



Faculty of Economics and Business

**The Impact of ASEAN Free Trade Area and ASEAN-China Free Trade
Agreements on ASEAN Trade**

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**Doctor of Philosophy
2018**

The Impact of ASEAN Free Trade Area and ASEAN-China Free Trade Agreements on ASEAN Trade

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A thesis submitted

In fulfillment of the requirements for the degree of Doctor of Philosophy

(Economics)

Faculty of Economics and Business
UNIVERSITI MALAYSIA SARAWAK
2018

ACKNOWLEDGEMENT

First and foremost, to God, for without Him, I would not go this far.

Throughout this whole period of my candidature, a few peoples had contributed to the birth of this thesis in one way or another. The first being my academic advisor, Associate Professor Dr. Venus Khim Sen Liew from the Department of Economics, Faculty of Economics and Business, Universiti Malaysia Sarawak. During our regular sessions, a great amount of time was spent in going through the details of this thesis due to his highly meticulous character. As I reflect on myself today, my attitude towards research is definitely the result of his cultivation.

As well, I would like to take this opportunity to show appreciation to my Co-supervisor, Dr. Mohamad Affendy Arip from the Department of Economics, Faculty of Economics and Business, Universiti Malaysia Sarawak.

Given this precious opportunity, I would also like to express my appreciation to my father, my mother and my sister, who have granted me their unconditional love and support from the very beginning. Their determination in showering me with their care and loves enabled me to look beyond the daily obstacles and challenges and make every effort towards the completion of this work.

Last of all, I would like to show gratitude to the Ministry of Higher Education for the financial support received through the MyBrain-15 scholarship program.

ABSTRACT

This study aims to examine the impact of the signing of AFTA and ASEAN-China Framework Agreement on the bilateral aggregate trade and manufacturing trade between ASEAN member countries plus China and its selected 79 trading partners for the period between 1999 and 2015 by applying the gravity model in panel estimation. The validations of ASEAN Free Trade Area (AFTA) established based on the formation of a single market and production base. This study examines whether the implementation of AFTA is able to stimulate the intra- and extra-regional trade between the ASEAN member countries. Besides, this study analyses the impact of ASEAN–China Free Trade Area (ACFTA) on the bilateral aggregate trade and manufacturing trade between the ASEAN member countries. From the basic gravity variables, the study finds that the GDP, population, relative endowment, distance and common language are the main determining factors of the bilateral trade for ASEAN member countries and its trading partners. Moreover, the estimated results showed that AFTA and ACFTA have increased the bilateral aggregate trade volumes not only between intra-bloc member countries, but also between intra-bloc and extra-bloc countries. In the case of total manufacturing trade, the positive estimated results confirmed that reducing tariff barriers in AFTA and ACFTA help to stimulate the trade volumes not only between intra-bloc member countries, but also between intra-bloc and extra-bloc countries.

Keywords: ASEAN Free Trade Area (AFTA), ASEAN–China Free Trade Area (ACFTA), gravity model, manufacturing trade.

***Kesan daripada Kawasan Perdagangan Bebas ASEAN dan Pengenalan Kawasan
Perdagangan Bebas ASEAN-China pada Perdagangan Intra ASEAN***

ABSTRAK

Kajian ini bertujuan untuk mengkaji kesan-kesan daripada menandatangani perjanjian Perdagangan Bebas ASEAN dan Perjanjian Rangka Kerja ASEAN-China pada perdagangan dua hala agregat dan perdagangan perkilangan antara negara-negara anggota ASEAN serta China dan 79 rakan kongsi perdagangan yang terpilih bagi tempoh bermula daripada 1999 hingga 2015 dengan menggunakan model graviti dalam anggaran panel. Kajian ini memeriksa sama ada pelaksanaan AFTA dapat merangsang perdagangan intra- dan ekstra-ASEAN. Kajian ini juga menganalisa kesan-kesan pengenalan kawasan Perdagangan Bebas ASEAN-China (ACFTA) ke atas merangsang perdagangan dalam sektor pembuatan dua hala antara negara anggota ASEAN. Daripada pembolehubah asas graviti, kajian ini menunjukkan bahawa keluaran dalam negeri kasar, jumlah penduduk, endowmen relatif, jarak serta penggunaan bahasa yang sama merupakan faktor-faktor utama yang menentukan perdagangan dua hala bagi negara-negara ASEAN serta China dan rakan-rakan perdagangan lain. Di samping itu, hasil kajian menunjukkan bahawa AFTA dan ACFTA telah meningkatkan perdagangan agregat bukan sahaja antara negara-negara anggota, tetapi juga negara-negara intra blok serta negara-negara blok ekstra. Dalam kes perdagangan jumlah pembuatan, hasil kajian menunjukkan bahawa pengurangan tarif dalam AFTA dan ACFTA telah membantu meningkatkan jumlah perdagangan bukan sahaja antara negara-negara anggota, tetapi juga negara-negara intra blok serta negara-negara extra blok.

Kata kunci: Kawasan Perdagangan Bebas ASEAN (AFTA), Kawasan Perdagangan Bebas ASEAN-China (ACFTA), model graviti, perdagangan pembuatan.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The trading issue of intra-ASEAN creates prospective and competition to its nations. Generally, ASEAN are dissimilar in terms of their economic, political, cultural, historical and religious backgrounds though they are situated within the same region. The adaptation in the level of earnings and backdrop are regarded as the discernible elements of the ASEAN Free Trade Area (AFTA). The difference in backdrop is revealed by the openness of each nation state in moving toward the time frame that stated under AFTA. Overall, the average import tariff system of its member countries could be considered as the reliable indicator for trade openness, in which the lesser amounts are showing the higher level of trade openness at the same time as the higher amounts implying lower level of trade openness.

Logically, collaboration through economic integration would stimulate the trade potential and secure more deliberate resource exploitation in developing the intra-ASEAN trade in long run. Therefore, the issue on whether the ASEAN member countries have acquire gains that arise from the AFTA development will still remained as an open question. Therefore, it is crucial to explore the issue on whether AFTA uphold trade between its members.

This thesis aims to examine the effects of AFTA on the trades between the ASEAN and its trade countries. In addition, it makes important observations on the impacts of agreement signing for ASEAN-China Free Trade Area (ACFTA) establishment on the trades between the ASEAN countries.

1.2 Background of ASEAN

The Association of Southeast Asian Nations, or ASEAN, was formed on August 8, 1967 in Bangkok, Thailand, when the ASEAN Founding Fathers, namely Indonesia, Malaysia, Philippines, Singapore and Thailand signed the ASEAN Declaration (Bangkok Declaration). The bloc gradually developed and expanded as Brunei Darussalam joined on January 7, 1984, Vietnam on July 28, 1995, Lao PDR and Myanmar on July 23, 1997, and Cambodia on April 30, 1999, making up ten ASEAN member countries.

Generally, the objectives of ASEAN formation, as embarked in the ASEAN Declaration, are:

- To speed up the economic growth, social advancement as well as the cultural development within the region via joint endeavors in the spirit of equal opportunity and collaboration in strengthening the base for a prosperous and peaceful society of Southeast Asian Nations;
- To uphold the regional peace and stability by abiding the deference for justice and the rule of law in the relationship between countries of the region and observance to the principles of the United Nations Charter;
- To sustain the dynamic partnership and mutual support on the common interest in the fields of economic, social, cultural, technical, scientific and administrative;
- To provide support by providing the training and research facilities for the educational, specialist, technical and administrative fields to each other;
- To collaborate for the better exploitation of their agriculture and industries as well as their trade expansion, including the analysis of the problems of global commodity trade, the enhancement of their transportation and communications facilities and the boosting of the living standards of their communities;

- To support the Southeast Asian studies; and
- To sustain the marked and complimentary collaboration with existing international and regional businesses with identical goals, and deal with all possibilities for closer collaboration between themselves (ASEAN University Network, 2017).

1.3 Background of ASEAN Free Trade Area (AFTA)

The formation of the AFTA was established during the 1992 ASEAN Summit in Singapore. The principal establishment goal of AFTA is to build up the competitive edge of ASEAN countries being the production centre in global market, by eliminating the non-tariffs and tariff barriers and forming a centre of attention for foreign direct investments to flow into the ASEAN countries (MITI, 2017).

In addition, AFTA was formed as a response to other emerging regional groupings, such as the North American Free Trade Area (NAFTA) as well as the growth of the European Union (EU). It was also to influence the huge potentials and complementarities that exist in the region to reinforce and expand the intra-ASEAN industrial linkages including generating robust and competitive in small and medium business enterprises.

The trade liberalization within the region, through the exclusion of both intra-regional tariffs and non-tariff barriers, had made the manufacturing sectors of ASEAN countries to be more competent and competitive in international market. Therefore, the consumers are able to obtain goods from the more efficient ASEAN manufacturers, and thus generating a robust intra-ASEAN trade.

The main mechanism for attaining the objectives of AFTA is the Common Effective Preferential Tariff (CEPT) Scheme which was launched in 1992 to enhance the competitive advantage of the region as a production base for the world market. The

continuing reduction and exclusion of the intra-regional tariffs within ASEAN region is done based on the sensitivity level of the products to the particular domestic industry of ASEAN Member States (AMS).

Unlike EU, AFTA will not apply the external tariff on products imported from outside countries. However, each of the ASEAN member nations might impose tariffs on the imported products from outside ASEAN accordingly to its countrywide schemes.

In 2005, ASEAN-6 countries have included 98.5 percent of its products into the CEPT, of which 98.9 per cent of the products have duties ranging between 0 to 5 percent. At the same time, the CLMV countries have included 87.8 percent of their products, of which 71.1 percent of their products have duties ranging from 0 to 5 percent. Overall, the tariff reductions are progressing on both the "fast" and "normal" tracks. The tariffs for the products under fast tracks at 20 percent and below will be reduced to 0 to 5% by 2000 at the same time as the tariffs above 20 percent were reduced to 0 to 5% by 2003. The tariffs for the products under fast tracks at 20 percent and below will be reduced to 0 to 5% by 2003 at the same time as the tariffs above 20 percent were reduced to 0 to 5% by 2008 (ASEAN Secretariat, 2012). In 2016, approximately 81% of ASEAN's tariff lines are covered by either the fast or normal track.

The CEPT scheme includes approximately 98 percent of all tariff lines in ASEAN by 2003; nevertheless, the only products that do not included were the products in the General Exceptions group as well as the sensitive agricultural products. In the longer term, the ASEAN countries have agreed to enact zero tariff rates on almost all the imports for the original members by 2010 and four newer ASEAN members¹ by 2015 (US-ASEAN Business Council, 2016). Generally, the AFTA implementation reinforced the obligation of

¹Cambodia, Laos, Myanmar and Vietnam (CMLV)

ASEAN member countries to go on with the carrying out of the regional economic integration and liberalization. The trade liberalization implemented under a free trade area would make the production segments turn out to be more cost-competitive in view of the fact that it improves the drawback of economies of scale in production.

Regional trade arrangements (RTAs) can form a larger domestic market, which provides lower prices, attract investment and make allowance for the production specialization and economies of scale. In the case of AFTA, the reduction of high tariffs will facilitate the trade in intermediate products as well as to sustain a global workforce grouping within the ASEAN manufacturing sectors.

Overall, the AFTA implementation could enhance the intra-ASEAN trade at an average annual rate of 10.5 percent over its fifteen years of operation (Pangestu & Ing, 2016).

1.4 Background of ASEAN– China Free Trade Area (ACFTA)

During the fifth ASEAN- China Summit on November 6, 2001, China and ASEAN countries agreed the formation of an ASEAN- China Free Trade Area, to set up the FTA in ten years as well as to support exceptional and differential treatment and flexibility for developing ASEAN countries, namely Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV). One year after declaring their intention to form a free trade area, all the eleven-member countries signed a Framework Agreement on a Comprehensive Economic Cooperation during the seventh ASEAN- China Summit in November 2002.

Beginning from January 1, 2010, ACFTA came into effect with the implementation of zero tariffs for around 93 percent of the traded commodities between China and ASEAN-6 countries. Overall, the average tariff for the China's commodities from ASEAN countries was reduced from 9.8 percent to approximately 0.1 percent at the same time as ASEAN

gave in return through the tariff reduction from 12.8 percent to 0.6 percent for the exported products from China (Liu, 2012). The percentage of zero tariffs for CLMV countries increased from approximately 10 percent in 2000 to 67.6 percent in 2012. The average CEPT rate for CLMV countries is 1.69 percent in 2012 at the same time as the ASEAN-6 has been close to zero at 0.05 percent since 2010 (Intal et al., 2014).

The ACFTA implementation facilitates the progression in the related trade pacts and agreements. Generally, the Second Agreement of Trade in Goods, an agreement under the ASEAN- China Framework Agreement on Comprehensive Economic Cooperation, was signed in an attempt to provide additional interests to ACFTA businesses from the preferential trade policies, in which it includes the rules of origin (ROO).

Besides, ACFTA also develops the economic capability and competitiveness of ASEAN countries. The formation of regional trade arrangements reveals the intense competition in international market and it holds two primary outcomes, namely the trade creation and trade diversion for trade blocs. The trade creation and trade diversion under the implementation of ACFTA has been sustained by progressively concentrated regional manufacture network between the international businesses from China and ASEAN.

Generally, ACFTA, the third leading regional free trade area of the world after EU and NAFTA, continues to hold considerable impacts on trade and growth for Southeast Asia and beyond (Tong & Chong, 2010). Sheng, Tang & Xu (2012) reveal that the bilateral trade between ASEAN and China increased above ten times throughout the fiscal years of 1995 and 2008. The rapid growth in trade volumes occurred during 2001 when China turned out to be the WTO member. In 2008, China developed into ASEAN's third leading trading partner and ASEAN-China's fourth largest. Similarly, the increasing intra-regional trade has stimulated the growth of cross-border regional production linkages in Asia.

Commonly, the intra-industry trade constitutes a significant proportion of ASEAN- China trade flows, which showed by the trade dominance in resources, parts and components. However, ASEAN- China trade remains insignificant in the two regions' total trade though the trade between China and ASEAN has developed promptly. This is as a result of the characteristics of competitive in the trade structures and the difference in expanding a dynamic consumer market within the county (Rangasamy & Swanepoel, 2011). In addition, ACFTA presents various possibilities and challenges to each of the ASEAN members as a result of the differences in the growth intensities and resource endowment. Hence, export-orientated ASEAN countries might have to abide the possibility of trade diversion and structural-related adjustments.

Following the initial course of the adjustment, the ASEAN economies will subsequently build up the individual positions in the economic relationships with China. However; different ASEAN countries will face different options and challenges as a result of the substantial divergences between ASEAN member countries. Generally, Indonesia, Malaysia, the Philippines and Thailand, which are loaded with the natural resources, had exported the primary commodities to China throughout the early 1990s.

Seeing that the world economy has been affected rigorously by the Global Financial Crisis, both China and ASEAN countries are confronting new challenges and problems. Trade between China and ASEAN has been significantly affected since late 2008. Seeing that China generally serves as the latter point in the production chain and intra-ASEAN trade develops a broader regional manufacture linkage, a significant reduction in China's export might be rapidly transformed into conditions where the import deteriorates, together with those from ASEAN countries. Despite the Global Financial Crisis, the bilateral trade flows between China and ASEAN, which sustained by the Zero Tariff scheme under ACFTA,

exhibited some rapid increasing movements throughout the period of 2010 and 2017. As shown by Ministry of Commerce of China, the bilateral trade volume between ASEAN member countries and China amounted to US\$514.8 billion in 2017. The exports of China to ASEAN countries achieved US\$279.1billion at the same time as its imports achieved US\$235.7 billion in 2017. In 2017, China had registered a trade surplus of US\$43.4 billion with ASEAN member countries. On the whole, the top trading partners of China within the ASEAN region were Malaysia, Thailand & Vietnam in which Vietnam was the principal export destination of China at the same time as China imported more goods from Malaysia

1.5 ASEAN Manufacturing Trade

Rapid manufacturing development, mainly in export-oriented industries (EOIs) (Greenaway, Mahabir and Milner, 2008), has an effect on trade and economic development, especially in ASEAN countries. The ASEAN member countries, in particular Malaysia and Singapore, are profoundly reliant on segment of export-oriented industries for economic growth. Hence, the remarkable developments of China's EOIs have developed an interest on ASEAN's prospect in EOIs together with the development and competitiveness of manufacturing segments. In other words, the countries with similar trade and production structures as China might suffer the loss of their global marketplace to China and these developments might eventually be suspended (Lardy, 2002).

ASEAN has turned out to be the main international manufacturing and trade hub, as well as one of the fastest expanding consumer markets in the world. Generally, ASEAN's manufacturing hubs, comprising of automobiles, electronics & electrical components and textiles & apparels, are subjected to the rapid export expansion into the Chinese markets as China emerged as the upper-middle-income economy with fast-growing consumer markets. The ASEAN export flows have diversified as its member countries established more highly developed manufacturing capabilities. For instance, Vietnam is specialized in producing textiles and apparel products as Singapore and Malaysia are the primary exporters of electronics & electrical products. At the same time, Thailand becomes the leading exporters of vehicle & automotive components. Similarly, some other ASEAN member countries have export industries in natural resources. For example, Indonesia is the world's major palm oil manufacturer and exporter, the major coal exporter, and the second major cocoa and tin manufacturer. Meanwhile, Myanmar has substantial oil, gas, and minerals

reserves. Besides exporting the manufactured and agricultural products, the Philippines has also set up a business-process-outsourcing industry.

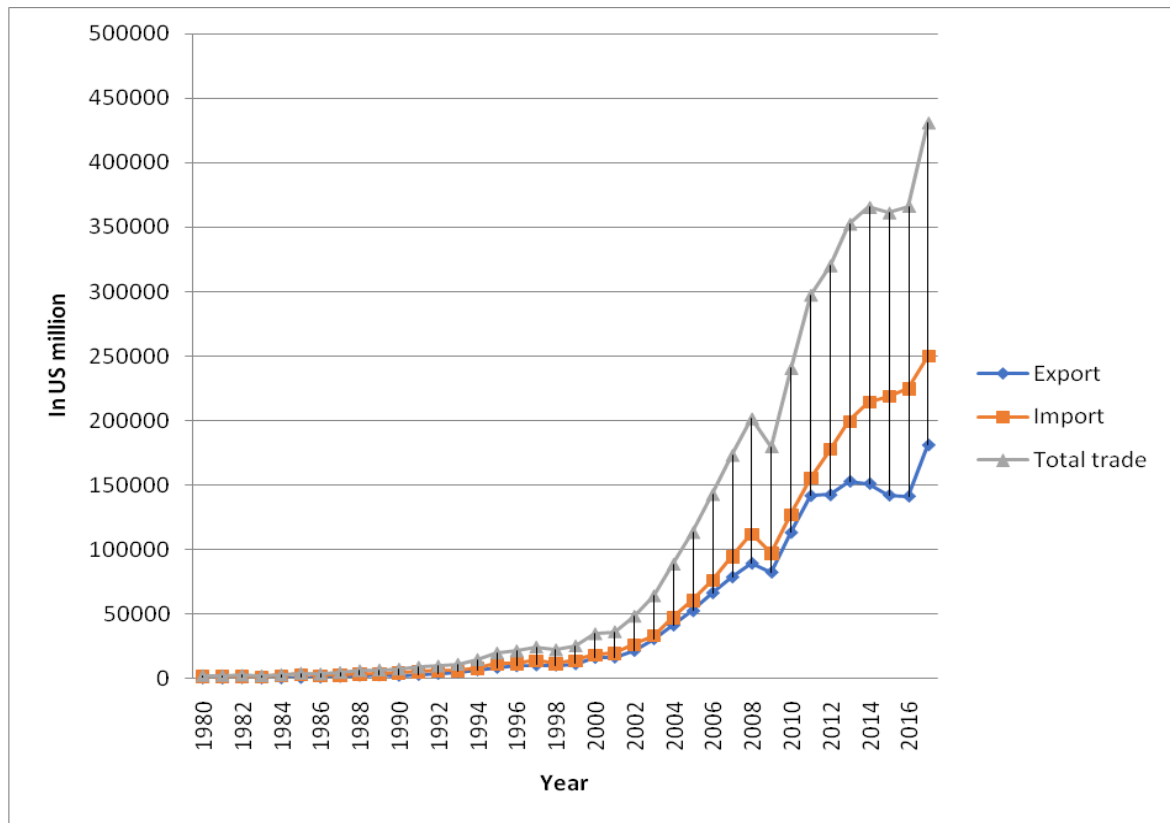
As reflected by Tonby et al. (2014) in their study, ASEAN countries accounted for approximately five percent of international manufacturing trade by holding the principal shares in manufacturing sub-sectors such as chemicals, food & beverage, metals, as well as the motor vehicles. Overall, foreign investors hold an increasing responsiveness of ASEAN's importance as the basis of operations.

Generally, ASEAN will confront challenges and opportunities from the ACFTA formation. From the export aspect of ASEAN countries, China is generally known as one of the huge market opportunities for ASEAN. The trade between China and ASEAN countries continued to expand though ASEAN has yet to be listed in the top ranking of the China's leading trade partners. The significant challenge facing the individual ASEAN member countries from the ASEAN import is the rivalry between local products and the imported manufactured goods from China. The individual ASEAN member countries will confront the rigorous competitive force from China by considering the overlapping in the relative factor endowments. On the whole, the "China threat" to ASEAN countries could be instantaneous and critical for labor-intensive products where China holds strong comparative advantages.

It is most likely that the ACFTA might produce higher trade volumes between China and ASEAN at the cost of intra-ASEAN trade. The development of extra-ASEAN trade has been constantly higher than the growth in intra-ASEAN trade flows ever since its establishment where it's due to at least four key determining elements, such as the majority of the member countries manufactured or specialized in the manufacture of identical products; comparative advantages are virtually alike between ASEAN member countries;

smaller number of trade inducement provisions such as export credits granted between ASEAN member countries in intra-ASEAN trade; and ASEAN market could not achieve the demand of its individual member countries for both the consumer and producer products, and thus each of the member countries profoundly dependent on imported products from the countries outside ASEAN.

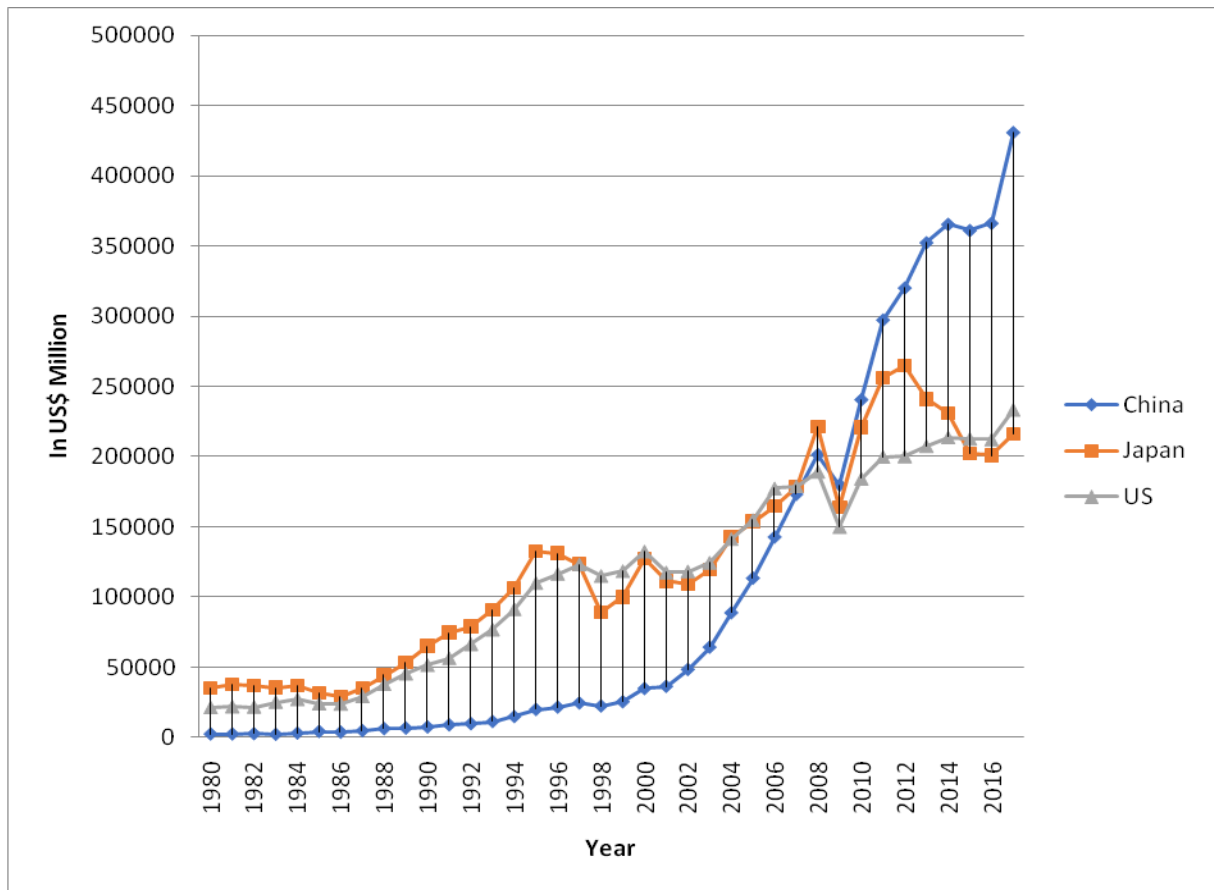
Figure 1.1 exhibits the exports and imports of ASEAN with China throughout the period of 1980 and 2017. Overall, there is a gradually increasing trend from 1980 to 2000 for both trade flows. After that both trades increased tremendously, with an exponential growth. The export patterns of ASEAN to China were similar to the import patterns during the same period. The ASEAN import flows from China reduced to certain extent in 1997 and 1998 as a result of the Asian Financial Crisis during the year of 1997. The ASEAN trade flows decreased substantially throughout years of 2008 and 2009, due to the happening of the Global Financial Crisis during 2008. Similarly, the export flows of ASEAN with China decreased throughout the years of 2015 and 2016, due to the occurrence of Chinese stock market crash during 2015. In summary, total ASEAN trade with China exhibited increasing movements excluding the periods of 1997 to 1998; 2008 to 2009 and 2015 to 2016.



Source: Direction of Trade Statistics (DOTS, 2017), International Monetary Fund (IMF, 2017)

Figure 1.1: Exports and Imports of ASEAN with China, in US\$

Figure 1.2 presents the total export flows of ASEAN countries with United States (US), China and Japan, throughout the period of 1980 and 2016. As indicated in the graph, the total exports of ASEAN countries with China expanded gradually, excluding the period of 2008 and 2009 where it showed downward movement was due to the Global Financial Crisis. Similarly, the total trades for ASEAN with US and Japan also exhibited an identical trade pattern. Nevertheless, total exports of ASEAN countries with US and Japan decreased between the periods of 1997-1998, 2000-2001, and 2007-2008, due to the major international financial and economic crises that could have an effect on all fiscal activities in investment and trade markets. For the period after 2010, the trade of ASEAN with China and United States gradually increased while the trade with Japan began to decrease throughout the period of 2013 and 2016.



Source: Direction of Trade Statistics (DOTS, 2017), International Monetary Fund (IMF, 2017)

Figure 1.2: Total Exports of ASEAN with United States, China and Japan

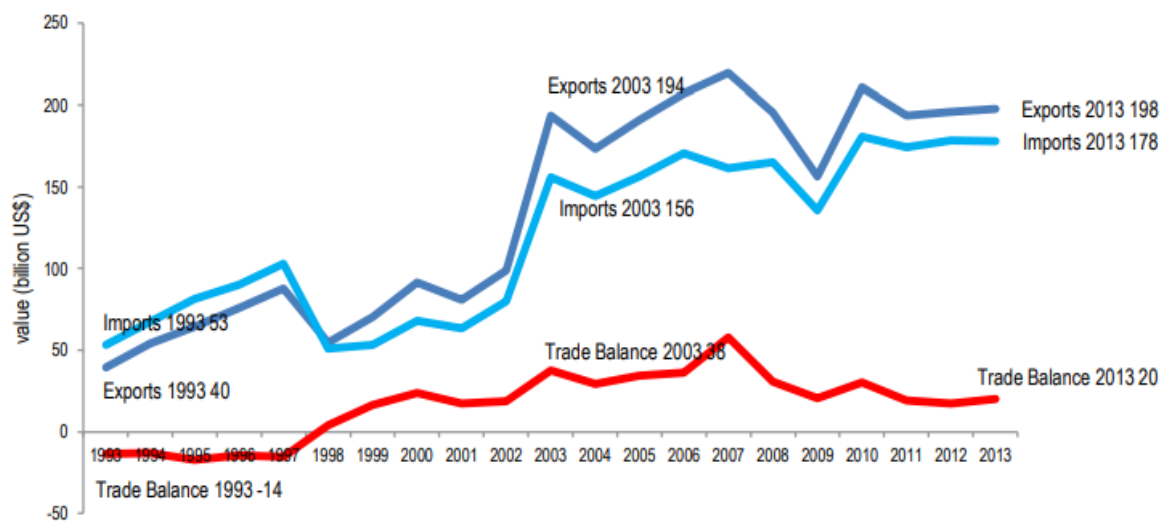
Over the past one and a half decade, the ASEAN economies have accomplished continuously high-level economic development rates through the implementation of the equitable macroeconomic policies, comparatively open and trade investment schemes, as well as the access to the export markets of developed countries. This period has been perceived as the adjustment in the ASEAN economic structures since both the services and manufacturing segments have significantly developed as the source of national production and employment. This adjustment is also revealed in the ASEAN export compositions.

It is important to reveal the way the ASEAN's manufacturing segments will be impacted by the carrying out of the CEPT schemes. There are approximately 43 percent in chemicals, electronics, machinery and textiles in terms of total tariff lines in which the ASEAN

nations have incorporated within the normal and fast track schemes of CEPT. Generally, the average tariff rates in 1993 for electronics & electrical components were approximately 13 percent while 15 percent for textiles & apparels. Today, the average tariff rates are slightly higher than 10 percent. The background on these industries will be explained as follows:

1.5.1 Electronics

Throughout the period of 2007 and 2013, the exports of electronic products weakened substantially wherein it recorded a negative growth rate of 1.7% annually, following the considerable growth of 11% to 17% throughout the period of 1993 and 2007. The exports in electronics products amounted to US\$198 billion in 2013, but ASEAN also imported the electronics products of US\$178 billion, thus generating the trade surplus of US\$20 billion (see Figure 1.3).

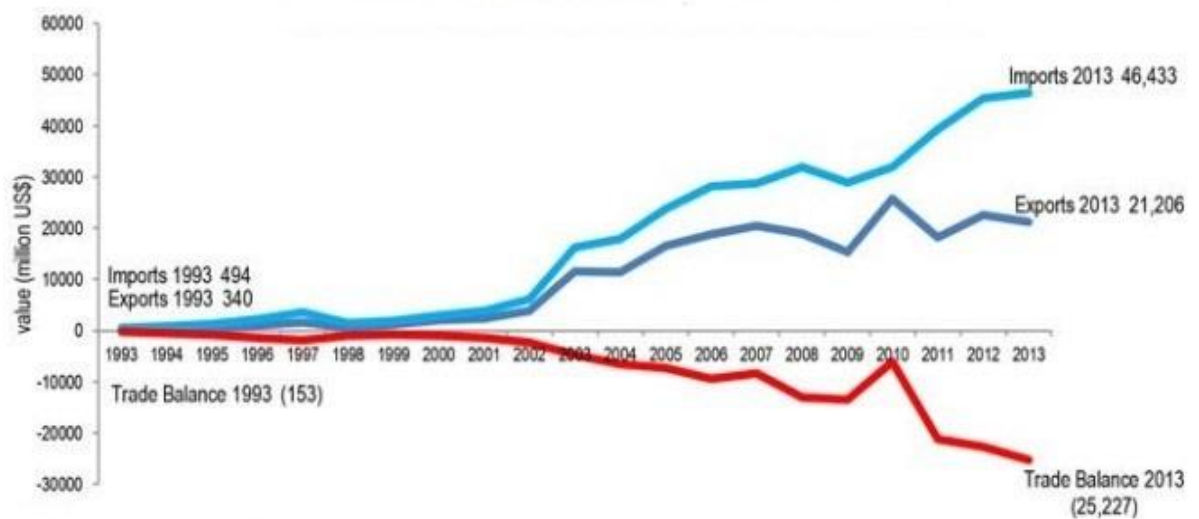


Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.3: Trend of Electronic Products

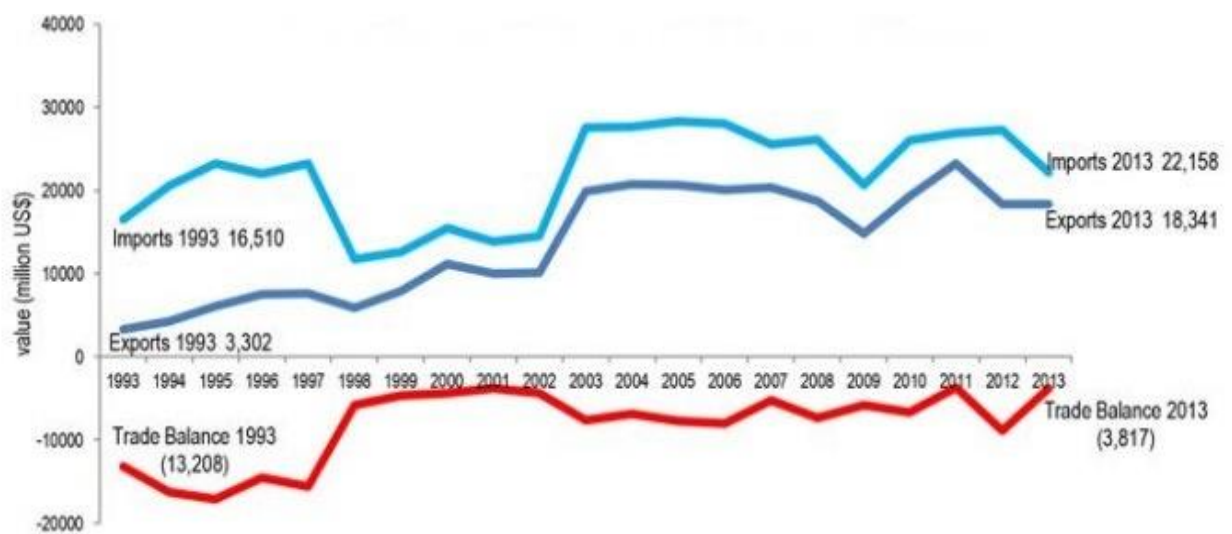
Generally, in 2013, ASEAN experienced trade deficit in its trade of electronic products with China (US\$25 billion), Japan (approximately US\$4 billion), and Republic of Korea

(ROK) (US\$5 billion), and recorded trade surplus in its trade with Australia, New Zealand, EU-28 and USA (see Figures 1.4 to 1.9).



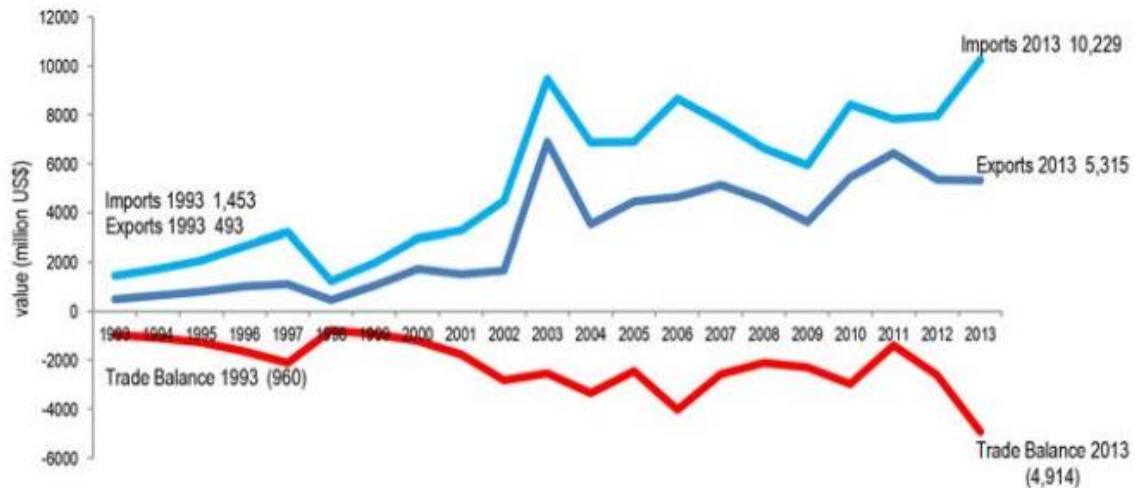
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.4: ASEAN Trade of Electronics Products with China



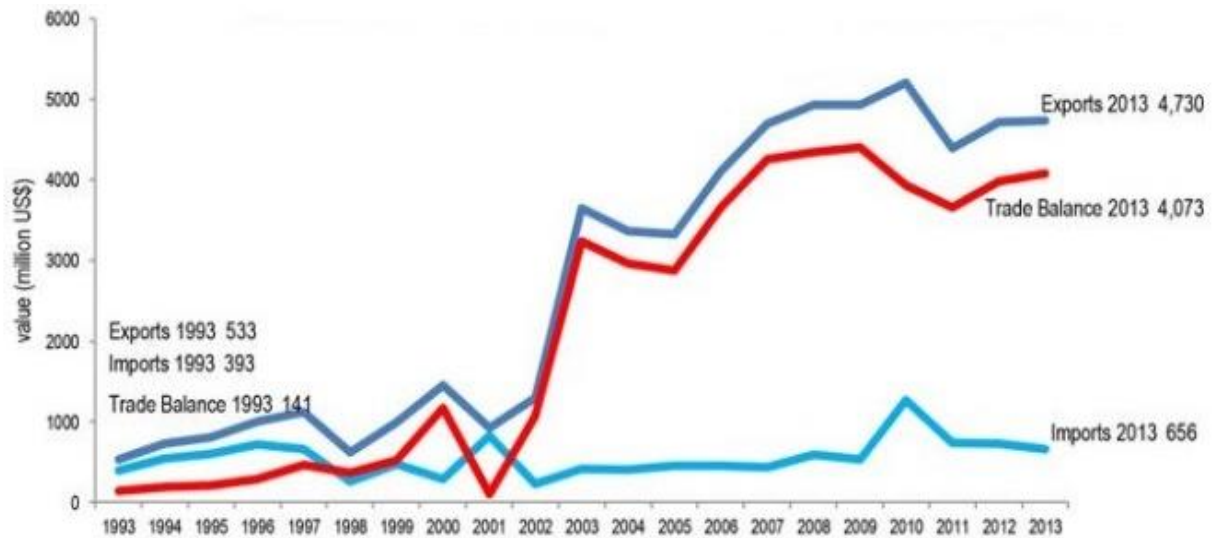
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.5: ASEAN Trade of Electronics Products with Japan



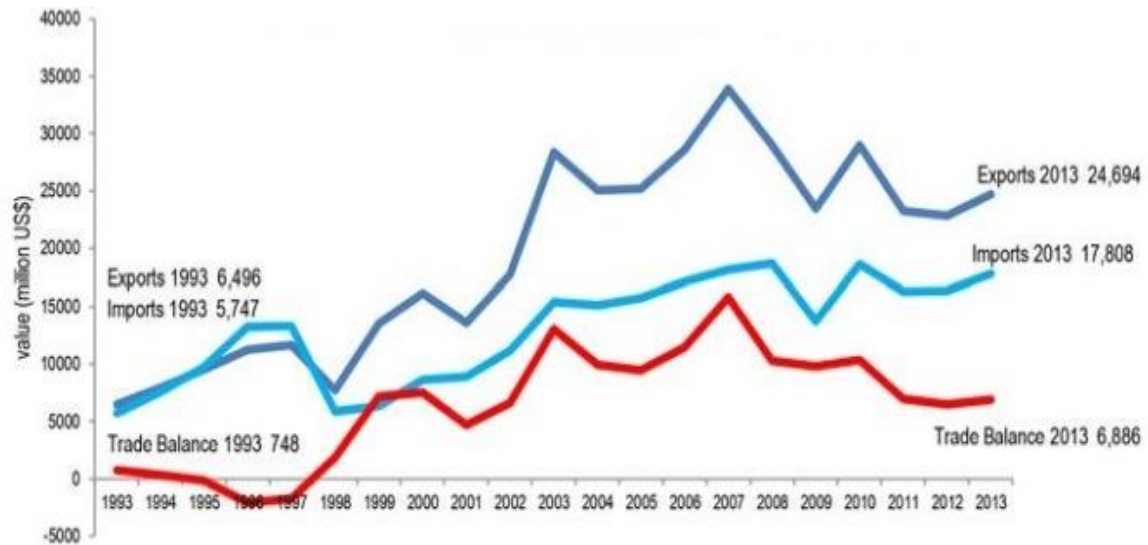
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.6: ASEAN Trade of Electronics Products with Republic of Korea



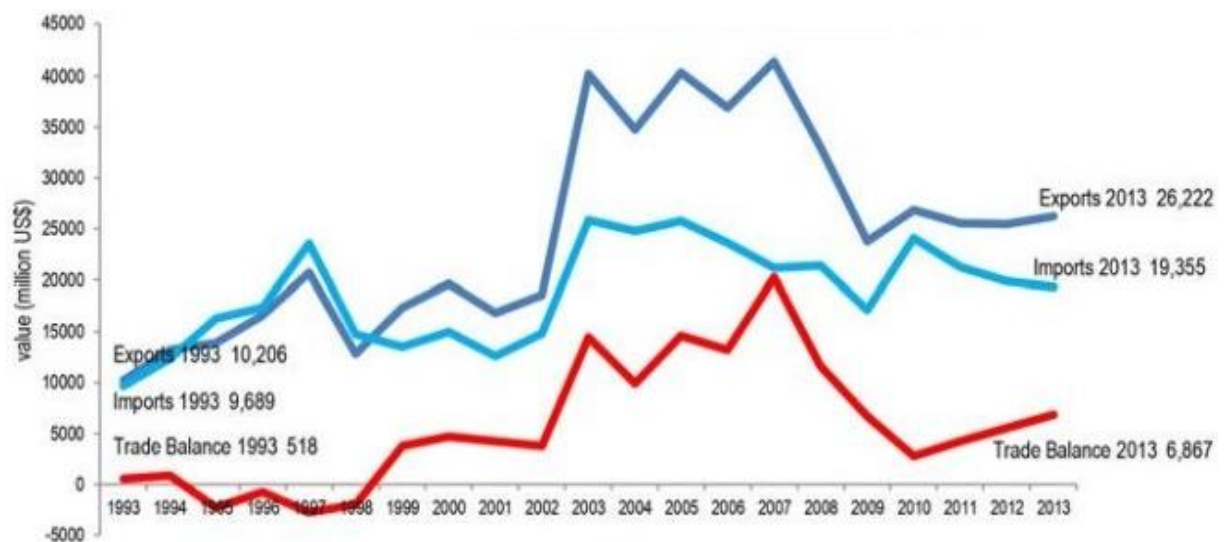
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.7: ASEAN Trade of Electronics Products with Australia and New Zealand



Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.8: ASEAN Trade of Electronics Products with EU-28



Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.9: ASEAN Trade of Electronics Products with USA

The importance of the electronics industry can be established through the manufacturing export shares for ASEAN countries. Furthermore, the share of the electronics industry for Malaysia and Singapore in their total manufacturing exports is approximately 50 percent. Similarly, Thailand and the Philippines also are the largest manufactured exporters of electronics products.

If the electronics market trends were to be the indicator, the tariff cutback will improve the development of the electronics industry within the region. Generally, the cutback in the tariff will catch the attention of more multinationals to invest in the ASEAN countries. The expansion of electronics industry in components and parts sub-sector implies that more international business from some ASEAN member countries will turn out to be the suppliers to some other Southeast Asian countries. These trends sequentially uphold the foreign direct investments as well as the intra-ASEAN trades. In the long run, lower tariff rates will help to develop the competition of the electronics industry in ASEAN. It is expected that the low tariff rate attracts additional investors to invest in the electronics manufacturing.

The expansion of electronics sectors was apparent in various East Asian economies, including Malaysia, Singapore, China, Japan, Taiwan, Thailand, Vietnam and the Philippines, during fourth-quarter 2016 (4Q16) and early 2017.

Generally, the exports of Malaysian electrical and electronic (E&E) products have shown substantial strength, increasing by 11.4% annually during January 2017. The E&E sector remained as an important sector of Malaysia's manufacturing industry and it accounted for approximately 35% of overall Malaysian merchandise exports. Additionally, the electronics exports of Singapore have also indicated the international upsurge in electronics demand, increasing by 17.2% annually during February 2017 (The Malaysian Reserve, 2017).

1.5.2 Machinery

ASEAN continues to be net importers of machineries, in which the exports of machineries accounted for 25% of its overall machineries trade in 1991. During 1992, the machineries imports of ASEAN member countries accounted for exceeding 40 percent of its overall

imports, except the Philippines. Generally, Malaysia had the highest imports of machineries at 54.9 percent, indicating its emergent industrialization, at the same time as the Philippines had the lowest machineries imports at 28.6 percent (Aslam, 2012).

The ASEAN exports to China in the manufacturing industry, as indicated by general purpose machinery in Table 1.1, revealed that the exports of machinery showed a decrease from 24.1 percent in 2001 to 18.7 percent in 2010. On the other hand, Table 1.2 shows that the ASEAN imports of machinery from China comprised 22.8 percent of total import in 2001 and increased slightly to 24.7 percent in 2010 (Aslam, 2012).

Table 1.1: ASEAN Exports to the World and China (%)

Manufacturing Industry	Exports to the World			Exports to China		
	2001	2005	2010	2001	2005	2010
General Purpose Machinery (US\$ billions)	21.54	18.26	14.92	24.11	21.05	18.66

Source: Aslam, 2012

Table 1.2: ASEAN Imports to the World and China (%)

Manufacturing Industry	Imports from the World			Imports from China		
	2001	2005	2010	2001	2005	2010
General Purpose Machinery (US\$ billions)	18.27	16.31	14.80	22.84	25.42	24.71

Source: Aslam, 2012

In 2015, the electrical machinery and equipment and their related products were the major intra-ASEAN traded commodities, which accounted for 21.4 and 22.3 percent of the total ASEAN trade, respectively. In the same year, the electrical machinery and equipment and

their related products hold approximately 30.0 percent of the trade with China (Aslam, 2012).

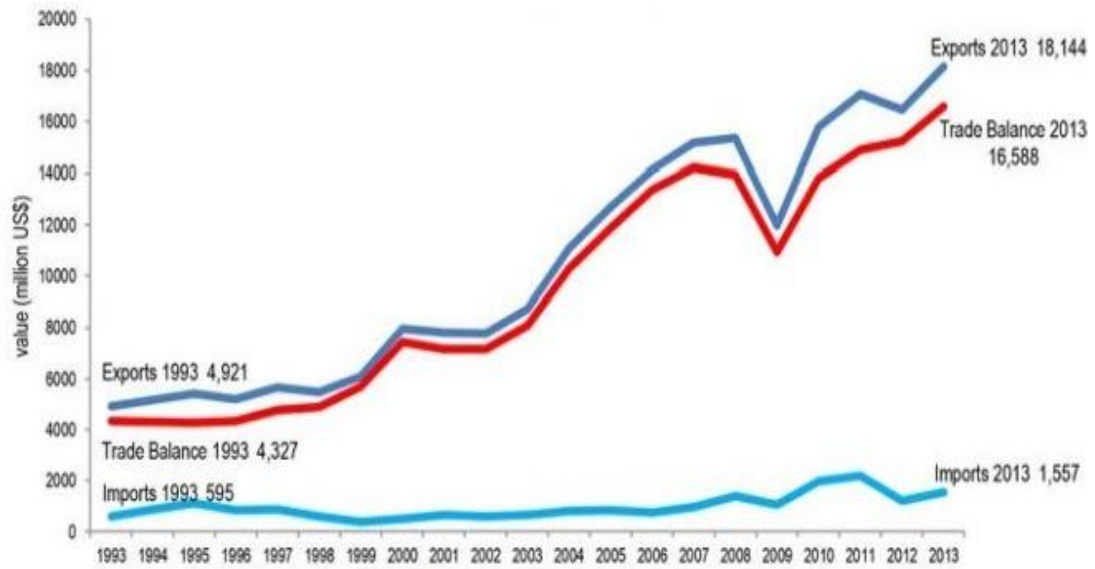
1.5.3 Textiles

The textile industry is identified as the dynamic and important industries in ASEAN, in which it recorded high development rates since the 1970s.

The augmented competition from the launching of ASEAN markets would ascertain the improved effectiveness, greater productivity and lower prices in the intermediate and final textile products.

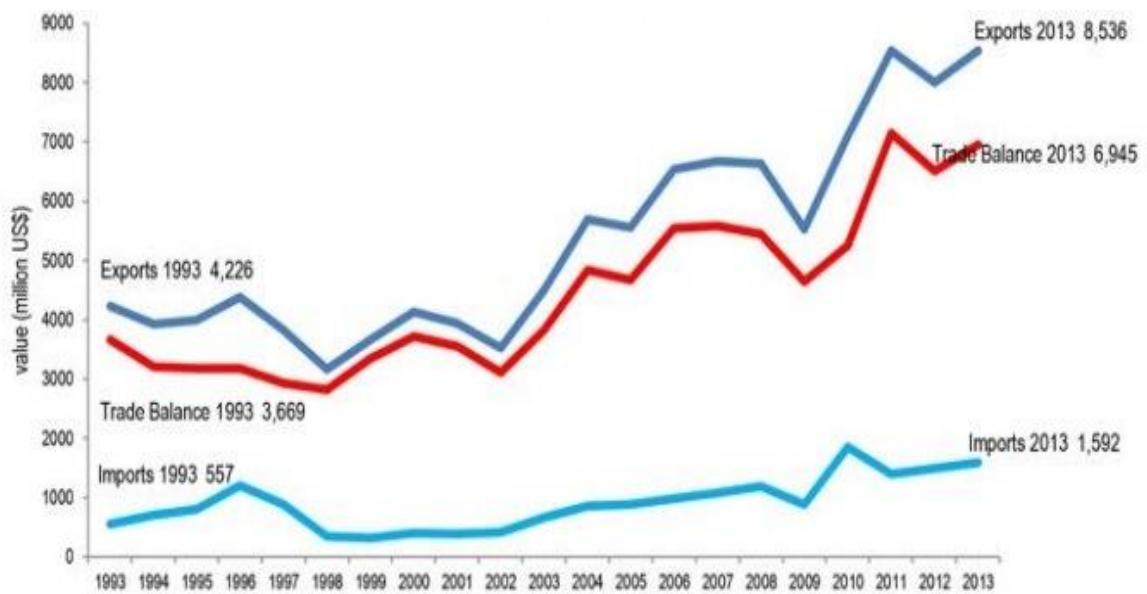
The tariff cutback under CEPT scheme might enhance the specialization level within the region as well as to develop the intra-industry relationships in ASEAN textiles. Such intra-industry trade is highlighted by the characteristics of the manufacturing trades, such as textiles wherein the scale economies can be collected, the products might have appeared in different varieties, and the selection demand is improved from the enhanced living standards of the ASEAN trade. Furthermore, this would grant the inducements for ASEAN textile industries to be suitably adaptable to reform and shift into higher value-added textile industries such as textile, yarn, marketing, design, fashion or brand and etc.

Throughout the period of 1993 and 2013, trade surpluses were identified in trade of textile products with USA and EU-28, while trade deficit showed an increasing trend in the case of ASEAN trade with China and ROK (see Figure 1.10 to 1.13).



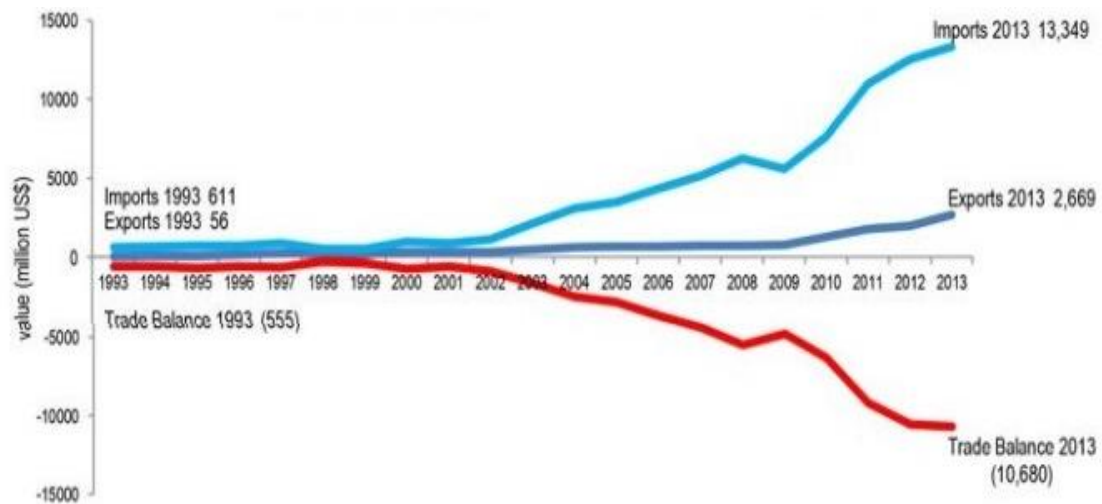
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.10: ASEAN Trade of Textile Products with USA



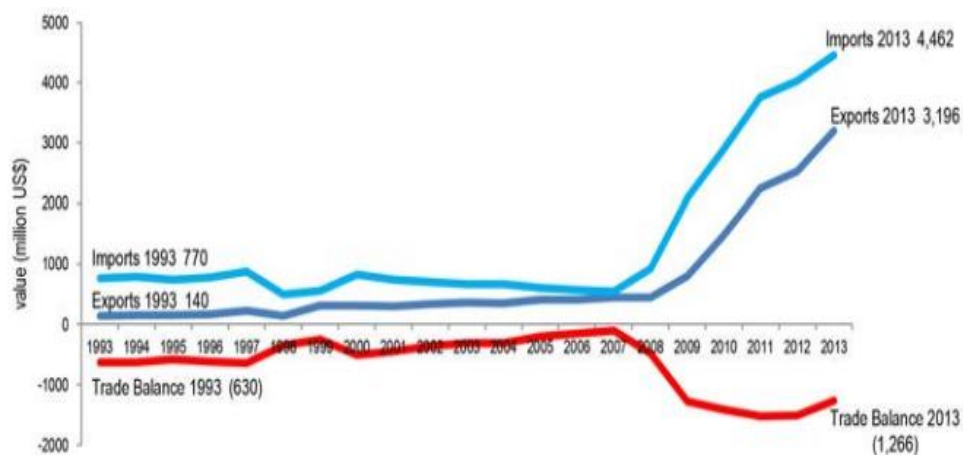
Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.11: ASEAN Trade of Textile Products with EU-28



Source: ASEAN Trade Statistics Database, as of 24 July 2014

Figure 1.12: ASEAN Trade of Textile Products with China



Source: ASEAN Trade Statistics Database, as of 24 July 2014

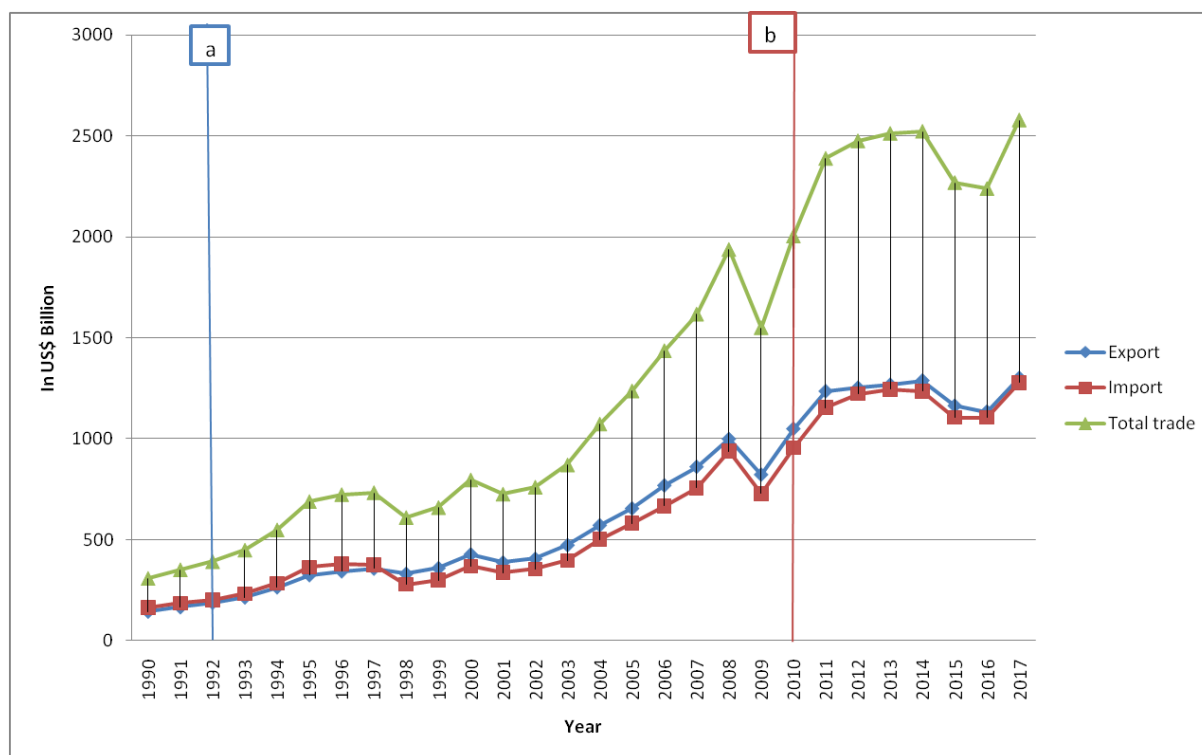
Figure 1.13: ASEAN Trade of Textile Products with Republic of Korea

In 2015, the growth of the region embedded from the substantial intra-ASEAN trade movements with the value recorded at US\$543.7 billion or 24 percent from the overall ASEAN trade (Aslam, 2012).

1.6 Bilateral Aggregate Trade Volumes of China and ASEAN: Before & after the AFTA & ACFTA Agreements Signing

As shown in the Figure 1.14, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral aggregate trade between 1990 and 1991, from US\$307.650 billion to US\$350.562 billion. For the period after the AFTA agreement signing, there is substantial growth in the bilateral aggregate trade between 1992 and 2000, from US\$390.380 billion to US\$795.080 billion. Nevertheless, there is a downward movement in 2001 which is attributable to the occurrence of the economic recession.

Prior to the ASEAN-China Framework Agreement signing in November 2002, there is substantial increase in the bilateral aggregate trade between the periods of 1992 and 2000 while there is a downward movement in 2001. For the periods following the agreement signing, the bilateral trade began to increase again from 2002 to 2017 with exceptional decreasing movements in 2004, 2009 and 2015 respectively. The volumes of bilateral trade began to rise yet again from 2002 to 2003 but then it decreased in amounts during 2004. On the other hand, it began to increase once more throughout the period of 2005 and 2017, excluding the period of 2009 and 2015 in which it exhibited the downward movement as a result of the occurrence of the Global Financial Crisis and Chinese Stock Market Crisis that occurred in September 2008 and June 2015, respectively. As of 2017, the volumes of bilateral aggregate trade for ASEAN-10 countries and China amounted to US\$2,577.38 billion.



Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

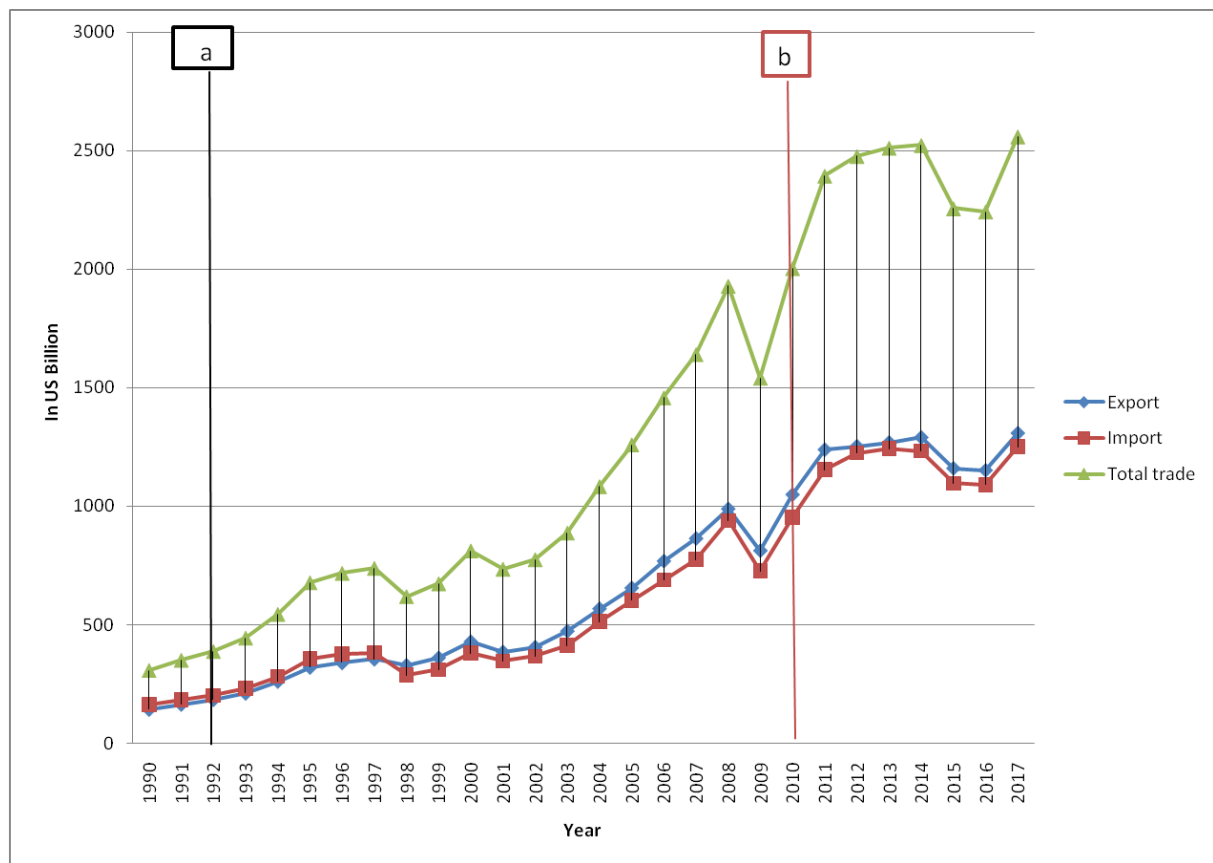
Figure 1.14: Bilateral Aggregate Trade Volumes of ASEAN-10 and China

1.7 Bilateral Manufacturing Trade Volumes of ASEAN-10 and China: Before & after the AFTA & ACFTA Agreements Signing

As shown in the Figure 1.15, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral aggregate trade between 1990 and 1991, from US\$306.494 billion to US\$349.578 billion. For the period after the AFTA agreement signing, there is substantial increase in the total bilateral manufacturing trade volumes for the period between 1992 and 2000, with the exception for the period of 1998, after the signing of the AFTA agreement. However, the manufacturing trade showed downward movement in 2001 which is attributable to the occurrence of the economic recession.

Prior to the ASEAN-China Framework Agreement signing during November 2002, there is substantial growth in the bilateral manufacturing trade between the periods of 1992 and

2000 while there is a downward movement in 2001. For the periods following the agreement signing, the volumes of bilateral manufacturing trade began to increase again from 2002 to 2017 while it presented the decreasing movements in 2009, 2015 and 2016 respectively. The bilateral manufacturing trade volumes increased again throughout the period of 2002 to 2017 while it exhibited the downward trade movements in 2009, 2015 and 2016 which caused by the happening of the Global Financial Crisis during September 2008 and September 2015, respectively.



Source: United Nations International Trade Statistics Database (2017)

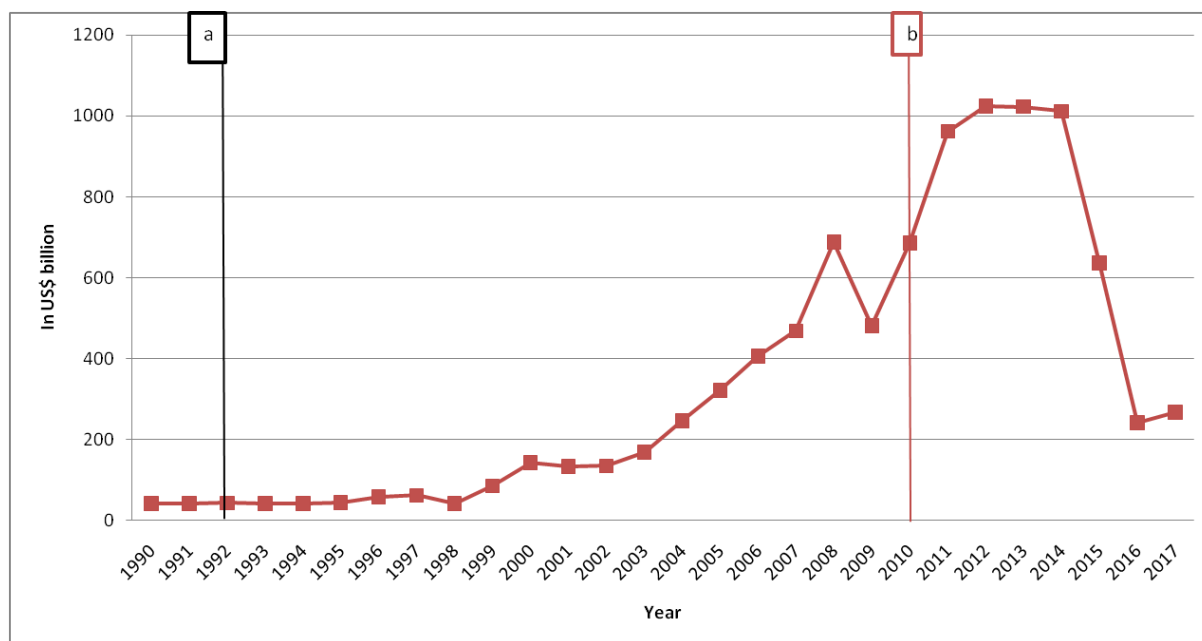
Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.15: Total Manufacturing Trade Volumes of ASEAN-10 and China

As shown in the Figure 1.16, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for mineral fuels, mineral

oils & products of their distillation, bituminous substances and mineral waxes between 1990 and 1991, from US\$42.546 billion to US\$43.464 billion. For the period after the AFTA agreement signing, there is substantial increase in the bilateral manufacturing trade volumes from the period of 1992 to 2000 and followed by the downward movement in 2001, subsequent to the signing of the AFTA agreement.

Upon the ASEAN-China Framework Agreement signing during November 2002, the volumes of the manufacturing trade increased once more throughout the years of 2002 and 2012, excluding the year of 2009 where it reduced in amount owing to the occurrence of the Global Financial Crisis that occurred in September 2009. On the other hand, the bilateral manufacturing trade volumes for the product began to decrease steeply from 2013 and onwards. However, the bilateral manufacturing trade volumes began to decrease substantially starting from the period of 2014 and onwards attributable to the increased global supply and declining global demand due to the slow expansion internationally.



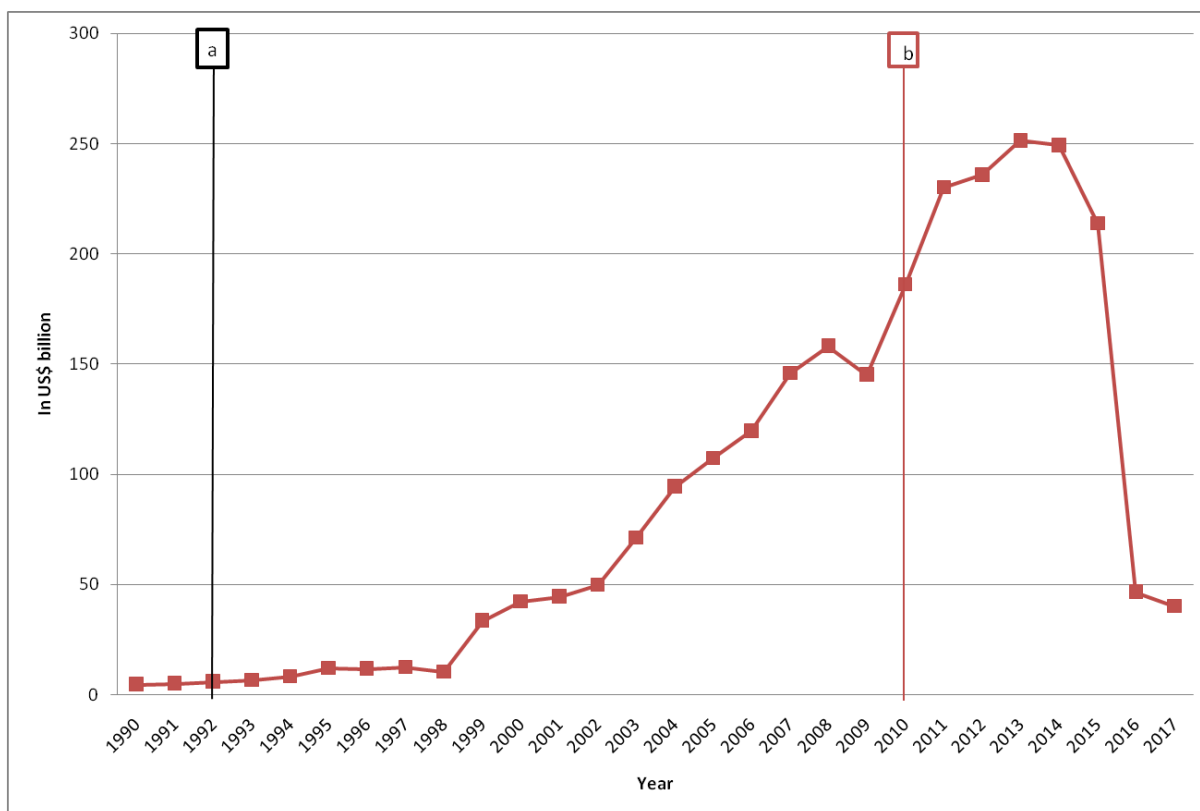
Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.16: Bilateral Manufacturing Trade Volumes for Mineral Fuels, Mineral Oils & Products of Their Distillation, Bituminous Substances and Mineral Waxes of ASEAN-10 and China

Figure 1.17 showed that, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for organic chemicals between 1990 and 1991, from US\$4.603 billion to US\$5.173 billion. For the period after the AFTA agreement signing, there is significant expansion in the trade volumes for organic chemicals from the period of 1992 to 2001.

Upon the agreement signing of ACFTA, the bilateral manufacturing trade volumes began to increase again from 2002 to 2013, excluding the year of 2009 where it reduced in amount as a result of the Global Financial Crisis during September 2009. On the other hand, the bilateral manufacturing trade volumes for organic chemicals showed steep downward trend for the period of 2014 and 2015 due to the trade downturn of 2015. The value further reduced to about US\$40.096 billion in 2017.



Source: United Nations International Trade Statistics Database (2017)

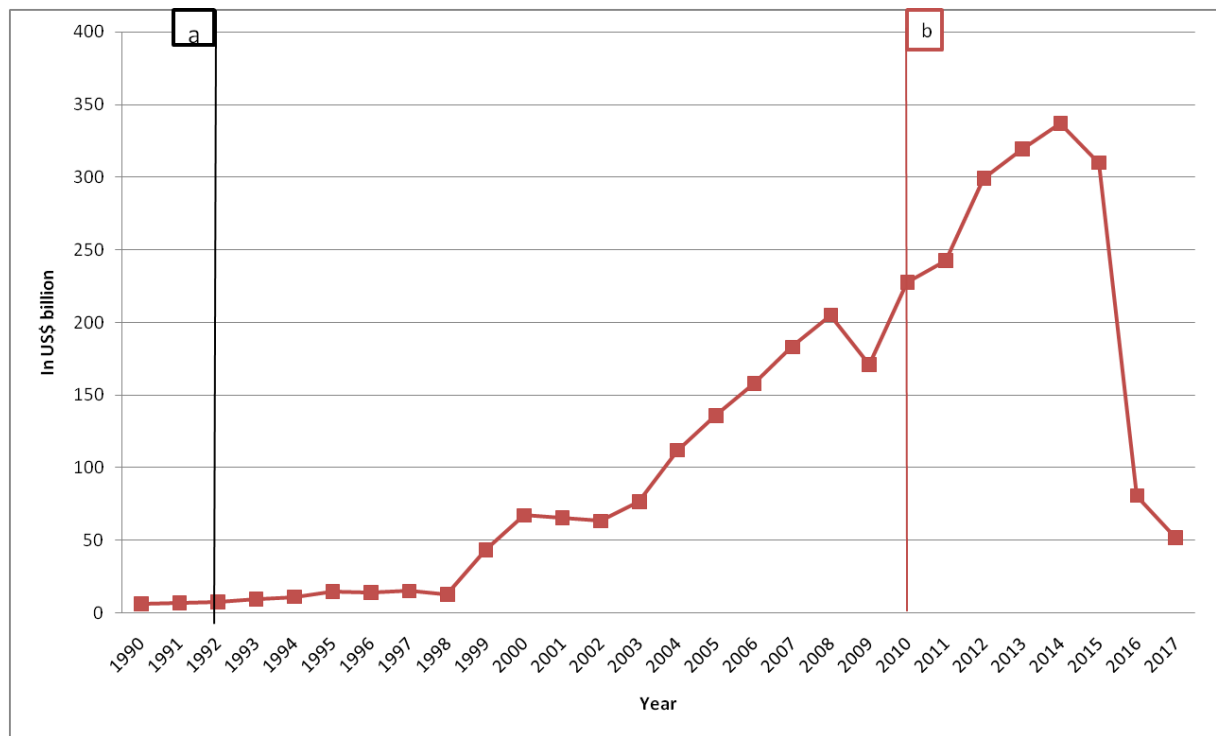
Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.17: Bilateral Manufacturing Trade Volumes for Organic Chemicals of ASEAN-10 & China

As shown in the Figure 1.18, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for plastics & articles between 1990 and 1991, from US\$6.418 billion to US\$7.344 billion. For the period after the AFTA agreement signing, there is significant growth in the trade volumes between 1992 and 2000 and it followed by the decreasing trends for the period of 2001 and 2002 due to the financial crises.

Upon the signing of ACFTA agreement, the trade volumes reported upward trends from 2003 to 2014 while the downward movements in the manufacturing trade volumes occurred during the period of 2009 due to the Global Financial Crisis in September 2009. On the other hand, the bilateral manufacturing trade volumes showed steep downward

trend for the period of 2014 and 2015 due to the trade downturn in 2015 and the value of trade further reduced to approximately US\$51.969 billion in 2017.



Source: United Nations International Trade Statistics Database (2017)

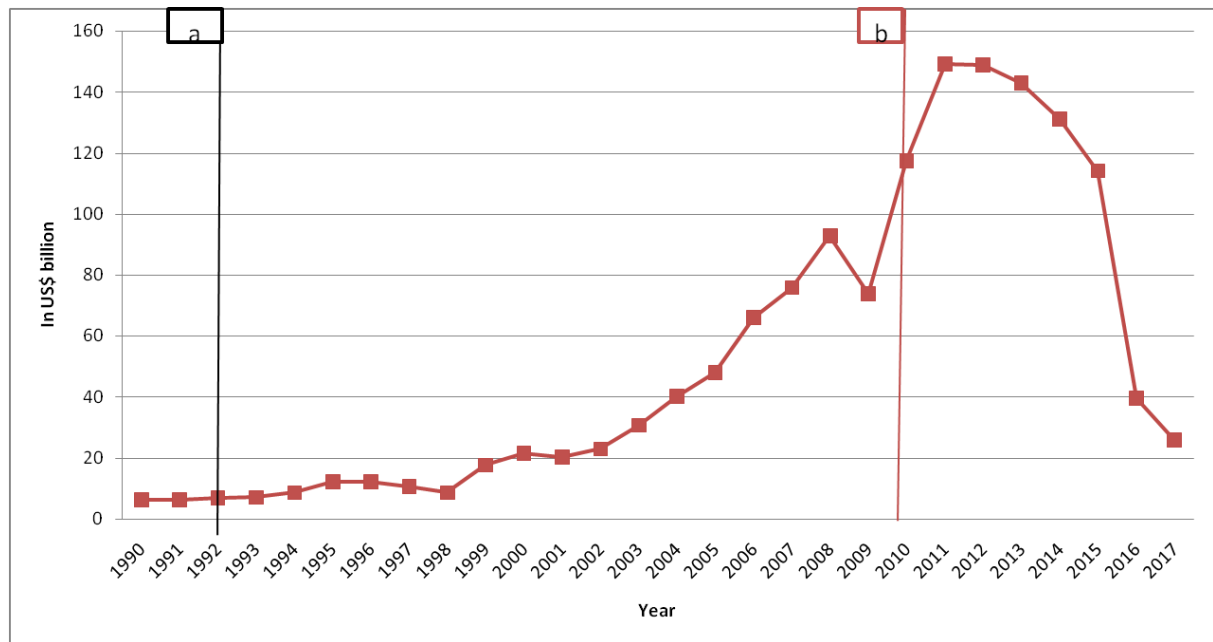
Note: Line a represents the period of AFTA establishment; line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.18: Bilateral Manufacturing Trade Volumes for Plastics & Articles of ASEAN-10 & China

As shown in Figure 1.19, before the AFTA agreement signing in January 1992, there is slight increase in the bilateral manufacturing trade volumes for rubber & articles between 1990 and 1991, from US\$6.101 billion to US\$6.103 billion. For the period following the agreement signing of AFTA, there is significant expansion in the bilateral manufacturing trade volumes between the period of 1992 and 2000 and it followed by a decreasing movement in 2001 due to the financial crisis.

Upon the signing of ACFTA agreement, the bilateral manufacturing trade volumes began to increase again from 2002 to 2011 with the exception of the year of 2009, where the trade

volumes reduced due to the Global Financial Crisis in September 2009. On the other hand, the bilateral manufacturing trade volumes for rubber & articles showed steep downward trend throughout the period of 2013 and 2015 attributable to the trade downturn in 2015. The value further reduced to approximately US\$25.729 billion in 2017.



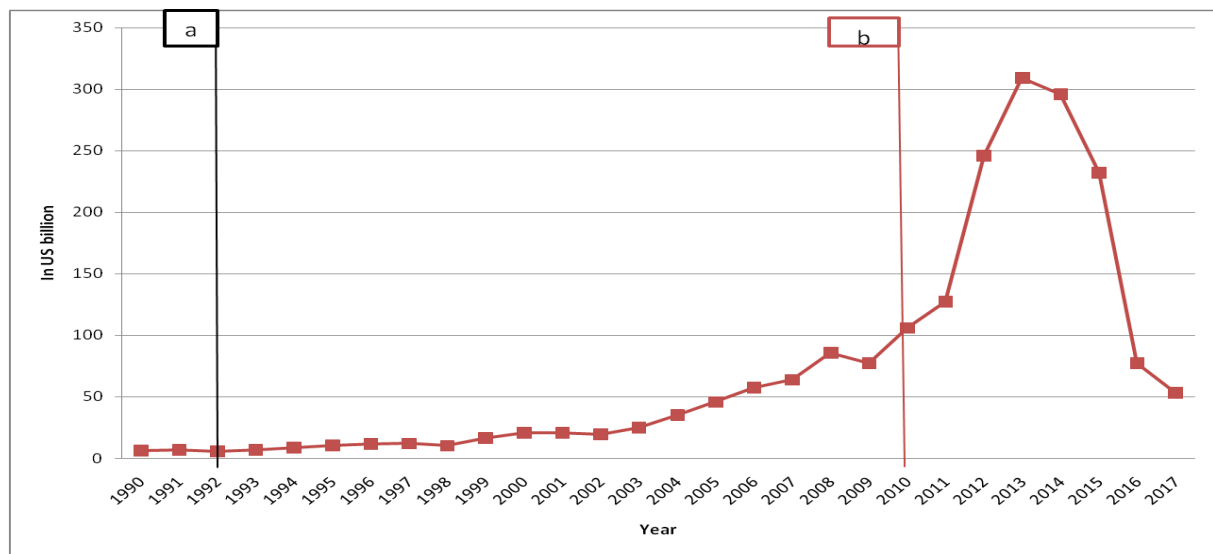
Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; line b represents the full completion of AFTA; and line c represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.19: Bilateral Manufacturing Trade Volumes for Rubber & Articles of ASEAN-10 & China

As shown in Figure 1.20, before the AFTA agreement signing in January 1992, there is slight increase in the bilateral manufacturing trade volumes for natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal & its articles between 1990 and 1991, from US\$6.037 billion to US\$6.867 billion. For the period following the agreement signing of AFTA, there is considerable growth in the bilateral manufacturing trade volumes for the period of 1992 and 2000 and it began to decrease in trade volumes in 2001 and 2002 due to the financial crisis.

Upon the signing of ACFTA agreement, the bilateral trade volumes began to decrease in 2002 and followed by the increasing trends from 2003 to 2013. On the other hand, the bilateral manufacturing trade volumes for organic chemicals showed steep downward trend for the period of 2014 and 2015 due to the trade downturn of 2015. The value further reduced to approximately US\$53.171 billion in 2017.



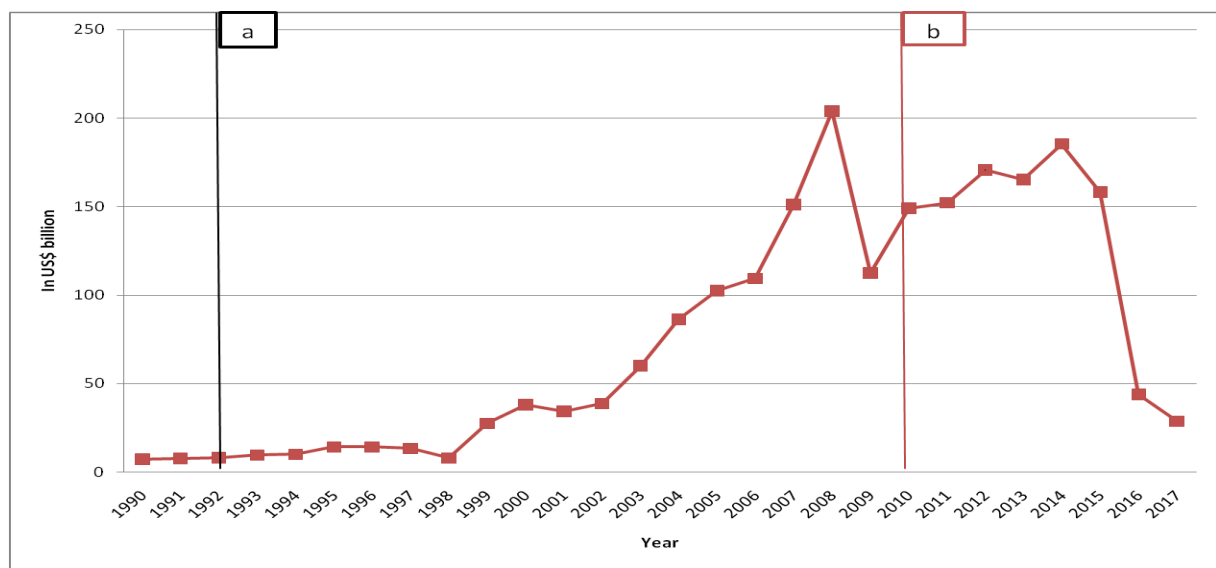
Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.20: Bilateral Manufacturing Trade Volumes for Natural or Cultured Pearls, Precious or Semi-Precious Stones, Precious Metals, Metals Clad with Precious Metal & its Articles of ASEAN-10 & China

Figure 1.21 showed that, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for iron & steel between 1990 and 1991, from US\$7.179 billion to US\$7.744 billion. For the period after the AFTA agreement signing, there is considerable growth in the bilateral manufacturing trade volumes in 1992 and 2000 while the decreasing movement in trade occurred during 2001 due to the financial crisis.

Upon the agreement signing of ACFTA, the bilateral manufacturing trade volumes began to increase again from 2002 to 2013, excluding the year of 2009 where it reduced in amount as a result of the Global Financial Crisis during September 2009. On the other hand, the bilateral manufacturing trade volumes showed steep downward trend for the period of 2013 and 2015 due to the trade downturn. The value further decreased to approximately US\$28.715 billion in 2017.



Source: United Nations International Trade Statistics Database (2017)

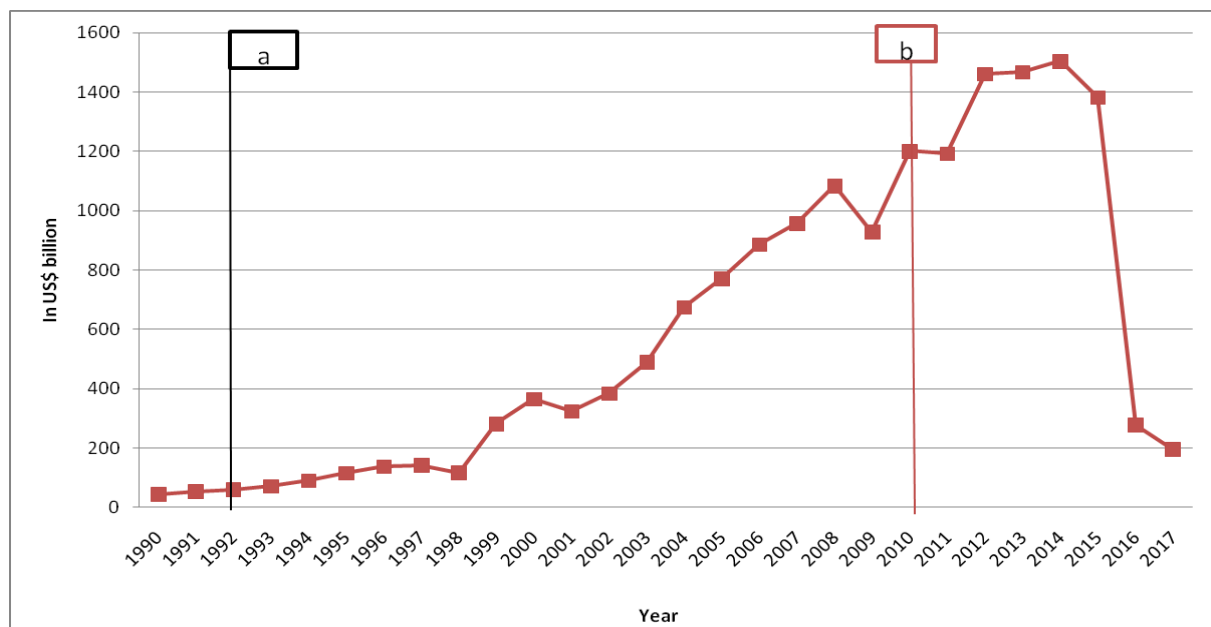
Note: Line a represents the period of AFTA establishment; line b represents the full completion of AFTA; and line c represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.21: Bilateral Manufacturing Trade Volumes for Iron & Steel of ASEAN-10 & China

As shown in the Figure 1.22, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for nuclear reactors, boilers and machinery & mechanical appliances between 1990 and 1991, from US\$42.295 billion to US\$51.702 billion. For the period after the AFTA agreement signing, there is considerable growth in the bilateral manufacturing trade volumes in 1992 and 2000

whereas the decreasing movement in manufacturing trade occurred during 2001 due to the financial crisis.

Upon the agreement signing of ACFTA, the bilateral manufacturing trade volumes began to increase again from 2002 to 2013, excluding the years of 2009 and 2011 due to the Global Financial Crisis. On the other hand, the bilateral manufacturing trade volumes showed steep downward trend for 2015 due to the trade downturn. The value further decreased to approximately US\$194.970 billion in 2017.



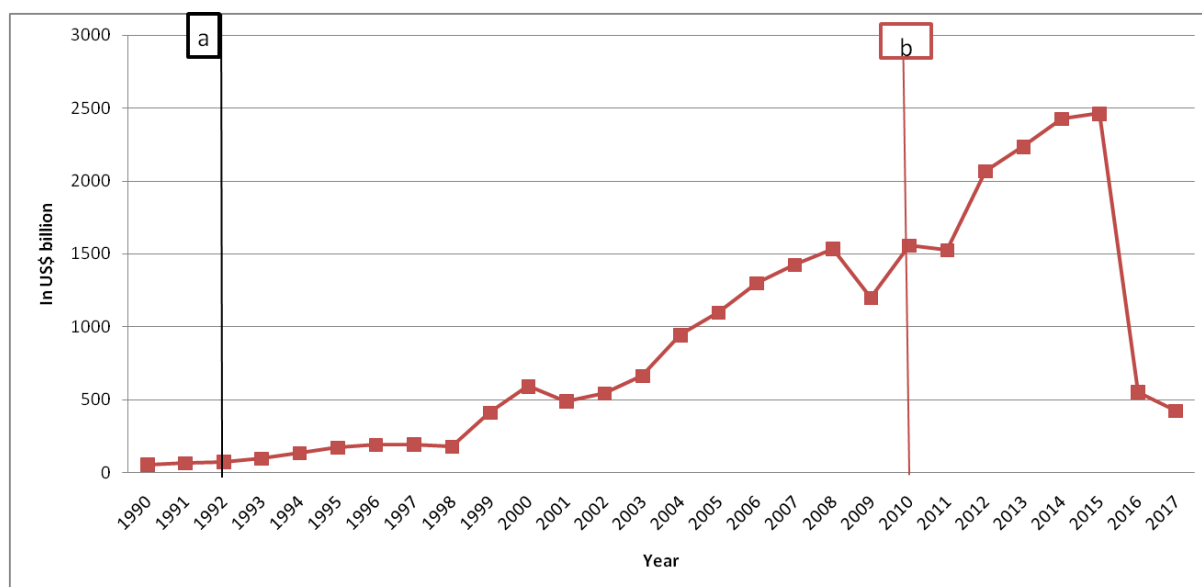
Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; line b represents the full completion of AFTA; and line c represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.22: Bilateral Manufacturing Trade Volumes for Nuclear Reactors, Boilers and Machinery & Mechanical Appliances of ASEAN-10 & China

Figure 1.23 showed that, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, and parts & accessories of such articles between 1990 and 1991, from US\$51.398 billion to US\$63.032 billion. For the period after the AFTA agreement signing, there is substantial increase in the bilateral manufacturing trade volumes from the period of 1992 to 2000 and subsequently it followed by the downward movement in 2001 attributable to the global financial crisis.

Upon the signing of ASEAN-China Framework Agreement, the bilateral manufacturing trade volumes of electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, & parts & accessories of such articles began to increase again from 2002 to 2015 at the same time as it showed downward trend in the manufacturing trade in 2009 due to the global financial crisis. However, the value decreased to approximately US\$550.660 billion and US\$421.969 billion, respectively for 2016 and 2017 attributable to impact of trade downturn occurred in 2015.



Source: United Nations International Trade Statistics Database (2017)

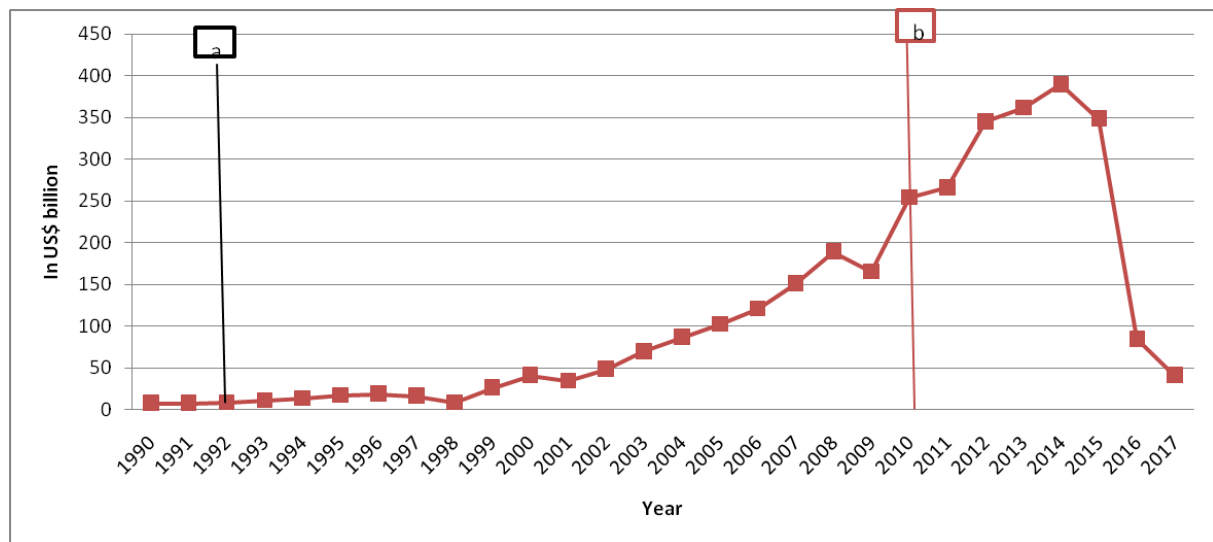
Note: Line a represents the period of AFTA establishment; and line b represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.23: Bilateral Manufacturing Trade Volumes for Electrical Machinery & Equipment & Parts; Sound Recorders & Reproducers, Television Image & Sound Recorders & Reproducers, and Parts & Accessories of Such Articles of ASEAN-10 & China

Figure 1.24 showed that, before the AFTA agreement signing in January 1992, there is slight decrease in the bilateral manufacturing trade volumes for vehicles other than railway or tramway rolling stock and parts & accessories between 1990 and 1991, from US\$7.778 billion to US\$7.387 billion. For the period after the AFTA agreement signing, there is substantial increase in the bilateral manufacturing trade volumes from the period of 1992 to 2000 and subsequently it followed by the downward movement in 1998 and 2001 attributable to the Asian financial crisis and global financial crisis respectively.

Upon the signing of ASEAN-China Framework Agreement, the bilateral manufacturing trade volumes began to increase again from 2002 to 2014 at the same time as it showed downward trend in the manufacturing trade in 2009 due to the global financial crisis. On the other hand, the bilateral manufacturing trade volumes showed steep downward trend

for the period of 2015 due to the trade downturn. The value further decreased to approximately US\$40.989 billion in 2017.



Source: United Nations International Trade Statistics Database (2017)

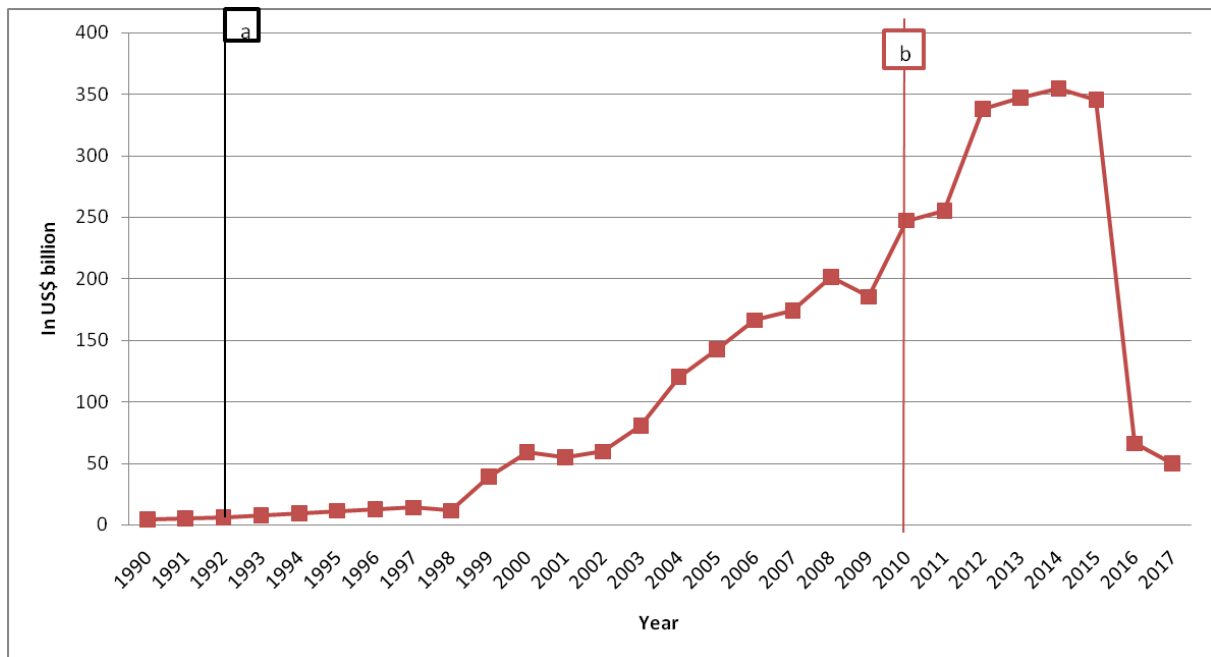
Note: Line a represents the period of AFTA establishment; line b represents the full completion of AFTA; and line c represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.24: Bilateral Manufacturing Trade Volumes for Vehicles other than Railway or Tramway Rolling Stock and Parts & Accessories of ASEAN-10 & China

Figure 1.25 showed that, before the AFTA agreement signing in January 1992, there is substantial growth in the bilateral manufacturing trade volumes for optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus and parts & accessories between 1990 and 1991, from US\$4.410 billion to US\$5.439 billion. For the period after the AFTA agreement signing, there is substantial increase in the bilateral manufacturing trade volumes from the period of 1992 to 2000 and subsequently it followed by the downward movement in 1998 and 2001 attributable to the Asian financial crisis and global financial crisis respectively.

Upon the signing of ASEAN-China Framework Agreement, the bilateral manufacturing trade volumes began to increase again from 2002 to 2014 at the same time as it showed

downward trend in the manufacturing trade in 2009 due to the global financial crisis. On the other hand, the bilateral manufacturing trade volumes showed steep downward trend for the period of 2015 due to the trade downturn. The value further decreased to approximately US\$50.000 billion in 2017.



Source: United Nations International Trade Statistics Database (2017)

Note: Line a represents the period of AFTA establishment; line b represents the full completion of AFTA; and line c represents the creation of the ASEAN-China Free Trade Area (ACFTA)

Figure 1.25: Bilateral Manufacturing Trade Volumes for Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments & Apparatus and Parts & Accessories of ASEAN-10 & China

1.8 Problem Statement

Generally, China has been trading with ASEAN countries for over thirty years. Nevertheless, the trade between these regions has significantly grown-up since the signing of AFTA & ACFTA. The imports of China from ASEAN have enhanced substantially and ASEAN has turned out to be one of the main import sources for China. Overall, China has progressively turned out to be a dominant member in the production networks that include the machinery and electronics & electrical manufacture, as well as to obtain the capital products and components from these countries.

For the periods following the AFTA agreement signing, there is substantial growth in the bilateral aggregate trade between 1992 and 2000, from US\$ 390,379 million to US\$ 795,084 million. Furthermore, following the ASEAN-China Framework Agreement signing in November 2002, the bilateral trade began to increase again from 2002 to 2017 with exceptional decreasing movements in 2004, 2009 and 2015 respectively. As of 2017, the volumes of bilateral aggregate trade for ASEAN-10 countries and China amounted to US\$ 2,577,378 million.

The flows of bilateral trade between ASEAN and China, which is upheld by the zero-tariff schemes under ACFTA, showed some rapid increasing movements in 2010. At this point in time, China has turned out to be the major trading partner of ASEAN member countries while ASEAN member countries remained as the fourth major trading partners of China. Taken as a whole, ASEAN has benefited from trade surplus with China. However, the trade surplus might have derived from the trade triangle where China imports the resources and technology from its neighbouring countries while acquiring raw materials and intermediate products from Southeast Asian countries and assembles them for the purpose of exporting the final products to the rest of the world.

Overall, the intra-ASEAN trade expanded throughout the 1990s and 2000s. As indicated in Table 1.3, the intra-ASEAN trade covers a quarter of total trade of ASEAN member countries. The share of intra-ASEAN merchandise trade is higher than the trade in MERCOSUR or SAARC even though it is lower than NAFTA and EU. However, it has got to be highlighted that the fairly lower intra-regional trade share in ASEAN does not reveal the failure of ASEAN's regional integration efforts. However, it signifies that the robust growth of intra-ASEAN merchandise trade goes together with by robust trade expansion with China, Japan, the Republic of Korea, and India. This indicates the pursuit of 'open regionalism' in ASEAN, which reveals that the trade discriminatory policies for intra-ASEAN have been minimalized, and therefore allowing the thorough implementation of comparative advantage in ASEAN (Chen & Intal, 2017). Furthermore, a large share of intra-ASEAN trade can be found in parts and components that are exported as intermediate products to the rest of East Asia and the world. Hence, the strength of trade within ASEAN also involves the strength of trade with non-ASEAN member countries, particularly China.

Table 1.3: Intra-Regional Trade Shares (Merchandise Trade), 1980 -2014 (%)

	1980s	1990s	2000s	2010-2014
ASEAN	18.6	22.5	24.4	25.3
RCEP	30.0	34.9	38.9	41.2
EU	61.6	66.5	67.1	62.2
Mercosur	6.9	17.1	13.4	14.1
NAFTA	39.5	47.9	53.3	49.2
SAARC	3.9	4.5	5.8	6.1

ASEAN=Association of Southeast Nations, EU=European Union, Mercosur=Southern Common Market, NAFTA=North American Free Trade Agreement, RCEP=Regional Comprehensive Economic Partnership, SAARC=South Asian Association for Regional Cooperation.

Source: Authors' calculation based on data from United Nation COMTRADE database

In addition, the adjustments in the country-level trade directions were the substantial adjustments in the commodity composition and trade direction in ASEAN regardless of the modest expansion in the overall intra-ASEAN trade share to total ASEAN trade. Table 1.4 presents the commodity composition of intra-ASEAN trade in 2003 and 2014. The table shows that the shares of intra-ASEAN trade in raw materials and intermediate goods remained unchanged and slightly increased respectively, between 2003 and 2014. However, the relative importance of capital goods (including parts and components) and consumer goods changed significantly (Chen & Intal, 2017).

Table 1.4: ASEAN Trade Composition, 2003 and 2014 (%)

	Trade Composition, 2003			Trade Composition, 2014		
	Intra-ASEAN	Exports to the RoW	Imports from the RoW	Intra-ASEAN	Exports to the RoW	Imports from the RoW
Capital goods	53.5	44.2	50.2	33.6	36.5	38.2
Consumer goods	21.3	28.2	15.6	38.8	31.8	22.0
Intermediate goods	16.3	15.2	21.7	19.6	17.6	24.7
Raw materials	6.2	9.0	10.8	6.2	9.9	14.0

ASEAN=Association of Southeast Nations, RoW=rest of the world

Source: Authors' calculation based on data from United Nation COMTRADE database

The provision of the full implementation in comparative advantage and product diversity by the elimination of intra-ASEAN tariffs is also revealed in the increase of both the intermediate and consumer commodity products. There are other commodity groups where the intra-regional trade shares have increased but in which they are not identified to be categorized in terms of regional production networks or regional production rationalization policies of multinationals, namely the products such as plastics and articles, organic chemicals, articles of leather, as well as beverages, spirits, and vinegar. Intra-ASEAN trade in such products is likely to be benefited from the elimination of tariffs and trade

facilitation expenses arising from the improved efficiencies in customs within the region (Chen & Intal, 2017).

There has been a significant expansion in intra-regional trade shares in commodity groups such as vehicles, other than railway and tramway (primarily cars and motorcycles), in which it affected in part by the emergence of Thailand and Indonesia as the major export hub of ASEAN for automotive products for ASEAN region and the rest of the world.

At the same time, the electronics and electrical equipment parts and components account for the biggest share of intra-ASEAN commodity trade, and there is an apparent geographic relocation as part of dynamic adjustments in the regional production networks in East Asia. For example, Table 1.5 indicates the shares of China and ASEAN in the exports and imports of parts and components for electrical and electronic goods in 1995, 2003, and 2015 for the major ASEAN member countries in the sector. The table shows the substantial expansion in exports and imports from China throughout the period for almost all ASEAN member countries. While most of the trade expansion with China is redistribution away from Japan, the EU, and Taiwan, the substantial expansion in the share of exports and imports from China is accompanied by significant reductions in the share of exports and imports from ASEAN in Malaysia, Singapore, Thailand, Indonesia, and Vietnam.

In summary, ASEAN countries increased their dependence on ASEAN for their imports of electronic goods and they considerably moved their export destination for parts and components of electrical and electronic goods from ASEAN to China. This shows the emergence of China as the hub of East Asia's regional production networks in electronic and electrical equipment parts and components (Chen & Intal, 2017).

Table 1.5: Shares of China and ASEAN in ASEAN Member States' Exports and Imports of Parts and Components for Electrical and Electronic Goods (%)

Reporter	Partner	Exports			Imports		
		1995	2003	2015	1995	2003	2015
Indonesia	China	0.04	2.64	4.65	1.87	5.04	31.18
	ASEAN	58.51	53.97	47.15	17.02	58.19	34.25
Malaysia	China	0.32	6.09	17.22	0.78	9.13	21.32
	ASEAN	32.57	28.64	25.04	21.86	23.05	24.91
Philippines	China	0.11	5.71	9.39	0.56	2.29	11.22
	ASEAN	16.22	23.54	21.40	9.41	13.95	20.33
Singapore	China	1.14	6.08	18.99	1.43	9.07	19.72
	ASEAN	31.47	33.09	21.46	29.68	38.49	23.57
Thailand	China	0.40	8.12	13.59	1.43	12.56	31.74
	ASEAN	34.37	26.57	22.05	24.21	27.92	25.17
Vietnam	China	0.03	6.08	11.94	0.81	5.51	42.51
	ASEAN	67.56	42.14	12.7	23.96	17.94	14.82

Source: Authors' calculation based on data from United Nation COMTRADE database

Therefore, the important research issue is whether the AFTA and ACFTA agreement signing have helped to stimulate the aggregate and manufacturing trades among the ASEAN countries and its trading partners?

Note that there are more than twenty items classified as manufacturing products. It will be helpful to further know in specific, the impacts of AFTA and ACFTA agreements signing on these specific manufacturing products.

1.9 Objectives of the Study

General Objective

The general objective of this study is to explore whether AFTA and ACFTA have any trade creation or trade diversification impacts on the ASEAN's bilateral trade flows among ASEAN member countries and their trading partners. Both intra-ASEAN (among ASEAN member countries), and extra-ASEAN trade flows (with non-member trading partners) are analyzed in this study.

Specific Objectives

The specific objectives of this study are as follow:

- a. To analyse the impacts of AFTA and ACFTA on the intra- and extra-ASEAN total aggregate trade flows.
- b. To estimate the impacts of AFTA and ACFTA on the intra- and extra-ASEAN total manufacturing trade flows.
- c. To evaluate the impacts of AFTA and ACFTA in influencing the intra- and extra-ASEAN manufacturing trade flows of the selected top 10 manufacturing commodities.

1.10 Significance of the Study

This study had revealed some benefits of the AFTA agreement generated for its member countries, in which it generates broader market opportunities to market the products of each ASEAN member countries. Besides, the agreement also enables the manufacturers to have lower production costs for the trade that require the exploitation of capital products and raw materials from other ASEAN member countries as well as to produce wider product varieties for the final consumer markets.

Additionally, the exclusion of trade barriers under the AFTA agreement would lead to greater benefits to the ASEAN societies. Generally, it leads to greater specialization and labor division since each of the ASEAN member countries concentrates on producing the goods and services where it holds a competitive advantage.

Therefore, this facilitates the ASEAN member countries and its communities to be more aware with the obligations and significance of AFTA establishment in stimulating the trade between the ASEAN member countries.

At the same time, this study also revealed some of the benefits that the ACFTA agreement generated for ASEAN member countries. On the whole, the agreement enables the producers to take advantage of the lower production costs and therefore making the product distributions to the rest of the world to be more effective.

Generally, the intra-industry trade within ACFTA has generated significant relationship and they improve the production-chain with ASEAN countries. The development and harmonization of product standards is one of the main factor which contribute towards the expansion of an international production value-chain in the ASEAN region and this helps to make best use of the benefits of regional free trade agreements.

The majority of the products manufactured and exported by China are very similar to the product groupings that manufactured by ASEAN countries. This has given rise to the concentrated competitions between the two regions as their manufactured products are complementary and substitution products. With high domestic demand in ASEAN and China, ACFTA is likely to facilitate the international trades in streamlining the supply chains and downsizing the production networks, which could have resulted in a single ASEAN-China market.

Therefore, this study facilitates ASEAN and Chinese societies to be more acquainted with the importance of the ACFTA agreement towards attracting and stimulating the trade of China and ASEAN member nations.

This study had revealed some benefits of the AFTA and ACFTA agreements generated for the policymakers, in which it allows the policymakers to be better understand on what their constituents found beneficial or important on a given trade policy issue. Generally, deliberative dialogue might enhance the public appreciation in favor of the efforts of the policymakers who are required to assess the competing interests in the middle of making the trade policy decisions through fostering an atmosphere where the relative advantages and tradeoffs of trade policy options can be discussed.

At the same time, the AFTA and ACFTA agreements provide a competitive edge for the importers and manufacturers in ASEAN countries through tariff reductions and lower trade provisions. The benefits that generated for the importers and manufacturers include lower importer costs; enhanced customs clearance times, uncomplicated trade procedures, as well as the enhanced access to a wide range of products that qualified for preferential treatments.

1.11 Organization of the Study

The study is structured as follows. Firstly, Chapter 1 comprises of the general introduction of this study. The literature review is grounded in Chapter 2 with the arguments on different opinions among the earlier researchers are in line with the subject of this study. Explanations concerning the data collections and research methodology are in Chapter 3. Empirical estimations and results are included in Chapter 4. Conclusions of this study are shown in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review on the trade theory and the model of estimation in Section 2.2 and 2.3 respectively. Section 2.4 reviews the empirical studies in FTAs, while Section 2.5 contains studies on gravity model. The literature gap is highlighted in Section 2.6.

2.2 Theory of Free Trade Agreements

The economists have identified various underlying principles for the trade agreements. Generally, there are two main approaches that can be differentiated. A nation might be interested to control the terms-of-trade, in the case where the nonattendance of trade agreements arose, to expand its national earnings at the expense of its trading partners. The second technique emphasized on the economic and political dilemmas that governments came across in establishing the trade policy. The trade agreements facilitate the governments to elude the arguments in terms-of-trade and/or to evade the influences from the private sectors and the special-interest parties which induced the government to diverge from a liberal trade policy.

On the whole, the common studies based on the static models assumed that all tariff and non-tariff barriers under the free trade agreements are entirely pulled apart and the liberalization impacts became observable. They also assumed that some other underlying limitations, such as the import and export elasticities, technology, as well as preference structures, remained constant. As such, the demand and supply functions are only transformed by the revised tariff structures. Nevertheless, prevailing studies, following Viner (1953), estimate the trade creation and trade diversion impacts on consumers,

producers and government by applying the partial equilibrium methods. Overall, FTA holds significant effects on both the export and import flows. The new export opportunities to the partner countries generated the net trade-creation effects and it turns out to be gainful; however, the net import effects might be ambiguous and it is subjected to the countries size and pre-existing trade flows.

As defined by Viner (1953), the trade creation impact is the decrease in the regional production that is met by more-efficient import flows. Additionally, there is an increase in consumption level when the FTA lowers the domestic price. Generally, the gross trade creation can be identified as the adjustment in imports attributable to the FTA (Plummer et al, 2010). On the other hand, FTA also generates the effect of trade diversion as the import flows that were formerly obtained from the outsiders are relocated by the import flows from its partner countries. The nation state suffers the loss of its tariff earnings on this amount of import flows. The reallocating of the import sources from the outsider to FTA partners happens as FTA generates imports from its member countries with relatively low-cost as compared with the imports from its non-member countries.

The theory of Customs Union as well as the established theoretical research on the relevant issues suggested that certain extent of uncertainties for the net gains might develop from the regional trade agreements, particularly FTAs. Therefore, it is difficult to go beyond any inflexible outcomes on the economic effects for any form of trade-related partnerships.

The primary concepts of custom union theory in static and partial equilibrium methods are trade creation and trade diversion (Viner, 1950). Commonly, an agreement (a FTA or Customs Union) is more likely to lead to trade creation if the contacting countries are competitive but complementary; where the extent of cost variances between the countries in the products they both manufactured is larger. As such, the preliminary extent of tariff

differences between the contacting countries is higher; and the trade volumes initially enclosed by the contacting countries is greater.

Generally, the effects of trade creation will turn out to be greater if the pre-integration economic structures are competitive but complementary after integration has taken place (Meade, 1955). This implies that countries within the same trade bloc produce similar products as a result of high tariffs and other preferential barriers prior to the occurrence of integration. For the period after integration, the more competent manufacturers will take over from the less efficient manufacturers, and the amount of similar manufactured products decreases, thus generating gains in welfare attributable to the economies of scale and area of expertise.

Nevertheless, the static and partial equilibrium methods keep hold of their particular theoretical drawbacks. The study of trade creation and trade diversion impacts in static method replicates the trade impacts of FTA at a certain phase and therefore it is incapable of acquiring any significant impacts if tariff reductions are phased in over a period. Nevertheless, the partial equilibrium study is only capable of capturing the trade impacts of FTA.

Generally, FTA is established based on the strategic considerations that arise from the imperfect and incomplete market at home countries as well as the markets in a foreign country.

The established literatures on the benefits and expenses of FTA focused on the creation of competitive equilibrium. Under such structure, FTA will be beneficial if the trade creation effects are found to be greater than the trade diversion effects. However, the important issue is to explore how the benefits and expenses are being governed. Besides the trade creation through guaranteed market access, FTA consolidates the economic capabilities in

different product lines through increasing competition as well as to promote specialization in regional market, balanced regional investment patterns, establishment of the prospective platform for non-traditional products, together with the utilization of externalities by way of providing foreign market as mechanism. On the other hand, the trade diversion can eventually develop into a cost-reducing welfare-enhancing impact regardless of the occurrence of economies of scale.

Overall, there are some trade theories that are applied to explore the dynamics of the international trade.

2.2.1 The Theory of Comparative Advantage

Eighteenth-century economist, David Ricardo established the theory of comparative advantage. He argued that a country boosts its economic growth the most through concentrating on the industry where it holds the most significant comparative advantage (Amadeo, 2018).

In general, comparative advantage happens when a country is able to produce a product at a lower opportunity cost than another country. This implies that a country is able to produce a product which is comparatively cheaper than other countries. The theory of comparative advantage indicates that there will be an increase in the economic welfare if the countries specialize in producing products where they have a lower opportunity costs (Pettinger, 2017).

2.2.2 The Theory of Economic Integration

The basic theory of economic integration was established by Balassa (1961), in which it shows that the economic integration increases when trade barriers lower. Economic integration can take several forms that represent varying extents of integration, namely free-trade area, a customs union, a common market, an economic union and complete

economic integration. In a free-trade area, the tariffs between participating countries are eliminated, but each country retains its own tariffs against non-members. Establishing a customs union involves the tariffs equalization in trade with non-member countries besides the suppression of discrimination in commodity movements within the union. A higher form of economic integration is achieved in a common market (CM), wherein the restrictions on trade flows and factor movements are eliminated. An economic union combines the control of restrictions on commodity and factor policies, toward get rid of the discrimination that was attributable to differences in these policies. The most highly developed form of economic integration is the economic and monetary union, which sets up a CM, gives the responsibility for fiscal policy to a supranational authority and adopts a common currency between member countries. Finally, total economic integration assumes the merger of monetary, fiscal, social, as well as the countercyclical policies and it requires the introduction of a supranational authority in which its decisions are required for the member countries.

These forms of economic integration are also known as regionalism. Burfisher et al. (2003) explain that there is a major changeover from a shallow to a deeper economic integration within the regionalism era in some RTA. The earlier form of regionalization is established based on the long-established trade theory that describes trade creation versus trade diversion in which it adopted from the Viner-Meade (1950, 1955) theoretical framework. On the other hand, the new regionalism concentrates more on expansive issues namely the relationships between trade and productivity, rent-seeking behavior, the role of FDI and productivity development as well as the integration between developed and developing countries.

By adopting the description as given above, the theory of economic integration will be related with the economic effects of integration in its various forms and the drawbacks that taken place from differences in countrywide monetary, fiscal, and other policies. The theory of economic integration can be deemed as an element of international economic, but it also expands the area of international trade theory through discovering the impact of a combination of nationwide markets on growth and investigating the requirement for the coordination of economic policies in a union.

2.3 Theory of Gravity Model

The application of gravity equations to empirical analysis of international trade was founded by Tinbergen (1962), Poyhonen (1963), Pullianinen (1963), and Linneman (1966). Tinbergen (1962) and Poyhonen (1963) initially applied the gravity equation in analyzing international trade flows. Since then, the gravity model has turned out to be a popular instrument in the analysis of international trade. The model has been effectively applied to the different flows, namely the flow of migration, foreign direct investment as well as the international trade flows. In line with this model, the export flows from country *i* to country *j* are being explained by their economic sizes (as proxied by GDP or GNP), their populations, geographical distances as well as a group of dummy variables which incorporating various form of institutional characteristics that are common to the particular flows.

However, the theoretical research groundwork in this area was exceptionally weak at first, but some of the theoretical developments have appeared for the gravity model since the second half of 1970s. Anderson (1979) initially derived the gravity equation from a model that assumed product differentiation. Bergstrand (1985, 1989) also investigated the theoretical determination of bilateral trade in several articles wherein the gravity equations were related to the monopolistic competition models. Helpman and Krugman (1985)

applied a differentiated product framework with increasing returns to scale in justifying the gravity model. More recently, Deardorff (1995) has established that the gravity equation can be applied in various models and it can be justified from the standard trade theories. Finally, Anderson and Wincoop (2001) derived a gravity model from the utilization of the CES expenditure method that can be estimated effortlessly and helps to resolve the so-called border puzzle. The differences in these theories help to clarify the various specifications and some diversity in the results of the empirical applications.

Generally, the gravity model of trade predicts that bigger nations with enhanced manufacture ability are expected to attain economies of scale and boost up the export flows accordingly to its comparative advantages. Therefore, increases in GDP of the exporting and importing countries are expected to enhance the volumes of trade flows.

In line with the study of Martinez-Zarzoso and Nowak-Lehmann (2003), the impact of positive absorption had occurred provided that the populations of exporting country hold negative effect in its exports, showing that larger nations import more than smaller nations. If the populations of importing country hold positive effect on exports, it shows that larger nations import more, and vice versa.

Generally, longer distance between the exporting and importing countries leads to greater operating expenses and smaller earnings margin to the importers. However, shorter distance shows lower amount of shipping costs and therefore greater amounts of trade between two trading partners. Therefore, the distance is expected to hold negative effect on bilateral trade flows.

Besides, the language variable is applied for controlling the countries that make use of identical languages. Generally, two nations that are sharing a cultural similarity are said to be more incorporated and similarity in its consumption model. Therefore, the bilateral

trade will expand provided that both the exporting and importing countries are sharing the same languages. Accordingly, the bilateral trade flows are expected common languages to positive impact.

At the same time, the dummy of common border which included is controlling for countries that share a border will allow them to acquire border trade. Overall, the bilateral trade flows are expected common border to negative impact. In line with the study of Hapsari & Mangunsong (2006), two nations that share a common border will have lower transportation costs, and thus it holds negative impact on the trade volumes.

On the other hand, landlocked countries are expected to enjoy lower trade amounts as a result of higher trade expenses. Nevertheless, small island countries are expected to trade at higher cost as a result of its limited domestic market and supply of its natural resources. Hence, the landlocked dummy is likely to hold negative impacts on trade flows if the countries without direct sea access trade less.

In general, the gravity model of trade is employed as the main tools in explaining the international trade flows. The gravity model of trade is used to determine the correlation between the volumes of bilateral trade, directions of bilateral trade flows along with the reinforcement of the trade agreements. Similarly, the gravity model of trade also validates the trade flows of the exporter and importer countries in terms of the level of incomes, populations, localities, along with the geographical characteristics with dummy variables, in penetrating the impacts of the regional trade agreements. In addition, the gravity model might also be used in investigating the hypotheses which are extracted from the underlying trade models as the basic form of gravity model consists of the fundamentals that are related with geography and spatiality.

Note that earlier studies that adapted the gravity model had also estimated the effect of several non-inclusion variables of the basic gravity equations. For example, the level of price and exchange rate has been included in gravity model to capture substantial impacts which are not justified by the basic form of gravity equations. In addition, in line with the study of Martinez-Zarzoso and Nowak-Lehmann (2003), the standard form of gravity model of trade is formed by including other related variables, such as infrastructure, differences in income per capita and the rates of currency exchange between countries, to examine whether the variables are significant in justifying the bilateral trade flows between the member and non-member trading countries.

Recent studies on gravity model estimations has highlighted that the bilateral trade flows is the functions of distance between the exporting and importing countries as well as the distance of the country pair from some other countries. Hence, Anderson and van Wincoop (2003) generated the term of multilateral trade resistance to represent the distance between the country pair with respect to the rest of the world, in which it implies that more countries pairs will trade with each other on condition that the multilateral resistance term is high. Generally, the multilateral resistance term could be included in basic gravity equation as a set of fixed importer and exporter effects.

At the same time, the gravity model of trade can be applied to evaluate the Free Trade Agreements (FTA) through including a dummy variable in the basic specification, which further revealed whether the pair of trading countries belongs to an FTA. Generally, this variable summarizes the differences of the substantial flows of bilateral trade and the counterfactual, in which it is the trade volumes which justified by the variables in the basic specification. By making use of this variable, the researchers are able to estimate whether an FTA hold significant impacts on trade flows. Nevertheless, there is an implication on

the FTAs impact on the bilateral trade flows and whether these effects are caused by the trade creation, diversion, or both trade creation and diversion. Therefore, another binary variable, in which the dummy variable of which both trading countries are the FTA members, would take control of the trade creation. The second dummy variable of which one of the trading partners is not the member of FTA would capture trade diversion, would need to be included with the intention of estimating the effects independently.

Similarly, this model also is employed to investigate the effect of membership for General Agreement on Tariffs and Trade (GATT)-World Trade Organization (WTO), currency unions, migration flows, foreign direct investments, and disasters² on the bilateral trade flows.

In general, the fixed effects model specifies the amounts of considered descriptive variables provided that the amounts are fixed. The random effects model will introduce bias in estimations of β while hold back the variance of those estimations, in which it leads to estimations that are closer to the exact value in any specific examples. It is possible for one to identify and point out the preferred model for estimation through applying the Hausman test statistic. Generally, the fixed effects model will be the preferred model for estimations if the Hausman test rejected the results provided that the random effects model is biased.

² Previous studies were done by few researchers such as Meng et al. (2015) and Oh (2017).

2.4 Empirical Studies on Free Trade Agreements

2.4.1 ASEAN FTAs

Sen et al. (2013) examine the impacts of recent bilateral and regional Preferential Trade Agreement (PTA) of ten-member countries of ASEAN with Australia, New Zealand, China, India, Japan and Korea. They found that plurilateral PTAs hold significant impacts, as compared with the bilateral PTAs, in stimulating the trade flow between the member countries of ASEAN Plus Six. This study generates motivating outcomes. Firstly, the impact of country-specific bilateral PTAs seems to be insignificant in the case of Australia, India, Korea, Malaysia, New Zealand and Singapore. However, the bilateral PTAs appeared to substantially increase the trade between its member countries in the case of Thailand. Secondly, all member countries of ASEAN Plus Six who entered into a plurilateral PTA, excluding Korea, have benefited from their membership through registering a positive impact on their bilateral trade. Thirdly, Thailand stands out as the only country within the ASEAN Plus Six that holds positive and significant coefficient on both bilateral free trade agreements (BFTA) and preferential free trade agreements (PFTA) attributable to enhanced FTA utilization rates in Thailand. Fourthly, APTA has benefitted all of its member countries, namely India, China and Korea. Besides, Das et al. (2016) concluded that combining an FTA in products between ASEAN+6 countries under the Regional Comprehensive Economic Partnership (RCEP) expanded the intra-industry trade flows within the region as well as to sustain its bilateral trade flows. These findings hold significant policy implications for contribution of India in RCEP negotiations with skillful controlling of Modalities of Tariff Reduction under RCEP; Intra-Industry Trade (IIT)-enhancing Trade in Services and Investment Negotiations; and Cooperation in Appropriate Technology.

Yong and Tan (2007) examine the impact of AFTA on the trade relations between Japan and ASEAN-5 countries. They found that the trade relation between Japan and ASEAN-5 countries found to be asymmetry even though AFTA has resulted in the trade creation for the trade flows between Japan and ASEAN-5 countries. The parameters of Japanese real GDP in Japanese imports demand function show a negative sign for all ASEAN-5 countries except Singapore, in which it implies that Japan had been a relatively important supplier to ASEAN countries but not vice versa while Japan has been a relatively important supplier for Singapore and vice versa. From the results, the parameters of ASEAN real GDP in Japanese imports demand function and the parameters of Japanese real GDP in Japanese exports demand function show a positive and negative sign respectively, excluding Singapore, which implies that Japan had been a relatively important market for ASEAN countries but not vice versa. However, Japan-Singapore shows a complementary relationship. Besides, Calvo-Pardo et al. (2009) found that the preferential liberalization has triggered higher import expansion from AFTA non-member countries. They also found that the preferential liberalization tends to precede the external tariff liberalization; a causal relationship found between the preferential and most-favored-nation (MFN) tariff reduction; and the external liberalization was reasonably sharper for the products in which the preferences are expected to be most unfavorable. Overall, the results imply that the ASEAN agreement has been a force for broader liberalization.

Ismail & Wong (2013) investigates the effect of trade creation on intra-ASEAN trade and found that the major trade determinants of ASEAN countries are GDP, population, relative endowment, distance and common border. The estimated coefficients are appropriately signed and statistically significant for GDP, population, relative endowment and distance. This indicates that these elements have an effect on the bilateral trade flows. The result

implies that the trade between the selected member countries remains strong even throughout the period where 1997 Asian Financial Crisis and 2008 Global Financial Crisis occurred. Similarly, Ho (2010) examines whether ASEAN Free Trade Area (AFTA) formation led to the occurrence of trade creation or diversion between its member countries and concluded that AFTA has no trade diversion considering that its member countries trade more with non-member countries. Overall, Ho (2010) reports three main findings on trade-related impacts of AFTA. Firstly, the result indicates that AFTA has generated intra-regional trade bias and no trade diversion effects identified. By applying the OLS estimation, the second finding shows 1997 Asian Economic Crisis had promoted AFTA export movements with non-member countries attributable to the depreciation of ASEAN national currency. Similarly, trade was boosted within the trade bloc after 1997 as a result of effective implementation ofCEPT schemes. Thirdly, the occurrence of SARS has weakened the intra-regional trade bias, negative export and import trade diversion. Singapore and Vietnam were the groups that were hard hit by SARS. The deterioration in intra-regional trade creation can be justified by the trade expansion between non-member countries. AFTA member countries have a preference to import and export with member countries as the spread of diseases generated negative impacts to economies of Hong Kong and China.

Herath et al. (2014) investigate the impact of AFTA on the food security of its member countries and found that per capita income, agricultural land and the level of foreign reserves have significantly affecting the food security of individual ASEAN countries. They also found that the political stability of the countries holds substantial impacts on the food security of ASEAN countries. The major finding of the study is that AFTA has influenced positively in reducing food insecurity of its member countries. Following the

establishment of AFTA, the level of per capita daily dietary energy supply of the member countries showed modest growth over time. In addition to the trade-related impact on food security, the sign of political stability coefficient showed that the food security level is influenced by the political stability of countries. Additionally, Wong et al. (2017) investigates the impacts of AFTA agreement on the bilateral manufacturing trade between the ASEAN-10 countries and their 39 selected trading partners. Results obtained from panel data analysis of the gravity model with random effects show that the economic sizes, populations, relative endowments, common language and geographical factors such as distance, island, landlocked and neighbor are the important determinants of the bilateral manufacturing trade for ASEAN member countries. Moreover, the results obtained from the fixed effects model imply that AFTA has generated pure trade creation effects in terms of exports. On top of that, AFTA has resulted in larger extent of trade creation effects in imports. They concluded that AFTA promotes trades among ASEAN member countries through the elimination of tariff and non-tariff barriers, for generating pure trade creation effects in terms of exports and imports along with the import diversion effects.

Bary (2015) investigate on the issue whether RTAs, such as AFTA, are likely to boost up the trade flows between its member countries through trade creation and diversion and found that AFTA has significantly expanded the trade flows. The estimation results implied that AFTA has increased the trade significantly. The trade creation effects happened instantaneously, but the impacts are subjected to decrease overtime. On the other hand, trade diversion was not significant in the short-term, but it increased progressively over time. The implication is that AFTA or other RTAs can reinforce globalization for the short term but it might impede the globalization in the long-term for the sake of regionalization, which implies that further RTAs with extra-regional countries are

desirable and predictable. This implies the reason why non-member countries had managed to form bilateral trade agreements with AFTA member countries or more RTAs with all AFTA member countries several years after AFTA had taken into force. Besides, Okabe and Urata (2013) found that significant positive trade creation effects of AFTA were identified, in a wide range of products, for both the imports and exports. They also found that the elasticity of tariff reduction on imports is likely to be greater than the one on export flows. The study showed that the trade creation impacts of tariff elimination under CEPT scheme are relatively small and restricted to several products for the new AFTA member countries such as Cambodia, Myanmar and Vietnam. Several policy implications can be drawn from the empirical analysis. Firstly, AFTA has been efficient in promoting intra-AFTA trade. This finding confirms the suitability of the policy decision by the ASEAN member countries on AFTA formation. Secondly, there is still huge prospective for further growth in intra-AFTA trade via increasing AFTA utilization and removing the remaining trade barriers in the forms of non-tariff measures by improving the competence of customs procedures, harmonizing the product standards and others. Thirdly, the result that exports do not act in response to the tariff reduction as much as imports might reflect the limited capacity of exporters or producers of exports in exploiting the business opportunity arising from the tariff reduction in the export destination countries.

Bhattacharyya and Mandal (2010) examine the effects of Indo-ASEAN Free Trade Agreement on the trade balances of India and they found that the agreement holds negative impacts on the trade balances of India. They also found that the Indian imports will increase significantly and there will be no well-adjusted expansions in India's exports to these countries, except for the exports to Indonesia. Tham and Kam (2014) investigate the AFTA on the exports of the manufactured products between ASEAN countries and India

and they found that ASEAN member countries gained more from the scheduled tariff liberalization under the agreement. They also concluded that the impact of the tariff liberalization on the exports of manufactured products between ASEAN countries and India found to be comparatively insignificant as compared to other contributing factors, especially factors related to the trade-related costs. Similarly, Haryadi (2015) found that the trade flows between ASEAN-India Free Trade Area (AIFTA) remained insignificant, as compared to the trade with the extra-ASEAN countries, while the trade share of the intra-AIFTA was lower than 20 percent. Overall, the AIFTA implementation helps to stimulate the trade creation and diversion for intra-AIFTA trade. Several policy implications can be drawn from the empirical analysis. Firstly, the power of the economy, particularly in the context of manufactured goods traded by the AIFTA, is still dominated by Singapore, followed by Malaysia and Indonesia, Thailand and the Philippines. However, the implementation of ASEAN-India Free Trade Area will hold an impact on trade creation (increase in trade volumes within the member countries) and trade diversion (adjustment in the trade flows from non-member countries to member countries). Secondly, ASEAN-5 countries have the benefit of the impact of this policy on the welfare and it has been shown to have the comparatively more advanced economies than other countries in ASEAN.

2.4.2 ASEAN-China FTA

Thu and Hien (2014) analyze the impacts of ASEAN+3 FTAs on Vietnam iron and steel trade flows and they concluded that the ACFTA and Vietnam-Japan Economic Partnership Agreement (VJEPA) hold positive impacts on the increasing imports of iron and steel products into Vietnam while ASEAN-Korea Free Trade Agreement (AKFTA), AFTA and VJEPA hold positive impacts on the export volumes. Overall, ASEAN-Japan Comprehensive Economic Partnership (AJCEP) and AFTA are found to hold little impact

on either the flows of imports or exports. Similarly, Thu et al. (2015) reveal that distance proxies as a trade-restrictive factor hold a strong impact on the bilateral trade. The results also indicated the positive and significant trade creation effects from reducing and eliminating tariff barriers in AFTA. AFTA has been successful in promoting the bilateral trade between countries but also between intra-bloc and extra-bloc countries. On the contrary, the implementation of ACFTA and AJCEP negatively affects the trade between ASEAN countries. In addition, ASEAN's imports and exports to the rest of the world are negatively affected by ACFTA and AJCEP. This relationship can be explained by the nature that there has been a substantial growth in trade between ASEAN and China, Japan since ACFTA and AJCEP came into effect. Therefore, there has been a trade diversion effect in terms of both ASEAN's exports and imports of AJCEP and ACFTA. Finally, AKFTA diverts ASEAN's exports to the rest of the world and might increase exports between ASEAN member countries. In addition, Hartiningtyas (2016) concludes that GDP, per capita GDP, distance, languages, and contiguity hold significant impacts on the trade within ASEAN+3 regions. They also identified trade creation impacts within the ASEAN+3 regions following the signing of AJCEP, AKFTA, and ACFTA.

Ibrahim et al. (2010) examine the impact of the ACFTA implementation on Indonesia's export flows. They found that ACFTA provide opportunities for increased export flows from Indonesia, wherein Indonesia acquired a net trade creation of international trade by 2% and total exports growth increased by 1.8. However, the export performance of Indonesia showed a reduction of competitiveness, as revealed by the deterioration in share of Indonesian export commodities which are highly competitive and high intra-industry linkage. This study also found that China is comparatively easier to penetrate export into the ASEAN markets due to similarity in the commodity structures of China and the non-

competing behaviour of ASEAN countries. Similarly, Yang and Martínez-Zarzoso (2013) conclude that ACFTA led to significant trade creation effects. They also found that the trade agreements between ASEAN and China yield an overall positive trade effect. The positive and significant estimated results for the aggregate data established that reducing and removing tariff barriers in ACFTA promotes total trade volumes between intra-bloc member countries, intra-bloc and extra-bloc countries. There are significant trade creation effects in terms of exports of manufactured goods and chemical products, even if the trade creation and diversion impacts for agricultural raw materials, as well as machinery and transport equipment, are not significant. Sheng et al. (2014) investigate the trade-related effects of the free trade agreement for the People's Republic of China (PRC) and ASEAN countries and they concluded that ACFTA holds a considerably larger effect on the bilateral trade flows between PRC and ASEAN countries, given the strong global production linkages and high trade ratio in parts and components within the region.

Through revisiting the impact of ACFTA on the manufactured exports of ASEAN to China, Tham and Kam (2014) found that ACFTA holds stronger impact on the exports of the final products from ASEAN-5 to China. They also found that the findings supported the assumption that the tariff liberalization under ACFTA did not apply any significant impacts on the parts and components (P&C) exports from ASEAN to China though it played a significant role in the case of final product exports. Likewise, Schaak (2015) found that the implementation of ACFTA lead to substantial trade creation impacts for the exports and imports of dairy products. In the case for combined group of dairy products, the trade creation effect is predominant on the imports, but it is exceeded by the trade diversion effect in terms of exports. Furthermore, Nguyen (2016) concluded that ACFTA is correlated with the export reductions between China and ASEAN countries while

ACFTA holds different impacts on individual ASEAN countries. In addition, Zhou (2017) finds that the trade impacts of ACFTA were not evident on the bilateral trade flows between China and its 16 major trading partners. Besides, Indriyani (2016) found that ACFTA holds substantial positive impact on Indonesia's exports to the ASEAN countries and China. In line with the trade liberalization where the ACFTA is one form of trade liberalization that the reduction and elimination of tariffs will enhance the export flows.

Lima and Bathan (2016) finds that ACFTA diverted the trade of fresh bananas for Philippines from Japan to ASEAN member countries as well as to China. Results of the competitiveness analysis revealed that the Philippines' fresh banana exports to China are not price and quality competitive. However, there are some other export markets for the Philippines' fresh banana such as the Middle East, Southeast Asia, New Zealand, and United States. Regression analysis indicated that the tariff, real domestic wholesale price, trade disagreement and China's sanitary and phytosanitary (SPS) negatively influenced the export volumes and values of the Philippines' fresh banana bound to China. Given that the tariff level has achieved zero by virtue of ACFTA, a reduction in domestic wholesale price, absence of trade disagreement, and conformity with China's SPS can be projected to stimulate the exports of the Philippines' fresh banana to China.

2.4.3 Other FTAs

Sarkar and Park (2001) find that the trade flows between United States and Mexico increased significantly following the NAFTA implementation. They also found that the trade between United States, Mexico and Canada has enhanced more rapidly than the trade with the rest of the world, which further revealed the positive impact of the implementation of NAFTA. Similarly, Susanto et al. (2007) estimate the gains of NAFTA establishment by highlighting the trade creation and diversion in U.S-Mexico agreement. The results imply

that U.S. agricultural imports from Mexico have been responsive to the reductions in tariff rate for Mexican products. A one percentage reduction in tariff would increase U.S. agricultural imports from Mexico by 2.4% in the entire period. Results also indicate that a one percentage reduction in tariff rates would increase U.S. agricultural imports from Mexico by 5.31% during the initial 6 years of NAFTA and by 2.62% during the latter 6 years of NAFTA. The overall effect would be a 5.5% increase in U.S. imports from Mexico for one percentage reduction in tariff rates. The increase in U.S. imports from Mexico has also been attributable to the pre-NAFTA tariff rates. Higher pre-NAFTA tariff levels would result in a higher percent increase in U.S. agricultural imports from Mexico as tariff rates are reduced. Similarly, U.S. imports from rest of the world (ROW) have also been significantly affected by tariff rates applied to ROW. However, the effect is lower as compared to Mexico. They also found that U.S. agricultural imports from Mexico during NAFTA were about 54% higher than the entire period. On the contrary, U.S. imports from ROW were not significantly higher due to NAFTA. Additionally, Tsang and Au (2008) concluded that the increase in intra trade of textile and clothing (T&C) in NAFTA could be revealed by the increasing movement of the regional indicator variables in three consecutive time intervals from 1990 to 2001 in the regression model. However, the indicator variables of both the T&C trade models decline significantly to negative value in the period 2002-2005. This is in line with the current situation that the total export trade between the NAFTA trading partners has trended downwards in following years. The downward trend of the intra-NAFTA T&C trade could be attributed to the cumulative competition from S&SE Asian countries with the gradual phasing out of quotas under the Agreement of Textiles and Clothing and the further elimination of quotas after 2005.

Assarson (2005) investigates the European Union-South Africa free trade agreement (EUSAFTA) and found that South Africa benefits from the agreement in terms of improving on its trade. The result also indicates that South Africa's trade with some Southern African countries has been negative effected by the agreement but it is difficult to state whether this situation was being triggered by the agreement or otherwise. However, the rest of the world has not been negatively affected by the agreement.

Holden and McMillan (2006) explore whether the two free trade agreements, EUSAFTA and SADC Free Trade Agreements, hold any substantial effects on the trade patterns of South Africa. They found that the differences in trade structures caused the distance to hold substantial negative impacts on exports. They also found that the cross-sectional estimations for the effect of the free trade agreements for South Africa, EU and SADC showed no evidence of substantial impacts on trade patterns while the panel estimations revealed that there are positive impacts for trade flows between EU with South Africa, as well as trade between South Africa and SADC. Similarly, Jordaan and Kanda (2011) found that the EU-SA preferential trade agreement holds substantial trade expansion impacts. They also found that the SADC preferential trade agreements can only be achieved when the agreement entirely in operation.

Jin et al. (2006) estimate the impacts of trade creation and diversion of the free trade agreement between China, Japan, and South Korea on global economy. They found that there are substantial trade diversion impacts of FTAs among its member countries and the rest of the world. This study also reveals that the member countries under the FTA are liable to specialize on the foundation of resource endowments, but there exist substantial intra-industry trade volumes between the member countries in all sectors excepting the agricultural and service or utility sectors. They also found that the FTAs stimulated the

economies of the three countries through the expanded trade volumes while it holds significantly negative impacts on the economies of its non-member countries.

Kwentua (2006) examined the impacts of trade creation and trade diversion and concluded that the overall effects of regional and preferential trade agreements are significantly positive, which indicates that the trade agreements stimulate and generate trade between member countries. The trade creating effects of Southern African Customs Union (SACU) was significantly negative as these countries operate within the same geographical area and have similar economies. Overall trade-diverting effects were positive, signifying that regional and preferential trade agreements do not essentially divert trade with non-member countries. The justification is that the trade creating impact of regional and preferential trade agreements enhances the overall demand to an extent that the income effect offsets the trade diverting effect of the agreements. It has been perceived that the benefits of regional and preferential trade agreements are greater for member countries. On the whole, the results imply that there were substantial trade creation and diversion effects in the European Union and South Africa preferential trade agreement.

Park (2006) evaluates the effects of different directions on East Asian RTAs and found that the static impact of existing, proposed and negotiating East Asian RTAs positively influenced the welfare of the world and its member countries. The study also found that (i) higher positive welfare and production gains are associated with original members of existing RTAs, (ii) additional positive trade creation impacts taken place for original member countries when the related RTAs expand, and (iii) welfare and output gains are in uneven distribution for a hub relative to smaller or even negative gains for spokes. Behar and Criville (2010) examine whether the free trade agreements enhance the trade flows of developing countries and found that FTAs lead to an increase in bilateral trade flows and

the percentage increase in bilateral trade flows is higher for the South-South free trade agreements. They also concluded that the multilateral resistance facilitates the impact of FTAs on trade by less in South-South trade agreements and the differences turn out to be bigger as the member countries increase in amount. Begovic (2011) found that the variables of free trade agreements between Central European Free Trade Agreement (CEFTA) member countries hold significant negative impacts on the export volumes, which implies that the trade liberalization did not lead to the improved trade performances between member countries in the case of CEFTA.

Baier and Bergstrand (2007) concluded that the implementation of the free trade agreements enhanced the bilateral trade volumes between both the exporter and importer countries. Similarly, Urata and Okabe (2007) found that FTAs resulted in trade creation effect. In the case of EU, NAFTA, and the MERCOSUR, they found that the trade diversion effects had been found for various products except for AFTA. At the same time, Alba et al. (2008) generates three important findings. Firstly, FTAs hold significant and positive impacts on trade. Secondly, the hub-and-spoke FTAs increase trade above and beyond FTAs, and therefore strengthen the trade-boosting impacts of FTAs. Thirdly, the results show an annual growth rate of 4.9% in bilateral trade flows and hence a doubling of trade after 14½ years between FTA partners. Caporale et al. (2009) examine the effect of the association agreements on the trade flows between EU-15 and four new EU members from Central and Eastern Europe (CEEC-4) countries and concluded that the free trade agreements hold substantial positive impacts on trade flows. They also found that the trade expansion, following the signing of FTA agreement with EU, surpassed the trade expansion of the control group of countries that did not turn out to be the member countries. Caporale et al. (2012) investigate the substantial impacts on the trade balances of Europe

agreements (EA) between EU-15 and CEEC-4. They found that the EA hold significantly positive impacts on the trade flows. They also found that there are unequal impacts of the agreement variables on the trade balances, exports and imports, in which it resulted in the deficit of trade balances in CEEC-4.

Bi et al. (2013) investigate the economic effects of Trans-Pacific Partnership (TPP) agreement and Transatlantic Trade and Investment Partnership (TTIP) agreements on international trade in China and revealed that most countries, such as Vietnam and Malaysia, would gain from the TPP and TIPP agreement at the same time as the real GDP and export of China would decrease in value. Additionally, Parra et al. (2016) found that the North-South-FTAs and South-South-FTAs hold a differential impact in terms of the increasing trade flows in MENA countries. They also found FTAs that consisted of the agricultural products, in which MENA countries hold a strong comparative advantage, hold more complimentary impacts for these countries than the countries which only take account of the industrial products.

Jafari and Othman (2013) investigate the possible economic impacts of potential Malaysia-US Free Trade Agreement (MUFTA) on Malaysia and US economies and the results showed that the bilateral Malaysia-US FTA is likely to induce an expansion in GDPs and net welfare for both trade parties. Milton and Siddique (2014) investigate the effect of the Thailand-Australia Free Trade Agreement (TAFTA) on bilateral merchandise trade flows between Australia and Thailand. They found that TAFTA generated modest trade creation impacts with no significant trade diversion impacts identified. These results have several implications. Firstly, the findings reiterate the importance of controlling for bias produced by heterogeneity and endogeneity in gravity models. The analysis shows that the use of standard OLS estimation of gravity equations is likely to generate severe bias and

misleading results. Time-invariant and time-varying country effects should be included to capture all country-specific characteristics and provide a proxy for the multilateral resistance terms proposed by Anderson and Van Wincoop (2003). Fixed time effects should also be included to capture any macroeconomic shocks to the international economic setting that might have an effect on international trade.

Herzog and George (2014) examine the potential economic implications of FTAs between European Union (EU) and the Indian Federation. They found that India holds the significantly positive impacts from FTAs with more advanced economies. Similarly, Vanhnalat et al. (2015) estimate the impact of FTAs between Lao PDR and its 32 trading partners. They found that the preferential utilization is relatively low and it is highly concentrated in the natural resource products. The findings imply that the basic factors of foreign income and geographical distance hold correct signs and statistically significant for all scenarios. The study also found that the exports under generalized system of preferences (GSP) stimulate an increase in Lao exports by 50.68% above the trading partners that have not granted the GSP.

Dembatapitiya and Weerahewa (2015) estimate the impacts of the WTO, RTAs such as SAFTA, EU, ASEAN, Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and NAFTA, as well as the Bilateral Trade Agreements (BTA) on the bilateral trade flows of South Asia and find that sharing of common language, sharing common colony, and membership of WTO affect positively and significantly on the export values and the impact of geographical distance, hold a negative effect. The memberships in BTA and RTA have mixed effects. Among RTAs applied in the study, only the co-efficient for EU is statistically significant while SAFTA, ASEAN, BIMSTEC and NAFTA do not show any significant effects on bilateral trade.

The effects of all BTAs are positive and significant and they show that BTAs within South Asia enhance its regional trade greater than the BTAs with non-members. These results indicated that creation of BTAs within South Asia facilitated the expansion of the regional trade.

Kalirajan and Paudel (2015) explore the issue on how much the reduction in trade deficits due to the different preferential trading arrangements is attainable under the theoretical export potential scenarios and found that the potential gains of India are high as the impacts of India's existing "behind the border" restrictions are eliminated.

Kutuk (2015) finds that both the EU-Turkey Customs Union and the FTAs are not the driving force for Turkey's export. However, the European Customs Union is substantially important on Turkey's import regardless of the fact that the FTAs do not affect Turkey's import. Hence, the FTAs of Turkey affect neither export nor import of Turkey in line with the potentials arisen from the fact that Turkey could not choose her FTA partners attributable to obligations of the Customs Union Decision. However, the EU-Turkey Customs Union affects Turkey's import.

Luqman et al. (2016) investigate the formational impact of the regional trade integration agreements (RIA) on trade flows by applying the similar currencies and Economic Community of West African States (ECOWAS) and found that robust relationships found between the determinants of RIA and trade flows. Several useful recommendations are provided with the intention of achieving better results in further studies. Firstly, ECOWAS members should draft and apply a robust industrial policy in intensifying the industrial competence of countries as well as to improve its competitiveness. Secondly, a reliable trade policy should be established in order for countries within ECOWAS to gain more

from trade. Thirdly, the economic diversification within ECOWAS should be encouraged. Finally, a sound macroeconomic policy should be set up.

Rasoulinezhad (2016) examine the impacts of the financial & non-financial agreements imposed against Iran together with the oil price shocks on Iran-Russia trade and concluded that the agreements as well as the oil price shocks hold significantly negative impacts on the trade flows between these two countries.

2.5 Gravity Model

Cagatay and Mihci (2006) investigate the effect of various environmental inelasticity levels on the trade patterns and export performances and concluded that the environmental inelasticity holds significant impact on the export of the countries. The impact of the extent of environmental inelasticity on the exports is significantly negative, wherein it signifies an inverse correlation between the exports and relative environmental sensitivity performance of the countries.

Yeboah et al. (2008) investigate the potential bilateral exports of cocoa between the sixteen-major cocoa producing countries and United States under trade liberalization and found that the differences between resource endowment, relative economies size, and the total bilateral GDP of U.S. and exporting countries are the major determinants of the cocoa exports. Therefore, the farmers' share of the world price of cocoa increases as trade is liberalized and thus increases the exports.

Kumar (2009) applies the China's export of goods and services, the weighted average real income for trade of the major trade partners of China (namely United States, Hong Kong, Taiwan, Japan and South Korea); the export prices of China's products, as well as the weighted average exchange rate as the main estimation variables and found that the real

exports, real income and relative prices are co-integrated with each other in China. The study also found that the depreciation in Chinese Renminbi played an important part in expanding its trade balances.

Bojnec and Ferto (2010) found that the positive impacts of internet connectivity on trade flows, in which it revealed that the internet reduced the expenses on market-specific access. The positive impact on the internet is found in the importing countries. On the other hand, the positive effects on food industry exports are found for the economic size of the country and bilateral common features and proximities. They also found that the internet had reduced the proximities but increased the geographical distances between both the exporting and importing countries. Overall, the empirical results revealed the evidence on the positive effect of the amount of internet users on the bilateral industry export patterns and overall food industry trade patterns of OECD countries. The increase in the amount of internet users in organizations, households, and the economy promote the trade in food industry as well as redirect food industry trade.

Ferto and Soos (2010) explore the structure of trade expansion in Hungary and Poland and its impacts on the workforce market adjustments. The study found that the alterations in domestic consumptions and productivity hold substantial negative impacts on the adjustments in employment. The estimations indicated that fractional trade liberalization in Hungary and Poland has led to lower adjustment expenses.

Gani (2010) investigates the issue on whether the distance is a resistance to the trade flows of Pacific Island countries (PICs) with United States and found that the distance holds negative impacts on the export flows of Pacific Island countries (PICs) to United States. Likewise, Gangnes et al. (2011) found that the distance will be developed into bigger trade

barriers due to higher oil prices; and the airborne-based exports are less responsive to the oil price adjustments.

Nguyen (2010) found that the export growth of Vietnam holds significantly positive impacts on income growth of Vietnam and its trading partners. They also found that the exchange rates, transportation costs and the membership of ASEAN hold significant effects on Vietnamese export flows. The paper found that there is a robust correlation between the contemporary export flows and the previous year export flows of Vietnam, and therefore the dynamic model proven to fit the data better as compared with the static model. Generally, Vietnamese export growth holds positive impact on the income growth of Vietnam and its trading partner. In addition, transportation costs hold substantial impacts on Vietnamese export performance. Other important elements include the exchange rate and the ASEAN membership of trading partners.

Rahman and Ara (2010) examine the trade patterns of Bangladesh and they found that the trade flows hold positive impacts on the common border, language, and regional trade agreements while it negatively influenced the tariff and trade-related transaction costs. One of the major findings is that a large portion of Bangladesh's potential trade has remained unrealized. They found that Bangladesh is liable to trade more with bigger economies and import developing economies. The cumulative trade operation expenses are one of the major trading barriers that triggered the high un-realization of trade potential in Bangladesh. The paper concludes that liberalization of non-policy barriers will stimulate the trade of Bangladesh throughout the current global economic and financial crisis. On the other hand, the improvement in infrastructure that leads to lower the trade transportation expenses should be an essential movement with the intention of unleashing the trade potential of Bangladesh. Similarly, Nuroglu and Dreca (2011) find that the distance, GDP

per capita of Bosnia and Herzegovina (BiH), GDPs and populations of its trading partners, ex-Yugoslavian dummy and the similarity index are the main determinants of Bosnian total trade and import flows, by analyzing the trade flows of BiH and its major trading partners. They also found that the export flows of BiH are significantly affected by distance, GDP per capita of BiH and its trading partners, ex-Yugoslavian dummy and the similarity between the countries' GDPs. The results revealed that the trade of Bosnia, its exports and imports are positively influenced by the economic size and population of its trading partners. Distance is found to be a significant element influencing its trade in a negative way. Increase in GDP per capita of BiH appears to substantially enhance the exports. The trade relations of BiH with its ex-Yugoslavian neighbors are exceptionally robust, in which it can be justified by strong historical and industrial relations they had previously.

Teweldemedhin and Schalkwyk (2010) estimated the impacts of liberalization on South African agricultural economy and concluded that all of the estimated variables were statistically significant while the EU trade agreements hold negative impacts on the export volumes of South African agriculturalists. These results hold some important policy implications for South Africa. Firstly, the trade agreements will enhance the potential trade flows between South Africa and other countries. Secondly, the distance revealed that the per capita income of the importing countries is elastic and significant in determining the export flows. Therefore, it is essential for South Africa to improve the existing trade relations as well as to expand the trade to high per capita income with the intention of realizing the export potential.

Hejazi and Ma (2011) concluded that the countries which do have English as the official language or have better proficiencies in English are more engaged in the international

economy. Having English as the official language or having an official language that is linguistically close to English enhances that the international activities of the country.

Kumar (2011) found that the real exports, real income of trading partners and the relative prices are co-integrated with each other. The findings, based on Granger causality, revealed that the levels of incomes and relative prices Granger cause the export levels in the reporting and partner countries in long-run. The results imply that exports are the engine of development in China. The exports of China are competitive within the global market and it has the preference to devalue its currency to uphold the export earnings. On the other hand, this paper argued that the trade promotion policies, namely the subsidies, tax exceptions and special credit lines, should be encouraged in current global economic crises.

Oh and Tumurbaatar (2011) examined the impact of Mongolia's landlocked location between Russia and China on its international trade patterns. They concluded that the landlocked location between Russia and China does not adjust the international trade patterns of Mongolia over time. Besides, trade policy of Mongolia might be obliged to concentrate on the trade irresponsiveness to its major factors, such as the membership of WTO and Trade freedom of a partner and Mongolia itself, which makes Mongolia's trade insensitive to these main factors to make use of them or to reduce the risks which generated by those factors. Overall, the policy should emphasize the Mongolia's export since it is susceptible to exchange rate fluctuation, not responsive to partner's trade freedom factor, exceedingly reliant on neighboring countries, as well as not correlated with Mongolia's economic growth.

Sheng and Mullen (2011) estimated the potential of export markets for the aggregate and specific industries and concluded that the FDI substitutes for and/or complement to the

export flows. Similarly, Chou et al. (2015) examine the issue whether the China's export flows significantly affected by political risk, economic integration, and spatial impacts. They found that a home market impact is obvious for China's exports as its economy has developed. They also found that higher level of economic integration is advantageous to China's exports; higher income per capita of partner countries and the higher extent of economic openness is both productive to the exports of China.

Hippolyte (2012) investigates the major determinants that affected the merchandise export flows of Barbados and found that the export flows of Barbados hold positive impacts on GDP and GDP per capita of the importing countries, membership of Caribbean Community (CARICOM), and the countries that share the common language (English) while the bilateral trade agreements and the Generalized System of Preferences hold insignificant impacts on the export flows. Similarly, Elshehawy et al. (2014) concluded that GDPs, importer's population, RTAs as well as the border between Egypt and its trading partner are the major determining factors that hold positive impacts on Egypt's export flows to its major trading partners while the transportation costs are found to hold insignificant negative impacts on the export flows of Egypt. Additionally, Bayar et al. (2015) found that Turkey's industrial production index and sectoral export unit price index, sectoral imports of partner countries from the World, and the import prices of partner countries holds significant effects on the Turkey's exports to various EU countries. Karagoz (2015) investigates the major determining factors for the export performance of Turkey found that the export supply holds positive impact on the domestic relative export prices while the domestic demand holds negative impacts on export supply. The study also found that export performance of Turkey positively impacted by the major economic crisis that occurred in 2001, in which further enhanced the export volumes.

Xia et al. (2012) examine the theoretical relationship between earnings, trade flows and trading expenses via a reduced-form gravity specification. They found that the distance between both the exporting & importing countries and the border trade barriers significantly affected the trade-related expenses of oilseeds and oilseeds oils.

Abidin et al. (2013) found that the importance of size effects, the force of economy openness, inflation rates, and the exchange rates are the major determinants of the exports of Malaysia to Organization of Islamic Cooperation (OIC) countries. They also found that the estimation of individual effects showed the importance of distance and trade associations in boosting up the Malaysia-OIC export volumes. It is crucial for Malaysian policymakers to play important roles in expanding the huge market of OIC region, such as concentrating on the African region, accelerating the effort to establish the Islamic Common Market (ICM), liberalizing the economy as well as to reduce the corrupt practices. Oh and Sardar (2013) found that its trade patterns are consistent with the gravity model estimation. They also found that the exports of Bangladesh are significantly dependent on the US market, through comparing the predicted and actual trade volumes of Bangladesh. Similarly, Rasoulinezhad and Kang (2016) concluded that the gravity equation fits well on the data and thus confirmed the existence of long-term relationships between bilateral trade flows and the primary components³ of gravity model. They found that the trade flows of South Korea- Organization of the Petroleum Exporting Countries (OPEC) are well explained by the factors that impacted the energy security of South Korea such as the oil reserves, transportation costs as well as the political stability. The robust impact of income level is explained by the high share of valuable goods in trade flows. The income level indicates the level of economic developments as well as the magnitude and quality of

³GDP, income (GDP per capita), the difference in income, exchange rate, the openness level, distance and WTO membership

consumer markets. The exports of South Korea are primarily expended by high-income economies or industrial suppliers. Hence, the more developed and bigger markets are associated with the larger trade volumes with South Korea.

Sherif (2013) concluded that the coefficients of the GDP variables of both importers and exporters are positive, which further indicates that the trade increases below proportionately with the GDP of Bahrain & Qatar (group A) and Oman & Kuwait (group B) while above proportionately with the GDP of UAE. In addition, the results indicated an increase in trade expense at the same time as the distance between the two trading partners increase; and the countries that share a border are inclined to trade more with each other. Additionally, Tripathi and Leita (2013) examine the India's trade flows with China, UAE, United States, Saudi Arab, Switzerland, Singapore, Germany, Hong Kong, Indonesia, Iraq, Japan, Belgium, Kuwait, Republic of Korea, Nigeria, Australia, United Kingdom, Iran, South Africa, and Qatar. They found that GDPs, political globalization, cultural proximity and common border hold positive impacts on the bilateral trade flows.

Tho (2013) concluded that the transportation costs, foreign direct investments (FDI) and real bilateral exchange rate hold negative impacts on trade. The results asserted the negative relationship between the exports and real bilateral exchange rate, implying that the depreciation of Vietnam Dong against the currencies of importing countries stimulated its exports. On the other hand, the GDP per capita of importing countries and the dummies of free trade agreements were found to have no significant effects on export flows of Vietnam.

Cieslik et al. (2014) estimate the trade-related impacts of euro adoption on the countries that joined European Union in 2004. They found that the exclusion of exchange rate volatility holds significant impacts on the trade growth for new member countries while

the accession to Euro zone did not hold any positive impacts on the export volumes. Dincer (2014) analyzes the import flows of Turkey from Brazil, Russia, India and China (BRICS) and found that the increase in the research and development (R&D)-related expenses of BRICS positively influenced the imports of Turkey while it holds negative impacts on its import levels.

Dritsaki and Stiakakis (2014) concluded that there are bi-directional short run and long run causal relationships between the export flows and economic growth of Croatia. Similarly, Shihab et al. (2014) found that there is evidence of unidirectional causality between the export flows and economic growth in Jordan. The results indicate that foreign direct investment does not hold the expected positive impact on the economic growth and therefore the government of Croatia ought to proceed with the substantial restructurings with comprehensible objectives and strong obligations. In addition, Yang and Wu (2015) concluded that, based on the estimation results from rolling window Granger causality test, the export growth Granger cause economic growth in 1984Q4-1985Q2 and 1989Q2-1990Q1 for China while no relationship found for Taiwan; and economic growth Granger cause export growth throughout the period of 1987Q4 and 1988Q1, 1989Q1-1989Q2, 2009Q3, and 2013Q2-2013Q3 for China while 1984Q4-1985Q1, 1989Q4, and 2008Q3 for Taiwan. Besides, Srinivasan (2016) concluded that there are significant relationships between export flows and GDP in the long run; long-run bidirectional causality between GDP and exports for Russia, India, China and South Africa; and unidirectional long-run causality from GDP to exports for Brazil. Al-Assaf and Al-Abdulrazag (2015) found that there is a stable long-run equilibrium relationship between the exports, imports, and production growth. From the results of bounds test, it is observed that there is a robust co-integration relationship between the variables. The findings revealed that the rapidity of

adjustment in the error correction model (ECM) is significant and comparatively slow. This indicates that, it takes approximately 5 years for the imbalance to adjust even if there is a positive relationship between the exports and economic growth, for the case of Jordan. These results imply that authorities implement an export expansion policy in stimulating the exports and economic expansion. Likewise, Gokmenoglu et al. (2015) revealed that there is a long-run equilibrium relationship between the export flows and economic development. The Granger causality test results also revealed the unidirectional causality from the economic development to the export growth of Costa Rica. The findings shown that economic stability plays a significant part for export growth of Costa Rica, which indicates that policies that sustain the GDP growth should be developed in enhancing the export segment of the country. On the other hand, export promotion policies, namely the application of a specific currency regime, sustaining the export related segments might not contribute to the economic expansion of Costa Rica. Therefore, the government of Costa Rica should give priority to the policies that generate a stable economic scheme as well as to uphold the rapid and sustainable economic expansion.

Oncel and Tekce (2014) investigate the bilateral trade relationships between Turkey and former Soviet Union countries. By applying the total trade volumes as the dependent variable, they concluded that the GDPs, GDP per capita and distance are important in explaining the bilateral trade flows between Turkey and its trading partners, the former Soviet Union countries. Abbas and Waheed (2015) found that Pakistan's exports are positively influenced by its supply capability, demand potential of its trading partners, market sizes, relative price, and common language while negatively affected by geographical distance, common border as well as the free trade agreements. They also found that Pakistan hold higher export potentials with India, Philippines, Japan, Singapore,

Malaysia and Indonesia (in Asia), Morocco, Egypt and Tanzania (in Africa), New Zealand and Australia (in Oceania), Hungary, Austria, Switzerland, Finland, Norway, Denmark and Sweden (in Europe). Pakistan has to expand and diversify its industries targeting market fundamentals of potential economies, and re-examine its regional and bilateral free trade agreements to improve the trade balance as well as to achieve sustainable economic growth. Bilas et al. (2015) found that the unidirectional Granger causality is identified for causality from the exports of goods and services to gross domestic product. They also found that the applied Engle-Granger approach to co-integration estimation method revealed that there is long-term equilibrium and short-term relationship between the variables under studied. In line with the results, they found evidence supporting the export-led growth hypothesis in Croatia. As the outcomes indicated, Croatia should highlight more on the growth of exporting segments in recuperating the economy.

Bouras and Raggad (2015) found the complementary or ripple impact between the exports and FDI at the international level for both manufactured and non-manufacturing sectors. The results indicate that the exports appeared to generate additional FDI flows from investing countries which implies that there exists a complementary relationship. In addition, Keho (2015) found that economic growth holds positive impacts on FDI in five countries and the exports hold positive effects on FDI in four countries. Based on the Granger causality estimations, the study concluded that there are short-run bidirectional causality between FDI and GDP; unidirectional causality from GDP to exports in Ghana; bidirectional causality from FDI and exports in Benin; GDP causes exports in Benin, Congo Democratic and Gabon; FDI causes exports in Cote d'Ivoire and Kenya. The study also found that there are long-run bidirectional causality between FDI and GDP in Cameroon, Cote d'Ivoire and South Africa, as well as between FDI, GDP and exports in

Congo Democratic, GDP and exports in Ghana, as well as the bidirectional causality between FDI and exports in Kenya.

Caporale et al. (2015) analyze the issue on whether the increasing trade has resulted in the adjustments in industrial structural and China's trade patterns. The study concluded that there are significant adjustments in China's trade structures with the expansion in foreign trade flows.

Cestepe et al. (2015) investigate the impact of trade liberalization policy on the export flows of Middle East and North Africa region (MENA) countries to its trading partners, Organization for Economic Co-operation and Development (OECD) and found that free trade agreements hold significant positive impacts on the export flows while WTO memberships hold negative impacts on the export flows of MENA countries. As the trade integration of the region into the international economy has been sluggish attributable to the substantial trade barriers, it has been argued that MENA countries should liberalize their trade regimes in expanding the production and exports, as well as to promote their economic growth. Therefore, the findings of this study indicated that the trade liberalization through free trade agreement could support the exports of MENA countries and then it motivates the liberalization policy of MENA countries.

Doumbe and Belinga (2015) concluded that the bilateral trade flows of Cameroon and European Union hold positive impacts on the economic sizes and per capita GDP while negatively affected by the distance between its trading partners. The results also revealed that Cameroon hasn't accomplished its full trade potential with Austria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Italy, Poland, Romania, Slovak Republic, Sweden and United Kingdom.

Karamuriro and Karukuza (2015) found that the GDPs, GDP per capita of importing countries, differences in per capita GDP, real exchange rate, official common language, contiguity, as well as the formation of the Common Market for Eastern and Southern Africa (COMESA) and East African Community (EAC) hold significantly positive impacts on Uganda's exports while the GDP per capita of Uganda and distance between Uganda and its trading partners hold negative impacts on Uganda's export movements. These results are significant for trade policy formulation with the intention of ensuring that Uganda's export potential is exploited in an attempt to enhance the economic growth. Besides, Sebbagh et al. (2015) concluded that there is positive effect of GDP and negative effect of geographical distance on the trade flows while the exchange rate and tariff rates hold no substantial impacts on the export flows.

Khosla (2015) examined the impacts of the increasing Chinese influence on the intra-regional trade of Africa and found that the existence of Chinese power has led African countries to export and import at a reduced amount to/from other African countries. The results indicated that the impacts of China on intra-regional trade have turn out to be less negative over the past decade.

Panda and Sethi (2015) found that the trade flows of India hold positive effects on the economic sizes of its trading partners and the dummy variable of common colonizer while it negatively affected by the distance between two countries. They also found that per capita income holds significant impacts on trade flows for the pre-crisis period but bereaved its importance throughout the post-crisis period.

Sultan and Munir (2015) found that the determinants of export and import flows are dissimilar from the determinants of total trade. They also found that Pakistan hold highest trade potential with Norway and Hungary; the highest export potentials found in the case of

Switzerland and Hungary while the highest import potentials found in the case of Norway, Philippines, Portugal and Greece. Besides, the border sharing countries provide lower transportation expenses attributable to the minimum distance as compared to non-border sharing countries. China and India are the two major border sharing countries but Pakistan has used up its trade potentials with China. At the same time, in case of India, Pakistan holds export potential in which India has land routes with Pakistan that provides lower transportation cost but both countries are not trading with each other attributable to the political tension.

Tumwebaze and Nahamya (2015) concluded that the export flows of Uganda positively affected by GDPs, GDP per capita of its trading partners, differences in per capita GDP, real exchange rate, official common language, contiguity, as well as the establishment of Common Market for Eastern and Southern Africa (COMESA) and East African Community (EAC) while it negatively affected the Uganda's GDP per capita as well as the geographical distances between Uganda and its trading partners. The results imply that the course of economic integration should be intensified in enhancing the Uganda's export flows. This implies that the transportation costs and adjacency variables investment in transportation and communications infrastructure reduces the business transaction expense and this would hold a major impact on Uganda's exports. Moreover, Eita (2016) revealed that increases in importer's GDP and Namibia's GDP lead to the increase in exports, at the same time as the distance and importer's GDP per capita are associated with the export reduction. The GDP per capita and real exchange rates of Namibia do not hold any impact on the export. Namibia exports more to countries that share a common border and SADC as well as to the European Union. The study shows that there is unexploited export potential to Australia, Belgium, Kenya, Mauritius, Netherlands, Portugal, South Africa and

Switzerland. These results are important for trade policy formulation to ensure that Namibia's export potential is exploited with the intention of enhancing the economic growth and generates employment opportunities.

Cipkute (2016) found that the memberships of Baltic States in EU hold significantly positive impacts on exports of Baltic States to other EU member countries. This study also found that Baltic States consisted of several major trading partners with different income levels, in which the Linder hypothesis is not applicable for the study.

Iliev et al. (2016) estimate the borders in manufacturing trade between Bulgaria and European Union. They found that the trade border between Bulgaria and EU countries was significant before the collapse of communism while the border decreased significantly throughout the period of 1990s and it followed the average sample trend since then.

Iqbal (2016) examine the export trends of Pakistan and found that the economic sizes (as measured by GDP and GDP per capita), membership of South Asian Association for Regional Cooperation (SAARC) and distance hold significant impacts on the Pakistan's export flows while the exchange rate does not hold any significant impacts on the export flows. Lai and Bujang (2016) examine the Malaysia export destinations and its primary trading partners. They found that Malaysia attracted to trade more with the major neighboring countries. They also found that Malaysia trade more with the countries that share the similar preferences in terms of the product consumptions as justified by the Linder theory of trade. The empirical study proven opposite impact in the case of Malaysia, thus allowing Heckscher-Ohlin theory to be emphasized since H-O theory denotes that a particular country will trade with another country with unrelated economic performance level.

Toyin (2016) concluded that the export-led growth theory through agricultural exports is unenforceable for the case of South Africa since there is no causality found between the agricultural export components and GDPs. The non-causality between the agricultural export components and economic growth in South Africa shows that the agricultural export level in earlier times was incompetent in stimulating the economic growth, and the existing economic development in South Africa does not wholly depend on the processed and unprocessed agricultural export level.

Zhang and Zhang (2016) concluded that the significantly positive impacts of continuing liberalization of the aviation industry and low-cost carriers in upholding the bilateral traffic flows for China's domestic aviation market. They also found that the regional industry structures and high-speed rail services also substantially influenced the volumes of the passenger movements.

2.6 Literature Gap

In this study, we applied the gravity model as the main estimation model and the total exports as the dependent variable at the same time as the economic size (as represented by GDP), populations, geographical distances between exporting and importing countries, common languages, common border, landlocked status and island countries as the independent variables, together with the memberships for AFTA and ACFTA as the dummy variables.

Generally, the previous studies identified that the variable of GDP per capita, the differences in per capita GDP, tariff, real exchange rates, real exchange rate volatility, inflation rates, foreign direct investments (FDI) and cultural proximity as the main determinants of the bilateral trade flows. At the same time, the previous studies also

showed that other ASEAN free trade agreements (FTA) namely ASEAN-Australia-New Zealand FTA, ASEAN-Japan FTA, ASEAN-India FTA and ASEAN-Republic of Korea FTA proved to play important roles in stimulating the bilateral trade flows.

As indicated by the previous studies, this study able to identify the major determinants that affecting the bilateral trade flows as well as to identify the impacts of different free trade agreements of ASEAN in stimulating its bilateral trade flows. Thus, additional variables and free trade agreements can be included in the estimation in order to obtain better outcomes on estimation.

CHAPTER 3

METHODOLOGY

3.1 Overall Introduction

This chapter explains the data and methodology used to study the impact of free trade agreements on bilateral trade flows. It begins with data description and data sources. Subsequently, models specification and the key estimation procedures are discussed.

3.2 Data Description

The estimation data includes a period of 16 years (1999-2015) and takes in China and ten ASEAN member countries as exporter countries: Malaysia, Indonesia, Singapore, the Philippines, Thailand, Brunei Darussalam, Lao People's Democratic Republic, Myanmar, Vietnam and Cambodia. There are 79 selected importer countries⁴, from other parts of Asia together with some developed and developing countries.

Additionally, the bilateral manufacturing trade for ASEAN's top ten manufacturing commodities are considered in this study, namely (i) mineral fuels, mineral oils and products of their distillation, bituminous substances and mineral waxes; (ii) organic chemicals; (iii) plastics and articles; (iv) rubber and articles; (v) natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles; (vi) iron and steel; (vii) nuclear reactors, boilers, machinery and mechanical appliances; (viii) electrical machinery and equipment and parts; sound recorders and reproducers, television image and sound recorders and reproducers, and parts & accessories of such articles; (ix) vehicles other than railway or tramway rolling stock and

⁴The selected import countries are the top 79 importer countries of ASEAN countries, which account for 95% of ASEAN's exports.

parts and accessories; and (x) optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus.

3.3 Data Sources

Bilateral aggregate and manufacturing trade, taken from United Nations International Trade Statistics Database (2016), are presented in dollar terms (constant prices⁵). The data of the bilateral manufacturing trade for ASEAN's top ten manufacturing commodities are taken from COMTRADE database, United Nation (2016).

The data of population and GDP are obtained from the World Bank (2016). Common border, common language, landlocked or island countries as well as the distance measures are taken from Centre D'Etudes Prospectives Et D'Informations Internationales (CEPII, 2016).

3.4 Model Specification

Generally, the model specifications, as shown below, are recommended to attain constant and unbiased estimations with the intention of capturing all ignored time-invariant and time-varying heterogeneity between the member and non-member trading countries (Yang & Martinez-Zarzoso, 2014).

This study follows the Vinerian specification of integration effects with an addition of two different groups of FTA dummy variables that explain the trade creation and diversion impacts⁶ in terms of export and import flows, as recommended by Endoh (1999), Soloaga and Winters (2001), Carrere (2006), Magee (2008) and Martinez-Zarzoso et al. (2009), to

⁵The constant prices reflected as Export/US GDP Deflator.

⁶Viner (1950) puts forward the concepts of trade creation and trade diversion to study the economic consequences of customs unions.

determine whether the formation of AFTA and ACFTA has accelerated the trade between the ASEAN member countries without regard for non-ASEAN member countries.

On the whole, this study aims to achieve the unbiased estimates for the dummy variables of ACFTA and AFTA, particularly the trade creation and trade diversion effects within the trade-bloc itself (FTA_{1ijt}), the impacts of trade creation and diversion of bilateral trade between the intra-bloc trading countries (FTA_{2ijt}) and between extra-bloc trading countries (FTA_{3ijt}) by employing the panel data that controls for unobserved heterogeneity of country-and-time and time-invariant country-pair (Yang & Martinez-Zarzoso, 2014).

The basic form of gravity equation justifies the bilateral export volumes from country i to country j . In its basic form, the bilateral trade from country i to country j shown to be influenced by the economic sizes, populations, distance, common border & language, island and landlocked countries. Therefore, this study estimates the following model:

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \varepsilon_{ijt} \quad (3.1)$$

where,

X_{ijt} = Total trade between exporting (i) & importing (j) countries at time period t ;

Y_{it} = GDP of the exporting i country at time period t ;

Y_{jt} = GDP of the importing j country at time period t ;

Pop_{it} = Population of the exporting i country at time period t ;

Pop_{jt} = Population of the and importing j country at time period t ;

$Dist_{ij}$ = Distance between the exporter (i) and importer (j) countries;

$Lang_{ij}$ = Binary (dummy) variable which takes the value of 1 if the two countries share the common language (either official or commercial) and zero if otherwise;

$border_{ij}$ = Binary variable which takes the value of 1 if the two countries share the common border and zero if otherwise;

$llocked_i$ = Binary variable which takes the value of 1 if exporting country i is landlocked (no sea ports or direct sea access) and zero if otherwise;

$llocked_j$ = Binary (dummy) variable which takes the value of 1 if importing country j is landlocked (no sea ports or direct sea access) and zero if otherwise;

$island_i$ = Dummy variable which takes the value of 1 if exporting i country is an island country and zero if otherwise;

$island_j$ = Dummy variable which takes the value of 1 if importing j country is an island country and zero if otherwise; and

ε_{ij} = error terms.

The gravity model of trade predicts that bigger nations with enhanced manufacture ability are expected to attain economies of scale and boost up the export flows accordingly to its comparative advantages. Therefore, the increase in GDP of two trading countries is expected to enhance the volumes of trade flows.

According to Oguledo and Macphee (1994), a large population might indicate large resource endowment, self-reliance and less reliance on global business and trade. Nevertheless, it is likely that a sizeable regional market would hold up the workforces, and thus, creating trade position in wide product varieties. The expected sign of the population coefficient is likely to be positive if the latter argument applies.

Generally, the population coefficient for the exporter nation might hold either negative or positive figure depending on whether the country exports at a smaller amount by presuming that it holds considerable absorption capability or whether a bigger nation state exports more as compared to a smaller nation state (which known as the economies of scale). Martinez-Zarzoso and Nowak-Lehmann (2003) pointed out that the impact of positive absorption occurred provided that the populations of exporting country hold negative effect in its exports, showing that larger nations import more than smaller nations. If the populations of importing country hold positive effect on exports, this shows that larger nations will import more.

The geographical distances can be identified as the proxy variable for natural trade resistance, which is a grouping of transportation costs and travelling time. Generally, longer distance between the trading countries leads to greater expenses and smaller profit margin to the importing nation state. However, shorter distance shows that lower amount of shipping expenses incurred and greater trade amounts generated between two trading partners (Aitken, 1973). Thus, the bilateral trade flows is expected distance to negative impact.

Besides, the language variable is used for controlling the countries that may benefit from having identical languages. Generally, two nations that are sharing a cultural similarity are said to be more incorporated thus leading to similarity in its consumption model. Therefore, the bilateral trade will expand on condition that both the exporting and importing countries are sharing the same languages. Accordingly, common languages are expected to show positive impact to bilateral trade flows.

At the same time, the dummy of common border which included is controlling for countries that share a border will allow them to acquire border trade. Overall, the bilateral

trade flows is expected common border to negative impact. In line with the study of Hapsari & Mangunsong (2006), two nations that are sharing a common border will have lower transportation costs, and thus it holds negative impact on the trade volumes.

On the other hand, the status of landlocked countries is expected to be combined with lower trade amounts as a result of higher trade expenses. Nevertheless, small island countries are expected to trade at higher cost as a result of its limited domestic market and supply of its natural resources. Hence, the landlocked dummy is likely to hold negative impacts on trade flows on condition that the countries without direct sea access trade less.

The error term is presumed to be normally distributed with zero mean and at constant variance for the entire observations. The error term is applied to acquire outside shocks which could have an effect on the bilateral trade flows between countries.

At first, this study estimates Eq. 3.1 through applying a pooled OLS estimation method and excludes the individual country and time dummies from the model. This study applies the elemental model as the measures designed for some other proviso even if the coefficients of pooled OLS are biased and inconsistent as a result of ignoring the heterogeneity and multilateral resistance terms for country and time-specific effects.

In general, AFTA dummies have been included in the basic model to determine the effect of AFTA implementation on trade flows. Therefore, the augmented gravity equations are shown as:

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} \\ & + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 AFTA_1_{ijt} + \\ & \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.2)$$

The equation 3.2 is an augmented gravity model which takes account of AFTA dummies.

Overall, AFTA_1 represents the binary variable that takes the value of 1 when countries i and j are the AFTA member countries in year t , zero if otherwise. The dummy variable of

AFTA_2 takes the value of 1 when country i is the AFTA member countries while country j is a non-member country of AFTA in year t , zero otherwise. AFTA_3 represents a binary variable that takes the value of 1 when country i is a non-member country of AFTA at the same time as country j is the AFTA member countries in year t , zero otherwise. In line with the study of Ghosh and Yamarik (2004), an estimated positive coefficient can be explained as trade creation. It indicates that the two countries trade more with each other. Hence, the extent and statistical significance of the AFTA coefficient proposes the existence of intra-regional trade. On the contrary, negative coefficients imply that they trade less with each other.

Besides, the regressions should estimate accordingly to the aggregate trade in determining the impact of the commencement of ASEAN-China Free Trade Area on intra-ASEAN trade flows. Hence, the augmented gravity equations are shown as:

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln \text{Pop}_{it} + \beta_4 \ln \text{Pop}_{jt} + \beta_5 \ln \text{Dist}_{ij} + \beta_6 \text{Lang}_{ij} + \beta_7 \text{border}_{ij} \\ & + \beta_8 \text{llocked}_{it} + \beta_9 \text{llocked}_{jt} + \beta_{10} \text{island}_{it} + \beta_{11} \text{island}_{jt} + \phi_1 \text{ACFTA_1}_{ijt} + \\ & \phi_2 \text{ACFTA_2}_{ijt} + \phi_3 \text{ACFTA_3}_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.3)$$

ACFTA_1 represents the binary variable that takes the value of 1 when countries i and j are the ACFTA member countries in year t , zero if otherwise. The dummy variable of ACFTA_2 takes the value of 1 when country i is the ACFTA member countries while country j is a non-member country of ACFTA in year t , zero otherwise. ACFTA_3 represents a binary variable that takes the value of 1 when country i is a non-member country of ACFTA at the same time as country j is the ACFTA member countries in year t , zero otherwise.

Generally, ACFTA_1_{ijt} , ACFTA_2_{ijt} and ACFTA_3_{ijt} are dummy variables that determine the particular trade-related impacts of ACFTA.

A positive coefficient of $ACFTA_1_{ijt}$ represents the trade creation impacts and implies that intra-regional trade has been sustained by the free trade agreements and it is higher than the normal trade levels.

$ACFTA_2_{ijt}$ takes a value of one if exporter country i belongs to the ACFTA member countries in year t and destination country j does not belong to the ACFTA countries and zero otherwise. A statistically significant and positive coefficient is categorized as the export creation effect and it implies that regional trade integration leads to export substitutions from ACFTA member countries to non-ACFTA countries. However, negative coefficient indicates the export reduction from member countries to non-member countries and it is known as the export diversion effect.

$ACFTA_3_{ijt}$ takes a value of one if exporter i is a non-member country of ACFTA in year t and destination country j belongs to the ACFTA member countries and zero otherwise. Fundamentally, a statistically significant positive coefficient of $ACFTA_3_{ijt}$ is classified as the import creation effects and it shows the expanded imports from the non-member countries to member countries. On the contrary, a negative coefficient indicates the import diversion effects.

Nevertheless, both the binary FTA variables, AFTA and ACFTA, are included in the elemental model to determine the impacts of both agreements on the intra-trade flows of ASEAN countries. Hence, the augmented gravity equations are presented as:

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} \\ & + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} \\ & + \phi_3 AFTA_3_{ijt} + \varphi_1 ACFTA_1_{ijt} + \varphi_2 ACFTA_2_{ijt} + \varphi_3 ACFTA_3_{ijt} + \epsilon_{ijt} \end{aligned} \quad (3.4)$$

Overall, Endoh (1999) originally introduced the term of export diversion while Balassa (1967) named the term of import diversion. As stated by Carrere (2006) and Martínez-Zarzoso et al. (2009), single observation for intra-bloc trade (ϕ_1) is ineffective in validating whether there is any net trade creation occurred in a free trade area as, that is to say, an increase in the exports of intra-bloc countries ($\phi_1 > 0$) might go along with the extra-bloc import reductions ($\phi_3 < 0$). Therefore, it is required to examine the trade directions and levels between the member and non-member countries (i.e. ϕ_2, ϕ_3). Assumed that $\phi_1 > 0$ and $\phi_2 > 0$, for which it implies that trade creation is related with the export expansions from intra-bloc countries to extra-bloc countries that is known as the pure trade creation. Nevertheless, a positive ϕ_1 with a negative ϕ_2 shows a combination of trade creation and export diversion effects. For the case where $\phi_1 > \phi_2$ occurred, the trade creation is existing with the effects being offset to a certain extent by the impacts of export diversion. On the other hand, the case of $\phi_1 < \phi_2$ shows an important export diversion effect that designates a loss in interests for the member countries. On the whole, the possible trade-related effects under FTA (Soloaga & Winters, 2001) were accurately justified by Martínez-Zarzoso et al. (2009, p.8) and they are stated in Table 3.1 as summary.

Table 3.1: Possible Outcomes of Trade Effects in an FTA

	Export effects		Import effects	
	$\phi_2 > 0$	$\phi_2 < 0$	$\phi_3 > 0$	$\phi_3 < 0$
$\phi_1 > 0$	Pure TC (X)	TC + XD ($\phi_1 > \phi_2$) or XD ($\phi_1 < \phi_2$)	Pure TC (M)	TC + MD ($\phi_1 > \phi_3$) or MD ($\phi_1 < \phi_3$)
$\phi_1 < 0$	XE	XD+XC	ME	MD + MC

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Kepaptsoglou, Karlaftis, and Tsamboulas (2010) revised the related empirical literatures and concluded that the fixed effects model provides better results. Overall, the fixed effects model is chosen to be the preferred model for estimations of this study.

Further, the second specification applied is a model estimated by using the dyadic fixed effects. Besides, the time-fixed effects are also being included in controlling for the macroeconomic impacts, such as international fiscal developments and economic downturn. Note that the demean process of fixed effects model arrives at the cost of the impact of time-invariant factors, such as distance, adjacency, common border or any other economic, political and cultural aspects. Hence, $Dist_{ij}$, $Lang_{ij}$, $border_{ij}$, $llocked_i$, $llocked_j$, $island_i$ and $island_j$ will be omitted as they are fixed over time.

Subsequently, the models are presented as:

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.5)$$

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.6)$$

$$\ln X_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.7)$$

In line with the study of Anderson and van Wincoop (2003), the basic gravity model can be incorrectly specified when disregarding the multilateral resistance terms in the model. Therefore, it is crucial to model the trade resistances, through utilization of the multilateral trade resistances⁷ and country-pair fixed effects to appropriately estimate the model.

By following the methodologies proposed by Baier and Bergstrand (2007), the panel data allows the study controlling for time-varying multilateral resistance terms as well as to

⁷The trade barriers that each country faces when dealing with all its trading partners

keep away from the endogeneity bias arising from gravity equations through setting up the country-time effects while retaining the country-pair fixed effects. So, the gravity equations are presented as:

$$\ln X_{ijt} = \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.8)$$

$$\ln X_{ijt} = \beta_0 + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.9)$$

$$\begin{aligned} \ln X_{ijt} = & \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} \\ & + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \end{aligned} \quad (3.10)$$

In the fourth model, the country-pair fixed effects and country-and-time fixed effects are established to correct for the bias aggravated by the unobserved time-varying multilateral resistance terms. By doing so, the omitted variable bias can be minimized and the actual impacts of free trade agreements on trade flows can be established.

The dependent variable, for objective 2, changed to total manufacturing trade while AFTA and ACFTA dummies still remain unchanged. Generally, the basic form of gravity equation justifies the bilateral manufacturing export volumes from country i to country j , in which it is shown to be influenced by the economic sizes, populations, distance, common border & language, island and landlocked countries. Therefore, this study estimates the following model:

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} \\ & + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \epsilon_{ijt} \end{aligned} \quad (3.11)$$

where,

M_{ijt} = Total manufacturing trade between exporting (i) & importing (j) countries at time period t ;

Y_{it} = GDP of the exporting i country at time period t ;

Y_{jt} = GDP of the importing j country at time period t ;

Pop_{it} = Population of the exporting i country at time period t ;

Pop_{jt} = Population of the and importing j country at time period t ;

$Dist_{ij}$ = Distance between the exporter (i) and importer (j) countries;

$Lang_{ij}$ = Binary (dummy) variable which takes the value of 1 if the two countries share the common language (either official or commercial) and zero if otherwise;

$border_{ij}$ = Binary variable which takes the value of 1 if the two countries share the common border and zero if otherwise;

$llocked_i$ = Binary variable which takes the value of 1 if exporting country i is landlocked (no sea ports or direct sea access) and zero if otherwise;

$llocked_j$ = Binary (dummy) variable which takes the value of 1 if importing country j is landlocked (no sea ports or direct sea access) and zero if otherwise;

$island_i$ = Dummy variable which takes the value of 1 if exporting i country is an island country and zero if otherwise;

$island_j$ = Dummy variable which takes the value of 1 if importing j country is an island country and zero if otherwise; and

ε_{ij} = error terms.

In general, AFTA dummies have been included in the basic model to determine the effect of AFTA implementation on total manufacturing trade flows. Therefore, the augmented gravity equations are shown as:

$$\ln M_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \varepsilon_{ijt} \quad (3.12)$$

The equation 3.12 is an augmented gravity model which takes account of AFTA dummies.

Overall, AFTA_1 represents the binary variable that takes the value of 1 when countries i and j are the AFTA member countries in year t , zero if otherwise. The dummy variable of AFTA_2 takes the value of 1 when country i is the AFTA member countries while country j is a non-member country of AFTA in year t , zero otherwise. AFTA_3 represents a binary variable that takes the value of 1 when country i is a non-member country of AFTA at the same time as country j is the AFTA member countries in year t , zero otherwise.

Besides, the regressions should estimate accordingly to the total manufacturing trade in determining the impact of the commencement of ASEAN-China Free Trade Area on intra-ASEAN total manufacturing trade flows. Hence, the augmented gravity equations are shown as:

$$\ln M_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \varepsilon_{ijt} \quad (3.13)$$

ACFTA_1 represents the binary variable that takes the value of 1 when countries i and j are the ACFTA member countries in year t , zero if otherwise. The dummy variable of ACFTA_2 takes the value of 1 when country i is the ACFTA member countries while country j is a non-member country of ACFTA in year t , zero otherwise. ACFTA_3 represents a binary variable that takes the value of 1 when country i is a non-member country of ACFTA at the same time as country j is the ACFTA member countries in year t , zero otherwise.

Nevertheless, both the binary FTA variables, AFTA and ACFTA, are included in the elemental model to determine the impacts of both agreements on the intra-trade flows in total manufacturing of ASEAN countries. Hence, the augmented gravity equations are presented as:

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} \\ & + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 AFTA_1_{ijt} \\ & + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \\ & \phi_3 ACFTA_3_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.14)$$

Further, the second specification applied is a model estimated by using the dyadic fixed effects. Besides, the time-fixed effects are also being included in controlling for the macroeconomic impacts, such as international fiscal developments and economic downturn.

Subsequently, the models are presented as:

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \\ & \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \end{aligned} \quad (3.15)$$

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \\ & \phi_3 ACFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \end{aligned} \quad (3.16)$$

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \\ & \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \\ & \delta_t + \pi_{ij} + \mu_{ijt} \end{aligned} \quad (3.17)$$

By following the methodologies proposed by Baier and Bergstrand (2007), the panel data allows the study controlling for time-varying multilateral resistance terms as well as to keep away from the endogeneity bias arising from gravity equations through setting up the country-time effects while retaining the country-pair fixed effects. So, the gravity equations are presented as:

$$\ln M_{ijt} = \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.18)$$

$$\ln M_{ijt} = \beta_0 + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.19)$$

$$\ln M_{ijt} = \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} \quad (3.20)$$

In the fourth model, the country-pair fixed effects and country-and-time fixed effects are established to correct for the bias aggravated by the unobserved time-varying multilateral resistance terms. By doing so, the omitted variable bias can be minimized and the actual impacts of free trade agreements on the total manufacturing trade flows can be established. The dependent variable, for objective 3, changed to total manufacturing trade of the selected (disaggregate) manufacturing sectors while AFTA and ACFTA dummies still remain unchanged. This study estimates the following model:

$$\ln MC_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \epsilon_{ijt} \quad (3.21)$$

where,

MC_{ijt} = Total trade for the selected manufacturing commodities between exporting (*i*) & importing (*j*) countries at time period *t*;

Y_{it} = GDP of the exporting *i* country at time period *t*;

Y_{jt} = GDP of the importing *j* country at time period *t*;

Pop_{it} = Population of the exporting *i* country at time period *t*;

Pop_{jt} = Population of the and importing *j* country at time period *t*;

$Dist_{ij}$ = Distance between the exporter (*i*) and importer (*j*) countries;

$Lang_{ij}$ = Binary (dummy) variable which takes the value of 1 if the two countries share the common language (either official or commercial) and zero if otherwise;

$border_{ij}$ = Binary variable which takes the value of 1 if the two countries share the common border and zero if otherwise;

$llocked_i$ = Binary variable which takes the value of 1 if exporting country i is landlocked (no sea ports or direct sea access) and zero if otherwise;

$llocked_j$ = Binary (dummy) variable which takes the value of 1 if importing country j is landlocked (no sea ports or direct sea access) and zero if otherwise;

$island_i$ = Dummy variable which takes the value of 1 if exporting i country is an island country and zero if otherwise;

$island_j$ = Dummy variable which takes the value of 1 if importing j country is an island country and zero if otherwise; and

ε_{ij} = error terms.

In general, AFTA dummies have been included in the basic model to determine the effect of AFTA implementation on manufacturing trade flows for the selected manufacturing commodities. Therefore, the augmented gravity equations are shown as:

$$\begin{aligned} \ln MC_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \\ & \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \phi_1 AFTA_1_{ijt} \\ & + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.22)$$

The equation 3.22 is an augmented gravity model which takes account of AFTA dummies.

Overall, AFTA_1 represents the binary variable that takes the value of 1 when countries i and j are the AFTA member countries in year t , zero if otherwise. The dummy variable of AFTA_2 takes the value of 1 when country i is the AFTA member countries while country j is a non-member country of AFTA in year t , zero otherwise. AFTA_3 represents a binary variable that takes the value of 1 when country i is a non-member country of AFTA at the same time as country j is the AFTA member countries in year t , zero otherwise.

Besides, the regressions should estimate accordingly to the manufacturing trade flows for the selected manufacturing commodities in determining the impact of the commencement

of ASEAN-China Free Trade Area on intra-ASEAN manufacturing trade flows. Hence, the augmented gravity equations are shown as:

$$\begin{aligned} \ln MC_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \\ & \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \\ & \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.23)$$

ACFTA_1 represents the binary variable that takes the value of 1 when countries *i* and *j* are the ACFTA member countries in year *t*, zero if otherwise. The dummy variable of ACFTA_2 takes the value of 1 when country *i* is the ACFTA member countries while country *j* is a non-member country of ACFTA in year *t*, zero otherwise. ACFTA_3 represents a binary variable that takes the value of 1 when country *i* is a non-member country of ACFTA at the same time as country *j* is the ACFTA member countries in year *t*, zero otherwise.

Nevertheless, both the binary FTA variables, AFTA and ACFTA, are included in the elemental model to determine the impacts of both agreements on the intra-trade flows for the selected manufacturing commodities. Hence, the augmented gravity equations are presented as:

$$\begin{aligned} \ln MC_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Dist_{ij} + \beta_6 Lang_{ij} + \\ & \beta_7 border_{ij} + \beta_8 llocked_{it} + \beta_9 llocked_{jt} + \beta_{10} island_{it} + \beta_{11} island_{jt} + \\ & \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_4 ACFTA_1_{ijt} + \\ & \phi_5 ACFTA_2_{ijt} + \phi_6 ACFTA_3_{ijt} + \varepsilon_{ijt} \end{aligned} \quad (3.24)$$

Further, the second specification applied is a model estimated by using the dyadic fixed effects. Besides, the time-fixed effects are also being included in controlling for the macroeconomic impacts, such as international fiscal developments and economic downturn. Subsequently, the models are presented as:

$$\ln MC_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.25)$$

$$\ln MC_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.26)$$

$$\ln MC_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \delta_t + \pi_{ij} + \mu_{ijt} \quad (3.27)$$

By following the methodologies proposed by Baier and Bergstrand (2007), the panel data allows the study controlling for time-varying multilateral resistance terms as well as to keep away from the endogeneity bias arising from gravity equations through setting up the country-time effects while retaining the country-pair fixed effects. So, the gravity equations are presented as:

$$\ln MC_{ijt} = \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.28)$$

$$\ln MC_{ijt} = \beta_0 + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.29)$$

$$\ln MC_{ijt} = \beta_0 + \phi_1 AFTA_1_{ijt} + \phi_2 AFTA_2_{ijt} + \phi_3 AFTA_3_{ijt} + \phi_1 ACFTA_1_{ijt} + \phi_2 ACFTA_2_{ijt} + \phi_3 ACFTA_3_{ijt} + \pi_{ij} + \epsilon_{it} + \psi_{jt} + \mu_{ijt} \quad (3.30)$$

In the fourth model, the country-pair fixed effects and country-and-time fixed effects are established to correct for the bias aggravated by the unobserved time-varying multilateral resistance terms. By doing so, the omitted variable bias can be minimized and the actual impacts of free trade agreements on the manufacturing trade flows for the selected manufacturing commodities can be established.

3.5 Panel Data Modeling

The variables of the equivalent cross-sectional unit are observed over time in panel data. Let $i = 1; \dots; N$ be an index of the cross-sectional unit and $t = 1; \dots; T_i$ be an index of time for unit i .

We have an unbalanced panel on condition that each of the individual unit contains an unrelated total observation over time, $T_i \neq T_j$. The total observations for unbalanced panel are $n = \sum_{i=1}^N T_i$. On the other hand, we have balanced panel if each cross-section subject (a person, a firm, or a country) hold the similar number of observations, $T_i = T$, where $i = 1; \dots; N$ and the total observations are $n = NT$. Overall, it is known as a short panel if $N > T$ while it is known as a long panel if $N < T$ (Cardoso, 2014).

Assuming that we estimate the following model:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \dots + \beta_k X_{kit} + \varepsilon_{it}, \quad (3.31)$$

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

Note that the double-subscripted notation denotes that we are handling a panel data.

Generally, this is a pooled regression model since all the observations are pooled into the regression for Ordinary Least Square (OLS). This model is similar for all the individuals assuming that the coefficients (together with the intercepts). Likewise, the regressor is designed to comply with the exogeneity assumption in order for the estimation of OLS to be constant and unbiased.

Assume that each of the individual i is time-invariant and holds unique effects on the dependent variable. Those impacts were unique to each individual which included in error term, ε_{it} , only if the pooled regression model does not reflect on the heterogeneity across individual variables and it assumed the similar coefficients for all individuals. In this case,

the explanatory variables are said to be correlated with error terms. Accordingly, the pooled OLS estimations will be biased and not homogeneous (Kim, 2012).

In general, the joint significance test is applied to choose between the pooled ordinary least squares and panel fixed effect model. A low probability is valid against the null hypothesis that the pooled OLS model is adequate, supporting the use of fixed effects model. If the null hypothesis is rejected, the fixed effect regression model is appropriate (Embaya, 2013). Furthermore, the Hausman test statistic can be applied as the method in determining the preferred estimation model, either the fixed effect or random effect model, for the study, where the null hypothesis stated that the preferred model is random effects model versus fixed effects model (Henriques, Bryan & Ivan, 2013). If there are no omitted variables in the model, then the random effects model will be the preferred model for estimation. Generally, this model generates unbiased estimations and minimum standard errors. In the case where the omitted variables are identified and correlated with the variables in the model, the fixed effects models present an important method in controlling the omitted variable partiality. In fixed effect model, any effects that the omitted variables hold on the subject matter at one time will have the same impact at a later time (William, 2017).

Besides, the Breusch-Pagan Lagrange multiplier test is applied to identify whether the pooled model or the panel random effect model are the appropriate estimation model. If the null hypothesis is not rejected, the pooled regression model is appropriate estimation model (Embaya, 2013).

Besides, it is common that the variables that take control of the time-invariant individual specific impacts overlooked in the data. However, we are able to measure these effects in some way through applying the following model:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \cdots + \beta_k X_{kit} + \varepsilon_{it}. \quad (3.32)$$

The intercept term holds subscript i to reveal that the intercepts for each individual could be different. The fixed effect model considers the heterogeneity between individual variables by permitting each variable to have its individual intercept value. The term α_i could be erratically correlated with X_{it} , and the pooled OLS regressions will generate partial and ambiguous estimates due to the violation of the assumption for exogeneity only if the fixed effects model is correct (Kim, 2012).

Hence, the unassuming approach of stipulating the fixed effects model is to generate the same number of dummy variables as in the individuals in panel data, which can be presented below.

$$Y_{it} = \alpha_i + \alpha_2 D_{2i} + \cdots + \alpha_N D_{Ni} + \beta_1 X_{1it} + \cdots + \beta_k X_{kit} + \varepsilon_{it}. \quad (3.33)$$

Take note that we must withdraw a dummy variable on one individual variable in avoiding the occurrence of perfect multicollinearity.

In general, this approach is identified as the least-squares dummy variable (LSDV) as it is the estimator for OLS with sufficient dummies. The constant estimations with LSDV model are achieved as the error terms are independent across both the time and individual extents of panel data. Furthermore, we could do the estimation in pointing out if the fixed effects model produces different analyses from the pooled OLS estimation by employing the F-test statistic. We can apply the within estimator if N is too large and we control the fixed effects parameters, which also identified as the parameters of dummies in LSDV model, as nuisance parameters (Kim, 2012).

However, we can apply a different estimator in estimating the parameters of fixed effects model over again by ignoring the nuisance parameters (Crisci, Antonello & Angelo, 2014). This estimator yields consistent estimations on β in fixed effects model although the coefficients of time-invariant regressors are remained unidentified.

To examine whether there is a multicollinearity problem in the model, this study applies the variance inflation factor (VIF) for all independent variables. By applying the Breusch-Pagan-Godfrey heteroscedasticity test, we find the evidence of heteroscedasticity. The Breusch-Godfrey Serial Correlation Lagrange multiplier test generally applied to identify the existence of the autocorrelation problem. The Breusch-Godfrey Serial Correlation Lagrange multiplier test is the statistical test that applied to test for the presence of the serial correlation. Therefore, this test is to be conducted to identify the presence of the autocorrelation problem in the model (Embaya, 2013).

3.6 Concluding Remarks

Generally, the gravity model applied in this study defines the relationship between bilateral trade to primary factors such as GDP, populations and distance. Rather than extending the gravity model beyond the foundation in an improvised method as found in some previous studies, this study extends the gravity model by including some appropriate additional factors that are found to be robust in the sensitivity analysis of the gravity models, which had been conducted by Yamarik and Ghosh (2005). These factors include the factor endowment as denoted by population, geographical distance and factors as signified by adjacency of one nation state to another and regional trade arrangements, in which it represented by ASEAN memberships.

CHAPTER 4

EMPIRICAL RESULTS

4.1 Overview

In this chapter, the empirical results are divided into three main sections that consist of the estimations for aggregate trade, total manufacturing trade, and the designated (disaggregate) manufacturing segments.

Since the data sample includes the bilateral trade flows between 79 trading partners of ASEAN and ASEAN countries, we had employed the Hausman test statistic to select the preferred model for estimation for this study. Generally, the results of Hausman test statistic provide evidence that the preferred estimation model of this study is the fixed effects model.

4.2 Panel Data Gravity Estimations for Total Aggregate Trade

The estimated models are summarized in Table 4.1. The result of the variance inflation factors (VIF) for the variables included in the model, as presented in Table 4.2, is between (1.12 and 9.03). This indicates that no multicollinearity problems in the model, since all VIF values are less than 10 (Gujarati, 2003). Therefore, it can be concluded that there is no multicollinearity problem between the independent variables. Depending on the results of the Breusch-Pagan-Godfrey heteroskedasticity test in Table 4.3, the F-statistic is 5003.21 (p-value: 0.000) and Chi-square statistics is 8098.14, (p-value: 0.000). The results find evidence of heteroskedasticity in the model. Based on the results of the Breusch-Godfrey Serial Correlation LM test, as presented in Table 4.4, the F-statistic is 17520.88 (p-value:

0.000) and LM statistics is 15468.11, (p-value: 0.000). The results find evidence of strong evidence of AR (2) serial correlation in the model as the null hypothesis⁸ is rejected.

This study estimates the equations by applying a pooled OLS method and excludes the time and individual country dummy variables from the model, as indicated in Column 1. This study applies this original model as the benchmark for some other specifications though the coefficients of pooled OLS can be biased and contradictory as a result of disregarding the heterogeneity and multilateral resistance terms on the time and country-specific effects. A model with time and dyadic random effects is presented in Column 2. Provided that fixed effects model is the appropriate estimation model for this study⁹, the model with dyadic fixed effects is shown in Column 3. In addition, the time fixed effects are also included in controlling for the macroeconomic effects. The variables of *DIST_{ij}*, *LANG_{ij}*, *BORDER_{ij}*, *LLOCKED* and *ISLAND* will be eliminated from the estimation as they are fixed over time. In the fourth model, the study introduces the country-and-time fixed effects and country-pair fixed effects to minimize the omitted variable bias and filters the actual effects of the free trade agreements, namely AFTA and ACFTA, on the bilateral aggregate trade flows.

In between models 3 and 4 which have been shown more appropriate than models 1 and 2, model 3 is better by the adjusted R-square and root-mean-square error (RMSE) criteria between the two estimation models, as shown in the Table 4.1.

⁸ The null hypothesis of the test is that there is no serial correlation in the residuals up to the specified order.

⁹ The study applies Hausman test to verify whether the time-invariant unobserved heterogeneity is orthogonal to the time-varying element of the error term and the null hypothesis was rejected, and thus invalidating the random effects specification.

4.2.1 Time and dyadic fixed effects

From the model 3 shown in Table 4.1, the bilateral trade flows are estimated the economic sizes (as proxies by GDP) of exporting and importing countries to negative and positive effects respectively. The coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.01 percent reduction and 0.72 percent increase in total aggregate trade of exporting and importing countries respectively.

In line with the study of Martinez-Zarzoso (2003), the bilateral trade flows are estimated the populations of exporting and importing countries to positive impacts. The significantly positive coefficients of population variables imply that a percent increase of populations will result in 1.77 and 0.43 percent increase in the bilateral aggregate trade respectively for exporting and importing countries.

The results for time and dyadic fixed effects model, as presented in Column (3), reported that the positive coefficients of AFTA and ACFTA dummies show that AFTA and ACFTA has generated pure trade creation effects respectively.

4.2.2 Time-varying multilateral resistance terms and country-pair fixed effects

The results for time-varying multilateral resistance terms and country-pair fixed effects model, as presented in Column (4) of Table 4.1, that the coefficients of $AFTA_1_{ijt}$ and $AFTA_2_{ijt}$ indicate that AFTA increased the bilateral aggregate trade between its member countries and non-member countries respectively. The negative coefficient of $AFTA_3_{ijt}(\phi_3 = -0.0688)$ implies that the non-member trading countries of AFTA reduced its bilateral aggregate trade to AFTA member countries. The positive coefficients of ACFTA dummies indicate that ACFTA has generated pure trade creation effects.

Table 4.1: Panel Data Gravity Estimations for Total Aggregate Trade

	(1) Pooled OLS	(2) t, ij, RE	(3) t, ij, FE	(4) it, ij, ij, FE
$\ln Y_{it}$	1.2331 [84.17]***	-0.013 [-0.87]	-0.0096 [-0.63]	
$\ln Y_{jt}$	0.6115 [42.66]***	0.6424 [62.20]***	0.7169 [69.80]***	
$\ln POP_{it}$	0.4534 [23.72]***	1.7650 [6.25]***	1.7677 [6.08]***	
$\ln POP_{jt}$	0.4826 [26.01]***	0.4633 [35.41]***	0.4293 [34.53]***	
$\ln DIST_{ij}$	-0.8798 [-16.88]***	-0.6032 [-12.35]***		
$LANG_{ij}$	2.2143 [16.99]***	1.1502 [11.80]***		
$BORDER_{ij}$	-0.5120 [-2.80]***	0.3907 [3.00]***		
$LLOCKED_i$	-2.818 [-28.17]***	0.4427 [0.57]		
$LLOCKED_j$	-1.7032 [-17.03]***	-1.7472 [-24.97]***		
$ISLAND_i$	1.0830 [14.90]***	-1.0022 [-1.26]		
$ISLAND_j$	0.6987 [9.69]***	-0.8086 [16.00]***		
$AFTA_1_{ijt} (\phi_1)$	-0.2896 [-1.31]	3.2890 [6.97]***	5.6665 [12.15]***	5.6193 [12.04]***
$AFTA_2_{ijt} (\phi_2)$	-0.9154 [-5.87]***	2.3380 [5.31]***	3.2628 [7.25]***	4.2911 [9.68]***
$AFTA_3_{ijt} (\phi_3)$	-0.5763 [-3.57]***	-0.0709 [-0.27]	0.9588 [3.56]***	-0.0688 [-0.21]**
$ACFTA_1_{ijt} (\phi_1)$	-0.9240 [-4.39]***	1.2782 [6.51]***	1.1873 [5.88]***	3.9461 [17.64]***
$ACFTA_2_{ijt} (\phi_2)$	-0.7840 [-9.35]***	1.4810 [10.67]***	1.3137 [9.21]***	3.1639 [21.85]***
$ACFTA_3_{ijt} (\phi_3)$	-0.4309 [-61.63]***	1.0979 [7.89]***	0.9041 [6.33]***	3.2427 [22.36]***
Constant	43.6249 [-61.63]***	-43.0474 [-8.74]***	-50.7777 [-10.07]***	4.4044 [10.00]***
Breusch-Pagan LM test	2200000 [0.000]***	17.23 [0.000]***		
Hausman test		0.000 [0.000]***		
AIC		142079.9	141520.9	
N	27676	27676	27676	27676
R-squared	0.5034	0.7584	0.7444	0.6287
Adj R-Squared	0.5031	0.7574	0.7434	0.6274
RMSE	4.4604	3.1166	3.2051	3.8626
Wald Test for the exclusion of:	χ^2 [p-value]			
AFTA	41.56 [0.000]	38.92 [0.000]	30.31 [0.000]	197.64 [0.000]
ACFTA	16.59 [0.000]	34.38 [0.000]	194.43 [0.000]	112.33 [0.000]

Note: Robust and clustered standard errors used to compute t-values. t-values are reported below each coefficient. Estimation uses White's heteroskedasticity-consistent covariance matrix estimator. Data sources: Sectoral exports (dependent variable) are from UNCTAD database and are in thousand US dollar. AFTA_1 is a binary variable that takes the value of 1 when countries i and j are the AFTA member countries in year t, zero otherwise. AFTA_2 is a binary variable that takes the value of 1 when country i is the AFTA member countries and j is the non-AFTA member countries in year t, zero otherwise. AFTA_3 is a dummy variable that takes the value of 1 when country i is the non-AFTA member countries and j is the AFTA members in year t, zero otherwise. ACFTA_1 is a dummy variable that takes the value of 1 when countries i and j are the member countries of ACFTA in year t, zero otherwise. ACFTA_2 is a dummy variable that takes the value of 1 when country i is the member countries of ACFTA and j is the non-ACFTA member countries in year t, zero otherwise. ACFTA_3 is a dummy variable that takes the value of 1 when country i is the non-ACFTA member countries and j is the ACFTA member countries in year t, zero otherwise. * p < 10% level of significance. ** p < 5% level of significance. *** p < 1% level of significance.

Table 4.2: The Variance Inflation Factor (VIF) – Total Aggregate Trade

Variables	Centered VIF
$\ln Y_{it}$	1.693810
$\ln Y_{jt}$	1.621465
$\ln POP_{it}$	1.786206
$\ln POP_{jt}$	1.682102
$\ln DIST_{ij}$	1.725722
$LANG_{ij}$	1.104353
$BORDER_{ij}$	1.272978
$LLOCKED_i$	1.121784
$LLOCKED_j$	1.121751
$ISLAND_i$	1.369077
$ISLAND_j$	1.346616
$AFTA_1_{ijt} (\phi_1)$	3.565115
$AFTA_2_{ijt} (\phi_2)$	8.300701
$AFTA_3_{ijt} (\phi_3)$	9.030118
$ACFTA_1_{ijt} (\varphi_1)$	1.397805
$ACFTA_2_{ijt} (\varphi_2)$	1.348232
$ACFTA_3_{ijt} (\varphi_3)$	1.347216

Table 4.3: The Results of Breusch-Pagan-Godfrey Heteroskedasticity – Total Aggregate Trade

F-statistic	Prob. F-statistic	Chi-Sq-statistic	Prob>chi2
5003.21	0.000	8098.14	0.000

Table 4.4: The Results of Breusch-Godfrey Serial Correlation LM Test– Total Aggregate Trade

F-statistic	Prob. F-statistic	LM-statistic	Prob>chi2
17520.88	0.000	15468.11	0.000

4.3 Panel Data Gravity Estimations for Total Manufacturing Trade

The panel data gravity estimation with pooled OLS method, time & dyadic random effects model, time & dyadic fixed effects model, as well as the time-varying multilateral resistance terms & country-pair fixed effects model is applied to analyze the impacts of AFTA and ACFTA agreements on overall manufacturing trade flows. The results are presented in Table 4.5.

The result of the variance inflation factors (VIF) for the variables included in the model, as reported in Table 4.6, is between (1.12 and 9.03). This indicates that no multicollinearity problems in the model, since all VIF values are less than 10 (Gujarati, 2003). Therefore, it can be concluded that there is no multicollinearity problem between the independent variables. Depending on the results of the Breusch-Pagan-Godfrey heteroskedasticity test in Table 4.7, the F-statistic is 5161.62 (p-value: 0.000) and Chi-square statistics is 8978.43, (p-value: 0.000). The results find evidence of heteroskedasticity in the model. Based on the results of the Breusch-Godfrey Serial Correlation LM test in Table 4.8, the F-statistic is 16064.18 (p-value: 0.000) and LM statistics is 14873.20, (p-value: 0.000). The results find evidence of strong evidence of AR (2) serial correlation in the model as the null hypothesis¹⁰ is rejected.

This study estimates the equations by applying a pooled OLS method and excludes the time and individual country dummy variables from the model, as indicated in Column 1. This study applies this original model as the benchmark for some other specifications though the coefficients of pooled OLS can be biased and contradictory as a result of disregarding the heterogeneity and multilateral resistance terms on the time and country-specific effects. A model with time and dyadic random effects is presented in Column 2.

¹⁰ The null hypothesis of the test is that there is no serial correlation in the residuals up to the specified order.

Provided that fixed effects model is the appropriate estimation model for this study¹¹, the model with dyadic fixed effects is shown in Column 3. In addition, the time fixed effects are also included in controlling for the macroeconomic effects. The variables of *DIST_{ij}*, *LANG_{ij}*, *BORDER_{ij}*, *LLOCKED* and *ISLAND* will be eliminated from the estimation as they are fixed over time. In the fourth model, the study introduces the country-and-time fixed effects and country-pair fixed effects to minimize the omitted variable bias and filters the actual effects of the free trade agreements, namely AFTA and ACFTA, on the bilateral manufacturing trade flows.

In between models 3 and 4 which have been shown more appropriate than models 1 and 2, model 3 is better by the adjusted R-square and root-mean-square error (RMSE) criteria between the two estimation models, as shown in the Table 4.5.

4.3.1 Time and dyadic fixed effects

Overall, total manufacturing trade flows are estimated the economic sizes (as proxies by GDP) of exporting and importing countries to negative and positive effects correspondingly. The coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.014 percent reduction and 0.660 percent increase in total manufacturing trade of exporting and importing countries respectively.

In line with the study of Martinez-Zarzoso (2003), total manufacturing trade flows are estimated the populations of exporting and importing countries to positive effects. The significantly positive coefficients of population variables imply that a percent increase of populations will result in 1.723 and 0.395 percent increase in the bilateral aggregate trade respectively for exporter and importer countries.

¹¹The study applies Hausman test to verify whether the time-invariant unobserved heterogeneity is orthogonal to the time-varying element of the error term and the null hypothesis was rejected, and thus invalidating the random effects specification.

The results for time and dyadic fixed effects model, as presented in Column (3), reported that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade creation effects respectively.

4.3.2 Time-varying multilateral resistance terms and country-pair fixed effects

The results for time-varying multilateral resistance terms and country-pair fixed effects model, as presented in Column (4), that the coefficients of $AFTA_1_{ijt}$ and $AFTA_2_{ijt}$ indicate that AFTA increased the total manufacturing trade between its member countries and non-member countries respectively. The negative coefficient of $AFTA_3_{ijt}$ implies that the non-member trading countries of AFTA reduced its overall manufacturing trade to AFTA member countries. The positive coefficients of ACFTA dummies indicate that ACFTA has generated pure trade creation effects.

Table 4.5: Panel Data Gravity Estimations for Total Manufacturing Trade

	(1) Pooled OLS	(2) t, ij, RE	(3) t, ij, FE	(4) it, ij, ij, FE
$\ln Y_{it}$	1.1234 [78.03]***	-0.0171 [-1.27]	-0.0140 [-1.01]	
$\ln Y_{jt}$	0.4627 [32.70]***	0.5918 [63.16]***	0.6603 [70.64]***	
$\ln POP_{it}$	0.6665 [35.03]***	1.7205 [6.71]***	1.7232 [6.52]***	
$\ln POP_{jt}$	0.5865 [31.76]***	0.4217 [35.52]***	0.3952 [34.92]***	
$\ln DIST_{ij}$	-0.7891 [-16.04]***	-0.6239 [-14.08]***		
$LANG_{ij}$	2.1224 [17.25]***	1.1600 [13.11]***		
$BORDER_{ij}$	-0.1877 [-1.09]	0.3390 [2.87]***		
$LLOCKED_i$	-3.0500 [-32.31]***	0.7175 [1.03]		
$LLOCKED_j$	-1.6866 [-17.87]***	-1.6945 [-26.69]***		
$ISLAND_i$	0.8665 [12.63]***	-1.0707 [-1.49]		
$ISLAND_j$	0.6065 [8.92]***	0.7119 [15.52]***		
$AFTA_1_{ijt} (\phi_1)$	0.4835 [2.31]**	4.6660 [10.89]***	7.0409 [16.58]***	7.0852 [16.62]***
$AFTA_2_{ijt} (\phi_2)$	-0.1931 [-1.31]	3.9571 [9.90]***	4.8916 [11.94]***	5.9262 [14.63]***
$AFTA_3_{ijt} (\phi_3)$	-0.0469 [-0.31]	-0.0761 [-0.32]	0.9241 [3.76]***	-0.0225 [-0.08]
$ACFTA_1_{ijt} (\phi_1)$	-1.0631 [-5.35]***	1.3199 [7.40]***	1.2432 [6.77]***	3.7912 [18.55]***
$ACFTA_2_{ijt} (\phi_2)$	0.8326 [-10.52]***	1.5735 [12.49]***	1.4173 [10.91]***	3.1285 [23.64]***
$ACFTA_3_{ijt} (\phi_3)$	-0.4433 [-5.59]***	1.2225 [9.69]***	1.0429 [8.02]***	3.2079 [24.21]***
Constant	-47.589 [-68.91]***	-39.982 [-8.94]***	-47.890 [-10.43]***	4.4509 [11.06]***
Breusch-Pagan LM test	2900000 [0.000]***	17.23 [0.000]***		
Hausman test		0.000 [0.000]***		
AIC		136792.2	136217.4	
N	27676	27676	27676	27676
R-squared	0.5297	0.7883	0.7747	0.6702
Adj R-Squared	0.5294	0.7875	0.7738	0.6690
RMSE	4.2085	2.8281	2.9176	3.5293
Wald Test for the exclusion of:	χ^2 [p-value]			
AFTA	53.09 [0.0000]	52.43 [0.0000]	40.90 [0.0000]	228.88 [0.0000]
ACFTA	6.41 [0.0002]	66.01 [0.0000]	226.43 [0.0000]	195.45 [0.0000]

Note: Robust and clustered standard errors used to compute t-values. t-values are reported below each coefficient. Estimation uses White's heteroskedasticity-consistent covariance matrix estimator. Data sources: Sectoral exports (dependent variable) are from UNCTAD database and are in thousand US dollar. AFTA_1 is a binary variable that takes the value of 1 when countries i and j are the AFTA member countries in year t, zero otherwise. AFTA_2 is a binary variable that takes the value of 1 when country i is the AFTA member countries and j is the non-AFTA member countries in year t, zero otherwise. AFTA_3 is a dummy variable that takes the value of 1 when country i is the non-AFTA member countries and j is the AFTA members in year t, zero otherwise. ACFTA_1 is a dummy variable that takes the value of 1 when countries i and j are the member countries of ACFTA in year t, zero otherwise. ACFTA_2 is a dummy variable that takes the value of 1 when country i is the member countries of ACFTA and j is the non-ACFTA member countries in year t, zero otherwise. ACFTA_3 is a dummy variable that takes the value of 1 when country i is the non-ACFTA member countries and j is the ACFTA member countries in year t, zero otherwise. * p < 10% level of significance. ** p < 5% level of significance. *** p < 1% level of significance.

Table 4.6: The Variance Inflation Factor (VIF) – Total Manufacturing Trade

Variables	Centered VIF
$\ln Y_{it}$	1.693810
$\ln Y_{jt}$	1.621465
$\ln POP_{it}$	1.786206
$\ln POP_{jt}$	1.682102
$\ln DIST_{ij}$	1.725722
$LANG_{ij}$	1.104353
$BORDER_{ij}$	1.272978
$LLOCKED_i$	1.121784
$LLOCKED_j$	1.121751
$ISLAND_i$	1.369077
$ISLAND_j$	1.346616
$AFTA_1_{ijt} (\phi_1)$	3.565115
$AFTA_2_{ijt} (\phi_2)$	8.300701
$AFTA_3_{ijt} (\phi_3)$	9.030118
$ACFTA_1_{ijt} (\varphi_1)$	1.397805
$ACFTA_2_{ijt} (\varphi_2)$	1.348232
$ACFTA_3_{ijt} (\varphi_3)$	1.347216

Table 4.7: The Results of Breusch-Pagan-Godfrey Heteroskedasticity – Total Manufacturing Trade

F-statistic	Prob. F-statistic	Chi-Sq- statistic	Prob>chi2
5161.62	0.000	8978.43	0.000

Table 4.8: The Results of Breusch-Godfrey Serial Correlation LM Test – Total Manufacturing Trade

F-statistic	Prob. F-statistic	LM-statistics	Prob>chi2
16064.18	0.000	14873.20	0.000

4.4 Panel Data Gravity Estimations for Manufacturing Trade of Selected Manufacturing Commodities

The panel data gravity estimation with country-and-time and country-pair fixed effects are used to analyze the impacts of AFTA and ACFTA agreements on different manufacturing commodities. The results are presented in Table 4.12 to Table 4.21. Based on the outcomes of the Wald test statistic, both the AFTA and ACFTA agreements will have to be included in the estimation model in estimating the impacts on the manufacturing trade for all types of manufactured products.

Overall, the result of the variance inflation factors (VIF) for the variables included in the model for the manufacturing commodities under studied, as reported in Table 4.10, is between 1.12 and 9.03. This indicates that no multicollinearity problems in the model, since all VIF values are less than 10 (Gujarati, 2003). Therefore, it can be concluded that there is no multicollinearity problem between the independent variables.

Depending on the results of the Breusch-Pagan-Godfrey heteroskedasticity test, as reported in Table 4.11, the F-statistic is ranging from 186.59 to 5590.42 with p-value of 0.000 and Chi-square statistics is ranging from 212.23 to 13296.54 with p-value of 0.000. The results find evidence of heteroskedasticity in the model.

Based on the results of the Breusch-Godfrey Serial Correlation LM test in Table 4.12, the F-statistic is ranging from 12044.78 to 20537.97 with p-value of 0.000 and LM statistics is 12884.25 to 16539.87 with p-value of 0.000. The results find evidence of strong evidence of AR (2) serial correlation in the model as the null hypothesis is rejected.

Accordingly, the estimation results, which based on the different group of manufactured products, will be discussed below.

4.4.1 Mineral fuels, mineral oils & products of their distillation; bituminous substances; mineral waxes

The coefficients of the GDP variables, as shown in Table 4.9, indicate that a percent increase in GDP will lead to 0.004 percent and 0.559 percent increase in the manufacturing trade of mineral fuels, mineral oils & products of its distillation; bituminous substances; mineral waxes of exporting and importing countries respectively. In line with the study of Martinez-Zarzoso (2003), the populations of exporter and importer countries to positive impacts on the manufacturing trade flows. The significantly positive coefficients of population variables imply that a percent increase of populations will result in 1.479 and 0.341 percent increase in the bilateral aggregate trade respectively for exporter and importer countries.

The results for time and dyadic fixed effects model show that the positive coefficients of AFTA dummies indicate that AFTA has generated pure trade creation impacts. On the other hand, the positive coefficients of $ACFTA_1_{ijt}$ and $ACFTA_3_{ijt}$ show that ACFTA has generated trade creation and pure import creation effects while the negative coefficient of $ACFTA_2_{ijt}$ indicates that ACFTA member countries reduced the manufacturing export for this manufactured product to its non-member countries. The impacts of AFTA and ACFTA on mineral fuels, mineral oils & products of its distillation; bituminous substances; mineral waxes are summarized in Table 4.12.

4.4.2 Organic chemicals

Overall, the coefficients of GDP variables, as shown in Table 4.9, indicate that a percent increase in GDP will lead to 0.012 percent reduction and 0.535 percent increase in manufacturing trade of organic chemicals for exporting and importing countries respectively.

The significantly positive coefficients of population variables imply that a percent increase of populations will result in 2.902 and 0.487 percent increase in the bilateral aggregate trade respectively for exporter and importer countries.

The results for time and dyadic fixed effects model show that the positive coefficients of AFTA dummies indicate that AFTA has generated pure trade creation effects. On the other hand, the positive coefficient of $ACFTA_1_{ijt}$ indicates that ACFTA has generated trade creation effects. However, the negative coefficient of $ACFTA_2_{ijt}$ indicates that ACFTA has generated trade creation and export diversion effects with the domination of export creation effects between its trade and non-ASEAN member countries while the negative coefficient of $ACFTA_3_{ijt}$ indicates that ACFTA has generated trade creation and import diversion effects with the domination of import creation effects for the trade between non-ASEAN member countries and ASEAN member countries. The impacts of AFTA and ACFTA on organic chemicals are summarized in Table 4.13.

4.4.3 Plastics and articles

The coefficients of the GDP variables, as shown in Table 4.9, indicate that a percent increase in GDP will lead to 0.026 percent reduction and 0.528 percent increase in the total manufacturing trade of plastics & articles for exporting and importing countries respectively.

The significantly positive coefficients of population variables imply that a percent increase of populations will result in 0.750 and 0.399 percent increase in the manufacturing trade correspondingly for both the exporting and importing countries.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has produced pure trade creation effects. The impacts of AFTA and ACFTA on plastics & articles are summarized in Table 4.14.

4.4.4 Rubber and articles

Overall, the bilateral trade flows are estimated the economic sizes (as proxies by GDP) of exporting and importing countries to negative and positive effects respectively. The coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.014 percent reduction and 0.471 percent increase in total manufacturing trade of plastics & articles for the exporter and importer countries respectively.

The coefficients of the population variables indicate that a percent increase in populations will lead to 0.402 percent reduction and 0.293 percent increase in total manufacturing trade of plastics & articles for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade

creation effects. The impacts of AFTA and ACFTA on rubber & articles are summarized in Table 4.15.

4.4.5 Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles

As shown in Table 4.9, the coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.001 percent reduction and 0.633 percent increase in total manufacturing trade of natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal & articles for exporting and importing countries respectively.

The coefficients of the population variables indicate that a percent increase in populations will lead to 0.577 percent reduction and 0.0006 percent increase in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model show that the positive coefficients of $AFTA_{1_{ijt}}$ indicates that AFTA has generated trade creation effects. However, the positive coefficient of $AFTA_{2_{ijt}}$ indicates that AFTA has generated pure trade creation effects between its trade and non-ASEAN member countries while negative coefficient of $AFTA_{3_{ijt}}$ indicates that AFTA has generated trade creation and import diversion effects with the domination of import creation effects for the trade between non-ASEAN member countries and ASEAN member countries.

The results also show that the positive coefficients of $ACFTA_{1_{ijt}}$ indicates that ACFTA has generated trade creation effects. However, the positive coefficient of $ACFTA_{2_{ijt}}$ indicates that ACFTA has generated pure trade creation effects between its trade and non-

ASEAN member countries while the negative coefficient of $ACFTA_{3ijt}$ indicates that ACFTA has generated trade creation and import diversion effects with the domination of import creation effects for the trade between non-ASEAN member countries and ASEAN member countries.

The impacts of AFTA and ACFTA on the natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal & articles are summarized in Table 4.16.

4.4.6 Iron and steel

As indicated in Table 4.9, the coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.027 percent reduction and 0.524 percent increase in total manufacturing trade of iron & steel for exporting and importing countries respectively.

The coefficients of the population variables indicate that a percent increase in populations will lead to 1.234 percent reduction and 0.464 percent increase in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA dummies indicate that AFTA has generated pure trade creation effects. The results also show that the positive coefficients of $ACFTA_{1ijt}$ indicates that ACFTA has generated trade creation effects. However, the positive coefficient of $ACFTA_{2ijt}$ indicates that ACFTA has generated pure trade creation effects between its trade and non-ASEAN member countries while negative coefficient of $ACFTA_{3ijt}$ indicates that ACFTA has generated trade creation and import diversion effects with the domination of import creation effects for the trade between non-ASEAN member countries and ASEAN member

countries. The impacts of AFTA and ACFTA on the iron & steel are summarized in Table 4.17.

4.4.7 Nuclear reactors, boilers, machinery and mechanical appliances

The coefficients of the GDP variables, as indicated in Table 4.9, indicate that a percent increase in GDP will lead to 0.013 percent reduction and 0.592 percent increase in total manufacturing trade of nuclear reactors, boilers, machinery & mechanical appliances for exporting and importing countries respectively.

The coefficients of the population variables indicate that a percent increase in populations will lead to 0.595 and 0.275 percent increase in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade creation effects. As a whole, the impacts of AFTA and ACFTA on the nuclear reactors, boilers, machinery & mechanical appliances are summarized in Table 4.18.

4.4.8 Electrical machinery and equipment and parts; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles

Overall, the coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.017 percent reduction and 0.446 percent increase in total manufacturing trade of electrical machinery & equipment & parts; sound recorders & reproducers, television

image & sound recorders & reproducers, & parts & accessories of such articles for exporting and importing countries respectively.

The coefficients of the population variables indicate that a percent increase in GDP will lead to 0.765 and 0.150 percent reduction in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade creation effects. As a whole, the impacts of AFTA and ACFTA on the electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, & parts & accessories of such articles are summarized in Table 4.19.

4.4.9 Vehicles other than railway or tramway rolling stock and parts and accessories

As shown in the Table 4.9, the coefficients of the GDP variables indicate that a percent increase in GDP will lead to 0.034 percent reduction and 0.501 percent increase in total manufacturing trade of vehicles other than railway or tramway rolling stock & parts & accessories for exporting and importing countries respectively.

The coefficients of the population variables indicate that a percent increase in GDP will lead to 0.644 percent reduction and 0.243 percent increase in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade creation effects. As a whole, the impacts of AFTA and ACFTA on the vehicles other than railway or tramway rolling stock & parts & accessories of such articles are summarized in Table 4.20.

4.4.10 Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories

The coefficients of the GDP variables, as indicated in Table 4.9, indicate that a percent increase in GDP will lead to 0.014 percent reduction and 0.586 percent increase in total manufacturing trade of optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus; parts & accessories for exporting and importing countries respectively. The coefficients of the population variables indicate that a percent increase in GDP will lead to 0.921 percent reduction and 0.195 percent increase in total manufacturing trade of this manufacturing product for exporter and importer countries respectively.

The results for time and dyadic fixed effects model indicate that the positive coefficients of AFTA and ACFTA dummies indicate that AFTA and ACFTA has generated pure trade creation effects. As a whole, the impacts of AFTA and ACFTA on the optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus; parts & accessories are summarized in Table 4.21.

Table 4.9: Panel Data Gravity Estimations for Manufacturing Trade of Selected Manufacturing Trade

	Minerals Fuels, Mineral Oils & Products of their Distillation; Bituminous Substances; Mineral Waxes	Organic Chemicals	Plastics & Articles	Rubber & Articles
$\ln Y_{it}$	0.0042 [0.22]	-0.0121 [-0.82]	-0.0255 [-1.96]**	-0.0141 [-1.10]
$\ln Y_{jt}$	0.5590 [42.99]***	0.5347 [54.06]***	0.5279 [60.40]***	0.4712 [54.70]***
$\ln POP_{it}$	1.4785 [4.02]***	2.9020 [10.37]***	0.7501 [3.03]***	-0.4020 [-1.65]*
$\ln POP_{jt}$	0.3412 [21.68]***	0.4865 [40.63]***	0.3991 [37.71]***	0.2928 [28.07]***
$AFTA_{1ijt}(\phi_1)$	4.8970 [8.29]***	3.0420 [6.77]***	9.1268 [22.99]***	10.1415 [25.92]***
$AFTA_{2ijt}(\phi_2)$	0.2581 [0.45]	0.4084 [0.94]	6.9232 [18.07]***	8.5856 [22.74]***
$AFTA_{3ijt}(\phi_3)$	2.2510 [6.59]***	0.3152 [1.21]	0.3020 [1.32]	0.3178 [1.40]
$ACFTA_{1ijt}(\phi_1)$	0.9773 [3.83]***	0.1110 [0.57]	1.6744 [9.75]***	1.7140 [10.13]***
$ACFTA_{2ijt}(\phi_2)$	-0.3056 [-1.69]*	-0.1102 [-0.80]	1.3483 [11.10]***	0.9896 [8.27]***
$ACFTA_{3ijt}(\phi_3)$	0.0196 [0.11]	-0.7109 [-5.17]***	1.0110 [8.31]***	0.8379 [6.99]***
Constant	-43.244 [-6.77]***	-71.252 [-14.67]***	-32.697 [-7.62]***	-10.172 [-2.40]**
Hausman test	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
N	27676	27676	27676	27676
R -squared	0.4800	0.6751	0.7503	0.7460
Adj R -Squared	0.4781	0.6738	0.7493	0.7451
$RMSE$	4.0583	3.0866	2.7278	2.6887
Wald Test for the exclusion of:				
AFTA	13.79 [0.0000]	24.80 [0.000]	48.06 [0.000]	37.14 [0.000]
ACFTA	415.63 [0.0000]	230.69 [0.000]	373.86 [0.000]	365.09 [0.000]

Table 4.9 continued

	Natural or Cultured Pearls, Precious or Semi-Precious Stones, Precious Metals, Metals Clad with Precious Metal, & Articles thereof; Imitation Jewellery; Coin	Iron & Steel	Nuclear Reactors, Boilers, Machinery & Mechanical Appliances	Electrical Machinery & Equipment & Parts, Sound Recorders & Reproducers, Television Image & Sound Reproducers, & Parts & Accessories of such Articles
$\ln Y_{it}$	0.0011 [0.07]	-0.0266 [-1.59]	-0.0132 [-0.94]	-0.0170 [-0.98]
$\ln Y_{jt}$	0.6327 [62.40]***	0.5240 [46.78]***	0.5922 [62.85]***	0.4463 [38.16]***
$\ln POP_{it}$	-0.5769 [-2.01]**	1.2342 [3.90]***	0.5952 [2.23]**	-0.7645 [-2.31]**
$\ln POP_{jt}$	0.0006 [0.05]	0.4640 [34.21]***	0.2754 [24.14]***	-0.1498 [-10.58]***
$AFTA_{1ijt}(\phi_1)$	4.3079 [9.35]***	8.3351 [16.38]***	9.633 [22.51]***	10.4679 [19.71]***
$AFTA_{2ijt}(\phi_2)$	2.5923 [5.83]***	4.6394 [9.45]***	7.2134 [17.47]***	8.7386 [17.05]***
$AFTA_{3ijt}(\phi_3)$	-0.2850 [-1.07]	2.4837 [8.44]***	0.8403 [3.40]***	0.1677 [0.55]
$ACFTA_{1ijt}(\phi_1)$	1.0631 [5.34]***	0.5212 [2.37]**	1.5611 [8.43]***	2.5391 [11.05]***
$ACFTA_{2ijt}(\phi_2)$	0.3789 [2.69]***	0.6485 [4.17]***	1.3351 [10.20]***	1.7436 [10.73]***
$ACFTA_{3ijt}(\phi_3)$	-0.0249 [-0.18]	-0.3898 [-2.50]**	0.9889 [7.54]***	1.2313 [7.57]***
Constant	-5.151 [-1.03]	-43.788 [-7.96]***	-29.889 [-6.46]***	4.853 [0.85]
Hausman test	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
N	27676	27676	27676	27676
R -squared	0.5629	0.5714	0.7587	0.6452
Adj R -Squared	0.5613	0.5698	0.7578	0.6438
$RMSE$	3.1644	3.4959	2.9404	3.6495
Wald Test for the exclusion of:				
AFTA	19.30 [0.000]	44.65 [0.000]	39.18 [0.000]	53.93 [0.000]
ACFTA	120.73 [0.000]	373.03 [0.000]	348.13 [0.000]	223.04 [0.000]

Table 4.9 continued

	Vehicles other than Railway or Tramway Rolling Stock, & Parts & Accessories Thereof	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments & Apparatus; Parts & Accessories Thereof
$\ln Y_{it}$	-0.0336 [-2.33]**	-0.0138 [-1.04]
$\ln Y_{jt}$	0.5005 [51.68]***	0.5864 [65.83]***
$\ln POP_{it}$	-0.6444 [-2.35]**	-0.9205 [-3.65]***
$\ln POP_{jt}$	0.2431 [20.73]***	0.1951 [18.09]***
$AFTA_1_{ijt} (\phi_1)$	9.5506 [21.71]***	7.3087 [18.07]***
$AFTA_2_{ijt} (\phi_2)$	7.0816 [16.68]***	5.0014 [12.81]***
$AFTA_3_{ijt} (\phi_3)$	0.7612 [2.99]**	0.4877 [2.08]**
$ACFTA_1_{ijt} (\varphi_1)$	2.0965 [11.02]***	1.9370 [11.07]***
$ACFTA_2_{ijt} (\varphi_2)$	1.7742 [13.18]***	1.5534 [12.55]***
$ACFTA_3_{ijt} (\varphi_3)$	1.3833 [10.26]***	1.2890 [10.40]***
Constant	-5.8737 [-1.24]	-2.0305 [-0.46]
Hausman test	0.000 [0.000]	0.000 [0.000]
N	27676	27676
R-squared	0.7039	0.7279
Adj R-Squared	0.7028	0.7269
RMSE	3.0227	2.7797
Wald Test for the exclusion of:		
AFTA	64.36 [0.000]	59.37 [0.000]
ACFTA	336.04 [0.000]	295.38 [0.000]

Note: Robust and clustered standard errors used to compute t-values. t-values are reported below each coefficient. Estimation uses White's heteroskedasticity-consistent covariance matrix estimator. Data sources: Sectoral exports (dependent variable) are from UNCTAD database and are in thousand US \$. AFTA_1 is a dummy variable that takes the value of 1 when countries i and j are members of the AFTA in year t, zero otherwise. AFTA_2 is a dummy variable that takes the value of 1 when country i is a member of the AFTA and j is not in year t, zero otherwise. AFTA_3 is a dummy variable that takes the value of 1 when country i is not a member of the AFTA and j is a member in year t, zero otherwise. ACFTA_1 is a dummy variable that takes the value of 1 when countries i and j are members of the ACFTA in year t, zero otherwise. ACFTA_2 is a dummy variable that takes the value of 1 when country i is a member of the ACFTA and j is not in year t, zero otherwise. ACFTA_3 is a dummy variable that takes the value of 1 when country i is not a member of the ACFTA and j is a member in year t, zero otherwise. * p < 10% level of significance. ** p < 5% level of significance. *** p < 1% level of significance.

Table 4.10: Outcomes of Trade Effects of AFTA and ACFTA for Total Aggregate Trade

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.11: Outcomes of Trade Effects of AFTA and ACFTA for Total Manufacturing Trade

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.12: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Mineral Fuels, Mineral Oils & Products of their distillation; Bituminous Substances; Mineral Waxes

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 < 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	TC + XD	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.13: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Organic Chemicals

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 < 0)$	$ACFTA_{3ijt} (\phi_3 < 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	TC + XD	TC + MD

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.14: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Plastics and Articles

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.15: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Rubber and Articles

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.16: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Natural or Cultured Pearls, Precious or Semi-Precious Stones, Precious Metals, Metals Clad with Precious Metal, and articles

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 < 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	TC + XD
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 < 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	TC + MD

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.17: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Iron and Steel

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 < 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	TC + MD

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.18: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Nuclear Reactors, Boilers, Machinery and Mechanical Appliances

	$AFTA_{2ijt} (\phi_2 > 0)$	$AFTA_{3ijt} (\phi_3 > 0)$
$AFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_{2ijt} (\phi_2 > 0)$	$ACFTA_{3ijt} (\phi_3 > 0)$
$ACFTA_{1ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.19: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Electrical Machinery and equipment and parts; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and parts and accessories of such articles

	$AFTA_2_{ijt} (\phi_2 > 0)$	$AFTA_3_{ijt} (\phi_3 > 0)$
$AFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_2_{ijt} (\phi_2 > 0)$	$ACFTA_3_{ijt} (\phi_3 > 0)$
$ACFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.20: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Vehicles other than Railway or Tramway Rolling Stock and parts and accessories

	$AFTA_2_{ijt} (\phi_2 > 0)$	$AFTA_3_{ijt} (\phi_3 > 0)$
$AFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_2_{ijt} (\phi_2 > 0)$	$ACFTA_3_{ijt} (\phi_3 > 0)$
$ACFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

Table 4.21: Outcomes of Trade Effects of AFTA and ACFTA for Manufacturing Trade of Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments and Apparatus; parts and accessories

	$AFTA_2_{ijt} (\phi_2 > 0)$	$AFTA_3_{ijt} (\phi_3 > 0)$
$AFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)
	$ACFTA_2_{ijt} (\phi_2 > 0)$	$ACFTA_3_{ijt} (\phi_3 > 0)$
$ACFTA_1_{ijt} (\phi_1 > 0)$	Pure TC (X)	Pure TC (M)

Note: ϕ_1 is the coefficient of FTA_1, which represents the exports between member countries. ϕ_2 is the coefficient of FTA_2, which represents the exports from member countries to non-member countries. ϕ_3 is the coefficient of FTA_3 which represents the exports from non-member countries to member countries. TC (X) and TC (M) represent the trade creation in terms of exports and trade creation in terms of imports respectively. XD and MD represent export diversion and import diversion respectively. XE and ME represent the expansion of extra-bloc exports and expansion of extra-bloc imports, respectively. XC and MC represent the contraction of intra-bloc exports and contraction of intra-bloc imports, respectively. Source: Yang & Martinez-Zarzoso (2014).

CHAPTER 5

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1 Summary

This study examines the effect of agreements signing of AFTA and ACFTA on total aggregate trade, total manufacturing trade and the manufacturing trade of selected manufactured products between ASEAN-10 and China together with its selected 79 trading partners throughout the period of 1999 and 2015.

Generally, the gravity model, as proposed by Jan Tinbergen in 1962, is applied as the main estimation model in the study. Overall, the gravity model of trade is used to determine the correlation between trade volumes, directions of trade flows along with the reinforcement of the trade agreements.

As indicated in model 1, both the GDP and populations of exporting & importing countries hold positive impacts on bilateral aggregate & manufacturing trade. Similarly, the dummy variables of having common languages and island status also hold positive impacts on the bilateral aggregate & manufacturing trade. On the other hand, the distance between exporter and importer countries, the dummy variables of common border and landlocked status hold negative impacts on the bilateral aggregate & manufacturing trade.

As shown in model 2, the GDP of importer countries and populations of both exporting & importing countries hold positive impacts on bilateral aggregate & manufacturing trade. Similarly, the dummy variables of having common languages, borders and the landlocked status of exporter countries also hold positive impacts on trade flows. On the other hand, the GDP of exporting countries, distance between exporter and importer countries, and the dummy variables of having landlocked status for importer countries as well as island status hold negative impacts on the bilateral aggregate & manufacturing trade.

The GDP of importer countries and populations of both exporting & importing countries, as shown in model 3, hold positive impacts on the bilateral aggregate & manufacturing trade while the GDP of exporting countries hold negative impacts on the bilateral aggregate & manufacturing trade. As for model 4, only the dummy variables for free trade agreements are estimated while the other variables are excluded from the estimation.

5.2 Major Findings

Overall, the estimated positive results showed that AFTA and ACFTA had expanded the total aggregate trade. In the case of total manufacturing trade, the results also showed that AFTA and ACFTA had generated trade creation effects between its member and non-member trading partners.

The estimation results for different manufactured products showed that AFTA has generated trade creation effects for mineral fuels, mineral oils & products of their distillation, bituminous substances & mineral waxes; organic chemicals; plastics & articles; rubber & articles; natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, & articles; iron & steel; nuclear reactors, boilers, machinery & mechanical appliances; electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, & parts & accessories of such articles; vehicles other than railway or tramway rolling stock & parts & accessories; and optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus. Similarly, the results also showed that ACFTA has generated trade creation effects for all the different manufactured products. This means that the trade creation in manufacturing trade between the two regions will create positive spillovers to the rest of the world. These trade creation impacts might

sequentially counterbalance the trade diversion impacts and improve the social welfare in both the People's Republic of China (PRC) and ASEAN (Yu et al., 2012).

5.3 Policy Implications and Recommendations

Even though the ACFTA was welcomed by various parties internationally, it triggered some apprehensions between ASEAN member countries. The apprehension over the rapid economic growth of China and the strong point of its economic powers before the implementation of FTA agreement has created uneasiness between ASEAN member countries attributable to the effect on their impending economic expansions.

Overall, the enormous market, abundant bargain basement priced workforces, reliable human capital supply as well as the desirable investment inducements & gains offered by the Chinese regime has captivated pools of investments from international companies to major trade regions across China. However, the threat can be greater provided that the majority of the products manufactured and exported by China are identical to the product groups that manufactured by ASEAN countries. This has given rise to the intense competitions between the two regions seeing that their products, i.e. electronic & electrical (E&E) products and garments, are the complementary and substitution products.

Hence, the following policies are suggested to reinforce the partnership between China and ASEAN countries as well as to develop the gains from ACFTA to the businesses as well as to the individuals.

Initially, set up closer relations between chambers of commerce and trade unions from ASEAN and China. The China-ASEAN Business Council, national trade unions as well as the chambers of commerce has a duty to provide statistics and advice-giving services to the industries, particularly the SME industries.

Secondly, develop the collaboration in calibration and mutual recognition. Additional endeavors should be done to lessen the technological trade barriers and enhance cross-border gaining between the member and non-member trading countries. Generally, the coordination of the standards and conformance of procedures are likely to hold direct effect on trade dealings between the countries. This coordination procedure should take in the technical protocols, metrology, and well-organized information sharing & consultation between nationwide experts accountable for the industrial standards as well. As the preliminary measure, it is important to set up the structure for mutual recognition of agreement review doctrines and procedures as well as the adjustment along with the evaluation reports.

Thirdly, additional procedures are needed toward enhancing the trade and investments in services, particularly in creating additional segments as well as to stimulate the investment liberalization and facilitation. Additionally, the associated government divisions have to generate additional undertakings in expanding the realization between trades in ACFTA regions via their policies that are found to form a center of attention for additional foreign capital.

Subsequently, uphold the additional schemes in promoting people-to-people interactions. There is a lack of mutual understanding between individuals in spite of the distances and fast developing fiscal relations between ASEAN countries and China. It is important to expand the collaboration in non-traditional safety measures to stimulate mutual confidence and understanding, especially in environmental protection, energy security, and healthiness & food security.

ASEAN member countries should develop their competitiveness in competing with China. Generally, a nation state has got to hold competitive advantage in a certain industry with the intention of gaining from the exports as well as the foreign investments.

The competitive advantages of ASEAN countries are different, in which numerous countries are identified as capital-intensive countries while the remaining is labor-intensive. In general, China is regarded as the labor-intensive nation. ASEAN countries such as Malaysia, Indonesia and Vietnam have got to concentrate on the raw material-based products and labor-intensive exports at the same time as China can concentrate in the manufacturing of the advanced value-added products. In general, ASEAN countries export modest value-added products to China at the same time as China exports highly value-added products to ASEAN countries. With high domestic demand in ASEAN and China, ACFTA is likely to facilitate the international trades in streamlining the supply chains and downsizing the production networks, which could have resulted in a single ASEAN-China market.

Generally, the government should adopt the strategic trade theory in enhancing the domestic industries from the competition within an FTA scheme. This theory proposes that selected forms of state contribution are likely to reallocate the gains from foreign to domestic organizations. Additionally, the government is able to facilitate the vulnerable industries with the imperfect competition and super-normal gains by developing the global competitiveness of home organizations via selected schemes such as enhancing the capacity building, developing infrastructure as well as taking charge of the business operations.

Last but not least, the governments are obliged to develop the governance issues on the FTA implementation, including the stipulation of information, the ease of trade

documentations and provisions, as well as the intrusive professionalism. Besides, the governments are required to make sure that the governance is operational, proficient and reasonable.

The economy of China has developed speedily ever since 1990s. The key rationales for the remarkable economic development were its open-economic policy which embedded the related policies on economic liberalization, the position of FDI inflows for the manufacturing trade developments in the labor-intensive and high-technology industries, as well as the depreciation of the China Renminbi against the dollar. The involvement of international trade in the industrial development of China has developed substantial economic expansions within the E&E industries.

Overall, the primary ASEAN manufacturing segments included E&E and textile & apparel industries. Overall, substantial volumes of ASEAN economic resources have been allocated to E&E industries, particularly for Malaysia and Singapore. Nevertheless, there has been an overlap in manufacturing segments as China also concentrated in the similar segments. It looks as if that China has been manufacturing and distributing similar products that the ASEAN countries has manufactured and traded since 1980s.

In line with the 2007 Annual Report of Asian Development Bank (ADB), the trade flows between China and ASEAN countries for E&E segment has been taken place in the form of network production, wherein the ASEAN member countries manufacture intermediate products and China appears as the assembling hub of the final products. The occurrences of trade-production networks only happen within a certain group of regions wherein there is an identical production and export structures. Given that China became apparent on the world economic systems throughout the earlier period of 1980s, it has turned into the primary designated position for business operations for multinational corporations (MNC).

Generally, the ASEAN countries can no longer be the primary designated location for business operations of international multinational due to certain important elements, namely the production cost and issues relating to the political stability or governance.

On the whole, the trade between China and ASEAN countries has exhibited increasing movements since 1995 and the trade has proven to favor China. It is shown that both China and ASEAN region typically trade in similar product categories. As represented by HS 2-digit classification, the primary commodities that traded in China-ASEAN trade are HS84¹² and HS85¹³.

ASEAN have to set-up additional policies on the development in manufacturing trade as well as to outline the potential policies of economic development that aimed at impending economic expansion. Taken as a whole, the world economy is progressively turned out to be more multifarious, and the typical economic practices are unable to control for the predicaments that caused by these contemporary forms of complications.

Additionally, the developing countries should be specific and concentrated in stimulating and reshuffling the manufacturing industries. Hence, in the case of Malaysia, the economic growth policy should sustain the industries that are able to create competitive and or comparative trade gains. Besides, the policy should focus on how to resolve or seize power from the forces of price competition from Chinese products in world market.

As a whole, some newly-introduced trade growth related policies are required provided that the international production linkages and economic performance of China had substantially impacted the region's economic performance. These new trade related policies, such as the introduction of paperless customs clearance procedures, amendments

¹² Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof

¹³Electrical machinery and equipment and parts, sound recorders and reproducers, television image and sound reproducers, and parts and accessories of such articles

to legislation & regulations, and departmental rules, as well as the creation of a combined and open market system with systematic competition, help to ensure that the resources can be utilized competently; improves the infrastructure facilities to lower down the manufacture expenses; as well as to develop human capital capabilities. In the case of ASEAN, its member countries should have committed to enhance its economic collaboration to counterbalance the issue of China in the future.

5.4 Limitation of the Study and Recommendation for Further Studies

This study applies three basic variables (GDP, populations and distance) and four dummy variables (common border, common language, island and landlocked countries) to estimate the effects of these variables on the total aggregate and manufacturing trade flows. Therefore, other relevant variables that might hold significant impacts on trade flows, such as the real exchange rates, cultural backgrounds and strategic partners, are suggested to apply in the future research to generate a more precise and reliable estimation.

The estimation on the impacts of free trade agreements between ASEAN member countries and its member and non-member trading partners on bilateral aggregate and manufacturing trade flows are done by employing the gravity model of trade. Computable General Equilibrium (CGE) model is suggested to be applied in the future research to investigate the effects of welfare gains & losses on bilateral trade flows. In general, the CGE models are applied to estimate the impacts of the adjustments in trade policy on the countries' welfares and the income distribution across countries. Through the use of these computational approaches, it is possible to examine the various policy changes and/or the policy changes with any uncertain impacts wherein the theory is unstated (Ivus & Strong, 2007).

The manufacturing sectors of ASEAN countries constitute more than 70 percent of the total ASEAN trade. Some other manufacturing sectors namely foods & beverages; electrical & mechanical equipment, petroleum coal products, and etc. are suggested to include in the future research to obtain more precise and detailed results.

5.5 Overall Conclusion

This study examines whether AFTA and ACFTA hold any trade creation or trade diversification impacts on the ASEAN's bilateral trade flows among ASEAN member countries and their trading partners.

This study shows that AFTA and ACFTA had generated trade creation effects for total aggregate and manufacturing trade for both exporting and importing countries as a whole.

In the case where the effects of AFTA are being estimated for different types of manufactured products, the trade creation effects are identified for the mineral fuels, mineral oils & products of their distillation, bituminous substances & mineral waxes; organic chemicals; plastics & articles; rubber & articles; iron & steel; nuclear reactors, boilers, machinery & mechanical appliances; electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, & parts & accessories of such articles; vehicles other than railway or tramway rolling stock & parts & accessories; and optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus.

When the overall impacts of ACFTA are included for estimation, the trade creation effects are identified for the plastics & articles; rubber & articles; nuclear reactors, boilers, machinery & mechanical appliances; electrical machinery & equipment & parts; sound recorders & reproducers, television image & sound recorders & reproducers, & parts &

accessories of such articles; vehicles other than railway or tramway rolling stock & parts & accessories; and optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & apparatus.

As a whole, this study had succeeded the objectives achievements as well related policy recommendations.

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