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Examining the impact of financial ratios on stock prices of large banks listed on the Indonesia stock exchange

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Abstract
This research aims to determine the effect of financial ratios on the stock prices of big banks listed on the Indonesia Stock Exchange in 2013-2022. The financial ratios used in this study are Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Return on Equity (ROE), Operating Costs Operating Income (BOPO), and Bank Indonesia interest rates (BI). The population in this study were banking companies listed on the Indonesia Stock Exchange during 2013-2022. The research sample was 12 banking companies obtained using purposive sampling techniques. The data collected were taken from the OJK, BPS, and BEI websites. The method in this study uses quantitative data analysis. The results of the study show that simultaneously the variables CAR, NIM, ROE, BOPO, and Bank Indonesia interest rates affect stock prices. Partially, the variables NIM, ROE, BOPO, and Bank Indonesia interest rates have a negative effect on stock prices, while the CAR variable does not affect stock prices.

Keywords: Share Price, Capital Adequacy Ratio, Net Interest Margin, Operating Costs Operating Income, Bank Indonesia interest rates

Abstrak
Penelitian ini bertujuan untuk mengetahui pengaruh rasio keungan terhadap harga saham big banks yang terdaftar di Bursa Efek Indonesia pada tahun 2013-2022. Rasio keungan yang dipakai dalam penelitian ini adalah Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Return on Equity (ROE), Biaya Operasi Pendapatan Operasi (BOPO), dan suku bunga Bank Indonesia (BI). Populasi dalam penelitian ini adalah perusahaan perbankkan yang terdaftar di Bursa Efek Indonesia selama tahun 2013-2022. Sampel penelitian sebanyak 12 perusahaan perbankkan yang diperoleh dengan teknik purposive sampling. Data yang dikumpulkan diambil dari website OJK, BPS, dan BEI. Metode dalam penelitian ini menggunakan analisis data kuantitatif. Hasil penelitian menunjukan bahwa secara simultan variabel CAR, NIM, ROE, BOPO, dan suku bunga Bank Indonesia berpengaruh terhadap harga saham. Secara parsial variabel NIM, ROE, BOPO, dan suku bunga Bank Indonesia berpengaruh negatif terhadap harga saham, sedangkan variabel CAR tidak berpengaruh terhadap harga saham.

Kata kunci: Harga Saham, Capital Adequacy Ratio, Net Interest Margin, Biaya Operasi Pendapatan Operasi, suku bunga Bank Indonesia

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1. Introduction

Shares are evidence that shows a person's or institution's ownership of a company (Suratna et al., 2020). According to the Indonesian Stock Exchange (Bursa Efek Indonesia, 2021) shares are defined as a sign of capital participation in a company. Shares can also be interpreted as the book value in a financial instrument which refers to the share of individual/institutional ownership of a company. This means that

individuals or institutions invest their capital in the company to be managed by management, then used to finance the company's operational activities. So, if someone owns shares in a company, he automatically owns part of that company. He is also entitled to profits if his company makes a profit.

Every day, the stock market attracts many investors looking to make money, earn dividends, or buy shares of selected companies to include in their portfolio. The market is also considered to offer many advantages for lucky and astute investors, but basically, the market is also risky because it tends to fluctuate along with the ups and downs of the economy and the companies themselves. The openness of stock exchanges to individuals and institutions results in hundreds of billions of dollars in stock trading every day. For example, on February 23, 2023, one of the world's largest exchanges, NASDAQ, saw trade worth $228 billion, in the form of 4.6 billion shares, and through 31 million trades. For the largest exchange in the world, the New York Stock Exchange (NYSE), 3.8 billion shares of Consolidated Tape A (a list of shares on the NYSE) changed hands on the same day (Cheema, 2023)

The transaction volume above makes the stock exchange a barometer of an economy, and as business gets tighter, share prices fall because many investors withdraw their capital on the stock exchange. The biggest example is the collapse of the global stock market after the collapse of Lehman Brothers in 2008 which triggered a global recession (Partington & Wearden, 2020). Apart from that, in 2020 the stock market experienced a collapse due to the Covid-19 pandemic, India was one of the worst hit. The BSE Sensex index was 42273 on 20 January 2020 but on 8 April 2020 it was 29894. This affects the stock market and financial stability of people in India (Das & Mahapatra, 2020). In just four trading days, the Dow Jones Industrial Average (DJIA) plunged 6,400 points, equivalent to about 26%. This caused the unemployment rate in the US to reach above 20% (Mazur et al., 2021).

Stock price movements in Indonesia always experience ups and downs over time. Over the last 30 years, the stock market in Indonesia has experienced at least 3 corrections. First, the financial crisis of 1997-1998 hit banking, so the Indonesian government at that time had to carry out an extraordinary policy of bailing out. In fact, this policy has become a legacy to this day. This caused Indonesia's economic growth to contract by 13.16% (Angriani, 2023) . Second is the financial crisis in 2008-2009, this crisis occurred in the United States (US) and Europe but the domino effect reached Indonesia, but in that year Indonesia still experienced economic growth of more than 6% (Bank Indonesia, 2009).Third is the Covid-19 pandemic crisis, when it emerged in 2020, it succeeded in destroying the Indonesian economy until it was corrected so deeply, this caused economic growth to experience minus 2.07% (BPS, 2021)

When a crisis occurs, not only is economic growth destroyed, the stock market also experiences a deep correction. For example, when the 1997-1998 financial crisis occurred, the Composite Stock Price Index (IHSG) was corrected by 65.63% to its lowest point of 255 in September 1998. Even though in July 1997 the Composite Stock Price Index (IHSG) had touched its highest point in number 742 (Tradingview, 1998)

Apart from the 1998 crisis, the 2008 crisis also caused the JCI to be corrected by 61.62% to its lowest point of 1089 in October 2008, even though in January 2008 it had touched its highest point of 2838 (Tradingview, 2008). Lastly was the 2020 crisis caused by Covid-19 which caused the IHSG to fall by 41.56% to its lowest point of 3911 in March 2020, even though in February 2018 it had touched its highest point of 6693 (Tradingview, 2020).

Figure 1. Graph of Composite Stock Price Index 1997 – 2022
Source: tradingview.com

Apart from the JCI being corrected when the crisis occurred, individual share prices also experienced a decline, and this was usually followed by a decline in financial ratios. For example, the financial ratios of 3 large government-owned banks, during the Covid-19 crisis, the financial ratios of these banks experienced a decline. This can be seen from the annual financial report, ROE, NIM, CAR and OCOR experienced poor performance compared to the year before the crisis (OJK, 2020).

Table 1. Financial Ratios of 3 Government - Owned Banks Before and During the Covid-19 Crisis

Stock	Year	Price	CAR	ROE	NIM	OCOR
BBRI	2019	4400	22.55	19.41	6.98	70.1
BBRI	2020	4170	20.61	11.05	6	81.22
BMRI	2019	3840	21.39	15.08	5.46	67.44
BMRI	2020	3160	19.9	9.36	4.48	80.03
BBNI	2019	7850	19.73	14	4.92	73.16
BBNI	2020	6175	16.78	2.86	4.5	93.31

Source: Financial Services Authority (OJK)

Basically, a company's financial ratios can influence an investor's decision to buy or sell. Good financial ratios can attract investors to come, whereas bad financial ratios can be a reason for investors to sell or withdraw their investment funds (Hidayat, 2017). We can see from data in Table 1 that financial ratios such as CAR, ROE, NIM and OCOR in the three large government-owned banks experienced a decline in financial performance when Covid-19 occurred (OJK, 2020). Apart from financial ratios which fell when Covid-19 occurred, it turned out that share prices also fell. Table 1 shows that when Covid-19 occurred, the relationship between prices and financial ratios had a strong relationship.

The purpose of this study is to determine the effect of financial ratios on the stock price itself. In addition, this study is also important to be conducted so that we can project and predict the price of banking stocks in the future. This is useful for individual and institutional investors in making decisions to buy and sell stocks in the banking sector.

The literature review in this study was taken from several previous studies related to the Analysis of the Influence of Financial Ratios on Stock Prices. (Manullang et al., 2019) in his study entitled "The Influence of Profitability, Solvency, and Liquidity Ratios on Stock Prices in Mining Sector Companies Listed on the IDX for the 2014-2018 Period". The results of this study indicate that partially Earning Per Share (EPS) has a positive effect on stock prices. Return on Equity (ROE) has a negative effect on stock prices, while Debt to Equity Ratio (DER) and Quick Ratio (QR) do not affect stock prices. (Djuniar, 2021) in his study entitled "Analysis of the Influence of Financial Ratios on Stock Prices of Banking Companies on the Indonesia Stock Exchange". The results of the study show that ROE, NPM, and EPS affect stock prices, while ROA and OPM do not have a significant effect on stock prices. Simultaneously, ROA, ROE, NPM, EPS, and OPM have a positive and significant effect on the stock prices of banks listed on the Indonesia Stock Exchange (IDX). (Wijayanti & Hadiprajitno, 2019) in their research entitled "The Effect of Financial Ratios on Stock Prices of Leading Companies (Empirical Study of Companies Consistently Included in the LQ45 Index in 2015-2017)". The results of the study showed that ATR had a positive effect on stock prices, while CR, DER, and ROA did not affect the stock prices listed on the LQ45 Index.

2. Research Method

The scope of this research was carried out in large bank companies listed on the Indonesia Stock Exchange (BEI). The approach used is to analyze the Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Return on Equity (ROE), Operating Costs Operating Income (OCOR), and Bank Indonesia (BI) interest rates affecting the share prices of 12 large listed banks on BEI.

The population in this research are companies operating in the banking sector that are listed on the Indonesia Stock Exchange for the 2022 period, namely 46 companies. The sampling technique in this research was carried out using the purposive sampling method. Purposive sampling is a technique for determining samples with certain considerations. The reason for using this purposive sampling technique is because it is suitable for quantitative research or research that cannot be generalized (Sugiyono, 2018).

The type of data used in this research is secondary data, meaning that this is data that is not collected directly by researchers (Sugiyono, 2018). However, this data can be accessed and obtained from the official websites of the Indonesian Stock Exchange (BEI), Financial Services Authority (OJK), and Central Statistics Agency (BPS). This research uses panel data. Panel data is combined data between cross section and time series data (Widarjono, 2018).The use of data between objects or commonly referred to as cross section is taken from data from twelve large banking companies

(BBCA, BBRI, BMRI, BBNI, BBTN, BNGA, PNBN, NISP, MEGA, BJTM, BJBR, BNII), while for data between time or what we usually call a time series is taken from 2013-2022.

Data processing in this research uses the E-Views application. The data used in this research is panel data. Panel data is combined data between cross section and time series data (Widarjono, 2018). There are several advantages to the panel data estimation method, namely, a large number of data observations, increased degrees of freedom, reduced collinearity between explanatory variables, increased efficiency of econometric estimates, and more reliable and more stable parameter estimates (Hakim, 2014). The equation formula in this panel data regression is as follows:

$$Y_{it} = \beta_0 + \beta_1 CAR + \beta_2 NIM + \beta_3 ROE + \beta_4 OCOI + \beta_5 IR + e_{it}$$

Notes:

Y	: Share Price (Rp)
CAR	: Capital Adequacy Ratio (%)
NIM	: Net Interest Margin (%)
ROE	: Return on Equity (%)
OCOI	: Operating Costs Operating Income (%)
IR	: Interest Rate (%)
i	: Company Type
t	: Time
e	: Error Term
β0	: Constant
β1-β2	: Regression Coefficient

The process in this research used a regression model estimation method which was carried out using panel data using three approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), Random Effect Model (REM) (Widarjono, 2018). In order to correctly select the model that will be used in this study, a number of tests are carried out, namely: Chow test (Chow Test) is a test performed for the selection between a common effect model or a fixed effect model, Hausman test, is a trial performed to select between a random effect or fixed effects model and lagrange multiplier test is to test between common effect and random effect model.

3. Results and Discussion

3.1. Results

The first step in panel data regression testing is to find out the best method for processing the data. The best method is chosen from calculations using common effects, fixed effects, and random effects. First, the common effect method is a model that only looks at a combination of time series and cross-section data, without paying attention to the time or individual dimensions. Second, fixed effects are a method that shows differences in the intercept for each individual. This model assumes the slope coefficient does not vary with individuals or time. Third, is the random effect estimation model which assumes that disturbance variables allow for a relationship between individuals and time (Widarjono, 2018).

These three methods are estimated in stages, starting from the common effect model, then the fixed effect model, and finally the random effect model. These three methods are estimated to see, compare, and select the best model for further analysis. The estimation results are as follows:

Table 2. Estimation Results of Common Effect Model, Fixed Effect Model, and Random Effect Model Testing

Variable	Common Effect		Fixed Effect		Random Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	22920.15	0.0000	20396.63	0.0000	20321.01	0.0000
CAR	-211.4871	0.0010	-34.91032	0.3857	-42.77212	0.2814
NIM	199.3354	0.3435	-421.4997	0.0069	-346.2602	0.0214
ROE	-87.1804	0.0968	-161.5735	0.0000	-156.9888	0.0000
OCOI	-172.6378	0.0000	-158.9573	0.0000	-160.0263	0.0000
IR	-511.9577	0.0002	-84.81329	0.2440	-113.6002	0.1156
R-squared	0.389138		0.884426		0.477286	
F-Statistic	14.52431		49.26281		20.81848	
Prob. F-Stitistics	0.000000		0.000000		0.000000	
Observations	120		120		120	

After testing three models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), then the Chow Test, Hausman Test, and Lagrange Multiplier Test were carried out to get the best model in this research.

Table 3. Test Chow

Effect Test	Statistic	d.f	Prob.
Cross-section F	40.127566	(11.103)	0.0000
Cross-section Chi-square	199.795346	11	0.0000

Based on Table 3 of the Chow Test above, the two probability values for Cross-section F and Cross-section Chi-square are 0.0000, so if you use a significance level of 5%, this means rejecting the null hypothesis (0.0000 < 0.05). So, this first test shows that the fixed effect model is the best model. Based on the Chow Test results which reject the null hypothesis, the next data test is the Hausman Test.

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	5	1.0000

Based on Table 4 Hausman Test, the Chi-square probability value is 1.0000 using a significance level of 5%, which means it does not reject the null hypothesis (1.0000 > 0.05). So, it shows the random effect model as the best model. Based on the results of the Hausman test which does not reject the null hypothesis, it can be concluded that the best model chosen is the random effect model. The Lagrange Multiplier test does not need to be carried out because the common effect model has been eliminated during the Chow Test.

Table 5. Best Model Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20321.01	2867.148	7.087535	0.0000
CAR	-42.77212	39.52152	-1.082249	0.2814
NIM	-346.2602	148.3857	-2.333514	0.0214
ROE	-156.9888	37.07004	-4.234924	0.0000
OCOI	-160.0263	24.82368	-6.446518	0.0000
IR	-113.6002	71.64634	-1.585569	0.1156
R-squared	0.477286			
Adjusted R-squared	0.45436			
F-statistic	20.81848			
Prob(F-statistic)	0.000000			

The coefficient of determination test (R^2) is a test carried out to show the percentage influence of the independent variables in explaining the dependent variable in the research (Widarjono, 2018). The coefficient of determination test (R^2) measures the percentage of variation in stock prices explained by the independent variables. For the 2013–2022 period, an R^2 of 0.4773 indicates that 47.72% of the stock price variations of major banks listed on the IDX are explained by the model, while 52.27% are influenced by other factors.

The F-test shows that the independent variables collectively have a significant effect on stock prices, as the F-statistic probability value (0.000000) is less than the 5% significance level. The t-test evaluates the individual effects of variables. Results show: CAR and BI Interest Rate have no significant partial effect on stock prices. NIM, ROE, and OCOI significantly and negatively affect stock prices: A 1% increase in NIM reduces stock prices by IDR 346. A 1% increase in ROE reduces stock prices by IDR 157. A 1% increase in OCOI reduces stock prices by IDR 160.

3.2. Discussion

This study shows that financial ratios have varying effects on the stock prices of major banks listed on the Indonesia Stock Exchange (IDX) during the 2013–2022 period. The Capital Adequacy Ratio (CAR) has no significant effect on stock prices, with a significance value of 0.2814 (>0.05). This is because CAR is not the only primary ratio considered by investors. Meanwhile, the Net Interest Margin (NIM), Return on Equity (ROE), and Operating Costs Operating Income (OCOI) each have a significant negative effect on stock prices. For instance, a 1% increase in NIM, ROE, and OCOI reduces stock prices by IDR 346, IDR 157, and IDR 160, respectively. This negative relationship occurs because investors tend to sell stocks when these ratios peak, driven by concerns such as rising interest rates or declining profits in subsequent periods.

The Bank Indonesia (BI) Interest Rate does not have a significant effect on stock prices, with a significance value of 0.1156 (>0.05). This is due to the ability of Indonesian banks to maintain income through the Net Interest Margin even when interest rates rise. Additionally, the majority of investors in Indonesia tend to engage in short-term trading, making them less affected by interest rate changes. The findings of this study are consistent with previous research, which also demonstrated the negative

effects of certain financial ratios on stock prices, albeit with variations in significance influenced by other factors outside the model.

4. Conclusion

Based on the results of the research and discussion presented in the previous chapter, it can be concluded that simultaneously the variables Capital Adequecy Ratio, Net Interest Margin, Return on Equity, Operating Costs Operating Income, and the Bank Indonesia Interest Rate influence the share prices of big banks listed on Indonesian Stock Exchange in 2013-2022. Partially, the Capital Adequacy Ratio (CAR) has no effect on share prices. Net Interest Margin (NIM) has a significant negative effect on share prices. Return on Equity (ROE) has a significant negative effect on share prices. Operating Costs Operating Income (OCOI) has a significant negative effect on share prices. Lastly, the Bank Indonesia (BI) interest rate has no effect on share prices.

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