

**INDONESIA, MALAYSIA, CHINA STOCK MARKET  
LONG-TERM ANALYSIS**

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**Abstract**

The present paper examines the long-run relationship between the Indonesia Stock Exchange (IDX), Malaysia Stock Exchange (Bursa Malaysia) and China Stock Market (SSE). The data used is the daily price index (daily price) of the composite shares (Composite Index) of each country from 2012-2018. The method used is the bivariate and multivariate cointegration approach with testing using the Johansen Test. To strengthen the proof of independence or interdependence of the capital markets of these countries, an Impulse Responses Function and Var Decomposition test will be conducted.

Key words : Cointegration, Market shares Index, Stock Exchange

**INTRODUCTION**

The role of developing countries is increasingly important in the global world, especially after developed regions such as America and Europe show a decrease in climate opportunities to benefit from the investment. As a result, a lot of capital has move to developing market areas, one of which is in the ASEAN capital market to get the opportunity to diversify. This can happen because it is supported by the development of communication and technology that penetrated the financial and economic world. Research on stock market cointegration is very important because it is a direct consequence of globalization and has important implications for investors.

The main objective of this study is to examine the short-term and long-term dynamic relationships that exist between the Indonesian and Malaysian stock market indices with the Chinese stock market index. Another important objective related to this analysis is to illustrate the potential for diversification between the two countries in Southeast Asia by considering the influence of the Chinese market turmoil. The results of this analysis alone will not only indicate the direction of market interaction but will provide an assessment of the interdependence of these markets, particularly the intra-regional impact on the Indonesian, Malaysian and Chinese markets. Also, the results of this study will prove the efficiency of these markets.

The importance of information from the results of the international stock market cointegration analysis encourages many researchers to examine the long-term relationship between stock market indices. Khan (2011) in his research showed that Malaysia, China and Austria were the countries with the lowest sensitivity to the global economy. Yang et al (2014) found that the influence of the US, Japan and China stock markets on global stock markets both developed stock markets and emerging market stock markets was highly dependent on certain periods such as crisis, pre-crisis and post-crisis periods. Hendrawan and

Gustyana (2011) tested the cointegration of Asian stock exchanges and found that there was cointegration on the Asian stock market.

The control of the world economy by the giant economy of China makes these countries obliged to become a concern for both investors and researchers and the government. Many investments in developing countries come from China. For this reason, the market will tend to be more sensitive to the policies carried out by the developed countries. Besides, the feud between the two countries is like a tariff war, the chaotic international politics between the two countries is also enough to give fear to the global market. Indonesia and Malaysia are two strong players in global affairs, especially economic affairs in the Southeast Asian region, especially namely trade relations, labor, security and other crucial relations. Nishimura and Men (2010) found that the Chinese stock market had a significant influence on other G5 countries (US, UK, Germany and France). Therefore, this study wants to see how China's long-term relationship is in a cointegration analysis with the Indonesian and Malaysian stock markets.

Cointegration analysis was introduced by Engle and Granger (1987), which measures diversification based on the price of an asset in the long run. Clare et al (1995) analyzed the cointegration of international bonds in the US, Britain, Germany and Japan, with the Johansen method and the univariate (pair-wise) approach, no cointegration was found between bonds. However, the cointegration test using Johansen test (1991) is more commonly used. Then, Mills and Mills (1991) use the same international bond yield data but different approaches (multivariate approach) to test bond cointegration, the results are the same (not integrated). Researchers found mixed results related to cointegration between stock markets in the world. Both cointegration between international stock markets and the integration of industries in the capital market. Khan (2011) in his research on the long-term relationship between the Chinese, Malaysian and Australian markets found that it did not coincide with the US stock exchange. Besides, all three stock exchanges have low sensitivity to global markets. Ali et al (2011) investigated the cointegration of Pakistan's equity markets with markets in India, China, Indonesia, Singapore, Taiwan, Malaysia, Japan, the United States and the United Kingdom using the integration test on monthly stock prices from the period July 1998 to June 2008. Research results revealed that there was no cointegration of Pakistan's equity market with the UK, US, Taiwan, Malaysia and Singapore markets.

Lanouar et al (2015) aim to find diversification opportunities in local investors using Sharia and conventional indices. The results of this study found that conventional and sharia indexes in London and America were not co-integrated and in American countries, only the SRI index and Shariah index were not integrated. Ibrahim and Mussah (2014) found cointegration among shares of companies listed on the Brazilian Stock Market by using cointegration and causality tests.

Walid (2012) examines the Qatar sector index and found a long-term relationship between the indexes tested. Muhajir (2008) and Efka (2002) tested the long-term relationship on various indices on the Indonesia Stock Exchange and found a small correlation between the variables tested. Ng (2002) found no cointegration among stock markets in Southeast Asia using data from the period 1988-1997. Although in this research it is explained that the Southeast Asian stock market tends to be increasingly co-integrated. Tabak and Lima (2003) analyze causality and cointegration between the Latin American stock markets namely Brazil, Chile, Peru, Mexico, Venezuela and Colombia with the United States and

find no long-term relationship between the sham markets. Irmalis et al (2019) found that between Indonesia, Malaysia and Singapore stock exchange show no cointegration.

But many studies prove the existence of long-term relationships between world stock markets. Menon et al (2009) tested the cointegration of the Indian stock market with developed countries' stock markets, namely China, Singapore, America and Hong Kong using the Engle-Granger method and the results showed that India had a fairly strong cointegration with these developed countries. Asidenou (2011) conducted a cointegration test between world stock markets during the 2008 crisis and proved that Asian stock markets cointegrated with each other, and the OECD, Pacific and Asian stock market groups also cointegrated with one another. Guidi and Ugur (2014) conducted a cointegration test on the SEE (South-Eastern European) stock market, from the results of the study it was found that the SEE market was cointegrated with the German and British markets during the 2000-2013 period, but not with the American market.

Subhani et al (2011) tried to investigate the stock markets of countries in the South Asian region namely Karachi Stock Exchange (Pakistan), Bombay Stock Exchange (India), Dhaka Stock Exchange (Bangladesh), Nepal Stock Exchange (Nepal). By using daily data, there was a cointegration between KSE and Dhaka Stock Exchange, but not with other stock markets.

Cointegration testing is also sometimes carried out not only between the stock market but also between the stock market with other important variables such as Bhuvaneshwari and Ramya (2017) examining the cointegration and causality of stock prices and exchange rates in India using the Karl Pearson correlation and Johansen test found that there is no integration between stocks with exchange rates and from the results of their research use the Granger Causality test and find the bidirectional causality between the stock price and the exchange rate. Irmalis and Hadi (2020) conducted an analysis on Indonesia, Malaysia and Singapore Stock Exchange and find in multivariate testing there was no cointegration, but they find in bivariate analysis Malaysia and Singapore stock Exchange exhibit cointegration.

### METHODOLOGY

Cointegration is examined in pair between the Indonesian stock market with the Malaysian Stock Exchange; between the Indonesia Stock Exchange and China Stock Market; the Malaysian Stock Exchange and China Stock Exchange. After that, Johansen tests are conducted in groups (Indonesia, Malaysia and China Stock Exchange) simultaneously.

Many previous studies used daily and monthly stock prices. However long-run relationship is not seen in a very short time but not too long, that is why this study is using weekly closing prices of SSE (code: ^ SSEC), IDX Composite (code: ^ JKSE), KLCI (code: ^ KLSE) covering January 2011 to December 2018 (8 years). The data obtained from the website [www.yahoofinance.com](http://www.yahoofinance.com) and [www.bloomberg.com](http://www.bloomberg.com).

Next, since variables with root unit will be persistent against shock or unexpected change so that if there is a shock in the period  $t$  will not affect the period  $t + 1$  or  $t + 2$  and so on. Therefore, cointegration tests require that the series must be non-stationary or stationary in  $I(1)$ . Thus, stationarity tests will be conducted first using the Augmented-Dicky-Fuller test (ADF). Next, if the data are non-stationary, then we can check the optimum lags using the AIC test. Adapted from Brooks (2008) testing for and estimating cointegrating systems using the

Johansen technique is based on VARs. A VAR with  $k$  lags containing  $I(1)$  variables could be set up:  $Z_t = \mu + y_1 X_{t-1} + B_2 X_{t-2} + \dots + B_k X_{t-k} + e_t$ . To use the Johansen test, the VAR model needs to be turned into a vector error correction model (VECM):

$$\Delta Z_t = \mu + \sum_{i=1}^{k-1} D_i \Delta X_{t-i} + W_i \Delta X_{t-k} + e$$

VECM is used when the Johansen test shows one or more cointegration equation. The maximum eigen value and trace statistics will present the number of cointegration equation from those stock market.

## RESULT AND DISCUSSIONS

### *Bivariate Testing*

#### Test 1: Indonesia and China Stock Exchange

From Maximum-Eigen Value and Trace statistics, indicate no evidence of the long-run relationship between Indonesia and China Stock Exchange. The Value of trace statistics and Maximum-Eigen Value are lower than the critical value at a 5% significance level.

#### Test 2: Malaysia and China Stock Exchange

The result also indicates no-cointegration between Bursa Malaysia and Shanghai Stock Exchange. This result is the same as the cointegration between the Indonesia Stock Exchange and China Stock exchange. Due to the value of Max-Eigen and Trace Statistics do not exceed the critical value.

#### Test 3: Indonesia and Malaysia Stock Exchange

Even though Indonesia and Malaysia are located in the same region, but there is also no contagion effect. This is because the value of trace statistics and Max-Eigen Statistics show a smaller value than the critical value at 5%

### *Multivariate Testing*

Consistent with bivariate testing, multivariate testing using Johansen Test also shows no evidence of cointegration. Since the Trace Statistics and the Maximum-Eigen Value exhibit smaller value than the critical value at a 5% significance level.

## CONCLUSION AND RECOMMENDATIONS

This study aims to examine the long-run relationship between Indonesia, Malaysia and China Stock Exchange. The specific purpose is to find the opportunity to make an abnormal return by diversification strategy among international assets. An international diversification strategy can only be done if assets or shares in the global stock world have no strong positive correlation. No cointegration between the stock markets indicates there is a chance for gaining a better return by diversifying the asset. Thus, Investors can exploit their portfolio by investing in Indonesia, Malaysia and China Stock Market.

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