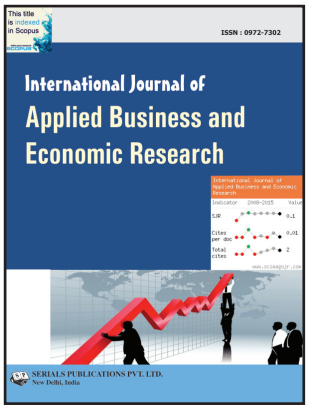

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Regionalization and Financial Integration of India with Southeast Asian Economies – A Cointegration Approach

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ABSTRACT

India adopted the policy of liberalization, privatization and globalization (LPG) in the year 1991. Though the emphasis of economic cooperation shifted from regional or bilateral level to multilateral level after the reforms, the importance of regional economic cooperation still maintained its pioneering position in policy making. And the launching of Look East Policy (LEP) in 1991 has resulted tremendous growth in trade with the Southeast Asian economies. But now the time has come to think beyond cross border trade and focus on cross border investments. It is possible only though the integration of financial markets. Hence, the present study is an attempt to detect financial market integration of India with select Southeast Asian economies. We have used the traditional Engle and Granger technique for test of cointegration and found that India is not financially integrated with any of the Southeast Asian economies except Japan and Taiwan.

Keywords: Regionalization, Liberalization, Privatization, Globalization, Financial Integration, Economic Integration, Financial Globalization, Look East Policy, Indian Economy, Cointegration, Southeast Asian Economies, ASEAN.

1. INTRODUCTION

Economic reforms in India in an actual sense started in the year 1991 with the objective to integrate Indian economy with the developed and emerging economies of the world. And India's integration with Southeast Asian economies has become so much important today not only due to the existence of littoral states across Indian Ocean but also because of the other characteristics the region possesses. First of all, Southeast Asia is undoubtedly the fastest growing region on earth in the twenty first century and even with

rich natural resources, most of the countries in this belt are actually practicing the philosophy of economic cooperation. India can take lessons from their experience as well as participate in the process of a miraculous economic development (Baru, 2001). Secondly, people in India and Southeast Asian economies have similar culture, language and religion (Parameswaran, 2010). Additionally the political environment and economic challenges of these countries also match with Indian economy to much extent (Mishra, 2001). Thirdly, it is also an encouraging fact that the Southeast Asian countries mean no stranger to India since the Indian merchants had trade links with them even during the prehistoric periods (Naidu, 2004). Last but not the least, the whole of the Southeast Asia and India officially started liberalizing their economies almost during the same time period i.e. in the late twentieth century (Wong *et. al,* 2004). Hence, even the stylized features of Indian economy can be assumed to be similar to those of Southeast Asian economies. However, Asia was always of the essence for India. That is why just after India's independence, the first Prime Minister of the country Pandit Jawaharlal Nehru envisioned a bright future of India-Asian cooperation (Morraji and Sharma, 2015). But a deep focus on Southeast Asian economies began in early 1990s with the launch of Look East Policy (LEP) under the leadership of the then Prime Minister of India Narasimha Rao. The LEP has much extent became responsible for significantly increasing international trade, cross country investments and also flow of labor across the region (Lalit, 2015). India further extended its scope by including countries like Australia, New Zealand, China, Japan and South Korea under the purview of LEP (Jyoti, 2013). And after the landslide victory of Narendra Modi as the new Prime Minister of India in May, 2014; the Look East Policy got transformed to Act East Policy by him with the intention to add new dynamism to it (Rajendram, 2014). Evidences of a growing economic integration between India and Southeast Asian economies have already been detected by researchers (De, 2014). The Indian Prime Minister Narendra Modi's recent speeches, first in ASEAN-India Summit, then in East Asia Summit and again in the 50th anniversary of diplomatic ties between India and Singapore also reflect India's enthusiasm to bring investments from the Southeast Asian countries (Pant, 2015). But, this million dollar dream can be fulfilled when India will be financially integrated with the Southeast Asian economies. Financial integration is one of the components of economic integration since the three most important indicators those are broadly considered for assessing the nature and extent of an economy's integration are; trade in goods and services, capital flows and migration of people (Nayar, 2006). And since the economic philosophy of India in its post globalization period strongly advocates the enhancement of economic integration; in specific a study on financial integration can best reveal the progress. In order to make the Indian financial markets integrated with the developed financial markets, different generations of financial sector reform programs have been undertaken in Indian economy. Through these reforms, the controls on trade of financial assets to much extent have been removed so that the prices of these assets will ultimately converge to the running prices in the international financial markets and the law of one price will hold good. India being a high returns market can visualize rapid flows of investible funds from the less returns markets by getting financially integrated. Since India is today looking at the east for attracting investments, the present study has been carried out with the broad objective to discover whether India is financially integrated with the Southeast Asian economies or not. Some of the selected countries from the Southeast Asian region have been taken in this study and the study covered the period from April 1997 to March 2016. Except with Taiwan, the study could not detect empirical evidences of financial integration of India with any of the selected Southeast Asian countries.

2. A THEORETICAL ANALYSIS THROUGH THE REVIEW OF LITERATURE

Financial integration of Indian economy has been extensively researched by many practitioners and academic researchers all around the globe. Jeyanthi and Pandian (2008) studied the efficiency and degree of integration of Indian financial market with the major emerging and developed markets of the world. They considered India along with Malaysia, Taiwan, China and South Korea among the emerging markets and US, UK, Germany, Singapore, Hong Kong and Japan among the developed markets for measuring the degree of financial integration. The study used daily stock price indices of the selected countries and Engle-Granger ADF Test of cointegration for detecting financial integration. The results of the study revealed that India is not cointegrated with any of the selected emerging and developed markets. Studies on financial integration of emerging and developed markets have always attracted researchers. Iwulska *et. al.*, (2012) investigated the role of financial integration in creating growth potential in EU12 and EU candidate countries and found that financial integration enabled them to attract capital flows and also increased vulnerabilities in the region. In the same line of thought Tabak and Lima (2002) analyzed potential linkages between US and the Latin American countries' stock indices by using Johansen Test of cointegration and Granger Causality Test. The results of the study did not detect any cointegration and hence the authors concluded that diversification of investible funds from US to Latin American markets can be beneficial for US investors. Arellano (1993) also examined the presence of financial integration in Chilean and Mexican stock indices by implementing Engle and Granger's cointegration technique and found mixed results. Elfakhani *et. al.*, (2008) in their study included the Arabian emerging markets like Jordan, Tunisia, Kuwait, Morocco etc. for a coingration study with the US market. They found that only three out of eleven sampled markets from the Arabian continent are cointegrated with US market and hence can anticipate benefits from international diversifications for the investors. In the same line of research Adjasi and Biekpe (2006) conducted a cointegration study in African stock markets while Abimanyu *et. al.,* (2008) concentrated on tests of cointegration in the Indonesian capital markets. In both of these studies the tests of cointegration has been conducted to detect the presence of financial integration. In addition to these kinds of studies which largely focused on detecting financial integration of specific countries with either regional counterparts or developed and emerging market economies, there have been such studies that considered common countries in a particular economic block. Aktan *et. al.,* (2009) considered the member countries of one of the fastest growing economic block in the world i.e. bric-a and implemented the vector auto regression (VAR) technique to measure the interdependencies among the financial markets. Similarly Khalid *et. al.,* (2011) measured the level of financial integration among the member countries of SAARC through the tests of cointegration and Granger causality. They found that there exists significant level of integration among the member countries of this economic bloc. But when we talk about Southeast Asian economics, it is beyond member countries of bric or SAARC and there are many studies done earlier that concentrated on almost all major countries of the region. Kabigting and Hapitan (2012) did a similar study by considering the ASEAN 5+3 countries and found increasing levels of integration in the region. Many other researchers understood the importance of financial integration in Asian region and undertook their studies in this context that include Wong *et. al.*, (2004), Linhares (2006), Herwani and Febrian (2008), Subramanian (2008), Mohsin and Rivers (2011), , Biswal *et. al.,* (2011), Cavoli *et. al.,* (2011). Tests of cointegration have been the common tool to detect financial integration in all of these researches. The technique of cointegration has been used to measure the financial integration also for India with its major Asian counterparts. Misra and Mahakud (2009) considered the technique of cointegration as the

most developed one in this connection and tried to assess the extent of financial integration of Indian financial markets by using these techniques. Now, after the review of extant literature a research question that arises is after so much efforts undertaken through Indian policies to bring the Southeast economies closer to India, whether India has become financially integrated or not. And for this purpose, the technique of cointegration seems to be most suitable.

3. RESEARCH DESIGN

The broad objective of this study is to provide evidence on the degree of financial integration of India with Southeast Asian economies on a regional scale. For this purpose, data of financial time series from the selected countries are taken into consideration and such a setting where time series of individual variables can wander extensively and yet some pairs of series may be expected to move so they do not drift too far apart is best studied in the context of a co-integration analysis (Kleimeier and Sander, 2000). Following this, the specific objectives of the present study has been framed as: to detect whether the selected financial time series are cointegrated or not.

After a review of extant literature it has been felt that financial time series data on stock prices might be the most useful in determining the cointegration between India and selected countries. That is why the closing prices of top stock indices in Southeast Asian economies from 01/04/1997 till 31/03/2016 have been taken. The period of study is such chosen because India started liberalizing its economy only in 1991 and the process of liberalization took off only after the launching of second generation of financial sector reforms i.e. in 1997. Hence it is obvious that the impact of regionalization on financial integration can be best measured after year 1997.

The econometric technique chosen in the present study for assessing financial integration of India with the Southeast Asian economies is the analysis of cointegration. Before we discuss the results of cointegration analysis, let us discuss the technicalities involved in it. The whole of the cointegration analysis is based on the concept of stationarity of time series data. A time series that is stochastic in nature is said to be stationary if the mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. A visual plot of the data is the first step to discover whether a time series is stationary or not. From the sets of data we have considered in the present study the impressions from their visual plots reveals that they are trending upwards. It means there seems to be high possibility of having nonstationarity in the time series taken into account in this study. It is because if a time series is stationary, will tend to return to its mean (called mean reversion) and fluctuations around this mean (measured by its variance) will have broadly constant amplitude. If a data set is non-stationary, it is also known popularly as a series suffering from the problem of unit root. Non stationarity and unit root in a time series data are treated as synonymous. But before we go for any analysis, traditionally the natural logarithm is applied to a time series data of the type we are exposed to in the present study. It is done with the following formula:

$$Y_t = l_n\left(\frac{C_t}{C_{t-1}}\right)$$

Where,

Y_t = Daily Continuous Compound Rate of Return

l_n = Natural Logarithm with base e

C_t = Closing Value of the Index for the Current Day 't'

C_{t-1} = Closing Value of the Index for the Previous Day '$t-1$'

This is not done here since it is a prerequisite to have nonstationary series of data in order to assume cointegration and once natural logarithms will be applied to time series data of the present type, the series will no more be nonstationary. Hence, the other step that is generally followed before the test of unit root is the calculation of descriptive statistics in order to assess the nature of time series data is considered. The descriptive statistics like mean, standard deviation, skewness and kurtosis are calculated from the return series in order to know the average performance of the sample indices and stocks over the period of the study and the nature of distribution of the return series. The formula used for the above moments are stated below:

(i) Mean Return $\bar{Y} = \sum_{t=1}^{n} \frac{Y_t}{n-1}$ moment

(ii) Standard Deviation $(\delta) = \left[\sum_{t=1}^{n}\left(\frac{Y_t - \bar{Y}}{n-1}\right)\right]^{1/2}$: 2^{nd} moment

(iii) Skewness $(S) = \frac{\sum_{t=1}^{n}\frac{(Y_t - \bar{Y})^3}{n} - 1}{\delta^2}$: 3^{rd} moment

(iv) Kurtosis $(k) = \frac{\sum_{t=1}^{n}\frac{(Y_t - \bar{Y})^4}{n} - 1}{\left[\sum_{t=1}^{n}\frac{(Y_t - \bar{Y})}{n-1}\right]^2}$: 4^{th} moment

In addition to the above, before applying any kind of statistical technique and econometric modeling to the data, it is essential to know whether the data distribution is normal or non–normal. The present study applies Jarque–Bera (1981) test statistic to know the nature of the return distribution of the securities under study. It is an asymptotic joint test statistic whose formula is given below;

$$\text{JB Statistic JB} = n\left[\frac{s^2}{6} + \frac{(k-3)^2}{24}\right]$$

This test statistic is a chi–square (χ^2) distribution with 2 degrees of freedom. The return distribution will be symmetric and normally distributed if the probability (p) value of the JB statistic is less than the critical 'p' at a given significance level. Now after it here we introduce the unit root test of stationarity with the following model:

$$Y_t = Y_{t-1} + u_t$$

Where u_t is the stochastic error term that follows the classical assumptions, namely, it has zero mean, constant variance δ^2, and is nonautocorrelated. Such an error term is also known as a white noise error term in engineering terminology. Here, if we run the regression,

$$Y_t = \rho Y_{t-1} + u_t$$

and actually find that $\rho = 1$, then we say that the stochastic variable Y_t has a unit root. To find out if a time series Y_t is nonstationary, first we need to run the regression and find out if $\hat{\rho}$ is statistically equal to 1 or equivalently, estimate the next equation as per above and find out if $\hat{\delta} = 0$ on the basis of, say, the *t* statistic. Unfortunately, the *t* value thus obtained does not follow Student's *t* distribution even in large samples.

Under the null hypothesis that $\rho = 1$, the conventionally computed *t* statistic is known as the τ(tau) statistic, whose critical values have been tabulated by Dickey and Fuller on the basis of Monte Carlo simulations. In the literature the tau test is known as the Dickey – Fuller (DF) test, in honor of its discoverers. For theoretical and practical reasons, the Dickey – Fuller test is applied to regression run in the following form:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + u_t$$

Where *t* is the time or trend variable. In each case the null hypothesis is that $\delta = 0$, that is, there is a unit root. If the error term u_t is autocorrelated, we can modify the equation given above as follows:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t$$

Where, for example, $\Delta Y_t = (Y_{t-1} - Y_{t-2})$, $\Delta Y_{t-2} = (Y_{t-2} - Y_{t-3})$, etc. that is, one uses lagged difference terms. When the DF test is applied in the models like the above, it is called augmented Dickey Fuller (ADF) Test. The ADF test statistic has the same asymptotic distribution as the DF statistic, so the same critical values can be used. Then in order to verify the result we can use the Philips and Peron (PP) Test to detect the unit roots in the given time series. Now, if it has been found that the two time series data on stock indices say, Index 1 and Index 2 are proved to be nonstationary or random walk stochastic process and we proceed for a regression analysis like the following:

$$u_t = \text{Index } 1_t - \beta_1 - \beta_2 \text{ Index } 2_t$$

and find that u_t i.e. the linear combination Index $1_t - \beta_1 - \beta_2$ Index 2_t is I (0) or stationary, then we say that the variables Index 1 and Index 2 are cointegrated; so to speak, they are on the same wavelength. It should be noted here that the nonstationarity of the time series data should comply here to the condition that they are going to be integrated of same order i.e. they will become stationary after uniform number of differences. This method of detecting cointegration has been developed by Engle and Granger.

Once the research tools have been selected, next to it the data collection exercise is needed to be performed. For this purpose, the leading countries of Southeast Asia were taken into consideration along with India and the data on their top indices were taken from www.yahoo.finance.com. The following is a description of the countries selected in the present study and the names of their indices from which the daily returns data have been taken.

Table 49.1
Name of the Selected Countries and Stock Indices

Sl. No.	*Name of the Country*	*Index*	*Period*
1	India	BSE30	01/04/1997 to 31/03/2016
2	Hong Kong	Hang Seng	01/04/1997 to 31/03/2016
3	Indonesia	Jakarta Composite	01/04/1997 to 31/03/2016
4	Malaysia	KLSE	01/04/1997 to 31/03/2016
5	Japan	Nikkei 225	01/04/1997 to 31/03/2016
6	South Korea	Seoul Composite	01/04/1997 to 31/03/2016
7	China	Shanghai Composite	01/04/1997 to 31/03/2016
8	Singapore	STI	01/04/1997 to 31/03/2016
9	Taiwan	Taiwan Weighted	01/04/1997 to 31/03/2016

Source: Researchers' Distillation

4. RESULTS AND DISCUSSIONS

Table 49.2 presents the descriptive statistics obtained from the level data like Mean, Median, Maximum, Minimum, Standard Deviation, Skewness, Kurtosis, Jarque-bera, Probability, Sum Square Deviation of the nine variables BSE30, HangSeng, Jakarta Composite, KLSE, Nikkei 225, Seoul Composite, Shanghai Composite, STI and Taiwan Weighted. The average daily closing level price and standard deviation for the stock market indices are almost different for the period under study. The skewness statistics of daily data whether found to be positive or negative, but are less than 1 for all the indices except Shanghai Composite indicating that the level data distribution is almost symmetric. In case of Shanghai Composite, the distribution is asymmetric. Kurtosis is less than three for all the indices again except Shanghai Composite during the period suggests that the underlying data is platykurtic i.e. squat with short tails about the mean, which indicates that the data is not normally distributed. Shanghai Composite kurtosis value is more than three i.e. 5.04 which indicates that the distribution is having high kurtosis. Additionally the application of Jarque-Bera (JB) statistics calculated to test the null hypothesis of normality in the data rejects the normality assumption at 1% level of significance. The results confirm the well known fact that daily level data of the indices under consideration are not at all normally distributed and so they are skewed.

Table 49.2
Descriptive Statistics of Level Data

Statistic	*BSE30*	*Hang Seng*	*Jakarta Composite*	*KLSE*	*Nikkei 225*	*Seoul Composite*	*Shanghai Composite*	*STI*	*Taiwan Weighted*
Mean	12313.41	17456.41	2159.08	1133.04	13129.48	1326.68	2209.26	2441.39	7158.95
Med	12173.67	17546.54	1566.82	978.71	12878.10	1374.32	2044.50	2472.69	7405.82
Max	29681.77	31638.22	5523.29	1892.65	20868.03	2228.96	6092.06	3875.77	10202.2
Min	2600.12	6660.42	256.83	262.70	7086.03	280.00	1011.50	805.04	3446.26
SD	7849.72	5260.48	1676.85	424.07	3426.85	567.14	928.58	703.25	1463.76
Skew.	0.36	–0.01	0.51	0.25	0.29	–0.12	1.37	–0.18	–0.29
Kurt.	1.90	1.89	1.75	1.73	1.91	1.49	5.04	1.82	2.20
JB.	309.81	220.97	457.05	330.18	269.06	412.61	2107.33	278.20	173.94
Prob.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Compiled from E-Views Output

The graphical presentations of the variables seem of having a trend, implying that the data are non-stationary in nature. However, in order to prove it statistically, the Augmented Dickey Fuller (ADF) Test for unit root has been conducted. And to verify the results of ADF Test, the Philips and Peron (PP) Test of stationarity has been conducted. The results of ADF Test and PP Test are given in Table 49.3. In case of Dickey Fuller (DF) Test, there may create a problem of autocorrelation. To tackle autocorrelation problem, Dickey Fuller have developed a test that has three shapes which has been already discussed in the previous section i.e. research design. Here, the ADF Test has been undertaken by considering the constant term as well as the trend. From the application of ADF Test, we come to a conclusion that the level data of selected stock indices are nonstationary and in order to verify the results the PP Test has also been performed which gave similar results. But, when the ADF and PP Tests are again applied to the first differences of the selected indices, they became stationary (See Table 49.4). Hence, it implies that since all the selected indices are nonstationary in their level form and are becoming stationary in their first difference, we may go for a test of cointegration. We have selected the Engle Granger methodology for detecting cointegration in this study.

Table 49.3
ADF & PP Test Results of Level Data

Name of the Index	*ADF Test Results*			*PP Test Results*		
	Computed Value	*Critical Value at 5% Level*	*P Value*	*Computed Value*	*Critical Value at 5% Level*	*P Value*
BSE30	–2.91	–3.41	0.15	–2.77	–3.41	0.22
Hang Seng	–2.81	–3.41	0.19	–2.79	–3.41	0.20
Jakarta Composite	–2.52	–3.41	0.31	–2.48	–3.41	0.33
KLSE	–2.75	–3.41	0.21	–2.79	–3.41	0.20
Nikkei 225	–1.85	–3.41	0.68	–1.75	–3.41	0.72
Seoul Composite	–2.87	–3.41	0.17	–2.87	–3.41	0.17
Shanghai Composite	–2.22	–3.41	0.47	–2.17	–3.41	0.50
STI	–2.83	–3.41	0.15	–2.84	–3.41	0.15
Taiwan Weighted	–3.20	–3.41	0.08	–3.28	–3.41	0.06

Note: Null Hypothesis: There is unit root. Alternative Hypothesis: There is no unit root
Source: Compiled from E Views Output

Table 49.4
ADF & PP Test Results of First Difference

Name of the Index	*ADF Test Results*			*PP Test Results*		
	Computed Value	*Critical Value at 5% Level*	*P Value*	*Computed Value*	*Critical Value at 5% Level*	*P Value*
BSE30	–59.92	–3.41	0.00	–59.86	–3.41	0.00
Hang Seng	–65.17	–3.41	0.00	–65.17	–3.41	0.00
Jakarta Composite	–39.67	–3.41	0.00	–61.02	–3.41	0.00
KLSE	–66.96	–3.41	0.00	–66.94	–3.41	0.00
Nikkei 225	–66.35	–3.41	0.00	–66.44	–3.41	0.00

Name of the Index	*ADF Test Results*			*PP Test Results*		
	Computed Value	*Critical Value at 5% Level*	*P Value*	*Computed Value*	*Critical Value at 5% Level*	*P Value*
Seoul Composite	–63.43	–3.41	0.00	–63.41	–3.41	0.00
Shanghai Composite	–29.70	–3.41	0.00	–63.76	–3.41	0.00
STI	–63.30	–3.41	0.00	–63.41	–3.41	0.00
Taiwan Weighted	–62.31	–3.41	0.00	–62.28	–3.41	0.00

Note: Null Hypothesis: There is unit root. Alternative Hypothesis: There is no unit root
Source: Compiled from E Views Output

Now, we may proceed for a test of cointegration. For pair wise test of cointegration, the precondition is that both the variables should be integrated of same order. Since the selected series of data are nonstationary in the level and stationary in the first differences, it is known to be integrated of order '1'. The level at which the data is found to be stationary is called the order of integration for that data series. Detection of cointegration through the method suggested by Engle and Granger is done by taking the financial time series on a one to one basis. Here, the two variables have been tested for their long run relationship interdependence by means of OLS regression of BSE 30 on any one of the selected indices first and then the selected one on BSE 30. The linear association can be tested between the variables by testing the significance of the β coefficient. As shown in Table 49.5, the β coefficient for regression of BSE 30 on the selected indices is given and for all the cases the *p*-value is 0.00. But there remains the symptom of spurious regression here as the R-squared value in the respective cases is greater than Durbin-Watson statistics. As the regression results are showing symptoms of spurious regression, if the residuals of the model will be found stationary, then it would remain no longer spurious, we can accept the model. If the residual of the model is found stationary, it also mean that variables in the model are cointegrated or they have long-run relationship or equilibrium relationship between them. In other words, the model is a long-run model. After estimating the model, in order to know whether the residual are stationary or not, we run the ADF Test on residual, but we need the Engle Granger critical values i.e. –3.34 at 5% level for the unit root testing. Here, the ADF test statistic is found to be less than -3.34 at 5% level in all the cases except for Nikkei 225 of Japan and Taiwan Weighted of Taiwan, which implies that null hypothesis of the presence of unit root is accepted. It means the residual is not stationary, hence BSE 30 and any of the indices except Nikkei 225 of Japan and Taiwan Weighted of Taiwan are not cointegrated. Further, the regression of the selected indices on BSE 30 has been computed. As shown in Table 49.6, the β coefficient for regression of the selected indices on BSE 30 has been computed and *p*-value is found to be 0.00 for all the cases. But there remains the symptom of spurious regression here as the R-squared value is greater than Durbin-Watson statisitic in all the cases. Then the same procedure of testing for the presence of unit root in the residuals has been followed and it has been found that except Taiwan Weighted of Taiwan, all the other indices are not cointegrated with BSE 30.

Hence, from the above discussion we can say that BSE 30 of India is found to be cointegrated with Nikkei 225 of Japan and Taiwan Weighted of Taiwan. Additionally, cointegration has also been detected between Taiwan Weighted of Taiwan and BSE 30 of India. Here it can be treated as the evidence of financial integration of India with Japan and Taiwan. The Indian capital market is getting affected by Japan and Taiwan, but the positions of Indian capital market is able to affect only the Taiwanese market and not the Japanese market.

Table 49.5
Regression Results with BSE 30 as Dependent Variable

Name of the Index	*β Coefficient*	*P Value*	*R Squared Value*	*DW Statistic*	*ADF Test Statistic for Residual*	*Engle Granger Critical Value (5%)*
Hang Seng	1.35	0.00	0.81	0.00	–3.05	–3.34
Jakarta Composite	4.49	0.00	0.92	0.00	–2.49	–3.34
KLSE	17.64	0.00	0.90	0.00	–2.93	–3.34
Nikkei 225	0.49	0.00	0.04	0.00	–3.41*	–3.34
Seoul Composite	13.08	0.00	0.89	0.00	–3.00	–3.34
Shanghai Composite	5.64	0.00	0.45	0.00	–2.96	–3.34
STI	9.89	0.00	0.78	0.00	–2.32	–3.34
Taiwan Weighted	3.82	0.00	0.50	0.00	–4.12*	–3.34

Note: '*' :- Null Hypothesis that there is unit root is rejected.
Source: Compiled from E Views Output

Table 49.6
Regression Results with BSE 30 as Independent Variable

Name of the Index	*β Coefficient*	*P Value*	*R Squared Value*	*DW Statistic*	*ADF Test Statistic for Residual*	*Engle Granger Critical Value (5%)*
Hang Seng	0.60	0.00	0.81	0.11	–2.97	–3.34
Jakarta Composite	0.20	0.00	0.92	0.00	–2.45	–3.34
KLSE	0.32	0.00	0.89	0.07	–2.38	–3.34
Nikkei 225	0.09	0.00	0.04	0.00	–1.86	–3.34
Seoul Composite	0.06	0.00	0.89	0.00	–3.01	–3.34
Shanghai Composite	0.07	0.00	0.45	0.00	–2.49	–3.34
STI	0.07	0.00	0.78	0.00	–2.20	–3.34
Taiwan Weighted	0.13	0.00	0.50	0.00	–3.62*	–3.34

Note: '*' :- Null Hypothesis that there is unit root is rejected.
Source: Compiled from E Views Output

5. POLICY IMPLICATIONS AND CONCLUSION

It is in the year 1991 only that the Indian economy decided to open up that gave rise to several new challenges and opportunities also. At the very outset of economic reforms economic initiatives at the multilateral level became the priority area. However, if we will talk about economic activities at the regional or bilateral level, then it was taken care of even before economic reforms. Then with the launch of the New Economic Policy (NEP) regionalization started taking new dimensions and the Look East Policy (LEP) undertaken by India actually contributed the most in this direction. The LEP of 1991 focused on Southeast Asian economies including Japan, China, South Korea and ASEAN. Because of it the Southeast Asian nations in an aggregate have become the largest trading partner of India and today the need of the time is to shift the emphasis from cross border trade to cross border investments. And this is possible only through financial integration

with the Southeast Asian counterparts. It is not that sufficient efforts have not put on policy grounds to achieve financial integration of India with the Southeast Asian economies, but the results of our study has revealed that Indian financial markets are integrated with financial markets of Japan and Taiwan only. It is really a disappointing fact. After more than twenty five years of launching of LEP, India is not able to get financially integrated with most of the economic giants of Southeast Asia. Hence, the Government of India should go for a policy interference in this direction so that better level of financial integration can be achieved with the fastest growing economic region of the world i.e. Southeast Asian region.

6. LIMITATIONS OF THE STUDY AND SCOPE FOR FURTHER RESEARCH

There are certain limitations of the present study. First, the present study only considered the stock indices for detecting cointegration, there are many other variables of international financial markets including interest rates that can be taken into account for this purpose. Second, here in this study, the traditional Engle and Granger methodology for detecting cointegration has been used while there is another methodology called the Johansen's technique that can take multiple variables in one go instead of making one to one analysis. Third, the Error Correction Mechanism (ECM) and Vector Auto Regressive (VAR) models have not been implemented in the present study after the analysis of cointegration. ECM and VAR give additional insights to the results from tests of cointegration. Hence, the limitations discussed here are expected to be taken care of in future studies.

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