# THE INTEGRATION OF THE INDONESIA STOCK EXCHANGE WITH REGIONAL AND INTERNATIONAL CAPITAL MARKETS

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**ABSTRACT**

This study specifically examines the integration between the Indonesia Stock Exchange and regional and international capital markets. The capital markets studied in this study were the New York Stock Exchange, Tokyo Stock Exchange, Seoul Stock Exchange, Australia Stock Exchange, London Stock Exchange, Kuala Lumpur Stock Exchange, Philippine Stock Exchange, Thai Stock Exchange, Taiwan Stock Exchange, Singapore Stock Exchange, Hong Kong Stock Exchange and Indonesia Stock Exchange. The research period used in this study started from January, 2012 to December, 2018. The data used was monthly data obtained from the Capital Market Statistics published by the Indonesia Financial Service Authority. All capital markets studied found to have a significant positive influence on the Indonesia Stock Exchange.

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

## INTRODUCTION

The economic crisis in 1997 brought quite drastic changes to the Indonesian capital market, where the government implemented a policy of exempting foreign investment ownership from a maximum of 49% 100% of the total shares (Muharam, 1999). This government policy has made an absence of the obstacles existed in the Indonesian capital market, especially the Jakarta Stock Exchange. This policy will eventually cause the stock risk and return on the Jakarta Stock Exchange to no longer be influenced only by domestic factors but also influenced by international capital markets. In other words, the Indonesian capital market (especially the Indonesia Stock Exchange) has theoretically been integrated with international capital markets and is greatly affected by capital markets in other countries.

In relation to capital market integration, Cha and Oh (2000) stated that capital markets are considered to be integrated internationally if the assets with identical risk will have the same price although they are traded in different capital markets. This indicates that the risks and returns apply internationally and the share movement in the capital market is not only influenced by domestic factors but also influenced by the stock price movements in world capital markets (Piesse & Hearn, 2005; Robiyanto & Ernayani, 2018; Yabara, 2012). A relatively similar thing was expressed by Bekaert, Hodrick, and Zhang (2009) stating that

in a market with a high level of integration and high contagion effect, it will move together and have a high level of relationship. Meanwhile the opposite of integrated capital markets is segmented capital markets (Wahyudi, Najmudin, Laksana, & Rachmawati, 2018). A capital market can be segmented if it has a low relationship with other capital markets (Bilson, 2000; Robiyanto, 2018).

Several experts have conducted researches on capital market integration, including Ameer (2006); Bekaert and Harvey (1995); Christoffersen and Errunza (2000); Guesmi, Teulon, and Lahiani (2013); Miyazaki, Toyoshima, and Hamori (2012). Bekaert and Harvey (1995); Christoffersen and Errunza (2000) separately applied a statistical model to examine an integration in capital markets in the western. Meanwhile, the research by Chittedi (2010) showed the interdependence between local and world capital markets. A relatively similar thing was also found by Ahn, Boudoukh, Richardson, and Whitelaw (1999) who examined 15 capital markets in developed countries.

Researches on capital market integration and the influence between the Indonesian capital market and foreign capital markets have also been carried out by Hermanto and Atmaja (1996) conducted a study of an integration between the Indonesian capital market and several capital markets in Asia Pacific countries, namely Japan, Hong Kong, Korea, Taiwan, Philippines, Thailand, Malaysia, Singapore, Australia, New Zealand and the United States. It was carried out using a research data from November, 1993 to September, 1994. In addition, Robiyanto and Ernayani (2018) used a data from January, 1997 to December, 2013, reviewing the integration of the Indonesia Stock Exchange with existing capital markets in the ASEAN region and the results showed that not all of these capital markets were integrated with the Indonesia Stock Exchange.

This present study examines the influence of several world capital markets such as Tokyo Stock Exchange, New York Stock Exchange, London Stock Exchange, Australian Stock Exchange, Kuala Lumpur Stock Exchange, Philippine Stock Exchange, Taiwan Stock Exchange, Stock Exchange Thailand, Seoul Stock Exchange, Singapore Stock Exchange and Hongkong Stock Exchange on the Jakarta Stock Exchange. The research period used started from January, 2012 to December, 2018. This was done to picturize the integration of the Indonesia Stock Exchange with the capital markets mentioned earlier by using a more recent period.

## METHOD

The data needed in this study was the monthly closing of the Composite Stock Price Index for the period of January, 2012 to December, 2018 from the studied capital markets (Nikkei 225 index, Dow Jones Industrial Average index, FTSE index, ASX index, Straits Times index, SET index, index KOSPI, Taipei WG index, KLSE Composite index, Manila Composite index, Hangseng index, and the Jakarta Composite Index (JCI)). The data was obtained from the Capital Market Statistics published by the Financial Services Authority.

The data was analyzed using regression analysis techniques. The regression analysis equation model is as follows:

$$\textbf{JCI Return} = \alpha + \beta\textbf{Foreign Capital Market Return} + e$$

Where

JCI Return : JCI return in the Indonesia Stock Exchange

Foreign Capital Market Return : Return of Nikkei 225 index, Dow Jones Industrial Average index, FTSE index, ASX index, Straits Times index, SET index, index

| | |
|---|---|
| | KOSPI, Taipei WG index, KLSE Composite index, Manila Composite index, and Hangseng index |
| α | : Constant |
| β | : Regression Coefficient |
| e | : Residual error |

Testing the symptoms of classical assumptions was done so that the regression result analysis could meet the BLUE criteria (Best, Linear, Unbiased Estimator). This classical assumption test consisted of normality test data, autocorrelation test, and heteroscedasticity test.

## RESULTS

A model is considered good for predictors if it has the best linear unbiased estimator properties (Gujarati, 2003). In addition, a model is considered quite good for predictors if it has passed a series of econometric assumptions underlying it. The classical assumption test was conducted to determine the condition of the existing data to determine the most appropriate analysis model to use. The classical assumption test in this study consisted of the Kolmogorov Smirnov one-way test to test the normality of the data statistically, the autocorrelation test using Durbin Watson statistics, and heteroscedasticity tests using the Ljung Q statistical box. The multicollinearity test was not carried out for the independent variables used in each regression equation model of this study were less than one independent variable.

### Result of data normality test

This test was carried out using the Kolmogorov Smirnov test which used a 5% significance level. Table 1. presents the results of the data normality test.

**Table 1 Result of Data Normality Test**

| Variable | Z-Value | Conclusion |
|---|---|---|
| JCI | 0.511 | Normally Distributed |
| DJIA | 0.561 | Normally Distributed |
| NIKKEI 225 | 0.419 | Normally Distributed |
| FTSE | 0.412 | Normally Distributed |
| ASX | 0.716 | Normally Distributed |
| MANILA Composite | 0.755 | Normally Distributed |
| KLSE | 0.734 | Normally Distributed |
| TAIPEI Weighted | 0.778 | Normally Distributed |
| SET | 0.881 | Normally Distributed |
| Strait Times Index | 0.575 | Normally Distributed |
| KOSPI | 0.769 | Normally Distributed |
| HANGSENG | 0.532 | Normally Distributed |

Source: Financial Service Authority, processed.

From Table 1. above, it can be seen that all variables used in the study were normally distributed.

### Autocorrelation test

To understand the existence of autocorrelation in a regression model, it can be done by testing the value of Durbin Watson with the following conditions:

| | |
|---|---|
| Less than 1.10 | : There is an autocorrelation |
| 1.10 to 1.54 | : No conclusion |
| 1.55 to 2.46 | : There is no autocorrelation |
| 2.46 to 2.90 | : No conclusion |
| More than 2.91 | : There is an autocorrelation |

The Durbin Watson statistic values in each regression equation in this study can be seen in Table 2. All regression equations show that their DW values are in the range of criteria with no autocorrelation. Based on this reason, it is concluded that there is no autocorrelation on the dependent variable to be used.

**Table 2 Result of Autocorrelation Test**

| No | Regression Equation | Value of DW | Conclusion |
|---|---|---|---|
| **1** | **NIKKEI → JCI** | 1.791 | There is no autocorrelation |
| **2** | **DJIA → JCI** | 2.001 | There is no autocorrelation |
| **3** | **FTSE → JCI** | 2.115 | There is no autocorrelation |
| **4** | **ASX → JCI** | 1.676 | There is no autocorrelation |
| **5** | **KLSE → JCI** | 1.982 | There is no autocorrelation |
| **6** | **MANILA → JCI** | 1.846 | There is no autocorrelation |
| **7** | **TAIPEIWG → JCI** | 1.899 | There is no autocorrelation |
| **8** | **SET → JCI** | 2.162 | There is no autocorrelation |
| **9** | **KOSPI → JC** | 2.284 | There is no autocorrelation |
| **10** | **STI → JCI** | 2.028 | There is no autocorrelation |
| **11** | **HANGSENG → JCI** | 1.932 | There is no autocorrelation |

Source: Financial Service Authority, processed.

## Heteroscedasticity Test

To test the presence of heteroscedasticity, Glejser and Ljung Box method can be used. for time series data, the right method is the Box Ljung method. It was chosen to test the stationarity of a time series data. Seiler and Rom (1997) used the Ljung Box test with 16 lag periods to test the data stationarity with $\alpha = 5\%$. If there are only a maximum of 2 significant lag periods out of the 16 lag periods, the data is considered stationary. In contrast, if there are more than 2 significant lag periods, then the data is considered not stationary. The following Table 3. summarizes the results of heteroscedasticity tests using the Ljung Box statistics.

**Table 3 Result of Heteroscedasticity Test**

| | Ljung Box Statistics (16) | | Total number of Significant Ljung Box Statistics at 16 Lags |
|---|---|---|---|
| | Q Statistics (16) | Prob. | |
| JCI | 15.288 | 0.502 | **0** |
| NIKKEI | 12.141 | 0.711 | **0** |
| DJIA | 8.687 | 0.929 | **0** |
| FTSE | 9.712 | 0.884 | **0** |
| ASX | 21.917 | 0.149 | **0** |

| | | | |
|---|---|---|---|
| KLSE | 12.113 | 0.739 | **0** |
| MANILA | 8.319 | 0.938 | **0** |
| TAIPEI WG | 22.268 | 0.137 | **0** |
| SET | 15.816 | 0.471 | **0** |
| KOSPI | 8.032 | 0.949 | **0** |
| STI | 20.773 | 0.181 | **0** |
| HANGSENG | 10.977 | 0.821 | **0** |

From Table 3. above, it can be concluded that all of the data used is stationary for the total number of significant Ljung Box statistics is less than 2. The absence of a statistically significant Q at $\alpha = 5\%$ indicates that there is no heteroscedasticity in each of these data.

**Result of regression analysis**

From the results of the data normality test that has been done, it is known that the data used in this regression equation is normally distributed and that there is no autocorrelation and free of heteroscedasticity. Therefore, the data met the requirements for performing regression analysis properly. In this study there are eleven regression equations, the results of the regression equation can be seen in Table 4.

**Table 4 Result of Regression Analysis**

| No. | Regression Equation | Constant | Regression Coefficient | $R^2$ | F |
|---|---|---|---|---|---|
| 1. | NIKKEI → JCI | 0.015 | 0.411** | 0.151 | 9.415** |
| 2. | DJIA → JCI | 0.016 | 0.554** | 0.114 | 9.318** |
| 3. | FTSE → JCI | 0.015 | 0.497* | 0.069 | 5.721* |
| 4. | ASX → JCI | 0.012 | 0.845** | 0.157 | 10.395** |
| 5. | KLSE → JCI | 0.013 | 0.518** | 0.247 | 24.338** |
| 6. | MANILA → JCI | 0.015 | 0.697** | 0.317 | 44.002** |
| 7. | TAIPEIWG → JCI | 0.016 | 0.251* | 0.091 | 5.921* |
| 8. | SET → JCI | 0.011 | 0.587** | 0.335 | 36.757** |
| 9. | KOSPI → JCI | 0.014 | 0.139* | 0.057 | 4.425* |
| 10. | STI → JCI | 0.011 | 0.721** | 0.349 | 42.159** |
| 11. | HANGSENG → JCI | 0.014 | 0.447** | 0.144 | 13.433** |

Source: Financial Service Authority, processed.

Where:
* significant at the 5% significance level
** significant at the 1% significance level

From Table 4., it can be seen that all independent variables studied, namely the stock market returns in the countries studied, have a significant influence on the market return of the Indonesia Stock Exchange. Almost all stock market returns in the countries studied have a significant influence on the Indonesian Stock Exchange's market return at a 1% significance level, and only the Taipei Weighted Index, KOSPI and FTSE returns have a significant influence at the 5% significance level.

In addition, it turns out that the regression coefficient of ASX and STI are the largest regression coefficient compared to other capital markets studied. This shows that the Australian Stock Exchange and the Singapore Stock Exchange were the capital markets with the most influence on the Indonesia Stock Exchange compared to other capital markets. This condition might occur

because the geographical location of the Australian Stock Exchange and the Singapore Stock Exchange were relatively close to the Indonesia Stock Exchange in Jakarta and the time difference of trading time was relatively only one to two hours. Similar conditions were also found in other capital markets that were relatively close to Indonesia. However, it was also found that the effect of the New York Stock Exchange and the London Stock Exchange was greater compared to the capital markets which were geographically closer to Indonesia, such as the Seoul Stock Exchange and Taiwan Stock Exchange.

This might happen as several Indonesian companies conducted dual listings on the New York Stock Exchange and the London Stock Exchange. For example, the shares of PT. Telekomunikasi Indonesia (Persero) Tbk. and PT. Indosat were also listed on the New York Stock Exchange and the same also happened to the shares of PT. Timah (Persero) Tbk. which was also listed on the London Stock Exchange. These dual listing shares had a very large market capitalization value on the Indonesia Stock Exchange. This resulted to the changes in the prices of these shares to have a strong contribution to the JCI movement on the Indonesia Stock Exchange.

## DISCUSSION

The foreign capital markets studied in this study, including Tokyo Stock Exchange, New York Stock Exchange, London Stock Exchange, Australian Stock Exchange, Kuala Lumpur Stock Exchange, Philippine Stock Exchange, Taiwan Stock Exchange, Stock Exchange Thailand, Seoul Stock Exchange, Singapore Stock Exchange and the Hong Kong Stock Exchange, were found to have a positive significant influence on the Indonesia Stock Exchange. The regression coefficient of ASX and STI was the largest regression coefficient when compared to other capital markets studied. This indicated that the Australian Stock Exchange and the Singapore Stock Exchange were the capital markets with the most influence on the Indonesia Stock Exchange compared to other capital markets.

The stock investors in the Indonesia Stock Exchange must pay attention to the conditions of foreign capital markets in making investments. The increase in the index that represents market conditions in each of the foreign capital markets is empirically proven to be able to signal that the same thing will happen on the Indonesia Stock Exchange. Excited foreign markets showing bullish and bearish trends will have an influence on the Indonesia Stock Exchange. If the general foreign capital market condition shows an increase, the investors in the Indonesia Stock Exchange can take a buy position on shares on the Indonesia Stock Exchange for the stocks will be positively affected by the increase in the foreign markets. Meanwhile, if the foreign capital markets show a decline, then the stock investors on the Indonesia Stock Exchange are advised to wait and see before taking further action.

Future researches are suggested to use the daily closing composite price index data. However, it is still very possible to happen that the condition of the daily data will be very different from the condition of the monthly data. Therefore, the analytical techniques used in this study are not necessarily in accordance with the conditions of the daily data. Future researches are also necessary to conduct studies involving global stock indices such as Morgan Stanley Country Index (MSCI) as its index calculation involves stocks from almost all countries in the world. Further, the index is also recognized as a benchmark for stock indices that reflects the condition of the global capital market.

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