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Financial Market Integration in the Greater China Region: A Multivariate Asymmetric Approach

K.Y. Ho

Zhaoyong Zhang
Edith Cowan University

Examining the existence of long-run relationships between East Asian economic integration and ASEAN tourism exports

Ghialy Yap*

School of Accounting, Finance and Economics

Faculty of Business and Law

Edith Cowan University

Joondalup, Australia

c.yap@ecu.edu.au

Abstract

This paper examines the existence of long-run relationships between East Asian economic integration and tourism exports for nine selected ASEAN States for the period 1996-2007. I employ tourist arrivals data as a proxy for tourism exports and trade ratios as a proxy for the economic integration. Using Johansen's Fisher panel cointegration test, the findings show that tourist arrivals and trade ratios are cointegrated in seven out of nine Southeast Asia countries. This suggests that East Asia economic integration can be one of the important factors that influence international tourism demand to ASEAN States in the long-run. However, for Laos and Thailand, the tourist arrivals and trade ratios are not cointegrated.

Keywords: East Asia economic integration, ASEAN tourism, panel cointegration

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Introduction

The idea of East Asian economic integration emerged after the collapse of communism in the South East Asian region, the introduction of open economy policies in China, and the birth of Association South East Asian Nations (ASEAN) in 1967. The main motivation for this integration is to foster the region's economic growth, to create job opportunities and to alleviate poverty (Yue, 2004). In the early 1990s, ASEAN members established the ASEAN Free Trade Area (AFTA), the ASEAN Framework Agreement on Services (AFAS) and the ASEAN Investment Area (AIA) agreement, with the purpose of accelerating economic integration and attracting more foreign direct investment. Furthermore, since the occurrence of Asian Financial Crisis in 1997-98, East Asian countries have committed to fostering financial and macroeconomic stability. Hence, in 2002, China, Japan and South Korea joined ASEAN during the Chiang Mai Initiative (CMI) and formed ASEAN+3. Its objectives are to build business partnerships in trade, investment liberalization and other areas of cooperation. In addition, during the CMI, the members discussed the possibility of introducing a common currency area in the East Asian region. Not only do member governments wish to strengthen financial integration and promote free trade in the region, they also want to transform ASEAN as a single production unit with deregulated labour and capital markets by 2015 (Cammack, 2009).

There is some evidence showing that East Asian economic integration leads to strong trade growth in the region. Figure 1 shows that exports to ASEAN from the main East Asian countries in 2009 have surged dramatically compared to the year 1999. For instance, China's export to the ASEAN¹ region in 2009 was US\$97 billion (in nominal terms), which is approximately eight times the value in 1999. During the same period, Singapore's export to ASEAN countries surged from US\$35 billion to US\$82 billion, whereas Indonesia's export increased from merely US\$8.3 billion to US\$24 billion. Similarly, the value of imports from the main East Asia countries to the ASEAN members has grown significantly between 1999 and 2009 (Figure 2). The value of imports from ASEAN countries to China was the highest, reaching a record of US\$98 billion in 2009 compared to US\$15 billion in 1999. In addition, Indonesia's import from ASEAN countries in 2009 was US\$44 billion, which is about nine times the import value in 1999. These trends, for imports and exports, were evident for all 13

¹ ASEAN in this context refers to South East Asian countries only. In addition, the paper uses ASEAN and South East Asia interchangeably.

countries albeit from a very low base for countries such as Brunei, Cambodia, Laos and Myanmar.

[Insert Figure 1]

Alongside the surge in trade, data for nine of these countries indicates that there has been a sign of considerable economic growth over the same period. In Table 1, the average annual growth in GDP per capita in China between 2006 and 2009 was 21.2% which is the highest, followed by Indonesia (16.1%). Despite some countries experiencing decline in income between 2008 and 2009, their average annual GDP per capita growth remained strong (except for South Korea). For instance, Vietnam's GDP per capita increased about 14.9% each year from 2006 to 2009. Given the same years, the annual GDP per capital growth for Philippines and Thailand were 11.2% and 10.1%, respectively. These figures suggest that household income and the standards of living in East Asia countries are improving.

[Insert Table 1]

Moreover, the improvement of these economies may indicate that intra- and inter-regional travel has become affordable for their citizens. As East Asian countries have demonstrated economic cooperation with each other, the economic integration could stimulate the region's tourism industry. In fact, for ASEAN members, the majority of international tourists in 2009 were those from ASEAN members themselves and more specifically, from South East Asia (49.6%) excluding China (See Table 2). Furthermore, China and Japan ranked third and fourth among the top ten sources of tourist arrivals to ASEAN countries. Hence, as argued by Timothy (2003), the growing trading relationships mean more business travellers and a trend that is also enhanced by removal of international travel restrictions in some ASEAN countries.

[Insert Table 2]

This paper examines whether East Asian economic integration plays an important role in influencing ASEAN tourism exports. If so, to what extent does the integration influence the collective ASEAN tourism industry and each member country's tourism industry? The research is a preliminary study of whether East Asia economic integration can be used as a proxy to determine the factors favoring tourism export growth in ASEAN. The findings would be of interest to tourism policy makers, particularly in developing appropriate policies and strategies to sustain tourism industries in the South East Asian region.

First, the paper describes how East Asian economic integration plays an important role in tourism development in ASEAN. Second, a methodology of testing the existence of long-run relationships between East Asian economic integration and tourism exports for each ASEAN state will be discussed. Finally, the empirical results and conclusions will be provided.

East Asia economic integration: From the ASEAN tourism perspectives

International tourism is important for ASEAN governments as it creates job opportunities in service industries, increases foreign exchange earnings and encourages tourism investment. Because of its importance to economic growth, since the 1990s, the ASEAN governments agreed to increase their cooperative in tourism promotion efforts. In 1992, ASEAN members designated the year as the “Visit ASEAN Year” to promote South East Asian countries as one travel destination. Then, in 1998, they passed the Plan of Action on ASEAN Cooperation in Tourism and established the Ministerial Understanding on ASEAN Cooperation in Tourism (ASEAN, 1998).

Table 3 summarizes the history of tourism development and economic integration within East Asia region. From the table, it seems that the progression of tourism industry in South East Asia could be influenced by East Asia economic integration. One of the distinguishing events was the ASEAN Transport Ministers Meeting in Chiang Mai in 1997 where ASEAN Economic Ministers agreed to develop an integrated and harmonized Trans-ASEAN transportation network (ASEAN, 1997). Since then, in 2001, AirAsia – the first budget airline in Asia has been carrying passengers from South East Asia to the rest of the world (AirAsia.com). Furthermore, the airline’s main terminal transit location is in Malaysia, which could encourage budget travellers from around the world to stop in South East Asia. As the air travel industry within the region has been experiencing significant expansion (Singh, 1997), the ministers agreed to further strengthen transport infrastructure and liberalize the transportation sectors. Consequently, more budget airlines such as LionAir from Indonesia and Tiger Air from Singapore have emerged, which encourages more inter- and intra-regional travel within ASEAN countries. In addition, the ASEAN-Mekong Basin Development project plans to develop a rail link from Singapore to Kunming. This project should help East Asian developing countries such as Myanmar and Laos to improve their trade performance (ASEAN, 1996).

[Insert Table 3]

However, the disadvantage of East Asia economic integration is that it creates uneven economic development in the region (Severino, 2007). Referring to Table 4, there is a significant household income gap between developed and developing Asia countries. For instance, the average annual household income for Japan in 2009 was US\$35,400 which is 32 times that of the average household income in Vietnam. Furthermore, the standard of living in Indonesia, Philippines and Vietnam is much lower than in their neighbour countries such as Malaysia and Singapore. The existence of this economic gap could be caused by the imbalance in foreign investment flows in this region (Severino, 2007).

Tourism development in South East Asia is also uneven across the region, with the countries generating the most tourism revenue in 2008 being Thailand, followed by Malaysia and Singapore (Table 5). These countries have better tourism infrastructure and facilities and hence, most tourists would prefer to visit these destinations. Conversely, Laos generated the least tourism revenue (Table 5), because of poorly maintained roads and limited tourism facilities in the country (Phakdisoth and Kim, 2007). While developed ASEAN members were interested in assisting the less developed members with their tourism developments, this collaboration did not progress well as The ASEAN Secretariat lacked the necessary financial resources and expertise (Wong, Mistilis and Dwyer, 2010).

It is clear that economic integration occurred concurrently with economic growth and intraregional travel as well as for many countries, with strong performance in generating tourism revenue. However, this information by itself does not prove that economic integration is responsible for the improvements observed in the performance of ASEAN travel industries. Hence, in the following sections, I report on quantitative research to assess whether East Asian economic integration can play a positive role in influencing tourism growth in the region.

Data and Econometrics Model

Quantitative studies on South East Asia tourism have been carried out in the past decade. For instance, Vogt and Wittayakorn (1998) evaluated the effects of world income and the relative price of tourism on Thailand's tourism exports using a cointegration analysis. Furthermore, Phakdisoth and Kim (2007) examined the determinants of international tourism inflows to Laos using panel data models. More recently, Chang, Sriboonchitta and Wiboonpongse (2009) employed Box-Jenkins time series analysis to model and forecast tourism from East Asia to Thailand under temporal and spatial aggregation. The purpose of those studies

research methods was to construct models that could explain the factors and behaviour of tourist arrivals to the investigated destinations.

This study examines whether there are long-run relationships between the East Asian economic integration and tourism exports in each ASEAN state. Following Timothy (2003), it is assumed that economic integration in East Asia can influence international tourist arrivals to ASEAN member countries. To test this assumption, a bivariate vector model is specified as follows:

$$Y_{it}^j = (TA_{it}^j, TR_{it}^j),$$

Where

$$i = 1, \dots, N; t = 1, \dots, T$$

N = number of origin countries; T = time period

TA_{it}^j = Tourist arrivals from partner country i (origin) to country j (destination) at time t

TR_{it}^j = Indicator of economic integration between country j and partner country p at time t

For simplicity, for each ASEAN member country j , the model can be written as:

$$Y_{it} = (TA_{it}, TR_{it}) \tag{1}$$

Equation (1) is a panel regression which will be expressed in a vector error correction model. TA_{it}^j is the number of tourist arrivals from an origin to a destination. The data is extracted from the *Yearbook of Tourism Statistics* between 1996 and 2007, compiled by the World Tourism Organisation (UNWTO). The nine destinations included in this study are Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. Brunei is excluded from this paper as the investigated destination because there are too many missing data. This research explores tourist arrivals from all nine of these ASEAN countries, as well as China, Japan and South Korea, to each destination.

The proxy variable for an economic integration indication is the ratio of foreign trade to gross domestic product (GDP) of each investigated destination. Prakash and Hart (2000) suggest that this trade ratio generally reflects the levels of trade integration between two countries or regions. The authors defined foreign trade as the sum of the value of exports and imports. In

this paper, the data on exports are based on the outflows of goods and services from a country of destination to an origin, whereas the data on imports are the inflows of goods and services from a country of origin to a destination. These data are expressed in US million dollars and they can be obtained from the annual reports of *Direction of Trade Statistics*, which is issued by the International Monetary Fund (IMF). The GDP is also extracted from the *IMF Data Mapper*, which is freely available from the IMF's website.

This paper adopts Johansen's Fisher panel cointegration test, as developed by Larson, Lyhagen and Lothgren (2001), to examine the existence of cointegration with TA and TR variables for each destination (j). To illustrate how the test is conducted, equation (1) can be re-written into a heterogenous vector error correction model (VEC) as follows:

$$\Delta Y_{it} = \Pi_i Y_{i,t-1} + \sum_{k=1}^{k_i-1} \Gamma_{ik} \Delta Y_{i,t-k} + \varepsilon_{it}, i = 1, \dots, N \quad (2)$$

Where k = number of lags, ε_{it} is an error term which follows independent and identically distribution, $\Pi_{ik} = \alpha_i \beta_i'$, α_i is a $p \times r$ matrix of short-run adjustment coefficients, β_i' is a $p \times r$ matrix of long-run cointegrating relations for origin country i .

In this test, Larson et al. (2001) consider testing the hypothesis that all of the N groups in the panel have at most r cointegrating relationships among the p variables. Hence, to do that, the authors specify the rank hypotheses as follows:

$$H_0: \text{rank}(\Pi_i) = r_i \leq r \text{ for all } i = 1, \dots, N$$

$$H_1: \text{rank}(\Pi_i) = p \text{ for all } i = 1, \dots, N$$

Adopting the idea of trace statistics from the Johansen (1995) time-series cointegration analysis, the trace statistic for each group i can be written as:

$$LR_{iT} \{H(r)|H(p)\} = -2 \ln Q_{iT} \{H(r)|H(p)\}$$

where $H(r): \text{rank}(\Pi) \leq r, H(p): \text{rank}(\Pi) = p$.

The asymptotic distribution of the trace statistic is $-2 \ln Q_{iT} \{H(r)|H(p)\} \xrightarrow{w} Z_k$, where $Z_k \equiv \text{tr} \left\{ \int_0^1 (dW)W' \left(\int_0^1 WW' \right)^{-1} \int_0^1 W(dW)' \right\}$ and W is a $k = (p - r)$ dimensional Brownian motion.

By averaging the N individual trace statistics, it becomes

$$\overline{LR}_{NT}\{H(r)|H(p)\} = \frac{1}{N} \sum_{i=1}^N LR_{iT}\{H(r)|H(p)\}$$

Larson et al. (2001) proposed using a standardized LR-bar statistic as a basis for the panel cointegration rank test, which is:

$$Y_{\overline{LR}}\{H(r)|H(p)\} = \frac{\sqrt{N}(\overline{LR}_{NT}\{H(r)|H(p)\} - E(Z_k))}{\sqrt{Var(Z_k)}}$$

where $E(Z_k)$ is the mean and $Var(Z_k)$ is the variance of the asymptotic trace statistic.

Under the null hypothesis $H_0: rank(\Pi_i) = r_i \leq r$ for all $i = 1, \dots, N$, the standardized panel trace statistics $Y_{\overline{LR}} \Rightarrow N(0,1)$ as N and $T \rightarrow \infty$ such that $\sqrt{NT}^{-1} \rightarrow 0$. Gerdtham and Lothgren (2002) asserted that the condition $T \rightarrow \infty$ is needed for the convergence of individual trace statistics $LR_{iT}\{H(r)|H(p)\}$ to Z_k whereas the condition $N \rightarrow \infty$ is required for the centre limit theorem to apply. For more information, refer to Larson et al. (2001).

The testing procedure starts with $r = 0$. If this hypothesis is rejected, then $r = 1$ is tested. This sequential procedure continues until the null is not rejected or the hypothesis $r = p - 1$ is rejected. If the hypothesis of $r = 1$, this shows that there is, at most, one cointegration. The testing procedure can generate the rank estimate r .

The Johansen's Fisher panel cointegration test was conducted using Eviews 6.

Empirical Results

Testing Non-Stationary Panel Data

Prior to conducting any econometric analysis, it is vital to examine whether the panel data are stationary (or unit root). In time-series literature, Maddala (2003) argued that estimations using ordinary least squares (OLS) will be biased if the data are non-stationary. Similarly, in the context of panel data, Baltagi (2008) asserted that non-stationary issues deserve more attention for large time-series macro panels.

This study implemented four different types of panel unit root tests: Levin, Lin and Chu (2002) (LLC), Im, Pesaran and Shin (2003) (IPS), ADF-Fisher and PP-Fisher tests. The LLC test is a panel-based ADF test and can be powerful because it restricts parameters so that they are identical across cross-sectional regions (Lee and Chang, 2008). However, Im, Pesaran and

Shin (2003) found that the LLC test is too restrictive and hence, they developed the IPS test to relax the restriction by averaging individual unit root ADF test statistics. Nevertheless, Maddala and Wu (1999) further disagreed with the average ADF statistics method and instead, they employed a Fisher test to combine the p -values from unit root tests for each cross-section. This test has more advantages because: (1) the cross-sectional dimension can be either finite or infinite; (2) each group can have non-stochastic and stochastic components; and (3) the time-series dimension can vary for each cross-section (Baltagi, 2009). A summary of null and alternative hypotheses for the abovementioned unit root tests is presented in Table 6.

Referring to Table 7, the panel unit root test results show that the tourist arrival (TA) data for most countries are non-stationary, $I(1)$. For countries like Laos, Philippines, Thailand and Vietnam, three out of four tests suggest that the TA variables for these destinations are $I(1)$. The only exception case is the TR variable for Myanmar, where three out of four unit root tests conclude the data as stationary, $I(0)$. As for the trade ratio (TR) variables, the tests revealed a mixture of results. Apparently, the TR variables are $I(1)$ for Cambodia, Malaysia and Vietnam cases, whereas the TR variables are $I(0)$ for Indonesia, Laos, Myanmar, Philippines and Thailand. Nevertheless, the TR variable for Singapore case is rather inconclusive as the LLC and PP-Fisher tests suggest that the variable should be $I(0)$ but the IPS and ADF-Fisher tests conclude the variable should be $I(1)$.

Panel Cointegration Analysis

Because there is evidence of non-stationary data, we can then proceed to panel cointegration analysis. This paper employs Johansen's Fisher panel cointegration test because it is developed based on the Johansen's time-series cointegration test, which allows using a mixture of $I(1)$ and $I(0)$ variables in the test (Johansen, 1995). Hence, this may indicate that conducting the panel cointegration test, using a set of panel data variables which have different orders of integration, would not create biased results.

The purpose of this paper is to conduct a cointegration analysis of the bivariate tourist arrivals (TA) and trade ratio (TR) system, based on the heterogeneous panel VEC Equation 2. Table 8 presents the results of Johansen's Fisher panel cointegration test and the cointegration rank as determined by the Larson et al. (2001) standardized trace statistics. As seen from the table, the hypothesis of $r=1$ cannot be rejected at the 1% significance level for most of the countries, implying that the TA and TR are cointegrated. In other words, there is

evidence of long-run relationships between the East Asian economic integration and tourism exports in seven out of nine Southeast Asia countries. However, Table 8 shows that the hypothesis of $r=1$ is rejected at the 1% critical level for Laos and Thailand, indicating that TA and TR are not cointegrated for these two countries.

Singapore is a unique case where the rank value for $r=1$ is 22.88 and its probability value is the highest (0.41). This suggests that the tourism growth in Singapore have a relatively strong association with East Asian economic integration. As quoted by Teo and Chang (2000), Singapore had joint projects with Riau (Indonesia) and Johor (Malaysia) in manufacturing, oil refining, telecommunications, resort management and agribusiness and that has strengthened Singapore's position as a cruise and eco-tourism destination because it provides an extended hinterland with Indonesia and Malaysia.

Conclusions

This preliminary study investigated whether long-run relationships exist between East Asia economic integration and tourism exports in each ASEAN state, covering the 12 year period 1996-2007. In this paper, we employed tourist arrivals data as a proxy for tourism exports and trade ratio as a proxy for economic integration. Using various panel unit root tests, the tests suggested that the tourist arrivals data are non-stationary for most of the ASEAN states, but there was a mixture of orders of integration for the trade ratios variables. Despite this, the study used a Johansen's Fisher cointegration test because it may allow a mixture of panel I(1) and I(0) variables in the test. Based on the cointegration test results, there is evidence that cointegration exists between East Asia economic integration and tourism exports for most of the ASEAN States, except for Laos and Thailand.

Laos is one of the world's poorest nations and the country lacks adequate facilities such as railways and road systems, as well as other transport networks (Hall and Ringer, 2000). Perhaps, this could constraint the Laotian government in its efforts to build economics cooperation with their neighbour countries. Moreover, the lack of economic integration may inhibit strong tourism growth in the country.

The result of this study suggested that East Asia economic integration and Thai's tourism exports have no long-run relationship. However, agricultural, industry and tourism sectors

lead Thailand's economy² and the Thai government has recognized the strategic opportunity linking Thailand to China and the rest of Southeast Asia (Higham, 2000). In conclusion, the result could not match with Higham's statement. Could this be because of Thailand has been maintaining its reputation as a world tourism destination and hence, the economic integration may not have significant long-run effects on its tourism businesses? This requires further investigation.

² According to the *Economy Watch* website, agriculture provided 12.3% of GDP in 2008 whereas industry and services provided 44% and 43.7% of GDP. Out of 64 million people in 2008, 38.24 million people were employed in these sectors. Refer to http://www.economywatch.com/world_economy/thailand/ for more information.

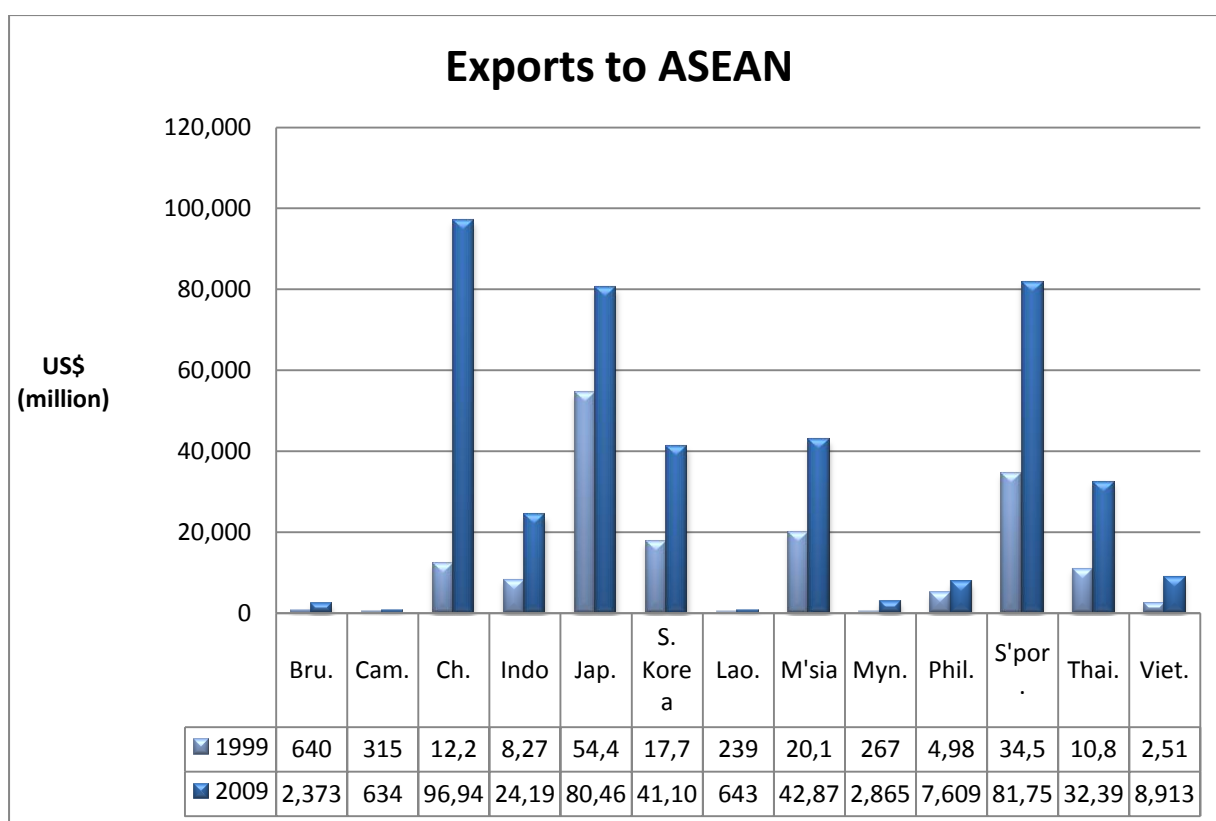


Figure 1 Exports to ASEAN by main East Asia countries in 1999 and 2009 (US\$ million).

Note: Bru. – Brunei Darussalam, Cam. – Cambodia, Ch. – Mainland China, Indo. – Indonesia, Jap. – Japan, S. Korea – South Korea, Lao. – Lao People’s Democratic Republic, M’sia - Malaysia, Myn. – Myanmar, Phil. – Philippines, S’pore – Singapore, Thai. – Thailand, Viet. – Vietnam.

Source: *Direction of Trade Statistics*, International Monetary Fund.

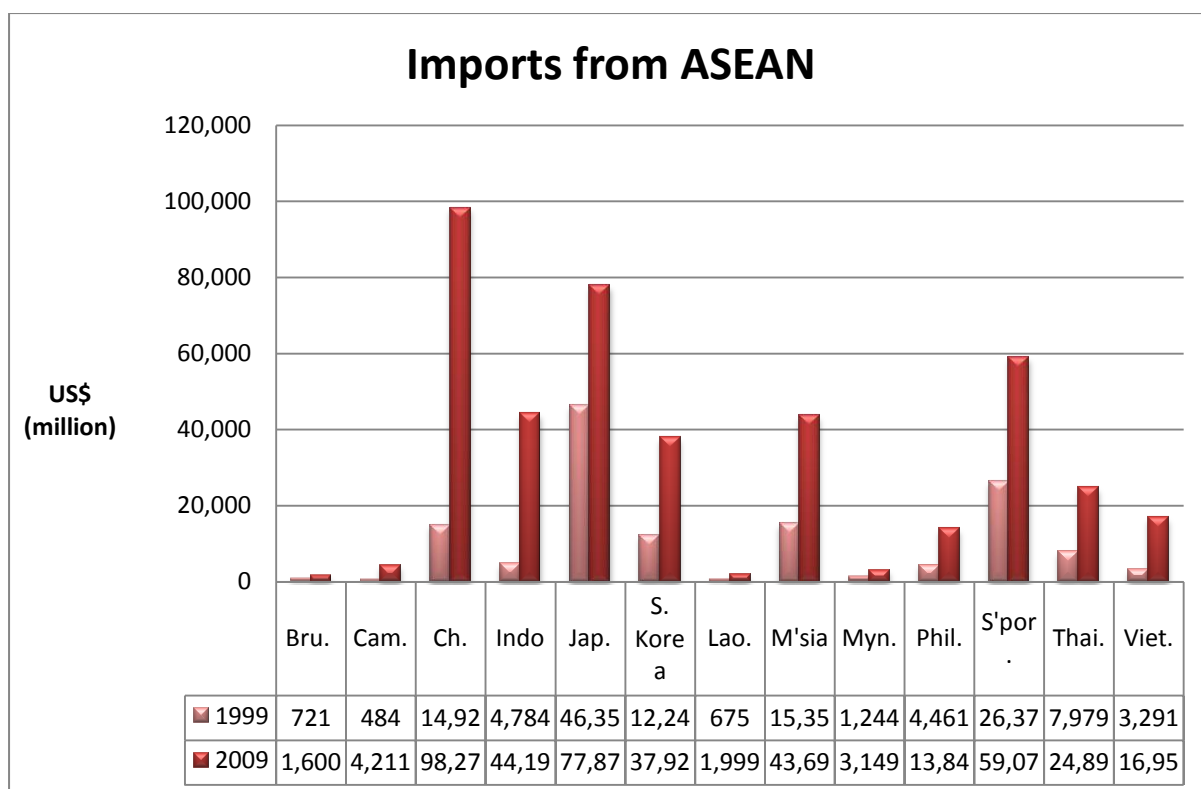


Figure 2 Imports from ASEAN to main East Asia countries in 1999 and 2009 (US\$ million).

Note: Bru. – Brunei Darussalam, Cam. – Cambodia, Ch. – Mainland China, Indo. – Indonesia, Jap. – Japan, S. Korea – South Korea, Lao. – Lao People’s Democratic Republic, M’sia - Malaysia, Myn. – Myanmar, Phil. – Philippines, S’pore – Singapore, Thai. – Thailand, Viet. – Vietnam.

Source: *Direction of Trade Statistics*, International Monetary Fund.

Table 1 Gross domestic product per capita in each East Asia country, 2006-2009 (\$US)

Country	2,006	2,007	2,008	2,009	Average annual growth (%) since 2006
China	2,033	2,573	3,275	3,697	21.2
Indonesia	1,642	1,923	2,248	2,345	16.1
Japan	33,720	33,632	37,536	38,956	2.6
Malaysia	5,813	6,808	7,962	6,768	7.6
Philippines	1,354	1,626	1,854	1,746	11.2
Singapore	29,460	34,160	36,898	35,400	7.9
South Korea	17,667	19,427	17,248	15,344	-0.01
Thailand	3,263	3,864	4,219	4,061	10.1
Vietnam	722	831	1,048	1,101	14.9

Source: *Euromonitor International*

Table 2 Top ten sources of tourist arrivals to ASEAN (excludes domestic tourism)

Country of origin	2009	
	Number of tourists '000	Share to total %
ASEAN*	29,776.3	49.6
European Union-25	6,475.8	10.4
China	3,840.6	6.4
Japan	2,757.8	4.6
Australia	2,715.5	4.5
Republic of Korea	1,968.2	3.3
USA	1,889.8	3.1
India	1,862.8	3.1
Taiwan (ROC)	1,227.1	2.0
Hong Kong, SAR	678.7	1.1
Top ten country/regional sources	53,192.6	88.6
Rest of the world	6,810.5	11.4
Total tourist arrivals in ASEAN	60,003.1	100.0

Note: *ASEAN members in this context refer to all East Asia countries, except China, Japan, South Korea, Hong Kong and Taiwan. Source: ASEAN Tourism Database

Table 3 History of tourism development and economic integration within East Asia region

Period	Tourism Progression/Development	Economic Integration
1990s	<ul style="list-style-type: none"> - Designated 1992 as the “Visit ASEAN Year”. - Established the ASEAN Tourism Association (ASEANTA). - Establishment of the first budget airline in Asia – <i>AirAsia</i> with the slogan “Everyone can fly”. 	<ul style="list-style-type: none"> - Established the ASEAN Free Trade Area (AFTA), the ASEAN Framework Agreement on Services (AFAS) and the ASEAN Investment Area (AIA) agreement. - Introduced the Framework of ASEAN-Mekong Basin Development Cooperation. - During the 1997 ASEAN Transport Ministers Meeting in Chiang Mai, ASEAN Economic Ministers agreed to develop an integrated and harmonized Trans-ASEAN transportation network.
2000 – 2005	<ul style="list-style-type: none"> - ASEAN Tourism Ministers endorsed the outline of the implementation of ASEAN Tourism Agreement. 	<ul style="list-style-type: none"> - The Framework Agreement on ASEAN-China Comprehensive Economic Cooperation was signed. - ASEAN and Japan signed the Joint Declaration and the Framework Agreement for Comprehensive Economic Partnership between ASEAN and Japan. South Korea proposed a formation of an East Asian Vision Group (EAVG). - The ASEAN+3 (China, Japan and South Korea) governments adopted the Chiang Mai Initiative (CMI). - Tariffs were reduced to 0-5% for ASEAN-6. Tariff reductions have started for the trade between China and ASEAN.
2006 – 2010 (Current)	<ul style="list-style-type: none"> - More budget airlines have emerged in most of the ASEAN countries, i.e. LionAir in Indonesia, Tiger Air in Singapore and Bangkok Air in Thailand. - Various ASEAN tourism projects were carried out in China, Japan and South Korea in 2008. <ul style="list-style-type: none"> (1) Promote ASEAN tourism at the China International Travel Mart 2008 and at the Workshop on Chinese Outbound Tourists Convention. (2) A film tourism promotion of ASEAN members at the ASEAN-Japan Centre. (3) Established ASEAN-ROK Centre in South Korea. (4) Set up ASEAN Promotional Chapter for Tourism (APCT) in Shanghai and Seoul. - ASEAN tourism ministers are preparing to sign a new Tourism Marketing Strategy and launch a preliminary stage for the ASEAN 	<ul style="list-style-type: none"> - Initiated in 2003, ASEAN has established an ASEAN Economic Community (AEC), aiming at transforming ASEAN as a single production base and market with free movement of goods, services, investment, capital and skilled labour by 2015. - As a part of the AEC objectives, the ministers agreed to strengthen transport infrastructure as well as to further liberalize air and maritime sectors. - Proposed cooperation between ASEAN and GCC (Gulf Cooperation Council).

Period	Tourism Progression/Development	Economic Integration
	Tourism Strategic Plan (2011-15).	

Source: Timothy (2003), Yue (2004), eTravelBoard (2009), TTRweekly (January 25, 2010), ISEAS (February 6, 2010) and ASEAN websites.

Table 4 Gross domestic product per capita in each East Asia country in 2009

Country	GDP per capita (\$US)
China	3,697
Indonesia	2,345
Japan	38,956
Malaysia	6,768
Philippines	1,746
Singapore	35,400
South Korea	15,344
Thailand	4,061
Vietnam	1,101

Source: *Euromonitor International*

Table 5 International tourist expenditure in the year 2008

COUNTRY	Total expenditure (US\$ million)
THAILAND	21,980
MALAYSIA	18,555
SINGAPORE	10,575
INDONESIA	8,147
VIET NAM	3,926
CAMBODIA	1,291
LAO PEOPLE'S DEMOCRATIC REPUBLIC	276

Note: The values for Brunei and Myanmar are not available when the data were collected. NA stands for not available. Source: World Tourism Organization (WTO).

Table 6. A Summary of Panel Unit Root Tests

Test	Null hypothesis	Alternative hypothesis
LLC	Each individual time-series contains a unit root.	Each time-series is stationary.
IPS	Each series in the panel contains a unit root.	Some (but not all) of the individual series have unit roots.
ADF-Fisher and PP-Fisher	Each cross-section has a unit root.	Some (but not all) of the cross-section have unit roots.

Sources: Asteriou and Hall (2007) and Baltagi (2009, pp. 257-258)

Table 7. Panel unit root test

Variable	Destination	LLC		IPS		ADF-Fisher		PP-Fisher		Order of Integration, <i>I</i>
		Log	Log-Diff	Log	Log-Diff	Log	Log-Diff	Log	Log-Diff	
TA	Cambodia	0.63 (0.74)	-5.84 (0.00)*	3.25 (0.999)	-3.56 (0.00)*	7.99 (0.999)	56.09 (0.00)*	3.75 (1.00)	95.54 (0.00)*	I (1)
	Indonesia	2.43 (0.99)	-5.33 (0.00)*	1.15 (0.88)	-3.76 (0.00)*	15.31 (0.50)	45.87 (0.00)*	26.61 (0.05)	109.9 (0.00)*	I (1)
	Laos	-1.96 (0.03)^	-7.64 (0.00)*	0.98 (0.84)	-3.44 (0.00)*	19.76 (0.71)	54.79 (0.00)*	21.86 (0.59)	84.89 (0.00)*	I (1) ^(a)
	Malaysia	1.20 (0.88)	-10.02 (0.00)*	3.17 (0.999)	-4.33 (0.00)*	9.23 (0.997)	62.76 (0.00)*	7.58 (0.999)	68.32 (0.00)*	I (1)
	Myanmar	-3.42 (0.00)*	-1.16 (0.12)	-1.05 (0.15)	-1.29 (0.098) ⁺	22.86 (0.03)^	19.80 (0.07) ⁺	25.36 (0.01)^	44.24 (0.00)*	I (0) ^(b)
	Philippines	-2.37 (0.01)^	-13.42 (0.00)*	1.84 (0.97)	-4.66 (0.00)*	20.81 (0.65)	63.90 (0.00)*	7.48 (0.9995)	68.24 (0.00)*	I (1) ^(a)
	Singapore	0.34 (0.63)	-8.10 (0.00)*	2.74 (0.997)	-4.10 (0.00)*	13.20 (0.96)	62.54 (0.00)*	10.51 (0.99)	110.2 (0.00)*	I (1)
	Thailand	-2.81 (0.00)*	-5.95 (0.00)*	0.50 (0.69)	-3.138 (0.00)*	21.77 (0.59)	55.79 (0.00)*	16.95 (0.85)	105.4 (0.00)*	I (1) ^(a)
	Vietnam	-1.08 (0.14)	-7.19 (0.00)*	0.64 (0.74)	-1.99 (0.02)^	20.63 (0.54)	38.95 (0.01)^	51.60 (0.00)*	77.64 (0.00)*	I (1) ^(a)
TR	Cambodia	-0.06 (0.48)	-7.04 (0.00)*	-0.52 (0.30)	-3.63 (0.00)*	20.02 (0.33)	44.80 (0.00)*	47.47 (0.00)*	76.63 (0.00)*	I (1) ^(a)
	Indonesia	-4.79 (0.00)*	-9.24 (0.00)*	-3.99 (0.00)*	-5.79 (0.00)*	46.88 (0.00)*	64.49 (0.00)*	47.90 (0.00)*	83.20 (0.00)*	I (0)
	Laos	-13.5 (0.00)*	-18.41 (0.00)*	-5.70 (0.00)*	-9.80 (0.00)*	65.76 (0.00)*	95.53 (0.00)*	38.07 (0.00)*	100.9 (0.00)*	I (0)
	Malaysia	-3.11 (0.00)*	-6.14 (0.00)*	-0.21 (0.42)	-4.16 (0.00)*	24.38 (0.44)	63.20 (0.00)*	29.43 (0.20)	118.9 (0.00)*	I (1) ^(a)
	Myanmar	-6.77 (0.00)*	-9.25 (0.00)*	-3.15 (0.00)*	-4.36 (0.00)*	31.97 (0.00)*	44.40 (0.00)*	23.57 (0.02)^	31.07 (0.00)*	I (0)
	Philippines	-4.08 (0.00)*	-6.60 (0.00)*	-1.64 (0.05) ⁺	-2.52 (0.01)^	38.43 (0.03)^	47.68 (0.00)*	67.43 (0.00)*	70.69 (0.00)*	I (0)
	Singapore	-3.02 (0.00)*	-12.09 (0.00)*	-1.12 (0.13)	-6.08 (0.00)*	31.06 (0.1)	78.24 (0.00)*	51.58 (0.00)*	77.57 (0.00)*	I (1)/I (0)
	Thailand	-5.48 (0.00)*	-7.92 (0.00)*	-1.34 (0.09) ⁺	-3.64 (0.00)*	33.57 (0.09) ⁺	57.33 (0.00)*	67.71 (0.00)*	71.36 (0.00)*	I (0)
	Vietnam	-1.77 (0.04)^	-11.23 (0.00)*	0.37 (0.65)	-5.72 (0.00)*	22.56 (0.55)	76.71 (0.00)*	28.50 (0.24)	87.19 (0.00)*	I (1) ^(a)

Note: TA = Tourist arrivals data, TR = Trade ratio (which is the ratio of exports and imports divided by GDP), Y = GDP per capita, RER = Real exchange rate and RP = Relative prices. The panel unit root tests are LLC's *t* (Levin, Lin & Chu, 2002), IPS's W-statistics (Im, Pesaran and Shin, 2003), ADF-Fisher Chi-square and PP-Fisher Chi-square. Figures in brackets are the *p*-values. *, ^ and + denote the significance levels at 1%, 5% and 10%. (a) Three out of four tests concluded the data as I(1); (b) Three out of four tests concluded the data as I(0);

Table 8. Johansen's Fisher panel cointegration test

Destination	Rank determination (Based on trace test)			
	$r = 0$	$r = 1$	$\text{Pr}(r=1)$	Rank (r_i)
Cambodia	42.26	22.76	0.12	1
Indonesia	9186	22.66	0.12	1
Laos	605.2	43.83	0.00	0
Malaysia	353.4	32.69	0.07	1
Myanmar	33.65	8.04	0.24	1
Philippines	385.6	38.47	0.02	1
Singapore	67.89	22.88	0.41	1
Thailand	108.4	38.07	0.00	0
Vietnam	562.00	17.98	0.06	1

Note: r is the rank determinants. $r=0$ means that there is no cointegration; $r=1$ means that there is one cointegration exists. $\text{Pr}(r=1)$ is the p -value for $r=1$. The figures in Rank (r_i) are based on the panel rank test results.

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