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Determinant Analysis of Macroeconomic Effect on Bank Stock Return Book 4 on the Indonesia Stock Exchange

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Abstract

This study aims to analyze macroeconomics on BOOK 4 Bank stock returns. This research uses the Vector Error Correction Model (VECM) method using monthly data on BOOK 4 Bank stock returns as the dependent variable and monthly inflation data, BI 7 days reverse repo interest rate. Rate, exchange rate, money supply, gross domestic product, foreign exchange reserves, and the fed funds rate, as independent variables, with a data time span from January 2016 to December 2020. The results show that in the short-term inflation, GDP, and foreign exchange reserves are variable. And the fed fund rate does not affect stock returns. The BI 7-day reverse repo rate and money supply variables have a significant positive effect, and the exchange rate has a significant negative effect on BOOK 4 bank stock returns. In the long-term inflation, the BI 7-day reverse repo rate, money supply, GDP, foreign exchange reserves, and the fed funds rate do not affect stock returns. Meanwhile, the exchange rate has a significant negative effect on BOOK 4 bank stock returns.

Keywords
Macroeconomic Variables, Stock Return, Bank BOOK 4, VECM

I. Introduction

Indonesia's economic conditions cannot be separated from global economic developments specifically from the United States, China, and Japan, also influenced by domestic factors such as inflation, interest rates, exchange rates, and gross domestic product. Global economic conditions in five years experienced growth but tended to decline. According to BI, world economic growth in 2016 was 3.10%, reaching 2.80% in 2019 and growing negatively to 3.30% in 2020.

Macroeconomic indicators during 2016-2020 include inflation in the range of 5% and tend to fall; The BI 7-day *reverse repo rate* is in the range of 5% and tends to decline to 3.75%. The Rupiah exchange rate against the US Dollar has weakened, and tends to be stable at 14,000, - per/USD, the amount of money in circulation has increased by an average of ±10% per year. GDP grew stagnant at 5.5%, and contracted in Q3/2020 minus 5.32%, in line with the slowdown in the world economy and the COVID-19 pandemic, for foreign exchange reserves that continued to increase.

The COVID-19 pandemic that has spread throughout the world, not only affects health but also the world economy, cannot be separated from Indonesia. The impact of COVID-19 is very influential on the stock market. JCI growth in 2016-2020 increased, but there was a sharp decline to reach the lowest point of 4,194.94 on March 20, 2020, this is in line with the decline in macroeconomic indicators and the COVID-19 pandemic.

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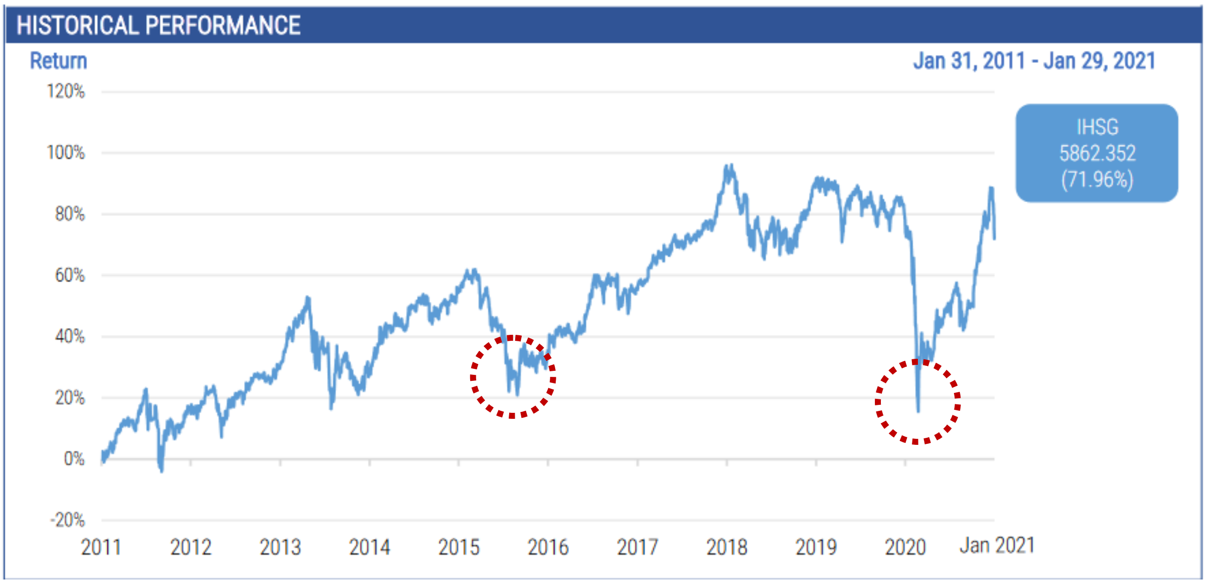


Source: www.idx.co.id
***Figure 1.** JCI (2016-2020)*

Changes in global and domestic monetary indicators as well as the sharp decline in the JCI caused by the impact of COVID-19 have attracted investors' attention to analyzing stock selection as an alternative for investing. One of the stock markets that contributed significantly to the JCI is the banking sector. The banking sector has the third increasing share after mining *and* trade, which is minus 1.59% followed by the agricultural sector (agriculture*)*, stocks in the financial sector control 37% of total trade and are still a reference in making investment choices, especially some stocks. BOOK 4 banks that are included in the top 10 are Bank Central Asia (BBCA), Bank Rakyat Indonesia (BBRI), and Bank Mandiri (BMRI).

The profitability of BOOK 4 Banks for the 2016-2020 period as measured by the ratio of *Net Interest Margin* (NIM), Operating Expenses and Operating Income (BOPO), and *Return On Assets* (ROA), shows that NIM has experienced a steady growth that *tends* to decrease, and the BOPO ratio has increased. Meanwhile, ROA experienced a sharp decline in 2020. This illustrates that BOOK 4 Banks show that an increase in operating costs (BOPO) has an impact on reducing NIM which in turn has an impact on a decrease in corporate profit (ROA).

BOOK 4 Bank stock returns for the 2016-2020 period fluctuated both in terms of closing prices and transaction volumes. Stock returns declined sharply in the first quarter of 2020 as a result of the COVID-19 pandemic. Although BOOK 4 banks dominate trading transactions such as BBCA, BBRI, and BMRI, this is not enough to stop the decline in ROA in 2020.

Research by Sundoro, HS, and P. Sihombing, (2019), BI *7 Day Reverse Repo Rate*, Inflation, Money Supply, GDP, Exchange Rate, Foreign Ownership using VAR and VECM (IRF and FEVD) analysis methods that macroeconomic and liquidity factors positive effect on *yield curve government* in the long term, and make little contribution.

Yumis, L., (2020) in the Analysis of Determinants of Financial Sector Stocks on the Indonesia Stock Exchange (2020) analysis using VAR/VECM, that GDP, Inflation, Gold Prices, Oil, and the S&P500 index have a negative effect, while for Interest Rates, Exchange Rates, *The Fed Funds Rate* has a positive effect.

Putri PY, Achsani, NA, and Koes Pranowo, (2019), in their research " *The Effects of Macroeconomic Variables and Corporate Finance Performance on Stock Prices of Palm*

Oil Companies in Indonesia ", that *inflation, exchange rate, interest rate, oil price,* DER, ROA, ROE, EPS and AUR using panel *analysis data* stated that *only one macroeconomic variable of exchange rate had a negative significant effect on the price of palm oil, while the financial performance variable affected the palm.*

Maudhita, A., and Hakiman Thamrin, (2018) in a study entitled "Analysis of Factors Affecting Financial Performance at BOOK 4 Banks for the Period of 2012-2016 (2018) that the financial ratio of CAR, NPL, Net Interest Margin, Operational Expenses and Operating Income, *Loan to Deposit Ratio* (LDR) to *Return on Assets* (ROA) of BOOK 4 banks. The results of the F, CAR, NPL, NIM, BOPO, and LDR tests together have a significant effect on ROA. While the results of the T-test concluded that CAR had no effect on ROA, while NPL, BOPO, and LDR partially had a significant negative effect on ROA, and NIM had a significant positive effect on ROA.

This study aims to analyze and evaluate the factors that affect the *stock returns of* BOOK 4 Bank on the Indonesia Stock Exchange by looking at how the response of BOOK 4 Bank stock returns to the shocks of these factors.

II. Review of Literature

2.1.Grand Theory

According to Fama (1978), the value of the company will be reflected in its share price. The value of the company is formed through the stock market value indicator which is influenced by the choice of investment opportunities. Investment opportunities will give a positive signal about the company's growth in the future.

Signaling Theory, Spence (1973), a signal is an action taken by the management of a company to provide instructions for investors about how management views the company's prospects. Broadly speaking, it is closely related to the provision of information in the form of company financial statements that investors use to analyze the company's fundamentals.

Stephen Ross developed *the Arbitrage Pricing Theory* (1976), basically using the idea that two investment opportunities in assets that have identical characteristics cannot be sold at different prices *(the law of one price)*. If assets that have the same characteristics are sold at different prices, there will be an opportunity to arbitrage by buying cheaper assets and at the same time selling them at a higher price and thus earning a profit without any risk.

2.2. Macroeconomics

Case and *Fair* (2001), define macroeconomics as relating to the economy as a whole and focusing on determinants of national income, relating to aggregates, and looking at the overall price level, not just individual prices. Macroeconomic policies are government plans and actions to influence the economy as a whole through the implementation of fiscal policy, monetary policy, and growth policy (supply-side). Various macroeconomic factors that can affect BOOK 4 Bank stock *returns* are inflation, the BI 7- *day repo rate*, exchange rates, gross domestic product, foreign exchange reserves, and *the fed funds rate*.

2.3. Stock Return Theory

Hartono (2016) that the level of stock *return* is the rate of return on investment made by investors consisting of realized returns and *expected* returns. Realized return is *the return* that has occurred and is used as a measure of the company's performance as well as the basis for determining the expected *return* and risk in the future. *The expected return* is the *return* expected by investors in the future. The measurement of realized *return can use total return* (total *return)*, relative *return* (relative *return)*, cumulative *return* (cumulative *return)*, and adjusted *return* (adjusted *return)*.

According to Hartono (2016), share profits can be obtained through *capital gains* and *yields*. *Capital gain* is the difference in profit from the current investment price relative to the price of the previous period. *Yield* is the percentage of periodic cash receipts against the investment price of a certain period of an investment. *Yield* is also part of the profits provided by the company and comes from the profits generated by the company. Given after obtaining approval from the shareholders and the General Meeting of Shareholders. Shares also have risks, namely *capital loss*, which is a condition where investors sell shares at a lower price than the purchase price, and liquidity risk caused by the issuer company being declared bankrupt by the Court, or the company being dissolved.

2.4. Bank Group Based on Core Capital (BOOK Bank)

BOOK 4, has a core capital of above Rp30 trillion and can conduct all business activities in Rupiah and foreign currencies, and make 35% equity participation in financial institutions at home and abroad with a wider scope than BOOK 3 (international *worldwide*). As of December 2020, there were 7 (seven) banks categorized as BOOK 4 banks, namely, PT. Bank Rakyat Indonesia (Persero), Tbk. (BBRI), PT. Bank Mandiri (Persero), Tbk. (BMRI), PT. Bank Negara Indonesia (Persero), Tbk. (BBNI), PT. Bank Central Asia, Tbk. (BBCA), PT. Bank Danamon, Tbk. (BDMN), PT. Bank Pan Indonesia, Tbk. (PNBN), Bank CIMB Niaga, Tbk. (BGA).

2.5. Framework

In general, the Framework for Thinking and Hypotheses are as follows:

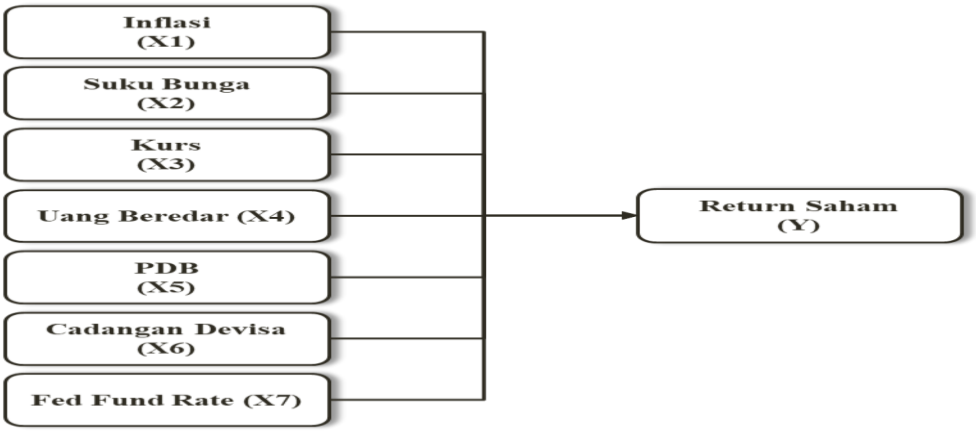


Figure 2. *Conceptual Framework*

2.6. Hypothesis

- According to Blanchard and Johnson (2013) inflation is a gradual increase in the general price level. According to Case and Fair (2007), an increase in inflation caused by *full demand* (demand) and *cost push* (supply) will have an impact on increasing prices, and lowering income and adversely affecting the economy. For companies, inflation can reduce investor interest in the capital market which will affect stock returns and company performance (Yumis-2020) and (Kertajumena, Permatasari, Setiawan, Ardela and Rustandi-2020).
  H1: Inflation has a negative effect on stock *returns* of BOOK 4 Bank companies.

- BI *The* 7 *Day Reverse Repo Rate* is the interest rate set by Bank Indonesia, and is a reference for the banking industry. This increase or decrease in interest rates will be followed by an increase or decrease in bank interest rates and encourage an increase or decrease in the cost of capital (*cost of funds)* . This will reduce the level of profit due to the increase in debt service obligations. For the public, an increase in interest rates can delay consumption and investment which will have a negative impact on Malla's stock returns (2020).

  H2: BI 7 *Day Reverse Repo Rate* has a negative effect on stock *returns* of BOOK 4 Banks.
- The exchange rate will affect the price of domestic and foreign goods. Something that causes an increase in domestic demand relative to foreign goods, the domestic currency will appreciate and if something causes a decrease in domestic demand relative to domestic goods, the domestic currency will depreciate (Mishkin-2016). The rupiah exchange rate which continues to depreciate will have an impact on the JCI. Sihombing and Santoso (2013), Sutrisno (2017) and Malla (2020) in their research conclude that the exchange rate has a negative effect on all industrial and financial sectors on the Indonesia Stock Exchange.

  H3: Exchange rate has a negative effect on BOOK 4 Bank stock *returns* .
- The demand for money is strongly influenced by the demand for *checkable deposits* , the larger the number of *checkable deposits* , the greater the bank must reserve (Blanchard and Johnson-2013). The demand for money can also be determined by the minimum bank reserve ratio, Case and Fair (2007). The condition of the BI 7 *Day Reverse Repo Rate* tends to fall and the low minimum reserves result in an increase in the money supply. The excess liquidity has the potential to enter the capital market and increase share earnings.

  H4: Money Supply has a positive effect on stock returns of BOOK 4 Banks.
- GDP is the market value of all final goods and services produced in a certain period of time by factors of production located within a country (Case and Fair-2013). GDP growth is an indicator of a country's economic growth. If GDP experiences expansion, it indicates that the business sector is experiencing positive growth, on the other hand, if GDP experiences contraction, it indicates that there is a decline in productivity in the business sector.

  H5: GDP has a positive effect on stock returns of BOOK 4 Banks.
- Foreign exchange reserves are financial assets and liabilities used in international transactions. Financial assets and liabilities can be in the form of *foreign exchange, monetary gold, special drawing rights, reserve positions in the Fund* , and bills in other forms. The increase in foreign exchange reserves has an impact on economic growth, this is reflected in the ability of a country to finance import needs and debt repayment obligations. The availability of foreign exchange reserves provides a positive signal for the economy, which is reflected in where business actors can increase production.

  H6: Foreign Exchange Reserves have a positive effect on stock returns of BOOK 4 Banks.
- *The Fed Funds Rate* is the interest rate on overnight loans from one bank to another in the United States. This interest rate provides a *signal* for all capital market participants regarding changes in interest rates which are the main factor in currency valuation. Changes in higher interest rates will affect regional capital markets which can result in higher capital outflows, and vice versa.

  H7: The *Fed Funds Rate* has a negative effect on stock *returns* of BOOK 4 Banks.

III. Research Method

The research design used is to conduct quantitative research to analyze and evaluate the effects of macroeconomics such as inflation, 7 *Day Reverse Rate*, Exchange Rate, Money Supply, Gross Domestic Product, Foreign Exchange Reserves, *Fed Fund Rate*, on stock *returns* of 7 (seven) BOOK 4 Bank companies in Indonesia. Indonesia Stock Exchange using the *Vector Error Correction Model* (VECM)

The regression equation model in VECM can be written as follows:

$$\Delta Y_t = \Sigma_{t-1}^{k-1} \Gamma_t \Delta Y_{t-1} - \gamma \beta Y_{t-1} + \varepsilon_t$$

Information:

□ = Coefficient of short-term relationship

□ = Long-term relationship coefficient

Y = Speed towards balance (*speed adjustment*)

Y *Endogenous* variables used in the model

t

IV. Result and Discussion

An overview of the results of the study using data on shares of BOOK 4 Bank companies listed on the Indonesia Stock Exchange during the 2016-2020 period. The number of companies that were sampled were 7 banks, namely BBRI, BMRI, BBNI, BBCA, PNBN, BDIN, BNIA. All research sample data in the form of inflation data, BI 7 *day reverse repo rate* , exchange rate, money supply, gross domestic product, *fed funds rate* and BOOK 4 bank stock *returns* during the 2016-2020 period were obtained using the VECM method using *Eviews* . The research results can be explained as follows:

4.1 Test Results

a. Stationary Test

Based on time series data, it is to do a data stationarity test or unit root test or *unit root test* using the *Augmented Dickey-Fuller* (ADF) test on each variable used in the study. The results of the data stationarity test, it is known that all the stationary data variables in the *first difference* with a significance level of 5% with the *ADF Probability value* <0.05 as follows:

Table 1. Stationarity Test Results

	Level	First Difference	
Variable	ADF Prob	ADF Prob	Information
INF	0.4980	0.0000	Stationary
BEER	0.8949	0.0029	Stationary
KUR	0.0119	0.0000	Stationary
UBE	0.8865	0.0000	Stationary
GDP	0.6613	0.0000	Stationary
CAD	0.2340	0.0105	Stationary
FFR	0.9797	0.0000	Stationary
Stock *Return*	0.0000	0.0000	Stationary

b. VAR. Model Stability Test

From the results of the VAR stability test that the value of the module ranges from 0.969711 to 0.086936, or smaller than 1 (<1) and based on Graph 4.1 above, it can be seen that the points are inside the circle (*cycle*) , thus the data has met test the stability of the VAR model , so that in the next test, the IRF and FEVD can be confirmed to be stable.

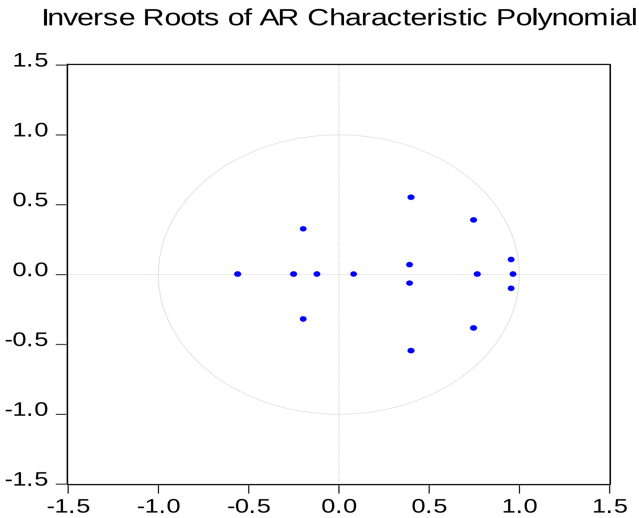


Figure 3. *VAR. Model Stability Test Results*

c. Optimum Lag Test

Determination of the optimal *lag is* determined by selecting the criterion that has the smallest value or the most asterisks (*) among the various proposed *lags* . Therefore Researchers took ***lag* 1** seen from the smallest value on the *Final Prediction Error (FPE), Schwarz Information Crition (SC),* and *HannanQuin Crition (HQ).*

Table 2. Test *Lag Optimum*

VAR Lag Order Selection Criteria
Endogenous variables: Y X1 X2 LX3 LX4 LX5 LX6 X7
Exogenous variables: C
Date: 07/26/21 Time: 10:39
Sample: 2016M01 2020M12
Included observations: 55

lag	LogL	LR	FPE	AIC	SC	HQ
0	245.5459	NA	2.45e-14	-8.638031	-8.346055	-8.525122
1	656.2817	687.0491	**8.38e-20***	-21.24661	**-18.61883***	**-20.23042***
2	722.7118	91.79425*	8.85e-20	-21,33497	-16.37139	-19.41551
3	798.3393	82.50273	8.71e-20	-21.75779	-14,45840	-18.93506
4	884.6571	69.05423	9.68e-20	-22.56935	-12.93415	-18,84334
5	1006.045	61.79740	8.74e-20	-24.65618*	-12.68517	-20.02689

d. Granger Causality Test

It is said that there is causality, if the *probability value* < 0.05. In table 4, there are 5 (five) variables that have the following causality:

Table 3. Granger Causality

Variable	Probability	Conclusion
Fed Fund Rate causality with BI *7 Day Reverse Repo Rate*	0.0427 < 0.05	*Fed Fund Rate* has a relationship with the BI *7 Day Reverse Repo Rate*
Money supply causality with exchange rate	0.0421 < 0.05	The money supply has a relationship with the exchange rate
Gross Domestic Product causality with exchange rate	0.0027 < 0.05	GDP has a relationship with the exchange rate
of foreign exchange reserves with exchange rates	0.0019 <0.05	Foreign exchange reserves have a relationship with the exchange rate
Money supply with causality with foreign exchange reserves	0.0245 < 0.05	Money supply has a relationship with Foreign Exchange Reserves

e. Cointegration Test

The results of the cointegration test show that the *Trace Statistic > Critical Value* with a significance level of 5%, namely (177.68 > 159, 52) or a *probability value* < 0.05 or 0.0035 < 0.05, so it can be concluded that there is cointegration in this study, thus then the VECM analysis can be continued.

Table 4. Cointegration Test Results

Date: 07/29/21 Time: 08:36
Sample (adjusted): 2016M03 2020M12
Included observations: 58 after adjustments
Trend assumption: Linear deterministic trend
Series: Y X1 X2 LX3 LX4 LX5 LX6 X7
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
None *	0.539735	177.6816	159.5297	0.0035
At most 1 *	0.510813	132.6763	125.6154	0.0173
At most 2	0.422760	91.20571	95.75366	0.0987
At most 3	0.335927	59.33490	69.81889	0.2563
At most 4	0.215725	35.59181	47.85613	0.4172
At most 5	0.210660	21.49810	29.79707	0.3273
At most 6	0.102876	7.777693	15.49471	0.4895
At most 7	0.025214	1.481175	3.841466	0.2236

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

f. Vector Error Correction Model (VECM) Estimation Results

The short-term VECM estimation results show that Inflation (INF), Gross Domestic Product (GDP), Foreign Exchange Reserves (CAD), and *The Fed Fund Rate* (FFR) at *lag* 1 have no effect on the dependent variable. This can be shown based on the *t-statistic value* of the independent variable < *t-table value.* On the other hand, the *BI 7 Day Reverse Repo Rate* (BIR) has a significant positive effect, the Exchange Rate (KUR) has a significant negative effect and the Money Supply (UBE) has a significant positive effect on Bank BOOK 4 stock *returns.* This is reflected in the *t-statistic value* > *t-table value.*

In the long term the variables of Inflation (INF), BI 7 *Day Repo Rate* (BIR), Money Supply (UBE), Gross Domestic Product (GDP), Foreign Exchange Reserves (CAD), *The* the *Fed Fund Rate* (FFR) has no effect on BOOK 4 bank stock *returns.* This is indicated by the *t-statistic value* the independent *variable* < *t-table value.* Meanwhile, the Exchange Rate (KUR) at *lag* 1 has a significant negative effect on Bank BOOK 4 stock *returns.* This can be explained where the *t-statistic value of* KUR > the *t-table value.*

g. Impulse Response Function (IRF) Test

Return variable response (Y) in response to shocks to inflation (X1) , where X1 is always stagnant and always at the equilibrium point. It is different with stock *returns* which receive shocks from inflation , while stock *returns* receive positive shocks from inflation starting from periods 1 to 2 , negative and then positive from periods 3 to 10 . This illustrates that shocks to inflation have an impact on stock *returns* or have no effect both in the short and long term.

Return response (Y) in response to shocks in the BI 7 *Day Reverse Repo Rate* (X2), where X2 experienced an upward shock in periods 1 to 4, then experienced a negative shock. In contrast to stock *returns (* Y) which received shocks from the BI 7 *Day Reverse Repo Rate* (X2) , Y received negative shocks from X2 from the beginning to the end of the period . This illustrates that shocks to the *BI 7 Day Reverse Repo Rate* in the short term have a positive effect while in the long term they tend to be negative.

Return response (Y) in response to exchange rate shocks (X3) , where the exchange rate (X3) is below the equilibrium point. In contrast to stock *returns (* Y) which received shocks from the exchange rate (X3) , it was negative from the beginning to the end of the period . This illustrates that shocks in the exchange rate have a significant negative effect on stock *returns.*

Return response (Y) in response to money supply shocks (X4), during the initial period of the Money Supply (X4) experienced an increase, then experienced a negative shock until the end of the period. Another thing is the stock *return (* Y) which receives shocks from the money supply (X4) , is negative since the beginning of the period and tends to decrease until the end of the period . This illustrates that shocks to the money supply have a positive effect on short-term stock *returns , and have no effect in the long term.*

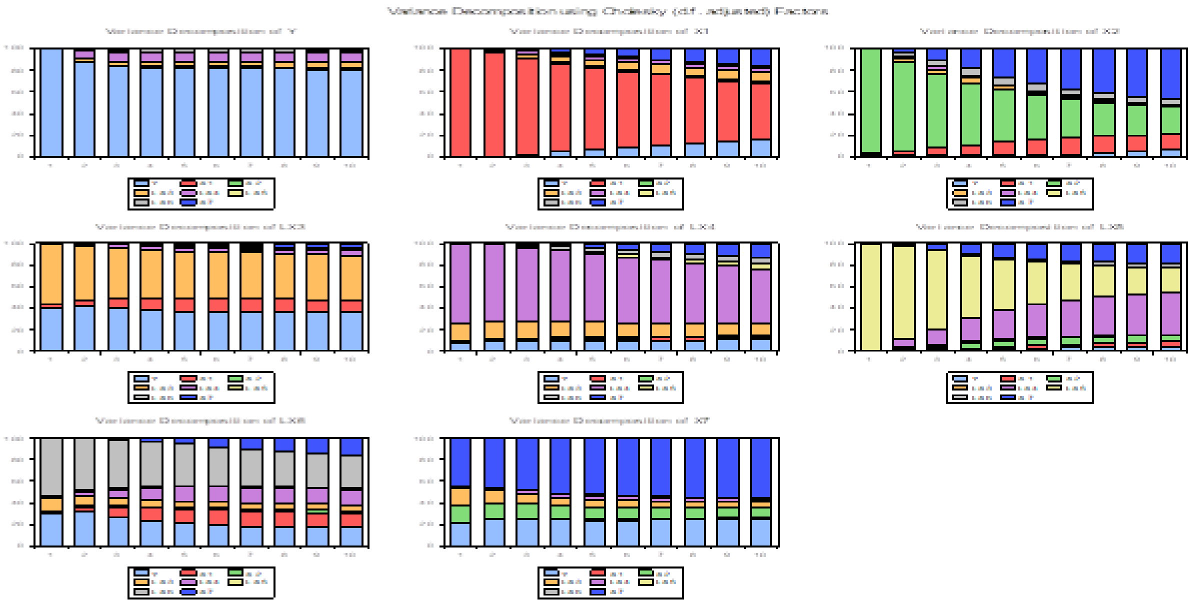
Return response (Y) in response to GDP shocks (X5) , where Y's response to GDP (X5) tends to stagnate. Another thing with stock *returns (* Y) which received a positive shock from GDP (X5) , from the beginning to the end of the period. This illustrates that shocks to GDP have no effect in the short or long term.

The response of stock *returns* (Y) in response to shocks in foreign exchange reserves (X6), experienced negative shocks in the initial period, and remained stagnant until the end of the period. On the other hand, stock *returns (* Y) received positive shocks from foreign exchange reserves (X6) , experienced positive shocks in the early period and tended to stagnate until the end of the period. This illustrates that shocks to foreign exchange reserves have no effect in the short or long term.

Return response (Y) in response to *fed funds rate* shocks (X7), where X7 since the beginning of the period experiencing stagnation and, in the second period experiencing negative shocks until the end of the period. Another thing with stock *returns (* Y) which received positive shocks from the *fed funds rate* (X7) , experienced positive shocks from the beginning of the period to period 2, and tended to be *flat* until the end of the period. This illustrates that shocks to the *fed funds rate* have no effect in the short or long term.

h. Forecast Error Variance Decomposition (FEVD) Test

The results of the FEVD analysis show that inflation (X1), BI *7 Day Reverse Repo Rate* (X2) Money supply (X4), GDP (X5) is influenced dominantly by the variable itself by 75% to 99%, the rest is influenced by other variables. Meanwhile, for the exchange rate (X3), foreign exchange reserves (X6) *Fed funds rate* (X7) is influenced by the variable itself between 45% to 57%, the rest by other variables.



4.2. Discussion

VECM test, inflation in both the short and long term has no effect on the stock *returns of* BOOK 4 Bank . The results of this study are different from the results of previous studies that inflation has a significant positive effect on stock *returns* (Sutrisno-2017) and inflation has a negative effect on financial sector stocks (Yusmia-2020). This difference may be due to the relatively controlled inflation rate from year to year, which is on average 3.12% lower than the inflation forecast set by the government at 5%. Based on the results of the *Granger causality test*, it shows that inflation does not have a causal relationship with stock *returns and vice versa.*

Based on the results of the VECM test, it shows that the BI 7 *Day Reverse Repo Rate* in the short term has a significant positive effect on Bank BOOK 4 *stock* returns . IRF analysis results if there is a shock in the *BI 7 Day Reverse Repo Rate* , then the stock *return* of BOOK 4 Bank experiences shocks in the 1 to 4 period, and tends to experience negative shocks in the next period. The results of this study differ from previous studies (Sihombing and Sundoro-2019) and (Yusmia-2020) where the BI *7 Day Reverse Repo Rate* has a positive effect on stock *returns* , but is in line with research by Sutrisno (2017) and Malla (2020) where BI 7 *Day Reverse Repo Rate* has a significant negative effect on industry and the financial sector.

VECM estimation test, that the exchange rate, both in the short and long term, has a significant negative effect on Bank BOOK 4 stock *returns* . This illustrates that shocks in the exchange rate have a significant negative effect on stock *returns* . This research is in line with previous research, namely Sihombing and Santoso (2013), Sutrisno (2017) and Malla (2020) in their research, which concludes that the exchange rate has a negative effect on all industrial and financial sectors on the Indonesia Stock Exchange. Meanwhile, Yusmia (2020) in his research concluded that the exchange rate had a positive effect on stocks in the financial sector.

Based on the VECM estimation results, in the short term the money supply has a significant positive effect on the stock *returns* of BOOK 4 Bank, and in the long term the money supply has no effect on stock *returns* . The results of the IRF test show that stock *returns* in response to shocks in the money supply experience shocks during the period 1 to 3 experienced an increase, then experienced negative shocks and tended to decrease until the end of the period . This illustrates that shocks to the money supply have a positive effect on short-term stock *returns , and have no effect in the long term.* The results of this study are in line with the hypothesis that the money supply has a positive effect on stock *returns* of BOOK 4 Bank.

Based on the results of the VECM estimation, the effect of the GDP variable on stock *returns* , both in the short and long term, has no effect on BOOK 4 bank stock *returns* . The IRF test results show that stock *returns* in response to shocks to GDP over a 10 month period tend to stagnate. This illustrates that shocks to GDP have no effect in the short or long term. Although theoretically an increase in GDP has a positive effect on stock *returns* , the results of the IRF analysis indicate that shocks to GDP have no impact on stock *returns* . This is because based on the results of the *Granger causality test,* it shows that GDP does not have a causal relationship with stock *returns , and vice versa.* From the results of the FEVD test , it is known that the GDP variable is influenced by the GDP itself in the first period of 98 . 77 %, or only 1.23% influenced by other variables. Meanwhile in the second period it decreased by 86. 49 %.

Based on the results of the VECM estimation, the effect of the foreign exchange reserve variable on stock *returns,* both in the short and long term, has no effect on the stock *returns* of BOOK 4. The IRP test results show that in response to shocks in foreign exchange reserves will experience negative shocks in period 2, and then stagnate until period 10. It is different with stock *returns which receive* positive shocks from foreign exchange reserves in period 2 and tend to stagnate until the end of the period. This illustrates that shocks to foreign exchange reserves have no effect in the short or long term. In theory, an increase in foreign exchange reserves has a positive effect on stock *returns,* but based on the results of the *impulse response function analysis, it* indicates that shocks in foreign exchange reserves have no effect on stock *returns.* This is because based on the results of the *Granger causality test,* it shows that foreign exchange reserves do not have a causal relationship with stock *returns and vice versa.*

Based on the VECM estimation results, the effect of the *fed fund rate variable* on stock *returns,* both in the short and long term, has no effect on BOOK 4 bank stock *returns.* The results of the IRF test show that in response to shocks in *fed funds rate,* it can be seen that since the beginning of the period it has been stagnant and in the second period it has experienced negative shocks until the end of the period. Although it contradicts the hypothesis, based on the results of the *Granger causality test, it* shows that the *fed fund rate* has no causal relationship with stock *returns and vice versa.*

V. Conclusion

Based on the results of the research above, it can be concluded that (i) there is no significant effect of shocks on inflation on stock returns, (ii) there are positive and negative effects of shocks on the BI 7 days repo rate on stock returns, and there are negative effect of shock on the Exchange Rate on stock returns of BOOK 4 Bank. (iii) there is a positive effect of shock on the Money Supply and Foreign Exchange Reserves on stock returns of BOOK 4 Bank, (iv) there is no positive effect of shock (shock) on the Fed Fund Rate on the return of shares of Bank BOOK 4.

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