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THE IMPACT OF THE CHANGE IN IDR/USD EXCHANGE RATE ON THE CHANGE IN INDONESIA COMPOSITE INDEX IN INDONESIA STOCK EXCHANGE

Lauw Tjun Tjun
Farida Betniwati Br Panjaitan

ABSTRACT

This study intends to test the impact of a change in IDR/USD exchange rate on a change in Jakarta Stock Exchange (JSX) composite index and to prove a long-term balance adjustment of JSX composite index. To achieve these two purposes, error correction model is used as data analysis method. The time observation conducted is the monthly data of 2011 to 2016. The result shows two things. Firstly, the change in IDR/USD exchange rate has a significant negative impact on the change in JSX composite index. Secondly, the study is successful to prove the long-term balance adjustment of JSX composite index. JSX composite index will decrease its position next period to correct its long-term balance of error.

Key words: IDR/USD Exchange Rate, JSX Composite Index, Long-Term Balance Adjustment.

INTRODUCTION

Macroeconomic variables of the rupiah exchange rate also influence the movement of the ICI in Indonesia. The exchange rate is defined as the price of the domestic currency of a foreign currency (Salvatore, 2014). According to Sukirno (2013), the exchange rate or foreign exchange rate shows the price or value of a country's currency expressed in the value of another country's currency.

According to Surbakti (2013), changes in exchange rates will affect the Composite Index. When the US dollar exchange rate strengthens, investors can be sure to flock to withdraw their money from stock investments into dollars and then invest it elsewhere as savings. So that the demand for shares declined and the share price automatically declined which was followed by a decrease in the ICI.

According to Salsabila Amalia, Isyнуwardhana, Khairunnisa (2016), inflation variables, exchange rates / exchange rates (USD / IDR), and Nikkei 225 Index simultaneously have a significant effect on the Indonesia Composite Index (ICI). However, only inflation and the Nikkei 225 Index that partially have a significant effect on the Indonesia Composite Index (ICI) while the exchange rate / exchange rate (USD / IDR) has no significant effect on the Indonesia Composite Index (ICI).

This research proves that the rupiah exchange rate significantly have a negative effect on the ICI, which means that the stronger the rupiah exchange rate against US \$ (appreciated rupiah) the higher the increase in the stock price will be, and vice versa. This gives theoretical implications that empirically these findings reinforce the theory of a country's strengthening currency exchange rate giving a positive signal to the country's economy.

Exchange rates also influence stock price volatility. Depreciation of the domestic currency will increase export volumes. If international market demand is sufficiently elastic, this will increase domestic company cash flow, which then increases stock prices, which is reflected in the ICI. Conversely, if an issuer purchases domestic products and has debt in the form of dollars, the price of the shares will go down. The depreciation of the exchange rate will raise share prices, which is reflected in the ICI in an economy experiencing inflation. (Kewal, 2012)

Studies conducted by Hismendi, Hamzah Abubakar, Musnadi Said (2013), Kewal (2012), Mardiyati Umi, Rosalina Ayi. (2013), Lailia Hilya, Darminto, Hidayat, R.R. (2014), which states that the exchange rate has a negative and significant effect on the ICI movement.

Based on the explanation shown above, the problem formulations in this study are:

1. Is there any influence of the Rupiah Exchange Rate on the US dollar on ICI?
2. Did the delay in the previous period's residual affect the change in the ICI?

The purpose of this study is to:

1. To test and analyze the effect of changes in the Exchange Rate of the Rupiah on the US dollar on ICI.
2. To test the delay in the previous period's residuals has an effect on the changes in the ICI.

THEORETICAL FRAMEWORK AND DEVELOPMENT OF HYPOTHESES

Currency Exchange

The exchange rate states the value of the relationship between a unit of a foreign currency and a unit of a domestic currency. According to Sukirno (2006), the exchange rate is the amount of domestic money needed, that is the amount of rupiah needed, to obtain one unit of foreign currency.

Stock

According to Basu (1997), the price of a stock is heavily influenced by demand and supply laws. Stock price is likely to rise if the stock has excess demand and tends to descend in case of excess supply. Stocks are one of the market securities commonly sold in the capital market (Stock Exchange) is a stock. Shares are evidence of capital inclusion of a limited liability company.

Indonesia Composite Index (ICI)

Indonesia Composite Index (ICI) describes a series of historical information about the movement of the combined stock price of all shares, up to a certain date. The movement of the stock price is presented every day, based on the closing price on the exchange on that day. The index is presented for a certain period. The composite stock price index changes every day due to, (1) changes in market prices that occur every day, (2) the presence of additional shares (the entry of new listed companies listed in the Stock Exchange, or the occurrence of corporate actions in the form of stock splits, rights, warrants, dividend shares, bonus shares, and conversion shares).

The Effect of Changes in Rupiah Exchange Rate on US Dollar Against Changes in ICI

The "portfolio balance" approach assumes stock as part of wealth so that it can influence the behavior of the exchange rate through the law of demand for money in accordance with the monetarist model of exchange rate determination. This approach assumes a negative relationship between stock prices and the exchange rate, with the direction of causality from the stock market to the money market, in accordance with the very fast financial market interactions. This happens because the relationship between the two markets occurs in a short period of time. According to Bilson, et al. (2011), the "portfolio balance" approach believes that the exchange rate and interest rate are determined simultaneously through a portfolio balance condition for the asset holder in each country. Because the asset has an imperfect mutually substituting trait. Thus the research hypothesis can be formulated as follows:

H1: The changes in the rupiah exchange rate on the US dollar negatively affect the changes in ICI.

The Effect of Residual Delay in the Previous Period on Changes in ICI.

In the error correction model, it shows the residual delay in the previous period. In the context of this study, it is intended to correct the value of the ICI that occurred in the period that follows. Correction occurred because the ICI balance was too high in the period afterwards. Thus the research hypothesis can be formulated as follows:

H2: The delay in residuals in the previous period has a negative effect on the changes in ICI.

RESEARCH METHODS

Type of research

The type of research used is explanatory research. An explanatory study according to Singarimbun and Effendi (2006) is a study that explains the causal relationship between research variables with hypothesis testing.

Operationalization of Research Variables

The variables used in this study consisted of 2 (two) types, namely the dependent variable and the independent variable. Earnings quality acts as the dependent variable, while investment opportunities, company size, leverage, and liquidity act as independent variables. In full, the operationalization of these research variables can be seen in Table 1.

Table 1: Operationalization of Variables

No.	Variable	Definition	Indicator	Scale
1	Exchange Rate	The price of the currencies used by residents of these countries to trade with one another	The amount of value (Bank Indonesia's middle rate)	Ratio
2	Indonesia Composite Index	An indicator that shows the movement of stock prices on a monthly basis.	ICI = The Value of The Stock (The Amount of the Stocks Listed) x Last Price X100 Base Value (The Amount of Stocks Listed) x Initial Price	Ratio

Method of Collecting The Data

The data collection method used in this study is archived data. According to Hartono (2012), archived data are recorded data from existing sources.

Data Analysis Method

Error correction model is used as a data analysis model in this study. This model is suitable for use when the independent and dependent variables are time series data. The equation of the error correction model used can be seen below.

$$DISHG_t = \beta_0 + \beta_1 DKURSt + \beta_2 LAG_RESID_t + \epsilon_1 t \dots\dots\dots (1.1)$$

To find the value of LAG_RESIDt (LAG above ε0), you can look for by equation (1.2) as follows:

$$CSPI(-1) = \gamma_0 + \gamma_1.KURS(-1) + \epsilon_0 \dots\dots\dots (1.2)$$

Furthermore, to ensure a cointegrated model a stationarity test was performed at ε0. The stationarity test used is the Augmented Dicky-Fuller (ADF) test (Nacrowi and Usman, 2006). The ADF test procedure is as follows.

- a. Formulate a statistical hypothesis that includes the null hypothesis (H0) and alternative (Ha)
H0: residual data has a root unit (not stationary data)
Ha: residual data does not have a root unit (statement data)
- b. Calculates the t-statistic value of the ADF and its probability. To calculate this value, the E-VIEWS program is used.
- c. Determine the level of significance to test statistical hypotheses. The level of significance (α) used is 5%.
- d. Test the statistical hypothesis by comparing the probability value of the t-statistic on the ADF with a significance level (α) of 5% with the following conditions: If the t-statistic probability value is ≥ α then the null hypothesis is accepted. If the t-statistic probability value < α, then an alternative hypothesis is accepted.

Research Hypothesis Testing

In order to be tested, the research hypothesis must be stated in a statistical hypothesis consisting of a null hypothesis and an alternative hypothesis. For the first research hypothesis, the null hypothesis and the intended alternatives are as follows.

H01: β1 > 0: Changes in the IDR / USD exchange rate have a positive effect on changes in the ICI return or have no effect on changes in the ICI return.

Ha1: β1 < 0: Changes in the IDR / USD exchange rate have a negative effect on changes in the ICI return.

For the second research hypothesis, the null hypothesis and and the intended alternatives are as follows.

H02: β2 > 0: The residual lag of the previous period have a positive effect on changes in the ICI return or have no effect on changes in the ICI return.

Ha2: β1 < 0: The residual lag of the previous period have negative effect on changes in the ICI return.

The second step, calculate the t-statistic value for each regression coefficient β and its probability. To calculate this value, the E-VIEWS program is used.

The third step is determining the level of significance for testing statistical hypotheses. The level of significance (α) used is 5%.

The fourth step is to test the statistical hypothesis by comparing the probability value of the t-statistics on the regression coefficient with a significance level (α) of 5% with the following conditions: If the t-statistic probability value ≥ α then the null hypothesis is accepted. If the t-statistic probability value < α, then an alternative hypothesis is accepted.

RESULTS AND DISCUSSION

Stationary Test Results

The condition for using an error correction model is that there are residuals that do not have a root unit or residuals are stationary. This test is carried out on the error value in equation (1.2). The test results can be seen in Table 1 below.

Table 1: The Result of ADF Test on Residual (ε0)

Null Hypothesis: RESID has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=11)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-9.962869	0.0000
Test critical values: 1% level	-3.512290	
5% level	-2.897223	
10% level	-2.585861	

*MacKinnon (1996) one-sided p-values.

Source: Output EViews 6.

As seen in Table 1, the residual probability value for the ADF t-statistic is 0,000. This value is smaller than α by 5%, so the null hypothesis is rejected. Thus the residual (ε0) does not have a root unit so it can be stated that the residual is stationary. This residual value is made late which is symbolized by the LAG over ε0 (LAG_RES). After that, then the error correction model is made.

Error Correction Model Estimation Results

Table 2 below presents the results of estimation of error correction models. This model has a coefficient of determination (R-Squared) of 0.619313. This means that these two variables can predict the changes in ICI.

Table 2: The Estimation Results of The Error Correction Regression Model

Dependent Variable: D(RIHSG)
 Method: Least Squares
 Date: 12/16/17 Time: 09:38
 Sample (adjusted): 2 72
 Included observations: 71 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003323	0.004271	0.778174	0.4388
D(KURS)	-7.53E-05	1.54E-05	-4.897002	0.0000
LAGRESID	-1.093828	0.100194	-10.91714	0.0000
R-squared	0.619313	Mean dependent var		-0.000369
Adjusted R-squared	0.609796	S.D. dependent var		0.061307
S.E. of regression	0.038296	Akaike info criterion		-3.651449
Sum squared resid	0.117329	Schwarz criterion		-3.564021
Log likelihood	154.5351	Hannan-Quinn criter.		-3.616326
F-statistic	65.07318	Durbin-Watson stat		2.058882
Prob(F-statistic)	0.000000			

Source: Output EViews 6.

Hypothesis Testing Results

The first hypothesis states that the changes in exchange rates have a negative effect on the changes in the Indonesia Composite Index. This hypothesis is tested by comparing the t-statistic probability value of the D regression coefficient (KURS) with a significance level of 5%. In Table 2, you can see the t-statistic probability value of the D regression coefficient (KURS) of 0.0000. Given the probability value is smaller than α by 5%, the alternative hypothesis is accepted. Thus, changes in exchange rate has a significant negative effect on the changes in ICI.

The second hypothesis states that the delay in residuals in the previous period has a negative effect on the changes in the ICI. This hypothesis is tested by comparing the t-statistic probability value of the RESID_LAG0 regression coefficient with a significance level of 5%. In Table 2, you can see the t-statistic probability value of the RESID_LAG1 regression coefficient of 0.0000. Given the probability value is smaller than α by 5%, the alternative hypothesis is accepted. Thus, RESID_LAG0 has a significant negative effect on changes in ICI.

Discussion

The result of testing the first hypothesis shows that the changes in the exchange rate has a significant negative effect on changes in the ICI. These results are in line with research by Hismendi, Hamzah Abubakar, Musnadi Said (2013), Kewal (2012), Mardiyati Umi, Rosalina Ayi. (2013), Lailia Hilya, Darminto, Hidayat, R.R. (2014), which states the exchange rate has a negative and significant effect on the ICI movement.

The results of the second hypothesis testing shows that the residuals in the previous period has a significant negative effect on changes in the ICI. Significant negative residuals in the previous period indicate the ICI will decrease in the period to follow to correct long-term equilibrium errors.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on descriptive statistical analysis, it can be seen that:

1. The t-statistic probability value of the D regression coefficient (KURS) is 0.0000. Given the probability value is smaller than α by 5%, the alternative hypothesis is accepted. Thus, the changes in exchange rate has a significant negative effect on changes in the ICI.
2. The t-statistic probability value of the RESID_LAG0 regression coefficient with a significance level of 5%. In Table 2, you can see the t-statistic probability value of the RESID_LAG1 regression coefficient of 0.0000. Given the probability value is smaller than α by 5%, the alternative hypothesis is accepted. Thus, RESID_LAG0 has a significant negative effect on changes in the ICI.

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