

The Impact of AFTA on Japan-ASEAN Trade Flows

Chen Chen Yong
Hui Boon Tan

ABSTRACT

Japan and ASEAN have a friendly and cooperative relationship since the 1970s. Japan is one of the most important economic partners for ASEAN, and vice versa. Japan and ASEAN member countries pursue bilateral and regional approaches to free trade agreements in order to further enhance their competitiveness. The ASEAN Free Trade Area (AFTA) was established in 1992. Along with the regional approaches, the bilateral approach to economic partnership between Japan and ASEAN is increasingly important in order to move toward greater economic integration in Asia. ASEAN has sustained trade deficits with Japan for a long time and its exports have been heavily reliant on Japanese market. From this point of view, Japan has been a relatively important market for ASEAN but not vice versa; and Japan has been a comparatively important supplier to ASEAN but not vice versa. Structural changes in the trading patterns between Japan and ASEAN in such a way that reflects a complementary relationship between the two regions remains in doubt. Although intra-ASEAN trade has registered growth after the implementation of AFTA, but ASEAN still encounters a large deficit with Japan. Therefore, changes in trade volume between Japan and ASEAN through the trade creation effect or trade diversion effect resulted from the establishment of AFTA are questionable. This study attempts to empirically examine the impact of AFTA on trade linkages between Japan and ASEAN-5 countries, namely, Malaysia, Singapore, Thailand, Indonesia and the Philippines using annual data from 1970 to 2003. An estimation method known as Vector Error Correction Model was used. The result shows that although AFTA has led to trade creation between Japan and ASEAN-5 countries but trade relationship between Japan and ASEAN remains asymmetry.

ABSTRAK

Negara Jepun dan ASEAN mempunyai hubungan kerjasama yang rapat semenjak tahun 1970an lagi. Jepun merupakan salah satu negara perkongsian ekonomi kepada ASEAN, dan begitulah sebaliknya. Jepun

dan ASEAN mengamalkan pendekatan dua hala dan wilayah bagi perjanjian perdagangan bebas untuk mengukuhkan daya saing. Kawasan Perdagangan Bebas ASEAN (AFTA) telah ditubuhkan pada tahun 1992. Bersama-sama dengan pendekatan wilayah, pendekatan dua hala antara Jepun dan ASEAN sangat bergantung kepada pasaran Jepun. Dari sudut ini Jepun merupakan pasaran yang penting kepada ASEAN tetapi tidak sebaliknya. Begitu juga Jepun merupakan pembekal penting kepada ASEAN tetapi tidak sebaliknya. Perubahan bentuk perdagangan antara Jepun dan ASEAN yang menggambarkan hubungan penggenap antara dua kawasan adalah diragui. Kajian ini cuba memeriksa kesan penubuhan AFTA terhadap hubungan perdagangan antara Jepun dan ASEAN-5, iaitu Malaysia, Singapore, Thailand, Indonesia dan Phillipines dengan menggunakan data tahunan antara tahun 1970-2003. Bagi mencapai objektif ini, kaedah penganggaran Vector Correction Model (VCM) digunakan. Hasil kajian ini menunjukkan berlaku penciptaan perdagangan melalui AFTA tetapi perdagangan antara Jepun dan ASEAN masih berbentuk simetri yang tidak sama.

INTRODUCTION

Japan and ASEAN have a friendly and cooperative relationship since the 1970s. Japan is one of the most important economic partners for ASEAN, and vice versa. ASEAN total trade comprised 14.0% of Japanese total trade and the Japanese total trade comprised 14.1% of ASEAN total trade in 2003 (IMF 2003). ASEAN has been Japan's important supplier of raw materials and market for light industrial products. On the other hand, Japan has been ASEAN's important supplier of capital, technology and development aid.

Japan and ASEAN member countries pursue bilateral and regional approaches for free trade agreements to further enhance their competitiveness. ASEAN Free Trade Area (AFTA) was established in 1992. The member countries of ASEAN have made significant efforts in lowering the intra-regional tariffs through the mechanism of Common Effective Preferential Tariff (CEPT) on goods traded within the member countries, which meet a 40% ASEAN content requirement. Along with the regional approaches, the bilateral approach for economic partnership between Japan and ASEAN is increasingly important in order to move toward greater economic integration in Asia. Recently, the analysis of regional trading bloc has become increasingly important in international trade. Thornton

and Goglio (2002), Sharma and Chua (2000), Elliott and Ikemoto (2004), Clarete et al. (2003), Hassan (2001) and Nilson (2000) used the gravity model to investigate the intra-regional trade flows. Sharma and Chua (2000) found that the ASEAN integration scheme did not increase intra-ASEAN trade, but an increase in trade occurred with members of a wider Asian Pacific Economic Cooperation (APEC) group. Elliott and Ikemoto (2004) and Clarete et al. (2003) studied not only intra-ASEAN trade but also the effect of AFTA on non-members. Elliott and Ikemoto (2000) found that intra-ASEAN trade flows were not significantly affected in the years immediately following the signing of the AFTA agreement and also that the traditional stance of ASEAN countries to outward-oriented economic activity has not been significantly harmed but rather stimulated by the AFTA process and/or the Asian economic crisis. Clarete et al. (2003) found that AFTA reduced trade with non-members without significant changes in intra bloc trade. Most of the previous studies were on intra-regional trade and the bilateral trade flows resulted from the trade agreements or partnership. There are relatively little research that analyzes the effects of regional integration on non-integrators.

Despite being the world's second largest economy, Japan has so far resisted to join a regional bloc (RTB) (Ministry of Economy, Trade and Industry 2001). Wall (2002) stated that because more than 60% of Japan's trade was with countries that are members of a major RTB, its reluctance may have had significant effects on its pattern and volume of trade. He found that Japanese trade, especially Japanese exports, had been reduced by the regional integration of its trading partners.

The percentage of ASEAN total trade value in Japan increases from 12.1% in year 1990 to 14.0% in year 2003. ASEAN registers a 1.9% increment in its trade value in Japanese total trade. Therefore, it is crucial to ask whether the importance of ASEAN for Japan is fully realized. Conversely, the percentage trade value of Japan in ASEAN-5 is 25.9%, 21.2%, 16.1% and 14.1% for year 1980, 1990, 2000 and 2003 respectively. The percentage of total trade of Japan in ASEAN decreases from 1980 to 2003, meanwhile the intra-ASEAN trade value has registered a growth rate of around 2-5% in ASEAN total trade value from year 1980 to 2000 (IMF various issues). Therefore, changes in trade volume between Japan and ASEAN through the trade creation or trade diversion effects resulted from the establishment of AFTA are questionable.

ASEAN has a sustained trade deficits with Japan for a long time. On the other hand, Japan has trade surplus with ASEAN since the 1990s. Among the ASEAN countries, Indonesian exports have been heavily reliant on the

Japanese market. In 2003, almost 22.3% of exports from Indonesia were directed to Japan. Japan imports less from Malaysia, Thailand and the Philippines. The total imports from these countries constitute 3.28%, 3.10% and 1.8% of the Japanese total imports respectively. However, in 2003, the exports from these countries to Japan constitute 13.6%, 14.2% and 15.9% out of their total exports respectively. Compared with the other ASEAN member countries, Singapore exports much less to Japan. Exports from Singapore to Japan constitute merely 6.7% of Singaporean total exports (IMF various issues).

The above-mentioned aspects of Japan – ASEAN trade raise an important issues: Japan has been a relatively important market for ASEAN but not vice versa and Japan has been a comparatively important supplier to ASEAN but not vice versa. From this point of view, there are some questions to ask. First, will AFTA create or divert the trade flows between Japan and ASEAN-5 countries? Second, will ASEAN-5 become an important supplier to Japan after the implementation of AFTA? Third, will ASEAN become an important market for Japan after the implementation of AFTA? Fourth, will the relationship between Japan and ASEAN-5 be complementary or asymmetry?

For the purpose of this study, we examine the impact of AFTA on Japanese imports and exports trade flows with ASEAN-5 countries based on Vector Error Correction Model (VECM). Our study differs from the previous studies in two ways. First, we examine the impact of regional integration (AFTA) on non-integrators (Japan) by estimating a single equation for each of the five countries in ASEAN in order to provide better understanding of the individual country. Second, instead of analyzing the bilateral trade flows at the aggregate level, we disaggregated the data by analyzing the imports flow and exports flow between Japan and five ASEAN member countries.

METHODOLOGY

The standard exports and imports demand models are as follow:

$$Q_m = A \left(\frac{P_d}{EP_f} \right)^\alpha Q_d^\beta \quad (1)$$

$$Q_x = B \left(\frac{EP_f}{P_d} \right)^\gamma Q_f^\delta \quad (2)$$

where Q_m and Q_x are the real imports and exports of the home country respectively, E is the nominal exchange rate, P_f is the foreign price and P_d is the domestic price, Q_d is the real domestic income and Q_f is the real foreign income. The determinants of bilateral imports demand are the import price, domestic price and domestic income. Konno and Fukushige (2002) considered domestic income, domestic price, foreign export price and exchange rate as the main determinants of each country's bilateral import volumes. On the other hand, Fountas and Bredin (1998) and Arize and Ghosh (1994), Arize (1999) provided new evidence on both long and short run exports demand functions. In their studies, four determinants of exports were considered, namely, foreign economic activity, export price, foreign prices and exchange rate volatility. The empirical literatures on bilateral trade flow based on gravity model usually considered domestic income, foreign income and distance between two countries as the main determinants of each country's bilateral trade flow. For the purpose of the study, the exports and imports demand functions follow the modern empirical literature on the estimation of long run exports and imports functions with few modifications. We add real domestic income for exports demand function and real foreign income for imports demand function as suggested by the gravity model. We also add dummy variable to account for the impact of AFTA. Therefore, the bilateral exports and imports demand functions for Japan with ASEAN-5 are as follows:

$$\ln X_t = \beta_{10} + \beta_{11} \ln Y_t^* + \beta_{12} \ln Y_t + \beta_{13} \ln P_t^* + \beta_{14} \ln PX_t + \beta_{15} ER_t + \beta_{16} D_t + \varepsilon_{1t} \quad (3)$$

$$\ln M_t = \beta_{20} + \beta_{21} \ln Y_t^* + \beta_{22} \ln Y_t + \beta_{23} \ln P_t^* + \beta_{24} \ln PM_t + \beta_{25} ER_t + \beta_{26} D_t + \varepsilon_{1t} \quad (4)$$

Where,

- X_t is the real exports of Japan to ASEAN-5 countries,
- M_t is the real imports of Japan from ASEAN-5 countries,
- Y_t^* is the real domestic product of Japan,
- Y_t is the real domestic product of ASEAN-5 countries,
- P_t^* is the domestic price of Japan,
- PX_t is the exports price of Japan,
- PM_t is the imports price of Japan,
- ER_t is the exchange rate between Japan and ASEAN-5 countries (Yen/ respective ASEAN currency),

D_i is the dummy variable coded 1 for year 1993 onwards to account the impact of AFTA, and 0 otherwise

ε_i is the error term.

All data are collected from International Financial Statistics (IFS) and Direction of Trade Statistics of the International Monetary Fund. Annual data spanning from 1970-2003 are used. The Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) tests are employed to test for the stationary. Then, we apply the Johansen and Juselius multivariate co-integration test followed by Granger causality tests within error correction modeling (VECM).

EMPIRICAL RESULTS

We subject the data to both the augmented Dickey-Fuller (ADF) and Philips-Perron (PP) unit root tests to examine the stationary of the series. From Table 1, the null hypothesis of a unit root cannot be rejected for all the series in level, as indicated by both ADF and PP tests. Conversely, ADF and PP tests have rejected the hypothesis of unit root for all series in first difference, implying that all series are integrated of order one, $I(1)$. Thus, the series are expedient in a co-integration analysis.

The result of Johansen multivariate co-integration test in Table 2 indicates one single co-integrating vector at 5% significance level, suggesting a clear and distinct long-run relationship of real gross domestic products, relative prices, exchange rate, AFTA with imports and exports flows between Japan and ASEAN-5 countries. Thus, there is a reason to expect higher imports and exports flows between Japan and ASEAN-5 countries after the implementation of AFTA. Based on the estimated equations which reported in Table 2, we could expect that, in general, higher real gross domestic products of ASEAN-5 countries may increase Japanese imports and exports demand from ASEAN. This indicates that the higher income level of the ASEAN-5 countries will enhance the production capacity and in turn increase the exports. In addition, higher income level will also increase domestic consumption and imports demand. These support the reason why there is an increase in Japanese imports and exports flows with ASEAN-5 countries.

Conversely, an increase in the Japanese income level does not seem to enhance the trade flows with ASEAN-5 except for Singapore. This could imply that Japan is less reliant on international trade because she owns a

TABLE 1. Unit root tests

	ADF			PP				
	Level		1st Difference	Level		1st Difference		
	No Trend	Trend	No Trend	Trend	No Trend	Trend		
Gdp								
Lyj	0.14[0]	-2.17[0]	-4.90[0]***	-4.98[0]***	0.12[2]	-2.21[2]	-4.86[2]***	-4.99[1]***
Lym	-2.25[0]	-2.30[0]	-5.06[0]***	-5.29[0]***	-2.25[1]	-2.34[1]	-5.06[1]***	-5.29[1]***
Lyi	-1.57[1]	-2.92[5]	-4.06[0]***	-4.13[0]**	-1.25[3]	-1.91[2]	-4.02[2]***	-4.16[1]**
Lyp	-0.35[0]	-2.14[0]	-4.26[0]***	-4.20[0]**	-0.58[2]	-2.34[2]	-4.26[0]***	-4.20[0]**
Lyt	-1.53[0]	-1.74[0]	-5.65[0]***	-5.70[0]***	-1.53[1]	-1.78[2]	-5.65[2]***	-5.70[1]***
Lys	-2.61[0]	-1.63[1]	-3.91[0]***	-4.21[0]**	-2.38[1]	-1.41[1]	-3.91[1]***	-4.23[1]**
Exchange rate								
Lem	-0.33[0]	-2.74[0]	-5.45[0]***	-5.39[0]***	-0.33[0]	-2.74[0]	-5.45[0]***	-5.39[0]***
Lei	-0.24[0]	-2.75[0]	-5.10[0]***	-5.04[0]***	-0.18[1]	-2.75[0]	-5.10[0]***	-5.04[0]***
Lep	-0.43[0]	-1.86[0]	-5.77[0]***	-5.67[0]***	-0.40[2]	-2.01[3]	-5.77[2]***	-5.67[2]***
Let	-0.74[0]	-3.68[0]**	-7.19[0]***	-7.07[0]***	-0.67[1]	-3.65[3]**	-7.23[1]***	-7.10[1]***
Les	-1.26[0]	-2.68[0]	-4.71[0]***	-4.63[0]***	-1.26[0]	-2.68[0]	-4.71[1]***	-4.76[1]***
Exports								
Ljmx	-1.95[0]	-1.44[0]	-4.26[0]***	-4.45[0]***	-1.88[2]	-1.44[0]	-4.00[1]***	-4.25[1]**
Ljix	-2.32[0]	-3.08[0]	-5.87[0]***	-5.97[0]***	-2.36[1]	-3.08[0]	-5.92[2]***	-6.05[3]***
Ljpx	-0.42[0]	-2.01[1]	-4.58[0]***	-4.50[0]***	-0.49[1]	-1.88[2]	-4.58[0]***	-4.50[0]***
Ljix	-0.75[0]	-2.18[1]	-4.38[0]***	-4.33[0]***	-0.77[2]	-1.59[0]	-3.92[1]***	-3.86[1]**
Ljxs	-2.13[0]	-1.09[0]	-4.97[0]***	-5.38[0]***	-2.12[1]	-1.18[1]	-4.97[0]***	-5.37[2]***

TABLE 1. (cont.)

	ADF			PP			
	Level		1st Difference	Level		1st Difference	
	No Trend	Trend	No Trend	Trend	No Trend	Trend	
Imports							
Ljimm	-0.87[0]	-3.11[0]**	-4.18[2]***	-4.09[2]**	-0.87[1]	-3.19[2]	-5.55[1]***
Ljim	-1.90[0]	-2.28[1]	-5.74[0]***	-5.96[0]***	-2.32[1]	2.30[2]	-5.74[1]***
Ljpm	0.26[0]	-2.01[0]	-5.34[0]***	-5.41[0]***	-0.24[1]	-2.04[1]	-5.34[1]***
Ljtm	-0.55[1]	-1.89[1]	-4.03[0]***	-3.96[0]**	-0.56[2]	-1.71[3]	-4.02[1]***
Ljism	-1.87[0]	-2.29[0]	-5.89[0]***	-6.08[0]***	-1.91[1]	-2.32[1]	-5.89[1]***
Prices							
Lpd	-2.12[0]	-2.41[0]	-6.83[0]***	-3.39[0]*	-1.99[3]	-2.89[1]	-3.91[3]***
Lpm	-1.98[0]	-2.76[1]	-3.96[0]***	-4.15[0]**	-2.08[1]	-2.76[1]	-3.91[3]***
Lpx	-0.91[0]	-2.95[1]	-4.51[0]***	-4.80[0]***	-1.11[2]	-2.93[2]	3.95[1]***

Notes: Asterisks (**), (*), (*) denote significant at 1 percent, 5 percent and 10 percent level respectively. Optimal lag lengths are provided in parentheses. All sample period covered from 1970–2003. The following notation applies in the tables: i = Indonesia, p = Philippines, t = Thailand, s = Singapore, m = Malaysia, j = Japan, ly = gross domestic product, le = exchange rate, ipd = domestic price, ipm = import price, lpx = export price.

TABLE 2. Johansen multivariate cointegration test results

Countries	k	λ -Max (Maximum Eigenvalue Statistics)						
		$H_0: r = 0$	$H_0: r \leq 1$	$H_0: r \leq 2$	$H_0: r \leq 3$	$H_0: r \leq 4$	$H_0: r \leq 5$	$H_0: r \leq 6$
Japan export flows to								
Malaysia	1	58.72*	39.80	28.25	22.39	15.65	9.20	1.94
Indonesia	1	54.16*	34.41	27.55	20.85	11.63	10.46	2.79
Philippines	1	63.17*	38.29	22.67	19.88	13.16	8.65	3.29
Thailand	1	48.62*	31.87	29.41	23.99	13.52	8.15	0.55
Singapore	1	50.58*	39.34	27.96	20.37	13.87	9.55	3.74
Japan import flows from								
Malaysia	1	60.53*	29.62	26.36	17.88	14.57	7.15	1.69
Indonesia	1	60.41*	38.88	27.27	16.80	15.47	6.58	1.35
Philippines	1	61.27*	27.16	22.82	21.88	12.78	8.44	3.24
Thailand	1	47.24*	24.73	21.72	15.72	12.77	9.76	2.53
Singapore	1	58.30*	38.45	21.44	12.89	10.68	8.77	3.60

Notes: k is the number of lag length in VAR. The 5 percent critical values are: λ -max: $r = 0, 46.23, r \leq 1, 40.08, r \leq 2, 33.88, r \leq 3, 27.58, r \leq 4, 21.13, r \leq 5, 14.26, r \leq 6, 3.84$. Asterisks (*) denotes rejection of the hypothesis at (5%) significance level.

relative large resource endowment and produces the goods for self-sufficiency. This provides an idea of why Japan so far resisted in joining a regional trading bloc.

From the estimated equations in Table 3 and 4, in general, the coefficients of the domestic price, exchange rate, import and export prices have the expected signs. Therefore, we could make the following observations regarding the obtained estimates. We should first note that the appreciation of Japanese yen will encourage Japanese imports flow from ASEAN-5 countries while the depreciation of Japanese yen will increase Japanese exports flows to ASEAN-5 countries. This is due to the fact that an appreciation of a currency will make foreign goods become cheaper and therefore imports demand increases while a depreciation of a currency indicates that domestic goods become cheaper and thus promote the country's exports. We should also note that the reduction in import price relative to domestic price will in turn increase the imports demand. Another finding from this study is that an increase in exports price relative to Japanese domestic price will encourage the Japanese exports flow to ASEAN-5 countries.

The error correction estimation is employed to find the short run relationship between the macroeconomic variables in the exports and imports models. The results of estimation are reported in Table 5 and 6. In conjunction with whether AFTA Granger causes the exports and imports flows between Japan and ASEAN-5 countries, we find that AFTA is able to Granger causal the Japanese exports flow to Thailand and Malaysia. As such, we may say that AFTA tends to be more significant in influencing the Japanese exports flow to Thailand and Malaysia in the long run.

In addition, we also find that AFTA is able to Granger causal the Japanese imports flow from Malaysia and the Philippines in the short-run. Thus, AFTA tend to be more significant in encouraging the Japanese imports flow from Malaysia and the Philippines in the long run.

CONCLUSION

Japan has been expanding links with the original five ASEAN countries rapidly. In order to move for a wider economic integration of the Asia-Pacific region, it requires a more in-depth exploration. Therefore, this study aims to investigate the impact of AFTA on Japan-ASEAN-5 trade flows as well as trade relationship between Japan and ASEAN-5 after the

TABLE 3. Japan imports flow

Destination										
Malaysia										
Ljrm	=	-0.59	-0.32 lj	+0.39lym	+2.53 lpd	-1.34 lpm	+0.46 lem	+0.09 dum		
t-stat	=	-0.99	-8.23	3.40**	9.15**	-10.69**	3.40**	4.20**		
Adjusted R ²	=	0.98								
Indonesia										
Ljim	=	-5.17	-1.81 lj	+3.32 lyi	+1.16 lpd	-1.07lpm	-0.78 lei	-0.24 dum		
t-stat	=	-5.68**	-4.91**	9.14**	1.71	-3.46**	-2.88**	-5.22**		
Adjusted R ²	=	0.98								
Philippines										
Ljpm	=	2.79	-0.61 lj	+0.77 lyp	+0.7 lpd	-1.02 lpm	+0.07 lep	+0.1 dum		
t-stat	=	3.48**	-21.34	6.77**	2.56**	-9.22**	1.14	6.36**		
Adjusted R ²	=	0.97								
Thailand										
Ljtm	=	-0.58	-0.88 lj	+0.18 lyt	+5.58 lpd	-3.16 lpm	+1.09 let	+0.09 dum		
t-stat	=	-0.77	-4.57**	0.63	8.00**	-9.47**	2.41**	1.83		
Adjusted R ²	=	0.97								
Singapore										
Ljsm	=	-7.56	+2.42lj	-2.44lys	+2.74lpd	+1.41 lpm	-1.82 les	+1.46 dum		
t-stat	=	-3.5**	2.72**	-4.21**	2.04**	2.07**	-2.13**	9.53**		
Adjusted R ²	=	0.98								

Asterisks (**) denote significant at 5 percent level. The following notation applies in the tables:

i = Indonesia, p = Philippines, t = Thailand, s = Singapore, m = Malaysia, ly = gross domestic product, le = exchange rate, lpd = domestic price, lpm = import price, dum = AFTA.

TABLE 4. Japan exports flow

Destination									
Malaysia									
Ljmx	=	-1.54	+3.5 lyj	+0.62 lym	-7.59 lpd	+10.7 lpx	-2.3 lem	+0.2 dum	
t-statistics	=	-1.01	5.32**	0.83	-4.66**	7.13**	-3.84**	1.59	
Adjusted R ²	=	0.99							
Indonesia									
Ljix	=	2.22	-4.97 lyj	+4.58 lyi	-4.25 lpd	+6.61 lpx	-0.26 lei	+0.31 dum	
t-statistics	=	0.85	-7.15**	9.51**	-5.73**	7.06**	-0.84	4.71**	
Adjusted R ²	=	0.93							
Philippines									
Ljpx	=	-0.48	-0.08 lyj	+2.5 lyp	-1.16 lpd	+0.03 lpx	-2.02 lep	+0.24 dum	
t-statistics	=	-0.44	-1.77	14.33**	-3.10**	0.08	-10.60**	8.87**	
Adjusted R ²	=	0.96							
Thailand									
Ljtx	=	5.18	-3.34 lyj	+4.04 lyt	+3.22 lpd	-6.06 lpx	-1.54 let	-0.52 dum	
t-statistics	=	3.88	-2.86**	3.86**	3.16**	-4.68**	-1.25	-4.98**	
Adjusted R ²	=	0.98							
Singapore									
Ljsx	=	-4.52	+0.82 lyj	+0.02 lys	-0.1 lpd	+0.19 lpx	+0.18 les	+0.07 dum	
t-statistics	=	-1.99	5.12**	5.87**	0.57	1.04	0.8	3.18**	
Adjusted R ²	=	0.99							

Asterisks (**) denote significant at 5 percent level. The following notation applies in the tables:

i = Indonesia, p = Philippines, t = Thailand, s = Singapore, m = Malaysia, ly = gross domestic product, le = exchange rate, lpd = domestic price, lpx = export price, dum = AFTA.

TABLE 5. Granger causality test results based on VECM

Dependent Variables	Lexport	Lyj	lyASEAN	lpd	Lpx	le	dum	ECT _{t-1}
Japan export flows to			F- statistics (p- value)					t- statistics
Malaysia (k=1)								
lexport	-	0.71(0.41)	0.02(0.89)	1.28(0.27)	3.89(0.06)*	1.30(0.27)	3.38(0.08)*	- 3.09**
lyj	0.40(0.53)	-	1.40(0.25)	1.57(0.22)	0.15(0.70)	1.51(0.23)	0.35(0.56)	0.56
lyasean	11.02(0.00)**	7.49(0.01)**	-	4.85(0.04)**	3.50(0.07)*	9.37(0.01)**	1.94(0.18)	0.31
lpd	8.02(0.01)**	12.69(0.00)**	10.02(0.00)**	-	1.32(0.26)	14.20(0.00)**	0.66(0.42)	1.37
lpx	22.65(0.00)**	12.49(0.00)**	14.08(0.00)**	6.03(0.02)**	-	14.32(0.00)**	0.57(0.46)	2.97**
le	9.45(0.01)**	0.13(0.73)	0.73(0.40)	0.24(0.63)	0.55(0.47)	-	0.04(0.85)	- 0.04
Indonesia (k=1)								
lexport	-	0.02(0.89)	1.62(0.22)	2.10(0.16)	0.21(0.65)	3.02(0.10)*	0.12(0.73)	- 2.07**
lyj	0.09(0.77)	-	2.68(0.12)	0.05(0.82)	1.34(0.26)	0.09(0.77)	0.02(0.90)	- 1.31
lyasean	0.01(0.92)	1.48(0.24)	-	0.002(0.99)	0.89(0.36)	0.003(0.96)	0.002(0.99)	- 0.82
lpd	0.02(0.90)	0.18(0.19)	1.41(0.25)	-	1.61(0.22)	0.38(0.54)	0.0004(0.98)	1.04
lpx	0.67(0.42)	0.46(0.50)	0.84(0.37)	0.73(0.40)	-	0.04(0.84)	0.04(0.84)	1.75
le	0.98(0.33)	3.14(0.09)*	3.41(0.08)*	0.26(0.62)	0.65(0.43)	-	0.13(0.72)	- 1.13
Philippines (k=1)								
lexport	-	0.19(0.66)	2.64(0.12)	3.01(0.10)*	2.63(0.12)	0.16(0.70)	1.28(0.27)	- 2.15**
lyj	0.89(0.36)	-	0.02(0.88)	1.01(0.33)	0.72(0.41)	0.28(0.60)	0.22(0.65)	- 0.72
lyasean	1.16(0.29)	0.69(0.42)	-	1.41(0.25)	1.01(0.33)	0.01(0.91)	2.75(0.11)	- 0.78

TABLE 5. (cont.)

Dependent Variables	Lexport	Lyj	lyasean	lpx	le	dum	ECT _{t-1}
Japan export flows to	F-statistics (p-value)						
lpx	0.61(0.44)	2.04(0.17)	0.46(0.50)	1.16(0.29)	0.63(0.44)	0.11(0.74)	0.79
lyj	2.18(0.15)	0.04(0.84)	1.02(0.32)	0.35(0.56)	0.67(0.42)	0.24(0.63)	-0.43
le	0.32(0.58)	0.69(0.42)	2.96(0.10)	7.55(0.01)**	2.74(0.11)	0.06(0.80)	-2.67**
Thailand (k=2)							
lexport	-	1.77(0.20)	4.39(0.03)**	7.46(0.01)**	3.95(0.04)**	4.05(0.04)**	-4.42**
lyj	0.69(0.52)	-	0.002(0.99)	1.10(0.36)	0.45(0.65)	0.18(0.84)	0.33
lyasean	0.61(0.56)	1.08(0.37)	-	0.82(0.46)	0.82(0.46)	0.01(0.99)	0.13
lpx	0.29(0.76)	4.03(0.04)**	1.66(0.22)	-	0.27(0.77)	0.16(0.85)	0.49
le	0.54(0.59)	1.07(0.37)	0.50(0.61)	0.004(1.00)	0.49(0.62)	0.02(0.98)	0.64
	2.69(0.10)	1.58(0.24)	1.17(0.34)	0.009(0.99)	0.53(0.60)	0.26(0.77)	-0.21
Singapore (k=1)							
lexport	-	0.08(0.79)	0.00(0.99)	0.01(0.92)	0.77(0.39)	0.46(0.50)	-2.44**
lyj	0.15(0.70)	-	2.60(0.12)	0.68(0.42)	0.12(0.73)	1.60(0.22)	-0.23
lyasean	0.19(0.66)	2.01(0.17)	-	0.46(0.24)	0.50(0.49)	1.20(0.28)	1.07
lpx	2.70(0.11)	5.55(0.02)**	4.84(0.04)**	-	0.02(0.89)	11.12(0.00)**	-0.93
le	1.41(0.25)	2.17(0.15)	1.19(0.29)	0.47(0.49)	-	4.19(0.05)*	0.59
	0.08(0.78)	0.37(0.54)	3.29(0.08)*	0.12(0.73)	0.01(0.93)	1.78(0.19)	1.43

Figures in brackets () are p-value. Asterisks(**) and (*) denotes significant at 5 and 10 percent level respectively.

TABLE 6. Granger causality test results based on VECM

Dependent Variables		lyj	lyasean	F-statistics (p-value)			le	dum	ECT _{t-1}
Variables	limport			lpd	Lpm			t-statistics	
Japan import flows from									
Malaysia (k=1)									
lexport	-	4.73(0.04)**	2.01(0.17)	12.28(0.00)**	2.16(0.16)	14.65(0.00)**	3.85(0.06)*	-7.15**	
lyj	0.07(0.79)	-	1.09(0.31)	0.07(0.79)	0.10(0.76)	0.25(0.62)	0.07(0.80)	-0.64	
lyasean	1.74(0.20)	1.19(0.29)	-	0.01(0.93)	0.01(0.92)	0.56(0.46)	0.03(0.88)	-1.47	
lpd	4.22(0.05)*	0.78(0.39)	0.03(0.86)	-	1.05(0.32)	0.15(0.70)	0.30(0.59)	-0.78	
lpm	1.59(0.22)	0.24(0.63)	0.001(0.98)	0.24(0.63)	-	2.21(0.15)	0.03(0.87)	0.15	
le	0.002(0.97)	1.04(0.32)	2.01(0.17)	0.04(0.85)	0.01(0.94)	-	0.03(0.86)	0.19	
Indonesia (k=2)									
limport	-	0.21(0.81)	1.24(0.32)	0.54(0.59)	0.71(0.51)	1.04(0.38)	0.96(0.41)	-2.38**	
lyj	9.77(0.002)**	-	0.22(0.81)	2.63(0.10)*	7.53(0.01)**	4.15(0.04)**	5.14(0.02)**	-4.19**	
lyasean	5.98(0.01)**	3.30(0.07)*	-	1.51(0.25)	4.72(0.03)**	2.25(0.14)	2.73(0.10)	-3.20**	
lpd	0.02(0.98)	0.37(0.70)	0.81(0.46)	-	0.45(0.65)	0.15(0.86)	0.04(0.96)	-0.05	
lpm	0.13(0.88)	0.35(0.71)	0.20(0.82)	0.03(0.98)	-	1.22(0.32)	0.01(0.99)	-0.14	
le	3.16(0.07)*	2.03(0.17)	0.16(0.86)	2.21(0.14)	3.76(0.05)*	-	1.62(0.23)	-2.32**	
Philippines (k=1)									
limport	-	13.80(0.001)**	2.65(0.12)	7.01(0.01)**	3.43(0.08)*	0.95(0.34)	3.11(0.09)*	-5.61**	
lyj	0.13(0.72)	-	0.26(0.62)	0.21(0.65)	0.21(0.65)	0.001(0.98)	0.10(0.75)	-0.17	
lyasean	1.19(0.29)	0.001(0.97)	-	2.03(0.17)	0.08(0.78)	0.98(0.33)	2.14(0.16)	-0.55	

TABLE 6. (cont.)

Dependent Variables		lyj	lyasean	lpd	Lpm	le	dum	ECT _{t-1}	
Variables	limport	F-statistics (p-value)							t-statistics
Japan import flows from									
lpd	1.69(0.21)	0.27(0.61)	0.04(0.84)	—	0.04(0.85)	0.003(0.96)	0.01(0.93)	0.70	
lpm	8.00(0.01)**	0.06(0.80)	0.58(0.45)	0.90(0.35)	—	3.16(0.09)*	0.08(0.78)	-0.09	
le	4.40(0.05)*	0.24(0.63)	0.14(0.72)	0.17(0.69)	0.68(0.42)	—	0.71(0.41)	0.07	
Thailand (k=1)									
limport	—	3.29(0.08)*	2.67(0.12)	3.74(0.07)*	2.02(0.17)	6.64(0.02)**	0.001(0.98)	-2.62**	
lyj	0.07(0.79)	—	0.39(0.54)	2.83(0.11)	0.02(0.89)	1.76(0.20)	0.06(0.81)	-1.18	
lyasean	0.03(0.87)	0.53(0.47)	—	2.25(0.15)	0.29(0.59)	0.11(0.75)	0.04(0.84)	-0.87	
lpd	1.04(0.32)	0.89(0.35)	0.24(0.63)	—	0.02(0.90)	0.49(0.49)	0.01(0.92)	0.53	
lpm	6.15(0.02)**	0.05(0.82)	0.65(0.43)	0.004(0.95)	—	2.12(0.16)	0.001(0.97)	0.55	
le	4.77(0.04)**	1.76(0.20)	0.02(0.89)	0.65(0.43)	0.65(0.43)	—	0.002(0.96)	0.86	
Singapore (k=2)									
limport	—	1.21(0.33)	1.03(0.38)	5.00(0.02)**	1.78(0.20)	1.36(0.29)	0.86(0.44)	-3.08**	
lyj	1.0(0.39)	—	3.48(0.06)*	3.09(0.08)*	1.20(0.33)	3.18(0.07)*	0.76(0.48)	-0.29	
lyasean	5.34(0.02)**	0.63(0.55)	—	5.04(0.02)**	4.13(0.04)**	1.89(0.19)	1.04(0.38)	-3.60**	
lpd	0.54(0.59)	1.01(0.39)	0.04(0.96)	—	0.39(0.69)	1.13(0.35)	0.07(0.94)	0.10	
lpm	0.17(0.85)	0.02(0.98)	0.29(0.75)	0.18(0.83)	—	0.16(0.85)	0.18(0.84)	-0.42	
le	0.11(0.89)	3.62(0.05)*	9.11(0.00)**	1.17(0.34)	0.42(0.67)	—	4.51(0.03)**	-2.33**	

Figures in brackets () are p-value. Asterisks(**) and (*) denotes significant at 5 and 10 percent level respectively.

implementation of AFTA. To achieve the objectives of the study, it is crucial to analyze the Japanese imports and exports flows with ASEAN-5 countries. From the analysis, we successfully demonstrate that the real gross domestic products of Japan and ASEAN-5 countries, domestic price, imports price, exports price, exchange rate and AFTA are significant indicators of the bilateral trade relationships between Japan and ASEAN-5 countries. This result indicates that AFTA has increased the imports and exports flows between Japan and ASEAN-5 countries. This finding is in conjunction with the recent development and efforts by ASEAN to accelerate institutional progress towards regional integration through both widening its membership to include the entire South-East Asia region and pursuing wider economic cooperation with other countries such as Japan. Interestingly, we discover that the higher income level of Japan does not increase the Japanese imports and exports demand from ASEAN-5 countries except for Singapore. This could imply that Japan is less reliant on regional trade and therefore, so far resisted in joining a regional trading bloc. Singapore's case is an exception as being an entry port or intermediary country. Singapore re-exports the intermediate and capital goods from Japan to neighboring countries. Furthermore, Japan is increasingly exporting intermediate and capital goods to Singapore for her own domestic consumption as a result of her active involvement in high-tech, value added and knowledge-intensive activities.

The parameters of Japanese real gross domestic products in Japanese imports demand function shows a negative sign for all ASEAN-5 countries except for Singapore. However, the parameter of ASEAN real gross domestic products in Japan exports demand function shows a positive sign for all ASEAN-5 countries. This indicates that Japan has been a comparatively important supplier to ASEAN but not vice versa. This is due to ASEAN's recent rapid economic development that has stimulated a substantial increase in imports of intermediate and capital goods from Japan. Japan's trade with ASEAN has been in ASEAN's favor because of its important supplies of industrial resources but ASEAN's efforts in exploring the Japanese market for its finished and semi-finished products have not been successful. Conversely, Japan has been a comparatively important supplier for Singapore and vice versa.

From the results, the parameter of ASEAN real gross domestic products in Japanese imports demand function and the parameter of Japanese real gross domestic products in Japanese exports demand function show a positive sign and negative sign, respectively, except for the case of Singapore. This reflects that ASEAN's exports as a share of GDP have been

higher than that of Japan generally. We may suggest that ASEAN's economic performance has been more reliant on its exports drive than does Japan. This reflects that Japan has been a relatively important market for ASEAN but not vice versa. However, Japan-Singapore shows a complementary relationship. In general, trade relationship between Japan and ASEAN is asymmetrical rather than complementary.

Therefore, we may conclude that although the implementation of AFTA has increased the Japanese imports and exports demand from ASEAN-5 countries but ASEAN as a whole is not as important as the US or the EU to Japan. From ASEAN's point of view, its exports and imports trade with Japan is crucial. ASEAN depends on the Japanese market to export their products and obtain supplies but not vice versa. Japan does not face much difficulty in exporting to ASEAN-5 because of the better quality and competitiveness of Japanese products. However, Japan has limited space for ASEAN's manufactured goods, agricultural and marine products. We cannot deny that Japanese market is very competitive and almost all types of manufactured goods can be produced in Japan with quality at reasonable price. Therefore, ASEAN as a whole should make more efforts to improve the quality of goods in exploring the Japanese market.

REFERENCES

- Anaman, K. A. & Al-Kharusi, L. H. S. 2003. An Analysis of Trade Flows between Brunei Darussalam and the European Union. *ASEAN Economic Bulletin* 20(1): 60-72.
- Arize, A. C. 1999. The Demand for LDC Exports: Estimates from Singapore. *The International Trade Journal* 13(4): 345-370.
- Arize, A. C. & Ghosh D. K. 1994. Exchange Rate Uncertainty and Recent U.S Export Demand Instability. *The International Trade Journal* 8(3): 347-365.
- Clarete, R., Edmonds, C., Wallack, J. S. 2003. Asian Regionalism and Its Effects on Trade in the 1980s and 1990s. *Journal of Asian Economics* 14: 91-129.
- Elliott, Robert. J. R. & Ikemoto, K. 2004. AFTA and the Asian Crisis: Help or Hindrance to ASEAN Intra-Regional Trade? *Asian Economic Journal* 18(11): 1-23. Ireland. *Applied Economics Letters* 5: 301-304.
- Greaney, T. M. 2001. *Assessing the Impacts of US-Japan Bilateral Trade Agreements, 1980-1995*. Blackwell Publisher Ltd: 127-157.
- Hassan, M. Kabir. 2001. Is SAARC a Viable Economic Block? Evidence from Gravity Model. *Journal of Asian Economics* 12: 263-290. D.C.: IMF.
- International Monetary Fund (IMF). 2003. *Directions of Trade Statistics*. Washington, D.C.: IMF.
- _____. *Directions of Trade Statistics, Various Issues*. Washington, D.C.: IMF.

- Jensen, P. E. 2000. Analysis of Bilateral Trade Patterns with Panel Data. *Review of International Economics* 8(1): 86-99.
- Matsubayashi, Y. & Hamori, S. 2003. Some International Evidence on the Stability of Aggregate Import Demand Function. *Applied Economics* 35: 1497-1504.
- Martinez-Zarzoso, I. & Nowak-Lehmann, F. 2003. Augmented Gravity Model: An Empirical Application to Mercosur-European Union Trade Flows. *Journal of Applied Economics* 6(2): 291-316.
- Ministry of Economy, Trade and Industry. 2001. *Report on the WTO Consistency of Trade Policies by Major Trading Partners*.
- Nilson, Lars. 2000. Trade Integration and the EU Economic Membership Criteria. *European Journal of Political Economy* 16: 807-827.
- Sharma, S. C. & Chua, S. Y. 2000. ASEAN: Economic Integration and Intraregional Trade. *Applied Economics Letters* 7: 165-169.
- Tang, T. C. & Nair, M. 2002. A Co integration Analysis of Malaysian Import Demand Function: Reassessment from the Bounds Test. *Applied Economics Letters* 9: 293-296.
- Thornton, J. & Goglio, A. 2002. Regional Bias and Intra-Regional Trade in Southeast Asia. *Applied Economic Letters* 9: 205-208.
- Wall, H. J. 2002. Has Japan Been Left Out in the Cold by Regional Integration? *The Federal Reserve Bank of St. Louis*: 25-36.
- Yu, Chwo-Ming & Zietlow, D. S. 1995. The Determinants of Bilateral Trade Among Asia-Pacific Countries. *ASEAN Economic Bulletin* 11(3): 298-305.

Faculty of Management
Multimedia University
Jalan Multimedia
63100 Cyberjaya
Selangor, Darul Ehsan, Malaysia
e-mail:ccyong@mmu.edu.my

