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## THE INFLUENCE OF DER, CR, NPM ON STOCK PRICES AND RUPIAH EXCHANGE RATES AS MODERATING VARIABLES

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### ABSTRACT

This research was conducted to analyze the factors that influence stock prices like DER, CR, and NPM which are moderated by the Rupiah exchange rate. The approach used is quantitative with panel data from banking companies indexed in LQ-45 from March 2017 to March 2023. Using Random Effect Model (REM) and Moderated Regression Analysis (MRA) analysis. The results show that DER, CR, and the Rupiah exchange rate affect stock prices. Also, the Rupiah exchange rate can weaken DER in influencing stock prices and strengthening CR in influencing stock prices. This research is a study that adds the Rupiah exchange rate as a moderator variable which proves that the Rupiah exchange rate is able to moderate DER and CR in influencing banking stock prices. The results of the study provide information and insight for decision makers and investors in banking companies that DER, CR and Rupiah exchange rates can influence banking stock prices. Therefore, investors pay attention to these factors before investing in banking companies. The limitation of this research lies in the research object which is only devoted to LQ-45 indexed banking companies.

**Key Words:** DER, CR, NPM, rupiah exchange rate, stock prices

### INTRODUCTION

In early 2023 Bank America failed and this could have an impact on the Indonesian state stock market (Liu et al. 2020). In addition to American banks going bankrupt, at the beginning of 2020 there was a corona virus event. The COVID-19 pandemic has affected the Indonesian economy, especially the banking and stock market sectors in Indonesia (Lorenza et al. 2022). Investors consider stock investment as "High Return-High Risk", which means that this instrument offers the potential to earn large profits but also faces high consequences (Amanda 2013). The companies that are most in demand by potential investors to invest their shares are banking companies, because a country always strives for safe and stable banking conditions. According to data from the IDX report from 2019 - 2022, 3 banking companies always rank in the top 5 in the 50 largest market capitalizations, they are BBKA, BBRI and BMRI.

LQ-45 banking company's Stockprice has fluctuated. BNI shares at the beginning of 2020 were still strong at the level of IDR 7,850, then due to the Covid-19 pandemic the Stockprice dropped to the level of IDR 6,175 at the end of 2020. The same thing happened with BMRI's Stockprice in 2019 at IDR 7,675 due to Covid-19 the Stockprice fell to IDR 6,770 at the end of 2020 and in 2021 or early 2022 managed to close at IDR 7 .025. BCA bank shares in 2019 to 2021 have experienced an increase in Stockprices, on the other hand bank BTN shares in 2019-2021 have decreased.

Investors must be able to read the market well, understand various aspects that are thought to have an influence on the value of stock instruments, and estimate how investors can benefit when investing (Wulandari 2014). The price level of shares can be caused by internal and external aspects. Internal aspects are classified as Debt Equity Ratio (DER), Current Ratio (CR), Net Profit Margin (NPM) while external aspects include the Rupiah Exchange Rate. Stock price fluctuations can also occur due to non-fundamental macroeconomic factors such as changes in the value of the Rupiah against the US Dollar (Nafiah 2019). Exchange rates can affect stock prices because investors will be careful in investing in shares or investments (Slaihin 2021). In April 2020 the rupiah exchange rate weakened by 12.4% against the US Dollar, this volatility was still better than the 2008

financial crisis and the rupiah depreciated 30.9% (Haryanto 2020). When the exchange rate depreciates, it can increase exports which will increase investment and Stockprices (S. H. Utomo et al. 2019).

DER takes into account the origin of company capital which can have an effect on the stock market and Stocktrading volume, this will also affect Stockprices (Hidayah, Yuliansyah, & Asmaranti 2022). Research from Dewi (2022) shows that DER has an effect on stock prices, which means that debt is lower than the company's own capital, so this can have an impact on increasing investor interest in buying company shares (Dewi 2022). The relationship between DER and the exchange rate can occur due to the influence of the exchange rate on interest costs and the company's financial burden related to debt. A depreciating exchange rate increases the cost of corporate debt in foreign currency and increases a company's DER (Sandi 2020).

The Current Ratio (CR) can affect dividend payments, investor interest and Stockprices (Mukti 2018). Companies with good CR tend to be more stable in dealing with fluctuations in exchange rates and maintain relatively stable stock prices. On the other hand, companies with poor CR will experience pressure on exchange rates and stock prices when exchange rate fluctuations occur (Hutabarat 2013). Research from Pradani and Widiasmara (2021) shows the results of their research that CR can affect stock prices because the level of the company's CR ratio shows that the obligations of the company have been properly accounted for (Pradani & Widiasmara 2021). On the other hand, Sari (2020) shows that CR cannot affect stock prices because investors do not see CR levels and investors see ratios or external factors that can have an impact on the company's stock price (Sari 2020).

NPM describes the company in generating net profit. Investor interest in investing can be seen from how much the company generates net profit (Triyanti 2021). Research by Purwaningsih & Trianti (2019) shows that NPM can affect stock prices, which means that investors see more about the company's ability to get net profits so that the returns on shares obtained and expected by investors are also appropriate (Purwaningsih & Trianti 2019). On the other hand, Nugroho (2020) shows that NPM cannot influence the Stockprice of state-owned banks because the bank's operating income mainly comes from lending, so that the greater the bank's operating income indicates the greater the bank's credit risk (Nugroho 2020). Fluctuations in exchange rates that are increasingly unstable will affect the company's Net Profit Margin (NPM). If the exchange rate strengthens, companies that export will earn more profits and vice versa (Puspitaningtyas 2016).

The inconsistency of previous research results is the background of this research. The uniqueness of this study is the use of moderating variables to provide a boost or weaken the relationship between DER, CR, NPM on LQ-45 Banking stock prices. The variable is the Rupiah Exchange Rate.

## **LITERATURE REVIEW**

### **Agency Theory**

According to agency theory, the assignee (agent) functions as management while the employer (principal) is the shareholder (Purwaningsih & Trianti 2019). An agent who runs a company with investor confidence must have a lot of knowledge. Principals only receive limited information (Nainggolan & Karunia 2022).

### **Teori Signaling**

A form of business management known as signal theory provides investors with an idea of management's view of a company's future prospects. The idea also states that strong financial results are a sign that a business is doing well (Brigham and Houston 2012). Investor interest in trading stocks will be influenced by that information, which will cause the market to react by showing changes in the volume of stock trading (Cahyaningtyas 2022).

### Stock

One of the most common forms of investment in the stock market is shares, which contain instruments with a fairly high level of risk (Pratomo 2014). Compared to raising money from financial institutions such as banks, stocks can help companies raise more money from investors (Utomo 2019). From an investor's point of view, stocks can benefit from rising Stockprices, paying dividends, and returning capital gains (Rahayu 2021).

### Debt Equity Ratio (DER)

DER assesses the company's capacity to settle all debts with its total equity. (Cahyani & Winarto 2017). DER definitely differs from company to company depending on the nature of the company and variations in the company's cash flows (Munawir 2011). DER calculation formula according to Kasmir (2019):

$$\text{Debt Equity Ratio} = \frac{\text{Total liabilities}}{\text{Total equity}}$$

### Current Ratio (CR)

When a company is billed for debt as a whole, CR is used to assess its capacity to settle obligations or debts that may be due soon (Karjono & Himawan 2019). The current ratio (CR) describes a comparison between current assets and current liabilities, changes in both will affect the level of liquidity (Riyanto 2013). Low CR can be a challenge for company liquidation (Sawir 2019). A high CR value can indicate that the company is doing well or is in good health because it shows how much the company can pay off its short-term debt (Brigham 2014). However, a CR that is too high may be a sign of poor management of liquidity sources (Kundiman & Hakim 2016). The CR calculation formula according to Kasmir (2019):

$$\text{Current Ratio} = \frac{\text{Current asset}}{\text{Current liabilities}}$$

### Net Profit Margin (NPM)

NPM describes companies in generating net profit (Triyanti & Susila 2021). Based on sales estimates by management, NPM predicts future profitability and shows the effectiveness of management in managing the business (Fitriyani 2019). In sales transactions, operating profit and net sales that depend on the size of operating costs determine the level of NPM (Bachri 2020). Inefficient company operations, resulting in high costs to be borne by the company, and high interest rates, which can reduce the profits generated by the company, resulting in a low NPM ratio. The calculation formula is according to Kasmir (2019).

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Income}}$$

### Rupiah Exchange Rate

The rupiah exchange rate is the price level that two countries have decided to trade (Mankiw 2012). Various economic factors such as interest rates, inflation rates, political stability, and other considerations can cause changes in the rupiah exchange rate (Suharto 2021). Indonesia uses a floating exchange rate system in which the rupiah exchange rate is determined based on the strength of market supply and demand for foreign currencies (Indonesian Bankers Association 2012). The formula for calculating a fixed exchange rate according to Sukirno (2016):

$$\text{Rupiah Exchange Rate} = \frac{\text{Buying rate} + \text{selling rate}}{2}$$

## METHODS

The approach used is quantitative and uses the Eviews 10 program. This research is to find out whether the Rupiah exchange rate supports moderation in the relationship between DER, CR, NPM on LQ-45 Banking Stock Prices. Data processing uses data originating from the IDX (secondary data) accompanied by a literature study. The population used is banking companies for the period March 2017 to March 2023 which are registered on the IDX website. Determination of the sample using purposive sampling that meets the criteria, namely banks that routinely publish financial positions and are always indexed LQ-45 in the period 2017 – 2023. There are five companies that meet these criteria, namely; BBRl (Bank BRI), BBKA (Bank BCA), BBNI (Bank BNI), BMRI (Bank Mandiri), BBTN (Bank BTN).

In this study, the Moderated Regression Analysis (MRA) approach was applied, and panel data regression and utilizing combined cross section and time series data. In the regression phase of panel data, the Chow Test, Hausman Test, and Lagrange Multiplier Test are used to determine which estimate model, out of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), is the best. Classic assumption test (multicollinearity test and heteroscedasticity test) after that do regression testing (t test, F test and R-Squared).

## RESULT

**Table 1. Chow Test**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	48.612589	(4,116)	0.0000
Cross-section Chi-square	123.054227	4	0.0000

**Source: Data processed**

The Chow test intends to choose between the CEM and FEM models. According to the Chow test results, the probability value is  $<0.05$ , so  $H_0$  is rejected and  $H_1$  is accepted. Then the results of the Chow Test get the best model, called FEM.

**Table 2. Hausman Test**

Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

**Source: Data processed**

Hausman test is used in determining the best model between FEM and REM. According to Table 5, the Chi-Square-Statistic Prob value is  $1.0000 > 0.05$ , so  $H_0$  is accepted. In the Hausman test the best estimation model is REM.

**Table 3. Lagrange Multiplier Test**

Null (no rand. effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	496.2508 (0.0000)	0.484457 (0.4864)	496.7353 (0.0000)

**Source: Data processed**

This test is useful in determining the best model between the CEM and REM models. Based on the results of the Lagrange Multiplier test above, the value of both is  $0.000 < 0.05$  so that  $H_1$  is accepted and  $H_0$  is rejected. In the Lagrange Multiplier test the best model is REM. So this study uses the REM model to be regressed.

**Table 4.** Random Effect Model

Variable	Coefficient	t-Statistic	Prob
X1	-0.119006	-8.342804	0.0000
X2	-0.604606	-4.153083	0.0001
X3	-9.21E-05	-0.157448	0.8752
Z	6.90E-06	2.346786	0.0206
C	9.410582	46.41156	0.0000
R-squared	0.437784		
Prob(F-statistic)	0.000000		

Source: Data processed

From the results of the REM model test, the regression model obtained between the variables DER, CR, NPM, the Rupiah exchange rate on the stock price variable is as follows:

$$Y_{it} = 9.410 - 0.119 X_{1,it} - 0.604 X_{2,it} - 9.21e05 X_{3,it} + 6.90e06 Z_{it} + e_{it}$$

The T test is used to obtain information about the effect of the variables DER, CR, NPM, Rupiah Exchange rate individually when explaining stock price variables by comparing t-statistic values  $>$  t-table and probability levels with values lower than 5%. So based on the results of the Random Effect Model it is known that DER, CR, and the Rupiah exchange rate can significantly influence the level of stock prices with respective coefficients of; 0.119 for DER. 0.604 for CR and 6.90e60 for the Rupiah exchange rate in influencing stock prices.

In the F test to observe the effect simultaneously between the variables DER, CR, NPM, Rupiah Exchange rate individually in explaining the stock price variable by looking at the probability value  $<$  5%. So based on the results of the Random Effect Model it is known that the F value is less than 5% so that the variables DER, CR, NPM, and Rupiah exchange rate can significantly influence stock prices. The R-square value is 0.4377. This condition means that the variables DER, CR, NPM and the Rupiah exchange rate are able to explain the stock price variable of 43.77% and the rest is explained by other variables.

**Table 5.** Multicollinearity Test

Variable	VIF
X1	1.199931
X2	1.195933
X3	1.194359
Z	1.043154

Source: Data processed

According to Ghazali (2016) the model equation which avoids experiencing multicollinearity is classified as good. This model shows that VIF values that are less than 10 are classified as multicollinearity not experienced by the regression model equation.

**Table 6.** Heterokedastisitas Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey	
Prob Chi-square	0.1299

Source: Data processed

This test is used in testing the heteroscedasticity problem in this research model. The heteroscedasticity test states that the Chi-square probability is  $0.1299 < 0.05$ , so this model avoids heteroscedasticity.

**Table 7.** Moderated Regression Analysis (MRA) Test

Variable	Coefficient	t-Statistic	Prob
X1Z	-2.41E-06	-5.559720	0.0000
X2Z	2.53E-05	3.037934	0.0029
X3Z	5.15E-08	1.124147	0.2632
C	8.501493	33.58028	0.0000

Source: Data processed

According to Table 7, the regression model between the moderating variables affects the independent variable on the dependent variable as follows:

$$Y_{it} = 8.501 - 2.41E06 X1Z_{it} + 2.53E05 X2Z_{it} + 5.15E08 X3Z_{it} + e_{it}$$

The MRA test results above, X1Z is the interaction between DER and the Rupiah exchange rate which has a Prob value of  $< 0.05$  and the coefficient value  $-2.41E-06$  is negative, so the rupiah exchange rate reduces the effect of DER on stock prices. For X2Z, the interaction between CR and the Rupiah exchange rate has a Prob value of less than 0.05 and the coefficient value of  $2.53E05$  is positive, meaning that the rupiah exchange rate strengthens the effect of CR on stock prices. As well as for X3Z, there is an interaction between NPM and the Rupiah exchange rate with a Prob  $> 0.05$  with a coefficient of  $5.15E-08$  which has a positive value, meaning that the rupiah exchange rate is not able to moderate the effect of NPM on stock prices.

## DISCUSSION

### Effect of Debt Equity Ratio on Stock Prices

The results of the analysis state that DER can negatively and significantly affect the stock price level. This result by a large DER ratio can provide an indication of a large quantity of financing and shows that banking companies have a lot of financing coming from creditors rather than the company's own financial sources. A high DER ratio can also indicate a company is utilizing debt as equity financing (Alifatussalimah 2020). This conclusion is in line with Yunus and Simamora (2017), DER can negatively and significantly affect the stock prices of banking companies because the higher the DER, the higher the bank's operations come from loans and this can increase credit risk so that stock prices decrease (Yunus 2021). This is in line with signal theory where a high DER will give a bad signal to potential investors when making decisions in buying shares. In addition, there is another theory that is aligned, namely the agent theory which explains that obligations that are used on a large scale can cause problems between agents and principals so that they can raise debt agency costs.

The rupiah exchange rate can weaken in moderating the DER on stock prices, the higher the rupiah exchange rate or the exchange rate depreciates, the company's DER level will decrease and will weaken the DER in influencing stock prices. According to Rahmad (2020) a weakened Rupiah exchange rate will affect cash flows from banks with foreign exchange obligations and affect debtors in terms of paying credit obligations from banks (Rachmad 2020). The rupiah exchange rate can weaken the DER in influencing stock prices. Throughout 2018, it was a tough challenge for investors, because the rupiah exchange rate weakened due to the China - US trade war, but it did not have an impact on the ability of banks to extend credit (Putri 2020).

### Effect of Current Ratio on Stock Prices

This study provides information about CR which can negatively and significantly affect stock prices. A CR that is too high illustrates that the company does not have a good financial management system. This has an impact on the low interest and confidence of

investors in buying shares in the company, resulting in a decrease in the company's Stockprice (Yuniarti 2022). The Covid-19 pandemic could exacerbate the banking liquidity ratio in Asia. The impact in Indonesia is that many companies go bankrupt and this can have an impact on reducing potential funding sources (Putra 2022). According to Bobade (2020) this will have an impact on the liquidity of banking companies due to the withdrawal of very large funds to fulfill claims of employees who have been laid off due to Covid-19 (Bobade 2020). The data analysis concludes that it is consistent with the signal theory where a CR that is too high has an impact on information systems that are lacking for potential investors so that it can have an impact on the stock price of companies with a CR ratio that is too high.

The Rupiah exchange rate is able to strengthen in moderating the CR on stock prices. The higher the rupiah exchange rate or the depreciated exchange rate, the higher the company's CR level and will strengthen CR in influencing stock prices. A depreciating rupiah exchange rate will affect bank debt in foreign currency and have an impact on the company's condition in paying obligations in the short or long term (Brigham & Houston 2014). In 2022 the Fed raises interest rates and this has an impact on the rupiah exchange rate depreciating up to 10.3%. However, banks respond to this by hedging, in which hedging can help banks reduce the risk of a weakening rupiah exchange rate and this can affect liquidity so that banking company stock prices increase (Utomo 2020).

#### **Effect of Net Profit Margin on Stock Prices**

NPM has not been able to influence Stockprices because NPM does not describe the prospects of a company and dividend returns received by investors, so that if NPM is high it does not necessarily have an impact on the level of investor interest in buying shares in a company (Fakhrudin 2020). The NPM value of the LQ-45 bank during the Covid-19 outbreak increased, but this increase had an impact on the decline in the stock price of the LQ-45 bank. This could happen because at the time of Covid-19, the Indonesian government implemented PSBB (Large-Scale Social Restrictions to avoid the spread rate (Jecuinna 2021).

Rupiah exchange rate is not able to moderate DER in influencing stock prices. This is because the condition of banking companies is still stable and facing the risk of fluctuations in the Rupiah exchange rate. Fluctuations in the rupiah exchange rate should significantly affect NPM, because fluctuations in the rupiah exchange rate will determine the company's net profit. However, this research, when the PSBB occurred in the fourth quarter of 2017 to the first quarter of 2020, the rupiah exchange rate depreciated by Rp. 2,459, the BRI bank's NPM increased by 22.1% to 79.9% and the Stockprice fell from Rp. 4,293 to Rp. 2,946. So that this research can be said if fluctuating exchange rates cannot affect NPM on stock prices.

#### **Effect of Rupiah Exchange Rate on Stock Prices**

The Rupiah exchange rate can have a positive and significant effect on stock prices. Unstable exchange rates make it difficult for exporters to set prices and buy and sell goods, thereby reducing profits and impacting the level of stock prices in the company. But some companies can benefit if the Rupiah exchange rate weakens (Ferral 2023). The weakening Rupiah exchange rate had a positive impact on the quality of banking performance because banks responded to the weakening exchange rate by increasing the quantity of derivative transactions for imports and exports where when imports increased sharply it prompted hedging actions against banks. Hedging is a transaction to protect prices where importers protect against unfavorable exchange rate fluctuations (Saut 2020).

### **CONCLUSION**

The purpose of this study is to analyze the impact of DER, CR, NPM on the stock price level of LQ-45 banking companies moderated by the rupiah exchange rate. Based on the Chow and Hausman test, the best model is REM. The REM estimation results conclude that DER and CR can have a negative and significant impact on stock prices. Meanwhile,

the Rupiah exchange rate can have a positive and significant effect on stock prices. Meanwhile, NPM does not have a significant effect on stock prices. This is supported by the emergence of the Covid-19 Pandemic which has an impact on credit risk so that it can reduce company Stockprices and cause layoffs, thereby affecting banking liquidity and reducing bank Stockprices. The decline in the rupiah exchange rate can be overcome by banks through hedging policies and can increase bank stock prices.

In the estimation of Moderated Regression Analysis (MRA), to see the impact of the Rupiah exchange rate in moderating DER, CR and NPM to affect stock prices. The estimation results conclude that the Rupiah exchange rate is able to weaken the DER in influencing the LQ-45 banking stock price level while the CR variable, the Rupiah exchange rate is able to strengthen the CR in influencing the LQ-45 banking stock prices. The NPM variable is unable to be moderated by the Rupiah exchange rate in influencing stock prices. Overall, this research provides an understanding of the aspects that influence the level of banking stocks, especially in the context of the COVID-19 pandemic. Exchange rate fluctuations will always have an impact on the financial ratios of banking companies, but this can be overcome by the policies of each banking company. This study is useful as a reference for investors and market players in making decisions on investment activities in the banking sector.

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