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The Impact Of Interest Rates, Inflation, Exchange Rates And Gdp On Stock Price Index Of Plantation Sector: Empirical Analysis On Bei In The Year Of 2008–2012

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Abstract

Plantation sector in Indonesia gives a great contribution to the economy development. This becomes a great opportunity for investors to invest their money in this sector. This study is a quantitative research which aims to investigate the impact of interest rate, inflation rate, and exchange rate of Indonesia Rupiah toward Dollar, as well as GDP on Plantation sector's stock price index at the Indonesia Stock Exchange (IDX) for the year 2008–2012. Analysis data technique used in this research is multiple regression analysis. The data used in this research is derived from the data recorded by Indonesia Stock Exchange, Central Bureau of Statistic, and Bank of Indonesia. The results suggest that only GDP significantly influences the stock price index of plantation sector. The other variables such as interest rate, inflation rate, and exchange rate of Indonesia Rupiah toward Dollar do not give any significant influence to the plantation sector's stock price index. By analyzing the condition of GDP in Indonesia may help investors in deciding whether it is the right time to invest or not.

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Keywords— Macroeconomics Variables, Plantation Sector, Investment

Introduction

Indonesia is a country rich in natural resources which is one of the nation's assets to help the economic development in Indonesia. In his article, Nugrayasa (2013) also agreed by stating that 14.4 % of Indonesia's GDP in 2012 came from the agricultural sector through the provision of food and raw materials for industry, not to mention its exports activity. Moreover, the Indonesian government is helped in coping with the problem of unemployment as well. This is why the Indonesian government gave encouragement and a great opportunity for everyone to have a contribution in this sector.

This opportunity was well welcomed by both local and foreign investors. In the period after the economic crisis in 2008 until today, the participation of the people in the form of investment both domestic and foreign one in the agricultural sector is very good and is likely to increase (Nugrayasa, 2013). The economic conditions and the stability of the macroeconomic variables of a country are the important factors that affect a person's decision to do investment. The influence of macroeconomic variables such as interest rates, inflation, and the exchange rate has been a concern for some investment analysts and researchers (Suhendra, 2010; Kewal, 2012; and Thobarry, 2009) for some examination or analysis and can be used as a benchmark for economic and industry development in the future.

The research questions driving this study are as follow:

1. Under what circumstances should the investors invest their money in plantation sector stock market?
2. What kinds of macroeconomics variables that influence the investment in Plantation Sector?

Literature Review

Investment is an activity of putting money or funds to a firm or business in the present by sacrificing the current consumption in order to make a profit in the future (Tandelilin, 2010). This decision is made by some people to make a profit which is used for a greater consumption in the future.

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There are two types of investments (IDX), they are direct investment and indirect investment:

1. Direct Investment is investing directly to the investment object.
2. Indirect Investment means that the investor is indirectly investing their funds to the investment object.

Capital market is a place (market) where long-term financial instruments, either obligation, stocks, derivative instruments, or another instrument are bought and sold (Indonesia Stock Exchange, 2010). In other words, the capital market is the place where those who have excess funds to invest with those who need funds can meet up (Tandelilin, 2010).

Tandelilin (2010) in his book mentioned that various long-term securities currently sold in Indonesian capital market include common stock and preferred stock, corporate bonds and convertible bonds, government bonds, warrants, options contracts, futures contracts, and mutual funds. This research paper will focus on the stocks.

Stocks are the sign of ownership or possession of a person or an entity to a firm or company in the form of certificate (Tandelilin, 2010). By acquiring shares, the investors will earn benefits such as dividends and capital gains. Dividends are profits distributed by the company issuing the stock, while the capital gain is the difference between the purchase price and the selling price (Indonesia Stock Exchange, 2010).

In his book, Widodoatmodjo (2008) mentioned that stock price index is a number that indicates how much the differences or the changes of the current price toward the previous price. In other words, stock price index is the indicator of stock price movements. This stock price index is very important in determining the initial indicator of market conditions. Changes in this index shows either gains or losses earned by the investors.

The Factors Estimated Influence the Value of Shares

Observation on the activities of macroeconomic variables, such as interest rates, inflation, exchange rate, and GDP, assists investors in forecasting what will happen in the capital markets and also help them in making the right investment decisions which will surely benefit them (Tandelilin, 2010).

According to Harianto (1998) cited in Thobarry(2009), economic conditions such as GDP , inflation, interest rate, and exchange rate of rupiah against the foreign currencies, are the factors that influence the demand and supply of products produced by the company. So that, the development of the firm's or the business' activity which will affect the return for the investors can be observed.

Interest Rate

Interest rates greatly affect the company's plan in fulfilling its capital needs, either by issuing equity securities or bonds (Thobarry, 2009). Low interest rates will lead to lower borrowing costs, since the borrower (the company) is charged to pay less interest. Thobarry (2009) also stated in his journal that low interest rate will encourage the investment and economic activity which generates a higher stock price as the result.

Inflation

Inflation is raising in general prices and continuously occurred (Anonymous, 2013). It is also associated with a decrease in the purchasing power of individuals and companies (Thobarry, 2009). Inflation is seen as negative news by the stock market, because it tends to curb consumer spending and therefore company earnings (Dimitrova, 2005).

Exchange Rate

The foreign exchange rate is a comparative value of one country's currency towards another country's currency (Thobarry, 2009). For instance, one American dollar has the same value of 11,000 Indonesian rupiah.

Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is the value of final goods produced, such as food and beverages, and services produced, such as business consultation, in the country in over a particular period of time (Brezina, 2012). Dornbusch & Fischer (1994) also mentioned that the total demand for domestic output consists of four components: consumption; investment by businesses; government purchases goods and services; and foreign demand. Therefore, gross domestic product is often considered as the best measure of economic performance (Mankiw, 2006).

The Relationships of Interest Rate, Inflation, Exchange Rate, and GDP on Stock Price Index in Plantation Sector

The Impact of Interest Rates on Stock Price Index in Plantation Sector

Interest rates have a role in the decision making of people to do investment (Kewal, 2012). When the numbers of interest rates are high, then people will tend to deposit their money than to do investment that have much higher risks, compared with saving which almost has no risk at all.

H1: Interest rate (SBI) has a negative impact toward the stock price index in plantation sector.

The Impact of Inflation on Stock Price Index in Plantation Sector

Inflation can give either positive or negative effect on the investment activity. If the rising prices affect to a higher incomes, it can be concluded that inflation has a positive impact on investment activity. However, if inflation causes the rising prices of raw materials or expenses, while the income or revenue is relatively similar to before, it can be said that inflation has a negative impact on the investment activity. (Suhendra, 2010)

H2: Inflation has a positive impact toward the stock price index in plantation sector

The Impact of Exchange Rates on Stock Price Index in Plantation Sector

According to Granger, et. al (1998) in the research of Kewal (2012), teorotically, there is the differences in the relationship between the exchange rate and the direction of stock prices that can be explained by the traditional approach and portfolio balance model. The traditional approach says that the relationship between exchange rates and stock price is positive, in which changes in exchange rates affect company's competitive. However, in proffolio balance model tells that the relationship between exchange rates and stock price is negative, since the interaction between the stock market and the money market is very fast.

H3: Exchange rate has a negative impact toward the stock price index in plantation sector.

The Impact of GDP on Stock Price Index in Plantation Sector

According to Sangkyun Park (1997) in Thobarry's research journal (2009), there is a positive relationship or positive impact between GDP level and stock return. GDP level of a country shows its economic performance. Therefore, if the GDP level increase or in other words this country economically performs well, investors will not miss this opportunity by investing more their money in the market (Thobarry, 2009).

H4: GDP has a positive impact toward the stock price index in plantation sector.

Data Collection And Research Methodology

This study is a quantitative research analysis with the five years observation period started from the early year 2008 to the end of year 2012. The target population of this study consisted of the stock price index of plantation sector in Indonesian Stock Exchange during the year of 2008–2012. The sampling technique used is non-probability sampling, especially purposive sampling technique. Astra Agro Lestari Tbk., BISI International Tbk., Central Proteinaprima Tbk., Sampoerna Agro Tbk., Tunas Baru Lampung Tbk., and Bakrie Sumatra Plantations Tbk were some plantation companies listed in Indonesia Stock Exchange which were the sample for this study. The trading activity of their stock was observed in five years period of time (2008–2012).

The source of data for this research was the secondary data. It consisted of data which are related to the variables discussed. There were two types of variables discussed in the research, dependent variable and independent variables. Dependent variable for this study was the stock price index of plantation sector. Whereas, the independent variables being discussed in the paper were interest rate, inflation rate, and exchange rate, as well as the GDP. They were obtained by collecting their historical data published by some institutions in charge. Dependent variable data (stock price index of plantation sector) used for the research was the historical monthly data of stock price index of the sample companies in plantation sector— listed in the Indonesian Stock Exchange for the year 2008–2012— recorded by Indonesia Stock Exchange. For the interest rate as the one of independent variables, the data used was the monthly data of the interest rate obtained from the Indonesian Financial Statistics, Bank of Indonesia, for the period of 2008–2012. Same with the data of interest rate, the foreign exchange rate data was also derived from the Indonesian Financial Statistics, Bank of Indonesia for the period of 2008–2012. The other two independent variables, inflation rate and GDP, the data of them were obtained from the historical monthly data on economic indicators from Central Bureau of Statistics for the period of 2008–2012.

The data obtained was processed by using SPSS 20 software. Analysis data technique this study was multiple regression analysis. However, multiple regression analysis can be done if the situations like multicollinearity, heteroscedasticity, and autocorrelation do not occur. Thus, the classical assumption test such as Normality, Multicollinearity test, Heteroscedasticity test, and Autocorrelation test were conducted.

Normality test aimed to see if the data were normally distributed or not. Multicollinearity test was conducted to see whether there was a correlation among independent variables in the regression model or not. Heteroscedasticity test was conducted to know if there was an inequality of variance from residual of one observation to another observation in the regression model. Autocorrelation test was done to know whether the autocorrelation error occurred or not.

The hypotheses made were tested by using multiple regression analysis. The aim of this analysis was to find out the impact of variables like interest rate, inflation rate, foreign exchange rate, and GDP level toward stock price index of plantation sector in Indonesian Stock Exchange.

Hypothesis was tested by using t-test; meanwhile the regression model was tested by using F-test. T-test was conducted to know the impact of independent variables on the dependent variable partially, by assuming the other independent variables were constant. However, F-test was conducted to know the impact of all independent variables available simultaneously on the dependent variable. By the test, the significant impact of interest rate, inflation, exchange rate, and GDP level on the return of shares simultaneously had been able to be found out.

Research Results

The research data has been successfully collected for 5 years from the year 2008 to the year 2012 from some institution in charge. From the historical data from Bank of Indonesia shows that during five years, for the interest rate reached its maximum at 9.50% and its minimum at 5.75%, with 6.93% and 1.08% as the mean and standard deviation respectively. Inflation rates data obtained from historical data published by Central Bureau of Statistics shows that it reached 12.14% as the maximum value during five years period and 2.41% as the minimum value, with 6.00% as the mean and 2.72% as the standard deviation. For the exchange rates of Rupiah toward Dollar, its historical data—published by Bank of Indonesia as well—shows that the highest value for it during five years was at IDR 12,400 and the lowest one was at IDR 8,231.59, with IDR 9,458.15 as the mean and IDR 791.58 as the standard deviation. From the historical data published by Central Bureau of Statistics, Gross Domestic Product (GDP) of Indonesia reached IDR 561,637 (billion) at the highest number and IDR 427,109.30 (billion) at the lowest number, with IDR 493,155.59 (billion) and IDR 39,195.95 (billion) as the mean and standard deviation respectively. For the stock price index, the data was about the stock price of companies in plantation sector listed in Indonesian Stock Exchange, such as Astra Agro Lestari Tbk., BISI International Tbk., Central Proteinaprima Tbk., Sampoerna Agro Tbk., Tunas Baru Lampung Tbk., and Bakrie Sumatra Plantations Tbk which has been observed from their five years historical data (2008-2012).

Classical Assumption Test

Classical Assumption Test consists of Multicollinearity test, Normality test, Heteroscedasticity test, and Autocorrelation test. It was conducted by processing all the data through SPSS 20 software. The result of this test could be found out in some tables and figures provided after processing data through SPSS 20 software.

The result of Multicollinearity test was found out in Figure 1 which is the figure of coefficients table obtained from the result of processing data through SPSS 20 software. Figure 1 shows that there is no multicollinearity in the regression model since the number of VIF for every variable is less than 10.

Normality test was done by analyzing the distribution of data on the provided Histogram and normal P-P Plot graph (Figure 2 and Figure 3). In Histogram graph (Figure 2), the data are all in the curve area. Moreover, the data in P-P Plot graph (Figure 3) are all following the straight line. These suggest that the data are normally distributed.

Heteroscedasticity test's result was shown by the Scatterplot graph. In Scatterplot graph (Figure 4), the data are scattered surrounding the zero point. Moreover, they do not form any kind of shape. In other words, the heteroscedasticity does not happen.

Figure 5 is about model summary table showing there is no autocorrelation since the number of Durbin-Watson for 1.347.

Hypothesis Test

F-test was conducted to find out whether the independent variables are strong predictors to predict the dependent variable. Figure 6 shows that the significant level is less than 5% ($F = 4.076, p = 0.020$). It suggests that interest rates, inflation rates, exchange rates, and GDP are strong predictors toward the stock price index for plantation sector.

Figure 1 which is a Coefficients table shows the result of t-test which indicates the influence of each independent variable (interest rates, inflation rates, exchange rates, and GDP) partially toward the dependent variable. It shows that interest rates partially give no significant influence toward the stock price index of plantation sector ($t = 0.595, p = 0.561$).

In other words, the increase of interest rate give less impact to the investors' decision making to invest in plantation sector. The same result was also got by Kewal (2012) in his research that interest rate do not have influence to the stock return (the composite stock price index).

This research also finds that inflation rates partially give no significant influence to the plantation sector's stock price index as well, since the significant value from the t-test is more than 5% ($t = -0.407, p = 0.690$). This finding is similar to what Kewal (2012) found in his research. However, it is different with what Thobarry (2009) found in his research which he found that inflation give both negative and significant influence to the stock price index.

Figure 1 also shows that GDP gives no significant influence to the stock price index in plantation sector ($t = -0.800, p = 0.436$). In other words, any change happens will not affect to the trading activity. The decision of investors to invest will not be influenced by the GDP. This finding is similar also with Kewal's (2012) in his research which exchange rate gives no significant influence to the stock price index (composite index).

A different result is found in exchange rates variable where it gives a negative and significant influence to the stock price index in plantation sector ($t = -3.796, p = 0.002$). The regression coefficient for this is -0.867 . In other words, when the number of exchange rate increase one point, the stock price index in plantation sector will increase for -0.867 times. Since exchange rates give a significant impact to the trading activity, the investors should pay attention to any changes happen before making a decision.

Conclusion And Discussion

This research finds that interest rate, inflation rate, and GDP partially give no significant influence to stock price index for plantation sector. It suggests that any changes in those variables will not affect the stock price index, in other words, to the investing (buying and selling) activity. Interest rate and inflation variables do not give a significant impact toward plantation sector's stock price index since some investors like to have a short term trading wishing to get a great profit in the term of capital gain. As we know that inflation rate in Indonesia is fluctuating and the interest rate offered is quite low, so the return from their saving may not cover their spending due to the inflation. However, when the inflation reaches 10 percent or more and the interest rate follow it, people may consider depositing their money in bank rather than investing it in the stock market, especially in plantation sector. Assuming they will get a similar return with the lower risk by saving than by investing in stock market. Based on the result, GDP does not give a significant impact to the plantation sector's price index. Kewal (2012) stated that the increase in GDP does not mean that there is an increase in every people's income, or in other words, it does not show that the prosperity is evenly spread to the citizen. As a result, it will not affect the investment model in capital market. Meanwhile, exchange rates variable gives a significant impact to the plantation sector's stock price index. It is similar with the result from the research conducted by Kewal in 2012 that exchange rates of Rupiah against Dollar gives a negative and significant impact to the stock price index. In this case, when the value of Rupiah increases, some costs in performing the business get lower. Thus, the firm can perform better with a great return for the investors as the result. In this situation, the stock trading activity (buying and selling) will increase and result an increase in stock price index.

Figure 1: Coefficients table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11640,841	2692,850		4,323	,001		
	INTEREST	271,958	456,870	,285	,595	,561	,139	7,195
	INFLATION	-66,690	163,871	-,176	-,407	,690	,172	5,829
	EXCHANGE	-1,178	,310	-,867	-3,796	,002	,613	1,633
	GDP	,005	,006	,186	,800	,436	,594	1,685

a. Dependent Variable: INDEX

Figure 2: Graph of Histogram

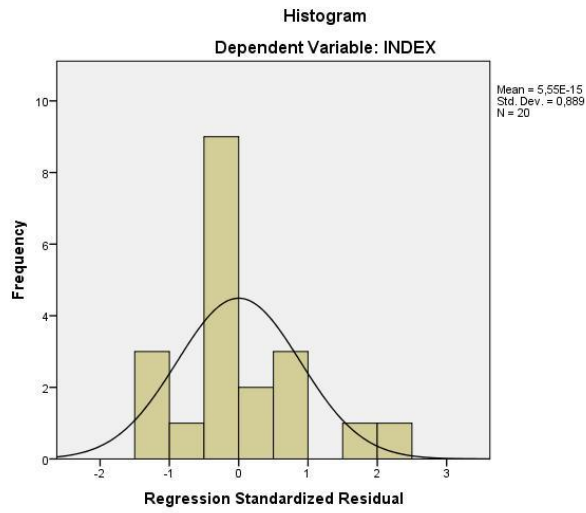


Figure 3: Graph of Normal P-P Plot of Regression Standardized Residual

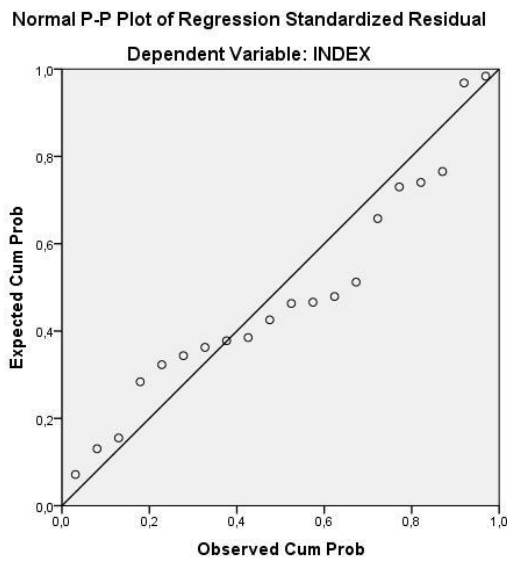


Figure 4: Scatterplot Graph

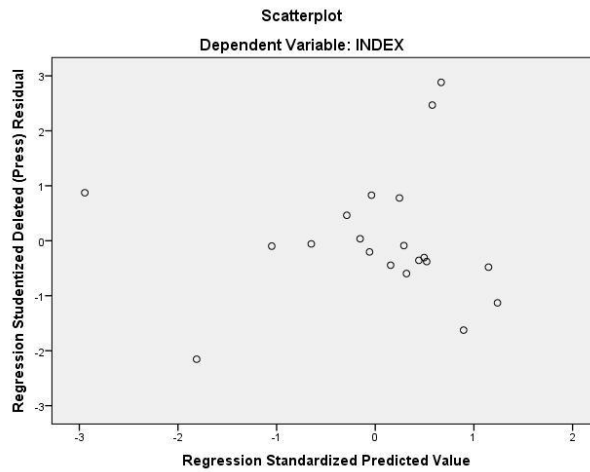


Figure 5: Regression Test Result

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,722 ^a	,521	,393	805,42010	1,347

a. Predictors: (Constant), GDP, INFLATION, EXCHANGE, INTEREST

b. Dependent Variable: INDEX

Figure 6: F-Test Result

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10577135,48	4	2644283,869	4,076	,020 ^b
	Residual	9730523,153	15	648701,544		
	Total	20307658,63	19			

a. Dependent Variable: INDEX

b. Predictors: (Constant), GDP, INFLATION, EXCHANGE, INTEREST

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