

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period



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ABSTRACT: This study aims to determine the effect of interest rates, money supply, inflation, exchange rates, and return on assets (ROA) on stock prices in the banking sector for the 2005 QII – 2019 QIV period. The data used are quarterly time series. The method of analysis used the Vector Error Correction Model (VECM). The result of this study indicate that the interest rates has a negative and insignificant effect on stock prices in the banking sector. However, money supply, inflation and return on assets have a positive effect and significant effect to the stock price of the banking sector in Indonesia.

KEYWORDS: Money Supply, Inflation, ROA, Exchange Rates, Stock Prices.

JEL Classification: E42, E52.

I. INTRODUCTION

Countries with a strong and modern financial system tend to experience a paradigm shift in money and the way it is allocated, which is important to increase a country's future economic growth. One of the sectors that play a significant role in the economic development of a country is the banking sector. According to analysts, this sector is expected to rapidly face global competition and increase investment in the Indonesian financial market comprising capital institutions and money.

The capital market has two main functions, firstly, it enables the company to obtain public funds as investors, which are used for business development, expansion, and additional working capital. Secondly, it acts as an input element for the general public to invest in various other financial instruments, such as stocks, bonds, and mutual funds. This market is very fast in responding to changes that occur on external and internal factors, hence it has the potential to risk fluctuation or uncertainty in investing. The development of share prices in the banking sector consists of four banks, namely PT. Bank Mandiri (BBMI, state banking), PT. Bank Negara Indonesia (BBNI, state banking), PT. Bank Rakyat Indonesia (BBRI, state banking), PT. Bank Central Asia (BBCA, private banking). According to analysts, the banking sector experienced an increase in stock price from 2005QII - 2019QIV. The highest increase was experienced by BBCA shares from IDR1,800, in the second quarter of 2005, to IDR33,425, in the fourth quarter of 2019. This was followed by BBNI shares which increased from IDR1,579 to IDR7,850 - and BMRI shares from IDR1,475 - to IDR7,675. BBRI shares are in fourth place among the four banks and increased from IDR1,450 to IDR4,400. The annual increase in the share price of the banking sector is supported by the fundamentals and policies implemented by each bank in overcoming both external and internal problems. The first factor capable of affecting the stock price of the banking sector is the BI interest rate followed by BBNI shares from IDR1,579 to IDR7,850, and BMRI shares augmented from IDR1,475 - to Rp7,675. BBRI shares are in fourth place among the four banks, with an increase from IDR1,450, to IDR4,400. The annual increase in the share price of the banking sector is supported by the fundamentals and policies implemented by each bank in overcoming both external and internal problems. The first factor capable of affecting the stock price of the banking sector is the BI interest rate. The annual increase in its share price is supported by the fundamentals and policies implemented by each bank in overcoming both external and internal problems. Meanwhile, an increase or decrease in interest rates impacts the sensitivity of the banking sector. People prefer investing in banks due to their high-interest rates. However, a low-interest rate encourages investors to utilize the capital market. According to Rozak (2018), the interest rate is an important input and one of several references for the community. Therefore, investors tend to make long and short terms investment when it falls or rises.

Novianto (2011) stated that interest rates are also determined by the existence of a demand or supply of money. Furthermore, fluctuations in changes affect the investment climate, which leads to an increase or decrease in interest rates, hence security

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

holders tend to experience losses or gains. When interest rates are high, investors invest in savings or deposits by buying bond instruments capable of providing fixed interest, therefore, the stock market is likely to experience sluggishness. On the other hand, when the interest rate is low, they move their funds to the stock exchange market. Another macroeconomics variable capable of affecting the stock price is money supply, which is the amount demanded by the public. This means that the development of the money supply is also determined by people's behavior towards the demand for money. The amount of money in circulation is narrowly or broadly categorized. When money is defined as M1 and M2, it is narrowly (narrow money) and broadly (broad money) supplied. According to Maski (2007), when the supply of money is out of control, there are adverse consequences. An excessive increase in the money supply leads to an increase in prices beyond the expected level, which tends to disrupt the economy in the long run. This process occurs due to inflationary pressure, which impacts the ups and downs of corporate profits. When inflation is high and a large amount of money in circulation, Bank Indonesia automatically responds by reducing the interest rate. An uncontrolled increase in the money supply increases peoples' purchasing power for a good or service, and when it occurs for a long time, it causes inflationary pressure. Inflation is a phenomenon where the overall price of goods increases. This process does not only reduce people's purchasing power for their daily needs, rather it also has an impact on the capital market due to its ability to decrease investor interest in buying shares. Inflation is one of the factors that affect stock prices in the banking sector. For instance, when it is high, stock prices drop, and when it increases, the prices of goods rise, with a decrease in the number of sales made by a company. Low and stable inflation tends to stabilize stock prices. This condition results in a decrease in company profits, thereby lowering share prices.

The exchange rate is one of the macroeconomic variables that tend to affect the stock price of the banking sector. It is the ratio of the value between two currencies, which changes or moves at any time. This condition forces foreign currency holders to gain or lose due to these changes. The response to changes is considered as exchange rate risk. The determination of the rupiah exchange rate against foreign currencies are an important matter for capital market players in Indonesia. The foreign exchange rate greatly affects the number of costs that need to be incurred and earned in stock and securities transactions on the capital market. Therefore, unstable exchange rate fluctuations reduce the level of confidence of foreign investors in the Indonesian economy. This tends to negatively impact stock trading in the capital market, thereby leading to the withdrawal of foreign investors, which leads to a decline in stock prices. Mirza & Nasir (2011) stated that a decrease in stock prices leads to lower returns on investment. ROA is a company's fundamental analysis, one of the factors that affect the banking sector's stock price. It is a comparison between a company's net income and its total assets. ROA reflects the strategies used by banks to generate profits through the ability of their assets. Therefore, the higher the ROA, the greater the profits achieved by the bank, thereby increasing investors' confidence. The increase in ROA was supported by the ability of banks to maintain growth in net interest income, improve asset quality and maintain profit. A high ROA indicates a good company prospect; hence investors tend to respond positively, thereby decreasing the company value with a rise in stock price. The greater the ROA of a bank, the better the bank's position in terms of asset use, which means that achieving high, profits increases dividends and share prices.

II. LITERATURE REVIEW

2.1. Previous Research

Mirza & Nasir (2011) analyzed the "Effect of Exchange Rates, Inflation, Deposit Interest Rates, and Stock Trading Volume on Stock Returns in Banking Companies listed on the Indonesia Stock Exchange." The results of this study indicate that of the four independent variables tested on stock returns of banking companies, inflation, deposit interest rates, and stock trading volume had a significant effect on stock returns, namely inflation with a t -test of 2.233, 2.741, and 0.034 and significance levels of 0.030, 0.008 and 0.011. Meanwhile, the exchange rate does not affect stock returns, with a t -test of 0.034 and a significance level of 0.973.

Rachmawati (2018) examined "The Effect of Inflation and Interest Rates on Stock Prices in Banking Companies Listed on the LQ45 Indonesia Stock Exchange." The statistical analysis concluded that the banking companies listed on the LQ45 Indonesian Stock Exchange were negatively and significantly influenced by inflation, and interest rates from 2015 - 2017. Rozak (2018) examined "Analysis of Interest Rate Factors and Amount of Money Supply that Affects Stock Prices in the Banking Sector." The results showed that the Bank of Indonesia interest rate (BI-Rate) and the circulation of money due to the amount of credit disbursement to the public had a significant impact on the volatility of state banking stock prices.

Syahroni (2017) examined the "Effect of Financial Ratios on Share Prices in State-Owned Banks (BUMN) Listed on the Indonesia Stock Exchange (IDX)." The results showed that 1). the analysis of the financial ratios of the variables LDR, PR, ROA, and NPM, fluctuated from yearly 2007 - 2014. 2). there is no significant effect on stock prices on the Primary Ratio (PR) linear regression test, while for the Loan to Deposit Ratio (LDR), ROA, and Net Profit Margin (NPM) partially have a significant effect on stock

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

prices in owned banks state (BUMN) listed on the Indonesian stock exchange from 2007-2014, and 3). The linear regression test, Loan to Deposit Ratio (LDR), Primary Ratio (PR), and ROA is insignificant.

Krisna & Wirawati (2013) examined "The Effect of Inflation, Rupiah Exchange Rate, SBI Interest Rates, on the Composite Stock Price Index on the IDX," using the multiple linear regression tool. The results showed that the inflation rate of the rupiah exchange and the SBI interest had a significant effect on the IHSG. Meanwhile, the inflation and rupiah exchange rates had partially affected the IHSG on IDX.

Sari (2009) examined "The Effect of Profitability, Capital Adequacy, and Liquidity on Stock Prices." The multiple regression analysis results with a significant level of 5 percent, concluded that the share process in companies listed on the Indonesia Stock Exchange have the following attributes (1). ROA with a coefficient β value of 2.135 positively affects companies with significant values ranging from $0.007 < 0.05$. (2) Capital adequacy ratio does not affect companies with coefficient β negative and significant values of -0.210 and $0.132 > 0.05$, respectively. (3) LDR does not affect companies listed with coefficient β negative and significant values of -0.008 and $0.879 > 0.05$, respectively.

2.2. Descriptive Analysis

The basic theory used in this research includes Interest Rates, Total Money Supply, Inflation, Exchange Rates, and ROA. The interest rate is the economic profit of the investment funds by investors over a certain period. Interest rates obtained from financial institutions are used to control a country's economy.

The government regulates and determines interest rates to maintain the continuity of a country's economy. Therefore, it is essential for investors to always consider interest rate in order to determine expected returns. The BI's is a short-term interest rate with a one-month tenor set and announced by Bank Indonesia (BI) periodically. It functions as a monetary policy signal used to achieve the inflation target and maintain the stability of the rupiah currency. The BI Rate is used to direct the interest rate of Bank of Indonesia Certificate (SBI) in the Open Market Operation (OPT) for 1 month using the BI Rate. The determined BI Rate tends to affect the interest rates makes the savings, and deposit time on Interbank Money Market (PUAB) longer.

The operational targets were achieved through a monthly meeting conducted by the Board of Governors Meeting (RDG) to determine the BI Rate in the money market. This meeting is usually carried out in January, April, July, and October with the BI 7-Day (Reverse) Repo Rate used to strengthen the monetary operation framework. This is carried out through the implementation of a new benchmark interest or policy rate, effective on 19th, August 2016. One of the common practices carried out by Central Banks is strengthening the monetary operation framework, which leads to three major impacts using BI 7-Day (Reverse) Repo Rate instrument. Firstly, it tends to strengthen the monetary policy signals on the financial market using a 7-day reverse repo rate. Secondly, it tends to increase the effectiveness of monetary policy transmission by influencing the money market and bank interest rates. Thirdly, it forms a deeper financial market, on transactions and the formation of an interest rate structure on the PUAB for 3-12 months.

According to Warjiyo and Juhro (2019), money is circulated in two ways, namely narrow sense (M1) and broad sense (M2). In analyzing the money supply in the economy, it is important to determine the difference between circulation and the money supplied. Currency in circulation is the total amount of money issued and circulated by the Central Bank. The currency consists of two types, namely banknotes and coins circulated in the Indonesian economy by commercial banks. Money supplied in a narrow sense is defined as currency plus demand deposits. Current accounts only include money held by the public, which is kept in banks. Meanwhile, bank account balances held by other banks or current account balances held by the government at other banks or Bank Indonesia are not included in the definition of demand deposit.

One of the most important factors in understanding demand deposits is balancing unused money belonging to the public. The money supply in a narrow sense (M1) is a purchasing power used directly for payment. This includes the payment instruments that "approach" money, for example, time and saving deposits in banks. Money saved in the form of time deposits and savings accounts is also a potential purchasing power for the owner, although it is not as easy as cash or check. Total Money Supply in a broad sense (M2) also known as economic liquidity is a combination of M1, time deposits and public savings balances at banks. Generally, its development affects price, production, and economic conditions. According to Warjiyo and Juhro (2019), M2 is associated with all time deposits and savings in rupiah and foreign currencies at banks.

Inflation is a condition when the prices of goods/services generally increase continuously to reduce the value of the currency in the country. An increase in the prices of goods/services is known as inflation when the increase in prices is widespread and affects other commodities. Inflation needs to be properly controlled by the government and the Central Bank in each country in order to maintain monetary and economic stabilities. Inflation is caused by an increase in the money supply in society, a reduction in stock of goods/services, or an increase in its demand. Some inflation comes from within and outside the country. Domestic inflation, for example, is the result of a deficit in the expenditure budget financed by printing new money or a market

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

failure which leads to high prices for public goods. Meanwhile, inflation from abroad occurs due to increase in prices of imported goods. According to the Consumer Price Index (CPI) in Indonesia, inflation is grouped into seven expenditure groups based on the Classification of Individual Consumption by Purpose - COICOP, namely Food, Processed Food, Beverage and Tobacco Group, Housing, Clothing, Health, Education and Sports, Transportation and Communication. Currency Exchange Rate is the value of a particular country's currency measured, compared, or expressed in with another country. In currency trading process through banking, forex traders usually two types of transactions, namely buying and selling. The difference between these two rates is the profit margin for the bank or forex traders.

According to Mankiw (2007), the exchange rate of currency between two countries is the price used by residents to trade with one another. Factors that affect exchange rates of a country are interest rates, inflation, and the political and economic conditions. When the rupiah exchange rate against foreign currencies increases, it means that the currency's value has depreciated with an increase in the foreign and vice versa.

ROA is a profitability ratio obtained from local and foreign investors and used to measure a company's ability to generate profits from its total assets. In financial statement analysis, this ratio is most often highlighted, because it is able to show the profits made by a company. Share price is the price of shares on the stock exchange at a certain time, which is determined by market players and the demand and supply of shares concerned in the capital market. Stock is defined as investor's participation in a limited liability company. It is usually in the form of a sheet of paper used to issue securities to investors. The portion of ownership is determined by the amount of investment in the company. The stock price index is a parameter used as a reference for investors, analysts, and the general public. Both economic and non-economic events are linked to the stock price index, which is an indicator that shows price movements. The Stock Price Index is a trend, used to describe and active or sluggish market. Therefore, the stock price index describes the stock performance both individually and cumulatively (market performance), in order to identify the context.

THEORETICAL FRAMEWORK

Based on the background of the problem, the theoretical framework in this study is as follows: The relationship between the interest rate and investment is negative, which means that when the interest rate rises, investment decreases, and vice versa. The source of capital comes from banking, therefore, when banks set high interest rates, the burden on investors to pay interest increases, which significantly affect investment value.

This is in line with the research carried out by Blanchard & Johnson (2013), which stated that an increase in interest rates reduces the demand for money. According to them, people put more of their wealth in the form of bonds or savings, hence a decrease in interest rate, leads to a rise in the amount of money held. This means that when interest rates increase, people tend to save their money in the bank as savings rather than investing in the capital market and vice versa.

The Money Supply has a positive relationship with investment. Therefore, when it increases, investment rises, thereby leading to a rise in the capital market. This is because the amount of money circulating in the community is either used or invested in the capital market. When the money supply increases, the stock price rises and when it decreases the stock price becomes a good signal for investors to invest in the capital market.

The high rate of inflation reduces the rate of return from investors. In conditions of high inflation, the prices of goods or raw materials have a tendency to increase, which affects the interest in people's purchasing power. This is also marked by a decrease in the demand for goods and services for companies, thereby leading to a decline in financial performance. When this kind of situation, affects almost all companies listed on the IDX, it weakens the Jakarta Composite Index (JCI).

Determination of the rupiah exchange rate against foreign currency is important for capital market players in Indonesia, because foreign exchange rates greatly affect the amount of costs that need to be properly incurred, and the costs to be obtained in stock and securities transactions. Unstable exchange rate fluctuations tend to reduce the level of foreign investor confidence in the Indonesian economy. This has a negative impact on stock trading in the capital market, with the withdrawal of foreign investors thereby leading to capital flow and decline in stock prices. According to Khalwaty (2000), the decline in stock prices decreases the rate of return distributed.

Tandelilin (2010) stated that one of the important indicators in assessing the company's prospects from the investor's point of view is by looking at the profitability growth (ROA). It is important to pay attention to this investment indicator to provide returns in accordance with the required level. The greater the ROA of a bank, the better the bank's position in terms of asset use, therefore, by achieving high profits, investors expect a high rate of return, which in turn impacts on the company's share.

III. DATA AND METHOD

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

The descriptive approach is used to analyze the problems associated with fluctuations in interest rates, inflation, ROA on stock prices and the amount of money being circulated. Meanwhile, f-test and t-test were used to determine the verification approach and truth hypothesis. This research utilized secondary data obtained indirectly through intermediary media from the financial statements of publicly traded companies, the Financial Services Authority (OJK), the Central Statistics Agency (BPS), Financial Reports, the Ministry of Industry and Trade, and other publicly traded companies from 2005 to 2019.

The analytical tool used is a method Vector Error Correction Model (VECM) which aims to determine short-term relationships with the cointegration test used to analyze indications of long-term relationships. VECM is a form of restricted vector autoregressive (VAR) due to the presence of non-stationary and cointegrated data. A linear combination of two or more non-stationary time series data becomes stationary. The VECM model is used in non-structural VAR to achieve a stationary time series data, thereby indicating a theoretical relationship between variables (Widarjono, 2016).

This research utilized a restricted VAR model known as Vector Error Correction Model (VECM) to analyze the effect of money supply, interest rates, inflation, ROA and exchange rates.

IV. RESULT AND ANALYSIS

4.1. Result

This research utilized a restricted VAR model known as Vector Error Correction Model (VECM) to analyze the effect of money supply, interest rates, inflation, ROA and exchange rates.

a. VECM Test

Table 1 shows the VECM estimation results which consists three variables with a positive and significant long-term effect on stock prices in the banking sector. These include money supply with t-statistic > t-table or 2.14348 > 1.67412, Inflation with a t-statistic value > t-table or 6.09513 > 1.67412, and Return on Asset with a t-statistic value > t-table or 1.82261 > 1.67412. Furthermore, two variables have a positive and significant influence on stock prices in the banking sector, namely money supply (Lag 1) with the value of t-statistic > t-table or 2.35037 > 1.67412, inflation (Lag 1) with t-statistic value > t-table or 2.52572 > 1.67412 and inflation (Lag 2) with t-statistic value > t-table or 1.80043 > 1.67412.

Table 1. VECM Estimation Results

Variable	Coefficient	t-statistic
Long-term		
X ₁ (Interest Rate)	-5.545021	-1.54204
X ₂ (Money Supply)	30,94738	2.14348
X ₃ (Inflation)	2.246720	6,09513
X ₄ (Exchange Rate)	7.333954	1.04166
X ₅ (ROA)	5.881581	1,82261
Short-term		
X ₁ (Interest Rate) (Lag1)	-0.220411	-0.94648
X ₁ (Interest Rate) (Lag2)	-0.107376	-0.41353
X ₂ (Money Supply) (Lag1)	2.019856	2.35037
X ₂ (Money Supply) (Lag2)	-0.130574	-0.17030
X ₃ (Inflation) (Lag 1)	0.073336	2,52572
X ₃ (Inflation) (Lag 2)	0.029278	1,80043
X ₄ (Exchange Rate / Exchange Rate) (Lag 1)	-0.212888	-0.44309
X ₄ (Exchange Rate / Exchange Rate) (Lag 2)	0.583644	1.22615
X ₅ (ROA) (Lag 1)	0.191083	1.01013
X ₅ (ROA) (Lag 2)	0.085761	0.51239

Source: Econometric result

b. Impulse Response Function (IRF) Test

Therefore, Figure 1 is described as follows:

Panel (a) shows the response of the variable share price in the banking sector (Y) to changes in the interest rate variable (X₁). The shock distributed by the interest rate variable (X₁) to the stock price of the banking sector (Y) occurred in the third period, to produce stabilized interest rate (X₁) close to the balance line of zero.

1. Panel (b) shows the variable share price in the banking sector (Y) to changes in the money supply (X₂). From the start to the 4th period, the banking sector share price changed and became very volatile, by responding positively and negatively after entering period 5 before returning to the balance line.

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

- Panel (c) shows the response of the variable share price in the banking sector (Y) to inflation (X_3), which started to occur in the 3rd period with the tendency of being below the balance line.
- Panel (d) illustrates the response of the variable share price in the banking sector (Y) to shocks given the exchange rate (X_4). From the 1st to the 4th period, the response given by the banking sector's stock price to changes in the exchange rate fluctuated. Furthermore, after entering the 5th period the stock price became balance in response to changes in the exchange rate.
- Panel (e) indicates the response of the variable share price in the banking sector (Y) to the return on assets (X_5). The shock provided on the return on assets (X_5) to the stock price of the banking sector (Y) occurred in the 3rd period. Furthermore, after passing through this period the response on assets to the stock price of the banking sector was stabilized and in the balance line.

Periods 3 and 4, experienced a significant decrease in the banking sector by 76.89674 percent and 77.03593 percent. Furthermore, these periods had interest rates of 0.303599 and 0.275110 percent, money supply of 3.581485 and 3.317622 percent, inflation rate of 15,19675 and 16,22840 percent, exchange rates of 3.059659 and 2.326261 percent and ROA of 0.961768 and 0.816673 percent. Inflation has the second largest influence after the variable share price in the banking sector. The effect of the 1st period was 1.721378 percent which continuously increased to the last at 15.46251 percent on the banking sector. The smallest influence is given by the variable interest rate of 0.212739 percent at the end of the period.

c. Variance Decomposition Test

Table 2 shows that the variance decomposition test significantly contributed to the variable share price in the banking sector at 100 percent. Furthermore, the share prices in the banking sector rapidly declined to the tenth period by 80 percent. This decrease contributed to the banking sector share price of 95.45185 percent, with an interest rate of 0.002769 percent. Furthermore, the money supply, inflation, exchange rate and ROA were 0.606850 percent, 1.721378 percent, 2.119871 percent, and 0.097283 percent.

Table 2. Variance Decomposition (VD) Test Results

Variance Decomposition of D (Y):							
Period	SE	D (Y)	D (X1)	D (X2)	D (X3)	D (X4)	D (X5)
1	0.117485	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.134261	95.45185	0.002769	0.606850	1.721378	2.119871	0.097283
3	0.156952	76.89674	0.303599	3.581485	15.19675	3.059659	0.961768
4	0.181184	77.03593	0.275110	3.317622	16,22840	2.326261	0.816673
5	0.194931	79.68899	0.237695	2.871410	14.30320	2.131345	0.767359
6	0.203772	80.37594	0.232147	2,629600	14.06709	1.974324	0.720906
7	0.218869	78,83546	0.228982	2.395155	15,98719	1.713464	0.839750
8	0.230311	79.79301	0.229386	2.196075	15.38488	1.547440	0.849210
9	0.241142	79.66679	0.224906	2.015704	15.69851	1.597016	0.797065
10	0.251184	80.13887	0.212739	1.874774	15.46251	1.486716	0.824390

Source: Econometric result

d. Statistic test

The VECM model shows that the F-count value $3.552846 > F$ -table of 2.39 at $\alpha = 0.05$ percent. Therefore, in conclusion the independent variables, comprising of interest rates, inflation, money supply, ROA and exchange rates have a significant effect on the dependent variable, such as the stock price of the banking sector. Therefore, based on table 3 it is concluded that inflation, money supply, and return on assets in the t-statistic value is greater than the t-table value. This means that the stock price significantly affects the banking sector while the variable interest and exchange rates is less than the t-table value.

Table 3. T test results

	t-statistic	t-table
Interest Rate	-1.54204	2.00575
Money Supply	2.14348	1.67412

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

Inflation	6,09513	1.67412
Exchange rate	1.04166	1.67412
Return on Asset	1,82261	1.67412

Source: Econometric result

4.2. Analysis

a. The Effect of Interest Rates on Stock Prices in the Banking Sector

Interest rate (X_1) is estimated using the VECM method, with a negative and insignificant effect on the stock prices on the short and long run. The interest rate variable is indicated by a coefficient value of -5.545021 with a t-statistic value of -1.54204 < t-table value of 2.00575. Therefore, H_0 is accepted and H_1 is rejected, which means that there is no statistical relationship between the interest rate and the money supply. The research indicated that the interest rate variable (X_1) partially has a negative and insignificant effect on stock prices in the banking sector, therefore, a 1 percent increase in interest rate, leads to a decrease by 5.545021 percent. Furthermore, this study is in accordance with the research carried out by Tandelilin (2010) which stated that interest rates negatively affect stock prices. This means that an increase in interest rate, leads to a decrease in stock price and vice versa.

b. Effect of Money Supply on Stock Prices in the Banking Sector

The variable estimate of the money supply (X_2) on the stock price of the banking sector using the VECM method, has a positive and significant effect on the stock price of the banking sector on the long-term test. Meanwhile, in the short-term test the money supply has a positive and significant effect on lag 1. The money supply variable is shown with a coefficient value of 30.94738 with a t-statistic value of 2.14348 > t-table value of 1.67412. Therefore, H_1 is accepted and H_0 is rejected, hence there is a statistical relationship between the money supply and the banking sector share price. The study stated that the money supply variable (X_2) partially has a positive and significant effect. Therefore, a 1 percent increase in money supply, leads to a 30,94738 percent rise in the banking sector. This is in accordance with the research carried out by Nugroho (2008), which stated that money supply has a significant effect on the stock market price index which is in high circulation and utilized by the public in order to invest in the capital market. An increase in the money supply, leads to a rise in the stock price.

c. The Effect of Inflation on Stock Prices in the Banking Sector

The long terms estimation result of the inflation variable (X_3) using the VECM method has a significant positive effect. Meanwhile, in the short-term test, inflation has a significant positive effect in lags 1 and 2 on the stock price of the banking sector, which is indicated by a coefficient value of 2.246720 with a t-statistic of 6.09513 > a t-table of 1.67412. Therefore, H_1 is accepted and H_0 rejected, which means that there is a statistical relationship between inflation and the stock price.

Furthermore, the result stated that the inflation variable (X_3) has a positive and significant effect on stock prices in the banking sector. Therefore, an increase in inflation by 1 percent, leads to a 2.246720 percent increase in the stock price. This means that the inflation rate has a positive effect on stock prices.

d. The Effect of Exchange Rate on Stock Prices in the Banking Sector

The estimation result of the exchange rate variable (X_4) using the VECM method, in the long-term test has a positive and insignificant effect on stock prices. The exchange rate variable is indicated by a coefficient value of 7.333954 with a t-statistic of 1.04166 < t-table of 1.67412. Therefore, H_0 is accepted and H_1 rejected, hence there is no statistical relationship between the banking sector and the currency exchange rate.

The results stated that the exchange rate variable (X_4) partially has a positive and insignificant effect on stock prices in the banking sector. Therefore, an increase in the rupiah exchange rate by 1 percent, leads to a rise in stock price by 7.333954 percent. This is in line with the studies carried out by Mirza & Nasir (2011) and Krisna & Wirawati which stated that exchange rate has a positive and insignificant effect on company stocks.

e. The Effect of ROA on Stock Prices in the Banking Sector

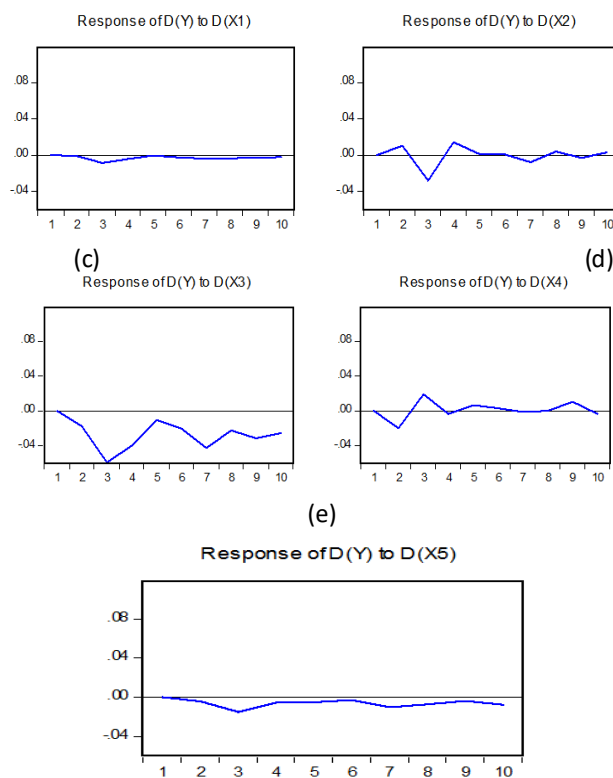
The variable estimation (ROA) (X_5) obtained using the VECM method, has a positive and significant effect on stock prices in the banking sector in the long term. It is indicated by a coefficient and t-statistic value of 5.881581 and 1.82261 > a t-table value of 1.67412. This means that H_1 is accepted and H_0 is rejected, hence there is a statistical relationship between ROA and stock prices.

Graphic 1. IRF Test Results

(a)

(b)

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period



Source: Econometric result

The results indicate that the ROA (X_5) partially has a positive and significant effect on stock prices in the banking sector. Therefore, an increase in the ROA variable by 1 percent, leads to a rise in the stock price of the banking sector by 5.881581 percent. This is in line with previous studies carried out by Syahroni (2017) and Sari (2009) which stated that ROA has a significant effect on stock prices.

V. CONCLUSION

5.1. Conclusion Remarks

In conclusion the VECM test shows that the independent variables of interest rates, money supply, inflation, exchange rates, and ROA simultaneously affect the stock price of the banking sector in the short and long terms from 2005 QII to 2019 QIV. The long-term effect of the variable interest rate, money supply, inflation, exchange rate, and ROA on stock prices in the banking sector from 2005 QII to 2019 QIV is shown from the VECM test, as follows:

The effect of the money supply, inflation and ROA on stock prices in the banking sector in the long run has a positive and significant impact. The effect of the interest rate on stock prices in the banking sector in the long run has a negative and insignificant impact. The effect of the exchange rate variable on stock prices in the banking sector in the long run has a positive and insignificant impact.

The short-term effect of the variable interest rate, money supply, inflation, exchange rate, and ROA on stock prices in the banking sector 2005 QII - 2019 QIV is shown from the VECM estimation test, as follows:

Two variables have a positive and significant effect in the short term on stock prices in the banking sector, namely the money supply and inflation.

- Interest rates have a negative and insignificant effect in the short term on stock prices in the banking sector;
- Exchange rates have a negative and insignificant effect on lag 1 in the short term on stock prices in the banking sector. Lag 2 has a positive and insignificant effect. ROA has a positive and insignificant effect in the short term on stock prices in the banking sector.

Based on the results of research and discussion, the authors provided the following suggestions:

- Investors wishing to invest in the capital market need to consider macroeconomic variables, such as interest rates, money supply, inflation and exchange rates, as well as company fundamental analysis for instance ROA to predict stock price movements listed on the Indonesia Stock Exchange.

Determinant Factors Effect of the Indonesia's Banking Sector Share Prices in 2005 QII - 2019 QIV Period

- b. The government needs economic and monetary stability in controlling interest rate movements, circulation of money in the community, inflation, and changes to the domestic currency exchange rate to be able to stabilize stock price movements on the capital market.
- c. The government is expected to be able to increase the interest of domestic investors to invest in the capital market to develop it, which is an important indicator of economic growth.

Further research needs to be carried out by academics using different or research variables to provide better results.

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