

THE ASIAN FINANCIAL CRISIS AND GLOBAL FINANCIAL CRISIS: EVIDENCE FROM ASEAN FREE TRADE AREA

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Abstract

This study empirically investigates the effect of the two series of financial crisis on intra ASEAN trade. Using the gravity model, this study further examines whether the formation of the ASEAN Free Trade Area (AFTA) resulted in an increase in intra ASEAN trade for the period 1986 to 2010. From basic gravity variables, the study found that market size, population, relative endowment, distance and common border are the main determinants of bilateral trade in ASEAN. The results reveal that the Asian financial crisis in 1997-98 did trigger the intra ASEAN trade compared to the global crisis in 2007-08. Closer examination also shows that the establishment of AFTA increases trade creation in the region as most of members already removed tariff among members.

Field of Research: ASEAN, Intra Regional Trade, Gravity Model, Financial Crises

1. Introduction

Regionalism has come late to Asia. ASEAN was among the first agreement on regional economic co-operation in East Asia. Unlike other regional associations in the world, ASEAN has no supranational authority or responsibility. However, there is an annual meeting that discusses many issues including trade, investment, security, custom, tourism and others conducted by ASEAN Secretariat. Historically, ASEAN was formed on 8th August 1967 in Bangkok with the five original members namely Indonesia, Malaysia, Thailand, the Philippines and Singapore. Cooperation in the economic, social, cultural, technical and educational areas was the main objective in the Bangkok declaration. In addition, the aim was to promote regional peace and stability through abiding respect for justice and the rule of law in the region and adherence to the principles of the United Nations Charter.

The expansion of ASEAN's membership was the peak of a process of gradual rapprochement between the original ASEAN members and Brunei, Cambodia, Laos, Vietnam and Myanmar. On 8th January 1984, Brunei Darussalam became the sixth member of ASEAN followed by Vietnam on 28th July 1995, Laos and Myanmar on 23rd July 1997, and Cambodia on 30th April 1999. Since the birth of ASEAN, relationships among members have focused on political, social and security matters, with economic considerations being less prominent.

The process of regional economic integration in ASEAN continued with the formation of the ASEAN Free Trade Area (AFTA) at the fourth summit in Singapore in 1992, which became the first organization in the East Asia region aimed at encouraging integrated economic cooperation. The main objective of AFTA is to increase the ASEAN 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 as well as agricultural products. Under the CEPT scheme, tariffs on a wide range of products traded within the region should be totally eliminated by 2010, for ASEAN5. Meanwhile, AFTA is still maintaining trade barriers from non-members at a level which was agreed upon as part of the Uruguay round. According to ASEAN Secretariat, the total ASEAN trade has expanded more than double from US\$82.46 billion in 1993 to US\$174.25 billion in 2003. In 2009, total ASEAN trade already reached at US\$1.5 trillion.

The biggest challenge faced by ASEAN members was the Asian financial crisis that hit the region in 1997 and 1998. Many experts predict that the crisis would be brought countries to poverty and distort the economic systems. The weakness in financial sector was the main concern and reasons the countries loss the value of the currency over the night. Many formulae and recipes were designed to bring the countries back including rescued from International Monetary Fund (IMF). Within two years, the ASEAN economy bounced back. Empirical evidences reveal that the Asian crisis has worked as a trigger for a further acceleration of the process of economic integration rather than as a hindrance (see Elliot and Ikemoto, 2004; and Ismail et. al, 2007).

In 2003, the ASEAN Secretariat announced the establishment of ASEAN Economic Community (AEC) by 2015 with aim to be a single market and production base, highly competitive economic region with equitable economic development and fully integration into global economy. The AEC is said to perform better not only for expansion of intra ASEAN trade but also to improve the whole of economy in the region. However, the global crisis in 2007/2008 that hit most of developed countries especially to the most important trade partners, the US and Western Europe distort trade flows in the region which encounter massive reduction of total ASEAN trade from 14.7% in 2007 to -19% in 2009; meanwhile, Intra ASEAN trade reduced from 13.9% to -20% for the same period.

Regarding the above issue; with the removal of tariff among members and implementation of deeper economic integration through AEC, this study aims to provide empirical evidence of the significant of AFTA in intra ASEAN trade. This study also further investigates whether the impact of the two financial crisis distort or enhance the trade within ASEAN members.

2. Literature review

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

A number of studies have been carried out to investigate the effect on bilateral trade of PTA such as European Union, North America Free Trade Area (NAFTA), the Andean Pact, Latin America Free Trade

Area (LAFTA). For instance, Thorton and Goglio (2002) investigate the degree of regional bias in intra-Southeast Asian trade including Malaysia, Indonesia, Philippines, Thailand and Singapore. They found that the membership of ASEAN does promote intra-regional trade. Meanwhile, Soloaga and Winters (2001) have modified the gravity equation to test for significant changes in trade patterns by separating the effect of PTAs (including ASEAN) on intra bloc trade, members' total imports and total exports. Their results are similar to Frankel (1997) which showed that the intra bloc trade coefficient was negative for ASEAN whereas the coefficients for overall bloc imports were statistically significant and positive. However, a study by Clarete et al.(2003) on the effect of various preferential trade agreements (PTA) on trade flows with Asian countries finds that there was no effect on intra-bloc trade in ASEAN; in fact they found evidence of a reduction in imports and exports in that region including all its ten members.

Frankel and Wei (1997) study trade and FDI among ASEAN economies by using gravity equation for 1980, 1990, 1992 and 1994. They concluded that trade among ASEAN countries is higher than one would expect which are trade creation instead of trade diversion. With data limitation, they predicted that the new ASEAN members particularly Vietnam and Indochinese countries will have trade expansion amounting to seven-fold for the next decade. Another study done by Sharma and Chua (2000) using a gravity model, examine each of five ASEAN countries namely Malaysia, Indonesia, Philippines, Thailand and Singapore based on data 1980 to 1995 to find the impact of the APEC on the integration of ASEAN. They found that the dummy variables for intra ASEAN trade are negative for all ASEAN5 except Philippines. They conclude that the ASEAN (excluding Philippines) PTA did not increase intra-ASEAN trade.

Influential study conduct by Elliot and Ikemoto (2004), examine intra-and-extra bias in bilateral trade flows before and after the signing of AFTA as well as the year of prior to and the following the Asian crisis which cover the period from 1983 to 1999. They found that trade flows were not significantly affected immediately after 1992 but gradually increased in the following years. Their result reveals that the Asian crisis has worked as a trigger for a further acceleration of the process of economic integration.

Similarly, Sudsawasd and Mongsawad (2007), shows by using gravity model ASEAN-5¹ will tend to realize the potential gains from stronger regional economic cooperation if they fully liberalized trade among themselves by having more trade among its member countries and between ASEAN-5 member countries and the selected FTA partners and perhaps that is the reason for potentially higher GDP growth. There are also welfare gains among ASEAN-5 member countries trading with FTA partners for ASEAN. Besides using Gravity model Tho (2002), using trade matrix analysis of manufactured products for ASEAN5 and three major non-ASEAN partners namely Japan, China and South Korea, found that trade and investment effect of the AFTA was not as strong as what the theory of free trade area would predict. Park (2008) uses CGE model to find the impact of proposed East Asian RTA strategies. He apply multi-sector and multi-country CGE model to evaluate the impact on the East Asian regional economic integration on welfare, GDP, export, and income. His finding reveals that the AFTA provide positive effect to the ASEAN members but negative effect with Northeast Asian neighbors. However, the gains from trade will be raised if ASEAN members pursue ASEAN Hub which applies the hub-and-spoke type of overlapping RTA strategy.

Based on previous studies the role of AFTA has mixed results. However, most of the data uses in most study are outdated. This study tries to fill the gap by using recent data to estimates seventeen years

¹ ASEAN-5 member countries are Indonesia, Malaysia, Philippines, Singapore, and Thailand

after the implementation of AFTA. Inspired study done by Elliot and Ikemoto (2004), this study compare the impact on two series of financial crisis on intra ASEAN trade.

3. Methodology

3.1 Model Specification

This study uses gravity model that originally explained the volume of trade flows in terms of the ratio of the product of the gross domestic product (GDP) of countries i and j to the distance between them. The estimation model is presented in equation (1). The dependent variable used is exports from country i (imports to country j) For linearizing the model, variables are in logarithmic form in year t .

$$\ln X_{ijt} = a + a_1 \ln Y_{it} + a_2 \ln Y_{jt} + a_3 \ln POP_{it} + a_4 \ln POP_{jt} + a_5 \ln ENDOW_{ijt} + a_6 \ln DIST_{ij} + a_7 BOR_{ijt} + e_{ijt} \dots \dots (1)$$

Equation (1) is a basic gravity model which contains basic determinants of bilateral trade such as market size ($\ln Y_i$ and $\ln Y_j$), population ($\ln POP_i$ and $\ln POP_j$), relative endowment ($\ln ENDOW$), distance ($\ln DIST$), and binary variables which are set equal to one if two countries share common border (BOR) and zero otherwise.

The gravity model predicts that bilateral trade should increase with market size, log of absolute difference in GDP per capita between exporters and importers as a proxy for relative endowment, and common border but decrease with distance. A dummy variable (binary variable) for common border is used to control for countries that share a border which allows them to have border trade. Distance is a proxy for transportation cost which shows the shorter the distance, the lower the transportation cost and the higher the volume of trade between in two countries. However, the expected result of the size of population and FTA are ambiguous. Frankel (1997) and Endoh (1999), considers that countries with a large population would be better able to exploit their own economies of scale in their larger domestic market than smaller countries. On the other hand, Brada and Mendez (1985) believe that a larger population in the importing country allows imports to compete better with domestic goods and compensates exporters for the cost of foreign sales activities.

$$\ln X_{ijt} = a + a_1 \ln Y_{it} + a_2 \ln Y_{jt} + a_3 \ln POP_{it} + a_4 \ln POP_{jt} + a_5 \ln ENDOW_{ijt} + a_6 \ln DIST_{ij} + a_7 BOR_{ijt} + a_8 AFTA + e_{ijt} \dots \dots (2)$$

The equation (2) is an augmented gravity model which includes AFTA is a dummy which equal to one if the exporter and importers are ASEAN members starting from 1993 to 2010, zero otherwise. The dummy represents the period when AFTA was implemented until the full effects of AFTA. Following Ghosh and Yamarik (2004), a positive value of the estimated coefficient can be interpreted as trade creation, which indicates that the two countries trade more than predicted by other variables. Therefore, the size and statistical significance of the coefficient on the AFTA suggests the existence of intra regional trade between the five ASEAN economies. A negative and significance, on the other hand implies that they trade less with each other than what would be expected.

$$\ln X_{ijt} = a + a_1 \ln Y_{it} + a_2 \ln Y_{jt} + a_3 \ln POP_{it} + a_4 \ln POP_{jt} + a_5 \ln ENDOW_{ijt} + a_6 \ln DIST_{ij} + a_7 BOR_{ijt} + a_8 AFTA + a_7 CRISIS1 + a_9 CRISIS2 + e_{ijt} \dots \dots (3)$$

Equation (3) includes dummy for Asian financial crisis 1997-98 (CRISIS1) and dummy for global financial crisis 2007-08 (CRISIS2).

For robustness purposes, equation (4) includes the interaction term between AFTA and the two financial crises.

$$\ln X_{ijt} = a + a_1 \ln Y_{it} + a_2 \ln Y_{jt} + a_3 \text{POP}_{it} + a_4 \ln \text{POP}_{jt} + a_5 \ln \text{ENDOW}_{ijt} + a_6 \ln \text{DIST}_{ij} + a_7 \text{BOR}_{ijt} + a_{10} \text{AFTA} * \text{CRISIS1} + a_{11} \text{AFTA} * \text{CRISIS2} + e_{ijt} \dots (4)$$

This study employ panel of five ASEAN countries for the period of 1986 to 2010. The methods used are Pooled OLS (POLS) and Random Effect Model (REM). Even though many studies proposed to use the Fixed Effect Model, to avoid hypothesized variables namely dummy for AFTA and financial crisis to be dropped, the REM model is preferable.

3.2 Data description

The estimation of panel data for 25 years (1986 to 2010) includes five exporter countries from ASEAN namely Malaysia, Indonesia, Singapore, The Philippines and Thailand. There are thirty nine selected import countries² mainly from Asia and some developed and developing countries. Therefore, this study consists of an unbalanced panel data of 190 trading pairs with 4534 observations. Bilateral export data are in dollar terms (current prices) taken from COMTRADE database, United Nation. GDP, Per Capita GDP, and Population were taken from World Development indicators, World Bank. Distance and Common border measures are taken from Centre D'Etudes Prospectives Et D'Informations Internationales (CEPII)³ meanwhile information about free trade agreement is built on the base of ASEAN secretariat information.

4. Empirical Result and Discussion

Table 1 presents the result of the impact of the formation of AFTA on intra ASEAN trade. Column (1) to (3) refer to the results of Pooled OLS, meanwhile column (4) to (6) refer to the results of Random Effect Model (REM). The coefficients for the market size for both exporters ($\ln Y_i$) and importers ($\ln Y_j$) are positive and statistically significant. This suggests that the bigger market size implies higher trade flows of the countries. However, both the coefficients of log population for exporters as well as importers are negative and significant. These results suggest that a country in ASEAN with a big population such as Indonesia might produce goods for domestic consumers to serve the domestic population and trade less with other countries, whereas a country with a small population such as Singapore trades more with others. The absolute difference between exporters and importers per capita GDP as a proxy for relative

² The list of the importers countries refer to 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.

endowment is positive and significant which implies that the more different in relative endowment, the more the two countries trade with each other, that support the Hecksher-Ohlin hypothesis.

Table 1: The Impact of the Implementation of AFTA on Intra ASEAN Trade

	Pooled OLS			Random Effect Model		
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln Y_i$	1.171*** (33.37)	1.705*** (33.37)	1.648*** (31.65)	1.849*** (40.24)	1.837*** (40.25)	1.808*** (14.47)
$\ln Y_j$	1.077*** (53.81)	1.064*** (53.65)	1.077*** (54.24)	0.776*** (13.67)	0.765*** (13.49)	.676*** (4.20)
$\ln POP_i$	-0.006*** (-34.67)	-.599*** (-34.58)	-.595*** (-34.34)	-0.620*** (43.98)	-0.623*** (-44.63)	-.620*** (-17.06)
$\ln POP_j$	-0.248*** (-15.75)	-.231*** (-14.41)	-.235*** (-14.69)	-.171*** (-3.55)	-0.143*** (-2.98)	-.152 (-1.29)
$\ln ENDOW_{ij}$	0.021 (1.38)	.030** (2.00)	.029** (1.92)	0.076*** (5.85)	0.094*** (7.22)	.094*** (2.27)
$IDIST_{ij}$	-1.421*** (-51.53)	-1.347*** (-40.37)	-1.246*** (-32.81)	-1.049*** (-20.63)	-0.692*** (-11.14)	-.669** (-2.92)
BOR_{ij}		.521*** (6.83)	.473*** (5.93)		1.076*** (9.83)	1.088* (1.70)
AFTA			.490*** (5.73)			.785*** (3.89)
Constant	-24.78*** (-20.95)	-25.35*** (-21.30)	-25.19*** (-21.16)	-25.18*** (-20.73)	-28.35*** (-22.67)	-25.51*** (-5.60)
No. Obs.	4534	4534	4534	4534	4534	4534
F-statistics/ Wald test	1017.15***	891.05***	823.40***	5291.77***	5496.85***	549.54***
R^2	0.6842	0.6858	0.6887	0.6692	0.6561	0.6475

The AFTA dummy is positive and significant in both models (column (3) and (6)) which confirm the free trade agreement did enhance trade among members. Within this period, if two countries were ASEAN members after the implementation of AFTA, they would trade about 2 times more than otherwise similar member countries.

Table 2 reports the results of the impact of financial crisis on intra ASEAN trade. All coefficients of standard gravity variables are of the correctly sign and statistically significant. In Column (1) and (5) the dummy for financial crisis 1997-1998 was found to have a positive and significant coefficient. AFTA dummy still positive and significant which implied that the five ASEAN countries did trade more during the crisis as found in Elliot and Ikemoto (2004). Dummy for financial crisis in 1997-98 is positive and significant. This implied that ASEAN export increases during the financial crisis. However, dummy for global crisis in 2007-08 shows negative and significant result.

Table 2: The Impact of Financial Crises on Intra ASEAN Trade

	Pooled OLS				Random Effect Model			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
lnY _i	1.649*** (31.69)	1.731*** (31.57)	1.705*** (33.40)	1.710*** (33.37)	1.806*** (14.5)	1.857*** (14.94)	1.83*** (14.86)	1.83*** (14.75)
lnY _j	1.077*** (54.26)	1.079*** (54.58)	1.066*** (53.67)	1.063*** (53.71)	0.696*** (4.25)	.731*** (4.82)	.768*** (4.67)	.773*** (4.80)
lnPOP _i	-.595*** (-34.39)	-.607*** (-34.48)	-.599*** (-34.65)	-.600*** (-34.57)	-.619*** (-17.0)	-.626*** (-17.28)	-.623*** (-17.18)	-.624*** (-17.12)
lnPOP _j	-.235*** (-14.69)	-.236*** (-14.82)	-.232*** (-14.47)	-.231*** (-14.43)	-.154 (-1.32)	-.162 (-1.38)	-.144 (-1.19)	-.143*** (-1.18)
lnENDOW _{ij}	.029** (1.94)	.029** (1.96)	.030*** (1.99)	.030*** (2.00)	.094** (2.28)	.095** (2.29)	.094** (2.29)	.094*** (2.29)
IDIST _{ij}	-1.24*** (-32.86)	-1.248*** (-32.96)	-1.338*** (-39.75)	-1.351*** (-40.05)	-.670*** (-2.91)	-.674*** (-2.89)	-.690*** (-2.94)	-.691*** (-2.94)
BOR _{ij}	.475*** (5.95)	.467*** (5.89)	.516*** (6.73)	.522*** (6.84)	1.088* (1.70)	1.08* (1.69)	1.076* (1.70)	1.07*** (1.70)
AFTA	.481*** (5.62)	.491*** (5.75)			.763*** (3.78)	.766*** (3.85)		
CRISIS1	.179*** (2.78)	-.378*** (-5.43)			.171*** (4.32)			
CRISIS2						-.337*** (-3.36)		
AFTA*CRISIS1			.428*** (2.50)				.313*** (5.02)	
AFTA*CRISIS2				-.141 (-0.68)				-.176 (0.61)
Constant	-25.22*** (-21.17)	-27.08*** (-21.56)	-25.48*** (-21.41)	-25.45*** (-21.32)	-25.64*** (-5.63)	-27.83*** (-6.49)	-28.42*** (-6.19)	-28.62*** (-6.13)
No. Obs.	4534	4534	4534	4534	4534	4534	4534	4534
F-statistics/ Wald test	732.21	733.79	781.52	780.12	573.84***	618.66***	521.98***	527.90***
R ²	0.6892	0.6905	0.6862	0.6858	0.6496	0.6597	0.6571	0.6559

For robustness, the interaction term between AFTA and crisis are included in the model. Column (3) and (7) shows the result of the intra ASEAN trade during Asian financial crisis is positive and significant. This result is very similar to Elliot and Ikemoto (2004) which also found that during the financial crisis they did trade more each other. In 1997, the ASEAN members set up the ASEAN Surveillance Process (ASP) which allowed them discuss solutions and methods to overcome the crisis. Furthermore, the devaluation of currency among the ASEAN members made trade among them become cheaper than other countries.

Another interaction term is a dummy between AFTA and global financial shows negative but insignificant (column (4) and (8)). During the global financial crisis 2007-08, the ASEAN members' currency were appreciate due to the US currency and the Euro were depreciate which results the intra ASEAN export more expensive, and thus decrease in intra ASEAN trade.

5. Conclusion

In this study, the effects of the formation of AFTA are estimated for the period 1986 to 2010. The powerful method in estimating bilateral trade namely gravity model is employed. Generally, the estimated coefficients of most basic determinants are correctly signed and statistically significant, indicating that GDP, population, relative endowment and distance between two countries and could influence bilateral trade flows.

The AFTA dummy is used to capture the effect of intra-ASEAN trade. The results show after the implementation of AFTA, ASEAN members trade each other more since by 2010 original ASEAN members already totally removed tariff and non tariff barriers among members. Thus, trade between members is cheaper than trade with other non member countries. The members even trade more during Asian financial crisis compared to global financial crisis.

In summary, the AFTA, which refers to the free trade agreement among developing countries or South-South Agreement, benefits the members with trade creation to the original members as well as the new members. The CEPT scheme is an important tool to improve not only domestic reformation but also to enhance the international trade liberalization. With the establishment of AEC in 2003, the future of ASEAN will be brighter with full commitment from the members.

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