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**Regional Economic Integration and Convergence in Asia**

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**ABSTRACT**

This paper examines economic integration among some selected Asian economies viz., Japan, ASEAN-5 (Indonesia, Malaysia, the Philippines, Thailand and Singapore), China, India, and South Korea (JACIK) in the context of ongoing initiatives for regional economic cooperation. It analyses macroeconomic performance and existing trade and investment relations, and examines whether per capita incomes of the countries are integrated to a long run relationship. The study finds widely divergent levels of development and considerable variations in macroeconomic structure and performance across the countries. Although trade and investment linkages have increased in recent years, there exists potential for enhancing such linkages through regional cooperation. The cointegration results indicate that the long-run relationship between per capita incomes of the countries has been weak, and the economies are not well integrated. While South Korea and Singapore seem to have shared a common steady-state level of per capita income with Japan, the remaining six countries have been following the steady-state growth paths different from that of Japan. It appears that liberalization of trade and investment policies, which may lead to expansion of trade and investment linkages, could enhance integration among the economies and offer welfare benefits to them.

**Key Words:** *Cointegration, Economic Integration, Convergence, Inter-regional Trade.*

**JEL Classification:** C32, F15, O47, R12.

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## **Regional Economic Integration and Convergence in Asia**

### **1. INTRODUCTION**

Many economies in the East, South and Southeast Asian regions have experienced high growth rates of gross domestic product (GDP) during the last few decades. The high performing Asian economies such as Japan, the four Asian Tigers (Singapore, Taiwan, South Korea, and Hong Kong), and the three Southeast Asian newly industrializing economies (Malaysia, Thailand, and Indonesia) have grown at a significantly high rate. Similarly, the two Asian giants, China and India, have been growing at a high rate since the implementation of economic reforms. Under such conditions, initially poor economies are expected to catch up with the rich ones, and per capita incomes of these economies are expected to converge in the long run.

Successful experiences with regional economic integration in the industrialized countries in Europe and North America have prompted South and Southeast Asian countries to adopt economic integration strategies. The Association of Southeast Asian Nations (ASEAN) decided to set up the ASEAN Free Trade Area (AFTA). South Asian Association for Regional Cooperation (SAARC) has agreed to create a SAARC Free Trade Area (SAFTA). Bilateral free trade agreements between countries have also helped economic integration in the region. Another significant development is Bay of Bengal Initiative for Multi-sectoral Techno-Economic Cooperation (BIMSTEC) involving five South Asian economies (Bangladesh, Bhutan, India, Nepal, and Sri Lanka) and two Southeast Asian countries (Myanmar and Thailand). Moreover, China, Japan, and India are engaged in negotiations of free trade arrangements with ASEAN and South Korea. These are important for broader regional economic cooperation in Asia.

The present paper examines economic integration among the JACIK countries i.e. Japan, ASEAN-5 (Indonesia, Malaysia, the Philippines, Thailand and Singapore), China, India, and South Korea in the context of the ongoing initiatives for regional economic cooperation in Asia. It analyses macroeconomic performance and the existing trade and investment relations, and examines whether per capita incomes of the countries are integrated to a long run relationship. It applies univariate (unit-root) and multivariate (cointegration) time series methods to see whether per capita incomes of the economies are cointegrated. An attempt has also been made to identify the economies that are following or not following a common steady-state path of income. The paper proceeds as follows. While Section 2 provides an overview of macroeconomic performance of the economies, Section 3 analyses economic integration of the economies through trade and investment linkages. Section 4 applies the augmented Dickey–Fuller (ADF) unit-root test and the Maximum Likelihood (ML) method of cointegration, and examines whether there has been any long-run relationship and thus convergence in per capita incomes of the economies. It also identifies the economies that are converging to or diverging from a common steady-state path of income. Section 5 summaries the

main findings and draws conclusion. The data set used in the paper was compiled from Heston et al. (2004)'s *Penn World Table Version 6.1* (PWT-6.1) and various issues of *World Development Indicators* (WDI).

## 2. MACROECONOMIC PERFORMANCE

This section evaluates macroeconomic performance of the economies in the domestic and external sectors. Tables 1 and 2 present data relating to select macroeconomic indicators. The tables reveal significant cross-country variations in all indicators of macroeconomic structure and performance of the economies. There have been substantial variations in the level and growth rates of gross domestic product (GDP) and per capita gross national income (GNP). Judged by the level of per capita GNP, Japan is the richest, and India is the poorest among the economies in both the years. Japan's per capita income (US\$40,940) was more than 107 times higher than India's per capita income (US\$380) in 1996. Although the gap declined in 2004, Japan's per capita income (US\$37,050) was about 60 times higher than India's per capita income (US\$620). However, the annual average growth rate of GDP and per capita GNP in Japan was the lowest in all considered periods. While China was the fastest growing, Japan was the slowest growing economy. However, Japan's near stagnation in GDP growth has occurred at a very high level of per capita income. The finding of differential growth rate of per capita income across the countries has the implication that relatively poor economies could catch up with Japan in the long run.

All the economies except Singapore experienced structural changes during 1990-2004, as the structure of output measured in terms of relative contribution of different sectors to GDP changed significantly. Table 2 shows that the contribution of the agricultural and industrial sectors has declined towards the services sector in Japan, South Korea, India and the Philippines. While the share of China's agricultural sector has declined in favor of the industrial and services sectors, the contribution of Indonesia's agricultural sector has declined in favor of the industrial sector only. Malaysia and Thailand experienced a decline in the share of agricultural and services sectors in favor of the industrial sector.

Moreover, there are significant cross-country variations in the structure of output. Table 2 reveals that in 2004, 68 percent of Japan's GDP came from the services sector, 31 percent from the industrial sector, and only 1 percent from the agricultural sector. Similarly, in Singapore, 65 percent of GDP was contributed by the services sector and the remaining 35 percent by the industrial sector. In South Korea, while only 3 percent of GDP came from the agricultural sector, 41 percent and 56 percent came from the industrial and services sectors respectively. In the rest of the countries, the share of the agricultural sector in GDP had been lying between 10 percent (Malaysia and Thailand) to 21 percent (India). The industrial sector was between 27 percent in India and 50 percent in Malaysia, and the services sector was between 40 percent (Malaysia) to 54 percent (Philippines). The

differential economic structure and performance of the economies signifies the existence of complementarities among the countries, which offers scope for possible economic integration through cooperation.

A comparative study of the performance of the economies in the external sector reveals significant cross-country variations in the level and growth of exports and imports as well as in the trade-GDP ratio (openness index). The data presented in Table 4 shows that in spite of being highly developed, the Japanese economy has been much less dependent on the external sector than the other economies, as indicated by its low trade-GDP ratio. Japan's total trade (exports plus imports of merchandise and services) constituted 21.84 percent of GDP in 1990 and 27.02 percent in 2004. However, Japan's total trade was the highest in 1990 and the second highest in 2004. Japan has been one of the major players in global trade, and has been ranked among the top 5 global exporters and importers in goods and services.

Due to large-scale liberalization and the opening up of the economy, China's external trade increased remarkably, leading to a significant improvement in its trade-GDP ratio from 35.34 percent in 1990 to 66.68 percent in 2004. China outperformed Japan, as its trade in goods and services (US\$1,288.2 billion) exceeded Japan's trade (US\$1,249.3 billion) in 2004. All other countries also experienced significant increases in exports and imports (Table 3). Although India had been following inward-looking economic policy up to 1990, it has been implementing comprehensive economic reforms involving large-scale liberalization and structural adjustment programmes since 1991. India has also been following the Look East Policy as a part of the reform and globalization process to strengthen its integration with the world economy. As a result, India's performance in exports and imports improved significantly, and the trade-GDP ratio increased from 16.47 percent in 1990 to 36.68 percent in 2004, despite the ratio appearing low compared with other economies. Singapore, Malaysia and Thailand have placed strong emphasis on external trade and have been following outward oriented growth strategy. These countries are highly dependent on the external sector, illustrated by the high trade-GDP ratios (Table 4).

The analysis based on the estimates of annual average growth rate of exports and imports of goods and services of the economies during different periods provides further insights. There are significant variations in the growth rates of exports and imports among the countries (Table 4). China experienced the highest growth rate of exports during 1990-2000 and 2000-04. It also experienced the highest growth rate of imports during 2000-04 and the second highest during 1990-2000. Due to large-scale liberalization in external trade and the opening up of its economy to the global economy, India also experienced high growth rate of both exports and imports during these periods, although the growth rates of imports were higher than those of exports. South Korea experienced high growth rate of exports and imports, with the exports growth rate higher than that of imports in both the periods. On the other hand, Japan experienced the lowest growth rate of both exports and imports during both

the periods. The rest of the economies experienced varying rates of growth in exports and imports of goods and services during these periods.

### **3. TRADE AND INVESTMENT LINKAGES**

Economic integration may be evaluated in terms of (i) the barriers to integration; and (ii) the outcomes of integration. Due to difficulties in measuring the barriers to integration, economic integration has often been evaluated using the second approach which considers the effects of integration on trade and capital flows. We have evaluated economic integration among the selected economies in terms of trade and capital flows (foreign direct investment).

#### ***3.1 Trade in Goods and Services***

Trade-GDP ratio is the most widely used measure of product market integration, although this indicator involves some limitations. Judged by this criterion, Singapore, Malaysia, Thailand, the Philippines, South Korea and Indonesia are some of the countries, highly integrated with the world economy (Table 4). This way of evaluating economic integration may, however, yield misleading conclusions, since this indicator may provide an incorrect picture due to its inherent limitations. For example, rich countries appear to be less integrated than they really are because they devote more of their output and consumption to services, which are harder to trade. They also tend to have higher prices for services, which makes them seem less integrated by their trade-GDP ratios. Again, large countries tend to trade less than small countries because they contain more diversified resources. Countries with an abundance of labour usually undertake more processing and assembly trade, with high content of imported intermediate imports and less value added per unit of gross output (WDI, 2001). There are some other measures of economic integration: (a) ratio of total merchandise trade to total goods GDP, (b) ratio of exports to gross output in the manufacturing sector, and (c) incidence of applied tariff rates of the manufacturing goods. These measures also have some loopholes, and share the limitations of the trade-GDP ratio as product market integration.

Due to these limitations, we have also evaluated economic integration in terms of direction and growth of trade among major regions in Asia. Table 5 provides data relating to the direction of trade and shares of different Asian regions in world trade. In 2004, exports from Japan constituted 6.4 percent of world trade; 4.5 percent went to all high-income importers, only 1.5 percent to East Asia and the Pacific, and 0.1 percent to South Asia. China's exports constituted 6.7 percent of the world trade; 5.6 percent went to high-income countries, and the remaining 1.1 percent to low and middle-income economies. Although the growth rates of exports from some of the Asian regions and individual countries of Asia were quite high during 1994-2004 (Table 6), exports within the trading blocs of the Asian region were not impressive. Table 7 shows that while the countries in the trading blocs such as APEC, EU and NAFTA confined their exports mainly within these blocs, exports within

the trading blocs like ASEAN, BA, and SAARC were not that significant. Moreover, exports by these three blocs accounted for only a minimal percentage of world exports. The trading blocs like APEC, EU and NAFTA captured the major share of world exports. This data seems to indicate that the selected Asian economies have not been strongly integrated through trade, and there exists scope for increasing economic cooperation among them through expansion of trade. Implementation of the agreements for a Free Trade Area (FTA) could go a long way to encourage intra-regional as well as inter-regional trade.

### **3.2 Foreign Direct Investment**

The data presented in Tables 8 and 9 provide some impression on economic integration of the countries through foreign direct investment (FDI). Table 8 shows that the absolute value of FDI has increased significantly in all the countries except Indonesia, Philippines and Thailand during 1990-2004. Moreover, net inflow of FDI as a percent of GDP has increased in all the countries except Indonesia, Malaysia, Philippines and Thailand. There are, of course, cross-country variations in the amount of FDI flows and FDI-GDP ratios. Nevertheless, analyzing the pattern of FDI flows according to source-country (Table 9), we observe that only a very small percentage of FDI came to the individual ASEAN countries and India through intra-regional flows, and the major part came from the rest of the world during 1995-2001. Japan has been an important source of FDI flows to the ASEAN-5 nations, particularly to Indonesia, Philippines and Thailand. However, only 0.3 percent of the FDI flows to India came from Japan during 1991-95, and thereafter there has been no FDI flows from Japan to India (for details, see Athukorala, 2006). The USA and EU-15 have been the important sources of FDI flows to most of the ASEAN economies and India. The current trends in FDI inflows according to source-country and the patterns of intra-regional flows suggest that FDI links among the Asian countries have been weak, and there exists potential for enhancing such flows through regional cooperation. Overall, our analysis of the linkages among the countries through trade and investment flows suggests that integration has increased in recent decades, but there exists considerable scope for strengthening and deepening such linkages. With trade and investment liberalization in the selected economies, regional economic cooperation can play an important role in improving the regional trade and investment flows.

## **4. CONVERGENCE IN INCOME**

Against this background, we examine whether per capita incomes of the selected countries have been converging or diverging. Based fundamentally on the assumption of diminishing returns to capital, the convergence hypothesis says that the growth rate in the country with lower per capita income should be higher than in the country with higher per capita income. When this happens, inter-country differences in per capita income will disappear over time [Barro and Sala-i-Martin (1992, 1995), and

Sala-i-Martin (1996)]. It has been argued that trade and capital flows, and technology transfer help the convergence process through their positive effects on growth of income. Strong trade and investment linkages may lead to the integration of per capita incomes among countries. However, since the existing trade and investment linkages among the selected Asian countries are not strong, per capita incomes of the countries are expected to be weakly integrated. We have undertaken tests to examine the degree of economic integration among the countries. The convergence research conducted in the past used four different approaches the cross-section, panel, time-series, and distribution [see Islam (2003)]. We have used the time-series approach.

Under the time series framework, regional integration or convergence requires that per capita incomes of the countries be cointegrated, and there exists a long-run relationship among them. We have examined regional convergence of per capita incomes, applying the Maximum Likelihood (ML) method of cointegration proposed by Johansen (1988) and Johansen and Juselius (1990). We have applied both the *trace* ( $\lambda$ -trace) and *maximum eigen value* ( $\lambda$ -max) tests statistics [for details, see Johansen and Juselius (1990)]. The data on real per capita GDP (US\$) at constant 1996 prices (chain series) for 1960-2000, compiled from PWT-6.1, are used in the cointegration exercise.

Before conducting the cointegration tests, we have examined the univariate time-series properties of the data and whether all the income series are non-stationary and integrated of the same order. We have performed this using the augmented Dickey-Fuller (ADF) test developed by Dickey and Fuller (1979, 1981). We have conducted the test on the level and first-difference of the series. If the unit-root null is rejected for the first-difference of the series but cannot be rejected for the level, then we say that the series contains one unit root and is integrated of order one,  $I(1)$ . The estimated test statistics from the ADF test for the per capita income series in level and first-difference are reported in Table 10. All the series were transformed in natural logarithm. The optimal lag length was selected using the Akaike Information Criterion (AIC). The table reveals that the null hypothesis of non-stationarity cannot be rejected for the income series in level but can be rejected for all the series in first-difference. The series are therefore non-stationary in their levels but stationary in first-differences, implying that the series contain a single unit root and are integrated of order one.

#### **4.1 Cointegration Results**

We have evaluated regional economic integration by investigating linear long-run relationships between per capita incomes of the selected economies. The results of the multivariate cointegration tests for regional integration of per capita incomes are presented in Table 11. While the trace test ( $\lambda$ -trace) shows two cointegrating relationships, the maximum eigen value test ( $\lambda$ -max) shows only one cointegrating vector. Since the number of income series included in the vector autoregression (VAR) is nine, and there are one or at most two cointegrating vectors, the number of common stochastic trends turns out to be seven or eight. The number of common stochastic trends is determined by

subtracting the number of cointegrating vectors from the dimension of the impact matrix given by the number of income series or variables ( $n$ ) included in the VAR. In general, with  $n$  income series and  $r$  cointegrating vectors, there will be  $n-r$  different stochastic trends [Stock and Watson (1988)]. It may be noted that  $n$  income series can be organized into  $(n^2-n)/2$  pairs. However, since one can find at most  $n-1$  cointegrating vectors with  $n$  number of variables, all but  $n-1$  pairs are redundant.

The finding of only one or two cointegrating vectors implies that the series contain multiple stochastic trends and therefore, are not cointegrated pair-wise. Pair-wise cointegration (i.e., when all the series share a common stochastic trend) is a stronger proposition than the general notion of integration as implied by the presence of at least one cointegrating vector in a multivariate system. This signifies that the number of cointegrating vectors is an important indicator of the extent of co-movement of incomes. An increase in the number of cointegrating vectors implies an increase in the strength of regional integration. The findings of only one or two cointegrating vectors and hence, seven or eight stochastic trends suggest that the long-run relationship between per capita incomes of the countries have been weak, and the economies are not strongly integrated.

#### 4.2 The Converging and Diverging Economies

The above exercise does not provide any information about which of the countries are following or not following a common trend in per capita income. In other words, it does not say anything about the countries that are converging to or diverging from a common steady-state path of per capita income. To identify the countries which are following or not following a common trend, we have undertaken tests of the convergence hypothesis by investigating the univariate time series (unit-root) properties of the *differential of per capita income* of each of the countries relative to a benchmark country (henceforth, *income differential*). The primary objective of such an exercise is to identify convergence clubs. We have considered Japan the benchmark country due to the obvious reasons that Japan belongs to a high-income group of countries, and it is the richest one among the selected countries. It has also been maintaining close economic relationship with many Asian countries. Hence, it seems interesting to examine whether per capita incomes of the other economies have been converging towards, or diverging from, Japan's per capita income during 1960-2000.

Convergence of a country's per capita income to that of Japan requires that its income differential is stationary. In this case, the test for convergence of per capita income is translated to a test for the stationarity of income differential. A test of the null hypothesis of no convergence (non-stationarity) against the alternative of convergence (stationarity) is undertaken. The null hypothesis of no convergence is

$$H_0: X_{i,t} = [\ln(Y_{i,t}) - \ln(Y_{j,t})] \sim I(1), \quad i = 1, 2, \dots, 8.$$

The alternative hypothesis of convergence is

$$H_1: X_{i,t} = [\ln(Y_{i,t}) - \ln(Y_{j,t})] \sim I(0), \quad i = 1, 2, \dots, 8.$$



where,  $X_{i,t}$  is the logarithm of per capita income of the  $i$ th country relative to Japan's per capita income;  $\ln(Y_{i,t})$  and  $\ln(Y_{j,t})$  respectively denote the logarithms of the  $i$ th country's and Japan's per capita incomes.  $I(1)$  and  $I(0)$  are respectively integrated of order one (non-stationary) and zero (stationary) processes. We have used the augmented Dickey-Fuller (ADF) method to test for stationarity of the income differentials.

The results obtained from applying the ADF test for evaluating the unit root property of income differentials are reported in Table 12. It can be seen that the null hypothesis of a unit root can be rejected for two countries only (South Korea and Singapore), implying that the income differentials of these countries are stationary, and they have shared a common steady-state level of per capita income with Japan. For the remaining six countries (China, India, Indonesia, Malaysia, Philippines and Thailand), we fail to reject the null hypothesis of a unit root in income differentials. This suggests that income differentials of these economies are non-stationary, and they have been following steady-state growth paths different from that of Japan. Thus, the countries appear to be organized into two convergence clubs – one club with two countries (South Korea and Singapore) has been converging to, and the other club consisting of the six countries has been diverging from the steady-state path of per capita income experienced by Japan.

## 5. SUMMARY AND CONCLUSIONS

We have examined economic integration among the JACIK countries in the context of ongoing initiatives for regional economic cooperation in Asia. We have evaluated macroeconomic performance and the existing trade and investment relations, and examined whether per capita incomes of the countries are integrated in a long-run relationship. The results revealed significant cross-country variations in the macroeconomic structure and performance of the economies. The analysis of the linkages through trade and investment flows suggest that economic integration has increased in recent decades, but there exists considerable scope for strengthening and deepening such linkages. The current trend and the patterns of intra- and inter-regional flows of exports and imports and FDI suggest that there exists potential for enhancing such flows through regional economic cooperation. The implementation of the agreements for a Free Trade Area (FTA) could improve intra-regional as well as inter-regional movements of trade and investment.

The results of the multivariate cointegration tests for regional integration revealed that the long-run relationship between per capita incomes of the countries has been weak, and the economies are not well integrated. While South Korea and Singapore seem to have shared a common steady-state level of per capita income with Japan, the remaining six countries (China, India, Indonesia, Malaysia, Philippines and Thailand) have been following steady-state growth paths different from that of Japan.

These results have important implications for regional economic integration. The divergent levels of development and differential macroeconomic structures and performances of the economies

signifies that there are complementarities between the JACIK countries' production and trade structures that may be exploited through economic cooperation for mutual benefits. Naturally, liberalization of trade and investment policies, which may lead to expansion of trade and investment linkages among the countries, could improve economic integration among them. Studies conducted by Research and Information System for Developing Countries (RIS) in a computable general equilibrium framework demonstrated that trade liberalization in Regional Trading Agreement (RTA) framework in the JACIK countries could yield welfare gain to the extent of US\$147.42 billion. Moreover, when trade liberalization is combined with investment liberalization and mobility of skilled labour, the gains could be US\$210.44 billion (Table 13). More importantly, all the JACIK countries individually, and even the rest of the world, can gain welfare benefits from such integration [for details, see Kumar (2006)]

**Table 1: Growth in Income**

Country	Per Capita GNP (US\$)		Annual Average Growth rate of Per Capita GNP (%)		Gross Domestic Product (GDP) (US\$ million)		Annual Average Growth rate of GDP (%)	
	1996	2004	1995-96	2003-04	1990	2004	1990-2000	2000-04
China	750	1500	8.9	9.4	354644	1931710	10.6	9.4
India	380	620	5.1	5.4	316211	691163	6.0	6.2
Indonesia	1080	1140	5.8	3.7	114427	257641	4.2	4.6
Japan	40940	37050	3.6	2.5	2970043	4622771	1.3	0.9
South Korea	10610	14000	5.6	4.1	252622	679674	5.8	4.7
Malaysia	4370	4520	5.8	5.2	44024	118318	7.0	4.4
Philippines	1160	1170	4.5	4.2	44331	84567	3.4	3.5
Singapore	30550	24760	5.6	7.0	36638	106818	7.7	2.9
Thailand	2960	2490	4.4	5.3	85345	161688	4.2	5.4

*Note:* Figures are at constant 1996 prices.

*Sources:* World Development Indicators 1998, 2006.

**Table 2: Structure of Output (% of GDP)**

Country	Agriculture		Industry		Services	
	1990	2004	1990	2004	1990	2004
China	27	13	42	46	31	41
India	31	21	28	27	41	52
Indonesia	19	15	39	44	41	41
Japan	2	1	39	31	58	68
South Korea	9	3	43	41	48	56
Malaysia	15	10	42	50	43	40
Philippines	22	14	34	32	44	54
Singapore	0	0	35	35	65	65
Thailand	13	10	37	44	50	46

*Note:* The estimates are based on figures at constant 1996 prices.

*Sources:* World Development Indicators 1998, 2006

**Table 3: Performance of External Trade**

Country	Exports of Goods and Services (US\$ million)		Imports of Goods and Services (US\$ million)		Total Trade in Goods and Services (US\$ million)	
	1990	2004	1990	2004	1990	2004
China	67877	655385	57458	632832	125335	1288217
India	22504	115233	29585	138289	52089	253522
Indonesia	28163	89661	27735	83160	55898	172821
Japan	328965	660740	319649	588556	648614	1249296
South Korea	74171	478308	79894	274104	154065	567996
Malaysia	33185	139962	34652	122610	67837	262572
Philippines	10965	43790	14762	47426	25727	91216
Singapore	65471	220624	69474	204324	134945	424948
Thailand	29362	116346	39539	118301	68901	234647

*Sources:* World Development Indicators 1998, 2006.

**Table 4: Trade-GDP Ratio and Growth of External Trade**

Country	Annual Average Growth of Exports of Goods and Services (%)		Annual Average Growth of Imports of Goods and Services (%)		Trade-GDP Ratio (%) (Openness Index)	
	1990-2000	2000-04	1990-2000	2000-04	1990	2004
China	13.0	24.2	14.3	22.2	35.34	66.68
India	12.3	12.0	14.4	15.8	16.47	36.68
Indonesia	5.9	3.8	5.7	4.9	17.68	67.08
Japan	4.2	3.6	4.1	1.5	21.84	27.02
South Korea	16.0	11.8	10.0	9.3	60.98	83.57
Malaysia	12.0	4.5	10.3	5.2	154.09	221.92
Philippines	7.8	4.3	7.8	6.2	58.03	107.86
Singapore	9.9	9.7	6.3	5.9	368.32	397.82
Thailand	9.5	6.6	4.6	8.0	80.73	145.12

Sources: World Development Indicators 2001, 2006.

**Table 5: Direction of Trade (% of World Trade) 2004**

Source of Exports	High-income Importers		Low- and Middle-income Importers			World
	Japan	All high-income Importers	East Asia Pacific	South Asia	All Low-and Middle-income Importers	
Japan	--	4.5	1.5	0.1	1.9	6.4
East Asia & Pacific	1.5	9.3	1.3	0.3	2.5	11.8
China	0.8	5.6	0.4	0.1	1.1	6.7
South Asia	0.0	0.8	0.1	0.1	0.3	1.2
India	0.0	0.6	0.1	0.1	0.3	0.9
World	4.6	76.8	9.0	1.4	23.2	100

Source: World Development Indicators 2006.

**Table 6: Region-wise Annual Average Growth (%) of Trade (1994-2004)**

Source of Exports	High-income Importers		Low- and Middle-income Importers			World
	Japan	All high-income Importers	East Asia Pacific	South Asia	All Low-and Middle-income Importers	
Japan	--	2.6	7.8	3.0	6.6	3.7
East Asia & Pacific	9.5	11.2	16.6	16.5	17.0	12.2
China	13.1	16.5	19.9	20.3	21.1	17.1
South Asia	-1.5	9.0	18.6	15.7	15.8	10.6
India	-0.1	10.5	20.6	15.6	17.1	12.2
World	5.4	7.8	10.6	10.4	10.1	8.3

Source: World Development Indicators 2006.

**Table 7: Regional Trade Blocs**

Region	Exports within Blocs (% of Total Exports)			Total Exports by Blocs (% of World Exports)		
	1990	2000	2004	1990	2000	2004
APEC (1989)	68.3	73.1	72.0	38.7	48.4	44.3
EU (1957)	65.9	61.6	60.7	44.1	35.8	37.9
NAFTA (1994)	41.4	55.7	55.9	16.1	19.0	14.5
ASEAN (1967)	19.0	23.0	22.2	4.2	6.7	6.1
BA (1975)	3.7	5.1	5.2	2.6	5.2	5.3
SAARC (1985)	3.2	4.1	5.6	0.8	1.0	1.1
EAEC (1990)	39.7	46.6	49.8	20.9	26.0	26.0

Notes: Asia Pacific Economic Cooperation (APEC); European Union (EU); North American Free Trade Area (NAFTA); Association of South-East Asian Nations (ASEAN); Bangkok Agreement (BA); South Asian Association for Regional Cooperation (SAARC); East Asian Economic Caucus (EAEC). The years in parenthesis are the years of creation.

Sources: World Development Indicators 2001, 2006.

**Table 8: Foreign Direct Investment (FDI)**

Country	FDI (US\$ million)		Net Inflow (% of GDP)		Net Outflow (% of GDP)	
	1990	2004	1990	2004	1990	2004
China	3487	54936	1.0	2.8	0.2	0.1
India	162	5335	0.1	0.8	0.0	0.2
Indonesia	1093	1023	1.0	0.4	0.0	0.0
Japan	1777	7805	0.1	0.2	1.7	0.7
South Korea	788	8189	0.3	1.2	0.4	0.7
Malaysia	2333	4624	5.3	3.9	0.0	1.3
Philippines	530	469	1.2	0.6	0.0	0.5
Singapore	5575	16032	15.1	15.0	5.5	9.9
Thailand	2444	1412	2.9	0.9	0.2	0.1

Sources: World Development Indicators 2001, 2006.

**Table 9: FDI Inflows by Source Countries (percentage composition)**

Source Countries	Indonesia	Malaysia	Philippines	Singapore	Thailand	ASEAN	India	
	(1995-2001)	(1995-2001)	(1995-2001)	(1995-2001)	(1995-2001)	(1995-2001)	1991-95	2001
ASEAN	3.2	19.7	9.5	4.3	13.7	10.7	1.3	1.8
Indonesia	-	1.0	0.4	1.3	0.1	0.8	0.0	0.0
Malaysia	1.8	-	0.7	1.7	0.5	1.5	0.4	0.4
Philippines	0.0	0.5	-	0.2	0.1	0.2	0.0	0.0
Singapore	-1.1	16.7	8.2	-	12.9	7.0	0.3	1.4
Thailand	3.2	0.1	0.2	0.9	-	1.0	0.6	0.0
Rest of the World	96.8	80.3	90.5	95.7	86.3	89.3	98.7	98.2
India	0.1	-0.1	0.0	0.3	0.0	0.2	-	-
China	-0.8	0.5	2.8	0.5	0.0	0.6	5.7	0.0
Hong Kong	0.1	1.0	4.4	1.9	7.2	3.6	6.6	0.2
Taiwan	-0.6	2.2	1.9	1.9	2.8	3.0	0.4	0.0
South Korea	8.6	-0.4	2.2	0.3	0.6	1.6	4.4	0.2
Japan	24.9	9.8	21.2	13.7	23.3	15.6	0.3	0.0
EU-15	78.1	23.5	16.0	29.1	12.9	25.7	18.5	37.2
USA	-31.9	44.0	26.1	19.0	14.2	17.2	23.3	18.3
Total	100	100	100	100	100	100	100	100

Sources: ASEAN Statistical Yearbook; World Investment Directory: Asia and the Pacific, Vol VII, Part 1&2 [as reported in Athukorala (2006)].

**Table 10: ADF Test-Statistics for the Order of Integration in Per Capita GDP**

Country	Level ( $\tau_\tau$ )	First-difference ( $\tau_\mu$ )
China	-0.941 (2)	-3.509 (2)**
India	-0.635 (7)	-2.625 (7)***
Indonesia	-2.911 (2)	-2.682 (2)***
Japan	-2.536 (3)	-2.634 (2)***
South Korea	-2.108 (2)	-3.469 (2)**
Malaysia	-2.998 (3)	-3.191 (2)**
Philippines	-1.767 (3)	-3.226 (2)**
Singapore	-0.404 (4)	-2.872 (4)***
Thailand	-2.748 (3)	-2.678 (2)***

*Notes:* \*\* and \*\*\* denote significant at 5 and 10 percent levels respectively. Figures in parenthesis are the optimal numbers of augmenting lags selected by the Akaike Information Criterion (AIC). Number of observations (T) = 40. 1, 5 and 10 percent critical values for  $\tau_\tau$  are -4.15, -3.50 and -3.18 respectively; Respective critical values for  $\tau_\mu$  are -3.58, -2.93 and -2.60 [See Fuller (1976)].

**Table 11: Cointegration Test for Regional Integration of Real Per Capita GDP**

Eigen Value	Trace Test		Maximum Eigen Value Test	
	Null	$\lambda$ -trace	Null	$\lambda$ -max
0.998	r=0	253.69*	r=0	70.59*
0.986	r≤1	183.10*	r=1	47.76
0.974	r≤2	135.34	r=2	40.56
0.924	r≤3	94.78	r=3	28.92
0.871	r≤4	65.86	r=4	22.55
0.776	r≤5	43.31	r=5	16.49
0.667	r≤6	26.82	r=6	12.13
0.573	r≤7	14.69	r=7	9.37
0.383	r≤8	5.32	r=8	5.32

*Notes:* \* indicates significant at 99% level. The level of significance is determined using the critical values from Osterwald-Lenum (1992). The estimated VAR includes a constant and a trend. Optimal lag specification of the VAR selected by the AIC=2. The test statistics involve small sample correction suggested by Gregory (1994).

**Table 12: ADF Test for Integration of Per Capita Income Differential**

Country	ADF Test Statistics ( $\tau_t$ )	P-value
China	-1.663 (3)	0.760
India	-1.747(6)	0.729
Indonesia	-2.436 (5)	0.146
South Korea	-3.566 (5)**	0.032
Malaysia	-2.219 (4)	0.478
Philippines	-2.693 (3)	0.238
Singapore	-3.979 (5)**	0.037
Thailand	-2.544 (3)	0.306

*Notes:* \*\* denotes significant at 5% level. The critical values tabulated in Fuller (1976) are used for testing the level of significance. Figures in parenthesis are the optimal numbers of augmenting lags selected by the Akaike Information Criterion (AIC). Number of observations (T) = 40. Japan is the benchmark country.

**Table 13: Welfare Gains from Economic Integration in East Asia or JACIK**

Country/Region	Estimated Welfare Gains (US\$ million)		
	Scenario I (Trade Liberalization)	Scenario II (Trade and Investment Liberalization)	Scenario III (Trade and Investment Liberalization, and Mobility of Skilled Workers)
Japan	107626	111807	150695
Korea	13043	13317	14076
China-HK	6327	7100	16328
ASEAN-5	13451	13553	19405
India	6971	7379	9937
JACIK	147418	153156	210441
Rest of the World	-27293	-45306	109916
World	120125	107849	320357

*Source:* RIS Simulation [as reported in Kumar (2006)]



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