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The Effects of ASEAN Free Trade Agreement (AFTA) on Intra ASEAN Trade: 1986-2010

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ABSTRACT

The ASEAN Free Trade Agreement (AFTA) was set up in 1993 and has already shown significant effects by 2010. This study empirically investigates the effect of trade creation on intra-ASEAN trade for the period of 1986 to 2010. Using the gravity model, we find that major determinants of bilateral trade in ASEAN are GDP, population, relative endowment, distance and common border. A dummy variable is introduced to measure the intra-ASEAN trade and trade creation among five ASEAN member countries. Our finding suggests that trade between the selected member countries remains strong even during the 1997 Asian Financial Crisis and the 2008 Global Financial Crisis.

Keywords: AFTA, Intra-ASEAN trade, gravity model, AEC

INTRODUCTION

ASEAN is among the first agreements on regional economic co-operation in East Asia. Unlike other regional associations in the world, ASEAN has no supranational authority or responsibility. The ASEAN Secretariat conducts annual meetings to discuss issues concerning the relationship between member countries such as trade, investment, security, custom, and tourism. ASEAN was formed on 8 August 1967 in Bangkok with five original members namely Indonesia, Malaysia, Thailand, the Philippines and Singapore (ASEAN-5). Cooperation in the economic, social, cultural, technical and educational areas is the main objective in the Bangkok declaration. Other objectives include promoting regional peace and stability through respect for justice, the rule of law in the region and adherence to the principles of the United Nations Charter. The expansion of ASEAN's membership is the peak of the gradual rapprochement process between the original ASEAN members and

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other neighboring countries namely Brunei, Cambodia, Laos, Vietnam and Myanmar. On 8 January 1984, Brunei became the sixth member of ASEAN followed by Vietnam on 28 July 1995, Laos and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. In the early beginning after the birth of ASEAN, relationships among members have focused on political, social and security matters, with less focus on economic considerations.

The process of regional economic integration in ASEAN began with the formation of the ASEAN Free Trade Area (AFTA) at the fourth summit was held in Singapore in 1992. ASEAN became the first organization in the East Asian region that agreed to promote integrated economic cooperation. The main objective of AFTA is to increase the region's competitive advantage as a single production unit. The key element in AFTA is the Common Effective Preferential Tariff (CEPT) Scheme which covers manufactured products and agricultural products. Under the CEPT scheme, tariffs for ASEAN-5 members on a wide range of products traded within the region should be eliminated by 2010. According to ASEAN Secretariat Report (2011), by 2010, ASEAN-6[1] has already eliminated 54,467 tariff lines or 99.65 per cent of the traded tariff lines under CEPT. The total ASEAN trade has expanded more than double from US$82.46 billion in 1993 to US$174.25 billion in 2003. In 2010, total ASEAN trade has reached more than US$1.5 trillion.

In 2007, ASEAN leaders agreed to sign the ASEAN Economic Community (AEC) blueprint with the objective of making ASEAN a single market and production base by 2015. The AEC aims to create a highly competitive economic region with equitable economic development and fully integrated into the global economy. The AEC is also said to be beneficial to the expansion of intra-ASEAN trade and improvement of the regional economy through greater gains from trade and FDI (Plummer, 2006). This led the members to sign the ASEAN Trade in Goods Agreement (ATIGA) in 2009. ATIGA replaces the role of CEPT with a broader coverage of tariff and non-tariff barriers liberalizations, rules of origin, trade facilitation, customs, standards and conformance, sanitary and phytosanitary measures.

In light of the removal of tariff among members and the implementation of stronger economic integration through AEC, this study aims to provide empirical evidence of the significance of AFTA on intra-ASEAN trade. ASEAN has faced many challenges and undertaken several reformations by 2010. Firstly, there was the establishment of AFTA in 1993, followed by two episodes of financial crises in 1997/1998 and 2007/2008 and the implementation of AEC in 2007. This study focuses on the original ASEAN (ASEAN-5), expecting to observe positive effects on intra-ASEAN trade.

LITERATURE REVIEW

Previous studies have analyzed the effects of Regional Trade Agreements (RTAs) or

[1]ASEAN-6 includes Brunei.

Preferential Trade Agreements (PTAs) in terms of the volume of trade. The literature on trading blocs typically concentrates on the Vinerian principles of trade creation and trade diversion (Aitken, 1973; Bergstrand, 1985; Hamilton & Winters, 1992; Frankel *et al*, 1995; Frankel & Wei, 1997; Endoh, 1999; Sharma & Chua; 2000; Soloaga & Winters, 2001; Thorton & Goglio, 2002; Clerete *et al*., 2003; Elliot & Ikemoto, 2004).

A number of studies examine the effects of PTAs, such as European Union, North America Free Trade Area (NAFTA), the Andean Pact, and Latin America Free Trade Area (LAFTA), on bilateral trade. Thorton and Goglio (2002) investigate the degree of regional bias in intra-Southeast Asian trade involving Malaysia, Indonesia, Philippines, Thailand and Singapore. They find that ASEAN membership promotes intra-regional trade. Meanwhile, Soloaga and Winters (2001) modify the gravity equation to test for significant changes in trade patterns by separating the effect of PTAs. The studies include ASEAN. Their results are similar to Frankel (1997) which show a negative intra-bloc trade coefficient for ASEAN. However, they also find that the coefficients for overall bloc imports is statistically significant and positive. Another study by Clarete, Edmonds and Wallack (2003) on various PTAs and trade flows with Asian countries, find no significant impact on intra-bloc trade in ASEAN. In fact, they find an evidence of a reduction in imports and exports in that region that includes all its ten members.

Frankel and Wei (1997) study the trade and FDI among ASEAN economies by using gravity equation for 1980, 1990, 1992 and 1994. They conclude that the trade among ASEAN countries is higher in trade creation than trade diversion. With limited data, they predict that new ASEAN members, particularly Vietnam and Indochinese countries, will have a seven-fold trade expansion in the next decade. Sharma and Chua (2000) use the gravity model to examine the impact of the APEC on the ASEAN integration on five ASEAN countries, namely Malaysia, Indonesia, Philippines, Thailand and Singapore for the period of 1980 to 1995. They find that dummy variables for intra-ASEAN trade are negative for all ASEAN-5 countries, except the Philippines. They conclude that the ASEAN, excluding the Philippines, PTA does not increase intra-ASEAN trade.

An interesting study by Elliot and Ikemoto (2004) examine intra-and-extra bias in bilateral trade flows pre and post signing of AFTA, the year prior to Asian crisis and its subsequent year. Their analysis cover the period of 1983 to 1999 where trade flows are found to be insignificantly affected immediately after 1992 but gradually increased the following years. This result suggests that the Asian crisis has worked as a trigger to a further acceleration of economic integration in the region. Similarly, Sudsawasd and Mongsawad (2007), tend to show that ASEAN-5 can realize the potential gain from stronger regional economic cooperation through full trade liberalization. Facilitating trade

among member countries and selected FTA partners promotes a potentially higher GDP growth and an increase in welfare gains. Another important study to see the effects of AFTA, done by Hapsari and Mangunsong (2006), reveals that the reduction of tariff among members does play important role in increasing intra ASEAN trade. The study covers the 10 year period after the implementation of AFTA (1993-2003) and it comprises of 19 countries including ASEAN countries.

On the other hand, Tho (2002), use a gravity model and a trade matrix analysis of manufactured products for ASEAN-5 and three major non-ASEAN partners, namely Japan, China and South Korea. It is discovered that the effect of AFTA on trade and investment effect is not as strong as predicted by the theory of free trade area. Park (2008) use a Computable General Equilibirum model (CGE) on the proposed East Asian RTA strategies. Multi-sector and multi-country CGE models are applied to evaluate the impact on welfare, GDP, export, and income. The finding reveals that the AFTA has a positive effect on the ASEAN members but negative effect on Northeast Asian neighbors. However, the gains from trade can reach its full potential if ASEAN members pursue the ASEAN Hub which applies the hub-and-spoke type of overlapping RTA strategy. Meanwhile, Plummer (2006) examine various economic and political related issues associated with the formation of AEC. It is noted that the potential benefit of AEC is much higher compared to AFTA. AEC needs to be outward oriented and liberal.

In summary, previous studies on the role of AFTA has yielded mixed results. This study offers current insight using recent data to estimate a period spanning seventeen years after the implementation of AFTA.

METHODOLOGY

The basic gravity equation explains the volume of bilateral exports from country i to country j by three factors. The first indicates the potential supply of the exporting country (i), the second explains the potential demand of the importing country (j), and the third includes the factors representing the resistance to trade flow between countries. In its basic form, bilateral exports from country i to country j are determined by the economic size, population, relative endowment, and geographical distances variables such as distance and border. Generally, the gravity model is specified as:

$$Ln\, X_{ijt} = a + a_1 lnY_{it} + a_2 lnY_{jt} + a3 lnPOP_{it} + a_4 lnPOP_{jt} + a_5 lnENDOW_{ijt} + a_6 lnDIST_{ij} + a_7 BOR_{ij} + e_{ijt} \quad (1)$$

where,

X_{ijt} = Total export at time t,

Y_{it} and Y_{jt} = GDP of the exporting and importing countries at time t,

POP_i and POP_j = Population of the exporting and importing countries at time t,

$ENDOW_{ijt}$ = Absolute difference between GDP per capita of the exporting and importing countries at time t,

$DIST_{ij}$ = Distance between two countries,

BOR_{ij} = Dummy variable which takes the value of 1 if the two countries share the common border and zero if otherwise,
e_{ij} = error terms.

GDP indicates the economic size of two countries in terms of production capacity and market size. The gravity model predicts that larger countries with greater production capacity are more likely to achieve economies of scale and enhance their exports based on comparative advantage. They also have large domestic markets which are able to attract more imports. Therefore, increases in GDP of the two countries are likely to increase bilateral trade volumes. On the other hand, the coefficient for population of the exporting country may have a positive or negative sign. The sign depends on whether the country exports less as it has large absorption capability or whether a large country exports more due to economies of scale, compared to a small country. For similar reasons, the coefficient for the importing country's population may have a negative or positive sign (Martinez-Zarzoso and Nowak-Lehmann, 2003). Another variable to be included is ENDOW. It is the per capita GDP difference between country i and j, expressed in absolute terms. A positive coefficient indicates that higher difference in per capita income has positive effect on the bilateral trade flows.

Distance serves as a proxy for transportation costs. Shorter distance implies lower transportation costs and higher volume of trade between two countries. In addition, the distance between pairs of countries is considered as an important linkage factor that affects trade flows. A dummy variable (binary variable) for common border is used to identify countries sharing a border. It enables border trade. Hence the estimated coefficient is expected to show a positive sign.

$$Ln\ X_{ijt} = a + a_1 lnY_{it} + a_2 lnY_{jt} + a3lnPOPit + a_4 lnPOP_{jt} + a_5 lnENDOW_{ijt} + a_6 lnDIST_{ij} + a_7 BOR_{ij} + a_8 AFTA + e_{ijt} \quad (2)$$

Equation 2 is an augmented gravity model which includes AFTA as a dummy where it takes the value of one if the exporter and importers are ASEAN members starting from 1993 to 2010, and zero otherwise. Thus, the dummy represents the period when AFTA was implemented until the full effects of AFTA. Thus, the dummy represents the period AFTA implementation till its effects. Following Ghosh and Yamarik (2004), a positive value of the estimated coefficient can be interpreted as trade creation. It indicates that the two countries trade more with each other. Therefore, the size and statistical significance of the coefficient on the AFTA suggests the existence of intra-regional trade between the five ASEAN economies. On contrary, negatively significant coefficient implies that they trade less with each other. Dummy variables for the Asian Financial Crisis (Crisis1) and the Global Financial Crisis (Crisis2) are added into the model to represent financial crises which occurred in 1997/998 and 2007/2008 (Equation 3).

$$Ln\ X_{ijt} = a + a_1 lnY_{it} + a_2 lnY_{jt} + a3lnPOPit + a_4 lnPOP_{jt} + a_5 lnENDOW_{ijt} + a_6 lnDIST_{ij} + a_7 BOR_{ij} + a_9 AFTA + a_{10} Crisis1 + a_{11} Crisis2 + e_{ijt} \quad (3)$$

This study employs a panel of five ASEAN countries for the period of 1986 to 2010. The methods used are Pooled Ordinary Least Square (POLS) and Random Effects Model (REM). Contrary to previous studies, we choose REM over the Fixed Effects Model (FEM) to avoid omitting hypothesized variables, namely the dummies for AFTA and financial crises.

DATA DESCRIPTION

The estimation of panel data for 25 years (1986 to 2010) includes five exporting countries from ASEAN, namely Malaysia, Indonesia, Singapore, the Philippines and Thailand. There are thirty nine selected importing countries[2], mainly from Asia and some other developed and developing countries. Overall, our data consists of an unbalanced panel of 190 trading pairs with 4534 observations. Bilateral export data are in Dollar terms based on current rate taken from COMTRADE database, as published by the United Nation. Data for GDP, per capita GDP, and population are extracted from the World Development Indicators, as published by the World Bank. Measurement for distance and common border are derived from Centre D'Etudes Prospectives Et D'Informations Internationales (CEPII)[3]. In addition, information about free trade agreement is compiled from published information by the ASEAN secretariat.

EMPIRICAL RESULT AND DISCUSSION

Table 1 summarizes the estimation results, where Columns (1) to (3) show the POLS results and Columns (4) to (6) present the REM results. The coefficients for market size of exporting countries (*lnYi*) and importing countries (*lnYj*) are positive and statistically significant. This suggests that bigger market size implies higher trade flows to and from the countries. However, the coefficients for population ($lnPOP_i$) of exporting and importing countries are negative and statistically significant. This suggests that a highly populated ASEAN country, such as Indonesia, might focus on producing goods for domestic consumers and trade less with other countries. Meanwhile, a country with a small population, such as Singapore, tends to trade more with others. The coefficient for relative endowment ($lnENDOW_{ij}$) is positive and statistically significant. It implies that larger difference in relative endowment encourages more trade between two countries. Such implication supports the Hecksher-Ohlin hypothesis. The coefficient for border (BOR_{ij}) shows a positive sign in POLS. It suggests that neighboring countries

[2]A list of the selected importing countries is included in the appendix.

[3]Distances are calculated following the great circle formula, which uses latitudes and longitudes of the most important city (in terms of population) or of its official capital.

tend to trade more with each other. However, this coefficient is found to be statistically insignificant in REM. The coefficient for distance ($lDIST_{ij}$) is negative and statistically significant. It supports higher trade volume with lower transportation costs.

The coefficient for the AFTA dummy is positive and statistically significant in both models (see Column 3). It confirms that free trade agreement encourages trade. This finding confirms the evidence from Hapsari and Mangunsong (2006) which find the reduction of tariff among members increase bilateral export of ASEAN members. This also supports that the CEPT scheme with tariff removal among its members has successfully promoted intra-ASEAN trade. This finding also captures the full effects of AFTA which was implemented in 1993 and ended in 2010. Within this

TABLE 1
The Impact of AFTA on ASEAN Trade: 1986-2010

	POLS				REM			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
lnY_i	1.69[a]	1.63[a]	1.63[a]	1.71[a]	1.82[a]	1.77[a]	1.77[a]	1.82[a]
	(32.82)	(30.98)	(30.98)	(30.84)	(14.14)	(13.78)	(13.79)	(14.17)
lnY_j	1.06[a]	1.07[a]	1.07[a]	1.08[a]	.759[a]	.729[a]	.737[a]	.787[a]
	(53.31)	(53.86)	(53.89)	(54.23)	(4.64)	(4.61)	(4.64)	(5.27)
$lnPOP_i$	-.598[a]	-.593[a]	-.592[a]	-.604[a]	-.626[a]	-.619[a]	-.619[a]	-.626[a]
	(-34.17)	(-33.7)	(-33.75)	(-33.82)	(-17.06)	(-16.93)	(-16.94)	(-17.17)
$lnPOP_j$	-.231[a]	-.237[a]	-.236[a]	-.237[a]	-.033	-.034	-.035	-.044
	(-0.34)	(-14.69)	(-14.69)	(-14.81)	(-0.71)	(-0.62)	(-0.76)	(-0.94)
$lnENDOW_{ij}$	.036[a]	.032[a]	.032[a]	.033[a]	.094[a]	.091[a]	.091[a]	.093[a]
	(2.33)	(2.08)	(2.11)	(2.15)	(2.26)	(2.20)	(2.22)	(2.24)
$lnDIST_{ij}$	-1.35[a]	-1.26[a]	-1.26[a]	-1.27[a]	-.649[a]	-.649[a]	-.651[a]	-.444[a]
	(-40.2)	(-33.42)	(-33.48)	(-33.70)	(-2.91)	(-2.67)	(-2.66)	(-2.24)
BOR_{ij}	.521[a]	.451[a]	.452[a]	.453[a]	.974	.949	.952	.9547
	(6.79)	(5.59)	(5.62)	(5.60)	(1.61)	(1.55)	(1.55)	(1.55)
AFTA		.473[a]	.462[a]	.452[a]		.593[a]	.569[a]	.544[a]
		(5.46)	(5.32)	(5.22)		(3.60)	(3.45)	(3.34)
Crisis1			.183[a]	.151[a]			.1875[a]	.149[a]
			(2.82)	(2.33)			(4.48)	(4.13)
Crisis2				-.356[a]				-.323[a]
				(-4.95)				(-7.36)
Constant	-25.0[a]	-24.73[a]	24.75[a]	26.52[a]	-29.74[a]	-28.25[a]	-28.36[a]	-30.58[a]
	(-20.86)	(-20.60)	(-20.61)	(-20.93)	(-6.40)	(-6.29)	(-6.29)	(-7.36)
No. Obs.	4479	4479	4479	4479	4479	4479	4479	4479
F-statistics/ Wald test	F (7, 4471) = 882.79[a]	F (8, 4470) = 809.99[a]	F (9, 4469) = 720.39[a]	F (10, 4468) = 650.00	547.17[a]	581.85[a]	620.25[a]	693.30[a]
R^2	0.6867	0.6893	0.6897	0.6912	0.6569	0.6639	0.6646	0.6676

Notes: Numbers in parentheses are t-values. Notations [a],[b], [c] indicate significance at 1 per cent, 5 per cent and 10 per cent levels.

period, the trade among ASEAN members has increased about 72%[4]. Our finding also reveals that even during the financial crises, the intra-ASEAN trade remains strong with a significantly positive coefficient. This finding is in line with Elliot and Ikemoto (2004) which support evidence of intra ASEAN trade increases during Asian financial crisis. In fact, during the 1997 Asian Financial Crisis, currency depreciation makes trading among members more favorable compared to the effect of the 2008 Global Financial Crisis (Columns 3 and 4).

CONCLUSION

In this study, the effects of AFTA are estimated for the period from 1986 to 2010. The gravity model is employed in examining bilateral trade between selected ASEAN countries. The estimated coefficients are correctly signed and statistically significant for GDP, population, relative endowment and distance. It implies that these factors influence bilateral trade flows. The AFTA dummy shows that trade between member countries increases after the implementation of AFTA. This study captures the full effect of AFTA since original ASEAN members have totally removed tariff and non-tariff barriers among each other by 2010. Thus, trade between members becomes cheaper and countries even trade more during the 1997 Asian Financial Crisis compared to the 2008 Global Financial Crisis.

In summary, the AFTA benefits ASEAN members with trade. In the beginning, the CEPT scheme helps in enhancing international trade liberalization. It is substituted with ATIGA that focuses more on comprehensive legal instrument for trade facilitation. The implementation of AEC in 2007 goes beyond removing tariff and non-tariff barriers. 87 measures out of 277 have been completed during the review of Phases 1 and 2 for ASEAN Scorecard dated from 2008 to 2011. The AEC aims to achieve a single market and production base by the year 2015. However, based on the experience of AFTA which took seventeen years to complete instead of the projected ten years, ASEAN may need more time to realize the full potential of AEC.

[4](Exp (0.544) – 1) x 100 = 72.2%

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