Master's Thesis of International Studies

Do Free Trade Agreements always boost trade? Evidence from ASEAN

– An empirical analysis using gravity model –

자유무역협정은 무역을 반드시 활성화시키는가?
아세안에 대한 실증 분석

August 2020

Graduate School of International Studies
Seoul National University
International Commerce Major

Thanh Hao Dau

국제학석사 학위논문

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Do Free Trade Agreements always boost trade? Evidence from ASEAN–An empirical analysis using gravity model

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candidate for the degree of Master of International Studies and hereby certify that it is worthy of acceptance

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Date: August 2020

Abstract

Against the world recent inclination towards protectionism characterized by a number of anti-globalization measures such as US-China tariff race or the US's withdrawal from several international agreements, the Regional Comprehensive Economic Partnership (RCEP) — the ASEAN's most comprehensive Free Trade Agreement (FTA) with Australia, China, Japan, New Zealand, and South Korea is going to be concluded in December 2020. Given the prevalence of existing FTAs at individual country level and at ASEAN regional level with the rest of the world (including the five aforementioned major trade dialogue partners), the extent to which ASEAN members can reap additional trade benefits from RCEP is ambiguous. As a starting point to answer to this question, this study attempts to illuminate the effectiveness of the current FTA network in Southeast Asian nations.

A variety of gravity estimation approaches was applied on a panel data of 75 reporters with 165 some partners each over the 1990–2018 span to obtain the "purest effect" of FTA. This variable is stratified into three groups — (1) overall FTA capturing all types of FTAs that ASEAN members have involved, (2) a disaggregate level of overall FTA into ASEAN Free trade agreement (AFTA) and aggregate ASEAN plus FTA (APFTA), and (3) individual ASEAN plus FTAs, namely ASEAN-China, ASEAN-Japan, ASEAN-Korea, ASEAN-India, ASEAN-Australia-New Zealand are incorporated in three separate estimation specifications. One-year and five-year lag of all FTA dummies is added to investigate the phased-in effect of FTA. Furthermore, a comparative analysis is conducted by applying the estimation model for each ASEAN member to investigate their relative capability of FTAs' utilization.

When the fundamental issue of heterogeneity is accounted, most of the FTA coefficients turn out to be quantitatively negative, revealing FTA as a hindrance for trade at the aggregate level. This urges caution to policymakers in evaluating the effectiveness and also the feasibility of forming an FTA. At the individual country approach, FTA

coefficient results demonstrate very heterogeneous levels at which ASEAN members exploit FTAs to expand their trade. At the ASEAN regional approach, coefficients of region-wide FTAs vary vastly. Interestingly, the results of the estimated coefficients are neither in line with what would be expected theoretically from the differences in tariff elimination's coverage and schedule nor the differences in tariff gap levels between pre and post-FTA formation among these agreements. This somehow implies that tariff removal might not be a crucial momentum for trade of ASEAN countries specific and perhaps a further look into non-tariff provisions might help better explain the impact on trade of FTAs.

Keyword : AFTA, gravity models, panel data analysis, trade, economic integration, ASEAN Plus FTA, phased-in effect of FTA

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List of Notation and Abbreviation

ASEAN	Association of Southeast Asian Nations
FTA	Free Trade Agreement
SEA	South East Asia
AFTA	ASEAN Free Trade Area
AANZFTA	ASEAN–Australia–New Zealand Free Trade Area
ACFTA	ASEAN–China Free Trade Area
AKFTA	ASEAN–Korea Free Trade Area
AIFTA	ASEAN–India Free Trade Area
AJFTA	ASEAN–Japan Free Trade Area
APFTA	ASEAN Plus One Free Trade Area
OFTA	Other ASEAN–evolving Free Trade Area
ATIGA	ASEAN Trade in Goods Agreement
ROO	Rules of Origin
RTA	Regional Trade Agreement
PTA	Preferential Trade Agreement
TPSEP	The Trans–Pacific Strategic Economic Partnership
CEPT	Common Effective Preferential Tariff under AFTA
EIF	Entry into Force
ASEAN-6	Brunei, Indonesia, Malaysia, Singapore, Thailand, the Philippines
CLMV	Cambodia, Lao PDR, Myanmar and Viet Nam
WTO	World Trade Organization
APEC	Asia–Pacific Economic Cooperation

Chapter 1. Introduction

1.1 Some stylized facts and research motivation

1.1.1 Trends in preferential trade agreements

Globalization has transformed the world economy over the past decades with an ever-growing number of free trade agreements (FTA). According to the World Trade Organization (WTO), as of 1st June 2020, 303 regional trade agreements (RTA) were in force corresponding to 490 notifications from WTO members, not to mention to several RTAs are under negotiation. Figure 1.1 depicts a dramatic shift in the development of RTAs at the point of WTO establishment: the rather sluggish trend in the preceding period was superseded by a steady increasing one after the WTO's formation.

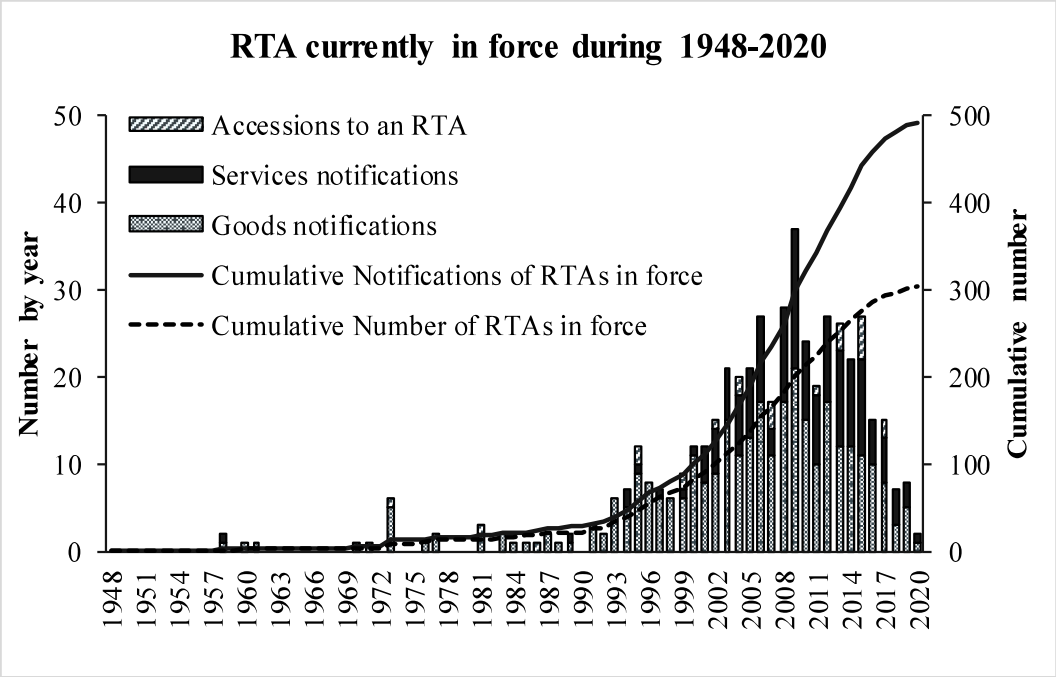

Figure 1. 1 Trend of RTAs during 1948–2020
(Source: author's derivation using WTO data)

Rampant RTAs bring countries into a more interconnected and intertwined one to another. Nowadays, two countries involve in various forms of preferential trade agreement (PTA) including country level bilateral FTA, region-wide FTA or multilateral FTA (Figure 1.2). As such, the effect of each FTA type on bilateral trade seems to be indistinguishable, or at least much effort is required to split out them.

In light of globalization, the Association of Southeast Asian Nations (ASEAN) meaningfully exemplifies the trend. The region has rooted with intra-ASEAN countries FTA and scaled up by signing FTA with six dialog partners – China, Korea, Japan, New Zealand and Australia. In what follow, these region-wide FTAs will be discussed in turn.

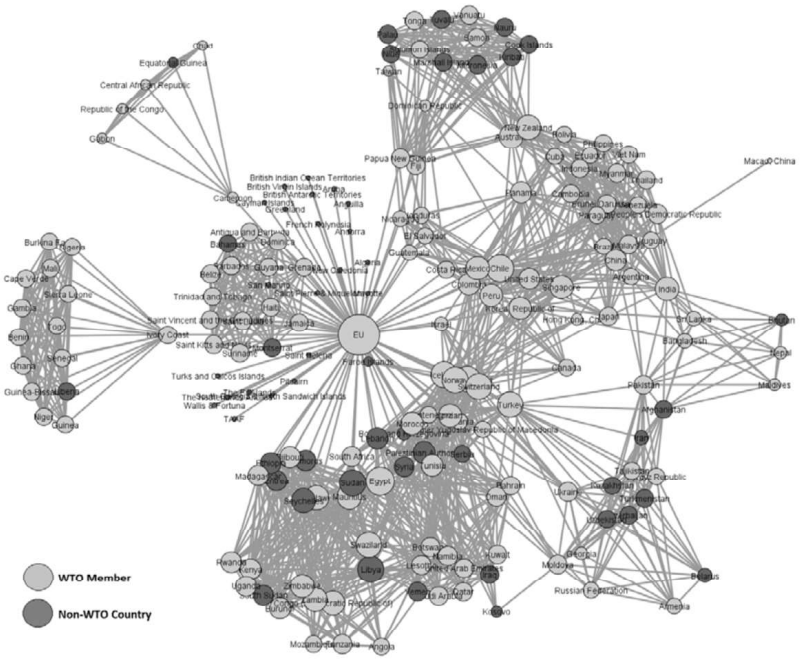

Figure 1. 2 The world PTA network in 2015
(Source: adopted from Pauwelyn and Alschner (2014))

1.1.2 ASEAN region-wide FTAs

ASEAN introduction

ASEAN was established in August 1967 by five countries: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Its main goal is to improve social–economic situation in the region. Over time, the number of members has expanded to ten countries, with the accession of Brunei in January 1984[1], Vietnam in July 1995, Laos and Myanmar in July 1997, and Cambodia in April 1999, which is often called CLMV group[2]. In 1976, all state members signed the Treaty to sets out the basic principles for Amity and Cooperation in the region. Following that, the ASEAN Free Trade (AFTA) was launched in 1992 with the introduction of the Common Effective Preferential Tariff (CEPT) scheme.

ASEAN Free Trade Area AFTA

AFTA was initiated by the ASEAN-6 group in 1992, later Vietnam joined in 1995, followed by Laos and Myanmar in 1997 and Cambodia was the last signatory to join in 1999. It was the first FTA in the East Asia region. The CEPT Scheme commitments determines tariffs reduction and non-tariff measures for goods being traded among ASEAN members which are categorized into four groups: (1) Inclusion List as subject to immediate elimination; (2) Temporary Exclusion List as temporarily shielded from tariff elimination; (3) Sensitive List as unprocessed agricultural products supposed to a relatively prolong reduction process; and (4) General Exception List for extremely sensitive goods and thus given the permanent exclusion. The tariff removal process goes through two phases. The first stage applies for goods belong to the Inclusion List for five to eight years, where the second stage applies for the rest of products and last for seven years.

AFTA sees a vigorous transforming in the last three decades. As of 2005, tariffs on 99% of products in the Inclusion List for ASEAN-6 were reduced to no more than 5%,

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[1] The five founding countries plus Brunei is often called ASEAN-6

[2] CLMV is comprised of the four starting letters of four countries

of which 60% actually have zero tariffs. For CLMV group, tariffs on about 81% of Inclusion List have been reduced to a within 5% range.

This Scheme has since been enhanced and superseded by the ASEAN Trade in Goods Agreement (ATIGA), which entered into force on 17 May 2010 to adapt better to changes in business environment. Under ATIGA, tariff rates of products in the Inclusion List were planned to be eliminated to zero percent by 2010 for ASEAN-6 and by 2015 for CLMV.

In fact, 99% tariff line belonging to Inclusion List has reached zero percent for ASEAN-6 and the share of tariff lines under 5% tariff rate was more than 95% for CLMV group as of 2010. In brief, the tariff commitment is virtually achieved after 20 years entering into force.

Trade from within ASEAN members as well as from the bloc to rest of the world has been on the rise. Figure 1.3 shows composition of ASEAN trade during 2004–2018 period. As can be seen, both import and export volume have gradually increased, although the share of intra-trade in total trade of ASEAN has levelled off at 25% over the period (Figure 1.3).

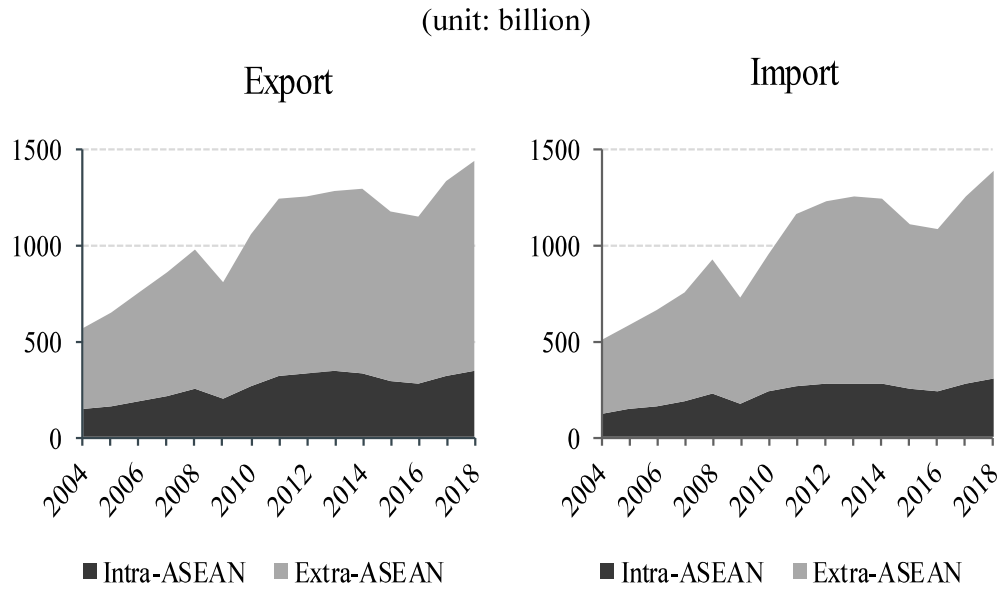

Figure 1. 3 ASEAN intra and extra trade during 2004–2018
(Source: author's derivation using ASEAN Stats data)

ASEAN Plus FTAs

ASEAN plus partnership was initiated in the aftermath of the 1997 financial crisis in the belief that it would fend off the risks of recession. So far, the region has signed FTAs with the biggest economies worldwide.

ASEAN–China FTA (ACFTA)

China had started to shift its trade with ASEAN since 1991. Their trade volume increased drastically since the mid of 1990s. The two sides had initiated FTA in 2002, starting with the Framework Agreement on Comprehensive Economic Cooperation. This Framework had served as a ground for the formation of the Agreement on Trade in Goods in 2004, Services section in 2007 and investment section in 2010. ACFTA opens up the world largest market (in terms of population) for ASEAN members and also an access to abundant natural resource as well as foreign market for China. ACFTA is no doubt a win–win cooperation between ASEAN and China. Figure 1.4 and Figure 1.5 show the tremendous increase in trade between ASEAN and China.

ASEAN–Japan FTA (AJFTA)

Of six countries, Japan is the first country to have established tie with ASEAN. The first informal dialogue relations between Japan and ASEAN dates back to 1973, which then developed into the formal forum level after four years. Japan has long been a big official development assistance (ODA) providers for developmental projects across ASEAN countries, which served as a foundation to build economic partnership between two sides. Their economic ties marked a milestone in 2003 with a comprehensive cooperation initiative being concluded at the 2003 ASEAN–Japan Commemorative Summit in Tokyo.

ASEAN–India FTA (AIFTA)

'Look East Policy' in 1991 set the first step of India's engagement with ASEAN. Since then, the partnership between India and ASEAN has strengthen significantly. India

became a full Dialogue Partner of ASEAN in 1995 and a member of the South East Asia region regional Forum (ARF) in 1996. Two parties signed the Comprehensive Economic Cooperation Agreement (CECA) as an institutional framework of FTA in October 2003, sparking negotiation on goods for the next six years. AIFTA was finally formed on 13 August 2009 in Bangkok during the of ASEAN' s Economic Ministers meeting.

ASEAN–Australia–New Zealand Free Trade Area (AANZFTA)

The New Zealand–ASEAN partnership took root in as early as 1975 but it was not until 2009 that two sides signed the ASEAN–Australia–New Zealand Free Trade Agreement (AANZFTA) at the 14th ASEAN Summit in Thailand. This is the first agreement that both Australia and New Zealand signed an FTA with a third party together.

ASEAN members have different liberalization commitments within each FTA. Singapore is the leading country to eliminate virtually all tariff lines right upon the agreement entering into force, followed by Thailand and Brunei. In the contrary, Indonesia records the lowest level of liberalization, it even reduces as little as 48.7% tariff lines towards India's commodities under AIFTA. In the same vein, six dialogue partners also differ in tariff removal's coverage imposed to ASEAN bloc. New Zealand and Australia offer a full tariff elimination, followed by China at 94% while India agreed to remove only 78.8%. As for Japan and Korea, they both cut around 90% tariff lines on ASEAN goods. In general, six dialogue partners are more liberal over ASEAN in terms of tariff removal coverage as shown in Table 1.1.

Apart from tariff coverage level, each dialogue partner as well as ASEAN group have its own tariff removal schedule (Table 1.2). In general, these FTAs offer a five to ten years span to complete tariff elimination commitments. A more detailed analysis is presented in the Chapter 4.

Table 1. 1 Tariff elimination coverage under ASEAN Plus FTAs
(Source: Adopt from (Isono, et al., 2013))

	AANZFTA	**ACFTA**	**AIFTA**	**AJFTA**	**AKFTA**	**Average**
Brunei	99.2	98.3	85.3	97.7	99.2	95.9
Cambodia	89.1	89.9	88.4	85.7	97.1	90
Indonesia	93.7	92.3	48.7	91.2	91.2	83.4
Lao	91.9	97.6	80.1	86.9	90	89.3
Malaysia	97.4	93.4	79.8	94.1	95.5	92
Myanmar	88.1	94.5	76.6	85.2	92.2	87.3
The Philippines	95.1	93	80.9	97.4	99	93.1
Singapore	100	100	100	100	100	100
Thailand	98.9	93.5	78.1	96.8	95.6	92.6
Viet Nam	94.8	N/A	79.5	94.4	89.4	89.5
Australia	100					
China		94.1				
India			78.8			
Japan				91.9		
Korea					90.5	
New Zealand						
Average	95.7	94.7	79.6	92.8	94.5	

Table 1. 2 Timeline for tariff elimination under ASEAN Plus FTAs
(Source: Adopt from Ikumo Isono 2013)

	ASEAN-6		CLMV		FTA Partner	
	Elimination (Normal Track)	Other reduction	Elimination (Normal Track)	Other reduction	Elimination (Normal Track)	Other reduction
AANZFTA	2020–2025	2020–2025	2020–2024	2025	2020	–
ACFTA	2012	2018	2018	2018	2012	2018
AIFTA	2017–2020	2017–2020	2022	2022	2017 (2020)	2020
AJCEP	2018	2018–2024	2023–2026	2026	2018	2018
AKFTA	2012 (2017)	2016	2018–2020	2021–2024	2010	2016

Trade between ASEAN and six dialogue partners sees a tremendous change during the last decades, export from ASEAN to these countries increase consistently during the 2004–2018 span except for the global crisis 2008–2019 period (Figure 1.5).

Same trend applies for import, albeit the pace differs among countries. While import from New Zealand, India, Australia increase slowly, the region experiences a surge in import from China, followed by Korea. As for Japan, its import from ASEAN is nevertheless fluctuated (Figure 1.5).

Change in import and export of ASEAN from/to these six countries determines the trend of balance of trade (BOT). Southeast Asia region witnesses an increasing trade deficit with China over the period and also with Korea at lower degree. At the same time, the bloc has long been in trade surplus with New Zealand and Australia. Japan, again, shows the most volatile BOT with ASEAN (Figure 1.6).

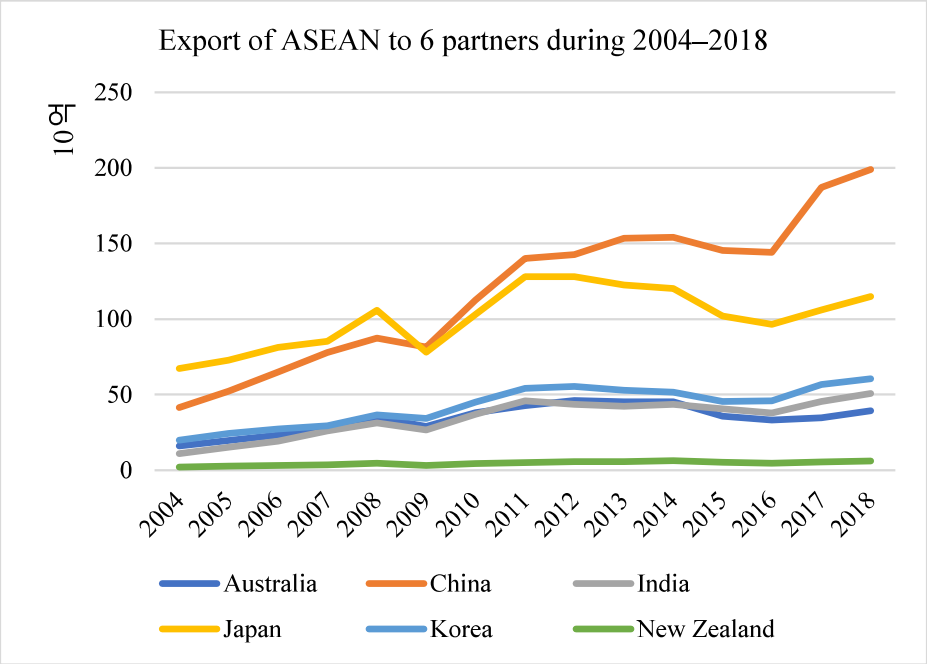

Figure 1. 4 ASEAN's export to six countries during 2004–2018
(Source: author's derivation using ASEAN Stats data)

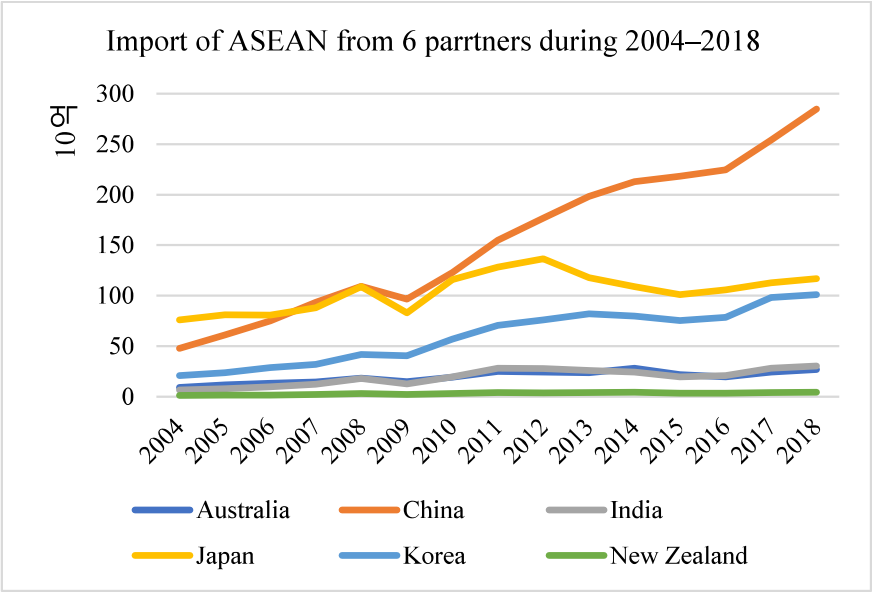

Figure 1. 5 ASEAN's import from six countries during 2004–2018
(Source: author's derivation using ASEAN Stats data)

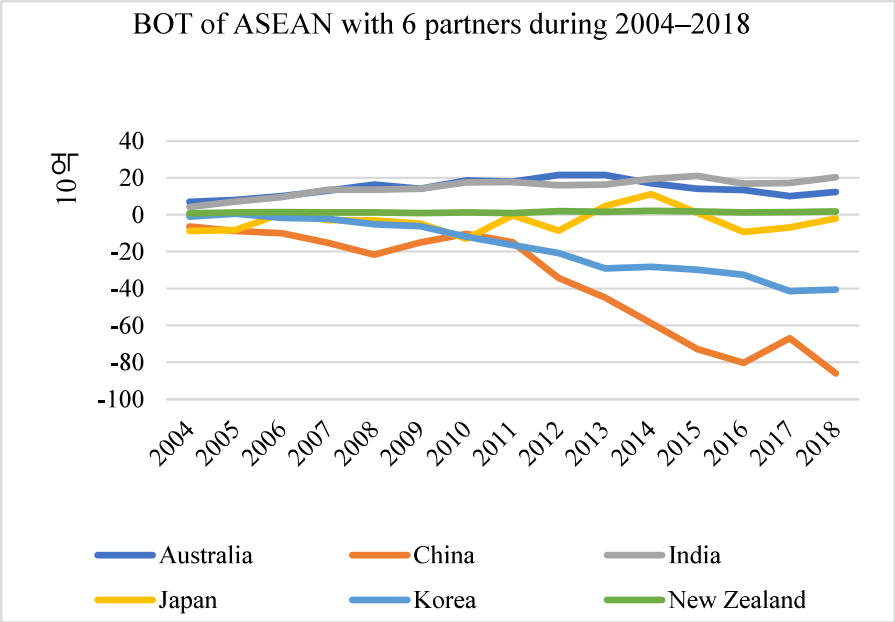

Figure 1. 6 ASEAN's BOT with six countries during 2004–2018
(Source: author's derivation using ASEAN Stats)

Other FTAs that ASEAN members have involved

Figure 1.7 provides a very intertwined and complex picture of current FTA network in ASEAN. Besides joining FTA under the name of ASEAN, each member states also have their own FTAs at both bilateral as well as multilateral level. This reflects a vastly varying in level of openness across countries.

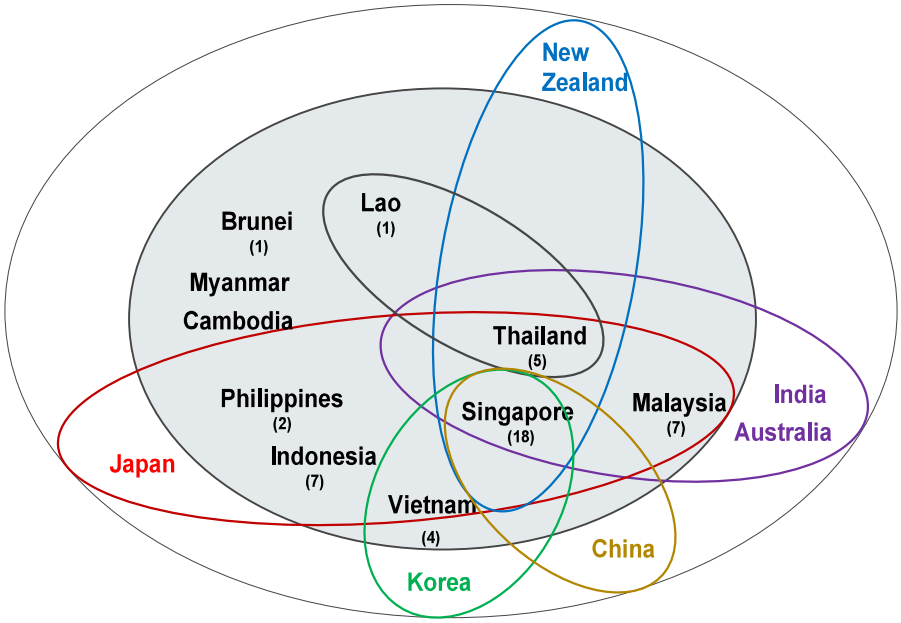

Figure 1. 7 FTA network in ASEAN as of June 2020
(Source: author's derivation using WTO RTA database)

Table 1.3 further demonstrates how heterogeneouss ASEAN members are in terms of openness. While Cambodia and Myanmar do not have any single FTA with other country at country level, Singapore has joined 6 multilateral FTA plus 12 other bilateral FTAs. Malaysia ranks the second country in terms of number of involved FTAs, followed by Thailand. Vietnam and Indonesia both signed three other bilateral FTAs each, while at the same time, Vietnam formed Eurasian Economic Union (EAFTA) while Indonesia has FTA with the European Free Trade Association or (EFTA).

Table 1. 3 List of countries and regions involved in FTA with ASEAN countries (Source: author using WTO RTA database)

	Brunei	Indonesia	Lao	Malaysia	The Philippines	Singapore	Thailand	Vietnam
Bil		Pakistan	Thailand	Australia	Japan	Australia	Australia	Chile
		Chile		Chile		Taiwan	New Zealand	Japan
		Japan		India		China	Chile	Korea
				Japan		Costa Rica	India	
				New Zealand		India	Japan	
				Pakistan		Japan		
				Turkey		Jordan		
						Korea		
						New Zealand		
						Panama		
						Peru		
						Turkey		
Multi	PSEP	EFTA			EFTA	USA		EAEU
						CPTPP		
						PSEP		
						EFTA		
						EU		
						GCC		

Note: Cambodia and Myanmar have no FTA and are thus dropped from the table.

A wide gap in economic freedom among ASEAN nations is further empirically supported. Figure 1.8 and 1.9 show trade volume in the form of log and average FTA level of ASEAN during the 1990–2018 period. It should be noted that FTA level ranges from zero to two, with a higher value indicating a more liberal economy. Again, Singapore's location at the top right corner of the plot shows its outstandingly high in trade volume as well as openness to the outsiders. This is followed by Malaysia and Thailand. Brunei's FTA index is relatively high although its trade volume is very small. Cambodia is the least country to open the economy to the world.

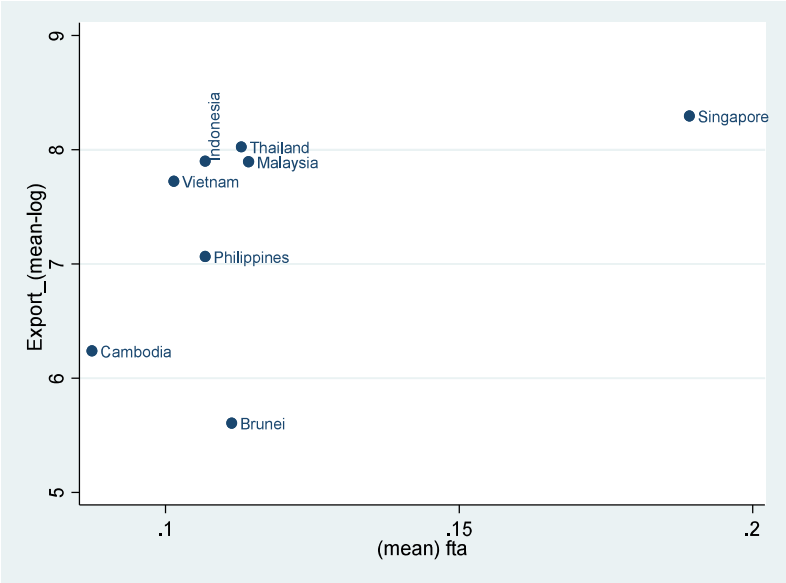

Figure 1. 8 ASEAN countries' export and FTA level
(source: author's derivation from dataset)

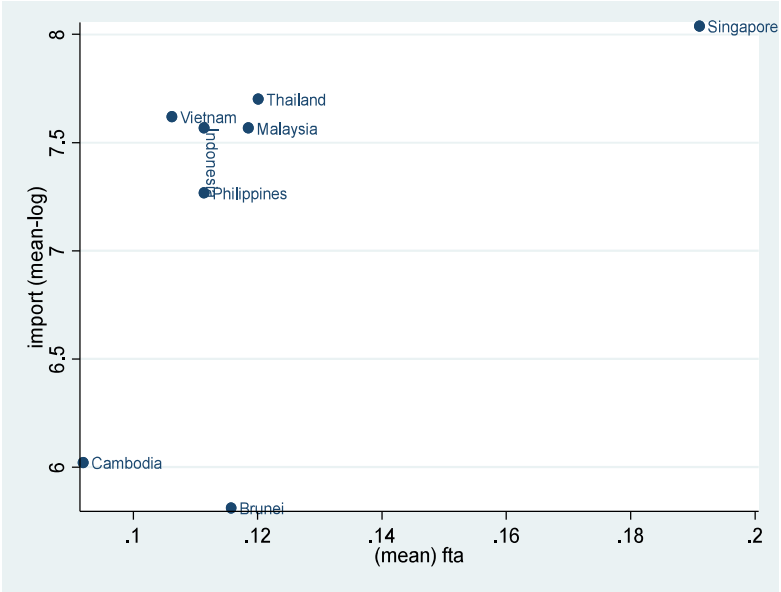

Figure 1. 9 ASEAN countries' import and FTA level
(source: author's derivation from dataset)

1.2 Overview of the study

Applying gravity model to examine the determinants of trade flows has widely utilized, especially since the era of globalization started booming in the World War II's aftermath. The impact on trade of FTAs is abundantly found in existing theoretical and empirical studies. In the same vein, ASEAN regionalism has become an interest topic to researchers since the inception of AFTA back in 1993.

Most studies have attempted to investigate AFTA's trade diversion and trade creation effect. Scholarly work in the early date applied CGE model to assess welfare and several other aspects triggered by trade liberalization. The basic idea of this method is to stimulate tariff elimination at different scenarios and see how it interacts with some major social–economic indexes. Therefore, CGE is more appropriate method for checking the feasibility to form an FTA or ante analysis. For ex–post evaluation, gravity model is considered superior and is thus frequently employed. Analyzing the impact on trade of AFTA in the early date often suffer from data insufficiency. Gradually, data infilling allows to construct panel data, making it possible to accommodate the so–called "multilateral resistance terms".

ASEAN is a very diverse and dynamic region in all senses. The level of economic development, political regime, culture, religion and the like are seemingly unique in each and every member. The degree of trade openness also varies vastly across countries due part to their developmental strategy. Against this backdrop, existing studies are generally incapable of incorporating this very feature into the model. Furthermore, there is no scholarly work involving the effect of overall FTAs network accommodating all types of FTAs that members have engaged so far, nor does exist empirically comparative analysis on ASEAN members' utilization of FTAs. In response to these flaws, this study takes a comprehensive approach where all relevant FTAs are inputted in a dynamic way into the 72(reporters)×172(partners)×28(years) matrix dataset for both export and import flows. Another very fact that member countries joint FTA at different time is also thoroughly checked and well reflected in the dataset. Data covering a relatively long span allows us to observe any specific shock that occur along the way or the typically

phased-in effect of FTAs. With that in mind, the following will explain the method of research along with data construction, results are interpreted subsequently and some implications based on results are drawn to conclude the study.

Chapter 2. Literature review

2.1 AFTA as a frequent object of RTA effect evaluation

ASEAN has emerged as the most dynamic area in the world in the last decades with a rampant expansion of FTAs at both country and region-wide level. There have been ample empirical studies on the impact of FTAs on ASEAN's trade flow using Computable General Equilibrium (CGE) and gravity model. Whereas the former is considered as an ante analysis to estimates the potential impact of FTA, the latter is used for post–trade evaluation. Right before the AFTA inception, it was anticipated to be one of the most efficient blocs to create intra-trade (Wang & Winters, 1992). Some analysis came after during the 1990s nevertheless found the trade creation impact of AFTA rather negligible. For example, Frankel, et al. (1995) incorporated ASEAN as a binary variable in an augmented trade gravity model. It first appeared to be quantitatively as large as 600% or six times by which intra-trade increases and statistically significant. However, the effect is no longer robust when the East Asia dummy was added into the model. The study suggested that AFTA would serve as a leverage to obtain a better position in a bigger scale FTA like APEC and perhaps global level FTAs. In Frankel's work–synthesized books titled "Regional Trading Blocs in the World Economic System (Frankel, et al., 1997)", he echoed the fade out effect of ASEAN with the presence of East Asia dummy. The final conclusion was that AFTA is in fact an effective agreement and at the same time, member states are also inclined to trade with outsiders which might have overshadowed the region's intra-trade. Likewise, Sharma and Chua (2000) examined the determinants of top five ASEAN countries' trade during the 1980–1995 period and found that ASEAN intra-trade volume is not beneficial from AFTA and these countries also accelerate its trade with other APEC members. Same finding is found in the report by Endoh (1999) in which he used a cross–sectional data for every five years during 1960–1995. Furthermore, AFTA is believed to have played no role in promoting trade within the region.

In short, AFTA in its early days was frequently juxtaposed with other region-wide FTAs when evaluating its effect and found not effective in stimulating ASEAN intra-trade. This finding is further supported in some recent studies. For instance, Venkatesh and Bhattacharyya (2014) conceded the very insignificant impact of AFTA. This result is based on modeling ASEAN's intra as well as extra data on relevant trade's influencing factors for pre and post–formation of AFTA period. Furthermore, he found that the net earning per traded good after joining AFTA become smaller than before and also the fact that ASEAN intra-trade was initially relatively robust compared to other regions often cause misbelief as to the effectiveness of AFTA. In the same vein, Bary (2015) applied time–varying fixed effect for FTA and pointed out a decline in magnitude overtime of trade creation effect, which is in contrast with trade diversion effect.

In general, scholarly work involving the impact on trade of AFTA by 2000 often bear data inaccuracy as "there is no clear date on which to focus" (Frankel, et al., 1997). Noticeably, 1992 is oftentimes falsely applied as the year of joining AFTA of all ASEAN members. In light of data construction, the log form turns all the less than one actual trade volumes to missing data. With that in mind, the latecomers have attempted to cope with these issues with several approaches.

Soloaga and Wintersb (2001) utilized Tobit model to fill up the bellow one trade volume to quantify the impact of AFTA together with other PTAs. AFTA shows the contradicting impact on intra-trade versus extra-trade for ASEAN bloc, with the former seeing the destructive effect and the later experiencing a significantly positive one.

Applying the same methodology as Venkatesh and Bhattacharyya (2014) yet Elliott and Ikemoto (2004) produces different result. That is, the impact of AFTA was negligible in the immediate years upon the agreement establishment and then increased in the next following years, demonstrating the linger effect of FTA. At the same time, ASEAN's extra-trade maintained vigorous in the post-AFTA formation and also during the 1997 Asian crisis. With regard to external shock, Ismail and King (2013) added the 1997 Asian crisis and the 2008 global financial crisis – the two biggest external shocks in South East Asia region during 1986–2010 period into model and found the estimate for AFTA

remain positive. Furthermore, the 1997 crisis actually bounded ASEAN members together and prompted them to trade more one to another under the pretext that a close linkage could mitigate the risk surfacing along the process.

Carrere (2006) measures the impact of AFTA using both panel and cross–sectional data and applies instrumental variable developed by Hausman and Taylor (1981) to account for unobservable country–pair characteristics. He asserted that most of the regional trade agreements including AFTA promotes trade from within the bloc while diminishes its imports from the rest of the world. However, the model proposed by Wong, et al. (2015) shows a positive impact of AFTA on ASEAN's outbound trade. For import side, trade creation effect is bigger than trade diversion one. On a whole, AFTA successfully fosters trades among ASEAN member countries.

In the "Go with the Gang, ASEAN!", Sudsawasd & Mongsawad (2007) scrutinize the trade potential of five ASEAN members, namely Indonesia, Malaysia, The Philippines, Singapore, and Thailand and seven potential FTA partners: The United States, Japan, Australia, India, New Zealand and South Korea. Utilizing both gravity model and CGE model, the study determines the most desirable FTA partners for these ASEAN–5 including China, United State, Japan, and India. It also suggests that ASEAN countries can better exploit FTA by maximize the liberalization level, claiming that doing so would help them allocate resources in a more efficient manner, improve terms of trade and suffer less from trade diversion. The results clearly indicate a potential gain for intra-trade and emphasizes the importance of cooperation in the region.

Considering the gradual tariff reduction scheme of AFTA, Bun, et al. (2009) believes the influence of AFTA on ASEAN intra-trade increase overtime and adds an interaction term between AFTA and time trend in the model to reflect this. AFTA in this approach is found quantitatively large. In the same vein, Kien (2009) employs different specification estimations to arrive at the most reliable model that accounts for the possibly high endogeneity. The study bases its advocates to the idea of upgrading AFTA into Free Trade Area like EU on the positive estimate of AFTA.

2.2 Relatively scant literature on individual ASEAN Plus FTAs

The expansion of ASEAN's dialogues with big economies that dominate the world trade led to the formation of five ASEAN Plus FTAs. Studies investigating the effectiveness of ASEAN bloc's openness to the world have been increasing accordingly. We now review the existing literature of each bilateral ASEAN Plus FTA in turn.

ASEAN–China FTA

China is the first country to have formed FTA with ASEAN back in 2004. Studies involving the impact of ACFTA is also relatively abundant. Yan (2007) investigates the static effect of ACFTA and finds trade diversion effect to be relatively robust compared to trade creation one, furthermore, the gap tends to diverge overtime. Roberts (2010) contemplates how ACFTA would affect less developed countries in ASEAN bloc or CMLV group. This study comes at a time when ACFTA was on the verge of signing. It suggests CMLV countries should take timely measures to capture the potential benefit of ACFTA.

Taking a closer look at trade flow at commodity group level, Sheng, et al. (2012) emphasize on the intensive trade in components and parts between China and ASEAN. They regressed trade volume of these commodity groups on ACFTA and found that the dummy reveals a significant impact. They concede that a close production linkage and intense trade in intermediate industries between China and ASEAN bloc should be accounted when evaluating the effect of ACFTA. In line with this, Yean (2014) focuses on the impact of ACFTA on ASEAN's manufactured exports to China by gauging the effects of trade in (1) parts and components and (2) non-parts and components (final manufactured goods) separately. Two estimate results indicate that the implementation of ACFTA had different effects on ASEAN's parts and components versus final goods exported to China. A more detailed investigation on both aggregate and disaggregated level of five main industries over 1995–2010 shows a quantitatively large and statistically significant for ACFTA's trade creation (Yang & Martinez-Zarzoso, 2014).

Some may question if the asymmetry between the world second largest economy, China[3] and its relatively small ASEAN country counterparts might aggravate the accuracy of estimation. In this light, Zhang and Wang (2015) used economic mass proxy to control for the China's economically extremely big (Baldwin & Taglioni, 2011) and price index of its trading partner for estimation. The result proves that using novel proxy for GDP gains explanatory power considerably for the augmented gravity model. Also, trade with Singapore is found relatively highly potential, suggesting China to further promote export to Singapore along with other ASEAN members to bounce its rather sluggish outbound trade at the time.

ASEAN–India FTA

Most of the work on AIFTA concludes that AIFTA has either trifling or an "unfair impact" on two sides, claiming that it benefits ASEAN over India. For instance, Khurana and Nauriyal (2017) adopts pseudo-Poisson maximum likelihood to avoid the zero-trade trap stemming from logarithmic transformation process[4]. Estimate results reveal that AIFTA actually lower export flow among signatories. It also suggests that a greater coverage of tariff elimination and ASEAN countries' deeper engagement into the agreement could advance the impact. Bhattacharyya and Mandal (2016) claims that AIFTA benefits ASEAN bloc more than India due to India's relatively higher level of tariff reduction against ASEAN counterpart. Nevertheless, both sides improve its welfare in overall since AIFTA inception except for global economic slowdown shock in 2013.

To further dissect the impact of AFTA on some certain industries, Sarath Chandran (2012) focuses on how AIFTA influences the fishing industry using trade complementarity index. The finding suggests that India could enhance trade with South East region by further eliminating tariff for CLMV countries.

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[3] China has surpassed the US to be the biggest economy worldwide in terms of total nominal GDP since 2015

[4] It automatically transformed to zero for those trade volumes below one

ASEAN–Australia–New Zealand Free Trade Area

Bano, et al. (2013) assesses the effectiveness of AANZFTA by calculating trade intensity and trade potential index across industries from 1980 to 2013. The results show a critical rise in New Zealand–ASEAN as well as Australia–ASEAN trade relation. It suggests that there is room for these two dialogue partners to form individual bilateral FTAs with other ASEAN members.

In a more comprehensive approach, some studies incorporate all the ASEAN Plus FTAs together. Okabe (2015) investigates the impact of all five ASEAN Plus FTAs on trade at industry level as well as capital flow among signatories. Estimated coefficients are varying, that is, while ACFTA and AKFTA demonstrates a positive role in facilitating ASEAN–China and ASEAN–Korea trade in intermediate and capital goods, AJCEP does not seem so. This is believed to have connection with the existing establishment of production along with distribution channel in the region, which makes the AJFTA' impact become rather shallow, given the fact that Japan has long been the leading country to have invested in Southeast Asia region. The paper asserts that only by arriving at the higher level of liberalization can the latecomer FTAs further enhance trade among signatories.

Similar outcome was found in the "Trade creation and diversion effects of ASEAN–plus–one–FTA" (Taguchi, 2015). In particular, trade creation effect in ACFTA was much larger than those in AKFTA and AJFTA. The surpassed impact of ACFTA was deemed as a result of relatively large pre–existing tariff gap of China towards ASEAN member countries. For trade diversion effects, ACFTA, AKFTA and AJFTA commonly show negative sign.

Taking a similar approach yet yield different outcomes, ACFTA, AJFTA in (Anh Thu, et al., 2015) appears to be an obstacle to both export and import flow of these FTA signatories to outsider. AKFTA, for its part, enhances ASEAN – Korea trade but also cause trade diversion for ASEAN members. As for AFTA, it positively influences intra and extra-trade of ASEAN.

Moving on firm level approach, Wignaraja (2014) conducts a comparative analysis as to the determinants of FTA utilization at firm level in Indonesia, Malaysia and the Philippines. He asserts that comprehension of FTA, competitiveness and the degree of participation into industrial clusters are main factors influencing how much can an FTA bring to firms.

2.3 Scattered individual country level approach

Similar to ASEAN plus FTA, scholarly work upon the impact FTA at country level is rather scarce, even for Singapore as the most open economy of the world. Starting with the Economic Partnership Agreements between **Singapore** and Japan (JSEPA)– the first bilateral FTA between two Asian economies, its effect is measured by applying the Global Trade Analysis Project (GTAP) (Hertel, et al., 2001) or gravity model (Ando, 2007). The result indicates JSEPA's little role in facilitating Singapore-Japan trade. This is associated with a rather limited tariff elimination coverage of the agreement. Furthermore, Ando (2007) also finds out that other factors such as business environment, legal system tend to inhibit trade. This raise a need of easing the existing complicated trade–involving procedure. Put it differently, in order for FTA to perform effectively, many other relevant factors should simultaneously be improved.

Athukorala and Kohpaiboon (2011) evaluate the impact **Thailand**–Australia Free Trade Agreement (TAFTA) with a focus on some certain sectors. TAFTA is found to be a big contributor to trade between the two countries. In addition, rule of origin and the utilization of tariff reduction are main consideration for country when selecting commodity to trade.

As for **Vietnam**, Nguyen (2012) incorporates AFTA and Vietnam–Japan Economic Partnership Agreement (VJEPA)[5] to investigate Vietnam trade's determinants. While AFTA shows a clearly positive effect, VJEPA's impact is rather shallow. The study

[5] The only bilateral FTA Vietnam has by 2012

suggests that Vietnam and Japan should further liberalize tariff to reap the benefits of AJEPA.

Taking a slightly different approach, Narayan and Nguyen (2016) look at the country bilateral trade pattern with the rest of the world grouped by the level of development. The conclusion is that the gravity model estimates depend largely on trading partners. To illustrate, trade with more advanced countries appears to be more sensitive and fluctuating than that with less developed economies.

Vanhnalat, et al. (2015) looks into **Laos**'s trade pattern with 32 trading partners during 1996–2011. The FTA utilization is found low and mostly in natural resource products. The main reasons are low quality products, fail to meet the local content requirement. In other words, the capability of utilizing FTAs is considered the very factor influencing how much FTAs can facilitate trade between Laos and partners. Nevertheless, FTAs contribute to Lao's export growth by as much as 50%.

Huot and Kakinaka (2007) examines **Cambodia**'s trade structure right after the country entered AFTA until 2004 using trade complementarity index. They assert that Cambodia follows the factor endowment–based mechanism in trade as in Heckscher–Ohlin model. Moreover, AFTA successfully paved the way for Cambodia to the world economy.

Deluna and Cruz (2013) investigate the determinants of trade in merchandise of **Philippines**. A conventional finding as to the significance of main variables such as distance, GDP partner countries is revealed in this study. They also confirm that being a member of WTO, ASEAN and APEC serve as an engine to enhance trade for the country.

In brief, scholarly work on the effect of ASEAN's FTA network is rather scattered where the most frequent object, AFTA's impact, is found mixed at best; region-wide FTAs are often analyzed at industry level and found quite favorable in general; individual country approach happens at most of the member countries yet there is no study synthesizing them all together, neither is there model taking into account all the FTAs that each and every ASEAN members has been engaging.

Chapter 3. Data and Methodology

3.1 Gravity model

The gravity model of international trade is built upon a very analogy with Newton's concept of gravitational force between two objects. Accordingly, trade flows Tradeij for a set of each exporter i and importer j is defined as follows:

$$Tradeij = \frac{kYiYj}{Dij}$$

The estimation provides a conjecture of main determinants of international trade. In this equation, Yi denotes total output of country i; Yj denotes total output of country j; Dij reflects trade costs from countryi to countryj. The function inherently concedes positive effect of economic size of both exporter and importer and negative impact of distance between two countries on bilateral trade.

The history of gravity model dates back to as early as 1940 when Stewart and Zipf (1948) developed a gravitational force of attraction between people. However, it was not until 1962 that Tinbergen and Poyonen (1962)applied the model into the field of global trade by incorporating FTA as dummy variable into the estimation specification of trade pattern among the European countries. This very first move opened a new era of studying international trade's determinants. However, scholarly work applying gravity model in international trade was initially criticized for lack of theoretical justification supports. This was then solved with new coming international trade theories including monopolistic competition (pioneered by Edward Chamberlin in 1933) or the distorted gravity model for differentiated goods in the context of firm heterogeneity (Chaney, 2008). Gradually, this approach earns credits for high consistency with economic theories and become one of the most prominent methodologies in the field.

3.2 Applying Gravity Model in the field of international trade

3.2.1 Baseline panel regression for trade equation model

Taking the logarithms of both sides of the equation in 3.1, we have a linear equation that can be considered as an alternative estimation to project trade flow between two entities at any level. In reality, trade flow is influenced by many other factors than solely distance and gross GDP such as population, relationship status, other geographical linkages, etc. Hence, this study augments the log–form of equation in 3.1 by adding four more variables, namely population, border, colony, common colonizer to form a base specification estimation of trade as follow:

$$Trade_{ijt} = \exp\big(A_0 + \beta_1 \ln GDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln D_{ij} + \beta_6 \mathrm{Border}_{ij} + \beta_7 Comlang_{ij} + \beta_8 Colony_{ij} + \beta_9 Comcol_{ij} + \varepsilon_{ij}\big)$$

An explanation about variables in the equation is provided in the following session.

3.2.2 Panel regression with the presence of FTAs

As mentioned earlier, there are three main specifications corresponding to set of FTAs of interest.

(i) Specification with focus on overall FTAs

$$Trade_{ijt} = \exp\left(\alpha_1 \sum_N \varphi_N FTA_{N,ijt} + \mu_{ij} + \rho_{it} + \emptyset_{jt} + Controls\right) + \varepsilon_{ijt}$$

(ii) Specification with focus on AFTA, APFTA

$$Trade_{ijt} = exp\left(\beta_1 AFTA_{ijt} + \beta_2 \sum_N \varphi_N OFTA_{N,ijt} + \beta_3 \sum_N \varphi_N APFTA_{N,ijt} + \mu_{ij} + \rho_{it} + \emptyset_{jt} + Controls\right) + \varepsilon_{ijt}$$

(iii) Specification with focus on each individual ASEAN Plus FTA

$$Trade_{ijt} = \exp\Bigg(\gamma_1 AFTA_{ijt} + \gamma_2 \sum_N \varphi_N OFTA_{N,ijt} + \gamma_3 ACFTA_{ijt} + \gamma_4 AKFTA_{ijt} + \gamma_5 AJFTA_{ijt} + \gamma_6 AIFTA_{ijt} + \gamma_7 AAFTA_{ijt} + \gamma_8 ANFTA_{ijt} + \mu_{ij} + \rho_{it} + \emptyset_{jt} + Controls\Bigg) + \varepsilon_{ijt}$$

where subscript i denotes reporting country and j is its trading counterpart,

Tradeijt is the value of the merchandise trade flow from reporter i to partner j at time t, note that the study uses both export and import flow for Tradeijt proxy

FTAijt is a binary variable assuming the value 1 if i and j are both signatories of any preferential trade agreement at time t[6] and 0 otherwise,

AFTAijt is a binary variable assuming the value 1 if i and j are both signatories of AFTAs at time *t* and 0 otherwise,

ACFTA, AKFTA, AJFTA, AIFTA, AAFTA, ANFTA is a binary variable assuming the value 1 if i and j are both signatories of corresponding FTAs at time *t* and 0 otherwise,

OFTAijt is is a binary variable assuming the value 1 if i and j are signatories of FTAs *other than* AFTA and ASEAN Plus FTAs at time t and 0 otherwise

Controls is a vector of many typical individual as well as country pair characteristics specific, including those in the following:

GDPit (GDPjt) is the nominal gross domestic product in country i (j) at time *t*,

POPit (POPjt) is the level of population in country i (j) at time *t*,

Distanceij is the distance between the economic centers of countries i and j

Common_languageij is a dummy variable taking the value 1 if i and j share a common language and 0 otherwise,

[6] In case two countries involve in many FTAs, the FTA dummy is counted from whichever FTA comes first

Borderij is a dummy variable taking the value 1 if i and j share a common land border and 0 otherwise,

Colonyij is a dummy variable taking the value 1 if i and j ever have had colonial link and 0 otherwise,

Comcolij is a dummy variable taking the value 1 if i and j ever have had common colonizer and 0 otherwise,

$\boldsymbol{\mu_{ij}}$ is country pair that control for time–invariant characteristics between trading countries.

ρit, Øjt are importer–year and exporter–year fixed effect, respectively, to account for country–specific shocks and also for the so–called "multilateral resistance terms" that is theoretically well supported in studies by Taglioni and Baldwin (2006), and Baier and Bergstrand (2007). A detail justification is discussed in the following session.

3.2.3 Alternative Fixed Effects Specifications

Panel data offer substantial advantages in comparison with cross sectional and time series data in that it is capable of capturing relationship of variables over time as well as observing individual effects between trading partners (Kepaptsoglou, et al., 2010).

Nevertheless, as it is constructed with a huge matrix of individual reporters and partners of whom unique characteristics are all presumably embodied in dependent variables, heterogeneity is highly likely to exist. In such cases, a reporting country, say, Vietnam, might export/import different amounts to/from two countries, say Australia and Nepal, even though these two partners supposedly share total GDP as well as distance to Vietnam. This problem can be associated with social, geographical, or political link between Vietnam and each individual partner and these factors are correlated to control variables. A model that does not accommodate for the said issues will encounter heterogeneous bias which often happens in standardized cross–section estimations. One way to deal with this issue is to transform the data from individual means into deviations for that within estimator provides unbiased and consistent results even when unobserved characteristics correlate with some explanatory variables. Fortunately, panel data allows

fixed effect to be incorporated and thus be able to control for unobservable multilateral resistance terms (Anderson & Wincoop, 2003). In practice, bilateral trade depends on any barrier built up between them in relation to the average trade barriers level that two countries face with all partners including structural trade policy and tariff, multilateral exchange rate regime or external shock, just to name a few.

In short, regressing bilateral variables on bilateral trade flows can be obtained by replacing the multilateral resistance indexes in equation with country and time fixed effect in panel dataset.

3.2.3.1 Gravity Model with country pair fixed effects

The main idea of country pair fixed effect lies on the assumption that gravity equation for each country pair has a unique intercept, meaning the intercepts remains constant overtime for each individual pair yet vary from pair to pair (Cheng & Wall, 1999). For better illustrating the country pair fixed effect justification, a detailed version of specifications in section 3.2.2 is presented as follows:

$$\begin{aligned}\ln Trade_{ijt} = \boldsymbol{\beta_{ij}} + \ \beta_0 + \beta_1(\ln \mathrm{GDP}_{it}) + \beta_2(\ln \mathrm{GDP}_{jt}) \\ + \beta_3(\ln \mathrm{POP}_{it}) + \beta_4(\ln \mathrm{POP}_{jt}) + \beta_5(\ln \mathrm{Dist}_{ij}) + \beta_6(\mathrm{Comlang}_{ij}) \\ + \beta_7(Contig_{ij}) + \beta_8(\mathrm{Colony}_{ij}) + \ \beta_9(Comcol_{ij}) \\ + \ Relevant\ FTAs + \varepsilon_{\mathrm{ijt}} + \mathbf{u_{ij}}\end{aligned}$$

where $\boldsymbol{\beta_{ij}}$ is the specific "country pair" effect accounting for all omitted variables that are cross sectionally specific but remain constant over time, namely distance, contiguity, language, common colonizer and colonial link. Using the pooled data produces 5.500 some country pair intercepts.

3.2.3.2 Gravity Model with one side country –year fixed effects

Reporters or partners are very different in many aspects including the level of trade as well as openness. Furthermore, each country faces specific shock or monadic factors that might influence that particular country's trade on a yearly basis. Similarly, a detailed version of specification (2) for country[7]–year fixed effect is derived as below:

$$\begin{aligned}\ln X_{ijt} = \boldsymbol{\beta_{it}} + \beta_0 + \beta_1(\ln \mathrm{GDP}_{it}) + \beta_2(\ln \mathrm{GDP}_{jt}) \\ + \beta_3(\ln \mathrm{POP}_{it}) + \beta_4(\ln \mathrm{POP}_{jt}) + \beta_5(\ln \mathrm{Dist}_{ij}) + \beta_6(\mathrm{Comlang}_{ij}) \\ + \beta_7(Contig_{ij}) + \beta_8(\mathrm{Colony}_{ij}) + \beta_9(\mathrm{Comcol}_{ij}) \\ + \beta_{10}(\mathrm{Relevant\ FTA}_{ijt}) + \varepsilon_{\mathrm{ijt}} + \mathbf{u_{it}}\end{aligned}$$

where $\boldsymbol{\beta_{it}}$ denotes country–year binary (0,1) variables that captures all country–specific characteristics and also country's overall level of imports or exports. This variable is set to one only for one country at a specific year, say Singapore in 2000 and zero otherwise, the same applies to all other countries.

There are pros and cons to apply country–year dummy. The equations we can ask about trade differ because the number of variables included are limited now. Many control variables such as GDP and population variability are now left out. Put differently, the country–year dummy variables are estimated at the expense of other control variables being swept out. At the same time, the number of variables required to account for the country–year fixed effect grows quickly as the number of trading partners and years in the dataset increase.

Nevertheless, estimates of trade institutional policies are improved as the unobserved monadic factors are now being controlled. There are quite a few uniquely–embodied features of variables on the right-hand side of estimation equation such as tariff and nontariff barriers or shipping costs are consigned to the error term. As such, the estimates might suffer from overestimation. For instance, if a country joins GATT or

[7]Either reporter or exporter, not both sides

PTAs which results in lower overall trading costs to all trading partners, the institution's effects is likely to be overestimated. Since the country–year fixed effects control for all of these unobservable monadic factors, the model can now deliver more accurate estimates of the institutional impact, obviating the need to collect tariff and nontariff barrier data. The second benefit is that the sample of countries is less restricted than in the case with only dyadic and year fixed effect; moreover, observations that lack GDP data is still usable. In brief, country–year fixed effects allow to bypass many of limitations and utilizes all of the available data.

3.2.3.3 Gravity Model with both country–year and country pair fixed effects

This approach is a combination of the aforementioned two approaches, leaving only FTA variables to be predicted. As each country trades with many countries in the world and prices for its exports change yearly depending on the condition of all trading partners, multilateral resistance terms should therefore be specific to each country at each year. Time–varying factors should not be limited within tradition gravity equation components like GDP or population. In fact, infrastructure, factor endowments, multilateral trade liberalization and other country–and–time specific factors are highly likely to suffer from imprecisely measured (Magee, 2008). Furthermore, this unobserved heterogeneity could also be strongly correlated with the tendency to form an FTA and thus lead to endogeneity bias (Baier & Bergstrand, 2007). In order for this problem to be addressed, there arises a need for a simultaneous introduction of country-and-time fixed effects by generating a full set of reporter-year, partner-year and country pair fixed effects. Doing so would correct the bias stemming from unobserved time-varying multilateral resistance terms. The estimation is as follow:

$$\begin{aligned}\ln X_{ijt} &= \boldsymbol{\beta_{it,jt}} + \beta_0 + \beta_1(\ln \mathrm{GDP}_{it}) + \beta_2(\ln \mathrm{GDP}_{jt}) \\ &+ \beta_3(\ln \mathrm{POP}_{it}) + \beta_4(\ln \mathrm{POP}_{jt}) + \beta_5(\ln \mathrm{Dist}_{ij}) + \beta_6(\mathrm{Comlang}_{ij}) \\ &+ \beta_7(Contig_{ij}) + \beta_8(\mathrm{Colony}_{ij}) + \beta_9(\mathrm{Comcol}_{ij}) \\ &+ \beta_{10}(\mathrm{FTA}_{ijt}) + \varepsilon_{\mathrm{ijt}} + \mathbf{u_{ij}}\end{aligned}$$

where $\beta_{it,jt}$ is an intercept controlling for both reporter and partner–year specific shock.

3.2.4 Phased-in Check with lagged effect

In practice, the effect of FTAs is often time phased-in or the so–called "latency effect", this is possibly because it takes time for involving stakeholders to comprehend and subsequently make use of FTAs. The problem is even more critical given a relatively poor institutional architecture in South East Asia. In general, it takes five to ten years for an FTA in ASEAN to reach full liberalization.

In this study, one year and five years lagged variables are constructed for all relevant FTA dummies. A lagged effect means more year variables in the model or the existing estimation is now equipped with more individual year observations in other words. Specifically, as the current dataset is for the 1990–2018 span, one–year lag variable allows individual trade data for 1990–2018 period are matched FTAs data from 1989 to 2017. Likewise, a five–year lag allows estimation of trade (1990–2018) with FTAs (1985–2013). It also worth noting that original FTA data features 1993 as starting time of AFTA for ASEAN-6 and also the earliest year of FTA, accordingly, one-year and five-year lag start from 1992 and 1988, respectively.

3.2.5 Individual country estimations

As mentioned earlier, there is no work involving comparing FTA's utilizing capabilities among ASEAN members. Therefore, the idea of this session is to see how heterogeneous FTAs bring about to ASEAN countries given their very diverse nature in characteristics. As this is the very factors shaping a country's strategy and subsequently relevant policies to expand trade with the world, it is therefore worth examining how relatively good ASEAN members' capability of making use of FTAs.

3.3 Data Type and Sources

3.3.1 Data construction

A strongly balanced panel data of bilateral trade flows of 75×175×28 reporter–importer–year matrix is assembled with gross domestic products, population, distance, geography, culture, history and trade policy in the form of FTAs measures. Reporters and partners include ASEAN countries except for Laos and Myanmar due to massive missing data. All other countries are also selected upon data availability. List of countries in the dataset is provided in Appendix Table A2.

Nominal bilateral trade flows (trade) are from United Nations Comtrade Database (https://comtrade.un.org/), Nominal Gross domestics products (GDP) measured at current USD currency and population (POP) are from the World Bank's World Development Indicators (WDI https://databank.worldbank.org/source/world–development–indicators). Geographical variables include common language (Comlang), adjacent (Contig), common colonizer (Concol), colony (Colony) and distance (Dist) are extracted from the French Centre d'Etudes Prospectives et d'Informations Internationales (CEPII http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp)'s gravity dataset. For FTAs dummy, variables are extracted from WTO RTAs database (https://rtais.wto.org/UI/PublicMaintainRTAHome.aspx). Table 3.1 summaries all variables in the model.

3.3.2 Coefficient expectation

The postulated effects of the explanatory variables on the dependent are as follow:

Gross domestic product would have a positive correlation following the supply demand principle, as more GDP boost demand for goods including imported ones, and higher GDP somehow prove the supply capacity of exporter.

Population impact tends to be controversial. Big population means big market, which engender demand and potentially open up market for its partner. At the same time, it also prompts local firms to expand production meet domestic needs. In this sense, big

country can successfully pursuit self–reliance and thus has no motive to trade with outsider.

Distance would negatively affect trade for two main reasons. First, shipping fee is usually based on distance. Second, the more far away one to another, the more time require to deliver goods given other factors. In other words, distance goes hand in hand with time and cost by which trade might proportionally decrease.

Common language should have a positive effect on trade. All type of partnership require communication and it would save tons of time when the parties understand one to another.

Adjacent factor is also worth checking for the very fact that two neighboring countries would be more like to trade with each other. This is because they would both be able to open more channel to trade with a substantially lower cost.

The impact on trade of common colonizer is rather mixed. For one hand, the wartime often left some network through which people can continue exchanging many things, including goods in the aftermath. On the flipped side, the lingering hostile sentiment might inhibit countries to trade with each other.

Free Trade Area dummy is oftentimes measured in the form of trade creation and trade diversion effect. This study focuses on the former and follows the common intuition that better condition for trade motivates countries to trade more. Therefore, the dummy is expected to have a statistically significant and positive value, which proves FTA as a crucial momentum among signatories. This mechanism work for FTA at all type: bilateral FTA where the signatories are bound to countries, region-wide FTA between ASEAN bloc and dialogue partners, and AFTA for within-ASEAN trade.

Table 3. 1 Variables Description
Source: author's derivation

Variable	**Category**	**Unit**	**Source**
Export and Import	Tradeijt	current US$	UN Comtrade
Gross domestic product	GDPit, GDPjt	current US$	World Bank
Population	POPit, POPjt	million	World Bank
Distance	Dist	kilometers	WTO RTAs database
Free Trade Agreement	FTAs	binary	CEPII
Contiguous/share border	Contig	binary	CEPII
Common Language	Comlang	binary	CEPII
Ever had colonial Link	Colony	binary	CEPII
Ever shared common colonizer	Concol	binary	CEPII

Chapter 4. Empirical Results and Discussion

Prior to interpreting the magnitude along with the statistical significance of the estimated coefficients, there are some points that worth noting as follows:

First, coefficients of variables in logarithmic forms should be interpreted as percentages or elasticities. However, dummy variable coefficients should be transformed as follow to obtain the elasticity degree:

$$Elasticity = exp(\beta) - 1$$

where β is the estimated coefficient of the dummy variable.

Second, distance between two countries in the model is measured as the weighted distance between two respective biggest cities by the share of population of that city's in country[8].

Third, following the aforementioned justification as to relevant fixed effect, the estimation with country pair fixed effect, reporter–year fixed effect and importer–year fixed effect (estimation 5 in result tables) is considered as a benchmark model while other estimations are also presented in the result table just for the sake of comparison.

4.1 Specification with focus on overall FTAs

First, looking at estimation (1) and (5) in Table 4.1 to examine control variables. As expected, coefficients for control variables GDP, population and distance are all highly statistically significant, with GDP and population showing positive sign while distance revealing the opposite sign. This reflects how significant a country's size typically represented by GDP and population, together with the remoteness to partners influence its trade activities. Another interesting point to be noted is that the magnitude of importer GDP's coefficient is higher than that of exporter. This is opposite to population variable.

[8] See Head and Mayer (2002) for more details about international and intra–national distance calculations.

We now turn to the main independent variable of interest, overall FTAs. Again, just a recap that overall FTA covers all type of FTA that ASEAN members have been joining. Estimation (5) shows that ASEAN's FTA participation produces a positive effect on their export, albeit the magnitude is rather minimal. This is no longer the case when it comes to import. In particular, being an FTA signatory reduces its import from FTA counterpart by roughly 6.2% compared to import volume from non–FTA members. Strikingly, estimates for overall FTA are consistently negative in all estimations applying different fixed effects. It should be noted that the random effect model means the uncaptured characteristics of importer and exporter in dataset have no connection with variables included in the model (Allison, 1994). All estimates for FTA are significant at the 1% level. In short, joining FTAs does not necessarily induce ASEAN countries to import more from its FTA partners.

Table 4. 1 Estimate results with focus on overall FTA
Source: author's calculation

	Export					**Import**				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
Var	**RE**	**FEij**	**Feij,it**	**Feij,jt**	**Feij,it,jt**	**RE**	**FEij**	**Feij,it**	**Feij,jt**	**Feij,it,jt**
Distance	-1.274***					-1.226***				
	(0.03)					(0.03)				
Gdpi	0.716***	0.693***		0.814***		0.732***	0.852***		1.024***	
	(0.01)	(0.01)		(0.01)		(0.01)	(0.01)		(0.01)	
Gdpj	0.651***	0.712***	0.806***			0.674***	0.592***	0.728***		
	(0.01)	(0.01)	(0.01)			(0.01)	(0.01)	(0.01)		
Popi	0.256***	0.120***		0.128***		0.114***	-0.162***		-0.221***	
	(0.02)	(0.03)		(0.04)		(0.02)	(0.03)		(0.03)	
Popj	0.173***	-0.184***	-0.234***			0.317***	0.081**	0.0742**		
	(0.01)	(0.03)	(0.03)			(0.01)	(0.03)	(0.03)		
Contig	0.283***					0.254***				
	(0.07)					(0.07)				
Comlang	0.278***					0.248***				
	(0.04)					(0.03)				
Colony	0.422***					0.401***				
	(0.07)					(0.07)				
Comcol	-0.231***					-0.242***				
	(0.05)					(0.04)				
FTAs	0.007	-0.001	0.023	-0.014	**0.008**	-0.061***	-0.064***	-0.0357*	-0.088***	**-0.06***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant	-6.14***	-7.64***	0.33*	-2.5***	7.55***	-6.71***	-7.94***	-1.035***	-2.290***	7.55***
	(0.15)	(0.26)	(0.20)	(0.23)	0.00	(0.15)	(0.26)	(0.22)	(0.22)	0.00
Obs	133,488	133,457	133,457	133,457	133,457	137,652	137,637	137,637	137,637	137,637
R–squared	0.76	0.91	0.924	0.915	0.929	0.75	0.912	0.916	0.921	131

Notes: (1) Standard errors in parentheses; (2) *** p<0.01, ** p<0.05, * p<0.1

4.2 Specification with focus on AFTA and APFTA

Before diving to the main variables of interest, AFTA and APFTA, we now take a quick scan at other control variables. Coefficient of population of importing countries turns from positive in random effect model to negative in the country pair and also in exporter–year fixed effect model as shown in Table 4.2. In other words, when the differences in country pair's characteristics and multilateral resistant terms are accommodated, population size of partners appears to render trade. One possible explanation is that a country with huge population is more likely to achieve a self–sufficient economy, that is, it now has adequate resource to produce necessary goods, at the same time, the demand side is also huge enough for the businesses to grow without exchanging with outsiders. In a sense, this intuitive explanation is quite true to some certain extents. On the other hand, it seems to lose the ground as the world economy is getting more integrated overtime. One obvious example is China − the world's largest population – has become the world production hub and continuously seeks for new market to absorb its products.

The formation of AFTA plays no role to boost up or even impedes intra-trade in South East Asia. As can be seen in estimation (5) for both export and import, the estimate of AFTA is negative, with the magnitude and significant level in import model is relatively bigger than in export model. This gap might reflect a discrepancy in statistical report. Put another way, joining AFTA reduces ASEAN members' export to and import from other members at the aggregate level by approximately 2.3% and 12.7% on average, respectively. Interestingly, this finding is echoing the 1990s' research and is contrary to recent literatures (Kien, 2009).

With respect to the aggregate ASEAN Plus FTA or APFTA, a positive effect is consistently proven in all export–based estimations with different fixed effects, meaning APFTA in general facilitates export from ASEAN countries to six partners. To specify, being involved in APFTA accelerates trade by 3.2%.

The contradicting trend is revealed in import–based model. ASEAN countries' import from six dialogue partners falls down by around 5% with the presence of APFTA which reflects the asymmetric effect of joining APFTA. To illustrate, while ASEAN countries can manage to expand export to dialogue counterparts, the other way around does not hold true. Nevertheless, which FTA works better than the others is by no means drawn from this estimation. The next section will walk though these FTAs.

Table 4. 2 Estimate results with focus on AFTA & APFTA
Source: author's calculation

	Export					Import				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Var	**RE**	**FEij**	**Feij,it**	**Feij,jt**	**Feij,it,jt**	**RE**	**FEij**	**Feij,it**	**Feij,jt**	**Feij,it,jt**
Dist	-1.27***					-1.22***				
	(0.03)					(0.03)				
Gdpi	0.716***	0.693***		0.813***		0.732***	0.854***		1.024***	
	(0.01)	(0.01)		(0.01)		(0.01)	(0.01)		(0.01)	
Gdpj	0.651***	0.710***	0.805***			0.674***	0.592***	0.726***		
	(0.01)	(0.01)	(0.01)			(0.01)	(0.01)	(0.01)		
Popi	0.255***	0.123***		0.132***		0.113***	-0.164***		-0.220***	
	(0.02)	(0.03)		(0.04)		(0.02)	(0.03)		(0.03)	
Popj	0.173***	-0.178***	-0.230***			0.316***	0.079**	0.074**		
	(0.01)	(0.03)	(0.03)			(0.01)	(0.03)	(0.03)		
Contig	0.279***					0.248***				
	(0.07)					(0.07)				
Comlang	0.279***					0.250***				
	(0.04)					(0.03)				
Colony	0.425***					0.403***				
	(0.07)					(0.07)				
Comcol	-0.233***					-0.245***				
	(0.05)					(0.04)				
AFTA	0.138***	0.103**	0.027	0.044	**-0.023**	0.061*	0.066*	0.141***	-0.203***	**-0.120***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
OFTA	-0.246***	-0.231***	-0.058	-0.198***	-0.0229	-0.095***	-0.088***	-0.088***	-0.036	-0.039
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
APFTA	0.097***	0.094***	0.086***	0.049*	**0.031**	-0.103***	-0.110***	-0.069**	-0.092***	**-0.049***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	-6.152***	-7.67***	0.312	-2.522***	7.555***	-6.73***	-7.914***	-1.015***	-2.3***	7.55***
	(0.16)	(0.26)	(0.20)	(0.23)	(0.00)	(0.15)	(0.26)	(0.22)	(0.22)	(0.00)
Obs	133,488	133,457	133,457	133,457	133,457	137,652	137,637	137,637	137,637	137,637
R-sq	0.74	0.91	0.924	0.915	0.929	0.74	0.912	0.916	0.921	0.926

Notes: (1) Standard errors in parentheses; (2) *** p<0.01, ** p<0.05, * p<0.1

4.3 Specification with focus on individual ASEAN Plus FTAs

Table 4.3 illustrates the effect of each individual ASEAN Plus FTAs on trade between ASEAN and respective dialogue partners. These region-wide FTAs show a very heterogeneous effect proved by scattered coefficients of FTA dummies. To be specific, the magnitude of region-wide FTAs' impact varies vastly from -15% to 36.3% in export model and from -15.5% to 0.8% in import model.

Table 4. 3 Estimate results with focus on individual ASEAN Plus FTAs
Source: author's calculation

Var	Export					Import				
	(1) RE	(2) FEij	(3) Feij,it	(4) Feij,jt	(5) Feij,it,jt	(1) RE	(2) FEij	(3) Feij,it	(4) Feij,jt	(5) Feij,it,jt
Dist	-1.27***					-1.221***				
	(0.03)					(0.03)				
Gdpi	0.717***	0.694***		0.813***		0.733***	0.856***		1.024***	
	(0.01)	(0.01)		(0.01)		(0.01)	(0.01)		(0.01)	
Gdpj	0.650***	0.709***	0.803***			0.673***	0.588***	0.723***		
	(0.01)	(0.01)	(0.01)			(0.01)	(0.01)	(0.01)		
Popi	0.255***	0.123***		0.133***		0.113***	-0.165***		-0.220***	
	(0.02)	(0.03)		(0.04)		(0.02)	(0.03)		(0.03)	
Popj	0.174***	-0.177***	-0.230***			0.317***	0.086***	0.079**		
	(0.01)	(0.03)	(0.03)			(0.01)	(0.03)	(0.03)		
Contig	0.279***					0.247***				
	(0.07)					(0.07)				
Comlang	0.279***					0.250***				
	(0.04)					(0.03)				
Colony	0.425***					0.403***				
	(0.07)					(0.07)				
Comcol	-0.234***					-0.245***				
	(0.05)					(0.04)				
ACFTA	0.133**	0.110*	0.0623	-0.113*	**-0.141****	0.073	0.108	0.110*	-0.197***	**-0.143****
	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
AKFTA	0.069	0.061	0.064	-0.012	**-0.037**	0.0054	-0.024	0.036	-0.053	**-0.01**
	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
AJFTA	0.015	0.008	0.036	0.098	**0.078**	-0.147**	-0.202***	-0.106	-0.037	**0.007**
	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
AIFTA	0.400***	0.421***	0.404***	0.324***	**0.307*****	-0.056	-0.0245	-0.013	-0.171**	**-0.137***
	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
AAFTA	-0.037	-0.036	-0.052	0.038	**0.022**	-0.311***	-0.316***	-0.287***	-0.033	**0.005**
	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
ANFTA	0.008	0.008	0.009	-0.023	**-0.02**	-0.204***	-0.221***	-0.184***	-0.055	**-0.017**
	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Constant	-6.152***	-7.682***	0.326	-2.522***	7.55***	-6.731***	-7.943***	-1.021***	-2.302***	7.549***
	(0.15)	(0.26)	(0.20)	(0.23)	(0.00)	(0.15)	(0.26)	(0.22)	(0.22)	(0.00)
Obs	133,488	133,457	133,457	133,457	133,457	137,652	137,637	137,637	137,637	137,637
R-squared	0.73	0.91	0.924	0.915	0.929	0.74	0.912	0.916	0.921	0.926

Notes: (1) Standard errors in parentheses; (2) *** p<0.01, ** p<0.05, * p<0.1

Taking a closer look at each individual FTA coefficient, for export side, AIFTA demonstrates a positive impact, followed by AJFTA and AAFTA. AIFTA increases

export from ASEAN member states to India by as much as 36%, meanwhile AJFTA and AAFTA increases by 8.2% and 2.2% of export from ASEAN to Japan and Australia, respectively. On the contrary, AKFTA, ANFTA and ACFTA all reduce export of ASEAN to Korea, New Zealand and China, respectively. Particularly, ASEAN's aggregate trade with China decreases by about 15%. This is quite an astounding finding, as the existing literatures as to ACFTA's impact on trade in some trade-intensive sectors often show a quantitatively large and statistically significant coefficient. This somehow implies that trade volume of prominent product groups seems to increase at the expense of trade declining in other commodities.

For India, its overall export to ASEAN market also sees a downward trend with AIFTA. This is in line with previous studies, which often deems that India "gains relatively less" compared to ASEAN counterpart (Venkatesh & Bhattacharyya, 2014). In the same vein, Korea, Australia and New Zealand experiences an overall fall in both export and import flow with their respective FTA counterpart.

Attention now focuses on the development of each coefficient from random effect model to fixed effect model. With respect to regression on export flow, ACFTA and AKFTA's coefficients turns around from positive to negative (14% to –15% for China and from 7.2% down to –36% for AKFTA). This is in contrast to AJFTA and AAFTA in which the coefficients increase from 1.5% to 8% for AJFTA and that is from –4% to 2.2% for AAFTA. Although the magnitude's absolute gap between random and fixed effect is not substantially huge, it is very misleading, especially when the sign of coefficients reverses. This might mistakenly discourage the formation of FTA on the surface if one prioritizes on solely overall effect over the disaggregate level effect.

In short, the effects of ASEAN plus FTAs are very mixed at best. We now examine if this has any linkage with tariff structure involved in these FTAs.

Figure 4.1 shows tariff elimination coverage, time period to implement the tariff commitments and also the gap between the most favored nation (MFN) tariff level in the year that FTA enter into force and the preferential tariff level in 2018 (the most recent year with available data). Interestingly, AIFT, which is expected to yield the least impact,

is in fact the most effective FTA to accelerate trade at aggregate level. ACFTA is another interesting example. For all its tariff removal scope ranks the second, plus having the biggest gap in tariff level between before and after FTA formation among these five region-wide FTAs, it is the worst FTA to stimulate two–way trade between ASEAN and China as shown in Table 4.3. For the case of Japan, given its lowest tariff gap with the presence of AIFTA, coupled with the longest span to complete the commitment, one might expect it to have relatively negligible role in increasing ASEAN–Japan trade. This anticipation is not supported, however, as it turns out to be the only FTA to have positive contribution to mutual trade between the two. All in all, tariff removal's commitment and scheme, as well as tariff gap between pre and post–FTA formation are not closely associated with the differences in these region-wide FTAs' estimated coefficients.

One might also wonder if the existing FTA network in the region would affect results. This is the very reason for that the effect of an FTA can be subject to overestimation or underestimation depending upon how much signatories have engaged in FTAs prior to or following the FTA of interest formation. For ASEAN specific, it is quite complex. ASEAN members show a very different degree of integrating into the world economy as discussed in Chapter 1. Six dialogue partners' FTA network with respect to ASEAN bloc also happen to be complicated (Figure 4.2). For example, New Zealand and Australia had signed bilateral FTAs with Singapore and Thailand prior to AANZFTA. With the tariff removal coverage of the former greater than the later, one would expect that the later has little room to gain, assuming that trade between Thailand and Singapore with these two economies will likely to continue relying on their existing bilateral FTAs. As such, the impact of these FTAs can bring about, if any, is trade gained between New Zealand and Australia with the rest eight ASEAN countries. In other words, AANZFTA is believed to plays less role in facilitating trade between ASEAN bloc and two dialogue partners than it would have if there were no individual country level FTAs exist earlier. The same mechanism applies for AIFTA, however, its coefficient reports quantitatively highest and statistically most significant, which is far different from AANZFTA.

Of six dialogue partners, Japan is the leading country to have engaged the most in trade and investment with ASEAN. It had signed eight individual bilateral FTA with ASEAN members before or right at the year ASEAN–Japan FTA was born. Therefore, gains in trade between ASEAN and Japan might be triggered by bilateral and not region-wide FTAs. Considering the number of FTAs signed in 2008 outweigh those signed before 2008, estimates for AJFTA is likely suffer from upward bias, that is, the real effect of AJFTA should be smaller than its predicted coefficient in the model. As for Korea, it is hard to asserts since the formation of bilateral FTA with Singapore prior to and another FTA with Vietnam after the AKFTA establishment might be subject to counterbalance.

China is only country who had not signed any single bilateral FTA with ASEAN member before forming ACFTA and has signed FTA with only Singapore after ACFTA to date. As such, the ACFTA impact's estimate is expected to be overestimated. However, the result for ACFTA turns out to be negative and statistically significant.

To sum, the current ASEAN's FTA network in relation to six dialogue partners does not seem to proportionally affect the region-wide FTAs' coefficient estimation.

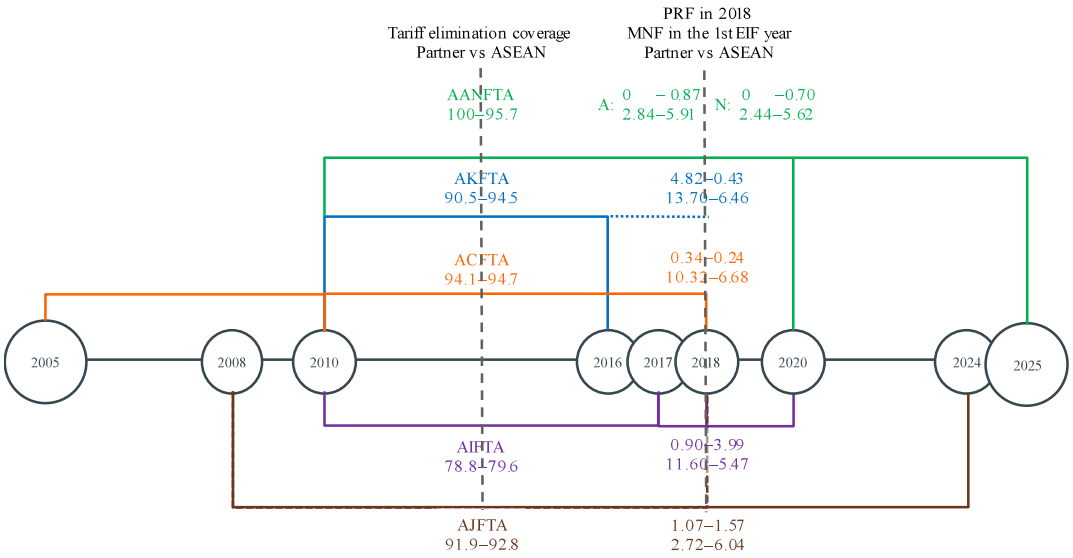

Figure 4. 1 Tariff elimination's coverage and timeline of ASEAN plus six FTAs
Source: author's derivation using various sources

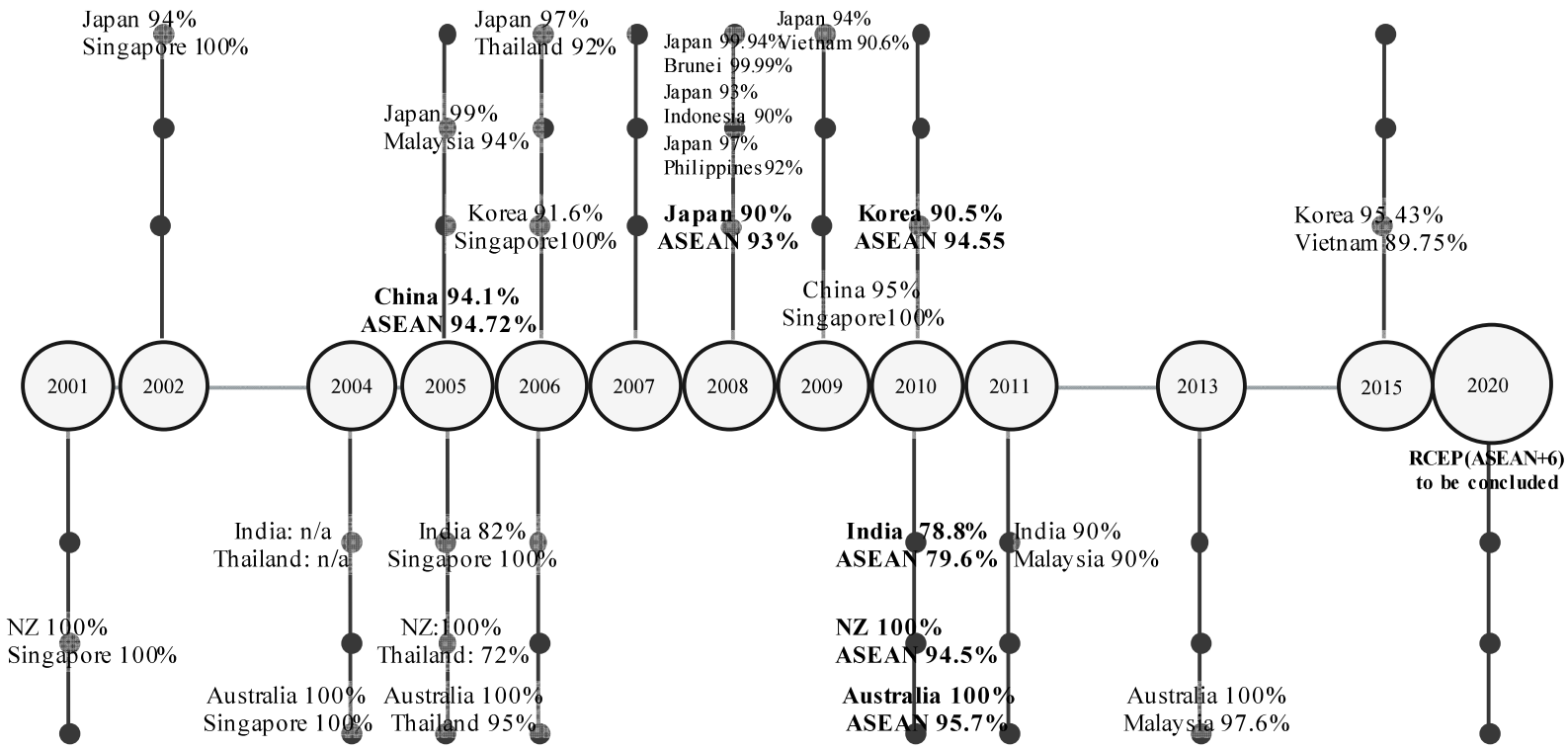

Figure 4. 2 FTA network of ASEAN and six dialogue partner
Source: author's derivation using legal text and relevant ministries' websites

4.4 Lagged effect Check

Table 4.4 shows the lagged effect of FTA dummies obtained in three respective estimation specifications. FTA dummies generally have no significant lagged impact, as no one–year lagged FTA dummy shows statistically significant and the five–year lag shows the significance just in some FTAs. For overall FTA in export model, both one–year and five–year lag have positive coefficients, meaning on average the ASEAN FTAs network still plays it role in facilitating export from ASEAN countries to its counterparts in some years later, in addition to the concurrent year effect. For AFTA, the effect for five-year lag is more robust compared to that of one–year lag effect. In short, FTAs that ASEAN countries have involved do not show a phased-in effect.

Table 4. 4 Estimate results for FTA's lagged effect
Source: author's calculation

	Export	**Import**		**Export**	**Import**
lag1_fta	-0.0207	0.0255	lag5_fta	-0.0364*	-0.0098
	(0.04)	(0.04)		(0.02)	(0.02)
lag1_afta	-0.101	0.0889	lag5_afta	-0.096***	-0.0177
	(0.07)	(0.07)		(0.03)	(0.03)
lag1_ofta	0.0679	0.022	lag5_ofta	0.0472	0.0286
	(0.09)	(0.06)		(0.06)	(0.04)
lag1_apfta	-0.0415	-0.0206	lag5_apfta	-0.0689*	-0.0199
	(0.07)	(0.07)		(0.04)	(0.04)
lag1_acfta	-0.103	-0.0644	lag5_acfta	-0.00494	0.0239
	(0.17)	(0.19)		(0.09)	(0.09)
lag1_akfta	-0.0329	0.0353	lag5_akfta	-0.0687	-0.0139
	(0.17)	(0.18)		(0.09)	(0.10)
lag1_ajfta	0.109	0.0646	lag5_ajfta	0.0158	-0.0138
	(0.17)	(0.18)		(0.09)	(0.10)
lag1_aifta	0.0546	-0.0195	lag5_aifta	0.0462	-0.0268
	(0.17)	(0.18)		(0.11)	(0.11)
lag1_aafta	-0.0778	0.0125	lag5_aafta	-0.172	0.0022
	(0.17)	(0.18)		(0.11)	(0.11)
lag1_anfta	-0.154	-0.159	lag5_anfta	-0.211**	-0.103
	(0.18)	(0.19)		(0.11)	(0.11)

Notes: (1) Standard errors in parentheses;
(2) *** p<0.01, ** p<0.05, * p<0.1

4.5 Individual country estimations

When it comes to individual country, there is widely varying in coefficients in all variables of interest as shown in Tables 4.5 and 4.6. Staring with Brunei, it effectively exploits FTA to expand export, most of the estimated coefficient for FTA–related dummies are positive. For import model, its import increased considerably from Korea in the presence of AKFTA and also from other ASEAN members thanks to AFTA. Cambodia also makes good use of AIFTA to expand its export to Indian market. As for Indonesia, it utilizes AIFTA to boost exporting to Indian market. At the same time, its mutual trade with Australia has worsen due to AANZFTA. Malaysia seems to not get any trade facilitated via FTA channel, as most of the FTA dummies show negative sign. Philippine imports much more from China utilizing ACFTA and also from ASEAN member under AFTA. Singapore has been making good use of FTAs. The coefficient of ACFTA in Singapore is the highest and also the most significant among eight countries. Nevertheless, as explained earlier, it is hard to conclude that the contribution is due solely to ACFTA or Singapore–China FTA also involves. Singapore is also the only country that AKFTA shows statistically significant in export model. Similar to other members, Vietnam and Thailand also utilized well AIFTA to accelerate its outbound trade towards Indian market. In addition, AANZFTA appears to hinder Vietnam' trade with Australia and New Zealand, meanwhile Thailand has been able to manage its export to these economies. Furthermore, Thailand succeeds in utilizing overall FTA to boost its export.

Alternative speaking, for overall FTA, Brunei and Thailand make good use of FTAs it has involved to expand export to and import from FTA partners. Meanwhile, Malaysia and Vietnam experience a trade decline with their FTA counterparts. AFTA shows statistically significant and quantitatively large for most of the countries except for Singapore and Vietnam in the import model.

Of five region-wide FTAs, AIFTA is the only FTA that consistently positively affect export from ASEAN members to India. Except for Malaysia, coefficients of AIFTA for all other countries in export model are positive and significant. When it comes to export

from India to ASEAN market, it turns out to be negative in all country, meaning India by no mean improves its aggregate export volume through AIFTA.

Table 4. 5 Estimate results for individual member export flow
Source: author's calculation

	Brunei	**Cambodia**	**Indonesia**	**Malaysia**	**Philippines**	**Singapore**	**Vietnam**	**Thailand**
FTA	0.384***	0.125	-0.0162	-0.0597*	0.00928	0.0189	-0.0395	**0.0987*** **
	(0.15)	(0.103)	(0.03)	(0.04)	(0.05)	(0.02)	(0.06)	(0.04)
OFTA			0.278**	-0.124*	-0.189	-0.0811***	0.162	0.244
			(0.12)	(0.07)	(0.17)	(0.03)	(0.14)	(0.15)
AFTA	-0.0946		-0.0848	-0.0742	0.127	0.00376	0.0318	0.0729
	(0.26)		(0.06)	(0.06)	(0.09)	(0.05)	(0.20)	(0.06)
ACFTA	0.446	-0.351	-0.0867	-0.134	0.0298	**0.272*** **	-0.152	-0.121
	(0.42)	(0.27)	(0.10)	(0.11)	(0.16)	(0.09)	(0.15)	(0.11)
AKFTA	0.0831	0.35	-0.0787	-0.087	0.0998	**0.223** **	**0.102**	-0.0298
	(0.36)	(0.24)	(0.10)	(0.11)	(0.15)	(0.09)	(0.14)	(0.11)
AJFTA	0.325	0.0451	-0.0785	0.0989	0.198	0.104	-0.15	0.0295
	(0.37)	(0.24)	(0.10)	(0.11)	(0.16)	(0.09)	(0.15)	(0.11)
AIFTA	**1.511*** **	**0.531** **	**0.458*** **	**-0.0208**	**0.0854**	**0.0974**	**0.424*** **	**0.267** **
	(0.39)	(0.24)	(0.11)	(0.12)	(0.16)	(0.09)	(0.15)	(0.11)
AAFTA	0.302	0.18	-0.207**	0.0089	-0.356**	0.127	-0.603***	0.116
	(0.37)	(0.24)	(0.11)	(0.12)	(0.16)	(0.09)	(0.15)	(0.11)
ANFTA	0.312	-0.222	-0.0523	0.0041	-0.207	0.182**	-0.17	0.202*
	(0.39)	(0.25)	(0.11)	(0.12)	(0.16)	(0.09)	(0.15)	(0.11)

Notes: (1) Standard errors in parentheses
(2) *** p<0.01, ** p<0.05, * p<0.1

Table 4. 6 Estimate results for individual member import flow
Source: author's calculation

	Brunei	**Cambodia**	**Indonesia**	**Malaysia**	**Philippines**	**Singapore**	**Vietnam**	**Thailand**
FTA	0.0272	-0.15	0.0785	-0.072	0.0724	**-0.092****	-0.124	0.0316
	(0.08)	(0.12)	(0.06)	(0.05)	(0.08)	(0.04)	(0.08)	(0.06)
OFTA	-0.422*		-0.412*	-0.252**	-0.365	-0.107**	-0.106	-0.074
	(0.23)		(0.23)	(0.12)	(0.25)	(0.05)	(0.20)	(0.24)
AFTA	**0.276****		**0.341*****	**0.166***	**0.303****	-0.121	-0.00758	0.143
	(0.14)		(0.10)	(0.09)	(0.13)	(0.09)	(0.26)	(0.09)
ACFTA	**0.153**	**0.197**	**0.362***	**0.02**	**0.448***	-0.0184	0.268	0.284
	(0.25)	(0.33)	(0.19)	(0.18)	(0.23)	(0.16)	(0.22)	(0.17)
AKFTA	0.385*	-0.181	0.0077	-0.139	-0.0106	0.0964	-0.112	-0.0076
	(0.23)	(0.29)	(0.19)	(0.18)	(0.23)	(0.16)	(0.21)	(0.17)
AJFTA	-0.217	-0.171	-0.048	-0.255	-0.304	**-0.314****	-0.256	-0.0537
	(0.24)	(0.29)	(0.19)	(0.18)	(0.23)	(0.16)	(0.21)	(0.18)
AIFTA	0.224	-0.046	-0.0091	-0.0596	0.162	0.141	-0.154	-0.0575
	(0.24)	(0.29)	(0.20)	(0.19)	(0.24)	(0.16)	(0.22)	(0.18)
AAFTA	-0.386	-0.359	-0.341*	-0.26	-0.223	-0.287*	-0.266	-0.117
	(0.24)	(0.28)	(0.20)	(0.19)	(0.24)	(0.16)	(0.22)	(0.18)
ANFTA	-0.302	-0.245	-0.171	-0.278	-0.0689	-0.0363	-0.388*	-0.093
	(0.24)	(0.30)	(0.20)	(0.19)	(0.24)	(0.16)	(0.22)	(0.18)

Notes: (1) Standard errors in parentheses
(2) *** p<0.01, ** p<0.05, * p<0.1

Chapter 5. Concluding remark

5.1 Conclusion

A variety of methods applied to examine the effectiveness of current FTA network in Southeast Asia region shows that FTA of all types does not necessarily trigger trade at aggregate level. That is, gross trade volume between ASEAN countries and its FTA partners does not increase with the presence of FTA. In this study, the dataset is constructed at the world level with a focus on ASEAN region, FTA is imputed in a dynamic way, essential control variables are included, and time span is long enough to observe changes overtime. Furthermore, the huge matrix dataset allows for different fixed effects, thereby arriving at the model where FTA produces the purest effect. In other words, the frequent concerns in studying international trade flow's determinants – heterogeneity, endogeneity, simultaneity bias – are accounted in earnest to obtain the least biased results in this study.

While AFTA has long been believed to have played a crucial role in facilitating ASEAN intra-trade, this empirical analysis illustrates that it rather turns out to be an impediment, albeit trade among member countries has been recorded as increasing during the last three decades. This fact might, therefore, merely suggest a common trend, given that the world is getting interconnected or be associated with other factors rather than FTA.

For ASEAN plus FTAs, it shows a positive impact when all five region-wide FTAs are combined together. Yet a more detailed analysis reveals a very heterogeneous effects among these FTAs. In fact, the recent expansion of trade with China can easily lead to an intuitive belief that ACFTA has contributed to the trend. However, this study brings to light the apparently negative impact of ACFTA on overall trade between ASEAN and China. Likewise, AANZFTA and AKFTA also experience the same development. Meanwhile, AIFTA and AJFTA, which are logically anticipated to engender a rather neglectable effect, prove to be a favorable determinant of trade.

Again, looking at the raw number without considering a number of potential factors simultaneously contributing to the change might delude researchers about the role of FTA. As mentioned in Chapter 1, total trade volume of ASEAN with five out of six dialogue partners has been on the rise. In fact, existing literatures oftentimes tout ASEAN plus FTAs as substantial momentum to boost up trade in some certain commodity groups. Supposing these findings are reliable, then a rise in trade of those intensively–traded products must come at the expense of others' downsizing. This total-zero sum game, therefore, result relevant stakeholders stratified into the so-called "losers and winners", hence triggering the increasingly negative public sentiment towards globalization. This is well proven in the course of setting up the Regional Comprehensive Economic Partnership (RCEP). A number of Indian civil groups have strongly opposed the RCEP proposal under the pretext of sustaining their livelihoods that the country had to opt out of the deal in November 2019. Having proven empirically that AIFTA is the only region-wide FTA that almost ASEAN members benefit form, the impact of RCEP on ASEAN is expected to be rather gloomy. In short, forming an FTA become a political hot potato and more caution is thus required to put into the process in order to mitigate the potential loss and also to balance out the benefits of different groups.

On the other hand, the study also attempts to check if there exists a linkage between the difference in coefficient estimates among five region-wide FTAs – ACFTA, AJFTA, AKFTA, AIFTA, AANZFTA and their tariff structure. It demonstrates that the differences in tariff elimination's coverage and schedule, tariff gap between before and after FTA formation, together with existing FTAs network between these six dialogue partners and ASEAN member countries do not go hand in hand with the estimated coefficients' dispersion. Hence, tariff provision should be juxtaposed with other factors to better understand the impact on trade of FTAs.

To sum up, although the impact on gross trade is not a decisive criterion for the establishment of an FTA, the negative coefficients of almost all FTA dummies in the model would perhaps urges policy makers to take a more comprehensive approach when scrutinizing the impact of FTAs.

5.2 Limitation and further research

The research recognizes a few of limitations that might be left for further research.

First, two ASEAN members are excluded in the dataset due to lack of data. Was it all included, the estimates would yield a more tellingly results that fully encompassing all FTA that ASEAN bloc has been involving. Fortunately, data for the rest eight members are sufficient enough in both time span and dimension mean to apply different approach.

Second, the study assumes that all types of FTAs affect bilateral trade in the same manner regardless of depth level. In fact, some FTAs covers all provision including trade in goods and services, investment and specify relevant measures to effectively utilizes it, while others offer very limited provisions with the ambiguous terms and conditions. In addition, the fact that the impact of FTA on trade also highly rest on the signatories' capability to utilize FTA is also not reflected in this modelling.

Third, in the case of overall FTA, if two countries involve in all three FTA types: bilateral, multilateral and region-wide FTA, the overall FTA dummy is built upon whichever FTA come first and ignore other late coming FTA. Doing so allow to examine the cumulative effect but not the individual effect of each FTA.

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Appendix A: Tables

Table A. 1 Data on trade description
Source: author's derivation from dataset

Country	Mean	P50	SD	Variance	N	Range	Min	Max
Brunei	5.785	5.829	1.675	2.805	1561	9.215	–	9.215
Cambodia	5.995	5.994	1.638	2.683	1337	8.885	0.903	9.788
Indonesia	7.419	7.614	1.621	2.628	2497	9.880	0.778	10.658
Malaysia	7.383	7.596	1.789	3.201	2585	10.336	0.301	10.637
The Philippines	7.150	7.343	1.674	2.802	2316	8.467	1.886	10.354
Singapore	7.878	8.087	1.600	2.560	2372	9.850	0.845	10.695
Vietnam	7.587	7.690	1.402	1.964	1566	9.862	0.954	10.816
Thailand	7.531	7.795	1.721	2.963	2622	9.919	0.778	10.697

Table A. 2 Correlation matrix of variables
Source: author's derivation from dataset

	Export	Distance	GDPi	GDPj	POPi	POPj	Contig	Comlang	Colony	Comcol	FTA
Export	1										
Distance	-0.3052	1									
GDPi	0.5716	0.0031	1								
GDPj	0.5117	-0.0235	-0.0172	1							
POPi	0.338	0.0862	0.6506	-0.0381	1						
POPj	0.3054	0.0697	-0.0486	0.6546	-0.0373	1					
Contig	0.2034	-0.3892	0.0443	0.0484	0.0435	0.0411	1				
Comlang	0.056	-0.0969	-0.0331	-0.0586	-0.0076	-0.0304	0.1597	1			
Colony	0.1351	-0.0768	0.0764	0.0608	0.0375	0.0282	0.103	0.2448	1		
Comcol	-0.1095	-0.0697	-0.1583	-0.1401	-0.0574	-0.0522	0.0493	0.1898	-0.0381	1	
FTA	0.1251	-0.1057	0.0255	0.0346	0.0411	0.0487	0.079	0.0143	-0.0191	0.0458	1

Table A. 3 Correlation matrix of variables
Author's derivation using dataset

	Export	Distance	GDPi	GDPi	POPi	POPj	Contig	Comlang	Colony	Comcol	AFTA	OFTA	ACFTA	AKFTA	AJFTA	AIFTA	ANFTA	AAFTA
Export	1																	
Distance	-0.3052	1																
GDPi	0.5716	0.0031	1															
GDPi	0.5117	-0.0235	-0.0172	1														
POPi	0.338	0.0862	0.6506	-0.0381	1													
POPj	0.3054	0.0697	-0.0486	0.6546	-0.0373	1												
Contig	0.2034	-0.3892	0.0443	0.0484	0.0435	0.0411	1											
Comlang	0.056	-0.0969	-0.0331	-0.0586	-0.0076	-0.0304	0.1597	1										
Colony	0.1351	-0.0768	0.0764	0.0608	0.0375	0.0282	0.103	0.2448	1									
Comcol	-0.1095	-0.0697	-0.1583	-0.1401	-0.0574	-0.0522	0.0493	0.1898	-0.0381	1								
AFTA	0.067	-0.148	-0.0291	-0.0213	0.0139	0.0177	0.1091	-0.0013	-0.0169	0.0466	1							
OFTA	0.0237	0.028	0.0096	0.0258	-0.0246	0.0023	-0.0073	0.0044	0.0114	0.0159	-0.0043	1						
ACFTA	0.071	-0.0133	0.0627	0.0377	0.0826	0.0489	0.0291	0.0109	-0.0079	-0.0111	-0.0049	-0.002	1					
AKFTA	0.0454	-0.0174	0.0197	0.0237	0.0121	0.0152	-0.0063	-0.0126	-0.0058	-0.0082	-0.0037	-0.0015	-0.0017	1				
AJFTA	0.0537	-0.0112	0.0381	0.0347	0.025	0.0247	-0.0066	-0.0132	-0.0061	-0.0087	-0.0039	-0.0015	-0.0018	-0.0013	1			
AIFTA	0.0361	-0.0165	0.0259	0.0247	0.0486	0.0438	0.0057	0.0134	-0.0055	0.0556	-0.0035	-0.0014	-0.0016	-0.0012	-0.0013	1		
ANFTA	0.0156	0.0163	0.0017	0.0052	-0.0146	-0.0081	-0.0059	0.0136	-0.0055	-0.0078	-0.0035	-0.0014	-0.0016	-0.0012	-0.0013	-0.0011	1	
AAFTA	0.0336	0.0049	0.0217	0.0214	0.0038	0.0068	-0.006	0.0134	-0.0055	-0.0078	-0.0035	-0.0014	-0.0016	-0.0012	-0.0013	-0.0011	-0.0011	1

Table A. 4 List of country included in the dataset
Source: author's derivation from dataset

Algeria	Cyprus	Japan	Peru	Switzerland
Argentina	Czech Republic	Jordan	The Philippines	Tanzania
Australia	Ecuador	South Korea	Pitcairn	Thailand
Austria	Egypt	North Korea	Poland	Togo
Bangladesh	Equatorial Guinea	Lao	Portugal	Tokelau
Belgium	Estonia	Liberia	Qatar	Trinidad and Tobago
Bolivia	Finland	Malaysia	Russian Federation	Tunisia
Brazil	France	Mauritius	Saint Helena	Turkey
Brunei	Germany	Mexico	San Marino	Uganda
Bulgaria	Gibraltar	Morocco	Saudi Arabia	United Kingdom
Cambodia	Greece	Myanmar	Singapore	USA
Canada	Guatemala	Nauru	Slovakia	Uruguay
Chile	Hong Kong	Netherlands	Slovenia	Venezuela
China	Hungary	New Zealand	Somalia	Viet Nam
Colombia	India	Niue	Spain	Western Sahara
Congo	Indonesia	Norway	Sri Lanka	Zimbabwe
Costa Rica	Ireland	Oman	Pierre and Miquelon	
Croatia	Italy	Pakistan	Sweden	

Table A. 5 List of ASEAN Plus FTAs
Source: author's derivation using WTO RTA database

RTA Name	**Coverage**	**Type**	**Signed Date**	**EIF (Goods)**	**EIF (Services)**
AFTA	Goods	FTA	1/28/1992	1/1/1993	
ACFTA	Goods & Services	FTA & EIA	11/29/2004	1/1/2005	7/1/2007
AKFTA	Goods & Services	FTA & EIA	8/24/2006	1/1/2010	10/14/2010
AJFTA	Goods	FTA	3/26/2008	12/1/2008	
AIFTA	Goods & Services	FTA & EIA	8/13/2009	1/1/2010	7/1/2015
AANFTA	Goods & Services	FTA & EIA	2/27/2009	1/1/2010	1/1/2010

Table A. 6 List of all other FTAs that ASEAN members have involved
Source: author's derivation using WTO RTA database

Country	Partner	Coverage	Type	Signed Date	EIF (Good)	EIF (Service)
Brunei	Japan	Goods & Services	FTA & EIA	6/18/2007	7/31/2008	7/31/2008
Brunei	PSEP	Goods & Services	FTA & EIA	7/18/2005	5/28/2006	5/28/2006
Indonesia	Pakistan	Goods	PSA	2/3/2012	9/1/2013	
Indonesia	Chile[9]	Goods	FTA	12/14/2017	8/10/2019	
Indonesia	Japan	Goods & Services	FTA & EIA	8/20/2007	7/1/2008	7/1/2008
Indonesia	Australia	Goods & Services	FTA & EIA	3/2019	2/2020	2/2020
Laos	Thailand	Goods	PSA	6/20/1991	6/20/1991	
Laos	Vietnam	Goods	PSA	3/3/1998[10]	3/3/1998	
Laos	GSP	Goods & Services	FTA & EIA	2/2/2013	2/2/2013	2/2/2013
Malaysia	Australia	Goods & Services	FTA & EIA	5/22/2012	1/1/2013	1/1/2013
Malaysia	Chile	Goods	FTA	11/13/2010	2/25/2012	
Malaysia	India	Goods & Services	FTA & EIA	2/18/2011	7/1/2011	7/1/2011
Malaysia	Japan	Goods & Services	FTA & EIA	12/13/2005	7/13/2006	7/13/2006
Malaysia	New Zealand	Goods & Services	FTA & EIA	10/26/2009	8/1/2010	8/1/2010
Malaysia	Pakistan	Goods & Services	FTA & EIA	11/8/2007	1/1/2008	1/1/2008
Malaysia	Turkey	Goods	FTA	4/17/2014	8/1/2015	
Singapore	Australia	Goods & Services	FTA & EIA	2/17/2003	7/28/2003	7/28/2003
Singapore	Taiwan	Goods & Services	FTA & EIA	11/7/2013	4/19/2014	4/19/2014
Singapore	China	Goods & Services	FTA & EIA	10/23/2008	1/1/2009	1/1/2009
Singapore	Costa Rica	Goods & Services	FTA & EIA	4/6/2010	7/1/2013	7/1/2013
Singapore	EFTA	Goods & Services	FTA & EIA	6/26/2002	1/1/2003	1/1/2003
Singapore	EU	Goods & Services	FTA & EIA	10/19/2018	11/21/2019	11/21/2019
Singapore	GCC	Goods & Services	FTA & EIA	12/15/2008	9/1/2013	9/1/2013
Singapore	India	Goods & Services	FTA & EIA	6/29/2005	8/1/2005	8/1/2005
Singapore	Japan	Goods & Services	FTA & EIA	1/13/2002	11/30/2002	11/30/2002
Singapore	Jordan	Goods & Services	FTA & EIA	5/16/2004	8/22/2005	8/22/2005
Singapore	Korea	Goods & Services	FTA & EIA	8/4/2005	3/2/2006	3/2/2006
Singapore	New Zealand	Goods & Services	FTA & EIA	11/14/2000	1/1/2001	1/1/2001

[9] The Comprehensive Economic Partnership Agreement between Chile and Indonesia)
[10] This is an upgraded version of its first FTA back in1998

Country	Partner	Coverage	Type	Signed Date	EIF (Good)	EIF (Service)
Singapore	Panama	Goods & Services	FTA & EIA	3/1/2006	7/24/2006	7/24/2006
Singapore	Peru	Goods & Services	FTA & EIA	5/29/2008	8/1/2009	8/1/2009
Singapore	Turkey	Goods & Services	FTA & EIA	11/14/2015	10/1/2017	10/1/2017
Singapore	USA	Goods & Services	FTA & EIA	5/6/2003	1/1/2004	1/1/2004
Singapore	Sri Lanka	Goods & Services	FTA & EIA	2014	1/5/2018	1/5/2018
Singapore	CPTPP	Goods & Services	FTA & EIA	3/8/2018	12/31/2018	12/30/2018
Singapore	PSEP	Goods & Services	FTA & EIA	7/18/2005	5/28/2006	5/28/2006
Philippines	EFTA	Goods & Services	FTA & EIA	4/28/2016	6/1/2018	6/1/2018
Philippines	Japan	Goods & Services	FTA & EIA	9/9/2006	12/11/2008	12/11/2008
Thailand	Australia	Goods & Services	FTA & EIA	7/5/2004	1/1/2005	1/1/2005
Thailand	New Zealand	Goods & Services	FTA & EIA	4/19/2005	7/1/2005	7/1/2005
Thailand	Chile	Goods & Services	FTA & EIA	10/4/2013	11/5/2015	11/5/2015
Thailand	India	Goods	PSA	10/9/2003	9/1/2004	9/1/2004
Thailand	Japan	Goods & Services	FTA & EIA	4/3/2007	11/1/2007	11/1/2007
Viet Nam	Chile	Goods	FTA	11/11/2011	1/1/2014	1/1/2014
Viet Nam	EAEU	Goods & Services	FTA & EIA	5/29/2015	10/5/2016	10/5/2016
Viet Nam	Japan	Goods & Services	FTA & EIA	25/12/2008	1/10/2009	1/10/2009
Viet Nam	Korea	Goods & Services	FTA & EIA	5/5/2015	12/20/2015	12/20/2015

Table A. 7 Regional abbreviation and country membership in the dataset
Source: author's derivation from dataset

TPCPP	EFTA	EU	EAEU	GCC	AFTA	PSEP
Australia	Austria	Albania	Armenia	Saudi Arabia	Brunei	Brunei
Canada	Denmark	Austria	Belarus	Kuwait	Indonesia	Chile
Japan	Norway	Belgium	Kazakhstan	UAE	Cambodia	New Zealand
Mexico	Portugal	Cyprus	Kyrgyzstan	Qatar	Lao	Singapore
New Zealand	Sweden	Czech	Russia	Bahrain	Myanmar	
Singapore	Switzerland	Denmark		Oman	Malaysia	
	UK	Estonia			Philippines	
		Finland			Singapore	
		France			Thailand	
		Germany			Viet Nam	
		Greece				
		Hungary				
		Ireland				
		Italy				
		Latvia				
		Lithuania				
		Luxembourg				
		Malta				
		Netherlands				
		Poland				
		Portugal				
		Slovakia				
		Slovenia				
		Spain				
		Sweden				
		United Kingdom				

Table A. 8 Average tariff of 6 dialogue partners to ASEAN during 1990–2018
Source: author's derivation using WITS Tariff dataset

	MNF						PRF					
	Australia	China	India	Japan	Korea	NZ	Australia	China	India	Japan	Korea	NZ
1990	.	.	77.55	4.02	12.74	.	.	.	.	2.18	.	.
1991	10.90	.	.	3.92	.	.	11.32	.	.	2.11	.	.
1992	.	41.13	55.69	3.98	11.04	9.82	.	.	.	2.08	.	.
1993	8.85	37.99	.	4.00	.	9.16	9.01	.	.	2.03	.	6.72
1994	.	33.85	.	3.88	.	.	.	.	.	2.05	.	.
1995	.	.	.	3.59	8.22	.	.	.	.	1.90	.	.
1996	4.63	23.83	37.67	3.46	11.66	6.74	4.66	.	.	1.83	.	6.92
1997	4.45	16.98	29.88	3.12	10.69	5.79	4.67	.	.	1.54	.	4.11
1998	4.26	16.91	.	3.06	12.07	4.80	4.56	.	.	1.56	.	3.55
1999	4.18	16.63	33.00	2.87	8.23	3.93	4.56	.	.	1.47	.	2.82
2000	3.96	16.70	33.51	2.85	10.67	3.00	4.45	.	.	1.49	.	2.17
2001	3.68	16.03	32.74	2.83	10.86	3.78	4.57	.	.	1.78	.	.
2002	3.63	12.43	29.42	2.72	11.45	3.73	4.27	.	.	1.68	.	2.46
2003	3.64	11.25	26.72	2.64	10.78	3.68	4.24	.	.	1.61	.	2.38
2004	3.62	10.32	29.52	2.59	11.50	3.50	4.25	.	.	1.57	3.35	2.31
2005	3.21	9.71	18.15	2.58	10.41	3.55	3.38	2.41	10.45	1.28	.	3.29
2006	3.26	9.94	15.14	2.66	10.98	3.41	1.41	7.76	.	1.91	3.08	2.77
2007	3.29	10.00	15.82	2.67	10.93	3.41	1.42	6.50	.	1.19	3.83	2.75
2008	3.24	9.67	11.35	2.72	11.20	2.58	1.49	6.53	4.70	0.94	.	1.69
2009	3.24	9.70	11.49	2.67	12.50	2.44	2.01	2.25	4.80	0.85	10.98	1.07
2010	2.84	9.74	11.16	2.61	13.70	2.44	0.25	.	.	1.67	0.53	0.35
2011	2.87	9.67	11.35	2.62	12.12	2.30	0.28	0.14	.	1.41	.	.
2012	2.83	.	11.70	2.62	10.91	2.37	.	.	.	0.72	.	.
2013	2.83	.	11.69	2.51	10.98	2.42	0.04	.	.	.	.	0.19
2014	2.85	9.38	.	2.56	10.88	2.42	0.04	0.13	.	1.08	2.12	0.26
2015	2.76	9.52	11.37	2.58	12.72	2.43	0.02	0.17	0.60	1.10	2.35	0.14
2016	2.76	9.98	11.88	2.61	13.09	2.43	0.02	0.18	1.00	1.09	2.82	0.12
2017	2.75	9.97	11.70	2.67	12.47	2.42	0.02	0.24	0.98	1.03	3.55	0.10
2018	2.74	9.92	11.77	2.68	14.12	.	0.02	0.34	0.90	1.07	4.82	.

Table A. 9 Average tariff of ASEAN to 6 dialogue partners during 1990–2018
Source: author's derivation using WITS Tariff

Year	MNF						PRF					
	Australia	China	India	Japan	Korea	NZ	Australia	China	India	Japan	Korea	NZ
1990	17.98	19.07	16.68	18.25	18.52	17.61	.	.	.	.	.	.
1991	22.27	24.69	22.14	24.62	25.61	19.91	12.18	.	.	.	.	9.42
1992	12.93	13.19	14.44	12.69	15.36	13.01	.	.	.	.	.	.
1993	21.30	22.48	20.91	22.39	23.06	19.97	12.12	.	.	.	.	7.17
1994	19.21	17.38	18.04	17.61	18.02	18.49	.	.	.	.	.	.
1995	12.91	13.55	11.02	13.42	13.53	11.30	.	.	.	.	.	.
1996	7.35	7.09	6.16	7.26	7.90	6.66	.	.	.	.	.	.
1997	9.63	9.17	7.75	9.22	9.72	8.65	.	.	.	.	.	.
1998	5.66	5.59	4.92	5.80	6.31	4.95	.	.	.	.	.	.
1999	10.53	10.64	9.66	10.94	11.25	9.42	.	.	.	.	.	.
2000	7.10	7.09	6.54	7.16	7.26	6.56	.	.	.	.	.	.
2001	7.87	8.30	7.09	8.11	8.36	7.71	.	.	.	.	.	.
2002	6.21	6.81	5.38	6.82	7.14	5.34	.	.	.	.	.	.
2003	7.93	7.91	6.88	8.02	8.24	7.83	.	.	.	.	.	.
2004	6.65	6.68	5.85	6.84	7.20	6.42	.	.	.	.	.	.
2005	7.34	7.37	6.46	7.48	7.73	7.36	12.34	6.91	.	0.00	.	0.00
2006	7.39	7.31	6.38	7.50	7.81	7.17	12.93	5.99	.	.	.	.
2007	7.16	7.12	6.19	7.27	7.71	6.87	0.00	11.60	0.00	0.00	12.66	0.00
2008	6.47	6.64	5.65	6.47	6.91	6.33	0.00	4.50	0.00	0.00	0.00	0.00
2009	6.09	5.94	5.63	6.10	6.29	5.85	0.00	2.28	0.00	9.09	1.15	0.00
2010	5.91	6.03	5.47	6.04	6.46	5.62	0.00	0.43	5.24	0.00	0.71	0.00
2011	5.57	5.47	5.16	5.46	5.81	5.57	1.42	0.39	5.85	1.79	0.56	1.16
2012	5.36	5.74	5.00	5.79	6.02	4.26	0.80	0.16	6.99	1.57	0.19	0.62
2013	6.07	5.90	5.71	6.06	6.19	6.06	3.09	1.17	6.05	4.55	1.94	2.11
2014	6.21	6.62	5.81	6.67	6.86	6.16	2.45	2.28	4.60	2.93	3.51	2.09
2015	6.33	6.43	5.74	6.21	6.30	6.27	1.88	0.51	4.58	2.38	1.60	1.51
2016	5.36	5.99	5.24	6.08	6.14	4.80	1.60	0.43	4.34	2.73	0.90	1.29
2017	5.03	5.26	4.77	5.26	5.44	4.64	1.03	0.56	3.95	1.80	0.94	0.95
2018	5.13	3.84	4.96	5.24	3.61	4.90	0.87	0.24	3.99	1.57	0.43	0.70

Table A. 10 Tariff of individual ASEAN members to Australia during 1990–2018
Source: author's derivation using WITS Tariff

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	18.73	.	.	.	20.68	.	.	.
1991	.	.	.	.	33.06	.	.	.	43.55	.
1992	2.70	.	.	.	.	.	20.63	.	.	.
1993	.	.	.	.	14.20	.	.	.	48.82	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	6.91	30.74	.
1996	.	.	.	.	92.23	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	2.63	.	.	.	.	.	.	.	.	.
2000	1.93	.	.	.	.	.	.	.	22.15	.
2001	2.10	.	15.39	.	37.73	.	.	0.49	19.29	.
2002	1.89	.	16.41	.	7.87	.	.	0.48	.	.
2003	1.76	.	14.39	.	16.36	.	.	0.52	21.19	.
2004	1.87	.	11.40	.	.	.	.	.	.	.
2005	1.77	.	10.11	.	.	.	.	–	16.67	12.15
2006	2.07	.	5.34	.	15.88	.	.	0.62	17.74	12.15
2007	1.72	.	5.59	.	23.90	.	.	–	16.94	.
2008	1.80	.	.	.	16.99	.	.	–	16.60	.
2009	.	.	9.18	.	15.34	.	.	–	16.57	.
2010	1.81	.	24.32	.	.	.	.	–	.	.
2011	3.58	.	11.10	.	.	15.18	1.40	.	.	.
2012	.	.	.	.	.	.	0.82	–	.	12.23
2013	.	.	17.18	.	.	.	0.43	–	.	12.97
2014	0.46	22.54	.	20.58	0.28	.	.	–	0.29	9.37
2015	.	.	.	11.01	.	8.89	0.24	–	0.20	8.45
2016	0.25	.	.	10.45	.	.	0.21	–	.	5.25
2017	0.00	.	0.66	6.64	.	.	0.18	–	.	5.58
2018	0.00	.	0.34	6.75	.	.	0.09	–	.	5.08

Table A. 11 Tariff of individual ASEAN members to China during 1990–2018
Source: author's derivation using WITS Tariff

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	20.65	.	.	.	20.81	.	.	.
1991	.	.	.	.	33.50	.	.	.	43.94	.
1992	1.78	.	.	.	.	.	20.79	.	.	.
1993	.	.	.	.	23.90	.	.	.	45.45	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	10.36	28.73	.
1996	.	.	.	.	31.25	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	2.87	.	.	.	.	.	.	.	.	.
2000	2.33	.	.	.	.	.	.	.	23.56	.
2001	1.76	.	8.53	.	22.20	.	.	0.64	20.38	.
2002	1.64	.	6.11	.	7.46	.	.	0.81	.	.
2003	1.77	.	8.51	.	20.61	.	.	0.74	20.58	.
2004	1.97	.	5.71	.	.	.	.	.	.	.
2005	1.78	.	5.90	35.34	.	.	.	0.66	17.83	10.95
2006	1.89	.	5.84	.	15.27	.	.	0.62	17.42	10.95
2007	6.16	24.00	4.76	19.43	22.78	11.22	5.62	–	15.21	19.55
2008	1.19	.	.	.	22.82	.	.	–	16.43	.
2009	1.81	.	1.75	.	26.03	.	.	–	16.24	.
2010	1.66	.	1.31	.	.	8.10	.	–	.	11.24
2011	0.15	.	8.98	.	.	4.50	0.33	.	.	.
2012	.	.	0.08	.	.	.	0.09	–	.	7.73
2013	.	.	7.26	.	.	.	0.09	–	.	4.13
2014	0.01	3.71	.	4.44	0.36	.	.	–	0.45	6.31
2015	.	.	.	0.39	.	1.33	0.12	–	0.56	3.68
2016	0.01	.	0.31	0.43	.	.	0.12	–	.	1.66
2017	–	.	0.31	0.38	.	.	0.11	–	.	3.51
2018	–	.	0.23	0.41	.	.	0.20	–	.	2.95

Table A. 12 Tariff of individual ASEAN members to India during 1990–2018
Source: author's derivation using WITS Tariff

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	19.38	.	.	.	21.35	.	.	.
1991	.	.	.	.	25.09	.	.	.	38.46	.
1992	2.60	.	.	.	.	.	21.35	.	.	.
1993	.	.	.	.	29.79	.	.	.	40.61	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	17.17	27.11	.
1996	.	.	.	.	23.27	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	2.61	.	.	.	.	.	.	.	.	.
2000	2.29	.	.	.	.	.	.	.	21.25	.
2001	14.31	.	13.96	.	27.79	.	.	0.82	20.65	.
2002	14.76	.	7.90	.	7.45	.	.	0.55	.	.
2003	13.50	.	5.68	.	23.68	.	.	0.60	21.08	.
2004	16.51	.	7.26	.	.	.	.	.	.	.
2005	25.42	.	5.80	.	.	.	.	0.52	15.99	.
2006	13.04	.	5.61	.	18.40	.	.	0.62	16.56	.
2007	8.03	.	5.43	.	28.93	.	.	–	14.52	.
2008	1.79	.	.	.	32.60	.	.	–	15.00	.
2009	.	.	5.88	.	28.64	.	.	–	15.84	.
2010	2.04	.	6.57	.	.	10.80	.	–	.	14.92
2011	6.86	.	4.75	.	.	14.17	8.12	.	.	.
2012	.	.	3.48	.	.	.	7.57	–	.	12.23
2013	.	.	4.37	.	.	.	6.84	–	.	10.59
2014	3.11	8.72	.	7.87	2.49	.	.	–	2.79	10.69
2015	.	.	.	7.43	.	6.67	4.37	–	3.01	10.33
2016	2.34	.	2.23	5.56	.	.	3.46	–	.	7.54
2017	1.60	.	1.79	5.27	.	.	3.17	–	.	9.18
2018	1.60	.	2.25	4.27	.	.	3.06	–	.	9.33

Table A. 13 Tariff of individual ASEAN members to Japan during 1990–2018
Source: author's derivation using WITS Tariff

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	19.78	.	.	.	19.57	.	.	.
1991	.	.	.	.	42.42	.	.	.	44.07	.
1992	1.76	.	.	.	.	.	19.56	.	.	.
1993	.	.	.	.	34.47	.	.	.	46.05	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	8.64	28.99	.
1996	.	.	.	.	34.28	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	2.11	.	.	.	.	.	.	.	.	.
2000	1.84	.	.	.	.	.	.	.	21.41	.
2001	2.45	.	10.89	.	16.71	.	.	0.73	18.68	.
2002	2.25	.	12.77	.	7.37	.	.	0.70	.	.
2003	2.25	.	13.70	.	18.72	.	.	0.79	20.76	.
2004	1.88	.	5.72	.	.	.	.	.	.	.
2005	18.71	.	5.55	.	.	.	.	–	15.93	.
2006	13.43	.	5.46	.	17.36	.	.	0.73	16.73	.
2007	13.16	.	5.59	.	14.35	.	.	–	15.09	.
2008	1.73	.	.	.	14.59	.	.	–	15.20	.
2009	4.43	.	11.45	.	18.00	.	.	–	15.80	.
2010	1.89	.	14.95	.	.	.	.	–	.	12.45
2011	0.69	.	10.76	.	.	.	2.02	.	.	.
2012	.	.	.	.	.	.	1.85	–	.	12.23
2013	.	.	17.40	.	.	.	1.41	–	.	12.90
2014	0.04	23.61	.	16.44	0.35	.	.	–	1.72	9.27
2015	.	.	.	16.44	.	4.07	0.86	–	1.39	8.72
2016	0.01	.	.	.	.	.	0.56	–	.	7.17
2017	–	.	0.28	.	.	.	0.30	–	.	7.84
2018	–	.	0.15	.	.	.	0.02	–	.	8.18

Table A. 14 Tariff of individual ASEAN members to Korea during 1990–2018
Source: author's derivation using WITS Tariff dataset

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	18.44	.	.	.	21.30	.	.	.
1991	.	.	.	.	23.14	.	.	.	46.56	.
1992	1.88	.	.	.	.	.	21.25	.	.	.
1993	.	.	.	.	29.72	.	.	.	52.40	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	12.95	29.77	.
1996	.	.	.	.	7.09	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	2.00	.	.	.	.	.	.	.	.	.
2000	1.79	.	.	.	.	.	.	.	22.24	.
2001	2.39	.	6.34	.	15.24	.	.	0.85	16.74	.
2002	2.39	.	5.84	.	8.50	.	.	0.96	.	.
2003	2.67	.	12.63	.	13.79	.	.	0.94	23.18	.
2004	2.34	.	7.90	.	.	.	.	.	.	.
2005	2.22	.	7.35	.	.	.	.	0.82	15.02	.
2006	3.07	.	5.19	.	17.05	.	.	0.88	15.70	.
2007	2.73	.	4.68	.	13.17	.	.	–	13.55	22.99
2008	2.15	.	.	.	14.29	.	.	–	14.64	.
2009	1.75	.	1.07	.	25.83	.	.	–	15.07	.
2010	1.76	.	1.01	.	.	7.86	.	–	.	15.16
2011	0.07	.	8.87	.	.	6.97	0.52	.	.	.
2012	.	.	0.12	.	.	.	0.14	–	.	10.62
2013	.	.	4.54	.	.	.	0.27	–	.	9.06
2014	0.05	6.54	.	4.96	1.12	.	.	–	0.41	9.77
2015	.	.	.	3.96	.	4.88	0.26	–	0.53	6.15
2016	0.02	.	0.35	2.70	.	.	0.36	–	.	4.21
2017	–	.	0.53	1.71	.	.	0.35	–	.	4.90
2018	–	.	0.53	0.02	.	.	0.38	–	.	5.21

Table A. 15 Tariff of individual ASEAN members to New Zealand during 1990–2018
Source: author's derivation using WITS Tariff dataset

	Brunei	Cam	Indo	Lao	Malay	My	Phil	Sing	Thai	Viet
1990	.	.	18.22	.	.	.	20.06	.	.	.
1991	.	.	.	.	17.01	.	.	.	47.11	.
1992	2.27	.	.	.	.	.	19.95	.	.	.
1993	.	.	.	.	10.95	.	.	.	45.23	.
1994	.	.	.	.	.	.	.	.	.	.
1995	.	.	.	.	.	.	.	11.51	32.94	.
1996	.	.	.	.	8.88	.	.	.	.	.
1997	.	.	.	.	.	.	.	.	.	.
1998	.	.	.	.	.	.	.	.	.	.
1999	4.38	.	.	.	.	.	.	.	.	.
2000	4.02	.	.	.	.	.	.	.	20.55	.
2001	1.78	.	15.71	.	7.54	.	.	0.73	21.18	.
2002	1.78	.	13.08	.	8.27	.	.	0.70	.	.
2003	2.62	.	10.62	.	12.93	.	.	0.65	19.59	.
2004	2.52	.	13.27	.	.	.	.	.	.	.
2005	2.08	.	12.29	.	.	.	.	–	16.92	.
2006	2.50	.	6.46	.	14.44	.	.	0.88	16.88	.
2007	2.07	.	6.12	.	14.65	.	.	–	15.89	.
2008	1.60	.	.	.	20.51	.	.	–	15.19	.
2009	2.05	.	5.81	.	16.35	.	.	–	14.78	.
2010	2.70	.	12.55	.	.	.	.	–	.	.
2011	1.62	.	13.83	.	.	15.18	1.40	.	.	.
2012	.	.	.	.	.	.	0.82	–	.	12.23
2013	.	.	15.41	.	.	.	0.43	–	.	12.97
2014	0.46	22.54	.	20.58	0.36	.	.	–	0.39	9.37
2015	.	.	.	11.01	.	8.89	0.24	–	0.20	8.45
2016	0.25	.	.	10.45	.	.	0.21	–	.	5.25
2017	–	.	0.66	6.64	.	.	0.18	–	.	5.58
2018	–	.	0.34	6.75	.	.	0.09	–	.	5.08

Appendix B: Figures

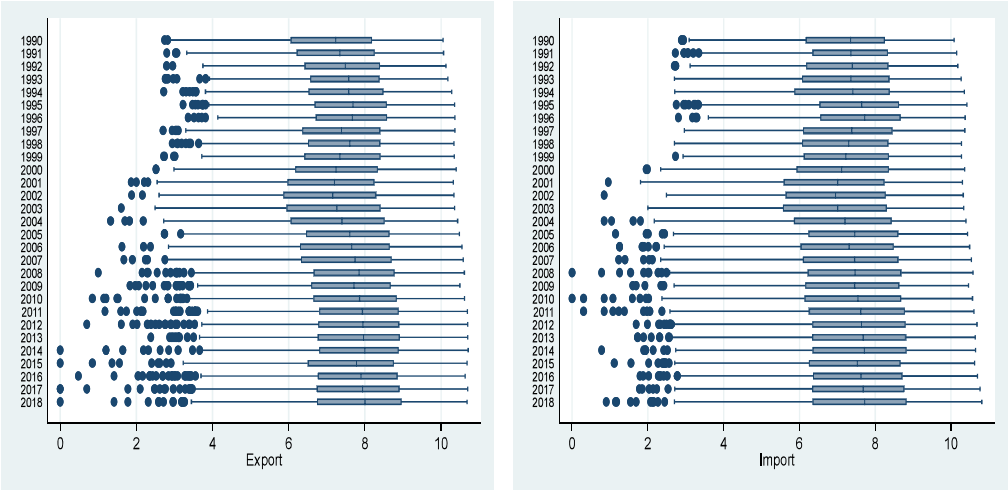

Figure A. 1 Fitted value for predicted trade volume
Source: author's derivation using dataset

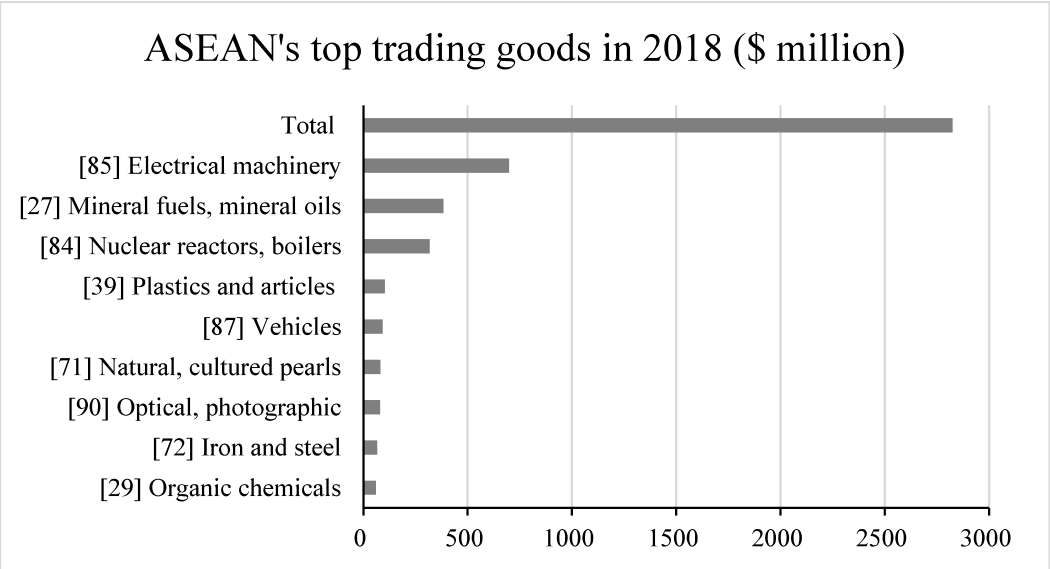

Figure A. 2 ASEAN's top trading goods in 2018
Source: author's derivation using WITS Tariff dataset

Figure A. 3 ASEAN's top trading partners in 2018
Source: author's derivation using WITS Tariff dataset

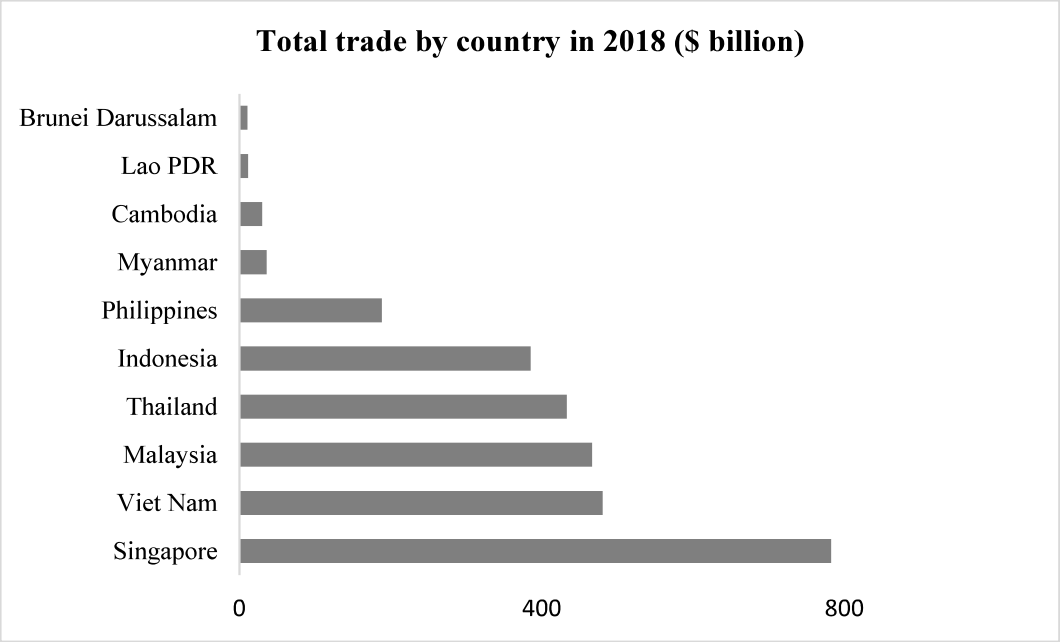

Figure A. 4 ASEAN's top trading partners in 2018
Source: author's derivation using WITS Tariff dataset

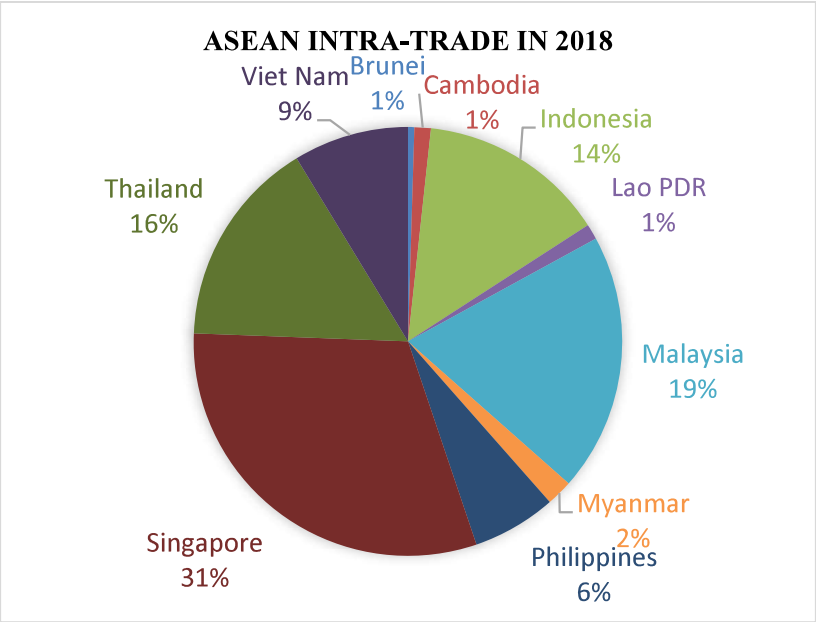

Figure A. 5 ASEAN intra trade's contribution by member country
Source: author's derivation using ASEAN stat dataset

국문초록

자유무역협정은 무역을 반드시 활성화시키는가?

아세안에 대한 실증 분석

본 연구는 아세안 국가의 FTA 네트워크가 무역을 증진하는 효과를 검증하는 데에 목적을 두고 있다. 미·중 무역 전쟁 혹은 미국의 여러 국제 협정으로부터의 탈퇴 등으로 특정되는 일련의 반세계화 정책 및 조치들로 최근의 세계 보호주의 경향에 맞서, 역내 포괄적 경제 동반자 협정 (域內包括的經濟同伴者協定, RCEP)이 오는 2020년 12월에 결론이 날 예정이다. RCEP이란 동남아시아국가연합 (ASEAN) 10개국과 한국, 중국, 일본, 호주, 뉴질랜드 다섯 파트너 국가 총15개국이 참여하는 아시아 · 태평양 지역경제통합 논의체다. 이미 아세안에 광범위한 FTA 네트워크가 맺어진 현재 상황에서 RCEP이 가져올 무역 증가의 효과가 있는가에 대한 의문점이 제기된다. 따라서 이러한 질문에 대한 해답을 찾기에 앞서, 우선은 기존의FTA 네트워크가 과연 아세안 회원국들의 무역 증진에 효과를 주었는가를 실증적으로 분석하는 것에 본 연구의 의의다.

FTA의 '순수 효과'를 얻기 위해 1990-2018년 기간 동안 75개국 있는 165파트너 구성된 패널 데이터에 다양한 중력 모형 추정 접근법을 적용하였다. FTA 는 아세안 자유 무역 협정(AFTA), 총 아세안 플러스 FTA (APFTA)와 기타 FTA 등 세 가지로 분류되며, 아세안 플러스 FTA (APFTA)는

ACFTA, AKFTA, AJFTA, AIFTA, AANZFTA로 분류된다. 본 연구에서는 전체 FTA, AFTA와 APFTA, ACFTA, AKFTA, AJFTA, AIFTA, AANZFTA 세분화된 세 계층 구조 그룹 FTA 변수를 개별 모형을 통해 효과를 추정하였다. FTA 효과 지연(lag) 여부를 알아보기 위해 1년 또는 5년 지연된 FTA 변수도 추가하였다. 아세안 회원국 간 FTA 활용 역량을 파악하기 위해 국가 차원에서 추정 모형을 적용해 비교분석을 실시하였다.

이질성 문제가 고려될 때 FTA 변수 분석 결과, 추정 계수가 대부분 음수로 나타나, FTA가 교역의 전체에 걸림돌이 되었음을 보여준다. 따라서 정책 입안자들이 FTA의 효과 및 실현 가능성을 평가할 때 신중히 유념해야 한다. 개별 국가 차원에서는 아세안 회원국들이 FTA를 이용하여 무역을 확대하는 데에 매우 다양한 결과가 나왔다. 아세안 지역 차원에서는 APFTA의 하위 FTA 변수도 무역 파트너에 따라 이질적인 것으로 나타났다. 가장 중요한 점은, 관세 철폐의 적용범위와 철폐 스케줄 차이, FTA 전후의 관세 차이에서 이론적으로 예측되는 방향성과 실제 추정치의 결과값들이 일치하지 않는다는 점이다. 따라서 본 연구는 관세 철폐 그 자체가 아세안 국가들의 무역량 증가의 중요 동인이 아닐 수도 있으며, 비관세 조항을 더 자세히 들여다보는 것이 FTA 무역에 미치는 효과를 더 잘 설명하는 데에 도움이 될 수 있다는 점을 시사한다.

주요어: 아세안, 효과 지연, 패널 데이터, 중력 모형, 아세안 플러스 FTA

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