ASEAN-China Free Trade Area (ACFTA) Impacts on Indonesia's Manufactured Goods Trade Flow: The Gravity Model Approach

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This document represents part of the author's study programme while at the Institute of Social Studies. The views stated therein are those of the author and not necessarily those of the Institute.

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Dedication Page

For my beloved wife Dessy Kurniasari…
For my beloved daughters Haruko and Hanako…
For my fellow FETA-2 Scholarship awardees…
Thank you all for your support

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Abstract

Free trade agreements (FTA) have been proliferated since the last two decades in various forms. Indonesia as one of the leading traders across the globe also has been actively involved in those FTAs. Started initially with the ASEAN Free Trade Area (AFTA), Indonesia's involvement in the FTAs grew in number rapidly, reaching 20 FTAs in the present. The most essential FTA for Indonesia seen from its economic and market size is the ASEAN-China Free Trade Area (ACFTA). Therefore, the investigation of its impacts on Indonesia's trade flows is vital to depict its effect on Indonesia's trade performance.

The purpose of this paper is to study the impacts of ACFTA on Indonesia's manufactured goods trade flow. This paper focuses on the manufacturing sector since it is the vital sector for Indonesia's economy with a large proportion of GDP share, high employment numbers, and Indonesia's most competitive goods are mostly manufactured goods. Indonesia's participation in establishing the FTA with China in the manufacturing sector raised some concerns about whether Indonesia's manufactured goods can compete well with China's or not. Therefore, it is interesting to investigate the impacts of ACFTA on Indonesia's manufacturing sector, particularly on its trade flows.

The gravity model is used to estimate the impacts of ACFTA on Indonesia's manufactured goods trade flows from both the export and import side. The gravity model is used with cross-sectional and panel data regression method covering 104 trade partner countries across the world from 1991 to 2012 period. The main finding of this study is to point out clearly that the ACFTA does not have a significant impact on Indonesia's manufactured commodities export and import flow. Besides, impacts of other variables apart from the ACFTA on Indonesia's manufactured goods trade flow also presented in this paper.

Relevance to Development Studies

International trade and its implications are exciting topics in development studies, especially Free Trade Agreements (FTAs) establishment. The FTAs initiation has impacts on FTA member countries mainly on their competitiveness. With free trade, member countries required to increase their product competitiveness to compete with similar products from the other FTA member countries. The increase in competitiveness is hoped to give positive impacts on economic growth. The main characteristic of an FTA is diminishing, or even eliminating trade barriers which are supposed to protect local industries. Trade liberalization brings negative consequences if the country is not ready to compete with others. This study will try to investigate the impacts of ACFTA on Indonesia's manufactured goods trade flow. It is hoped that the findings can provide an insight of Indonesia's trade policy impact on the trade flows and also give recommendations for policymakers to formulate trade policies which can maximize the advantages of ACFTA and minimize its disadvantages.

Keywords

Gravity model, ACFTA, manufacturing, Indonesia

Chapter 1
Introduction

1.1 Background

Since the 1990s, international trade development gives rise to various forms of trade liberalization not only bilateral, and regional but also multilateral. The trade liberalization itself commenced with the General Agreement on Tariffs and Trade (GATT) agreement in 1948 as a part of the Havana Charter (Final Act of the United Nations Conference on Trade and Employment). In 1995, the World Trade Organization (WTO) established an replaced the GATT 1948. According to Sofjan (2017), trade liberalization can be seen with tariff and non-tariff reduction or even abolishment in order to increase the flow of goods and services.

Nowadays, most countries in the world are involved in trade liberalization under Free Trade Agreements (FTAs). Indonesia itself joined its first FTA in 1993 along with five other old ASEAN (Association of South East Asian Nations) countries which are Malaysia, Singapore, Thailand, the Philippines, and Brunei Darussalam. They established the ASEAN Free Trade Area (AFTA) with an objective to increase the ASEAN region's competitive advantage as a production base geared for the world market by catalyzing higher efficiency in production and long-term competitiveness. The AFTA members reached an agreement on final tariff reduction to 0-5% in 2002 (ASEAN Secretariat 2012).

In 2002, the AFTA expanded its coverage when China joined as a trading partner under the name of ACFTA (ASEAN-China Free Trade Area). ASEAN countries product characteristic as a complementary product for China's export products and large market coverage (1.5 billion people in China and 500 million people in ASEAN) drove China and ASEAN to establish an FTA. The tariff reduction between China and ASEAN countries started on January 2004, and it was hoped that the tariff would be reduced to 0% in 2012 to 2018 (different products may have different tariff reduction schedule) (Surono 2012).

The trade liberalization policy in the manufacturing sector with ACFTA questioned by many people since most countries consider this sector is vital for their economy. In Indonesia, the manufacturing sector contributes the most significant share of the total Gross Domestic Product (GDP) with an average of roughly 26% in the 2000-2014 period. This sector also provides fifteen million jobs for Indonesian people in the last five years, or roughly 13% of Indonesia's employment comes from this sector (Statistics Indonesia 2018). Some of the manufactured products such as textile and textile products, electronic goods, footwear, and automotive products also considered as Indonesian ten main commodities in the international trade (Ministry of Trade of Republic of Indonesia 2018b). Hence, the manufacturing sector is seen as one of the most critical sectors in the Indonesian economy.

1.2 Problem Statement

Indonesia's involvement in trade liberalization especially ACFTA raised some disputes about their impacts on the Indonesian economy. For a developing country like Indonesia, getting involved in an FTA is a 'double-edged sword'. On the one hand, there is a massive benefit because Indonesian products can access into the international market and with FTA Indonesian products will be cheaper in importing countries and it is hoped that it will increase demand. Ultimately, an increase in Indonesian export will have a positive impact on the national economy. On the other hand, there is an unfavorable effect of FTA which is when the imported products are cheaper than similar products produced by local industries in Indonesia, it could make the local producer being out of business because they are unable to compete with the imported products (Jafar 2012). This is, of course, a threat to Indonesian manufacturing industry because they have to compete with imported commodities which have cheaper and better quality.

Table 1.1

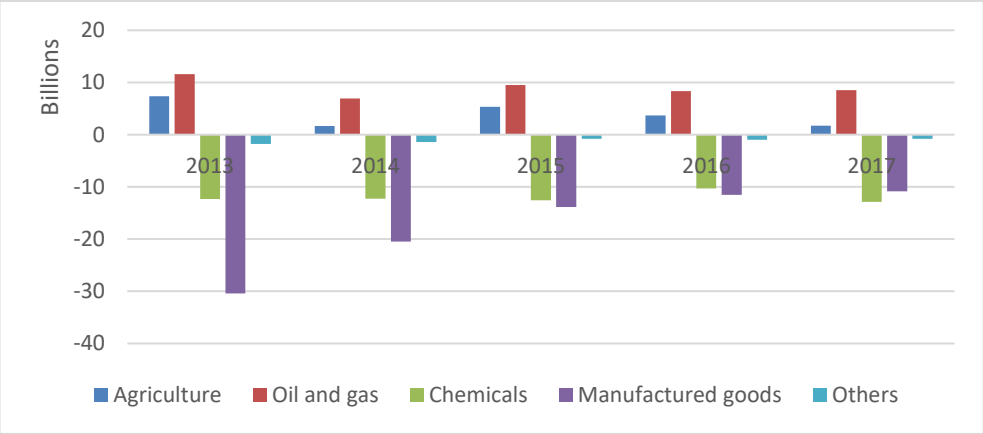
The balance of Trade Between Indonesia – ACFTA member countries 2013-2017 (US$)

COUNTRY	YEAR				
	2013	2014	2015	2016	2017
Malaysia	-2.6 billion	-1.1 billion	-0.8 billion	-0.1 billion	-0.4 billion
Singapore	-8.8 billion	-8.4 billion	-5.3 billion	-2.6 billion	-4.1 billion
Thailand	-4.6 billion	-3.9 billion	-2.5 billion	-3.2 billion	-2.8 billion
The Philippines	3.0 billion	3.2 billion	3.2 billion	4.4 billion	5.8 billion
Brunei	-0.5 billion	-0.5 billion	-0.1 billion	0.1 billion	0.1 billion
China	-7.2 billion	-13.0 billion	-14.3 billion	-14.0 billion	-12.7 billion

Source: Ministry of Trade of Republic of Indonesia 2018a; author's calculation

Now let us look at Indonesia's trade flows data. In table 1.1, based on the data from the Ministry of Trade of Republic of Indonesia, from 2013 to 2017, Indonesia experienced significant trade deficit in all commodities almost with all of ACFTA member countries. Indonesian trade balance only performed well with the Philippines and Brunei. In conclusion, Indonesia relying on imports from other ACFTA member countries especially from China.

Figure 1.1
Indonesia - World Trade Balance by SITC Rev. 1 Classification
2013-2017 (USD Billion)



Source: UN COMTRADE 2018; author's calculation

Indonesian balance of trade with all of the countries in the world in total showed different performance with the previous explanation. While in the previous description the negative gap between export and import goods between Indonesia and China became larger from US$ -7.2 billion into US$ -12.7 billion, in the same period Indonesia's trade balance deficit with all countries in the world became lower. In 2013, there was roughly US$ 25.5 billion deficit, but every year the number showed promising progress. The number then became smaller and reached USD$ 14.2 billion of the deficit in 2018. This fact might indicates that Indonesia tends to ship its commodities to other countries rather than to the ACFTA member countries, and also Indonesia's export goods, especially to the other countries which are not ACFTA members, have higher values than the goods exported to ACFTA member countries.

If we look at Indonesia's global trade flow performance classified by SITC rev.1 in Figure 1.1, Indonesia's manufactured goods (SITC rev.1 classification 6, 7, and 8) trade flow always recorded a deficit along with chemicals and unclassified goods. In the 2013-2017 period the highest deficit was $30 billion in 2013, and it became lower and lower until in 2017 with $10.8 billion deficit.

Table 1.2
Five Biggest Countries Causing Deficit in Manufactured Goods Trade Flow
2013-2017 (US$)

COUNTRY	YEAR				
	2013	2014	2015	2016	2017
China	-21.0 billion	-21.0 billion	-20.0 billion	-20.0 billion	-19.0 billion
Japan	-8.4 billion	-7.0 billion	-4.9 billion	-4.7 billion	-5.0 billion
Rep. of Korea	-4.8 billion	-3.9 billion	-2.8 billion	-2.2 billion	-2.7 billion
Thailand	-4.0 billion	-3.3 billion	-2.3 billion	-2.3 billion	-2.0 billion
Germany	-1.6 billion	-1.1 billion	-0.8 billion	-0.3 billion	-0.4 billion

Source: UN COMTRADE 2018; author's calculation

When we look closer to the detailed data, based on Table 1.2, China made the most significant contribution for Indonesia's manufactured goods trade balance deficit in the 2013-2017 period with an average deficit of roughly US$ 20 billion each year in that period. The highest deficit was in 2014 with US$ 21 billion, and the lowest deficit was in 2017 with US$ 19 billion (UN COMTRADE 2018). Compared with other biggest deficit contributors, it seems that only with China, Indonesia could not improve its manufactured goods trade flow performance.

However, before Indonesia (and ASEAN member countries) made a free trade agreement with China, Indonesia's manufactured goods trade flow performance with China was much better. In 1992, Indonesia could make US$ 316 million surplus in trade in manufactured goods with China. However, started in 1995, the trade flow started to switch into a deficit performance, and it became worse since Indonesia joined ACFTA in 2002. In 2002, Indonesia's manufactured goods trade flow performance with China recorded US$ 398 million deficit. Then in 2007, the deficit became more significant to roughly US$4 billion (UN COMTRADE 2018), and the rest is already explained in the paragraph above.

To sum up, there were dynamics on Indonesia's trade flows. On the one hand Indonesia made improvements for the total balance of trade, but on the other hand, if we look closer to sectoral trade flows, the balance of trade for manufactured goods sector, especially with China does not show promising progress.

Those facts and numbers presented above bring into question whether Indonesia's manufactured goods trade flows are affected by Indonesian involvement in ACFTA. Therefore, this study will try to examine whether ACFTA has a significant impact on Indonesia's manufactured goods trade flow. As argued by Mareta (2018), there are lack of decent study about potential gain and/or loss regarding Indonesia's involvement in the FTAs.

To answer the question about ACFTA impacts on Indonesia's manufactured commodities trade flow, there are many tools to investigate the international trade policy. However, the Computable General Equilibrium (CGE) model of trade and the gravity model are the standard tools used by researchers across the globe. The difference between those models is while the CGE approach usually used to measure the prospective impact of a new policy, the gravity model estimates the impact of the past trade policy on the trade flows. Furthermore, the gravity models only describe the pattern of bilateral trade without estimating the welfare costs while the CGE models are usually used to measure the impact of a trade policy over a country's welfare and income distribution regionally (Ivus and Strong 2007).

Thus, the gravity model which has been used for more than fifty years since introduced firstly in 1962 by Tinbergen will be used to analyse the ACFTA impacts. This model initially used to capture the relationship of economic size, distance, and trade flows between countries in the international trade. However, this model recent development enables it to simulate trade policy.

1.3 Research Objective

This study aims to analyse the impact of trade liberalisation particularly ACFTA on Indonesia's manufactured goods trade flows. Especially, whether Indonesia could gain benefit on involvement in ACFTA as was expected before the free trade agreement implemented.

1.4 Research Question

According to the background described in the previous section, the research question of this study is:

Does ACFTA affect Indonesia's manufactured goods trade flow?

1.5 Scope and Limitations of the Study

The FTAs is claimed to benefit export performance for member and non-member countries of FTAs with its trade creation and trade diversion effects. This research paper will only analyse manufactured goods trade performance in a single country which is Indonesia.

Indonesia also involved in many FTAs. By now Indonesia already has 20 FTAs namely AFTA (ASEAN Free Trade Area), ACFTA (ASEAN-China Free Trade Area), IJEPA (Indonesia-Japan Free Trade Agreement), AANZFTA (ASEAN-Australia and New Zealand Free Trade Agreement), and so on. Since the ACFTA is one of large-scaled Indonesia's FTAs, this study only focused on ACFTA effects on Indonesia's manufactured goods trade flow performance. However, since in the observation period there were other FTAs enforced at that time, those FTAs also included as dummy variables. Those FTAs are AFTA, AKFTA, and AANZFTA. So, AFTA, AKFTA, and AANZFTA are also included as dummy variables and in the gravity equation.

In the FTA, usually not all commodities tariff reduced at the same time or there is a staggering tariff effect. The staggering tariff effects will not be considered in this study. So, the assumption in this study is that all tariff reduced since ACFTA started.

1.6 Organization of the Study

This research paper is divided into six chapters. Introduction, the background of the study, problem statement, research objective, research question, scope and limitations of the study, and the organisation of the study are presented in the first chapter. The following chapter will describe the theoretical framework about theories and concepts of international trade and also literature review about the impact of Free Trade Agreements on trade flows. The third chapter will explain Indonesia's manufacturing sector trade. The next chapter clarifies the data and methodology used in this research. The results and analysis of this study showed on chapter five followed by the conclusion in the final chapter, chapter six.

Chapter 2
Theoretical Framework and Literature Review

In this chapter, the author discusses some theories and concepts about free trade agreements. This chapter started by the overview of international trade theories continued by trade liberalisation concepts and explanation of free trade agreements. At the end of this chapter, previous studies about free trade using the gravity model will be discussed.

2.1 Theoretical Framework

2.1.1 International Trade Theory

In the late 18th century, Adam Smith came with his idea of 'foreign trade', or international trade based on the division of labour. On the one hand, the division of labour will increase both quantitative and qualitative production not only by boosting the number of goods produced but also encouraging innovation and upgrading labour skills but on the other hand, the division of labour has its own limit which is the domestic market size. If the market size can be expanded, then the division of labour will likely rise. Thus, enlarging the market size by involving in international trade should be reckoned because the international market is bigger than the domestic one. Ultimately, international trade is beneficial to a country because the rise of division of labour leads to the rise of the 'real wealth of nation and its population' by increasing specialisation, increasing competition for domestic producer so domestic monopoly will unlikely happen, and knowledge and technology transfer among nations involved in international trade (Schumacher 2012; 57-59).

A century later, David Ricardo and John Stuart Mill came out with another international trade model called the comparative advantage model. In this model, relative cost and price differences based on the labour cost hold the critical concepts of international trade. The assumption lies behind this theory is that a country should specialise in some products, not all if that country wants to have the lowest relative costs (in this book Todaro and Smith use Germany and Kenya as a comparison). Briefly explained that even if a country does not have any absolute advantage, it still can get benefit from international trade since a country should have at least a comparative advantage in a product (Todaro and Smith 2015; 613-614).

The comparative advantage international trade model has two benefits for the countries involved in a trade which are first; the trade is a different way to produce all goods. So, rather than producing all kinds of products trading is more efficient. A country should only focus on producing one product then trade it with another country to fulfil its needs. Secondly, there will be more variation in product consumption which will make the citizen in the countries which engaged in trade more satisfied (Krugman et al. 2017)

Later on the twentieth century, two economists named Eli Heckscher and Bertil Ohlin developed the comparative advantage model into a new model, 'neoclassical factor endowment trade theory'. Based on the comparative advantage model, they added two other variables which are land and capital. Furthermore, this model can be used to explore economic growth effects on trade patterns and international trade effects on a country's economy (Todaro and Smith 2015; 614).

Two main principles of neoclassical factor endowment trade theory are: (1) every kind of product has its own factor requirements, for example agricultural products will tend to have higher labour costs per unit rather than manufactured goods, and the other way around; and (2) each country has its own proportion of factors of production. This theory argues that developed countries are more likely to have plenty of capital rather than labour, and developing countries are more labour-abundant (Todaro and Smith 2015; 615).

The international trade became more intense and complex since the globalisation era. Krugman (1979) came up with a theory that economies of scale is another reason for countries to engage in trade, besides the difference in technology and factor endowments. He argues that trade between countries happens because of market expansion and scale of economies exploitation motives, especially on the trade between industrial countries. While on the comparative advantage assumption is the constant returns to scale (if the inputs to an industry are increased twice then the outputs would increase by twofold), the economies of scale makes industries more efficient if producing more goods (doubling the inputs will increase production more than twice) (Krugman et al. 2017).

There are two types of economies of scale which are the external economies of scale (industry size economies of scale) and the internal economies of scale (firm size economies of scale) which drive into international specialisation and trade. An external economies of scale industry usually consists of small firms in a cluster, and they have a perfect competition market. In contrast, an internal economies of scale industry gives big companies costs advantages compared by small firms. Therefore, this type of economies of scale industry leads to an imperfect competition market (Krugman et al. 2017).

The imperfect competition in the internal economies of scale industry development happens because of two reasons. Firstly, when only a few firms producing particular goods and secondly, when each company is producing a differentiated good from other firms. The easiest form of imperfect competition is the pure monopoly when a firm does not have any competitors. However, this form of imperfect competition rarely happens because when a firm is gaining high profits, it usually lures rivals who sell differentiated products to compete with the monopolistic firm. After the competition reached its peak, it becomes unprofitable for new companies who want to join the competition, and 'a long-run equilibrium is attained'. This form of imperfect competition then can be called with a monopolistic competition (Krugman et al. 2017).

When the monopolistic competition model is used in the international trade, it enhances the trade-off between scale and product differentiation for every nation. The increasing market size caused by international trade leads to a lower average commodity price and product variation in the market (Krugman et al. 2017). Ultimately, Krugman predicted two impacts from monopolistic

competition in trade which are the scale effect, as surviving companies increasing their outputs, and the selection effect because some firms have to exit the competition (Feenstra 2004). Because of the monopolistic competition model, the intra-industry trade, a two-way international trade between industries in different countries because of differentiated goods, is likely to happen especially on the trade of manufactured goods amid industrial countries (Krugman et al. 2017, Krugman 1981).

Krugman (1981) proposed the intra-industry trade model based on his thought that there are three anomalies in the international trade and he called them the 'stylized facts' of international trade which are first; the majority of international trade is between nations with the same factor of endowments. The next reason is the trade between those similar countries is identified as intra-industry trade, and the last reason is the intra-industry trade growth created 'serious income-distribution problems'.

A neglection in the study of economic geography for the general economic analysis inspired Krugman in 1991. Combining the economies of scale with transportation costs, he explains the phenomena of the concentrated manufacturing sector in the world with the peripheral agricultural suppliers. His study gave birth to a new approach in economics known as the New Economic Geography (NEG) approach.

The NEG approach describes many phenomena in the modern economic world such as the development of cities and the existence of regional and international inequalities. The most prominent substantiation from this approach is the importance of geography in shaping economic interactions (Venables 2010).

2.1.2 Trade Liberalisation and Free Trade Agreements

Trade liberalisation had started and developed extensively since the end of the second World War. The General Agreement on Tariff and Trade (GATT) was the starting point of it, and in 1993 the World Trade Organisation (WTO) took over it. The trade liberalisation in this era can be seen as many countries in the world lowering down the tariff and non-tariff barriers to trade (Thirlwall 2000). As argued by Todaro and Smith (2015) trade liberalisation is the acts of nations to disentangle impediments for free trade namely tariff, quotas, and exchange controls.

A couple of effects can happen when countries liberalised their trade. The first effect is the trade creation effect that is when countries are lowering their tariff, their domestic production decline because of the consumption shifts to imported goods which have a cheaper price than the local goods. The second effect is the trade diversion effect that is when countries collaborate to liberalise their trade, they shift their consumption from the previous supplier which are non-member countries which can produce goods with low price to higher-cost member countries. In short, Krueger argues that 'the trade creation effect is welfare-increasing and trade diversion effect is welfare-reducing' (Krueger 1997).

With getting involved in trade liberalisation, countries will boost their export and growth because free trade is claimed to have several benefits which are: (1) promoting competition, increasing resource efficiency, and economies of scale; (2) improving product quality and upgrading technology; (3) boosting

overall economic growth; (4) inviting investments; (5) generating foreign exchange; (6) diminishing 'costly economic distortion' from government interference; (7) promoting equality to use rare resources; and finally (8) enabling developing countries to gain benefit from WTO agreements (Todaro and Smith 2015). Trade liberalisation in the manufacturing sector is inclined to make relative food prices cheaper because people will choose to consume cheaper manufacturing goods rather than food (Goldin et al. 1993).

There is inequal proportion sharing of trade liberalisation among countries, and it tends to make frictions locally and globally. Nevertheless, the trade benefits, in general, are too good to be missed, so there has to be a policy to cover all countries and all sectors, rural and urban, to gain from higher global growth from trade liberalisation (Goldin et al. 1993).

When countries in the same region collaborate alike to create an 'economic union', that is the integration of two or more country's economy into one, or 'regional trading bloc', which is economic cooperation among countries in a region through internal free trade and external trade boundary, it leads to an economic integration. Economic integration can be described into two types which are customs union and free-trade area. Both of them accommodate their member countries to benefit from free-tariff internal trade. However, the difference between them is while the customs union imposes a standard tariff for trade from non-member countries, the free-trade area gives their member option to charge tariffs on non-member countries. Ultimately, when not only goods but also factors of production which are labour and capital are free to move among countries in the region, they have created a common market (Todaro and Smith 2015, Krueger 1997).

2.2 Literature Review

Numerous researches are analysing FTAs impact on international trade flows using the gravity model estimation. Various FTAs (from global trade, regional trade, and single country investigation), techniques, and findings can be found in those study which will be discussed below.

Starting with the global FTA, in 2004, Rose investigated the effects of three multilateral trade agreements which are (1) the World Trade Organization (WTO); (2) the Generalized Agreement on Tariffs and Trade (GATT), and (3) the Generalized System of Preferences (GSP) on 175 countries all over the world for the period of 1948 to 1999 (fifty years, with some gaps). He used the augmented gravity model and panel data estimation technique. The study revealed that the WTO and the GATT do not have significant impacts to trade while the GSP is proven statistically increases trade.

In the regional FTAs, Sharma and Chua (2000) conducted a study about economic integration and intra-regional trade in the ASEAN member countries particularly in Indonesia, Malaysia, the Philippines, Singapore, and Thailand using the gravity model. They observed 33 sample countries over period 1980 to 1995 using cross-sectional estimation technique. They found out that the ASEAN integration did not increase intra-ASEAN trade.

Kien (2009) examined the impact of AFTA to the export flows of 39 countries using a gravity model and panel data estimation from 1988 to 2002.

His results on his study are GDP affects the export flows positively, and the AFTA establishment created trade creation effects for its member countries.

Yang and Martinez-Zarzoso (2013) conducted research to study the impacts of the ACFTA on export, especially on trade creation and diversion effect with the gravity model. They studied 31 countries in 1995 to 2010 period on aggregated and disaggregated export data of three clusters of goods using panel data analysis. They found out that ACFTA results in trade creation rather than trade diversion. Furthermore, when they used disaggregated data, ACFTA has a positive and significant impact on manufactured goods and chemical products export flow.

Ardiyanti (2015) studied how AFTA affects its member countries export performance using the basic gravity model. She analysed the cross-sectional data from sixty countries which are AFTA's members and non-members for the period of 1991, 2001, and 2012. Her notable finding is that AFTA has a positive effect on its members export performance after it was being enforced.

Study about FTAs impacts on single country especially the ASEAN members can be found in many literatures. Thu and Hien in 2016 analysed the impacts of AFTA and three other ASEAN+1 FTAs on Vietnam's iron and steel trade flows using gravity model with panel data analysis from Vietnam's trade with 27 main trading partners in the period of 2001 to 2012. Their findings show that ACFTA has a positive impact on increasing Vietnam's iron and steel imports while AKFTA and AFTA affect its export flow.

In 2013, Dianniar conducted research to study the impacts of AFTA and ACFTA on Indonesia's trade flow in the agricultural sector using gravity method with cross-sectional and panel data analysis from 1991 to 2010. She found out that GDP and population do matter in Indonesia's agricultural trade flow. Distance is not a significant barrier to Indonesia's agricultural export performance. Common language and border sharing are proven lowering the value of export while colonial link factors have a positive influence on the trade flow. AFTA and ACFTA surprisingly do not bring significant effect on Indonesia's agricultural sector trade flow.

Kahfi in 2016 conducted a study to analyse the determinants of Indonesia's manufacturing sector export which are the real exchange rate, foreign direct investment (FDI), GDP, and FTAs with gravity model approach. He observed Indonesia's manufactured goods export to 28 top destination countries in 2014 from the period of 2005 to 2014 using panel data regression technique. He found out that the GDP does have a positive and statistically significant to Indonesia's manufacturing sector export while the real exchange rate, FDI, and FTAs do not have a significant impact.

Mareta (2018) investigated the impacts of AKFTA on Indonesia's manufactured goods export flow. She used the augmented gravity equation and panel data of Indonesia's manufactured goods export to its twenty trading partners from 1990 to 2015 period, and she also broke down the manufactured goods into five different categories. Her study resulted in AKFTA caused trade diversion rather than trade creation effects for most of manufactured goods categories, assuring the lower export of manufactured goods from member to non-member countries.

With the literature review discussed in this section, it can be seen that the previous studies about FTA impacts on international trade have various results. Some of the studies concluded the FTAs were significant in influencing the trade flows while some others are not. Particularly on the country-level analysis with Indonesia as the subject, there were many studies on various sectoral commodities trade flows, also with various results. With this study, I hope that I can contribute to describe what happened with Indonesia's manufactured goods trade flows after the ACFTA is being enforced.

Table 2.1
Literature Review Summary

Author(s) (year)	Subject	Period	Estimation Technique	Result(s)
Rose (2004)	GATT, WTO, GSP on world trade	1948 – 1999	Panel data	GATT and WTO insignificant, GSP significant
Sharma and Chua (2000)	ASEAN integration to intra-ASEAN trade	1980 – 1995	Cross section	ASEAN integration did not affect intra-ASEAN trade
Kien (2009)	AFTA on member countries export flow	1988 – 2002	Panel data	AFTA created trade diversion effects rather than trade creation
Yang and Martinez-zarzoso (2013)	ACFTA on member countries export flow	1995 – 2010	Panel data	ACFTA brings trade creation effects rather than trade diversion
Ardiyanti (2015)	AFTA impacts on member countries export	1991 – 2012	Cross section	AFTA has a positive effect on its members export performance
Thu and Hien (2016)	ASEAN+1 FTA on Vietnam's iron and steel trade	2001 – 2012	Panel data	ACFTA increasing Vietnam's iron and steel imports while AKFTA and AFTA affect its export flow
Dianniar (2013)	AFTA and ACFTA on Indonesia's agricultural trade flow	1991 – 2010	Cross section and panel data	AFTA and ACFTA do not bring significant effect on Indonesia's agricultural sector trade flow
Kahfi (2016)	Determinants of Indonesia's manufacturing sector export flow	2005 – 2014	Panel data	FTAs do not have a significant impact on Indonesia's manufacturing sector export flow
Mareta (2018)	AKFTA on Indonesia's manufactured goods export flow	1990 – 2015	Panel data	AKFTA brings trade diversion effects rather than trade creation effects

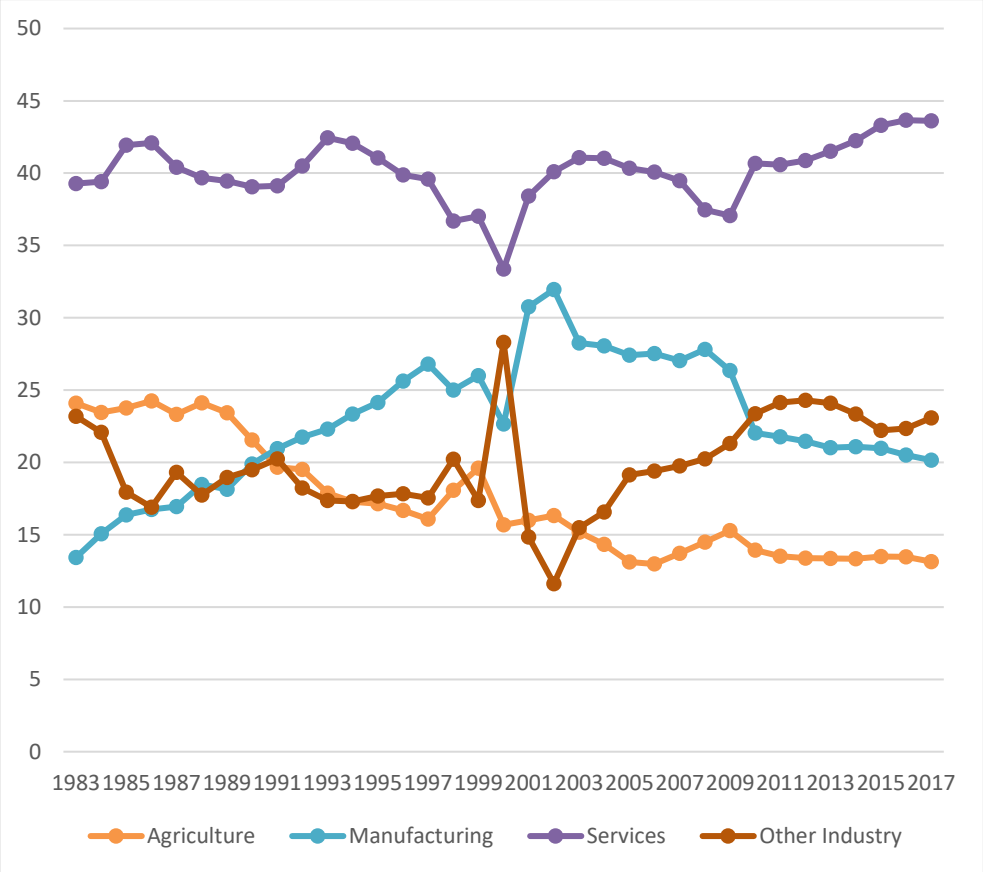
Source: Author 2018

Chapter 3
An Overview of Indonesia's Manufacturing Sector Trade and ACFTA

3.1 Indonesia's Manufacturing Sector

Consists of five major islands and seventeen thousand islands in total, Indonesia reached 263 million population in 2017. The archipelago nation now is the fourth largest populated country in the world with 1.8% of population growth rate in average in the last five decades. Indonesia's economic development in the last fifty years showed good progress, recording annual GDP growth of roughly six per cent in the period. Although Indonesia had a difficult time when the financial crisis hit it on the 1997-1998 and as a result growth of GDP at that time was -13%, Indonesia made a comeback, and since then the economy until now has been steadily growing five to six per cent annually (World Bank Open Data 2018).

Figure 3.1
Indonesia GDP Share (% of GDP)



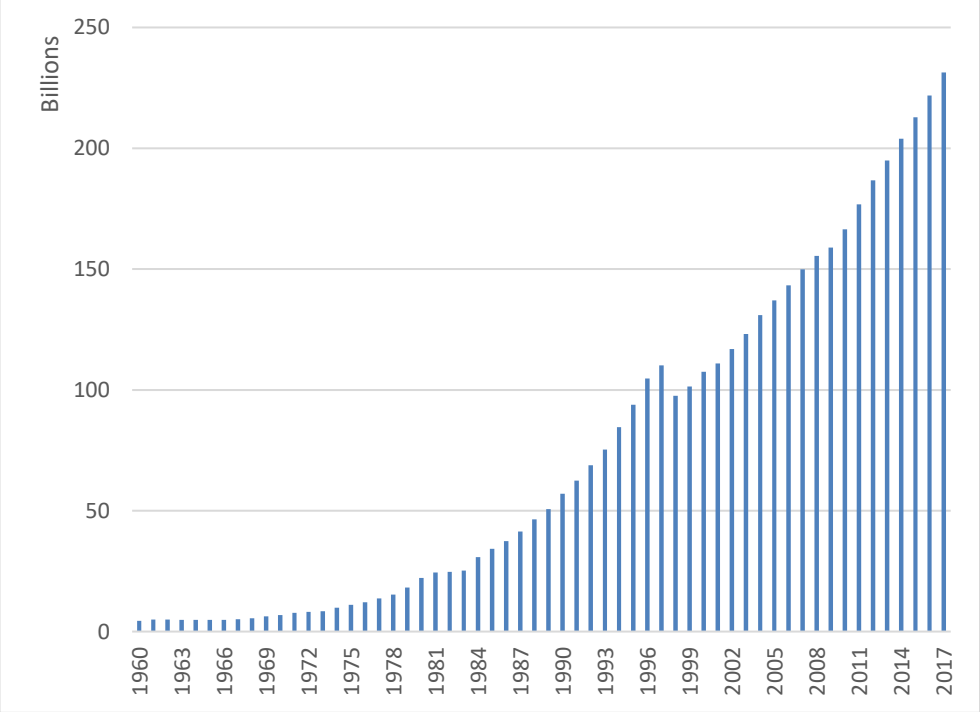
Source: World Bank Open Data 2018; author's calculation

From Figure 3.1 we can see that Indonesia depended more on the agricultural sector rather than the manufacturing sector since the 80's. However,

it shifted into the manufacturing sector from the 90's. From 1991 the manufacturing sector surpassed the agricultural sector in Indonesia GDP share and accounted to Indonesia's GDP with an average of 24.5% share of GDP (World Development Indicators 2018). The manufacturing sector also has been employing 15.9 million people annually on average in the last five years (Statistics Indonesia 2018). Roughly 13% of Indonesia's employment on average comes from this sector. Indonesia also has shown good progress in the manufacturing sector with the increasing of value added created by this sector. We can see in figure 3.2 that the value added generated by the manufacturing sector increased slowly in the 60s period, and after then since the 70s the value added created by this sector increased more rapidly than before. However, on 1998 the value added fell because of the monetary crisis. However, the manufacturing sector could recover and the value added from this sector keeps increasing since then until 2017 (World Bank Open Data 2018).

Figure 3.2

Indonesia GDP Share (% of GDP)



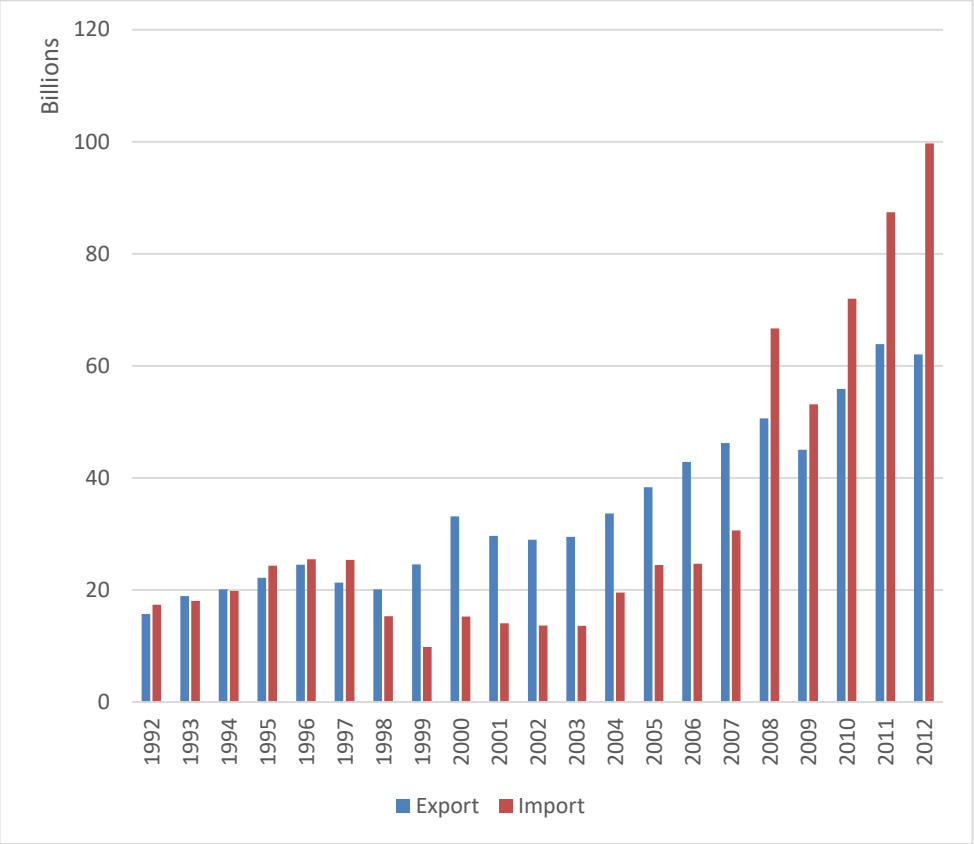
Source: World Bank Open Data 2018; author's calculation

3.2 Indonesia's Manufactured Goods Trade Overview

From 1992 to 2012, there was a dynamic in Indonesia's manufactured goods trade flow as we can see in Figure 3.3. There was an only small gap in Indonesia's manufactured commodity trade flow in early 90's, and from 1998 to 2007 continued by increased in export flow and decreased in import flow which made Indonesia became manufactured goods net exporter. The manufactured articles export then grew gradually from US$ 50.6 billion in 2008 and reached US$ 62 billion in 2012. However, it could not match the skyrocketing import flow that grew almost twice from 2007 (US$ 30.5 billion) to 2008 (US$ 66.6 billion) and

reached US$ 99.6 billion in 2012. Thus, Indonesia became manufactured goods net importer since 2008.

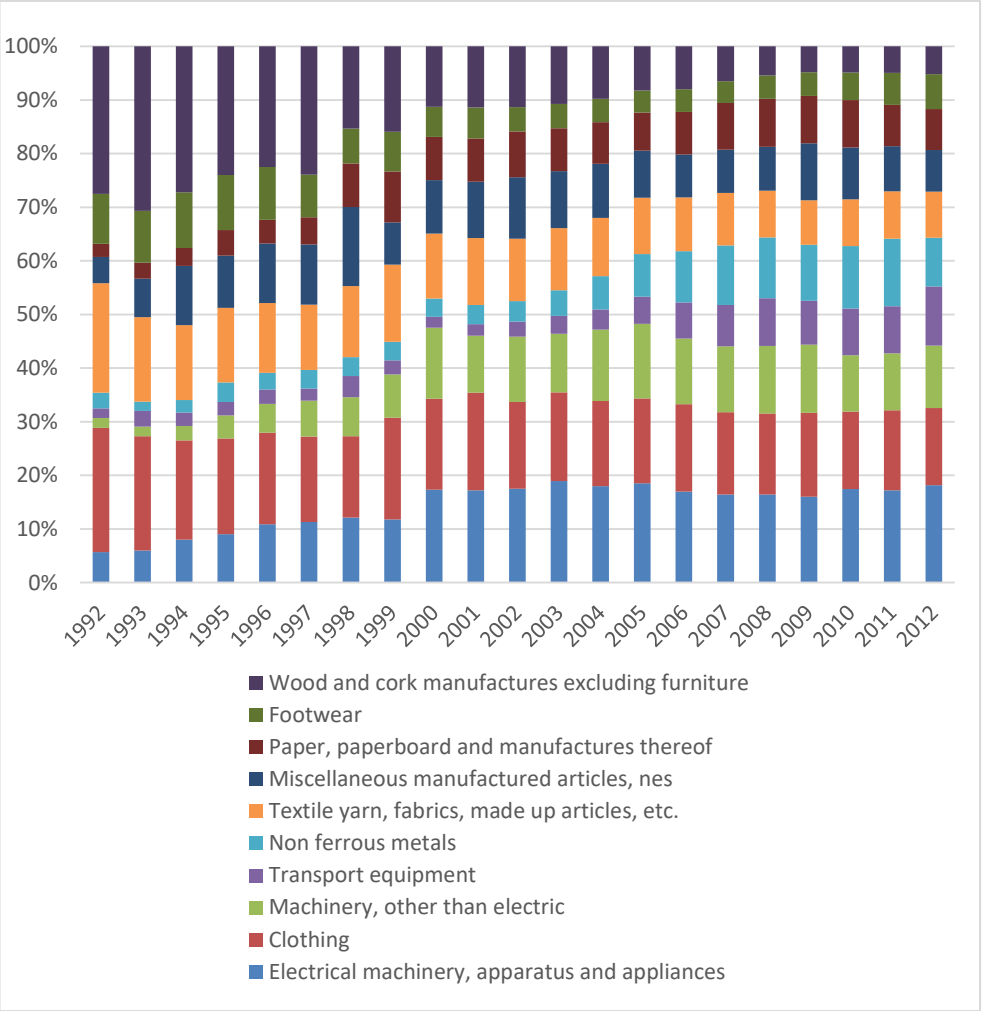
Figure 3.3
Indonesia - World Manufactured Goods Trade Balance by SITC Rev. 1 Classification 1992-2012 (USD Billion)



Source: UN COMTRADE 2018, author's calculation

Now let us look at Indonesia's top ten manufacturing commodities export share in global from figure 3.4a. In 1992, there were only several commodities which had the most significant share of Indonesia's export which are wood and cork manufactures (except furniture) in the top with US$ 3.8 billion export value, accounted for 25.7% of top ten manufactured goods export total value. It followed by clothing and textile yarn, fabrics, and other commodities in the second and third place respectively. However, from time to time other manufactured commodities production developed well and could make a significant growth namely electrical machinery products which became the most exported product with US$ 9.6 billion value in 2012 which accounted for 18.2% of top ten manufactured commodities total value of export. Clothing industry still stood at second position with US$ 7.6 billion (14.3%) followed by non-electrical machinery with US$ 6.2 billion in third place in 2012. From figure 3.3 we can also see that Indonesia's manufactured goods export became more diverse, not only focused on several commodities.

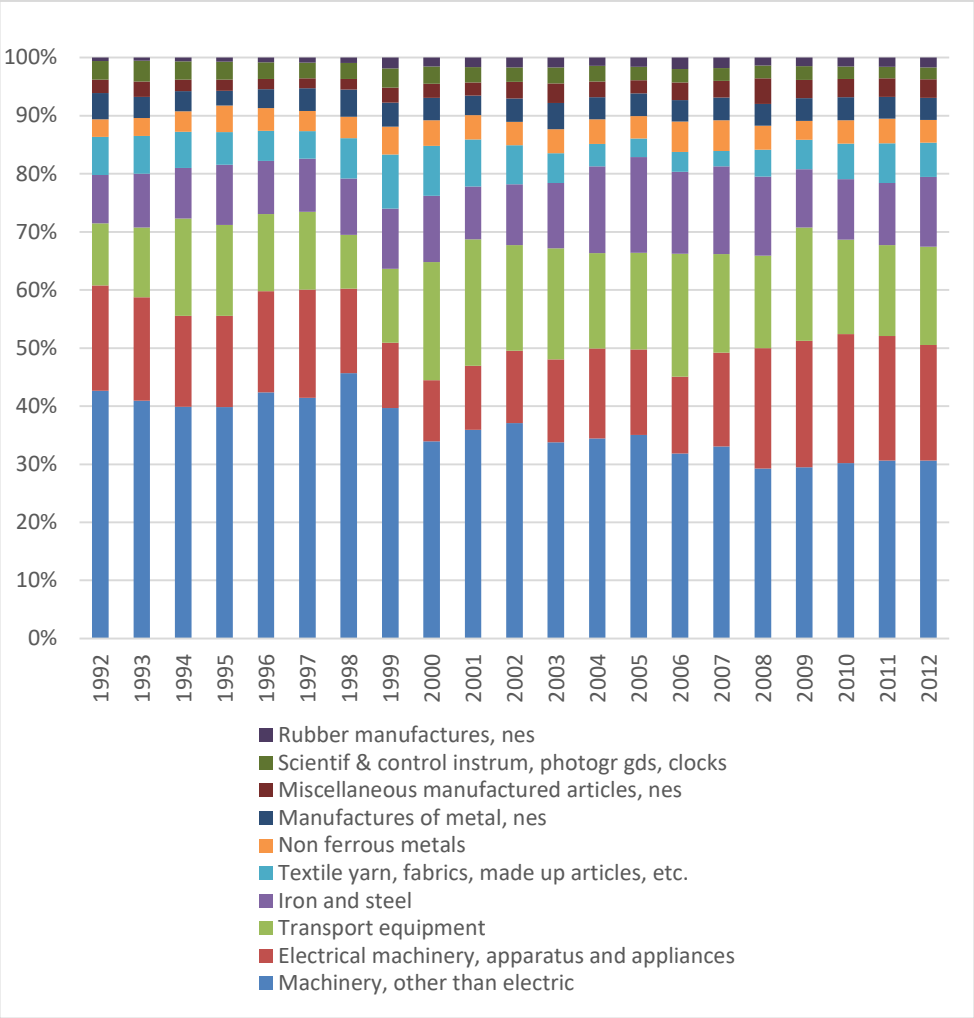
Figure 3.4a
Indonesia Top Ten Exported Manufactured Commodity Share 1992-2012
(USD Billion)



Source: UN COMTRADE 2018; author's calculation.

Meanwhile, on the import side, as described in figure 3.4b, it can be clearly seen that the composition of manufactured imported goods only slightly changed from 1992-2012. We can see that non-electrical machinery dominated the manufactured goods import from 1992 with US$ 7.0 billion (42.6% share of total top ten manufactured goods import) and it reached US$ 28.9 billion in 2012 (30.7%). Electrical machinery (US$ 2.9 billion) and transport equipment (US$ 1.7 billion) were also sit in second and third place in 1992. Finally, in 2012 electrical machinery in the second position with US$ 18.8 billion and transport equipment in the third place with US$ 15.9 billion. From the description above and the figure below we can also say that the top ten manufactured goods share in the import side were more constant with several goods dominating the manufactured goods import flow share.

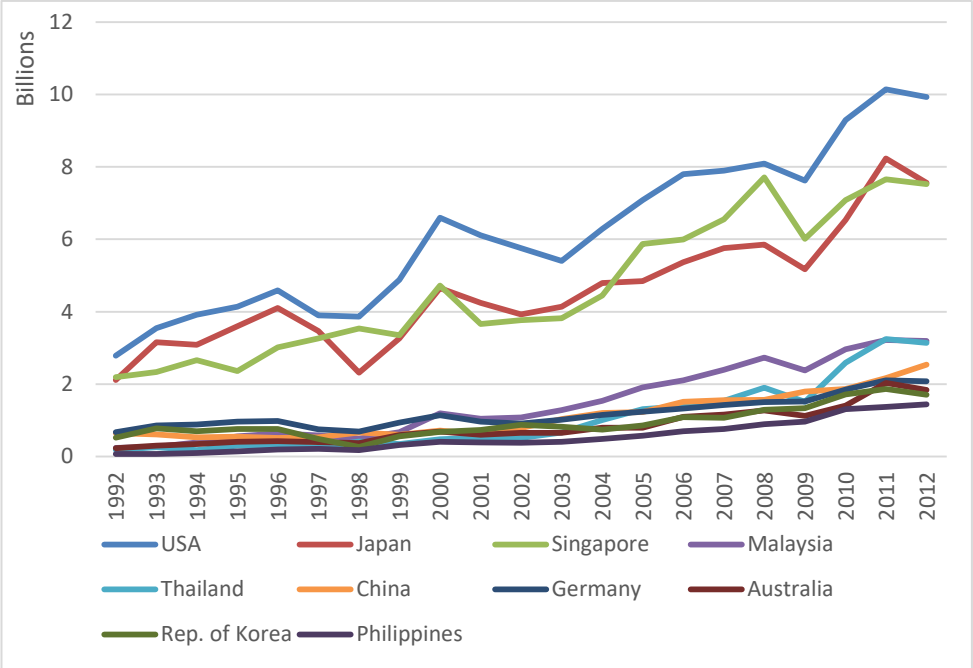
Figure 3.4b
Indonesia Top Ten Imported Manufactured Commodity Share 1992-2012
(USD Billion)



Source: UNCOMTRADE 2018; author's calculation.

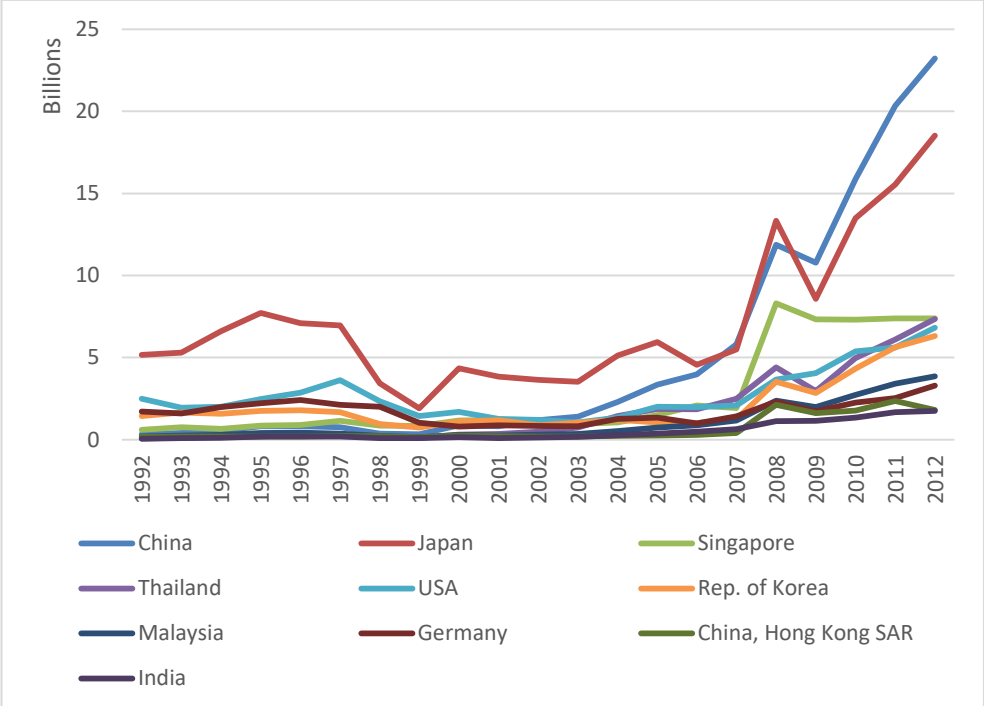
Figure 3.5a describes the top ten Indonesia's manufactured goods export main partners in the 1992-2012 period. In 1992, Indonesia's manufactured goods mostly shipped to USA with US$ 2.7 billion of manufactured goods were shipped there. Japan and Singapore were close enough to sit in second and third place with export value US$ 2.1 billion of manufactured commodities. The position remains unchanged until 2012 with the USA as the top destination for Indonesia's manufactured commodities with Japan and Singapore at second and third place respectively. Although there were top ten country destination for Indonesia's manufactured goods depicted in Figure 3.4, we can see that only three countries which are USA, Japan, and Singapore dominate the manufactured goods export share.

Figure 3.5a
Top Ten Manufactured Goods Country Destination 1992-2012 (USD Billion)



Source: UN COMTRADE 2018; author's calculation.

Figure 3.5b
Top Ten Manufactured Goods Country Supplier 1992-2012 (USD Billion)



Source: UN COMTRADE 2018; author's calculation.

Figure 3.5b above tells us about the top ten manufactured goods supplier for Indonesia. Japan was Indonesia's main manufactured goods supplier with US$ 5.1 billion in 1992, followed by nine other countries which are USA, Germany, Rep. of Korea, Singapore, China, Thailand, Malaysia, India, Hong Kong,

and India. Japan was dominating until 2008 before China overtook the status as Indonesia's main manufactured commodities supplier in 2009 with US$ 10 billion of manufactured goods shipped to Indonesia. We can also see that Singapore also surged into the third position in 2009 with US$ 8.3 billion. The position then remain unchanged until 2012, leaving China in the top with US$ 23 billion followed by Japan with US$ 18 billion and Singapore in the third position with US$ 7.3 billion.

3.3 Indonesia and ACFTA at A Glance

Since started from the GATT and switched into WTO, free trade agreements developed massively across the globe. As we can see that every region now has its own FTA, such as North American Free Trade Agreement (NAFTA) in North America, South American Trade Blocks (MERCOSUR) in South America, South Asian Free Trade Agreement (SAFTA) in South Asia, and also ASEAN Free Trade Agreement (AFTA) in South East Asia.

Indonesia initially involved in FTA in 1992, along with five other nations in South East Asia (ASEAN-6) which are Singapore, Malaysia, Brunei Darussalam, the Philippines, and Thailand, initiated the AFTA. The market size of this FTA was 330 million of the population, with targeted tariff reduction into 0-5 per cent in fifteen years (and accomplished five years sooner because of some critique). The rest countries in South East Asia which had not joined then became a member of AFTA several years later (Yue 1998).

Several motives behind the AFTA establishment as argued by Yue (1998) are: (1) the need for new 'regional glue' to keep ASEAN members unified; (2) change of international trade policy in Indonesia, the Philippines, Malaysia, and Thailand from protectionist towards trade liberalisation; (3) the need to attract more investor to ASEAN to build new factories and market; and (4) as a backup if Uruguay Round negotiations run into a deadlock.

In 2012, ten years after AFTA establishment, ASEAN-China FTA created a new trade bloc named ACFTA. As argued by Chirativat (2012), the establishment of new trade bloc between ASEAN and China was not only because of the globalisation and propagating trade liberalisation, but also because ASEAN's economy was unappealing since the 1997-1998 crisis and world's attention turned towards China as a 'newly rise global trading partner'. Devadason (2010) also argued that in this era the ASEAN institution was fainting and reached its limit. Low technological content made the industries find it hard to do the upgrading, domestic market which already reached its limit, and 'few economic complementarities'. ACFTA establishment then gave a massive boost to market size which can encourage intra-regional trade and connect the ASEAN member countries with the global production chain with China as the core. The ACFTA also supposed to drive major reconstruction of East Asian region trade pattern through intra-industry specialisation in the manufacturing sector.

Before ACFTA establishment, the average tariff rates for China's product to ASEAN-6 was already low compared to China's tariff rates for its imported goods with only 2.3% in average for ASEAN-6's tariff rates and 9.4% in average for China's tariff rates. It is hoped that when ACFTA fully enforced and trade barriers became lower, not only the trade creation and trade diversion effects

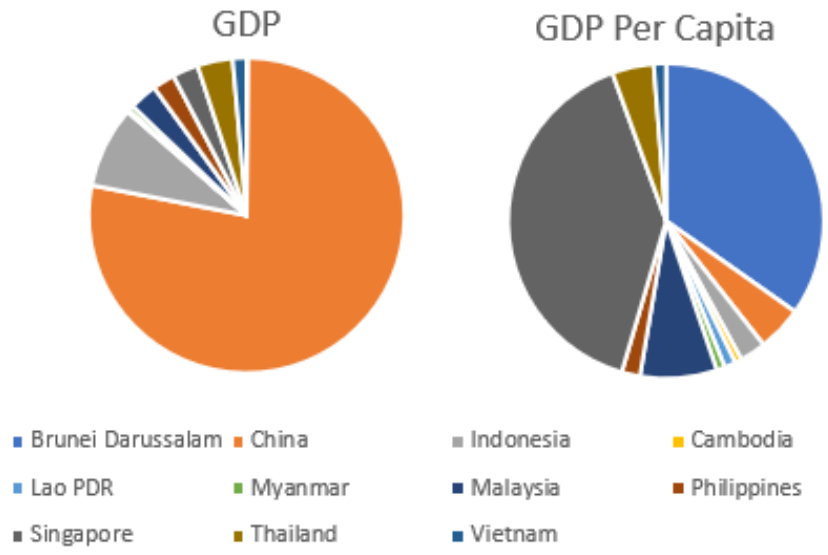
would happen but also would increase 'economic efficiency'. As a result, real income in member countries will surge because the production will be optimum (Chirathivat 2002).

The tariff reduction and/or removal among ASEAN member countries and China in ACFTA were planned into three phases for three different clusters of commodities. Initially, the 'early harvest' phase will remove tariffs for the best ten traded commodities from every nation just in three years period. Then, the tariff for normal commodities will reduce gradually and reached 0% on final implementation. The last one is the phase for sensitive products from 'infant industries' to give time for adaptation with the trade liberalisation and will have tariff range from 0% to 5% on the final exercise (Chirathivat 2002).

3.3.1 Indonesia and ACFTA Member Countries Socio-economic Indicators

ACFTA or ASEAN+1 (China) with ten members countries from ASEAN plus one which is China considered as the one of the largest FTA in economic and social coverage. This trade bloc GDP grand total was US$ 10.9 trillion with 628 million people inhabit this trade bloc. As we can see in Figure 3.6, in 2012 China held the biggest GDP among this FTA member countries, accounted for 78% of this trade bloc's total GDP with US$ 8.5 trillion almost ten times larger from Indonesia which came in after with only 8% share for total GDP in this FTA with US$ 917 million. However, if we look at the GDP per capita share in this FTA in 2012, Singapore was the biggest in this trade bloc with US$ 54.7 thousand, followed by Brunei Darussalam with US$ 47.6 thousand and Malaysia with US$ 10.7 thousand in second and third place respectively. China, in terms of GDP per capita, falls into the fourth position with US$ 6.3 thousand, only accounted for 5% share of total GDP per capita in the ACFTA.

Figure 3.6
ACFTA Member Countries Nominal GDP and GDP Per Capita Share in 2012

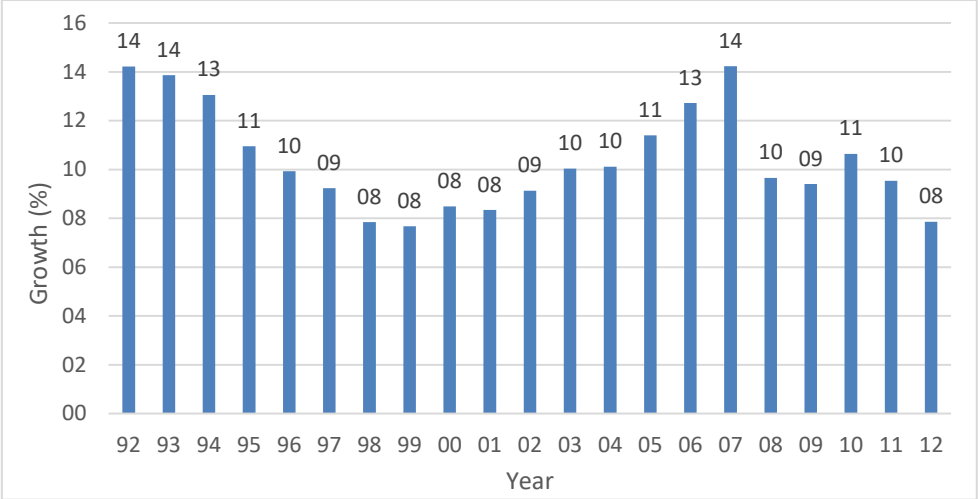


Source: World Bank Open Data 2018; author's calculation.

China's annual nominal GDP growth in the 1992-2012 period recorded at 10.4% annually with the highest growth were 14.2% in 1992 and 2007 as described in Figure 3.7. When the crisis hit in 1998, China's economic growth slowed down, but after that, the growth increased gradually and reached its peak in 2007. However, after another global crisis happened and its affected China's economy, the nominal GDP growth slowed down once again, and it was stable around 10% from 2008-2012.

Figure 3.7

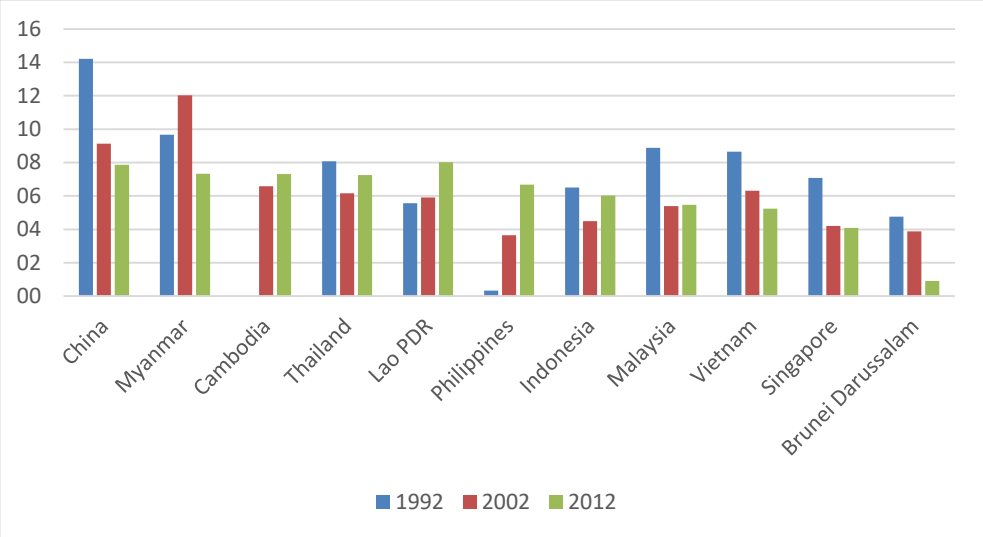
China's Nominal GDP Growth 1992-2012 (%)



Source: World Bank Open Data 2018; author's calculation.

Figure 3.8

ACFTA Member Countries GDP Growth 1992-2012



Source: World Bank Open Data 2018; author's calculation.
Notes: Cambodia's GDP 1992 data is not available.

We can compare the GDP growth among ACFTA member countries before, on the ACFTA establishment, and after ACFTA was implemented from figure 3.8. In this figure, it clearly can be seen that most of the ACFTA member countries experienced slower economic growth except for Cambodia, Lao PDR, and the Philippines who could increase their growth after ACFTA established. However, it does not mean that it was all because of the ACFTA formation

because in 1998 and 2008 there was a crisis and it might be still had any effects to ACFTA member countries on 2002 and 2012.

Chapter 4
Data and Methodology

4.1 Data Source

The data used in this study are secondary data which are collected from the government and international organisations. Export and import data were collected from Ministry of Trade of Republic Indonesia and United Nations Comtrade (UN COMTRADE) database. The GDP and population data were obtained from World Bank Open Data. The data on geographical distance, common language, and contiguousness were acquired from *Le Centre d'études Prospectives et d'informations Internationales* (CEPII) by Mayer and Zignago (2011), downloaded on 7th August 2018.

The data collected for the 1992-2012 period (ten years before the ACFTA, the year of ACFTA signing, and ten years after the ACFTA was being implemented). The data are collected from bilateral trade flows (export and import) between Indonesia and 104 other countries. The countries as Indonesia's trade partner sample is chosen based on data availability, especially on GDP and population data. Thus, this study only includes 104 countries which are:

Table 4.1
List of Countries in this study

COUNTRY			
1. Albania	27. Denmark	53. Malawi	79. Saudi Arabia
2. Algeria	28. Ecuador	54. Malaysia	80. Senegal
3. Angola	29. Egypt	55. Mali	81. Sierra Leone
4. Argentina	30. Finland	56. Mauritania	82. Singapore
5. Australia	31. France	57. Mexico	83. Spain
6. Austria	32. Gabon	58. Morocco	84. Sri Lanka
7. Bahamas	33. Germany	59. Mozambique	85. Suriname
8. Bahrain	34. Ghana	60. Netherlands	86. Sweden
9. Bangladesh	35. Greece	61. New Zealand	87. Switzerland
10. Belgium-Luxembourg	36. Russian Federation	62. Papua New Guinea	88. Trinidad & Tobago
11. Benin	37. Guinea	63. Niger	89. Togo
12. Bolivia	38. Guinea-Bissau	64. Nigeria	90. Thailand
13. Brazil	39. Guyana	65. Norway	91. Tunisia
14. Bulgaria	40. Honduras	66. Oman	92. Turkey
15. Burkina Faso	41. Hungary	67. Pakistan	93. Uganda
16. Cote d' Ivoire	42. India	68. Panama	94. Ukraine
17. Cameroon	43. Ireland	69. Nicaragua	95. UAE

18. Canada	44. Italy	70. Paraguay	96. United Kingdom
19. Central African Rep.	45. Japan	71. Peru	97. Tanzania
20. Chad	46. Jordan	72. The Philippines	98. Uruguay
21. Chile	47. Kenya	73. Poland	99. USA
22. China	48. Lao PDR	74. Portugal	100.Venezuela
23. Hongkong	49. Lebanon	75. Qatar	101.Viet Nam
24. Colombia	50. Liberia	76. Rep. of Korea	102.Yemen
25. Cuba	51. Libya	77. Romania	103.Zambia
26. Cyprus	52. Madagascar	78. Guatemala	104.Zimbabwe

Source: Author 2018

4.2 Methodology

4.2.1 The Gravity Model

This research paper uses Gravity Model which initially proposed by Tinbergen (1962) to analyse the impacts of ACFTA on Indonesia's manufactured goods export and import flow. According to van Bergeijk and Brakman (2010), the gravity model can explain the interaction between different sized economic groups and the distance between them. This robust and multi-purpose tool can be used to investigate various policy issues, especially on trade policy. However, in the 70s and 80s, the gravity model became less popular among academics because this model can interpret many international trade models and it makes no clear boundaries which theory is being tested with the gravity model. Furthermore, the lack of theoretical background also gave the gravity model an ambiguous status; a useful empirical tool but it has a weak theoretical angle.

The very basic (classical) gravity model uses three variables which are exporting country's GDP, importing country's GDP, and the distance between two countries. The model called gravity model because of its similarity to Newton's law of gravity. In a brief explanation, the bilateral trade flow between two countries can be explained as a function of the economic size of them and the inverse of the distance between the two countries (van Bergeijk and Oldersma 1990).

The basic equation of gravity model presented by Tinbergen is as follows:

$$T_{ij} = \frac{GDP_i^{\alpha} GDP_j^{\beta}}{D_{ij}^{\theta}},$$

where T_{ij} is the trade flow between country *i* and *j*; GDP *i* and GDP *j* are the economic size of country *i* and country *j*; and D_{ij}^{θ} is the distance between country *i* and country *j*, while α, β, and θ mean the log-linear transformation for the model. From the equation above we can see that the trade between two countries is affected by their economic size and their distance. The bigger their economic

size, the bigger the trade between them and the farther their distance, their trade flow will be lower (van Bergeijk and Brakman 2010).

Although the gravity model proposed by Tinbergen was so famous, it lacked in its micro-economic foundation, and it made the gravity model's reputation became questionable. Some researchers tried to give some solid micro-economic foundation to strengthen the model. In 1979, Anderson showed that the gravity model really proves that economic sizes influence the trade flows. However, the limitation of his findings was the span of time and the principle that countries should have the same demand composition. Thus, his results were not recognised very well. The attempts to provide a theoretical foundation then continued by Bergstrand in 1986, 1989, and 1990. He constructed a connection between trade theory and bilateral trade including the supply side of the economy. Based on Anderson (1979) and Bergstrand (1985,1989, 1990) work, Anderson and van Wincoop came up with a new theory which can take on 'the complicated price (index) terms' (van Bergeijk and Brakman 2010).

4.2.2 The Augmented Gravity Model Specification

This paper uses an augmented gravity model estimation which was used by Dianniar (2013). The augmented gravity estimation used in her research is proven the most robust model than the other estimations (basic gravity model and gravity model with Linder effect) to depict the agricultural trade flows between Indonesia, and its partner countries because it has the highest R^2 value among them (Dianniar 2013). With the limited observation for only Indonesia's manufactured goods trade to 104 other countries, this study will focus on Indonesia's manufactured commodities trade performance especially when the ACFTA is being implemented. The bilateral trade performance analysis approach to investigate the FTAs impact also done by Thu and Hien (2016) where they studied the impact of AFTA, ACFTA, and AKFTA on Vietnam's iron and steel trade performance.

The augmented gravity model estimation came from the basic gravity model proposed by Tinbergen (1962) where bilateral trade between two countries (country i and j) has a positive relationship with their incomes (GDP), and the distance between them has a negative relationship. The basic gravity estimation form can be seen as follows,

$$\boldsymbol{lnX_{ijt} = \beta_o + \beta_1 lnDist_{ij} + \beta_2 lnGDP_{it} + \beta_3 lnGDP_{jt}}\text{.....[1]}$$

where X_{ijt} indicates expothe rt or import of country i to country j in year t; $Dist_{ij}$ represents the distance between country i and country j; GDP_{it} is country i's GDP in USD in year t; GDP_{jt} is country j's GDP in USD in year t.

The gravity model proposed by Tinbergen performs very well. However, because it lacked in the theoretical foundation, many researchers tried to develop the gravity model. Some variables were added to the basic gravity model such as population, common language used, colonial relationship, and contiguousness. Initially, this paper estimates the augmented gravity model which use those variables as control variables to the basic gravity model. The augmented gravity estimation form can be seen as follows,

$$lnX_{ijt} = \beta_o + \beta_1 lnDist_{ij} + \beta_2 lnGDP_{it} + \beta_3 lnGDP_{jt} + \beta_4 lnPop_{it} + \beta_5 lnPop_{jt} + \beta_6 Comlang_{ijt} + \beta_7 Contig_{ijt} + \beta_8 ACFTA_{ijt} + \varepsilon_{ijt} \quad [2]$$

However, since in the observation period (1992-2012), there are more than one FTA which also took effect, namely AFTA, AKFTA, and AANZFTA, in this study I also add dummy variables for those FTA. Thus, the estimation which is used for this research can be seen as follows,

$$lnX_{ijt} = \beta_o + \beta_1 lnDist_{ij} + \beta_2 lnGDP_{it} + \beta_3 lnGDP_{jt} + \beta_4 lnPop_{it} + \beta_5 lnPop_{jt} + \beta_6 Comlang_{ijt} + \beta_7 Contig_{ijt} + \beta_8 ACFTA_{ijt} + \beta_9 AFTA_{ijt} + \beta_{10} AKFTA_{ijt} + \beta_{11} AANZFTA_{ijt} + \varepsilon_{ijt} \quad [3]$$

where Pop_{it} is country i's population in year t; Pop_{jt} is country j's population in year t; $Comlang_{it}$ is 1 if country i and country j speak the same language, 0 if otherwise; $Contig_{it}$ is 1 if country i and country j share the same border, 0 if otherwise; Col_{it} is 1 if country i and country j have colonial links, 0 if otherwise; $ACFTA_{ijt}$ is 1 if country i and country j are the member of ACFTA, 0 if otherwise; $AFTA_{ijt}$ is 1 if country i and country j are the member of AFTA, 0 if otherwise; $AKFTA_{ijt}$ is 1 if country i and country j are the member of AKFTA, 0 if otherwise; $AANZFTA_{ijt}$ is 1 if country i and country j are the member of AANZFTA, 0 if otherwise; and ε_{ijt} is the error term. In this study, country i is Indonesia and country j is Indonesia's trade partner.

The gravity model with the form described as equation number 3 is estimated with cross-section and panel data. There are numerous empirical literature of the gravity model which are using cross-section data, some of which are (Limao and Venables 2001), (Sohn 2005), (Dianniar 2013), and (Ardiyanti 2015). Nevertheless, gravity model with panel data analysis offers more benefits than cross-sectional analysis because not only it can give a clear picture about the connection between variables that change over time but also views individual effects for each trading partners (Nowak-Lehmann et al. 2007). However, the panel data regression should free from time-invariant variables. Thus, to have a comprehensive analysis of all variables in the model presented above, this study uses both cross-section and panel data analysis.

In panel data analysis, there are three ways to do the estimation which are (1) the Pooled Ordinary Least Square; (2) Fixed Effects; and (3) Random Effects technique (Gujarati 2003). The Pooled OLS estimation does not assess 'the time and space dimension' (Gujarati 2003:641). Thus, the Pooled OLS regression cannot be used to estimate the panel data in this study. Then, to decide which method should be used, normally Hausman chi-square test is conducted. However, according to Egger (2000), to estimate panel data in gravity model, Fixed Effects Model (FEM) is more appropriate because first, the effects among trading countries are not random but there are some motives such as historical, political, and geographical motive. Moreover, to investigate international trade, no one will look at randomly chosen sample, but the sample partner countries have been selected before. Furthermore, Matyas (1997) suggest that to analyze

international trade using panel data estimation, specific effects such as time effect should be used to have better results.

4.3 Variables Definition

4.3.1 The Dependent Variable

Trade Flows

Most of the studies with the gravity model used bilateral trade flow in total as the dependent variable. However, if total trade flow is used, the impact of FTA on export and import could not be identified. Following Thu and Hien (2016) where they observed both export and import trade flows to analyse Vietnam's iron and steel trade flow, this paper uses export and import of manufactured goods trade values as the dependent variable. So, it is hoped that it can depict Indonesia's manufactured goods trade performance after ACFTA is being enforced.

4.3.2 The Independent Variables

Distance

The distance variable used in the gravity model depicts transportation costs needed to export or import goods between two countries. The further the distance, the transportation costs are higher and ultimately will reduce the trade flows. Thus, the distance coefficient is expected to be negative.

GDP

The GDP variable used in this paper is GDP in current U.S. Dollar. World Bank defines this with

> "GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used." (World Bank 2018).

The GDP variable is expected to have a positive sign for both export and import flow which means that the bigger Indonesia's and its trading partner's GDP, the greater manufactured trade flow between them.

Population

Population growth can also affect trade flows. Martinez-Zarzoso and Nowak-Lehmann (2003) show that population coefficient can have a negative or positive sign. It negatively affects export when countries export less as they become larger, so they switch into internal trade and it positively affects export if countries export more as they have more people as they are capable of achieving economies of scale. On the import side, the population will have similar effects.

Dummy Variables

This paper uses several dummy variables such as common language, contiguousness, and free trade agreements which are ACFTA, AFTA, AKFTA, and AANZFTA. Speaking the same language and sharing the same border will enhance trade flows, so the coefficients of these variables are expected to be positive. However, regarding the FTAs, I do not have any particular expectation since the impacts of FTAs on trade flows can be positive or negative.

Table 4.2
Summary of Chosen Independent Variables

Variable	Definition	Coefficient Sign Expectation	Source
$Dist_{ij}$	Geographical distance between Indonesia and its trade partner	Negative	CEPII, downloaded on 7th August 2018
GDP_{it}	Indonesia's GDP in year t	Positive	World Bank Open Data (7th August 2018)
GDP_{jt}	Indonesia trade partner's GDP in year t	Positive	World Bank Open Data (7th August 2018)
Pop_{it}	Indonesia's population in year t	Positive	World Bank Open Data (7th August 2018)
Pop_{jt}	Indonesia trade partner's population in year t	Positive	World Bank Open Data (7th August 2018)
$Comlang_{ijt}$	Dummy variable to depict whether Indonesia and its trading partner talk the same official language	Positive	-
$Contig_{ijt}$	Dummy variable to depict whether Indonesia and its trading partner share the same border	Positive	-
$ACFTA_{ijt}$	Dummy variable to depict whether Indonesia and its trading partner are members of ACFTA	Positive or Negative	-
$AFTA_{ijt}$	Dummy variable to depict whether Indonesia and its trading partner are members of AFTA	Positive or Negative	-
$AKFTA_{ijt}$	Dummy variable to depict whether Indonesia	Positive or Negative	-

	and its trading partner are members of AKFTA		
$\boldsymbol{AANZFTA_{ijt}}$	Dummy variable to depict whether Indonesia and its trading partner are members of AANZFTA	Positive or Negative	-

Source: Author 2018

4.4 Hypothesis

The hypotheses of this research are:

H0 = β0, β1, β2, β3, β4, β5, β6, β7, β8, β9, β10, β11 = 0

(every variable does not affect Indonesia's manufactured goods trade flow)

H1 ≠ H0

There is a significant impact of $lnDist_{ij}$, $lnGDP_{it}$, $lnGDP_{jt}$, $lnPop_{it}$, $lnPop_{jt}$, $Comlang_{ijt}$, $Contig_{ijt}$, Col_{ijt}, and $ACFTA_{ijt}$. The predictions of the relations between the dependent and independent variables for import and export flows are:

$lnDist_{ij}$ has a negative sign which means that the further the distance between Indonesia and its trading partner, the less manufactured goods trade made by them.

$lnGDP_{it}$ has a positive sign which means that the greater the Indonesia's GDP, the greater Indonesia's manufactured goods trade flows.

$lnGDP_{jt}$ has a positive sign which means that the greater the Indonesia's trade partner's GDP, the greater Indonesia's manufactured goods trade flow.

$lnPop_{it}$ has a positive sign which means that the greater Indonesia's population, the greater Indonesia's manufactured goods trade flows.

$lnPop_{jt}$ has a positive sign which means that the greater Indonesia's trade partner's population, the greater Indonesia's manufactured goods trade flow.

$Comlang_{ijt}$ has a positive sign which means that Indonesia would have greater manufactured goods trade flow with countries who have the same language as Indonesia.

$Contig_{ijt}$ has a positive sign which means that Indonesia would have greater manufactured goods trade flow with countries who share borders with Indonesia.

$ACFTA_{ijt}$, $AFTA_{ijt}$, $AKFTA_{ijt}$, and $AANZFTA_{ijt}$ are still unpredictable since the FTAs impacts on Indonesia's manufactured commodities trade flow are still unknown. Thus, the sign might be positive or negative. A positive sign means that Indonesia's involvement in the FTAs boost the manufactured goods and a negative sign means the other way around.

4.5 The Issue of Zero Trade Flows

The gravity model uses the log-normal equation sometimes has some problems which are: the bias created by the logarithmic transformation, the failure of the homoskedasticity assumption and the way zero values are treated. The first issue happens because when a model use log-normal equation, it means that it estimates the log-normal variables, not the variables themselves and the antilogarithms of the estimation will be biased especially when the estimation uses Ordinary Least Square (OLS). The next issue which is homoskedasticity assumption failure can make variable's consistency and efficiency suffer. However, the most common problem appears in the gravity model is the last issue, treatment of zero trade values. It becomes a problem since '*The log-normal model cannot deal well with zero-valued trade flows, since the logarithm of zero is undefined*' (Burger et al. 2009).

Frankel et al. (1997) argue that the zero trade flows (usually because of the levels of trade are too small) occur due to the small-sized and distant countries tend to rarely trade with each other. Furthermore, as argued by Burger et al. (2009), those zeroes in trade between countries will appear more in some goods trade flow rather than overall trade flows because every country does not produce all commodities as well as have the demand for all commodities.

To deal with zero trade flows, there are three alternatives which are first, simply drop all of the zero trade from the data set. However, this alternative may cause bias in the result because significant information on a small number of trade is omitted. Another alternative is to use Tobit estimation technique, and the last alternative is to add a small number to replace the zeroes (Burger et al. 2009, Linders and Groot 2006).

Based on the alternatives discussed before, this study applies the last alternative to deal with zero trade flows. In this study, there are 248 zero flows (21 zeroes in the export flow and 227 zeroes in the import flow) from 2184 total observation or 11.35% zeroes from total data, and so I used a linear transformation and added 0.005 to all trade flows. Thus, the log-natural transformation can be done, and the zero trade flows can be included in the estimation.

Chapter 5
Result and Analysis

Indonesia has started to liberalise its market since 90's with AFTA as the initial step. Now, fifteen years after it, Indonesia involved in twenty FTAs with ACFTA as the largest market coverage FTA. This study aims to analyse the impact of ACFTA as trade liberalisation with gravity model approach. In this chapter, the empirical results of the gravity model are presented. To construct the empirical results, cross-sectional and data panel gravity model between Indonesia and 104 countries for 1992-2012 were used to estimate the augmented gravity model as stated in equation [3] in the previous section.

5.1 Empirical Results

5.1.1 Cross-sectional Estimation

Table 5.1
Cross-sectional Regression Results – Export Flow

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	1992	1995	1998	2002	2005	2008	2012
Dist	-1.717**	-1.250*	-0.430	-1.280**	-1.232**	-1.076***	-0.834***
	(0.804)	(0.635)	(0.896)	(0.529)	(0.553)	(0.303)	(0.292)
GDPj	1.297***	1.149***	1.291***	1.055***	1.031***	0.957***	0.996***
	(0.216)	(0.149)	(0.214)	(0.127)	(0.130)	(0.0725)	(0.0739)
Popj	-0.592*	-0.488**	-0.466	-0.00445	0.106	-0.00999	-0.0202
	(0.322)	(0.225)	(0.319)	(0.186)	(0.198)	(0.109)	(0.108)
com_lang	-0.735	-1.044	-0.580	-0.210	-0.128	-0.168	-0.497
	(3.498)	(2.707)	(3.822)	(2.256)	(2.306)	(1.242)	(1.194)
contig	1.154	0.826	1.556	0.859	0.984	0.543	1.014
	(3.050)	(2.149)	(3.037)	(1.797)	(1.833)	(0.987)	(0.948)
ASEAN		1.100	2.662	0.494	1.686	1.275	1.493
		(1.745)	(2.463)	(1.455)	(3.035)	(2.065)	(1.992)
ACFTA					-1.205	-0.852	-0.927
					(2.340)	(1.264)	(1.215)
AANZFTA					0.366	0.451	0.468
					(1.623)	(0.876)	(0.846)
AKFTA						0.389	0.562
						(1.220)	(1.173)
Constant	9.760	7.898	-3.798	2.960	1.129	3.551	0.475
	(9.306)	(7.050)	(9.973)	(5.959)	(6.185)	(3.390)	(3.297)
Observations	104	104	104	104	104	104	104
R-squared	0.351	0.480	0.354	0.591	0.601	0.802	0.813

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculation using STATA 15

Following Ardiyanti (2015), this study uses cross-sectional gravity estimation for the years 1992, 1995, 1998, 2002, 2005, 2008, and 2012. Table 5.1 above summarises the empirical results for the gravity model in the export side, and Table 5.2 provides information about the findings for the import side.

Table 5.2
Cross-sectional Regression Results – Import Flow

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	1992	1995	1998	2002	2005	2008	2012
Dist	-2.652**	-2.055	-1.726	-2.512**	-1.068	-2.465**	-2.844**
	(1.286)	(1.406)	(1.387)	(1.020)	(1.217)	(1.047)	(1.192)
GDPj	2.987***	2.384***	2.771***	2.479***	2.819***	2.291***	2.572***
	(0.346)	(0.329)	(0.332)	(0.246)	(0.286)	(0.251)	(0.302)
Popj	-0.964*	-0.713	-0.692	-1.006***	-1.073**	-0.809**	-0.780*
	(0.515)	(0.498)	(0.494)	(0.359)	(0.437)	(0.376)	(0.441)
com_lang	-2.022	-2.189	-2.441	-4.375	-3.644	-3.266	-5.042
	(5.592)	(5.997)	(5.916)	(4.349)	(5.077)	(4.293)	(4.879)
contig	2.753	2.091	3.276	2.779	2.455	0.725	2.703
	(4.877)	(4.761)	(4.700)	(3.463)	(4.036)	(3.411)	(3.874)
ASEAN		0.845	2.117	1.780	2.134	-0.265	2.997
		(3.867)	(3.813)	(2.804)	(6.683)	(7.135)	(8.139)
ACFTA					2.795	1.614	-0.667
					(5.152)	(4.368)	(4.965)
AANZFTA					0.168	0.127	-0.982
					(3.575)	(3.029)	(3.457)
AKFTA						1.258	0.505
						(4.217)	(4.794)
Constant	-19.95	-13.96	-27.88*	-7.689	-29.42**	-7.136	-11.31
	(14.88)	(15.62)	(15.44)	(11.48)	(13.62)	(11.72)	(13.47)
Observations	104	104	104	104	104	104	104
R-squared	0.530	0.450	0.523	0.596	0.591	0.590	0.568

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: Author's calculation using STATA 15

According to Table 5.1, the value of R-squared in 1992 shows that about 35 per cent of the variation in the model can be explained by the model. The R-squared value then increased in the year 1995 with 48 per cent of the variation in the model can be explained by the model. In 1998 the value dropped again back to 35 per cent of the variation in the model can be explained by the model. Afterwards, the R-squared value was increasing time by time from 2002 and reach the highest R-squared value in 2012 with 0.816. It implies that about 81 per cent of the variation in the model can be explained by the model. However, Table 5.2 shows a different range of the R-squared value. In the import side, the R-squared value is more stable with the value around 0.53 to 0.59.

Now let us look at the coefficient $\boldsymbol{\beta_1}$. On the export side, the distance variable is always negative and mostly statistically significant, except on the year

1998, with the expected negative coefficient from all of the regression results. It shows that geographical distance is an important factor that hinders Indonesia's export flow in manufactured goods. However, the level seems decreasing from -1.7 in 1992 to -0.837 in 2012. When we compare the result with the data on figure 3.5a, when distance became insignificant in 1998 the graph for manufactured goods export to Japan and USA then increasing which may indicates that when the distance variable become insignificant to trade then the role of distance as impediment of trade also diminished so the trade flow especially for more distant countries became bigger. Even so, the distance variable in the import side is totally different with the one in the export side. It shows us that the coefficient is much bigger and also increasing after China joined the ACFTA which might be a sign of Indonesia's preference to import manufacturing goods from the trading partners nearby rather than doing the long-distance shipments. If we compare it with figure 3.5b, we can see that after the ACFTA implementation the manufactured goods import flow from distant countries such as USA and Germany stayed at a low level when the import flow from closer countries in Asian region hiked.

Indonesia's trading partner's GDP variable coefficients for both export and import have positive significant coefficients. This is in accordance with the prediction that the greater Indonesia's trade partner's GDP, the greater Indonesia's manufactured goods trade flow. Nevertheless, the coefficient is lessened on the export side which maybe indicates that Indonesia's manufactured goods export has switched to its trading partners with smaller GDP.

The coefficient $\boldsymbol{\beta_5}$ does not bring significant impact on Indonesia's manufactured goods export but on the import it does. On the export side the coefficients are decreasing from time to time and on the import side the coefficients are more stable around -0.78 to -1.00. Both the export and import side regression results mostly show the negative sign. It means that Indonesia tends to export and import the manufactured goods to and from low populated trading partners.

Now let's move to the coefficient $\boldsymbol{\beta_6}$. Surprisingly, the language similarity between Indonesia and its trading partner shows a negative sign and does not bring significant impact on Indonesia's manufactured goods export and import flow. Yet, on the import side the coefficient $\boldsymbol{\beta_6}$ shows a strong negative value which may indicates that Indonesia tends to import manufactured goods from countries which has a different language.

Contiguousness coefficient in the export and import side has a positive sign in overall but shows different information. The coefficients on both the export and import side show a strong positive coefficient indicates that Indonesia is trading more goods from neighbouring countries.

Finally, we look at the ACFTA coefficient. From the first three observations (1992, 1995, 1998) there are no ACFTA coefficients since China joined the ACFTA from 2002. The regression results for ACFTA are different for the export and import side. On the export side, after ACFTA is applied, it brings negative but insignificant impact. Meanwhile, on the import side, the ACFTA initially increases manufactured goods import flow but it decreases over time, and ultimately in 2012 the coefficient shows that the ACFTA has an impact to reduce Indonesia's manufactured goods import.

However, the cross-sectional analysis cannot cover the analysis of country-specific and time-specific effects. Panel data regression analysis can cover this drawback because it offers more in-depth analysis with country-specific and time-specific effects. In this study, the time-specific effects is used to analyse the changes overtime in the observation period.

5.1.2 Panel Data Estimation

The results of Fixed Effects using time-specific effects regression on the export and import side is as follow:

Table 5.1

Panel Data Regression Results (Fixed Time Effect)

	(1)	(2)
VARIABLES	export	import
GDPi	0.966	7.587
	(3.865)	(9.086)
GDPj	0.724***	0.516
	(0.172)	(0.405)
Popi	0.534	-45.08
	(27.43)	(64.50)
Popj	-1.879***	1.298
	(0.456)	(1.071)
ASEAN	-0.293	0.158
	(0.846)	(1.988)
ACFTA	-0.105	1.524
	(0.562)	(1.320)
AKFTA	0.0838	-0.381
	(0.495)	(1.163)
AANZFTA	0.165	-0.579
	(0.490)	(1.153)
Constant	-6.254	642.7
	(423.8)	(996.4)
Fixed time effects	yes	yes
Observations	2,184	2,184
R-squared	0.161	0.082
Number of ctr_id	104	104

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: time effect is not reported

Source: Author's calculation using STATA 15

Results from the Fixed Effects Model with specific time effects regression for the export and import flow can be seen in table 5.3. In the export side, there are only two statistically significant variables which are the GDP and the of export destination countries. However, there are some variables which show a

different sign from what we had expected. Those variables are the trading partner's population, ASEAN (AFTA), and ACFTA variables. Meanwhile, in the import flow regression results, there are no statistically significant variables. However, Indonesia's population, AKFTA, and AANZFTA variables show a different sign from our initial expectation.

5.1.3 Distance, GDP, Population, Language, and Contiguousness Impact on Indonesia's Manufactured Commodities Trade Flows

In this section, I will discuss the regression results based on the previous section. The FEM data panel with specific time effects regression results will mostly be used because it can give a clear picture of the connection between variables that change over time (Nowak-Lehmann et al. 2007). However, because in the panel data estimation the time-invariant variables are omitted, then for the time-invariant variables regression result I will refer to the cross-sectional regression result.

The distance variable estimation results can only be seen in cross-section regression result since in the data panel regression, the time-invariant variables are omitted. In the export side, the distance coefficient shows a decreasing trend with an initial value of -1.7 in 1992 and finally became -0.8 in 2012. This may indicates that geographical distance is becoming less important, or the long-distance shipments are becoming more attractive as argued by Hummels (2007), particularly for Indonesia's manufacturing goods export. Meanwhile, in the import side, the statistically significant distance coefficient values are mostly above -2.4 which may indicates that Indonesia tends to import manufactured commodities from distant countries rather than nearby countries.

Indonesia's GDP does not bring a significant impact on the manufactured goods trade flow both in the export and import flow. However, the coefficients shown by the regression result are positive signs, the same as expected before. It means that the bigger Indonesia' GDP, the more Indonesia exporting and importing manufactured goods. Simultaneously, Indonesia's trade partner GDP variable coefficients have a positive sign just as expected, but only bring significant impact on the export flow while on the import flow it does not. The coefficient value on the export side is 0.72 which means that with an increase of 1 per cent of Indonesia's partner GDP will result in 0.72 per cent increase in Indonesia's manufactured goods export flow, as long as other variables constant.

The estimated coefficients on Indonesia's population are insignificant both on the export and import flow, yet the sign is different for both trade flows. Meanwhile, the population of Indonesia's manufactured goods trading partner is negative significant for the export flow and inversely in the import flow. As argued by Kien (2009), the different sign in population can be happened because of different economies of scale. The larger population might be an indication of a bigger local market, and it causes reduced dependency to the international market. As a result, the negative sign will appear if this happened. In contrast, the bigger domestic market as the population grows, the economies of scale benefit will be fully utilised, opening opportunities to trade with other countries.

Language similarity can be used to promote trade (Melitz 2008; Egger and Lassmann 2012) because communication is essential in trade. Without proper communication, things can go south; namely, goods can be defected because of

miscommunication in packing, or there might be a violation in the contract because of misinterpretation (Melitz and Toubal 2014). However, in this study, it seems that the results for export and import flow show that the language similarity is an impediment to trade, shown by the negative sign of the coefficients in both trade flows. If we look at the details in the dataset, only two other countries speak the same language as Indonesia which are Malaysia, and Singapore. All of the three countries are speaking the same language, Malay. Nevertheless, though they are speaking the same language, Malay language in those three countries has different meanings. Thus, the potency to have higher trade flow because of language similarity cannot be realised.

The contiguousness is proven can spur Indonesia's manufactured goods trade flows, as shown by the positive coefficient sign. From this result, we can draw a conclusion that Indonesia tends to trade with neighbouring countries rather than distant countries. This might be in line with distance variable which has negative coefficients, showed that the further the distance the less manufactured goods trade made by Indonesia.

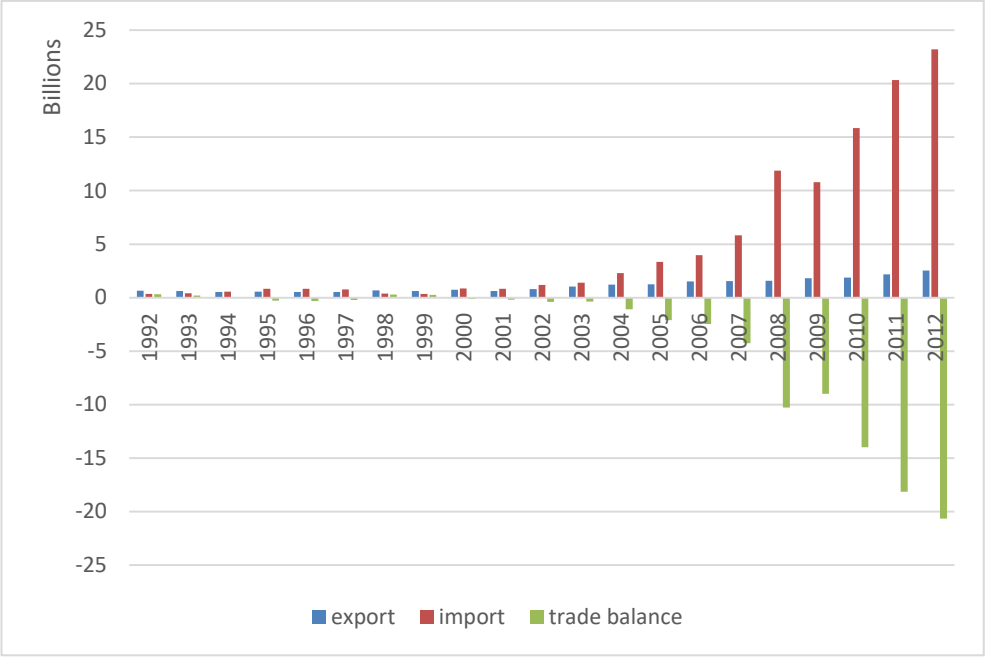
5.1.4 ACFTA Impacts on Indonesia's Manufacturing Goods Trade Flow

The estimation using the augmented gravity model to estimate the variables which are affecting Indonesia's manufactured goods trade flow had completed with results presented in previous sections. Indonesia's involvement in ACFTA, based on the results above, does not bring significant impact to Indonesia's manufactured commodities trade flows. It may indicates that the ACFTA utilisation is still far from its optimum level. According to Hiratsuka et al. (2008) study prove that the Japanese affiliated companies in ASEAN countries are not accustomed to FTAs in this region, the procedures to fulfil the requirement of the rules of origins (ROOs) are too complicated, and the administrative costs to acquire the certificate of origin also too high, so they hinder the FTA utilization.

Although the results are insignificant, the ACFTA's coefficient result has a negative sign in the export side and positive sign in the import side. It means that after Indonesia joined ACFTA, Indonesia tends to have lower export and higher import of manufactured goods. Based on the UNCOMTRADE data, before China joined the AFTA and became ACFTA, Indonesia had manufactured goods trade surplus with China.

In the early period of observation, in Figure 5.1 it clearly can be seen that Indonesia could record manufactured goods trade surplus with China in 1992, 1993, 1998, and 1999. However, after the ACFTA was signed and implemented Indonesia's manufactured goods trade flow could not achieve a trade surplus. Furthermore, the trade deficit got worse every year, reaching its peak on 2012 with US$ 20 billion deficit. This might be parallel with Aslam (2011) study which was conducted to explore the impacts of ACFTA on Indonesia's manufacturing industries mainly the producers and/or exporters. He used several trade performance indexes namely Revealed Comparative Advantage, Intra-industry trade, and Hillman index. He found out that ACFTA has a negative impact on Indonesia's manufacturing sector performance and firms because Indonesia's manufactured goods competitiveness could not match China's.

Figure 5.1
Indonesia – China Manufactured Goods Trade Flow (1992-2012)



Source: UN COMTRADE 2018, Author's calculation

Chapter 6
Conclusion and Policy Implications

6.1 Conclusion

This paper has studied the impact of ACFTA on Indonesia's manufactured commodities export and import flow using the gravity model. To achieve the objective, this paper used the augmented gravity model which also used in the previous study by Dianniar (2013) and in addition including other FTAs which were enforced on the period of observation. Cross-sectional and panel data analysis from manufactured goods trade flow from Indonesia to 104 its trading partners for the period of 1992 until 2012 has performed to estimate the model.

The estimation results show that the distance variable which is closely related to transportation costs has a negative and statistically significant impact in both manufactured commodities export and import flow. However, not like in the import side which has high coefficient values, in the export side, the coefficients were decreasing year by year which may indicates that the geographical distance is becoming less important for Indonesia to export its manufactured goods.

Indonesia's GDP has a positive influence on manufactured goods export and import flow, but the impacts are not statistically significant. Meanwhile, the GDP of Indonesia's trading partner does have a positive impact on manufactured commodities export and import flows but only significant on the export side. It means that the economic size of Indonesia and its trading partners does matter to influence Indonesia's manufactured goods trade flow.

The population of Indonesia does not have a significant impact but tend to increase manufactured goods export and decrease its import, showed by the coefficient's sign which are positive in the export side and negative in the import side. Simultaneously, Indonesia's trade partner's population has a negat\ive significant impact on export and positive impact on import flow.

When Indonesia and its trading partners have the same official language, it is supposed to increase the manufactured trade flows. However, it does not happen since the coefficient of language similarity variable shows a negative sign.

The contiguousness variable shows a positive impact on Indonesia's manufactured commodities export and import flow, confirming the fact that the closer the distance between two countries, the higher the trade flow between them.

The main finding of this study is the ACFTA has no significant impacts on Indonesia's manufactured goods trade flow. However, from the estimation results, the ACFTA tends to reduce Indonesia's manufactured commodities export and inversely on the import flow.

6.2 Policy Implications

Some policy implication which can be considered from this research are:

1. With an insignificant effect of ACFTA which supposed to promote more intra-industry trade among its member countries that will ultimately lead to specialisation in the manufacturing sector, there is an indication that the ACFTA utilisation is still far from its optimum level. Indonesia should put more effort to gain more benefit from the ACFTA by increasing its utilisation level. The ACFTA should be expanded into broader scope, not only in the tariff reduction. Product standard agreement policy such as the rules of origins and certificate of origins with ACFTA member countries should be made easier and affordable to encourage more trade among them, Trade facilitation by simplifying customs procedures among ACFTA member countries also can be undertaken.
2. Regarding coefficients signs which may indicates the disadvantage of the ACFTA, there are two strategies to mitigate this which are:
   a) A proper analysis of Indonesia's manufactured goods comparative advantages should be done. It is necessary to identify which commodities are superior in international trade and which are not. For the leading products, Indonesia should know the origin of that comparative advantage and improve it so it can be maintained as the dominant product of Indonesia's manufactured goods. Increasing domestic productivity, providing reliable infrastructures, lowering logistics and transportation costs can ultimately keep the price of the goods produced by the industry low. Meanwhile, for the inferior products, the comparative disadvantage and its source should also be identified because improvements can be made to keep the industry survive and act as a supplier for the domestic market.
   b) Manufactured goods usually associated with final and consumption goods. Decelerating import for those goods is vital to nurture the local industry. Import prohibition seems to be difficult to do since the aims of FTA is to dismantle the trade barriers among its member countries. Therefore, a self-sustaining manufactured goods policy (especially for final and consumption goods) should be considered as an alternative. By giving more access to imported raw, intermediary goods, and capital to produce final goods, either for export or local consumption may be undertaken to cut imported final goods.

6.3 Suggestion for Further Research

This research is an initial study, suggesting some addition for future studies. The model used in this study has found its objective to estimate ACFTA impacts on Indonesia's manufactured goods trade. A more specific study for each manufacturing goods classification is compelling to be done in future research in order to explore which commodities are actually gain benefits or suffer losses from this FTA. Lastly, this research is limited only for the explanatory variables included here. Thus, for further development of this study, more explanatory variables which have shown its significance such as exchange rate and foreign direct investment can be added.

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