

DOMESTIC AND FOREIGN FACTORS FOR STOCK PRICES IN INDONESIA

Rahajeng Cahyaning Putri Cipto

Semesta Resource Yogyakarta, Yogyakarta

e-mail: ajeng_cipto@yahoo.com

Akhsyim Afandi¹

Faculty of Economics, Universitas Islam Indonesia

e-mail: akhsyim@fe.uii.ac.id

Abstract

Indonesia has been developing various sectors of its economy, and so it needs a huge amount of capital. Therefore, it has been putting a lot of efforts to develop its capital market. This paper analyzes the impacts of domestic and foreign factors on Indonesia stock price. Some considered domestic factors are interest rates, production index, and foreign exchange rates. Various considered foreign factors are Singapore and US stock prices. The paper uses Vector Error Correction Mechanism model to analyze the data. The estimation results suggest that all variables significantly influence Indonesia stock price, with Singapore stock price as the dominant factors.

Keywords: Stock price, interest rates, exchange rates, production index

JEL classification numbers: G12, G15

Abstrak

Indonesia sedang giat membangun berbagai sektor ekonominya, dan memerlukan dana yang sangat besar. Untuk mencapai hal tersebut, Indonesia telah berupaya keras membangun pasar modalnya. Makalah ini menganalisis dampak faktor domestik dan asing pada harga saham Indonesia. Beberapa faktor domestik yang dipertimbangkan adalah tingkat suku bunga, indeks produksi, dan nilai tukar asing. Berbagai faktor asing yang dipertimbangkan adalah harga saham Singapura dan harga saham Amerika Serikat. Makalah ini menggunakan model *Vector Error Correction Mechanism* untuk menganalisis data. Hasil estimasi menunjukkan bahwa semua variabel berpengaruh signifikan terhadap harga saham Indonesia, dengan harga saham Singapura sebagai faktor dominan.

Keywords: Harga saham, tingkat bunga, kurs, indeks produksi

JEL classification numbers: G12, G15

INTRODUCTION

Indonesia is one of the countries which is currently developing various sectors of its economy, especially its agricultural sector. In such an effort, it needs a huge amount of capital to support some short and long term plans to develop these sectors.

Investment growth in a country is influenced by its economic growth. The higher the economic level, the higher the people's wealth. The wealth is commonly represented by a level of its people's income. The high income level makes it possible for the people to put aside some of their funds and use them for investment in the capital market.

¹ Corresponding author

Capital markets have been recognized as important sources for investment funding. They have been long recognized that the performance of capital markets becomes one of the indicators of economic performance in a given country. The role is of importance especially for long term investment funds sources. An efficient capital market will act as an efficient intermediary between those who need to invest their money and those who need funds for long term investment.

Indonesian capital market, namely Bursa Efek Indonesia, is influenced both by domestic and international factors. Domestic factors influencing the market are interest rates, production index, and exchange rates in terms of USD/IDR. International factors influencing the markets are activities in global capital markets and the tendency that similar players are actually play an important role in the markets nearby or regional markets.

With regards to this situation, usually big markets will influence, or even dominates, the smaller ones. It is also well recognized that agents in small markets tend to follow those in big markets. This paper investigates dominant factors on Indonesia capital markets. The focus is on finding whether the market is dominated by foreign or domestic factors.

Research questions to be answered are as follows. (1) Do domestic factors influence stock price in Indonesia. (2) Do Singapore and US stock prices influence Indonesia stock price. (3), Is Indonesia stock price influenced more by domestic or foreign factors.

Interest rates can be defined as the price of money for a certain period or the price of the usage of the money in present time which needs to be returned in the future. Domestic interest rates are influenced by international interest rates. This stems from the link between both markets and the policy of exchange rates which are not fully flexible.

High interest rates might bring benefit to investors. Investors also consider risks in his decision of investing the funds. Interest rates changes might influence stock price in three ways. First, the change in interest rates influences overall condition and the profits earned by a company, namely the dividend and capital gain. Second, it influences the relationship between return on bonds and dividend from stocks and therefore there exist a relationship between stock and bonds. Third, changes in interest rates might influence the way investors think with regards to their investment on stock markets, which will eventually influence the stock price. It can be inferred that interest rates negatively influence stock price in Indonesia.

Exchange rates are the ratio between two currencies. Depreciation of Rupiah increases the demand of Indonesia stocks by foreign investors, and therefore increases the price of the stocks.

Production index represents all goods and services produced by a given country for a given period as a proxy to Gross National Product (*GDP*). This paper does not use *GDP*, which is available in yearly basis only, while what the paper needs is monthly data. Production index provides positive influence on Indonesia stock price.

The economic dependence of a country to other countries is getting bigger, especially for neighboring countries. In such cases, capital market form developed markets dominates the influence across the markets. The strong link across Indonesian capital markets to other markets was begun when the government allowed foreign investors to trade in Indonesia capital markets (Bursa Efek Indonesia).

Foreign investment is hoped to be one of the stimulus for domestic investors to enhance investment in the country. The fact is that domestic players treat foreign players as their benchmarks, which leads the stronger domination of foreign markets to the domestic one. In such situation, the

variation in stock prices in foreign markets is expected to influence the counterparts in Indonesia.

Stock price or stock return is also influenced by other stock price, bond, and other factors. The relationship across stock markets has been investigated by Brooks and Henry (2002), Baele (2005), and Barari et al. (2008). The relationship between foreign exchange rates has been investigated by Assoe (2001), Benson and Waft (2003), Bekiros and Georgoutsos (2007). The relationship between stock and bond markets has been investigated by Brennan and Xia (2000), D'Addona and Kind (2005), Baur and Lucey (2006). Most researches find that the relationship exists.

The following papers specifically investigate the case of Indonesia. Mansur (2004) investigates the impact of global index market on Indonesia Composite Price Index. Using a path analysis he finds that global price index simultaneously influence Indonesia Composite price index. The influence is dominated by the stock markets of South Korea, Tokyo, Taiwan, and Australia.

Marita (2007) analyzes the behavior of Indonesian Composite Price Index in Bursa Efek Jakarta from April 2002 to June 2006. She estimates a multiple regression model and finds that foreign exchange, stock trade volume, and money supply positively influence the index. She also finds that time interest rates negatively influence the index.

Hasibuan (2009) investigates the influence of foreign exchange and global stock price index, namely (Nasdaq, Taiek, Nikkei and Kospi, on Indonesian Composite Stock Price Index using multiple linear regression. He finds that foreign exchange and the global indices simultaneously influence the domestic index. He also finds that foreign exchange and the global index partially influence the domestic index, except for the Taiek.

Fuadi (2009) analyzes the impact of interest rates, trade volume and exchange

rates on return on stock in property sector listed in Bursa Efek Indonesia, 2003-2007. Estimating a multiple regression on the data he finds that interest rates and foreign exchange positively influence return on stock in property sector. He also finds that trade volume insignificantly influence the return on stock in property sector.

Johan (2007) analyzes the impact of international capital markets on Bursa Efek Jakarta. Using simple linear regression he suggests three findings. First, stock price indices in Nikkei (Japan), Dow Jones, FTSE of the United Kingdom, ASX of Australia, KLSE Composite of Malaysia, WG Taipei, KOSPI of South Korea, Strait Times from Singapore, and Hang Seng of Hong Kong do not directly influence composite Stock Price of Indonesia. Second, the index of stock price is not influenced only by non economic factors but also influenced by non economic conditions, such as safety, politics, and celebrations of holy days. Index of stock price in Manila and SET of Thailand are directly influenced by composite index of stock from Indonesia.

Mansur (2004) investigates the influence of global market index on Indonesian Composite Price Index from 2000 to 2002. He examines, both simultaneously and partially, the development of Indonesian composite price index in Bursa Efek Jakarta. Using a path analysis method, he finds some outcomes. First, global price index simultaneously and significantly influences the domestic index. The individual test on seven indices in the global markets reveals that Hong Kong, New York and London indices do not significantly influence domestic index. Those of significance in influencing the domestic index are indices from Korea, Tokyo, Taiwan, and Australia. Second, he also finds that the dominance market is KOSPI which is from Korea, followed by Nikkei from Japan, Taiek and ASX from Australia.

Frensidy (2009) examines the influence of buy and selling activities by for-

eigner, exchange rates, and Hang Seng Index on domestic index in Jakarta using GARCH model. He finds the positive relationship between domestic index and the flow of funds from other countries. He also finds that net flow of Funds from other countries influence positively domestic price. He notes that the relationship between exchange rates and domestic price is negative.

Fuadi (2009) investigates the influence of interest rates and foreign exchange rates on stock return in property sector. Estimating multiplier regression model, he finds that both independent variables negatively and significantly influence return of stock in property sector.

Wikanti (2009) studies the contagion effect of US financial crisis on financial sector in Indonesia. She focuses on using foreign exchange and stock index prices. Using Vector Autoregression (VAR), she finds the evidence of contagion from Dow Jones index on domestic index. She also finds that the domestic index significantly influence foreign exchange as a result of the contagion effect from the USA.

METHODS

This paper uses monthly data from January 1996 to June 2010, taken from the International Monetary Fund. The paper estimates Vector Error Correction Model (VECM) to analyze the data in answering research questions mentioned earlier. Before estimating the data using the model, the first thing that should be done is testing the stationarity of the data, to avoid the possible spurious regression.

If the result from data analysis is not stationary and VAR is estimated in level without considering cointegration restriction, parameter estimated in VAR is consistent but not efficient, stems from neglecting of long term relationship. It can be solved using VECM. The model considers cointegration among variables which reflects long term relationships among them.

One of the important requirements in applying time series model is obeying the assumption of stationary variables in the regression. To incorporate such assumption, the papers use a cointegration technique. It starts by testing the stationarity by unit root tests, followed by cointegration tests, estimating the VECM.

In general, the paper estimates various VAR model with five variables as follows. First, it estimates a regression model using three domestic variables, namely interest rates, IDR/USD, and production index, with Indonesia stock price index as the dependent variable.

$$DLINA_{it} = \beta_{01} + DEP_{t-1} \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} + e_{it} \quad (1)$$

Second, it estimates a regression model using three domestic variables, namely interest rates, IDR/USD, and production index, along with Singapore stock price index, with Indonesia stock price index as the dependent variable.

$$DLINA_{it} = \beta_{01} + DEP_{t-1} \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} + \sum_{i=1}^p \lambda_{ii} DLSING_{t-1} + e_{it} \quad (2)$$

Third, it estimates a regression model using three domestic variables, namely interest rates, IDR/USD, and production index, along with American stock price index, with Indonesia stock price index as the dependent variable.

$$DLINA_{it} = \beta_{01} + DEP_{t-1} \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} + \sum_{i=1}^p \mu_{ii} DLUSA_{t-1} + e_{it} \quad (3)$$

Fourth, it estimates a regression model using all variables, namely interest rates, IDR/USD, and production index, along with Singapore stock index and American stock index, with Indonesia stock price index as the dependent variable.

$$\begin{aligned}
 DLINA_{1t} = & \beta_{01} + DEP_{t-1} \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} \\
 & + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} \\
 & + \sum_{i=1}^p \lambda_{ii} DLSING_{t-1} \\
 & + \sum_{i=1}^p \mu_{ii} DLUSA_{t-1} + e_i
 \end{aligned} \quad (4)$$

where

DLINA is Indonesian Composite Stock Price Index

DDEP is Interest rates

DLKURS is USD/IDR

DLIP is production index

DLSING is Singapore stock price index

DLUSA is American stock price index, namely the Dow Jones

$\beta, \alpha, \gamma, \lambda, \mu$ is constants

e_i is standard error.

A VAR model can be used to analyze time series data which includes two steps, namely impulse response and variance decomposition. Impulse Response is a tool of analysis to examine the impact of a shock on standard deviation from an innovation variable which contains current value and future value in the endogenous variables under investigation. It also can track the shock for some following periods.

Variance decomposition is a type of analysis which provides information on innovation variable which are relatively more dynamic in VAR compared to the previous impulse response. The test is useful in assessing the occurrence of variance error in a variable, namely how big is the difference between the variances before and after the

shock, both comes from the internal and external sources. Variance decomposition is useful in decomposing variation in prediction error or assessing the proportion of a serial of changes resulted from a certain shock.

To find out the significant influence of each independent variable on the dependent variable, the paper uses *t* test. To find out the significant influence of overall independent variables on the dependent variable, the paper uses *F* test.

There are various types of VAR models. To choose the appropriate ones, the paper evaluates types of data available. It finds that the data which are not stationarity in order 0 (in level) will be stationarity in degree 1. Further analysis on the data reveals that they are cointegrated at 5%. This means that the appropriate model is Vector Error Autoregression (VECM), as follows:

$$\begin{aligned}
 DLINA_{1t} = & \beta_{01} + \alpha ECT + DLINA_{it} DDEP_{t-1} \\
 & + \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} \\
 & + e_{it}
 \end{aligned} \quad (5)$$

$$\begin{aligned}
 DLINA_{it} = & \beta_{01} + DDEP + DLINA_{it} \\
 & + \sum_{i=1}^p \alpha_{ii} DLIP_{t-1} \\
 & + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} + e_{it}
 \end{aligned} \quad (6)$$

$$\begin{aligned}
 DLIP_{1t} = & \beta_{01} + DLIP + LINA_{t-1} \\
 & + \sum_{i=1}^p \alpha_{ii} DDEP_{t-1} \\
 & + \sum_{i=1}^p \gamma_{ii} DLKURS_{t-1} + e_{it}
 \end{aligned} \quad (7)$$

$$\begin{aligned}
 DLKURS_{1t} = & \beta_{01} + DLKURS + LINA_{t-1} \\
 & + \sum_{i=1}^p \alpha_{ii} DDEP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLIP_{t-1} \\
 & + e_{it}
 \end{aligned} \quad (8)$$

$$\begin{aligned}
 DLSING_{it} = & \beta_{01} + DLSING + LINA_{t-1} \\
 & + \sum_{i=1}^p \alpha_{ii} DDEP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLIP_{t-1} \\
 & + \sum_{i=1}^p \lambda_{ii} DLKURS_{t-1} \\
 & + \sum_{i=1}^p \pi_{ii} DLUSA_{t-1} + e_{it}
 \end{aligned} \tag{9}$$

$$\begin{aligned}
 DLUSA_{it} = & \beta_{01} + DLUSA + LINA_{t-1} \\
 & + \sum_{i=1}^p \alpha_{ii} DDEP_{t-1} + \sum_{i=1}^p \gamma_{ii} DLIP_{t-1} \\
 & + \sum_{i=1}^p \lambda_{ii} DLKURS_{t-1} \\
 & + \sum_{i=1}^p \theta_{ii} DLSING_{t-1} + e_{it}
 \end{aligned} \tag{10}$$

RESULTS DISCUSSION

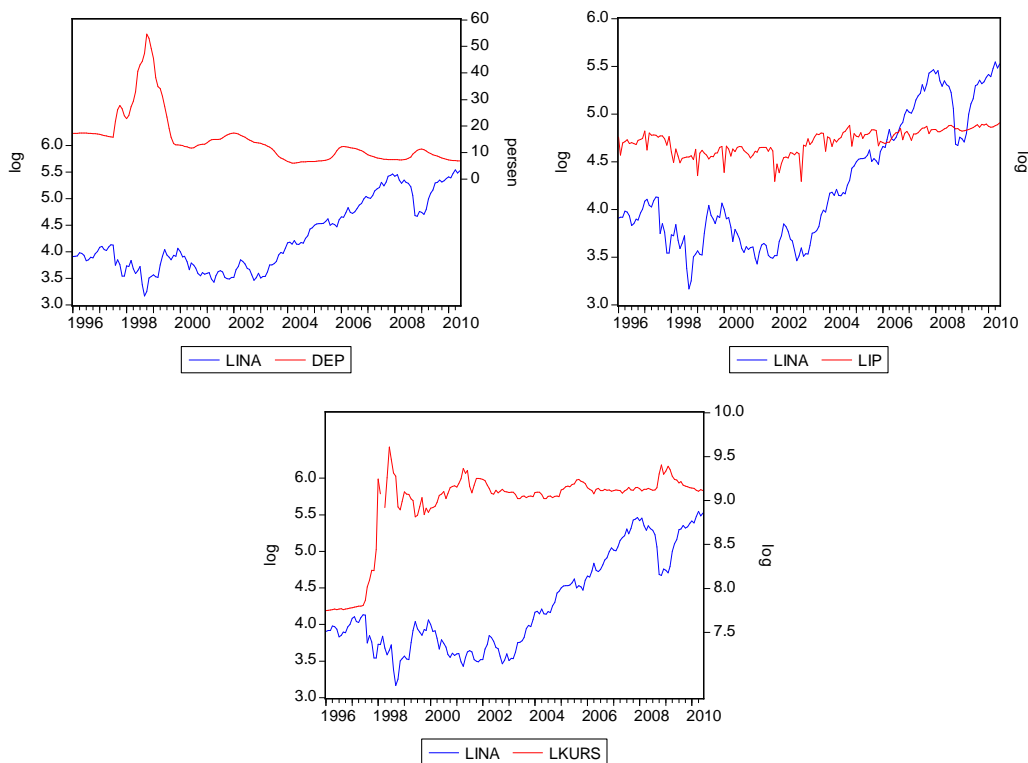
The paper conducts four analysis, using EViews software package. The four analyses are explained as follows.

Analysis on Indonesian Stock Market and Domestic Economic Factors

The graph 1 shows a negative relationship between Indonesia stock price and interest rates. The graph also shows positive relationship between Indonesia stock price and production index. In addition, it also shows a negative relationship between Indonesia stock price and IDR/USD. The analysis results on the data using VECM on the cointegration equation is as follows.

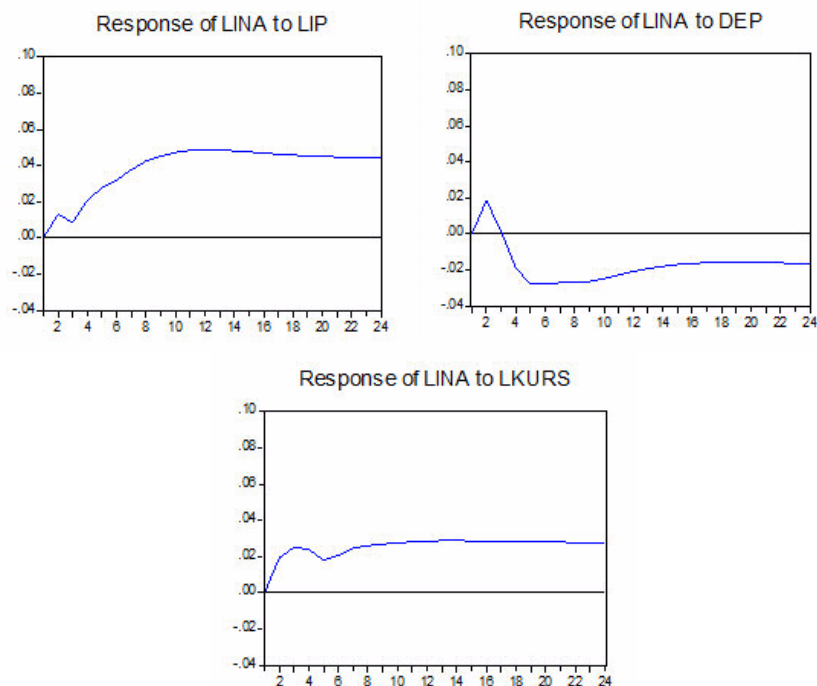
$$\begin{aligned}
 LINA = & -38.998 + 0.0378 DEP \\
 & \quad (2.942) \\
 & + 7.5974 LIP + 0.7741 LKURS \tag{11} \\
 & \quad (7.651) \quad (3.777)
 \end{aligned}$$

We can see that all variables positively and significantly influence *LINA*. The signs of the coefficients are as expected, except for *DEP*. the results on the evaluation using impulse response and variance decomposition are as follows. The graph of impulse response can be seen in graph 2.



Source: Data calculation.

Graph 1: Indonesia Stock, Interest rates, Production Index, and IDR/USD



Source: Data calculation.

Graph 2: Impulse Response

Table 1: Variance Decomposition Analysis *DLINA*

Period	Standard Error	<i>DLINA</i>	<i>DEP</i>	<i>LIP</i>	<i>LKURS</i>
1	0.081748	100.0000	0.000000	0.000000	0.000000
12	0.345525	71.60667	2.880839	24.86144	0.651047
24	0.485112	64.84112	1.515610	33.01400	0.629269

Source: Data estimation.

Graphic 2 shows the response of Indonesia stock price on the shock resulted from the changes in other variables. The influences are not instance, but a continuous process during a certain period. The first graph shows a negative influence from *DDEP* on *DLINA*.

The second graph shows the positive influence of *DLIP* on *DLINA*. The third graph shows the negative influence from *DLKURS* on *DLINA*. This can be seen from the analysis of the impulse responses. In the second and fifth periods, there are evidences of volatility which lead to the fluctuation between both variables. The results of variance decomposition can be seen in the table 1.

That table shows variances, in percentage, of *DEP*, *LIP* and *LKURS* and the

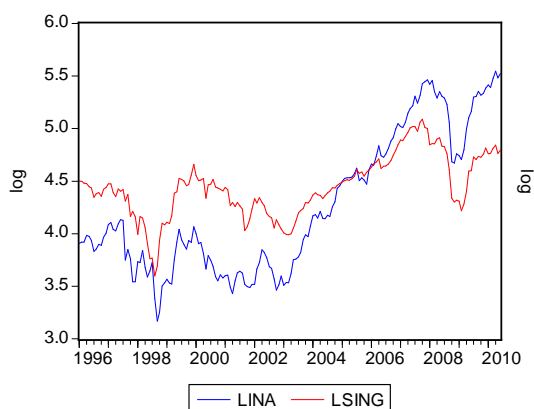
correspond changes in *LINA*. In the first period, the variance of *LINA* is explained by itself (100%). In the 12th period, only 71.60667% of the variance is explained by itself, and the rest is explained by *DEP* of 2.880839%, *LIP* of 24.86144% and *LKURS* of .651047%.

From the overall test on the data, it can be seen that Indonesia stock price is significantly influenced by domestic factors. As different from the hypothesis, the relationship between Indonesia stock price and interest rates is positive. This might be explained by the focus of investors on capital gain. Production index shows positive and significant relationship with Indonesian stock market. IDR/USD shows positive and significant relationship as well, as has been expected.

Analysis on Indonesia Stock Price, Domestic Economic Factors and Singapore Stock

Graph 3 shows a positive relationship between Singapore Stock price and Indonesia stock price. Analysis on the data using VECM is as follows.

$$\begin{aligned}
 LINA = & -29.5717 + 0.0300 DEP \\
 & \quad (4.2801) \\
 & + 5.1439 LIP + 0.5522 LKURS \\
 & \quad (9.1302) \quad (5.3841) \\
 & + 0.9520 LSING \quad (12) \\
 & \quad (4.0976)
 \end{aligned}$$



Source: Data calculation.

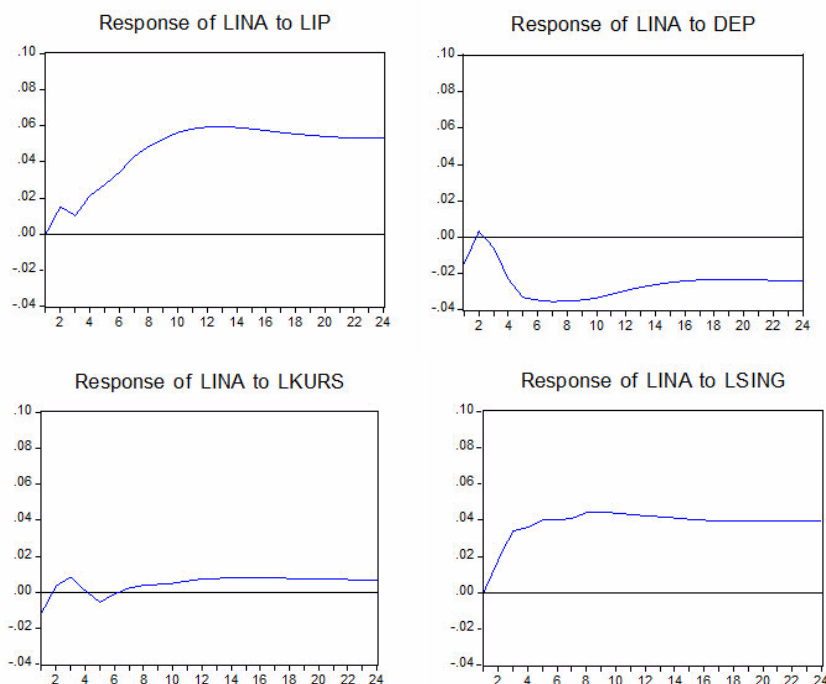
Graph 3: Relationship between Indonesia Stock Price and Singapore Stock Price

From the cointegration equation, it can be seen that all variables positively and significantly influence *LINA*. This matches with the hypothesis, except for *DEP*. It can also be inferred that Singapore and Indonesia stock markets are of complementary. That is why Singapore stock price dominates the influence to Indonesia stock price. The results are supported by the outcome of the variance decomposition analysis. Impulse

responses of the analysis can be seen in Graph 4.

The first graph shows a negative influence from *DDEP* on *DLINA*. We can see that there is a shock in the fourth period, before it eventually becomes relatively stable. The second graph shows a positive impact from *DLIP* on *DLINA*. The graph shows fluctuation on the third and fifth periods, before it eventually becomes stable. The third graph shows fluctuation on the third and fourth periods on the relationship between *DLKURS* and *DLINA*. It should be noted as well that *DLKURS* has a negative influence on *DLINA*. In the last graph, the impact of *DLSING* on *DLINA* is positive. This means that when *DLSING*_{*n*} creases, *DLINA* increase as well. Even though there were a certain degree of decreases, but it becomes more stable in the medium period.

Results of variance decomposition analysis can be seen in the Table 2. It shows the prediction on the percentage of variance from variables *DEP*, *LIP*, *LKURS* and *LSING* on *LINA*. In the first period, *LINA* is influenced only by itself (100%). In the 12th period there are evidence of variance from other variables. About 61.62932% of *LINA* is still influenced by itself, and the rest is influenced by *DEP* of 1.664243%, *LIP* of 13.34958%, *LKURS* of 3.411844% and *LSING* of 19.94502%. This means that compared to the other variables, Singapore Stock price dominates the variation in Indonesia stock price. From the whole hypothesis testing above, it can be concluded that Singapore Stock price index provides positively and significantly effects on Indonesia stock price. This shows that Singapore Stock price index and Indonesia stock price are complementary. This might happen since Indonesia and Singapore are of the same area.



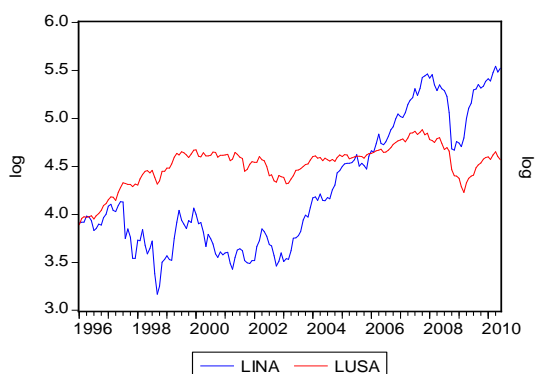
Source: EViews Estimation Results
Graph 4: Impulse Response

Table 2: Variance Decomposition Analysis, DLINA

Period	Standard Error	LINA	DEP	LIP	LKURS	LSING
1	0.079976	100.0000	0.000000	0.000000	0.000000	0.000000
12	0.350098	61.62932	1.664243	13.34958	3.411844	19.94502
24	0.498129	54.59709	1.183064	17.90502	3.612903	22.70192

Source: Data estimation.

Analysis on Indonesia Stock Using Domestic Economic Factors and American Stock Markets



Source: Data calculation.

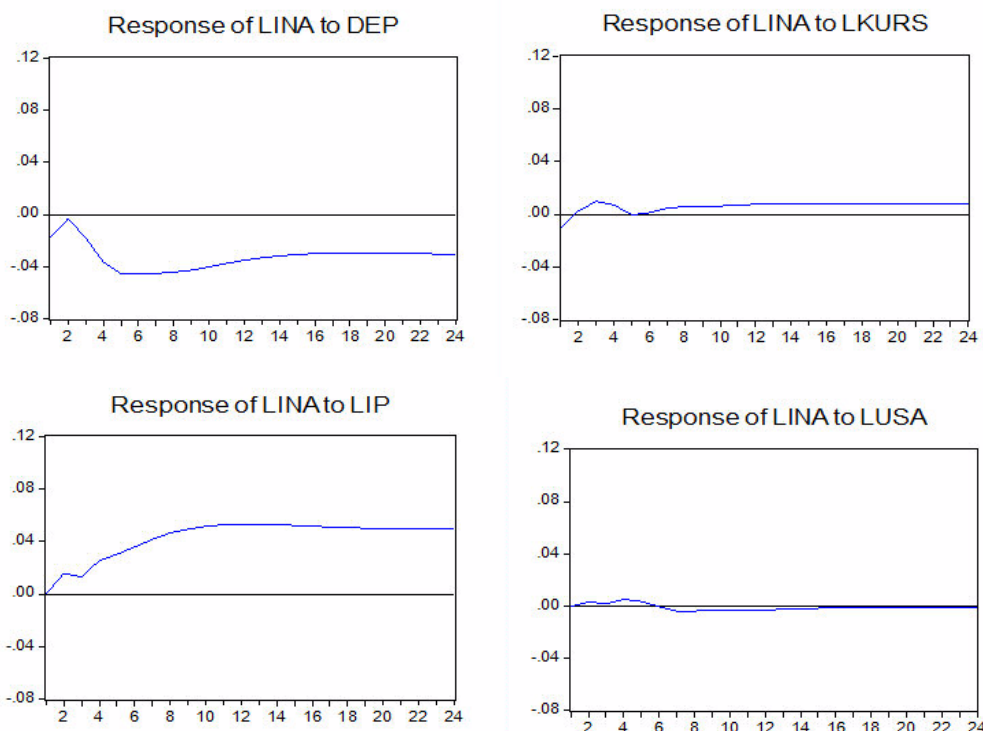
Graph 5: Indonesia and US Stock Prices

The graph depicts the positive relationship between Indonesia stock price and

Singapore Stock price. The data are analyzed using VECM which are applied on the cointegration model. The results are as follows.

$$\begin{aligned}
 LINA = & -37.0867 + 0.0422 DEP && (3.5043) \\
 & + 7.4302 LIP + 0.6932 LKURS && (8.1848) \quad (2.4758) \\
 & + 0.1015 LUSA && (-0.1614)
 \end{aligned} \tag{13}$$

From the equation, it can be seen that all variables positively and significantly influence LINA except LUSA. These results have been predicted, except for the relationship between DEP and LINA. The relationship can also be examined from the analysis of impulse response and variance decomposition.



Source: Data calculation.

Graph 6: Impulse Response

Table 3: Variance Decomposition Analysis on *DLINA*

Period	Standard Error	<i>LINA</i>	<i>DEP</i>	<i>LIP</i>	<i>LKURS</i>	<i>LUSA</i>
1	0.082269	100.0000	0.000000	0.000000	0.000000	0.000000
12	0.336475	76.58510	5.037441	13.81929	4.453435	0.104736
24	0.464160	70.45029	3.900418	19.91189	5.673373	0.064032

Source: Data estimation.

Graph 6 shows results which, in general, similar to the previous analysis. *DDEP* still has a negative influence on *DLINA* and shows volatility in the beginning of the period. *DLIP* also shows positive relationship, while *DLKURS* shows negative relationship with *DLINA*. The graph also shows the positive relationship between *DLUSA* and *DLINA*. The relationship is stable, with only a little volatility. The variance decomposition results can be seen in Table 3.

The table shows the prediction of variance in percentage of *DEP*, *LIP*, *LKURS* and *LUSA* on *LINA*. In the first period, *LINA* is only influenced by itself (100%). In the second period, it shows the

variance even though the influence is still minor compared to that of itself. The other influences are 1.967991% from *DEP*, 1.011754% from *LIP*, 1.811438% from *LKURS* and 0.060851% from *LUSA*. The analysis shows difference variance in the next periods.

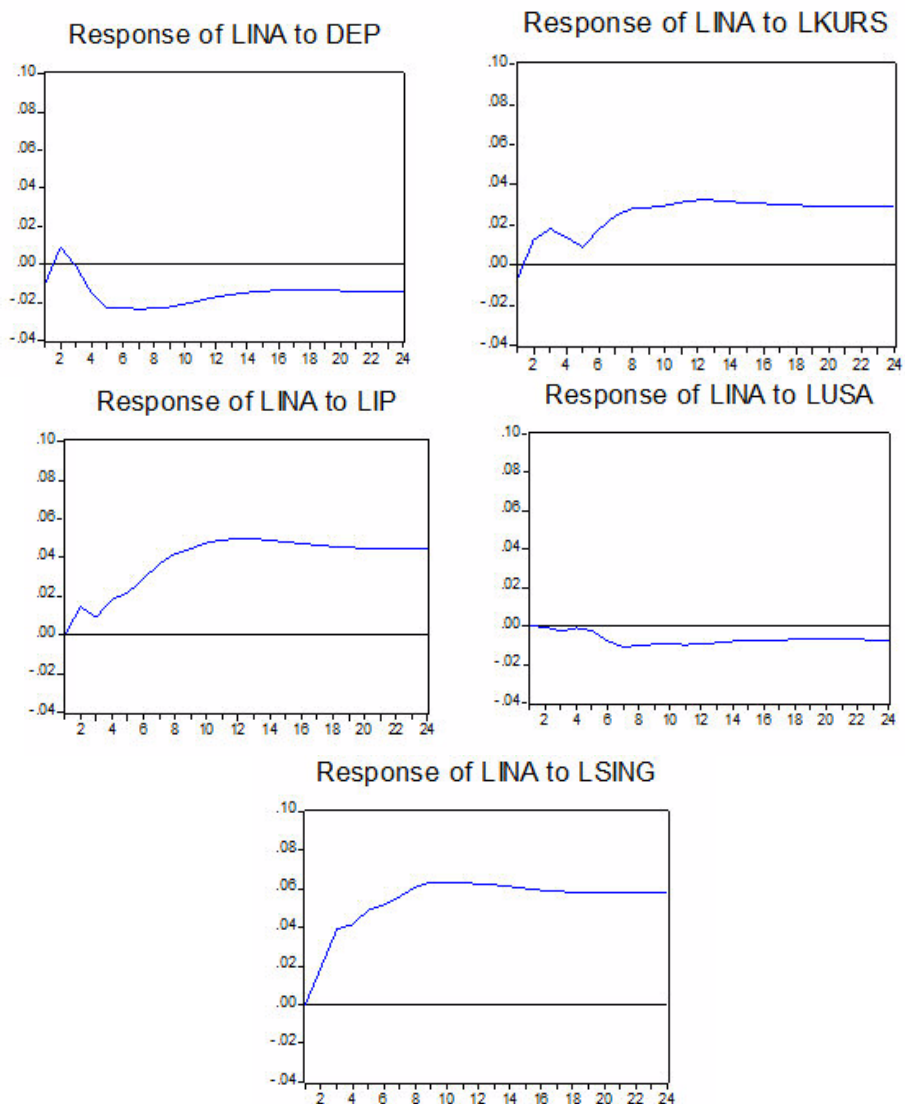
From the overall tests, it can be concluded that American stock price does not significantly influence Indonesia stock price. This can be seen from the test result after including *LUSA* into the model, domestic economic factors does not change significantly. For the following step, we need to see whether the result change when *LUSA* is included in the model, along with *LSING*.

Analisis on Indonesia Stock Market Using Domestic Economic Factors and Stock from Other Countries

Estimation on the VECM model is as follows.

$$\begin{aligned}
 LINA = & 22.926 + 0.030DEP + 3.6277LIP \\
 & \quad (00089) \quad (8.5196) \\
 & 0.8513LKURS + 1.9258LSING \\
 & \quad (5.8593) \quad (7.8664) \\
 & - 1.4398LUSA \quad (14) \\
 & \quad (-3.9390)
 \end{aligned}$$

From the above estimation we can see that only American stock price which shows negative relationship with Indonesia stock price. After including Singapore Stock price in the model, all variables are significant except the variable of interest rates, which are different from the expectation. The impulse response graph can be depicted as graphic 7.



Source: Data calculation.

Graph 7: Impulse Response

Table 4: Variance Decomposition Analysis, *DLINA*

Period	Standard Error	<i>LINA</i>	<i>DEP</i>	<i>LIP</i>	<i>LKURS</i>	<i>LSING</i>	<i>LUSA</i>
1	0.078455	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
12	0.352601	53.74653	0.681455	8.482359	5.504157	21.82935	9.756142
24	0.497904	47.29088	0.343756	10.72983	5.834806	25.15991	10.64081

Source: Data estimation.

The graph shows similar results with the previous ones. *DDEP* still shows a negative influence on *DLINA* even though it eventually tends to positively influence the dependent variable, and also shows some volatility at the beginning of the period. *DLIP* still shows positive relationship. *DLKURS* also shows negative relationship on *DLINA* at the beginning of the period before it eventually shows positive relationship.

DLSING shows negative relationship during the whole period. *DLUSA* shows positive relationship with *DLINA*. The relationship seems relatively stable during the period, with only minor volatility. The results of variance decomposition can be seen in table 4.

From all the tests conducted previously, Indonesia stock price is influenced more by Singapore Stock market than the domestic factors. When American stock market included in the model along with Singapore Stock price, the results change, and showing significant effects. This suggests that American stock price influences Indonesia stock price through Singapore stock market. As an example, when American stock price increases, it does not directly influence Indonesian stock market, but it first influence Singapore Stock market, before it eventually influences Indonesia stock market.

REFERENCES

- Assoe, K. (2001), "Volatility Spillovers between Foreign Exchange and Emerging Stock Markets," *HEC-Montreal*, May, 2001.
- Baele, L (2005), "Volatility Spillover Effects in European Equity Markets," *Journal of Financial and Quantitative Analysis*, 40(2), 373-401.

CONCLUSION

From the analysis on Indonesian stocks with internal factors, it can be inferred that all variables simultaneously significantly positively influenced the Indonesian stocks. From the second analysis, namely the analysis of Indonesian stocks using internal factors and Singapore Stock price, the paper suggests that Singapore Stock price dominated the influences on Indonesia stock prices. From the third analysis on Indonesia stock price using internal factors and US stock price, it finds that US stock prices did not significantly influence Indonesia stock price. From the fourth analysis on Indonesia stock using domestic factors and Singapore Stock price it can be concluded that US stock prices were significant, but the sign was negative after considering the impact of Singapore Stock price. This means that US stock price influenced Indonesia stock price through Singapore Stock market.

From the analysis of the whole variables, it can be concluded that the most influential factors on Indonesian stock market are Singaporean and US stock prices. However, the biggest influence was from Singapore stock price. This might be caused by the fact that Singapore and Indonesia were of the same regions.

- Barari, M., B. Lucey and S. Voronkova (2008), "Reassessing Comovements among G7 Equity Markets: Evidence from iShares," *Applied Financial Economics*, 18, 863-877.
- Baur, D. and B.M. Lucey (2006), "Flight-to-quality or Contagion? An Empirical Analysis of Stock-bond Correlations," IIS Discussion Paper No. 122.
- Bekiros, S.D. and D.A. Georgoutsos (2007), "Extreme Returns and the Contagion Effect between the Foreign Exchange and the Stock Market: Evidence from Cyprus," *Applied Financial Economics*, 18, 239-254.
- Benson, K.L. and R.W. Faft (2003), "Exchange Rate Sensitivity of Australian International Equity Funds," *Global Finance Journal*, 14(1), 95-120.
- Brennan, M.J. and Y. Xia (2000), "Stochastic Interest Rates and the Bond-Stock Mix," *European Finance Review*, 4(2), 197-210.
- Brooks, C. and O.T. Henry (2002), "The Impact of News on Measures of Undiversifiable Risk: Evidence from The UK Stock Market," *Oxford Bulletin of Economics and Statistics*, 64(5), 487-507.
- D'Addona and Kind (2005), "International Stock-Bond correlations in a Simple Affine Asset Pricing Model," Working Paper Series in Finance, Paper No. 14, University of St.Gallen.
- Frensidy, B. (2009), "Analisis Pengaruh Aksi Beli-jual Asing, Kurs, dan Indeks Hang Seng terhadap Indeks Harga Saham Gabungan di Bursa Efek Jakarta dengan Model GARCH," Unpublished paper, Faculty of Economics, Universitas Indonesia.
- Fuadi, D.W. (2009), "Analisis Pengaruh Suku Bunga, Volume Perdagangan dan Kurs terhadap Return Saham Sektor Properti yang Listed Di BEI," Master's Thesis, Program Pasca Sarjana, Universitas Diponegoro.
- Hasibuan, A.F. (2009), "Pengaruh Nilai Mata Uang dan Indeks Harga Saham Global terhadap Pergerakan IHSG," Master's Thesis, Program Pasca Sarjana, Universitas Sumatra Utara.
- Johan, H. (2007), "Analisis Pengaruh Bursa Efek luar Negeri Terhadap Bursa Efek Jakarta," Master's Thesis, Program Pasca Sarjana, Universitas Diponegoro.
- Mansur, M. (2004), "Pengaruh Indeks Bursa Global terhadap Indeks Harga Saham Gabungan (IHSG) pada Bursa Efek Jakarta (BEJ) Periode Tahun 2000-2002," *Jurnal Sosio Ekonomi*, 7, 1-12.
- Marita, D. (2007), "Analisis Perilaku Indeks Harga Saham Gabungan (IHSG) di BEJ Periode April 2002-Juni 2006," Undergraduate Thesis, Faculty of Economics, Universitas Islam Indonesia.
- Wikanti, A.S. (2010), "Efek Contagion Krisis Keuangan Amerika Serikat Terhadap Sektor Keuangan Indonesia," Unpublished Paper, Universitas Islam Indonesia.