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An Evaluation of Indonesian Capital Market Co-integration with ASEAN 4 to Enter the ASEAN Capital Market Integration in Accordance to ASEAN Economic Community (AEC) 2020 Scheme: Should Indonesia Enter or Postpone?

Barli Suryanta*

Association of South East Asian Nations (ASEAN) Economic Community (AEC) 2020 has already been declared on 7 October 2003 by ASEAN Concord II in Bali, Indonesia. In general, AEC was designed to prepare ASEAN countries for ASEAN economic integration within the next 10-15 year. ASEAN Free Trade Area (AFTA) had actually been launched since 1992 though was not comprehensive enough and kept ASEAN only partially integrated. To overcome it, ASEAN proposed financial integration through capital market integration based on AEC commitment in order to reach comprehensive ASEAN economic integration. Indonesia is one of the ASEAN members that is linked by AEC 2020. The purpose of this paper is to evaluate Indonesian capital market co-integration in entering the ASEAN capital market integration compared to those of ASEAN 4. To examine the notion of the Indonesian capital market integration within ASEAN region, co-integration model is utilised to figure out co-integration between Indonesian stock market indices and ASEAN 4, i.e., Singapore, Malaysia, Philippines and Thailand. In addition, Vector Auto-regression (VAR) model is also utilised to examine Indonesian market returns co-movement and dynamic link with ASEAN 4. The conclusions of this research, i.e. co-integration between Indonesian capital market with Singaporean, Malaysian, Philippines, and Thailand does not exist; there is neither co-movement nor strong dynamic link between Indonesian capital market with those of Singaporean, Malaysian, Philippines, and Thailand. This paper also recommends Indonesia to postpone the integration of its capital market into the integrated ASEAN capital market.

Keywords: *AEC 2020, Indonesian capital market, ASEAN capital market integration, co-integration model, VAR model*

Introduction

Association of South East Asian Nations (ASEAN) Economic Community (AEC) 2020 aims to establish market integration action through ASEAN Free Trade Area (AFTA) commitment first and will then move forward to financial integration through 'Free Flows of Capital' that one of urgent points is bolstering ASEAN

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capital market development and integration agenda. The ultimate goal of capital market integration is to reduce uncertainty, because by capital market integration between Indonesia and ASEAN 4 major members (Singapore, Malaysia, Philippines and Thailand), especially the investors around ASEAN may predict the future of assets movement of ASEAN 5 (Indonesia, Singapore, Malaysia, Philippines and Thailand) market returns optimally. This is supposed to be beneficial for Indonesia to integrate its capital market with other ASEAN 4 major members.

Literature Review

The arguments for financial integration

Free flow of capital encourages countries to follow more disciplined macroeconomic policies (Obstfeld, 1998). Finally, integration may broaden and deepen financial markets and improve the functioning and efficiency of countries' financial systems. Hardouvelis et al. (2001), related with this issue in different perspective, showed that a fundamental condition for a reduction in the cost of equity capital in Europe is satisfied. They estimated that this cost falls by between 0.5% and 3% during the 1990s.

Giannetti et al. (2002) provided indirect estimates of the effects of financial integration on growth. They argued that further integration will encourage the adoption of best financial structures and particularly benefit firms dependent on external financing. They concluded that economic growth in the European Union (EU) could thereby increase by up to 1%. In another paper, Hartmann et al. (2003) noted that financial integration does not necessarily result in the adoption of similar financial structures across countries. As in other industries, financial integration could promote specialization in the provision of particular services, resulting in quite diverse structures. Nevertheless, in the process of promoting financial development and modernization, integration is likely to have significant effects on growth and welfare.

According to Freixas et al. (2004), there are four effects that are considered: on risk sharing for consumption smoothing, domestic investment and growth, macroeconomic discipline, and efficiency. International capital markets provide firms with access to sources of financing that increase capital and raise growth rates and living standards. The macroeconomic implications of financial integration are, therefore, contentious. The emphasis on the microeconomic side has been on portfolio allocations, the opportunities available to savers and borrowers, and the impact on individual components of the financial sector. The elimination of barriers to free flow of capital increases the variety of forms in which savers can invest and firms can borrow. Savers can achieve a greater degree of portfolio diversification by having access to foreign as well as domestic assets and financial institutions. Regulatory differences may be one factor contributing to the existence of the "home country bias", by which savers systematically prefer to invest in domestic rather than foreign assets. They also said that financial integration, therefore, allows savers to move closer towards holding the global portfolio. From the borrowers' side, financial integration

Table 1. Indonesia and sub-pillar AEC 2020: ASEAN capital market integration

Strategic approach	Focus	Indonesia specific initial sector for integration
A4. Free Flows of Capital	ASEAN capital market development and Integration	• Capital market integration within four major markets such Singapore (STI), Malaysia (KLSE), Philippines (PSE) and Thailand (SET)

Source: Modification from AEC Blueprint, 2008

broadens the range of sources of financing and intensifies the degree of competition in the lending market. Credit rationing is diminished and borrowers can search across a broader range of lenders for the lowest-cost source of financing.

The arguments for financial integration by implementing capital market integration

The general arguments of capital market integration

It is generally believed that capital market integration has such an important role in international and development economics. Capital market integration provides the opportunity for better diversification as investors shift to higher risk and expected return projects because they are able to diversify their overall risk (Obstfeld, 1994).

In this context, Rajan and Zingales (1998), among others, find that development of capital markets facilitates economic growth by reducing the cost of capital. By the elimination of investment barriers, Stulz (1999) shows that equity market integration allows for international risk diversification which affects long term economic growth by altering resource allocation and savings rates. Capital market integration entails that the markets are exposed to similar risk factors and thus, common risk premium (Ahlgren and Antell, 2002). Why is capital market integration so compulsory? It may improve the global allocation of capital and help countries share risk better by minimising consumption volatility (Kose et al., 2003).

The co-integration of capital markets arguments

In co-integration models, however, deviation of prices from a long run relationship indicate predictable future changes (Granger, 1986; Baillie and Bollerslev, 1989). Hassan and Naka (1996) also support the argument of previous notion proposed by Granger that in co-integrated markets, price movements in one market soon induces the movement of the indices in other markets, which is consistent with the efficient information sharing and free accessibility to markets by domestic and foreign investors. They also corroborate the co-integration of capital market arguments that markets are predictable and foreign investors are sophisticated, then investors are likely to book profit from the predictable of returns. As the foreign investors take the advantage of market inefficiencies, those market inefficiencies will decrease and the prices will react more quickly to new information (Kim and Singhal, 2000).

With respect to portfolio diversification, Raj and Dhal (2009) had shown that the co-integration can be consistent with the standard asset demand function, such that the price of one asset (domestic) depends on other assets (regional and global), some of which may serve as substitutes or complements to domestic assets. Therefore, portfolio diversification in the long run would depend on the size and the sign conditions of the coefficients of the co-integration vector relating to various stock prices.

Methodology

The hypothetical construct and basic theoretical model

H1: *If Indonesian capital market is integrated, market returns co-movement exists and so does market interdependence with four major ASEAN capital market (Singapore, Malaysia, Philippines and Thailand), then Indonesian capital market is ready for an ASEAN capital market integration.*

The stage 1 from 'Hypothesis 1' aims to find empirical evidence; are there co-integration between Indonesian and the other four major ASEAN capital market? And the stage 2 or the final stage from 'Hypothesis 1' is to test Indonesian market returns co-movement and market interdependence with Singapore, Malaysia, Philippines and Thailand. In brief, co-integration is one of the key concepts of modern econometrics to find the long run equilibrium or between two or more important variables in observation. Two or more processes are said to be co-integrated if they stay close to each other even if they drift about as individual processes (Fabozzi et al., 2007). It implements the notion that there are feedbacks that keep variables mutually aligned. Then, VAR model is one of econometric approach, models of vectors of variables as autoregressive process, where each variable depends linearly on its own lagged values and those of the other variables in the vector. This infers that the future values of the process are a weighted sum of past and present values plus some noise and, possibly, exogenous variables (Fabozzi et al., 2007). According to Enders (1995), a VAR in standard form is the appropriate basic model to conduct VAR analysis comprehensively.

The data of co-integration and VAR Model

This study utilises the data of capital market indices of five major ASEAN members in a daily basis, i.e. Indonesian capital market (JKSE or IDX), Singaporean capital market (STI), Malaysian capital market (KLSE), Philippines capital market (PSE), and Thai capital market (SET). The time period of the observation of the indices is from 1 January 2004 to 30 December 2009, after five major ASEAN countries formally signed The ASEAN Bali Concord II of November 2003, which established The ASEAN Economic Community 2020 (AEC). One of the urgent agenda of AEC is to implement financial integration through capital market integration.

The co-integration framework

This paper proposes bivariate level of co-integration, the co-integrating regression between Y_t and X_t, i.e.

$$y_t=\alpha X_t+\varepsilon_t \quad (1)$$

where Y_t; X_t are two non-stationary variables of the same order and ε_t is the error term. According to Engle and Granger (1987), Y_t and X_t are co-integrated if the error term ε_t is stationary; namely, ε_t's mean and variance are constant over time. Bivariate is chosen here since the Hypothesis 1 needs to be tested in a head to head comparison between Indonesia and other four major capital market in ASEAN members; and then what the advanced conditions of Indonesian capital market are, with respect to co-integration modeling as a tool to find long run relationship with capital market of Singapore, Malaysia, Philippines, and Thailand. Based on standard form of bivariate co-integration, this paper runs four co-integrating regression equations:

$$y_I=\alpha+\beta X_S+e_t \quad (2)$$
$$y_I=\alpha+\beta X_M+e_t \quad (3)$$
$$y_I=\alpha+\beta X_P+e_t \quad (4)$$
$$y_I=\alpha+\beta X_T+e_t \quad (5)$$

where Y_I represents the Indonesian stock indices, X_S is Singaporean stock indices, X_M is Malaysian stock indices, X_p is Philippines stock indices, and X_T is Thai stock indices, while ε_t is the error term. This procedure aims to estimate the four equations above using Ordinary Least Squares (OLS) and then test the OLS results of e_t, error term using Dickey-Fuller (DF) test or also called the unit root tests. One basic assumption of DF test is that error terms need to be

homoscedastic and independent. The general model of DF to test stationary or not of error term or e_t from OLS result of co-integrating regression in equation (2), (3), (4), and (5) is:

$$\Delta e_t=(\alpha\text{-}1)e_{t\text{-}1}+\varepsilon_t \qquad (6)$$

where Δe_t and $e_{t\text{-}1}$ are error terms of bivariate Co-integration model. So that the test amounts to:

$$H_0:\alpha\text{-}1=0$$
$$H_1:\alpha\text{-}1<0$$

If the null hypothesis is accepted, there is no co-integration. However, if the null hypothesis is rejected, co-integration exists. If the null hypothesis rejected or the series contains a unit root problem and thus is non-stationary, then the same test on the first difference of the series will be applied. The more negative the value of ADF test rather than its critical value (1% level, 5% level, and 10% level), the null hypothesis is strongly rejected and there is co-integration between two error term series and vice versa (Brooks, 2008).

The procedure and technique of testing vector autoregressive (VAR) framework

Step 1: Dickey-Fuller (DF) test
DF test is applied in context of checking the data is stationary or non stationary. It must avoid the unit roots problem, it means the data is non stationary.

Step 2: VAR model in standard form
A VAR system of order k, denoted as VAR (k), with n variables can be expressed in the following form:

$$y_t=a+\Theta_1 y_{t\text{-}1}+.....+\Theta_k y_{t\text{-}k}+e_{nt} \qquad (7)$$

where $\Theta_k=\begin{bmatrix}\theta_{1\,1,k} & \ldots\ldots\ldots & \theta_{1n,k}\\ \theta_{n1,k} & \ldots\ldots\ldots & \theta_{nn,k}\end{bmatrix}$

and $y_t=(y_{1t}, y_{2t},.....,y_{nt})$

In this study induced a five-variable (n=5) case with number of lags (k) equal to one, then based on equation (7), the VAR model can be performed and simplified with different notation. y_{nt} with n=5 will be replaced to be different notation as $R_{I,t}$; $R_{S,t}$; $R_{M,t}$; $R_{P,t}$; $R_{T,t}$, are the market returns series of Indonesia, Singapore, Malaysia, Philippines, Thailand, respectively, or as the dependent variables. α_n with n=5 will be replaced to be another notation as α_I, α_S, α_M, α_P, α_T. $\theta_{nn,k}y_{nt\text{-}1}$ t-1 will be replaced to be different notation as 5x1 vector:

$$\begin{bmatrix}\alpha_{II}R_{I,t-1}+\alpha_{IS}R_{S,t-1}+\alpha_{IM}R_{M,t-1}+\alpha_{IP}R_{P,t-1}+\alpha_{IT}R_{T,t-1}\\ \alpha_{IS}R_{S,t-1}+\alpha_{SS}R_{S,t-1}+\alpha_{SM}R_{M,t-1}+\alpha_{SP}R_{p,t-1}+\alpha_{ST}R_{T,t-1}\\ \alpha_{IM}R_{M,t-1}+\alpha_{MS}R_{S,t-1}+\alpha_{MM}R_{M,t-1}+\alpha_{MP}R_{P,t-1}+\alpha_{MT}R_{T,t-1}\\ \alpha_{IP}R_{P,t-1}+\alpha_{PS}R_{S,t-1}+\alpha_{PM}R_{M,t-1}+\alpha_{PP}R_{P,t-1}+\alpha_{PT}R_{T,t-1}\\ \alpha_{IT}R_{T,t-1}+\alpha_{TS}R_{S,t-1}+\alpha_{TM}R_{M,t-1}+\alpha_{TP}R_{T,t-1}+\alpha_{TT}R_{T,t-1}\end{bmatrix}$$

where the equations above are the independent variables those have own past returns and past returns of other markets lagged a certain number of times. e_{nt} will be $e_{I,t}$; $e_{S,t}$; $e_{M,t}$; $e_{P,t}$; $e_{T,t}$, , are the residual series of $R_{I,t}$; $R_{S,t}$; $R_{M,t}$; $R_{P,t}$; $R_{T,t}$, respectively. Now,

$$\begin{bmatrix}R_{I,t}=\alpha_I+\alpha_{I,I}R_{I,t-1}+\alpha_{I,S}R_{S,t-1}+\alpha_{I,M}R_{M,t-1}+\alpha_{I,P}R_{P,t-1}+\alpha_{I,T}R_{T,t-1}+e_{I,t}\\ R_{S,t}=\alpha_S+\alpha_{I,S}R_{S,t-1}+\alpha_{S,S}R_{S,t-1}+\alpha_{S,M}R_{M,t-1}+\alpha_{S,P}R_{p,t-1}+\alpha_{S,T}R_{T,t-1}+e_{S,t}\\ R_{M,t}=\alpha_M+\alpha_{I,M}R_{M,t-1}+\alpha_{M,S}R_{S,t-1}+\alpha_{M,M}R_{M,t-1}+\alpha_{M,P}R_{P,t-1}+\alpha_{M,T}R_{T,t-1}+e_{M,t}\\ R_{P,t}=\alpha_P+\alpha_{I,P}R_{P,t-1}+\alpha_{P,S}R_{S,t-1}+\alpha_{P,M}R_{M,t-1}+\alpha_{P,P}R_{P,t-1}+\alpha_{P,T}R_{T,t-1}+e_{P,t}\\ R_{T,t}=\alpha_T+\alpha_{I,T}R_{T,t-1}+\alpha_{T,S}R_{S,t-1}+\alpha_{T,M}R_{M,t-1}+\alpha_{T,P}R_{T,t-1}+\alpha_{T,T}R_{T,t-1}+e_{T,t}\end{bmatrix} \qquad (8)$$

from points above create VAR model 5 x 1 vector as following equation (8):

Step 3: Akaike Information Criteria (AIC)
Fabozzi et al. (2007) informed that the purpose of the AIC is to avoid excess fitting of the model by selecting the minimum of AIC value.

Step 4: Innovation accounting and the analysis
The innovation accounting will consist of the impulse response function and variance decomposition. The impulse response function is a practical way to visually represent the behavior of $R_{I,t}$; $R_{S,t}$; $R_{M,t}$; $R_{P,t}$; $R_{T,t}$ series in response to the impulse various shocks (Enders, 2004). Then, the variance decomposition or the forecast error variance decomposition tells us the proportion of the movements in a sequence due to its own shocks versus shocks to the other variable (Enders, 2004).

Result and Discussion

Co-integration analysis

Referring to table 2, and based on parameter of adjusted R-squared, JKSE or IDX and STI have a quite high relationship. However, according to parameter of ADF test, there is a spurious relationship since the ADF test is greater than its test critical values. So, JKSE or IDX and STI are not co-integrated. Then, JKSE or IDX and KLSE have a high relationship of 0.846712, but this situation is not supported by ADF test that is less than its test critical values. The empirical provides the JKSE or

Table 2. Co-integration findings

	Adjusted R-squared	ADF* test statistic in level form with intercept and trend	Econometric findings
Indonesia (JKSE) and Singapore (STI)	0.620806	-1.277230 (-2.567701)**	*Accepted the null hypothesis*
Indonesia (JKSE) and Malaysia (KLSE)	0.846712	-1.967315 (-2.567703)**	*Accepted the null hypothesis*
Indonesia (JKSE) and Philippines (PSE)	0.371907	-1.401639 (-2.567694)**	*Accepted the null hypothesis*
Indonesia (JKSE) and Thailand (SET)	0.197317	-2.249325 (-2.567695)**	*Accepted the null hypothesis*

* ADF is the Augmented Dickey fuller test
**Test critical values at 10 % level

Table 3. Unit root tests of market returns

	ADF test statistic
JKSE market returns	-33.63723 (-3.434325)**
STI market returns	-10.09452 (-3.434357)**
KLSE market returns	-39.08771 (-3.434325)**
PSE market returns	-37.88534 (-3.434325)**
SET market returns	-43.77289 (-3.434325)**

**Test critical values at 1 % level

IDX and KLSE are also not co-integrated or have spurious relationship. The weaker relationship is shown by JKSE or IDX and PSE, that is 0.371907, adjusted R-squared. ADF test indicates there is no co-integration between JKSE or IDX and PSE. Those findings display JKSE or IDX and SET have low relationship and no co-integration between them.

VAR analysis

Table 3 is related to Augmented Dickey-Fuller (ADF) test statistics for all market returns at 1% level of test critical values which reject the null hypothesis because all values are greater than its test critical value. These are called stationary, i.e. the data are not indicated to have a unit root problem and may proceed them as inputs for VAR model in its standard form. And the best appropriate model regarding AIC is VAR (1) or VAR order 1 that has minimum value at 7.185741.

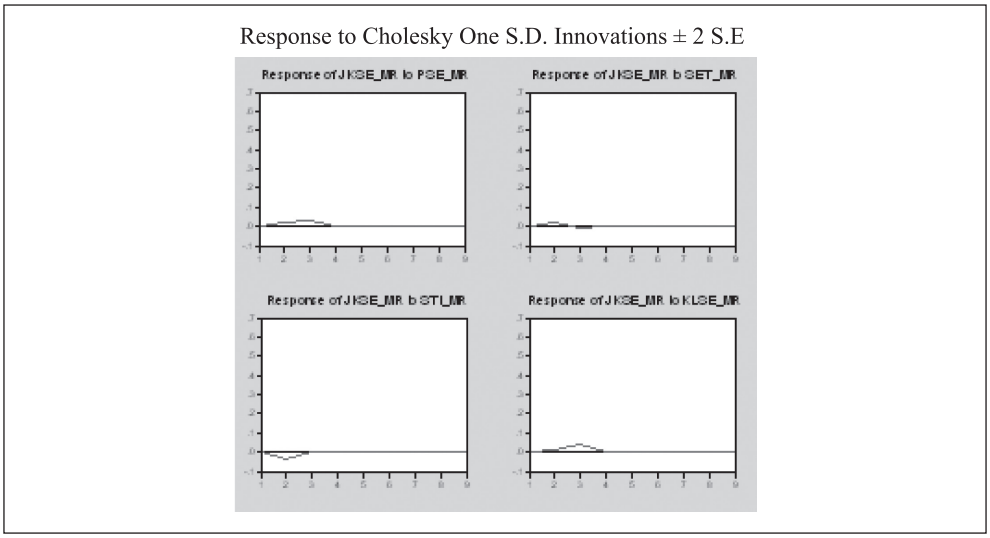
Table 4 will explain that there are no co-movements between JKSE or IDX and STI, KLSE, PSE, or SET. Why is that happened? Because of the negative signs of STI, KLSE, PSE, and SET are signaling that JKSE or IDX to others have opposing market returns movement. These findings describe that when JKSE or IDX market returns are bullish, the others are bearish or vice versa. This implies that there are market inefficiencies which related to unpredictable of market returns, not similar risks factors, and JKSE or IDX over others will be asset substitution. This is good for investors who love arbitrage and abnormal market returns but worse for achieving capital market integration in line with ASEAN purpose through AEC 2020 scheme.

Table 4. Co-movement market returns estimation analysis between JKSE and others based on VAR (1) estimation

	STI	KLSE	PSE	SET
JKSE	-0.018167*	-0.022670*	-0.016894*	-0.000814*

*Coefficients from regression VAR order 1 or VAR (1)

Figure 1. The JKSE market returns impulse response function



The impulse response function has related to the mechanism of the regional transmission of capital market movements (Maghyereh, 2006). The speed with which innovations is a particular market are transmitted to the other markets in the system indicate the responsiveness of markets and the efficiency with which *"new information or innovation"* is transmitted among markets. In another word, *"new information or innovation*" can be called as "*a shock"*. Figure 1 is composed of vertical and horizontal axis. The vertical axis is percentages points and the horizontal axis is period. The period will be 9 periods that each period consist of 1565-days divided by 9 periods. So, 1 period in this term is 174-day steps ahead. Figure 1 presents that response of JKSE or IDX market returns on STI market returns has range along 0% which is a few above at 0% and a few below at 0%. In period 1 (174-days) there is no positive shock or new information or innovation came from STI to influence the JKSE or IDX. And shortly, during period 2 (348-days) until period of 9 (1563-days), the shocks are very small amount fluctuation around 0%. The innovations or shocks from the STI market returns cannot affect the JKSE or IDX market returns in any periods, therefore there is almost no dynamic response from the JKSE or IDX on behaviour of STI market returns. The previous situation will be alike with others where JKSE or IDX cannot be affected by dynamic of KLSE, PSE and SET.

Recall from Enders (2004) about the variance decomposition or the forecast error variance decomposition that he told the proportion of the movements in a sequence due to its own shocks versus shocks to the other variables. The forecast error variance decomposition allows the relative importance of each market in generating unexpected variations in the returns on its own market and the other markets to be measured over different time horizons (Maghyereh, 2006).

The values from the table 5 are given in the 9 periods that 1 period is composed of 174-day steps ahead and each row displays the percentage of variance decomposition that will be explained by the JKSE market returns in the column heading. In period of 2, JKSE market returns have percentage of error variance at 99.44163 and then in sequence amount of 0.340311, 0.106210, 0.066609, and 0.045236 explained by STI, the second one is SET, the third is PSE and the fourth is KLSE market returns. But the situation changed in period 3 (522-day), the JKSE market returns percentage of error variance explained in sequenced by KLSE (0.371665), followed by STI (0.348183), PSE (0.264982), and SET (0.122145). This condition was going stable until 9 periods of lags.

Conclusion

There are three conclusions from result of this study. Firstly, based on co-integration empirical findings that there are no co-integration between Indonesian capital market (JKSE or IDX) with Singaporean (STI), Malaysian (KLSE),

Table 5. Variance decomposition JKSE market returns to others

Variance Decomposition of JKSE_MR:						
Period	**S.E.**	**JKSE_MR**	**STI_MR**	**KLSE_MR**	**PSE_MR**	**SET_MR**
1	0.652534	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.663308	99.44163	0.340311	0.045236	0.066609	0.106210
3	0.665093	98.90923	0.345970	0.366248	0.258005	0.120550
4	0.665197	98.89303	0.348183	0.371665	0.264982	0.122145
5	0.665210	98.88998	0.350378	0.371674	0.265252	0.122717
6	0.665210	98.88985	0.350408	0.371735	0.265276	0.122730
7	0.665210	98.88984	0.350411	0.371737	0.265277	0.122731
8	0.665210	98.88984	0.350411	0.371737	0.265277	0.122731
9	0.665210	98.88984	0.350411	0.371737	0.265277	0.122731

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Philippines (PSE), and Thailand (SET). These empirical findings are a quite in line with studies by Durrand et al. (2001) where these markets (ASEAN capital markets) are integrated with global markets, specifically with US. This shows that JKSE is much more integrated with US rather than STI, KLSE, PSE, or SET. To support the previous statements, this study also refers to the findings of Janor and Ali (2007), which found that Japan is co-integrated with Philippines and Thailand by using bivariate co-integration. Moreover, they also found that specifically Singapore is co-integrated with Indonesia, Malaysia and Thailand, except Philippines. And Malaysia is co-integrated with Thailand. Ultimately, Japan is co-integrated with all the ASEAN countries except Singapore. Therefore, the bivariate co-integration analysis infers that JKSE and others have a lower level of integration because of the difference co-integrated segmentation.

Secondly, based on the VAR empirical findings, there is no co-movement between JKSE and STI, KLSE, PSE, or SET. Why does it happen? Because the negative signs of STI, KLSE, PSE, and SET signify that JKSE have opposite market returns movement to others. These findings describe that when JKSE market returns is bullish, the others are bearish and vice versa. These imply that there are market inefficiencies which are related to the unpredictability of market returns, disparate risk factors, and JKSE over others can be an asset substitution. This is good for investors who love arbitrage and abnormal market returns but bad for achieving capital market integration in line with ASEAN purpose in accordance AEC 2020 scheme. The innovations or the behaviour some particular shocks from the KLSE, PSE, and SET is not rigorous and by that, no significant response given by JKSE on their shocks. The variance decomposition shows three sub-parameters as proposed by Maghyereh (2006), i.e. *first*, the past information of market returns in the four major ASEAN countries (STI, KLSE, PSE, and SET) are useless to predict JKSE market returns. *Second*, none of the STI or KLSE or PSE or SET play a dominant role as innovations or new information manufacturing to predict JKSE market returns. *Third*, the domestic factors of the fluctuation of JKSE market returns are much significant than its external factors (from STI, KLSE, PSE, and SET) in context of explaining innovations or new information or shocks to JKSE market returns.

Ultimately, Indonesia should postpone its capital market integration to ASEAN capital market integration scheme because there is no co-integration, no co-movement, and no market interdependence between Indonesia and Singapore, Indonesia and Malaysia, Indonesia and Philippines, and also Indonesia and Malaysia.

Research limitation

This evaluation of the readiness of Indonesia capital market only discusses from the perspective of stock indices and market returns movement. The other factors will be assumed constant (*cateris paribus*).

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