that other financial ratios can predict. Therefore, efforts to improve banking performance cannot focus on one financial performance (financial ratio) alone, but improvements must be made as a whole. Because improving the performance of one element will have an impact on the other. Likewise, a decrease in performance in one aspect will have a negative impact on other aspects. The results are in line with previous studies that CAR is influenced by several variables (financial ratios) simultaneously (El-Ansary et al., 2019; Pravasanti, 2018; Princess & Dana, 2018; Rianto & Salim, 2020; Setiarini & Yudiana, 2023; Setiono, 2017; Encouragement, 2020; Yokoyama & Mahardika, 2019; Yulistina &; Ahiruddin, 2022).

Effect of Financing to Deposit Ratio to Capital Adequacy Ratio

The results of the analysis showed that FDR had a negative but not significant effect on CAR. This shows that a decrease in the amount of third-party funds disbursed as financing will increase the capital adequacy of BPRS. In other words, the smaller the amount of financing taken from third-party funds, the better the ability of BPRS to bear the risk of any productive assets that contain risk. If a bank's FDR ratio is 100%, it means that it uses all third-party funds as financing. In the end, this will make the bank unable to bear the risk of losses that may occur. The findings in this study that FDR's influence on CAR is negative and insignificant also indicate that BPRS with capital and liquidity that is smaller than BUS must use all third-party funds (exceeding the permissible limit). However, this does not have a negative impact on the capital adequacy of BPRS.

With the above findings, the hypothesis proposed in the study that FDR had a significant effect on CAR was rejected. Nevertheless, the results of this study fit with the theory that the relationship between FDR and CAR is negative. The results of this study are also in accordance with several previous studies which stated that FDR had a significant effect on CAR (Fajriati et al., 2021; Sari et al., 2023). However, other studies show different results, where FDR stated FDR's effect on CAR is not significant (Ali, 2019; Pravasanti, 2018; Setiarini & Yudiana, 2023; Yolanda, 2017; Yulistina & Ahiruddin, 2022).

Effect of Non-Performance Financing on Capital Adequacy Ratio



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The results showed that NPF has a negative and significant effect on CAR, which means that if there is a decrease in non-performing financing, the bank's capital adequacy ratio will increase significantly. NPF describes the level of problematic financing. The higher the NPF number, the worse the quality of financing at a bank. Conversely, a low NPF level indicates good financial performance. In general, financial performance based on non-performing financing is declared unhealthy if it exceeds the 5% limit. Therefore, a small NPF will have a good impact on the capital adequacy of a bank. The negative relationship between NPF and CAR, as the findings in this study show, is that, on the one hand, BPRS in the East Java region tends to be able to control and minimize potentially bad or problematic financing. On the other hand, debtors are generally trustful and orderly in completing their obligations.

With the results of this analysis, the research hypothesis stating that NPF has a significant effect on CAR is accepted. The results of this study are in accordance with several previous studies which also stated that the effect of NPF on CAR is negative and significant (Andini & Yunita, 2015; El-Ansary et al., 2019; Sari et al., 2023; Setiarini & Yudiana, 2023). However, the results contradict several previous studies, which stated that the effect of NPF on CAR is positive and significant (Yokoyama & Mahardika, 2019), as well as negative and insignificant (Ali, 2019; Encouragement, 2020).

The Effect of Return on Assets on Capital Adequacy Ratio

The results showed that ROA had a negative and insignificant effect on CAR. ROA is a ratio that shows the return on the amount of assets used in the company and is used to measure the effectiveness of the company's overall operations. In banking, a large ROA indicates good bank performance in obtaining returns. The return can then be stored in a retained earnings account and can later be used to increase bank capital. So, obtaining a significant return will increase the bank's capital adequacy ratio. However, the results of this study, which states that ROA does not have a significant effect on CAR, show that BPRS in East Java has yet to really be able to effectively utilize its assets to obtain as much profit as possible. Research findings show that the relationship between ROA and CAR is negative, which means that an increase in ROA will potentially decrease CAR.

Based on the results of this study, the research hypothesis that states that ROA has a significant effect on CAR is rejected. The results of this study are in line with several previous studies that stated that the effect of ROA on CAR was not significant (Putri & Dana, 2018; Rianto & Salim, 2020). However, several other studies show different results and state that ROA has a significant effect on CAR (Andini & Yunita, 2015;



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Asma & Khadidja, 2015; Cahyono & Anggraeni, 2015; Setiono, 2017; Yulistina & Ahiruddin, 2022).



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Effect of Operating Expenses and Operating Income (BOPO) on Capital Adequacy Ratio

The test results in this study showed that the effect of BOPO on CAR was positive and significant. BOPO is a ratio between operating expenses and operating income. If operating costs increase, operating income will decrease. The decrease in operating income will ultimately have an impact on the company's capital adequacy. So, economies of scale in a bank will be achieved if operating costs decrease while operating income is fixed or operating costs remain while operating income increases. Thus, if there is an increase in BOPO, it means that the bank does not achieve economies of scale, and if BOPO experiences a decrease, then the bank has succeeded in achieving economies of scale. If the bank can consistently achieve economies of scale, then profits can be included in retained earnings accounts and used to raise capital. That is why BOPO should be negatively correlated with CAR. However, the results of this study show that the effect of BOPO on CAR is positive and significant. The positive relationship direction shows that BPRS in East Java has yet to be consistently able to achieve economies of scale by increasing operating income or lowering operating costs. This inability is possible because, in 2020-2022, banks must concentrate on reducing risks due to the Covid-19 pandemic rather than increasing revenues.

Based on these findings, the research hypothesis that BOPO has a significant effect on CAR is accepted. Based on the significance of BOPO's influence on CAR, this study is in accordance with Sorongan (2020) and Yulistina and Ahiruddin (2022). However, if you look at the direction of the relationship between BOPO and CAR, this study contradicts these studies, which state that BOPO is negatively correlated with CAR. Research conducted by Cahyono and Anggraeni (2015) shows that the direction of BOPO's relationship with CAR is positive, although not significant. If you look at the direction of BOPO's relationship with CAR, the study is in line with this study. This similarity is due to the general conditions that occurred during the study period. Cahyono and Anggraeni's research was conducted in a period where there was a downward trend in CAR at National Private Commercial Banks, and Foreign Exchange went public during the period. Meanwhile, this research was conducted in a period where there was a downward trend in revenue and an increase in BOPO caused by the COVID-19 pandemic.

V. CONCLUSION



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The results showed that FDR, NPF, ROA, and BOPO had a significant effect on CAR simultaneously. This finding means that these financial ratios are able to explain and predict any changes in the data in the CAR. Based on this, the first hypothesis was then declared acceptable. FDR was known to have a negative and insignificant effect on CAR, so the second research hypothesis was rejected. NPF is known to have a negative and significant effect on CAR, so the third hypothesis is accepted. The effect of ROA on CAR is negative and insignificant. Therefore, the fourth hypothesis was declared rejected. At the same time, the influence of BOPO on CAR is positive and significant. Based on these findings, the fifth research hypothesis was accepted.

The results of the study stating that the first, third, and fifth hypotheses (with a positive relationship direction) were accepted, while the second and fourth hypotheses were rejected, showed that in the research period, BPRS in East Java was not able to maintain liquidity and increase gains consistently. However, BPRS in East Java managed to prevent risks that might occur due to problematic financing. This is evident from NPF, which has a negative and significant effect on CAR. All of these facts are most likely due to the fact that during the study period, BPRS concentrated on reducing and mitigating potential and ongoing risks due to the Covid-19 pandemic, while economies of scale were not achieved due to declining revenues (where almost all companies experienced the same trend) or because operational costs tended to increase.

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