ANALYSIS OF CAPITAL MARKET INTEGRATION REGION ASIA

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ABSTRACT

The realization of a single market Asia into a competitive economic region, will be reflected in the integration of stock exchanges or the closeness of the relationship between the exchanges in the region. It is very important both for investors and companies. This study examines the movement of stock price index composite daily in nine countries in Asia, with a range of time from January 4, 2011 until November 30, 2012. The research objective was to determine and prove whether there is a tendency that the stock market in nine countries in the Asia region is integrated or not. The first step taken is to look at the correlation analysis of daily returns in the stock nine countries, by dividing the data into two groups based on time data is 2011 and 2012. The results showed that both time periods is different. Correlation coefficient of the second period showed an increase compared to the first period. This suggests that there is increased integration over time in nine such exchanges. The next step, using analysis techniques developed by Johansen co-integration, result that the nine exchanges in Asia are indeed integrated. The existence of co-integration suggests that the stock market in the long run, the movement of stock price indices in stock exchanges in nine Asia countries tend to move in the same direction.

Keywords: Capital market, integration.

INTRODUCTION

The development of the capital market of a country can be used as a benchmark of the progress of a country. The capital market is a market for long-term financial instruments in the form of equity and debt that maturities over one year. The capital market is one of the instruments of financing and investment that involves the entire community potential both domestically and abroad. Therefore, the capital market is one of the main drivers of globalization in the financial sector.

Globalization and agreements between countries greatly influence the development of global capital markets. Investing in a portfolio is one form of globalization-based investments because these investments are private and do not recognize national borders. Free cash flow in and out in a country and consider only market efficiency and rivalry climate that conducive for the growth of investment. In the presence of the international capital markets, investors could invest in various countries not to undertake direct investment , as practiced by multinational and transnational corporations, but by buying securities that offered in the stock exchanges (Suad Husnan: 2009).

Economy of East Asia and Pacific was still strong in the weak of global economy. The latest report of the World Bank projected that the economy of East Asia and the Asia Pacific region grew by 7.5 percent in 2012 and will increase in 2013. The influence of the East Asia and the Pacific region in the global economy has tripled in the past two decades, from six percent to nearly 18 percent. This shows the importance of sustainable growth in these region for the world economy. (Tempo, 2012).

The realization of a single market Asia into a competitive economic region, will be reflected in the integration of stock exchanges or the closeness of the relationship between the stock exchanges in the region. The benefits arising from the integration of stock exchanges in Asia, can be enjoyed by investors and companies. The investor's purpose from investing is to obtain the optimal return means the better risk-return trade off . Investing in the securities of industry that spread internationally will provide an opportunity for investors to get better risk return trade off than investing in only one stock market of a country. For investors, the portfolio investment in the stock market will be more attractive if they have the option of a wider investment diversification between stock markets and between the countries. By diversifying investments there is a risk that can be eliminated so that the more attractive international diversification for investors (obtsfeld, 1994).

This is consistent with the basic theory of portfolio diversification that states that the wider diversification is done, the more stable returns earned and the less risks covered. So by diversification internationally investors believe that they can take advantage such as a reduced risk (systematic risk) and an increase in investment return. Solnik (1974) explained that international diversification can reduce systematic risk up to 12% of the total risk and the number is much smaller than the systematic risk that still 27% if only done domestic diversification (for the same number of stocks). Similarly, Gitman (2012) stated that over long periods, internationally diversified portfolios growing niche to perform better (meaning that they earn higher returns relative to the risk taken) than purely Domestics portfolios.

While for the companies, the use of capital markets as the sources of financing the creation of value-added activities would be interesting if the funding through the capital markets will lower their cost of capital. Integration of stock exchanges will provide opportunities for companies to obtain capital efficiently.

Based on the above considerations, this study aims to determine and prove whether capital markets in nine Asian countries, namely Indonesia, Malaysia, Singapore, Korea, Hong Kong, China, India, Japan and Taiwan are integrated.

BASIC THEORY

Integration of capital markets

Integration means merging or fusion (the encyclopedia business, economics, and management, 1992: 256). Economic integration is a retraction (removal) of economic barriers between two or more economies (countries). While market integration is a condition where the prices of stocks in various capital markets in the world have a very close relationship (closely correlated) between each capital market in the world (eitmen, et.al, 2007), so that the capital market in the world can reach an international pricing of their shares and give unlimited access or any barrier to investors around the world to have it.

From the definition, it can be concluded that in the market that integrated completely will create the world capital markets that are closely linked each other and closely correlated. This means that stock price fluctuations have in common (same movement) in each stock exchanges, and occurred simultaneously resulting risk and return in the same magnitude in all of the world capital markets. This gives the impact on the freedom of investors to invest in the capital market.

Integration of the capital market means that there are no barrier to have any securities in each capital markets, and there are no barrier in the capital inflow/outflow. With the integration of capital markets will create lower capital cost than if the capital markets are not integrated (Husnan, 2009). Theoretically, removal of barriers to foreign investors will make fully integrated capital markets around the world, (Husnan, 2009). Thus, consideration of risks and benefits will be made within the scope of the world and no longer within the limits of a particular country. Stock prices will be higher than the state where the capital markets are all closed (fully segmented markets).

Stock Return Correlation

Brook and the Negro (2002) stated that increasingly integrated world capital markets are characterized by the higher correlation between stock returns between the stock exchange. The cause of the higher correlations are (1) diminishing refraction in the selection of the portfolio, (2) the great variety of sales and financing companies, (3) a temporary phenomenon, or and convergence of industry and policy coordination among countries that higher in intensity.

Onay (2007) and Bodie. et al (2005), stated that the correlation between the stock exchange varies from time to time or the correlation are time-varying. Although the return correlation between stock exchanges is important in the decision of portfolio diversification, the calculation of return correlation using the mean and variance, only gives short-term indication and does not give clue to the long-term movement of financial markets. And for long-term forecasting needed a more accurate measure of interdependence and the general direction of movement (comovement) of the price of the shares on the various stock exchanges. (Onay, 2007).

Previous Research

Koh and Mayasami's research (1996) about the effects of the global market to the cointegration of shares in Singapore's Stock Exchange explained that at the level of the market, the U.S., Japan and Singapore cointegrated positive significantly.

Husnan and Pudjiastuti's empirical research (1998) tested the integration of international capital markets for the eleven stock exchanges in Asia Pacific, namely the stock exchange in Tokyo, Hong Kong, Singapore, Kuala Lumpur, Seoul, Taipei, Bangkok, Jakarta, Manila, Sydney and New Zealand. The results obtained, stock exchanges in Tokyo, Hong Kong and Singapore are integrated with other stock exchanges around the world. Kuala Lumpur and New Zealand classified as an intermediate form. while other are segmented.

Endri's research (2012) about the Integration of the stock market Asean free trade area Free China explained that not all markets are fully integrated. While the results of Nurhayati's research (2012) on the integration of the ASEAN capital market also provide results that only Indonesia's capital market that is significantly affected by the capital markets of Malaysia, Singapore, Philippines, and Thailand. Capital markets do not affect each other. Thus, the capital market in the ASEAN region is integrated, but not entirely.

RESEARCH METHODOLOGY

Population in this research are all stock markets in Asia, while the sample is an active stock market and its data can be accessed on the internet. There are nine stock markets in Asia consist of Indonesia, Malaysia, Korea, Singapore, India, Hongkong, Taiwan, Japan, China. Period of observation is recent period from January4, 2011 until 30 November 2012.

In this research the types of data used is secondary data on stock price indices (daily) at Nine countries in Asia from 2011 to 2012. The data is time series data. Collection of data was conducted by using data collected documentation from the internet via *www.investmen.com* , www.world-exchanges.org and www.yahoo.finance.

To research the purposes , the variables that used and tested in the study are following:

- Stock price index in 9 observed stock exchanges namely in Indonesia, Malaysia, Korea, Singapore, India, Hongkong, Taiwan, Japan, China.
- Stock return in 9 observed stock exchanges namely in Indonesia , Malaysia, Korea, Singapore, India, Hongkong, Taiwan, Japan, China.

*R*eturn stock is accounted with following formula:

$$R_{mt} = \frac{SPI_t - SPI_{t-1}}{SPI_{t-1}}$$

R_{mt} = *return* stock at t period
SPI_t = stock price indes t period
SPI_{t-1} =stock price index t-1 period

The method of this research is done in two steps:

1. Analysis correlation of the stock return

This analysis is to see the correlation between the trend of the stock exchanges in Asia. Data are grouped into two periods of data, 2011 and 2012. Coefficient correlation is a portrait of a short-term close relationship between the exchange functional, in this case is how in a span of time is observed, profit expectations (expected return) in a stock market moves than the other, which is positive (direct) and negative (opposite directions).

2. Cointegration test

This test used to examined of the stock exchanges in Asian countries is integrated or not. If they are integrated, it means that the stock exchanges in Asian countries are interrelated. To analyze, it is necessary to do some statistical tests as follows:

a. Detection of Stasionarity: Unit Root Test

Time series data are often not stationary that is causing regression results are dubious or often called superious regression. In superious regression,results of regression indicate that the regression coefficient is statistically significant and the coefficient of determination is high, but the relationship between variables in the model are not interconnected. The data did not show an association often stationary imbalance in the short term, but there is the tendency for long-term equilibrium relationship. Therefore, it is necessary to test stasionarity with unit root tests using the Augmented Dickey-Fuller test (ADF).

In this analysis, if data doesn't stationary, it can be converted to stationary data through a process of differentiation. Stationary data test through the process of testing the degree of differentiation is called integration. As the unit root test earlier, the decision of stationary data will be seen for ADF statistic comparing the values obtained with the statistical distribution Mackinnon critical value. If the absolute value of the ADF statistic is greater than the critical value at the first level of differentiation, then the data is conclude to be stationary at level one. However, if the value of ADF is smaller than the test of the degree of integration should be continued to higher differentiation in order to obtain stationary data.

b. Johansen Cointegration Test

Johansen cointegration test is used to explain the existence of cointegration by looking at the maximum likelihood estimators, based on the likelihood ratio test (LR). If the LR calculated value is greater than the critical value then we accept the LR cointegration number of variables and if the calculated value smaller than the critical value LR then there is no cointegration.

c. Test the estimated VECM (Vector Error Correction Model)

After Johansen cointegration test that shows the relationship or a long-term equilibrium is done, VECM tests will be conducted to see whether the balance in the short term occurred. Verification is done by comparing the F statistic with significance. If the value of F statistic is greater than the significance level, then it means there is cointegration and vice versa.

RESEARCH AND DATA ANALYSIS

a. Analysis correlation of the stock return

This analysis data are grouped into two periods. The first period is 01/04/2011 to 12/30/2011 and the second period is 01/04/2012 to 11/30/2012. The correlation of stock returns in Nine Asian Countries during the observation period is shown in the two tables below.

Table 1: Daily return correlation between stock exchange in 9 countries in Asia 01/04/2011 - 12/30/2011

	SHG	JKSE	KLSE	NIKEI	STI	KOSPI	TAWN	BSE	HGSG
SHG	1								
JKSE	0.305	1							
KLSE	0.112	0.478	1						
NIKEI	0.177	0.331	0.218	1					
STI	0.278	0.540	0.469	0.522	1				
KOSPI	0.377	0.552	0.357	0.629	0.651	1			
TAWN	0.349	0.508	0.424	0.551	0.667	0.749	1		
BSE	0.102	0.355	0.363	0.285	0.569	0.379	0.361	1	
HGSG	0.459	0.618	0.403	0.589	0.743	0.783	0.713	0.528	1

Sources : Result of data processing
Description : Correlation significant at the 0.01 level (2-tailed)

Table 2: Daily return correlation between stock exchange in 9 countries in Asia 01/04/2012 - 11/30/2012

	SHG	JKSE	KLSE	NIKEI	STI	KOSPI	TAWN	BSE	HGSG
SHG	1								
JKSE	0.981	1							
KLSE	0.988	0.986	1						
NIKEI	0.977	0.974	0.983	1					
STI	0.987	0.986	0.992	0.984	1				
KOSPI	0.976	0.979	0.984	0.979	0.987	1			
TAWN	0.981	0.982	0.989	0.984	0.989	0.991	1		
BSE	0.977	0.979	0.985	0.971	0.986	0.975	0.979	1	
HGSG	0.982	0.987	0.988	0.981	0.990	0.986	0.988	0.983	1

Source: Result of data processing

Description: Correlation significant at the 0.05 level (2-tailed)
Based on the results in tables 1 and 2, it can be concluded that stock returns during the observation period showed highly significant positive correlation (significance level of 5%) for all stock exchanges. The correlation of returns between the two observation periods, the period 1/4/2012 - 11/30/2012 compared to the time period 4/1/2011 - 12/31/2011 showed significant increases. The increase correlation showed possibility integration for nine stock exchanged in Asia at future time.

This indicates that all nine markets in Asia were integrated because of the economic linkages and drive factors of information and communication technologies. This condition is a reality that must be faced and accepted by market participants. Besides that, an increase in return correlation is found in this study suggests that the overall integration of stock exchanges in nine Asian countries is likely to increase in the context of long-term and this is in line with the trend of stock exchanges are increasingly integrated world. The increase in the correlation coefficient between the stock exchanges return is occurring evenly between couples exchange suggests that the direction of the establishment of the single market Asia increasingly apparent.

b. Cointegration Analysis

1) Test Unit Roots at the level

Results of stationary test at the level of the data presented in Table 3.

Table 3:Unit Roots Test Results at the level of Joint Stock Return Period Nine Asian Countries 04/01/2011 - 11/30/2012

No.	Augmented Dickey-Fuller test Statistic	t-Statistic	Prob.*
1.	Return saham HGSG	-1.265927	0.6464
2.	Return saham JKSE	-2.213009	0.2021
3.	Return saham KLSE	-1.584878	0.4893
4.	Return saham KOSPI	-2.303950	0.1713
5.	Return saham NIKEI	-1.613467	0.4747
6.	Return saham SHGHAI	-1.225177	0.6646
7.	Return saham STI	-1.504237	0.5306
8.	Return saham TWN	-1.129953	0.7050
9.	Return saham BSE	-1.735541	0.4125
Test critical values:	1% level	-3.447627	
	5% level	-2.869050	
	10% level	-2.570838	

*MacKinnon (1996) one-sided p-values.

Sources : Result of data processing

From Table 3, the results of the unit root test with an intercept yield showed that the absolute value statistic Augmented Dickey-Fuller test (ADF) is smaller than the critical value α MacKinnon on any of his (1%, 5% and 10%). So that the data are not stationary. This means that the stock returns between stock exchanges in nine Asian countries have the possibility of an integrated (having a long term relationship). To find out how many degrees of integration of the data, it's necessary to test the level of differentiation to find stationary data.

2) Unit Root Test on 1st Level differens

Results of stationary test that firs level differentiation are following:

Table 4:Unit Roots Test Results at a rate of 1 st differens Return Composite Nine Asian Countries Period 04/01/2011 - 11/30/2012

No.	Augmented Dickey-Fuller test Statistic	t-Statistic	Prob.*
1.	Return saham HGSG	-11.81780	0.0000
2.	Return saham JKSE	-12.47746	0.0000
3.	Return saham KLSE	-10.85108	0.0000
4.	Return saham KOSPI	-13.53062	0.0000
5.	Return saham NIKEI	-13.14156	0.0000
6.	Return saham SHGHAI	-11.72693	0.0000
7.	Return saham STI	-12.29484	0.0000
8.	Return saham TWN	-13.75737	0.0000
9.	Return saham BSE	-6.548639	0.0000

Test critical values:

1% level	-3.447627
5% level	-2.869050
10% level	-2.570838

* MacKinnon (1996) one-sided p-values.
Source: Result of data processing

Based on the table above, the test results showed that the differentiation rate stationary test first to make the data stationary by ADF absolute value is higher than the absolute value of statistical Mackinnon at various confidence levels (1%, 5% and 10%) with an intercept. This means that stock returns among nine Asian markets integrated in the first degree. It could also mean that the stock returns in the stock exchanges in nine Asian countries have a long-term relationship.

3) Cointegration tests: Johansen Test

Johansen test used to determine stock return in the nine stock exchanges is cointegrated or not. The test results can be shown in Table 5. following.

Table 5: Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.273439	669.4820	192.89	204.95
At most 1 **	0.251724	553.2087	156.00	168.36
At most 2 **	0.242869	447.6547	124.24	133.57
At most 3 **	0.208766	346.3831	94.15	103.18
At most 4 **	0.188077	261.1484	68.52	76.07
At most 5 **	0.170596	185.3091	47.21	54.46
At most 6 **	0.163606	117.2237	29.68	35.65
At most 7 **	0.109756	52.19302	15.41	20.04
At most 8 **	0.026763	9.874586	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 9 cointegrating equation(s) at both 5% and 1% levels

According to Table 5 above, it can be concluded that all nine stocks exchanges in Asia is cointegrated. It can be seen from the value of Trace Statistic greater than the critical value at 5% and a confidence level or 1%. Besides these ways, in order to determine whether there is cointegration , can be seen from the statement in the last line: Trace test indicates 9 cointegrating equation (s) at both 5% and 1% levels, which states that there is cointegration at both the level of confidence, either 5% or 1%.

4) Estimated VECM (Vector Error Correction Model)

After Johansen cointegration test that shows the relationship or a long-term equilibrium is done, VECM tests will be conducted to see whether the balance in the short term occurred. VECM test results are presented in the following table:

Table 6: Test Results Return Composite VECM Nine Asian Countries
Period 04/01/2011 - 11/30/2012

No.	Augmented Dickey-Fuller test Statistic	F-Statistic
1.	Return saham HGSG	19.04789
2.	Return saham JKSE	15.87640
3.	Return saham KLSE	15.53304
4.	Return saham KOSPI	19.75224
5.	Return saham NIKEI	15.72990
6.	Return saham SHGHAI	13.59368
7.	Return saham STI	17.25733
8.	Return saham TWN	17.07836
9.	Return saham BSE	1.622886

Test critical values:	1% level	3.333
	5% level	2.7067
	10% level	2.1592

From Table 6 above VECM test results showed that all stock exchanges except BSE yield F statistic values greater than F critical at all levels of confidence (1%, 5% and 10%). This shows that all the stock exchanges except India (BSE) are integrated cointegration. The eight Asian stock exchanges are Indonesia, Malaysia, Singapore, Taiwan, Japan, Hong Kong, China and Taiwan. So, there are eight correlation equations from the data analysis.

While the results of the Johansen cointegration test models lead to the conclusion that there is cointegration in nine Asian stock exchanges. This indicates that the formation of stock prices in a market is not only determined by factors within the country but also closely related to the factors of price formation in the foreign country. So when stock price increase, it will be followed by a price increase in the stock-exchange in other Asian countries and vice versa.

Theoretically fully integrated Asian capital markets showed no barriers in having any securities exchange and there is no obstacle in the capital inflow and capital outflow. It will create lower cost of capital than than the capital markets are not integrated. This is occurred because investors able to diversify investments with broader (not only within the industry, but also between countries in Asia). Because of the risks that are relevant for investors is nondiversification risk. The greater part of the total risk can be eliminated by diversification more attractive for investors to diversify their investments in many markets.

The reduced cost of capital would make investment more profitable, if other things is not changes. This would mean that the investment will be more widely applied, greater employment, and so on. Thus the stock market appears to be integrated Asia will provide a great benefit compared to if the capital market is still segmented.

CONCLUSION AND SUGGESTIONS

Conclusion

1. Correlation analysis of stock returns in the study showed an increase in the return of the second period from the first period. It means that the overall integration of nine stock exchanges in Asian is tend to increase in the context of long-term and this is in line with the trend of world stock exchanges that are increasingly integrated. The increase in the correlation coefficient return between the stock market that is occurring equally between couples of stock exchange indicates that the direction of the establishment of the single market in Asia increasingly apparent.

2. Cointegration analysis for the stock market in nine Asian countries showed the presence of cointegration. This indicates that in the long term, the movement of the stock price index in the stock exchanges in nine Asian countries tend to move in the same direction. Establishment of share prices in the stock exchanges is related to the factors of price formation in stock exchanges abroad, no longer just associated with these factors within the country. So when a stock price increase, it will be followed by a price increase in the stock-market countries of Asia. While for the short-term, there is only one stock exchange that is not integrated the Indian stock market.

Suggestion

1. For market participants or investors, it needs to consider the implications of the cointegration of Asian stock exchanges before taking any investment decisions.

2. For further research, it is recommended to use other variables beside price index or stock returns, such as by digging macroeconomic fundamental factors and also the fundamentals of micro company factors (issuers stock) for each country to influence in the stock price movement. It will be more interesting if the research is associated with stock-market shares in the world because now the world is leading to economic globalization.

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