Signal of Rupiah Exchange Rate to US Dollar and Gross Domestic Product (GDP)

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INTRODUCTION

Indonesia development growth is inseparable from macroeconomic indicators including rupiah exchange rate, Gross Domestic Product (GDP) and Composite Stock Price Index (CSPI). Economic growth is an indicator of a government in national development to improve community welfare. This research focuses on the signaling theory so that it can determine the impact of the rupiah exchange rate on the US dollar and GDP on Indonesian CSPI changes. In contrast with research by Otorima and Kesuma, (2016) which focused more on determining the effect of exchange rate and GDP on the CSPI without explaining the negative impact arising from the depreciation of rupiah exchange rate to CSPI and did not explain the signal of GDP growth to the CSPI, which could increase the interest of investor in providing investment in Indonesia.

Rupiah exchange rate is used as a transaction tool between Indonesia and other countries. Measurement of rupiah exchange rate is based on the US dollar because it is used in global transactions (Tambunan, 2016). Based on Bank Indonesia (BI) data in October 2018, the weakening of rupiah exchange rate was around Rp. 15,200 per US Dollar, which caused investors hesitated to invest in Indonesia and caused a decrease in Jakarta Composite Index (Bank Indonesia, 2018). Fluctuations in rupiah exchange rate can affect the price of goods and services in the country so that it has an impact on the decline/weakening of the CSPI (Ulfia and Aliasuddin, 2011). The impact of rupiah depreciation for US dollar caused the declining value of stock prices on the capital market. Depreciation of rupiah for foreign currencies gives a negative signal for investors. Widyastuti, et al (2017) proves that there is a significant negative effect between the exchange rate of the rupiah and the CSPI in which the weakening of rupiah for US dollar has an impact on the decline in the CSPI.

GDP measurement is based on total value of domestic goods and services production. So that, GDP represents an increase or decrease of Indonesia economy. An increase in GDP as an economic activity is based on products and services produced to increase the Indonesia welfare (Malik and Kurnia, 2017). The research of Saidi, et al (2017) proves that GDP has a significant positive impact on CSPI. It means that increasing value of GDP represents that the national economy is healthy and gives a positive signal for investors to make their investment in Indonesia.

CSPI serves as a guideline for investors in capital market (Fahmi, 2017). CSPI is price movement of all common shares and preferred stocks listed in IDX. CSPI strengthening has a potential to attract foreign investors to invest in Indonesia (Capital Inflow), while CSPI weakening will reduce the number of prospective investors. Rupiah exchange rate and GDP on the CSPI have an impact including increased investment in Indonesia that in turn will increase the economic activity. Rupiah exchange rate will strengthen and an increase in GDP will be able to increase investors' interest.

CSPI strengthening as main indicator of efficient capital market represents company's performance and economic growth. CSPI also the main information used by investors to analyze economics of a country,

especially Indonesia (Fahmi, 2017). The increasing of CSPI is a signal for success of company management in Indonesia. It means success in generating profits and providing satisfaction for rational investors. Higher CSPI also provides benefits in the form of capital. In addition, a better corporate image in Indonesia making it easier for the company management to obtain funds from outside of company. CSPI which is going down will harm the company. The company will experience capital loss and investors will be less interested in investing in Indonesia (IDX, 2010).

Based on the background, the research problem is how the signal of rupiah exchange rate for the US dollar and Gross Domestic Product (GDP) affect the changes of Indonesia Composite Stock Price Index (CSPI). This research aims to analyze the signal of rupiah exchange rate for US dollar and Gross Domestic Product (GDP) in Indonesia Composite Stock Price Index (CSPI).

Theoretical framework employed in this research is "Signaling Theory" which according to Spence, explains that published information provides a signal to investors in making investment decisions (Richard, 2012). The information providing signals to investors includes fluctuations in the exchange rate of the rupiah for US dollar, GDP growth, and CSPI. Exchange rate is the value of currency used for transactions between currencies of two countries (Triyono, 2008). In the theory, relationship between exchange rates and inflation rates in two countries is called Purchasing Power Parity (PPP) theory. Purchasing power parity theory expressed by Madura and Fox (2011) explains that exchange rate balance will adjust to the difference of inflation rate between two countries. Gross Domestic Product (GDP) is total value added to goods and services from national economic activities. An increase in national income will be achieved if a country is able to produce products with high sale values (Mankiw and Gregory, 2009). Economy is said to grow if there is an increase in output per capita in the long run, an increase in the GDP as a quantitative measure representing the development of an economy in a certain period (Sukirno, 2011).

Composite Stock Price Index (CSPI) is the price movement of all common shares and preferred shares listed on the IDX (Fahmi, 2017). According to IDX (2010), IHSG is main indicator to explain the movement of stock prices. Index movement will show changes in market situation, so that it is used as a barometer of economic health in a country as well as a basis for the latest market statistical analysis. These economic phenomena include micro and macroeconomics. Macroeconomic phenomena include changes in exchange rates, interest rates, and inflation rates. Changes in stock prices in every trading will form the Stock Price Index. Index numbers are made in such a way that can be used to measure performance of shares listed on stock exchange, where returns and market risks are calculated. Portfolio return is expected to increase if CSPI tends to increase and otherwise, it decreases as the Stock Price Index is decreasing.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Signal of Rupiah Exchange Rate for US Dollar on Indonesian CSPI

The depreciation of rupiah for the US dollar has led to a decline in investors' interest to provide investment in Indonesia. Consequently, it led to a decline in Jakarta Composite Index (Bank Indonesia, 2018). The rupiah exchange rate plays an important role in business decision making and as an important indicator in determining information for investors to invest in Indonesia. Rupiah exchange rate as a macroeconomic variable contributes to determine the CSPI volatility.

Instability of rupiah exchange rate for the US dollar is a real challenge for investors in capital market as exchange rate is always fluctuating. It is a fundamental consideration for investors in conducting their business activities. It is in accordance with signaling theory, where some signals give sign regarding economy state of firm (Ross, 1978) or in a wider context a country (ie., CSPI). Study from Surbakti, et al (2016) proves that the impact of weakening of rupiah for US dollar affected CSPI declining. According to Widyastuti et al., (2017), it is proven that exchange rate has a significant negative impact on changes in the CSPI. It means that depreciation of rupiah has an impact on the decline in Jakarta Composite Index. These two studies have differences in observation period of exchange rate and CSPI variables. Based on explanation above, first hypothesis is.

H1: rupiah exchange rate for US dollar gives a negative signal to CSPI

Signal of GDP to CSPI

GDP growth increases purchasing power so that it has an impact on increasing corporate profits. It also gives investors confidence to invest in Indonesian companies. Signalling theory gives some basis that GDP is a form of signal to adjust CSPI score when there is information asymmetry in Indonesia capital market, as Morris (1987) mention that signaling is applicable in every market setting as long as there is information asymmetry. The rising value of GDP has a positive signal for investors to invest in companies or in the

Indonesian capital market. The increasing demand for domestic products will benefit the companies, so they can increase returns to meet investor expectations. Research by Bodie, et al (2007) explains that an increase in GDP has an impact on CSPI. For instance, the increase in economic activity in Indonesia leads to high interest to invest in the capital market. Findings from Bilal and Kamal, (2016) shows that GDP growth plays an important role in assessment of investors so that it supports an increase in CSPI. The difference in the research is data collection from two different countries.

The value of GDP is information on economy of Indonesia. The higher the value of GDP, the higher business activities increase so that it gives a positive signal for

investors. The increase in GDP gives an overview of Indonesian companies' performance, so that it gives a positive response in the capital market. The second hypothesis in this research is.

H2: GDP has a positive signal to Indonesian CSPI.

RESEARCH METHODOLOGY

The type of this research is quantitative. It used quarterly time-series data (January, April, July, October) starting from 2010 - 2018 from the Bank Indonesia website to obtain the exchange rate of rupiah for US dollar using the quarterly closing middle rate. Researcher also accessed the website of the Ministry of Trade of Republic of Indonesia to obtain a constant quarterly GDP value, as well as accessed Indonesia Stock Exchange website to obtain quarterly closing CSPI value. Independent variable was rupiah exchange rate for the US dollar (X1) and GDP (X2), while the dependent variable was the Composite Stock Price Index (CSPI) (Y). Data analysis used Multiple Linear Regression based on the results of the F test, the Determination Coefficient test and ttest.

FINDINGS AND DISCUSSION

Research Data
Rupiah Exchange Rate For US Dollar

Rupiah exchange rate data was directly taken from the Bank Indonesia website using middle exchange rate for US dollar. While the movement of rupiah exchange rate based on quarterly data from January 2010 - July 2018 is presented as follows.
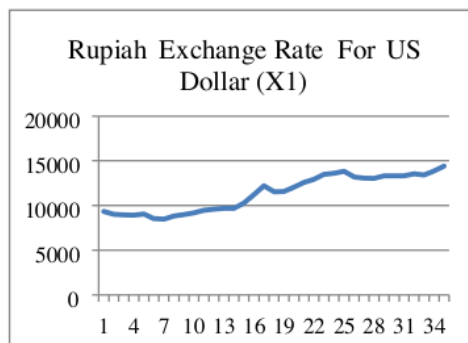

Figure 1. Movement of Rupiah Exchange Rate For US Dollar
Source: Edited, 2019

Figure 1 shows that movement of rupiah exchange rate for US dollar from January 2010 - July 2018 was increased. It means that the exchange rate of rupiah has weakened relative to US dollar over the years. Strengthening of rupiah exchange rate for US dollar in July 2011 was Rp. 8,508 / US dollar and weakening of rupiah in July 2018 was Rp 14,413 / US dollar.

Indonesia Gross Domestic Product (GDP)

Data on Gross Domestic Product (GDP) was taken from website of the Ministry of Trade of Republic of Indonesia. While movement of Gross Domestic Product (GDP) based on quarterly data from January 2010

- July 2018 is presented in figur 2, shows that movement of Gross Domestic Product (GDP) from January 2010-July 2018 has increased. It means that Indonesia has experienced economic growth over the years. The lowest GDP in January 2010 was Rp 1,642.35 billion and the highest GDP in July 2018 was Rp 2,684.19 billion.

Composite Stock Price Index (CSPI)

Movement of CSPI is an information that can be used by investors to assess feasibility of business in Indonesia. A high CSPI value indicates that companies in Indonesia are healthy, while the low value CSPI indicates that the stock market in Indonesia is weak. Composite Stock Price Index (CSPI) data was directly taken from

Indonesia Stock Exchange website using closing values. While movement of Composite Stock Price Index (CSPI) based on quarterly data from January 2010-July 2018 is presented as follows.
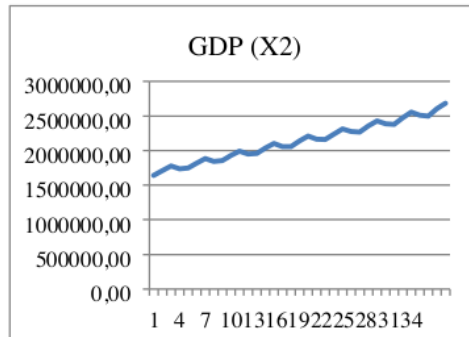
GDP (X2)

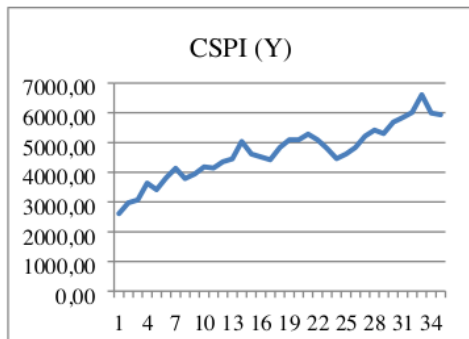Figure 2. Movement of GDP
Source: Edited, 2019

CSPI (Y)

Figure 3. The Movement of CSPI
Source: Edited, 2019

Figure 3 shows that movement of Composite Stock Price Index (CSPI) from January 2010 to July 2018 has increased. It means that CSPI has strengthened over the years. CSPI weakened in January 2019 by 2,610.79 and strengthened in January 2018 by 6,605.63.

Descriptive Data

Descriptive test of each research variable based on quarterly data from January 2010 - July 2018, is presented in table 1 as follow:

Table 1. Descriptive Test

Variable	N	Lowest	Highest	Mean
Rupiah Exchange Rate for US Dollar (X_1)	35	8.508,00	14.413,00	11.372,25

GDP (X$_2$)	35	1.642,35	2.684,19	2.134,75
CSPI (Y)	35	2.610,79	6.605,63	4.662,72

Source: Edited, 2019

Table 1 proves that mean of rupiah exchange rate was Rp. 11,372.25/US dollar meaning that exchange rate has weakened. The mean of GDP was Rp 2,134.75 billion meaning that high value of GDP shows increasing economy. The mean of CSPI was 4,662.72 meaning CSPI value has strengthened in the past 9 years. The results of descriptive test research show that weakening of rupiah does not have an impact on decline of CSPI, while increasing in GDP has an impact on strengthening of CSPI.

Data Analysis
Classic Assumption Test
Normality Test

Normality test of data used Kolmogorov Smirnov Test on each variable using a level of significant (α) of 5%. The data is presented below:

Table 2. Normality Test

Variable	Sig. (2-tailed)
Rupiah Exchange Rate for US Dollar (X$_1$)	0,149
GDP (X$_2$)	0,990
CSPI (Y)	1,000

Source: Edited, 2019

The results of Kolmogorov Smirnov Test show that data for the variables of Rupiah Exchange Rate for US Dollars (X1) and GDP (X2) to the CSPI (Y) are normally distributed since the significance value is greater than 0.05.

Multicollinearity test

The results of multicollinearity testing using Tolerance and VIF values are presented as follows:

Table 3. Multicollinearity Test

Variable	Tolerance	VIF
(X$_1$)	0,291	3,435
(X$_2$)	0,172	5,819

Source: Edited, 2019

Based on Table 3, it can be concluded that variables of Rupiah Exchange Rate for US Dollars (X1) and GDP (X2) have no multicollinearity issues because tolerance values greater than 0.1 and VIF less than 10,000, which means that the data have no disturbing symptoms from each independent variable.

Heteroscedasticity Test

Heteroscedasticity test in this research used Scatterplot, the figure is presented as follows:
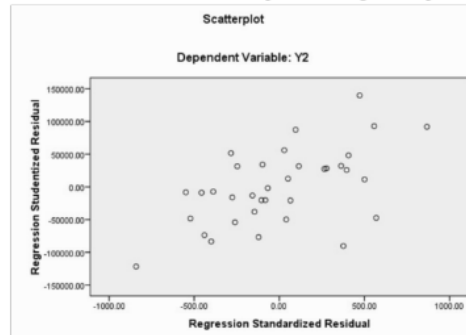

Scatterplot
Dependent Variable: Y2

Figure 4. Heteroscedasticity Test
Source: Edited, 2019

Figure 4 shows the data has no symptoms of heteroscedasticity because the data distribution in the diagram lies between the 0 value of X axis and Y axis and it has no clear pattern.

Autocorrelation Test

The autocorrelation issue can be identified by the Durbin-Watson value between -4 to +4. Meanwhile, if the value less than − 4, it means negative autocorrelation, and greater than 4 means positive autocorrelation. The autocorrelation test result is presented as follows.

Table 4. Autocorrelation test

Model	Durbin-Watson
1	1,658

Source: Edited, 2019

Table 4 shows that the Durbin-Watson (d) value is 1.658. Therefore, the value (d) is between - 4 to 4, so the data is stated to have no autocorrelation symptoms.

Model Accuracy Testing (F Test)

The results of F test analysis determine the overall research model. The data is presented in the following table.

Table 5. F Test

Variable	F_{count}	F_{table}	Sig F
Rupiah Exchange Rate For US Dollars (X_1) GDP (X_2)	120,289	3,260	0,000

Source: Edited, 2019

F_{count} value of X_1 and X_2 variables to Y (120.289) is greater than F_{table} (3.260) with significant value of (0,000) meaning that rupiah exchange rate for US dollar X_1 and GDP (X_2) give signal to the Composite Stock Price Index (CSPI) (Y)

Coefficient of Determination (R^2)

Coefficient of Determination Test (R^2) is to determine percentage of overall effect of dependent variable to independent variable. The test result is presented as follows.

Table 6. Coefficient of Determination Test (R^2)

Model	R Square
Rupiah Exchange Rate for US Dollar (X_1) GDP (X_2)	0.883

Source: Edited, 2019

The R^2 value of variable X1 and X2 is 0.883, which means that the rupiah exchange rate for the US dollar (X1) and GDP (X2) give signal to the CSPI (Y) of 88.3%.

Hypothesis Test (t-test)

Hypothesis testing using the t-test value was performed to analyze signals in each variable of rupiah exchange rate for the US dollar and GDP on the Composite Stock Price Index (CSPI). The test results are presented in the following table.

Table 7. t-test

Variable	Unstandardized Coefficients B	Sig
Rupiah Exchange Rate for US Dollar (X_1)	-0,178	0,021

GDP (X_2)	4,179	0,000

Source: Edited, 2019

The correlation coefficient of exchange rate of rupiah for US dollar (X1) to CSPI (Y) of (-0.178) and sig. value equals to 0.021, which means less than 0.050 so it supports H1. It means that rupiah exchange rate for US dollar has a negative signal to CSPI. Meanwhile, correlation coefficient of GDP (X2) to CSPI variable (Y) is (4,179) and sig. value equals to 0,000 which means less than 0.050, so it supports H2. It means that GDP has a positive signal to CSPI.

Discussion

Signal of Rupiah Exchange Rate for US Dollar on Indonesian CSPI

Based on signaling theory, exchange rate of rupiah for US dollar on CSPI using portfolio balance model assumes that stocks are part of properties so that it can affect behavior of exchange rate through law of demand for money in accordance with monetarist model of exchange rate determination. This approach assumes a negative correlation between stock prices and exchange rate, with direction of causality from the stock market to money market, in accordance with rapid financial market interactions. This is because correlation of two markets occurs in a short time. CSPI is an indicator that shows historical data on stock price movements in capital market. This index serves as an indicator of market trends, which means that movement of stock price indexes represent market conditions at all times. The determination of CSPI in capital market depends on the strength of demand and supply. CSPI fluctuation attracts investors to make investment in capital market (Kewal and Suci, 2012).

Exchange rate of rupiah for US dollar has a negative signal for CSPI because the weakening of rupiah for US dollar causes a decline in investment which eventually leads to weakening of CSPI. The data shows that exchange rate is quite weakened but it does not have an impact on declining of CSPI. The role of rupiah exchange rate to CSPI is very important, in which fluctuations in rupiah exchange rate provide useful information for investors in making investment decisions in Indonesian companies. The results indicate that weakening of rupiah has an impact on declining of CSPI because investors are not interested in investing in countries with weak currency values.

This research supports Widyastuti et al., (2017) that rupiah exchange rate for US dollar has a negative impact on CSPI. Along with the depreciation of the rupiah for the US dollar, exchange rate has a negative response to investors' interest in investing in Indonesia. Therefore, it has an impact on declining of CSPI which represents the low performance of companies in Indonesia. Otorima and Kesuma, (2016) shows that rupiah exchange rate has a negative effect on the CSPI. Fluctuations in exchange rate of rupiah for foreign currencies will affect investment climate, especially in capital market. Go public companies in Indonesia that rely on imported raw materials from abroad will give a negative impact if the rupiah depreciates or weakens for US dollar resulting in low interest for investors to invest in Indonesian capital market (IDX, 2010).

Signal of GDP to Indonesia CSPI

Based on the signaling theory, the higher value of the GDP will support investors's interest, so that there is an increase in CSPI. GDP has a positive signal to CSPI as value of GDP rises, it will provide investors with information to invest in Indonesia as well as supporting an increase in CSPI. GDP plays an important role in Indonesian CSPI such as rising GDP response indicates that Indonesia is a developed country. This will have an impact on business sustainability, and therefore give impacts on investment.

The results show that Indonesia's GDP has increased, so it can support strengthening of CSPI in Indonesia. The increasing CSPI indicates that companies in Indonesia is profitable. It will provide benefits for investors. CSPI strengthening has an impact on increasing investment in several companies in a country so that it encourages Indonesia development. According to IDX (2010), strengthening of CSPI serves as main indicator of an efficient capital market so that it can reflect company's performance and economic growth. CSPI is also main information for investors to determine economic conditions of a country, especially Indonesia. A decline in CSPI will reduce investor confidence. Therefore, issuers of stocks must maintain and improve company performance. Hence, it will restore confidence of investors that the stock is still one of investment alternatives that provides a prospective return.

This research is corresponding to opinion of Kewal and Suci, (2012) explaining that increase of GDP is a good (positive) signal for investment and vice versa. Increase of GDP has a positive effect on consumer

purchasing power that will affect to higher demand of companies' products. An increase in demand for company products will increase profit and finally can increase stock price. An increase in GDP represents an increase in consumer purchasing power. An increase in consumer purchasing power causes an increase in public demand for company goods and services which in turn will increase the company profits. Increased company profits will encourage stock prices to increase as well as representing a good company performance. As the result, it will increase investor interest in investing in Indonesia. Research by Bilal and Kamal, (2016) shows that GDP growth plays an important role in assessment of investors to make investments so that it supports improvement of capital market performance.

CONCLUSION AND SUGGESTIONS

The results show that exchange rate of rupiah for US dollar has a negative signal for the CSPI because weakening of rupiah for US dollar can cause a decline in investment in Indonesia which causes CSPI weakening. Weakening of rupiah has an impact on the declining of CSPI because investors are not interested in investing in countries with weak currency values.

GDP has a positive signal to CSPI as increasing value of GDP will provide investors with information to invest in Indonesia, so it can support CSPI to increase. Increasing GDP value will encourage investors to invest in Indonesia since economy is in a good condition. This way, CSPI will increase as well.

The government should take into account to causes of weakening of rupiah. It will give a positive signal to increase GDP which later gives impact on the strengthening of CSPI. Future researcher is suggested to develop research variables by analyzing factors affecting CSPI such as export and import as well as political condition in Indonesia.

Researchers should not focus on measuring research variables in a certain period such as during President Ir. H. Joko Widodo as GDP variable data is published quarterly.

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