

THE EFFECT OF MACROECONOMIC VARIABLES AND GOLD PRICE FLUCTUATION ON THE JII STOCK RETURN

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ABSTRACT

The purpose of this study is to test the effect of some macroeconomic variables (i.e. inflation, interest rates, IDR/USD exchange rate) and fluctuations in gold price on the Jakarta Islamic Index (JII) stock returns. It is hypothesized that some macroeconomic variables and gold price fluctuation affect the performance of the JII stock returns. This study employs ARCH/GARCH methods to test the hypotheses. This study finds that IDR/USD exchange rates positively affect the JII stock returns. However, there is no evidence that inflation, interest rates, and fluctuations in gold price affect the JII stock returns.

Keywords: Capital Market Integration; Regional Stock Market; International Stock Market

INTRODUCTION

In general, stock prices are influenced by company performance and the risks faced. The company performance can be seen from their net income per share and several financial ratios that can show the management performance in managing the company. The company's risk can be seen in the company's endurance in facing the macroeconomic and microeconomic factors (Samsul, 2008). The macroeconomic factors can directly or indirectly affect the company performance and stock prices. Stock prices can be affected quickly by macroeconomic factors because investors are more responsive to the global economic situation. The investors may react positively and negatively as a reaction to the change of the macroeconomic variables. A positive reaction can increase stock prices and vice versa where it will have an impact on the decline in stock prices.

In relation to the influence of macroeconomics, there are several studies on stock returns conducted. For example, studies by Damayanti (2011); Gumilang, Hidayat, and NP (2014); Robiyanto (2018a); Yunita and Robiyanto (2018). Research by Halim (2013) studied the effect of inflation, Bank Indonesia (BI) rate, money supply and exchange rates on large capitalized shares with multiple linear analysis models. The results showed that there was a negative relationship between inflation and the BI rate for large capitalized stocks while the money supply and exchange rate had a positive effect on large capitalized shares. In the study by Hutapea, Margareth, and Tarigan (2014), USD / IDR exchange rate and oil prices had a positive effect on the Jakarta Composite Index (JCI) by using a multivariate regression model and found that gold had a negative effect on the JCI.

Previous studies have provided evidence and insights on the effect of several macroeconomic variables and commodity prices on the Jakarta Composite Index (JCI). However, there is no such study with the focus on the Jakarta Islamic Index (JII). There is a need, therefore, to study the effect of some macroeconomic variables and commodity prices on

the Jakarta Islamic Index (JII) stock returns due to the unique characteristics of the JII. The present study aims to test the effect of some macroeconomic variables (i.e. inflation, interest rates, IDR/USD exchange rate) and fluctuations in gold prices on the Jakarta Islamic Index (JII) stock returns. Having empirically tested the hypotheses, this study finds that only IDR/USD exchange rates variable affects the JII stock returns. Meanwhile, there is no evidence that some other macroeconomic variables and gold prices have an effect on the JII stock returns.

Interest rate is the cost or price that must be incurred for borrowing the fund (Mishkin, 2010). The BI rate is the policy carried out by the central bank and published to the public. Indonesian Interest Rate (IIR) is used as the minimum standard of return on investment (Halim, 2013). In addition, the interest rate is used as the basis for determining the level of return on investment (shares) (Modigliani & Miller, 1958). As a result of an increase in interest rates affecting each issuer, the debt interest burden increases. The decline in profit resulted in a decline in stock prices. On the other hand, an increase in interest rates may encourage investors to sell shares. Therefore, an increase in interest rates can affect stock prices (Arafat, 2016; Samsul, 2008).

In the study by Gumilang et al. (2014), they stated that interest rates had a significant negative effect on the stock returns of the JCI. In contrast, Silim (2013) stated that interest rates had a non-significant negative relationship with the stock market returns. However, in research by Halim (2013), the BI rate was found to have no significant effect on the stock returns. Based on the previous studies mentioned earlier, the first hypothesis that can be formulated is as follows:

H1: BI rate has a negative effect on the JII return

Inflation is a price that increases continuously. The inflation rate is classified into three levels, namely, moderate, malignant and hyperinflation inflation (Mishkin, 2010). High inflation can be detrimental to the economy, in the broad sense that many companies experience bankruptcy. In this case, inflation can have an influence on stock prices. On the other hand, low inflation has resulted in slow economic growth, ultimately resulting in a slow increase in share prices (Samsul, 2008). Research by Damayanti (2011) suggested that inflation had a significant relationship with the stock market returns. In research by Yunita and Robiyanto (2018) stated that there was a negative influence of inflation with the stock return. Halim (2013) further said that inflation had no effect on the return of the Indonesia Stock Exchange. Based on the previous studies mentioned earlier, the second hypothesis that can be formulated is as follows:

H2: Inflation has a negative effect on the JII return

The exchange rate is the price of a domestic currency in the form of foreign currency (Yunita & Robiyanto, 2018) Samsul (2008) added that foreign exchange rates are the currency needed to obtain foreign currency. Meanwhile, Mishkin (2010) stated that the exchange rate is the price of a currency contained in a foreign currency. Therefore, it can be concluded that the exchange rate is the value that exists in the domestic currency in foreign currencies. Changes in foreign exchange rates can have a negative or positive effect on stocks, depending on the issuer. When Dollar strengthens on Rupiah, it has a negative impact on companies that have debt in USD, while issuers exporting goods abroad have a positive impact. The issuers affected by the negative effects of foreign exchange will result in a decrease in stock prices. Conversely, the issuers that are positively affected by foreign exchange can increase company profits which will give an impact on the increase in stock prices (Samsul, 2008).

Research by Gumilang et al. (2014) showed that there was a significant negative effect of exchange rates on the JCI. A study by Robiyanto (2018a) in addition, showed that there was a significant effect of exchange rates on the Indonesia Stock Exchange. Silim (2013) also found that there was a significant negative effect of the IDR-USD exchange rate on the return of the Indonesia Stock Exchange. Therefore, based on the previous studies mentioned earlier, the third hypothesis that can be formulated is as follows:

H3: IDR-USD exchange rate has a negative effect on the JII return

Robiyanto, Wahyudi, and Pangestuti (2017) stated that gold can be used as a hedge against

an increase in continuous inflation. A long-term investment in the form of gold can be used as a hedge, but in the short-term investment, price fluctuations may occur. A study by Hutapea et al. (2014) revealed that gold has a significant effect on the stock returns on the Indonesia Stock Exchange for the period of 2007-2011. The same thing also stated by Robiyanto (2018a) where gold has a significant effect on stock returns on the Indonesia Stock Exchange. Therefore, based on the previous studies mentioned earlier, the fourth hypothesis that can be formulated is as follows:

H4: Gold return has a positive effect on the JII return

METHOD

This study focuses on the JII, so none sample has been taken. The observation was the JII itself. The data used in this study was monthly data for the period of 2012-2017. This data was obtained from the websites of Bank Indonesia, Dunia Investasi, Investing, and the Central Bureau of Statistics. The purpose of this study is to analyze the influence of macroeconomic variables and gold prices on the rate of return of JII.

To examine the effect of these variables, the study used the ARCH (AutoRegressive Conditional Heteroscedasticity), model. Before carrying out the ARCH / GARCH method, a Root test was performed.

According to Dickey and Fuller (1979), there are three types of equations used for the Root test:

$$Y_t = \alpha_1 y_{t-1} + \epsilon_t \quad (1)$$

$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \epsilon_t \quad (2)$$

$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 t + \epsilon_t \quad (3)$$

There are differences in the equations, namely in the parts of determination of α_0 and $\alpha_2 t$. If $\alpha_1 = 1$, then y has a unit root (stationary). Conversely, if $|\alpha| < 1$, then y has no unit root (not stationary). The following is the hypothesis:

$$H_0 : \alpha_1 = 1 \text{ (stationary)} \quad (4)$$

$$H_1 : |\alpha| < 1 \text{ (not stationary)} \quad (5)$$

Before conducting the hypothesis testing, the Y parameter is estimated. The Y parameter can be estimated by doing the Ordinary Least Squares (OLS) test. It is done before carrying out the ARCH / GARCH method. The OLS equation as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \quad (6)$$

To test the H_0 from the root, it is necessary to estimate β_1 in the equation.

$$Y_t = \beta_1 Y_{t-1} + \mu_t, \text{ where } |\beta_1| < 1 \quad (7)$$

$$\mu_t \sim NID(0, \sigma^2_u) \quad (8)$$

The above equation can be used with OLS.

Furthermore, in the ARCH model, the residual variant of time-series data is not only influenced by variables, but also by the residual values studied as well. There are two ARCH equations, namely:

$$Y_t = b_0 + b_1 X_t + \epsilon_t \quad (9)$$

$$\sigma_t^2 = \sigma_0 + \sigma_1 \epsilon_{t-1}^2 \quad (10)$$

There are Y as the dependent variable, X as the independent variable, ϵ as the error variables, σ_t^2 as the residual variable and σ_{t-1}^2 as the components of ARCH. There are two components of residual variant, namely constants and residuals from the previous period. Equation (1) is a conditional mean and equation (2) as a conditional variance.

The residual variant ϵ_t is influenced by the movement of the residual square with one previous period (according to equation 2), referred to as ARCH (1). If it is interpreted by period (p), it becomes ARCH (p) and the equation is as follows:

$$Y_t = b_0 + b_1 X_t + \epsilon_t \tag{11}$$

$$\sigma_t^2 = \sigma_0 + \sigma_1 \epsilon_{t-1}^2 + \sigma_2 \epsilon_{t-2}^2 + \dots + \sigma_p \epsilon_{t-p}^2 \tag{12}$$

In order to make the variants to always be positive ($\text{var}(\epsilon^2) > 0$), therefore a condition of $\sigma_0 > 0$ and $0 < \sigma_1 < 1$ must be fulfilled.

RESULTS

Unit Root Test

Stationary data testing can be done by the root test. The root test was developed by Dickey and Fuller (1979). In all variables used in this study, the ADF value is statistically significant at $\alpha = 5\%$. This shows that all data is stationary.

Table 1 Result of Unit Root Test

Variable	Augmented Dickey-Fuller	Conclusion
	Statistic	
Gold	-8.3645*	Stationary
JII	-7.7450*	Stationary
Inflation	-7.7977*	Stationary
Exchange Rate	-6.3879*	Stationary
BI Rate (Interest Rate)	-9.9824*	Stationary

* Significant at $\alpha = 1\%$

GARCH (1,1) Test

The GARCH (1,1) test results can be seen in Table 2. below.

Table 2 Result of GARCH (1.1.) Test

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.002509	0.023104	-0.108598	0.9135
INFLASI	0.202463	0.370349	0.546683	0.5846
NILAI_TUKAR_1	0.859525	0.236301	3.637410	0.0003
SUKU_BUNGA	-0.276543	0.531372	-0.520432	0.6028
GOLD_1	-0.066777	0.107566	-0.620802	0.5347

From Table 2. the equation can be written as follows:

$$\text{JII Stock Return} = -0,0025 + 0,202 \text{ Inflation} + 0,858 \text{ IDR/USD Exchange Rate} - 0,276 \text{ Interest Rate} - 0,066 \text{ Gold} + \epsilon_t$$

Therefore, based on the above equation, it can be concluded that every change in the JII stock return is 1 unit, and the change in inflation is +0.202 units; the exchange rate is + 0.858 units; interest rate is -0,276 units and gold is -0,066 units. The following is the var (ϵ_t) equation:

$$\sigma_t^2 = 0,0002 + 0,1241 \epsilon_{t-1}^2 + 0,6245 \sigma_t^2$$

According to the processed data, the results show that inflation has a probability of 0.5846, which is greater than $\alpha = 5\%$, which makes it not significant. The IDR / USD exchange rate has a probability of 0,0003, which is smaller than $\alpha = 5\%$, which makes it significant. The interest rate has a probability of 0.6048, which is greater than $\alpha = 5\%$, so it is not significant. Meanwhile, gold has a probability of 0.5347, which is greater than $\alpha = 5\%$, so it is also not significant.

DISCUSSION

This study contributes to the literature by providing empirical evidence on the positive

effect of IDR/USD exchange rates on the JII stock returns. This finding is not consistent with some previous studies such as Gumilang et al. (2014); Robiyanto (2018a). This may happen because the JII consists of some stock which does not affect by the exchange rates, different from the LQ45 index which consists of exchange rate affected stocks such as manufacturing stock sector's stock. While there is evidence that inflation and interest rate affect JCI stock returns, this study finds that the two macroeconomic variables have no effect on the JII stock returns. This is consistent with Yunita and Robiyanto (2018).

It is also interesting to note that while some studies find evidence on the effect of gold price fluctuation on the JCI stock returns, this study finds that gold price fluctuation has no effect on the JII stock returns. This finding is consistent with Robiyanto (2018b); Tjandrasa and Sutjiati (2016), because only a few even none mining stocks become the JII's constituent.

Overall this study could contribute to the arbitrage pricing theory, by proving that the macro variable such as the exchange rate could affect the stock return.

Those findings imply that investors who want to invest in the JII stocks need to focus on the exchange rate fluctuation when formulating the trading strategy mix. While it is good to know macroeconomic data (such as inflation and interest rate) and price movement of the commodity (such as gold), it is not necessary to include those variables in the trading strategy mix.

It is worth noting that further study focusing on the dynamic analysis using DCC-MVGARCH approach would be useful as such an approach would be able to analyze the dynamic relationships between many variables at once. It is also recommended to use a longer data period to improve the robustness of the results.

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