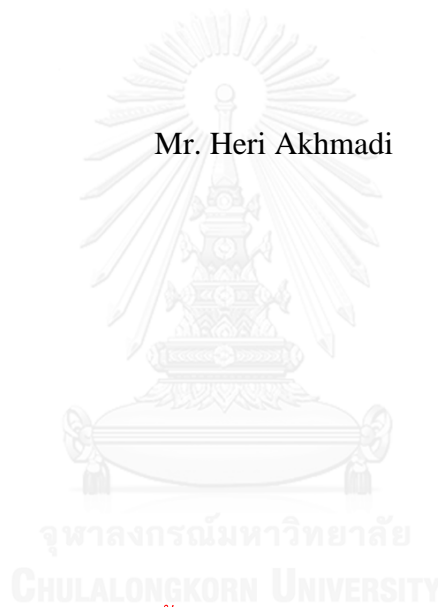


Impact of Free Trade Agreement (FTA) on Indonesian Agricultural Exports

Mr. Heri Akhmadi



บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)
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ผลกระทบของข้อตกลงการค้าเสรี (FTA) ต่อสินค้าเกษตรส่งออกของประเทศอินโดนีเซีย



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
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การศึกษาว่าการเข้าร่วมเขตการค้าเสรี ของประเทศอินโดนีเซีย มีผลต่อการส่งออกผลผลิตทางการเกษตรของอินโดนีเซียอย่างไร โดยใช้ข้อมูลประจำปีจาก 140 ประเทศคู่ค้าในปี 2547- 2556 จากนั้นใช้ Gravity Model ในการวิเคราะห์ปัจจัยของการส่งออกสินค้าทางการเกษตรของประเทศอินโดนีเซีย การศึกษานี้ยังสำรวจผลกระทบของการเป็นสมาชิกเขตการค้าเสรีด้านสินค้าหลัก 5 ชนิด นั่นคือ โกโก้, มะพร้าว, กาแฟ, น้ำมันปาล์มและยางแปรรูปด้วย

ผลการศึกษาพบว่าการส่งออกสินค้าทางการเกษตรของประเทศอินโดนีเซียมีความสัมพันธ์ในเชิงบวกกับการขยายตัวของจำนวนประชากรและการขึ้นทะเบียนการค้าเสรี แต่มีความสัมพันธ์ในเชิงลบกับการเพิ่มขึ้นของอัตราแลกเปลี่ยนสกุลเงินของประเทศอินโดนีเซีย การศึกษานี้ยังพบว่าการเป็นสมาชิกเขตการค้าเสรีอาเซียนนั้นส่งผลดีเป็นอย่างมากต่อการส่งออกสินค้าทางการเกษตรของประเทศอินโดนีเซียอีกด้วย

ปัจจัยที่เป็นผลกระทบต่อสินค้าโภคภัณฑ์ มีดังนี้คือ การเข้าร่วมเป็นสมาชิกการค้าเสรี ASEAN-India และ ASEN-Korea ซึ่งช่วยกระตุ้นการส่งออกของ ยาง และ โกโก้ อย่างไรก็ตาม กลมการค้าเสรี มีผลในเชิงลบต่อการส่งออกของ มะพร้าว และ น้ำมัน ปาล์ม กลุ่มการค้าเสรี ASEAN-Australia และ New Zealand มีผลทางลบต่อการส่งออกยางเช่นเดียวกัน

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The study of impact of Free Trade Agreement (FTA) on Indonesian agricultural exports study was aimed to examine whether Indonesian participation on free trade agreement increased exports of agriculture commodity. Annual data from 140 partner countries along 2004-2013 had been used. The augmented gravity model was chosen to analyze factors affecting Indonesian agricultural exports. This study also examined the impact of FTA on five major agriculture exports commodities including cocoa, coconut, coffee, palm oil and rubber.

The result showed that Indonesian agricultural exports were positively correlated with the population growth and free trade agreement enrollment but negatively correlated with the Indonesian currency exchange rate appreciation. It also found that Indonesian membership on ASEAN Free Trade Area (AFTA) has a significant positive impact on agricultural exports.

The impact on commodities is as follows, Indonesian membership on ASEAN-India FTA and ASEAN-Korea FTA has promoted export on rubber and cocoa respectively. However, the ASEAN FTA has significantly negative impact on coconut and palm oil export. The result was similar to the ASEAN-Australia and New Zealand FTA which negatively impacted for rubber exports.

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CHAPTER 1

Introduction

1.1 Background and Significance of the Problem

Over the past two decades since early 1990s, free trade agreement had become the focus of various groups of countries. As of 7 April 2015, World Trade Organization (WTO) had received 612 notification of the formation of Regional Trade Agreements (RTAs).³ The main idea of the establishment of economic integration is to increase trades and other benefits in the form of a more competitive trade region by reducing or even removing trade and non-trade barriers and freeing flow of goods and services.

Indonesia, like another country in the world also involved in several free trade agreements. Based on regional trade agreement database that notified to WTO, as January 2015 Indonesia has been a member of at least seven free trade agreements, consist of five regional agreement within ASEAN namely ASEAN Free Trade Area (AFTA), ASEAN-China Free Trade Area (ACFTA), ASEAN-India Free Trade Agreement (AIFTA), ASEAN-Korea Free Trade Agreement (AKFTA) and ASEAN-Australia and New Zealand Free Trade Area (AANZFTA). Another free trade agreements are in the form of bilateral economic cooperation namely Indonesia-Japan Economic Partnership Agreement (IJEPA) and the latest one is Indonesia-Pakistan Preferential Trade Agreement.⁴

The membership in regional trade agreement is expected to increase trade among member countries by reason of decreasing trading cost and removing barrier on trade. This policy ultimately can enhance market size and increase the

competitiveness of countries product, which in the end could increase economic growth and welfare.

Despite of many potential benefits, trade liberalization has another side regarding its effect on economy particularly the liberalization in agriculture sector. For many countries, especially developing countries, agriculture is still becomes major sector in economy. For Indonesia, agriculture sector is still considered as the economic backbone due to the importance of this sector to the share of country's Gross Domestic Product (GDP) and employment. Based on Statistics Indonesia, the share of agriculture sector to Indonesian GDP are around 13.0 per cent to 15.3 per cent in the last 10 year since 2004 to 2013.⁵ In term of employment, according to National Labor Force Survey 2013 conducted by Statistics of Indonesia, agriculture sector provide 39,220,261 employment or about 34.8 percent of Indonesia workforce.⁶

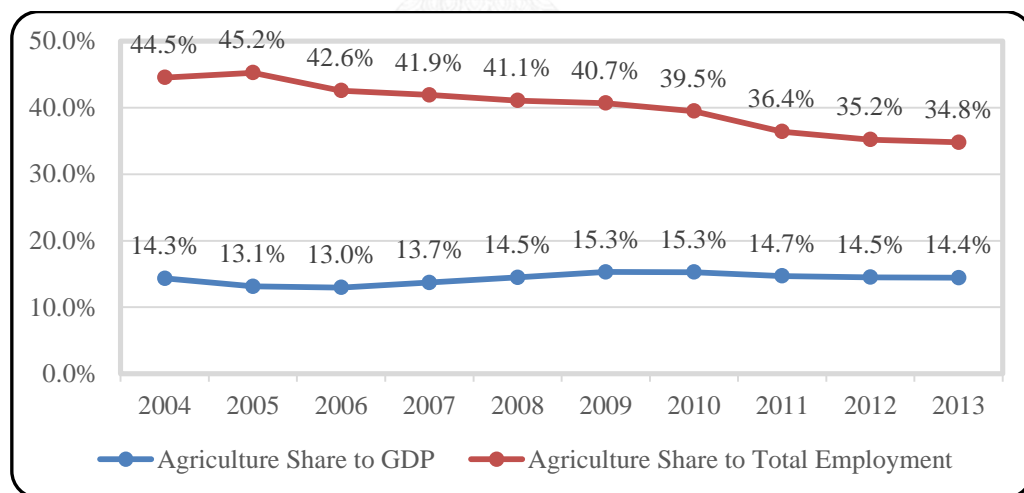


Figure 1.1 Indonesian Agriculture Sector Share to GDP and Employment (Statistics Indonesia⁶; World Development Indicator World Bank⁷)

Another fact regarding the importance of agriculture sector in Indonesian economy is agriculture commodity exports. United Nation reported that in 2013 Indonesia is major commodity exporter in the world for several commodities such as

Palm Oil (No.1st), Coconut (No.1st), Rubber (No.2nd), Cocoa (No.3rd) and Coffee (No.6th).⁸ These five commodities are also the major agricultural export commodities of Indonesia which is compose around 88% of total Indonesian agricultural exports in 2013. The share of agriculture exports for the Indonesia's total value of non-oil gas export was around 23 percent in the last five years.⁹

Trade liberalization undertaken by Indonesian government through membership in several free trade agreements (FTAs) may encourage economic growth and increase trade because Indonesia's commodity would had larger market and get more efficient trade procedure within FTA. However in the same time, participation in FTA also gives more access for another country to Indonesian market, this means would threaten domestic agriculture commodity because they will compete with other countries imported product which may cheaper and better in quality.

It is interesting to investigate whether Indonesia's agricultural exports are influenced by Indonesia's membership in FTAs or not. It is also appeal to find out whether these facts affect on Indonesia's decision to participate in free trade agreement. Hence this study tried to reveals whether free trade agreement ascertains Indonesian agricultural trade flows.

1.2 Research Question

Based on the concise background, the main question that this research will find the answer is: Does Indonesia's membership in Free Trade Agreements (FTAs) encourages Indonesia's agricultural exports, mainly on five agricultural export major commodities?

1.3 Research Objectives

The objectives of this study are:

1. To analyze similarity and differences among FTAs that Indonesia involved, particularly on five major Indonesia's Agriculture exports commodity.
2. To assess the economic impact of Free Trade Agreement (FTA) on Indonesian agriculture export and mainly on five major Indonesia's Agriculture exports commodity, including: Cocoa, Coconut, Coffee, Palm Oil and Rubber. Those commodities have been selected because it is major commodity exports of Indonesian agriculture sector.

1.4 Scope of the Study

Agriculture sector in this study are refer to WTO definition on agricultural products (Anex.1 WTO Uruguay Round Agreement) which is consist of raw material/unprocessed product rounded up under Chapter 01-24 (excluding chapter 03, fish and crustaceans, mollusks and other aquatic invertebrates) of The Harmonized Commodity Description and Coding System or generally known as Harmonized System (HS) in addition to a number of commodity in chapter 33, 35, 38, 40, 41, 43 and 51-53 of the Harmonized System.¹⁰

Table 1.1 Commodity HS code and definition

No	HS Code	Definition
1	180100	Cocoa beans, whole or broken, raw or roasted
2	151311-151319	Coconut (copra) oil or fractions simply refined
3	090111-090122, 090190	Coffee, whether or not roasted or decaffeinated; coffee substitutes containing coffee in any proportion; coffee husks and skins;
4	151110	Palm oil, crude
5	400110- 400129	Natural rubber and gums, in primary form

Source: World Custom Organization.¹¹

This study also examines the impact of FTA on commodity level. There are five major agricultural export commodity selected in this research. The five major Indonesian agricultural exports commodities are Cocoa, Coconut, Coffee, Palm Oil and Rubber. These commodities have been chosen in this study by reason of their importance in Indonesian agriculture sector. These commodities encompass for about 73.5 per cent of total Indonesian Agricultural exports commodity in the last 10 year since 2004-2013.⁸ Detail explanation about these five commodities is shown in Table 1.1 including definition and Harmonized System code.

1.5 Possible Benefits

The impact of free trade agreement (FTA) on agricultural exports can be identified and used for policy implication regarding development of agricultural export commodity for Indonesian government, particularly Ministry of Trade and Ministry of Agriculture, Republic of Indonesia. Also, this study will provide benefits to the development of a competitive commodity within the framework of free trade agreement and as consideration of the decision to establish free trade agreement with other countries.

CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Foundation

This chapter consists of concise explanation related to the theory and concept regarding to the topic of this study. Previous researches regarding the impact of Free Trade Agreement (FTA) on agriculture export and particularly the FTA impact on Indonesian agriculture exports are discussed here.

2.1.1 Theory of International Trade

International trade theory is defined as a concept to explain the process of exchanging goods and services between two persons or individual in two or more different countries. People believe that they will get an advantage in every trade they made is becoming a reason why people or country trade each other.¹²

People already involved in international trade since thousand years ago. Helpman (2012) on their paper titled International Trade in Historical Perspective mentioned that more than three millennium ago there has been a trade between Mesopotamia (today is the part of Iraq) and Levant (Syria). Furthermore, in the beginning of the first millennium, The Roman Empire trading routes is extended from Europe to western Asia and Northern Africa. In the 8th century, Carolingian Empire in Europe experienced imported spices and exotic pharmacology from Asia and Middle East and exported textiles and tin. It's continued in 14th century when European countries explored to whole of the world.¹³ That's why Schumacher (2012) pointed out that international trade is an old phenomenon.¹⁴

Generally international trade theory can be divided into two major theories called classical theory and modern theory. The classical theory of international trade is referred to the country-based perspective, while the modern theory based on the perspective of firm rather than a country as major component of international trade. The classical theory consist of several theories including mercantilism, theory of absolute advantage, theory of comparative advantage and the theory developed by Swedish economist, Eli Heckscher and Bertil Ohlin. Whilst the modern international trade theory divided by country similarity theory, product life cycle theory, global strategic theory and theory of national competitive advantage.¹⁵

Table 2.1 Theory of International Trade

Classical Theory	Modern Theory
Mercantilism Theory	Theory of Country Similarity
Theory of Absolute Advantage	Product Life Cycle Theory
Comparative Advantage Theory	Global Strategic Theory
Heckscher-Ohlin Theory	Theory of National Competitive Advantage

Source: Carpenter and Dunung (2012).¹⁵

Based on Langdana and Murphy (2014), the mercantilism theory was developed in the 8th century when European countries extended their empires around the world. The main idea of this concept is assume that a country become more prosperous if they can accumulates more gold and silver by increasing export and decreasing import. A country enforced restriction on imports goods and discourage import in order to increase export. This mercantilism characteristic is called protectionism and still exist until today in the modern international trade.¹⁶

Another part of classical theory is the absolute advantage theory. This theory was proposed by Adam Smith, a Scottish political economist. Free trade concept is

the main idea of this theory. He argued that in international trade each country will use different amount of materials to produce products. A country will win the competition if they can make the product with the lowest raw materials. If a country can make a product in the most efficient resources, they can specialize to make that product and have an advantage on it. The more specialized a country on producing product then the production process will be more efficient. Adam Smith also argued that government intervention or restriction must be eliminated to support the trade and let the market to regulate the trade naturally.¹⁵

The problem face by the theory of absolute advantage is that some countries may not have absolute advantage. David Ricardo proposed the theory of comparative advantage in 1817 to answer this challenge. The main idea of this theory is focuses on the relative advantage rather than absolute advantage as Adam Smith hypothesis. Anderson (2006) mentioned that in order to get maximum benefit from international trade, a country should export product in which they have comparative advantage. In other word, trade between two or more countries is take place because there are differences in production factor. David Ricardo also agreed that free trade is good to enhance trade among countries.¹⁷

The last concept in classical theory of international trade is the theory of factor proportion proposed by Eli Heckscher and Bertil Ohlin in the early 1990s. They argued that a country can optimized its trade's advantage from producing goods using resources were affluence in the country. Concisely the foundation of this theory is based on supply and demand law on production factor. The resource which has larger supply than demands will be lower in price. Conversely the production factor that less in supply will be higher in price.¹⁵

In opposition to classical theory, the modern theory of international trade is motivated by the emergence of multinational enterprise (firm base). The first theory in modern theory of international trade is the theory of country similarity. This theory was proposed by Stefan Linder, a Swedish economist in 1961. The main idea of this theory is simple; trade is happen when supply of goods fit (similar) to the demand for those goods. Linder pointed out that two or more countries with similar characteristic (economic size, culture, language, per capita income etc.) tends to trade more. In the other word, identical country will be obsessed in similar product or services. A country can sell differentiate goods if they have reputation and good brand.¹⁸

The second theory is product life cycle theory. This theory proposed by Raymond Vernon in 1960s as an answer for Heckscher and Bertil Ohlin's theory which lack of success of to explain international trade patterns. The main idea of this theory is life cycle product which consist of introduction stage, growth stage, maturity stage and decline stage as the last stage .¹⁹

Based on the live cycle theory, in the first manufacturing stage a product will be produced in the country where the product invented (developed countries). The product which has come into maturity stage and produced in huge amount using mass-production techniques will be moved to the competitive country in term of labor and production factors (developing countries) and then exported to the developed country where the product invented. In the other word, inventor country in the introduction stage is an exporter of the product but after the product come into maturity stage and produced in the country which has comparative advantage on production factors the original inventor country will become importer of the same product.²⁰

Another theory in the modern theory of international trade is global strategic theory. Developed in 1980s by economist Paul Krugman and Kevin Lancaster This theory also tries to explain the pattern of international trade. Based on this theory, to win the competition with other rival in global market a company must develop some strategies. The common strategy developed to win the global competition is optimizing research and development, owning intellectual property right, increasing the economics of scale, control to raw material access and develop the unique business method.¹⁵

The last theory of new modern international trade theory is the theory of national competitive advantage. Michael Porter an American economist developed this theory to be contributed in the international trade theory evolution. Introduced in 1990, the main idea of this theory is country's competitiveness can be obtained by innovation and upgrading the industrial capacity. Competition among companies is beneficial to increase the competitiveness since the competition will push and challenges the company to find innovation strategies to survive. Porter also explains how some countries are more competitive in production of goods and develop the industries.²¹

2.1.2 Theory of Free Trade and Economic Integration

Schumacher (2012) mentioned that the concept of international trade was first known in world trade rather than free trade concept but people were recognized with the concept of free trade for more than two centuries ago. The introduction of free trade system was began after the World War II and formalized in the scheme of General Agreement on Tariff and Trade (GATT). After the establishment of World

Trade Organization (WTO) the campaign on the reduction on trade and non-trade barrier was become more encouraged. The main objective of the formation of WTO is to promote trade liberalization. Hence, free trade become main issue in the development of international trade.¹⁴

The emergence of the phenomenon of economic integration in several regions in the world is started in the last two decades. European Union (EU) is the first region and the best example for the formation of regional economic cooperation. Since the establishment of the European Economic Community (EC) in 1958, it has developed the membership and degree of integration among members.²²

The phrase economic integration (EI) has been seen to have a number of definitions. Balasa (2013) on his book entitled *The Theory of Economic Integration* consider to define economic integration as both process and state of affairs.²³ In term of process it covers the elimination of trade discrimination between economies, while as a state of affairs it can be realized by disappearing of several form of distinction between countries. Although there is no clear definition on economic integration, Snorrason (2012) on his book “**Asymmetric Economic Integration**” refers economic integration as a process of reducing trade barrier between countries to increase trade and welfare at the end of the process.²⁴

Kehoe on his paper “**Regional and Global Economic Integration: Implication for Global Business**”, pointed out that regional economic integration implies the countries to cooperate each other in some types of economic cooperation to promote trade and encourage development. The basic principle of any economic

integration formation is the liberation of barriers to trade among two or more member countries.²⁵

According to Hosny (2013), agreements on the establishment of economic integration now is not only to lowering tariffs and removing quotas but also to increase exports orientation, market allocation of resources, services and investment. Hosny also pointed out that the new orientation on economic integration now is focus on export orientation than import substitution, increasing participation from private sector, attracting foreign direct investment (FDI) and to include all goods and services sector on the coverage of economic integration agreement.²⁶

2.1.3 Free Trade Agreement Process

Olayiwola, Osabuohien and Okodua (2011), said on their paper **Economic Integration, Trade Facilitation and Agricultural Exports Performance in ECOWAS Countries** that economic integration processes can be realized through various stages, from the first step cooperation which is preferential trading area to the advance economic integration which are the formation of economic, monetary and fiscal union.²⁷

An economic partnership between two or more countries to promote trade between them within the form of free trade agreement may occur through several processes. Based on Baldwin and Venables (1995)²⁸ and Kehoe (2007)²⁵, there are six step on the creation of free trade agreement:

1. **Preferential Trade Area** or preferential trade agreement (PTA): the countries who participate in this agreement give preferential access to several products among themselves. So, the tariff barriers are decrease but non-tariff barrier remain

exist. PTA is called the first step of economic integration. The Global System of Trade Preferences among Developing Countries (GSTP) is the example of this economic integration process.

2. **Free Trade Area (FTA):** the characteristic of this economic integration stage is the liberalization of trade regulation and elimination trade barrier on the most (if not all) goods and services for member countries. This including removal tariffs, import quotas and elimination non-tariffs barriers on goods and services trade among members according to the planned schedule. A free trade area can be an agreement between two countries (bilateral) or many countries (multilateral). ASEAN Free Trade Area (AFTA) is one of economic block example.
3. **Custom Union:** in the custom union, member countries set a common tariff for non-member. This means in the custom union the participant remove trade barrier among members and apply same tariff for non-member while previously each member set different tariff.
4. **Common Market:** economic integration process in this step is characterized by all characteristic of free trade area and custom union and added a fourth characteristic that is mobility of factors production including mobility of capital, labor and technology. They set common visa, develop common standard and have mutual acceptance on standard of other member countries.
5. **Economic Union:** The main characteristic of this integration process is a harmonizing monetary and fiscal policies in economic integration through creating a common currency and build a governing authority. The example of this

integration stages is European Union with the establishment of European Parliament by European Union countries.

6. **Political Union:** this is the final stages of economic integration. A political union combines full economic integration and political unification of member countries.

2.1.4 Agricultural Trade and Free Trade Agreement

A number of researches had been conducted to evaluate the impact of the membership on Free Trade Agreement (FTA) on agriculture trade. A previous study about Agriculture, Trade, and Regionalism South Asia conducted by DeRosa and Govindan (1996) examined South Asia's agriculture and trade relations and the implementation of the South Asian Association for Regional Cooperation (SAARC) Preferential Trading Arrangement (SAPTA). This study used quantitative analysis method with a simple economic model and employed two approaches. The first approach is examining the impact of SAPTA from the tariff reduction scheme and other fiscal policy to reduce charge (Para-tariff) among SAPTA member's countries. The second approach is to evaluate the economic cooperation between SAARC and APEC member's countries especially the impact of this close economic cooperation on SAPTA import from APEC countries.²⁹

The DeRosa and Govindan analysis found that the trade integration under SAPTA agreement increase intra-trade among member significantly, especially in agriculture product. Trade creation in agriculture sector was found to be limited only \$86 million or 2 percent, but trade diversion will be extensive under free trade agreement for about 75 percent (\$628 million). In addition, the SAPTA proved to give significant impact on intra trade among member countries value US\$ 841 million,

increase 145 percent or almost one and a half the level of intra-regional trade in South Asia. The positive gains are vary among member, for the largest 180 percent in Bangladesh (value US\$327 million) to India with the value US\$ 268 million or 114 percent. In line with the result on total trade, the establishment of SAPTA also gives positive impact on trade in primary commodities particularly in food commodities which increase to 189 percent account US\$ 404 million.²⁹

In line with the positive result for the SAPTA liberalization, DeRosa and Govindan study also found that SAPTA economic cooperation with APEC gives positive impact on import of agriculture commodity from APEC member countries. Import of food product increase 33 percent account US\$1,263 million.²⁹

Another study conducted by Zahniser, Pick, Pompeli and Gehlar (2002) on impact of regional economic integration on exports of agricultural commodities of The United States (U.S.). The major purpose of this study is to explore alteration in U.S exports of agricultural commodity to the MERCOSUR and NAFTA member's countries, both at the aggregate and individual commodities during 1980-1999. They employed gravity model to obtain the purpose in this study. The estimates results shows that the national income (GDP) of importing countries are positive and statistically significant, the magnitudes of these estimates is 0.32 implying that one percent increase in the sum of importing country's GDP will enhance US agricultural exports by 0.32 percent.³⁰

Regarding with the effect of trade liberalization Zahniser et al. (2002) mentioned that the membership in free trade agreement shows positive value and statistically significant. For instance the coefficient for CFTA-Canada is 0.3518

implying that the membership in this free trade agreement will increase US agricultural exports by 41.9 [$\exp(0.35)-1*100$] percent. Similar with this, the membership of GATT-Mexico free trade agreement represent by GATT-Mexico variable is positive and statistically significant at 0.48, implying that the membership will increase US agricultural exports by 61.6 percent. The NAFTA-Canada also has positive and statistically significant effect on US agricultural exports, the coefficient of this FTA is 0.3437. Conversely with respect to MERCOSUR, free trade agreement shows negative result and significant effect on US agricultural export to Brazil. The magnitude of this variable is -0.9359. This result may occur because there is a diversion on trade to Brazil after the implementation free trade agreement. GATT-Mexico show positive and significant effect on 14 commodities, for example rice, wheat and peanut. While NAFTA-Mexico is positive but only on two commodities: grapes and yarn.³⁰

Grant and Lambert (2005) examine the effect of Regional Trade Agreement (RTAs) on agriculture trade. Their research aims to analyze the impact of 8 RTAs (Including: AFTA, APEC, AFRICA, Andean Pact CER, EU-15, MERCOSUR and NAFTA) on agricultural trade by specifying an augmented gravity model. Time series bilateral trade data for 18 year (1985-2002) include 87 countries and region were used in this study. Using the gravity model estimation, the result indicates that the exporter and importer income (GDP + per capita GDP) were positive and statistically significant, and the magnitudes of these estimates was 0.90 and 0.70 for the exporting and importing country respectively. This result suggests that the larger countries trade more than small countries. Distance has negative effect and statistically significant on export of 5 agricultural commodities and for all agriculture. Another augmented

gravity model variable, including common language, landlocked and contiguity showed expected sign and significant on exports.³¹

The membership on NAFTA and the European Union show positive and significant effects on 8 agricultural commodities. The magnitude of coefficient suggest that NAFTA member trade 361 percent more in bovine cattle and 511 percent in vegetables and fruits. The membership on Andean Pact, MERCOSUR and Africa were also positive and significant affect on 8 agricultural products. The result also indicates that the member of AFTA actually traded less with each other after the establishment of the agreement because AFTA members do not specialize in production or exports of agricultural commodities. In summary, this research result in line with hypothesis that the membership on free trade agreement have generally enhanced agricultural trade between member countries although the magnitude of this increase depends on the average flow.³¹

Another study conducted by Koo, Kennedy and Scripnitchenko (2006) on impact of regional trade agreements on trade creation and trade diversion. The purpose of this research was to examine the impact of regional preferential trade agreements (RPTA) on agricultural trade. The gravity model equation was used to estimate the economic effects of RPTA on trade in agricultural commodities. Based on the regression results, the main gravity variables examined in this study shows statistically significant effect on trade in agriculture. GDP represent size of economy was statistically significant and has positive effect on agricultural trade. The distance wich represent transportation cost was found negative and significant effect on agriculture trade. The population coefficient of exporting and importing countries surprisingly was found negative and statistically significant effect on agriculture

trade. The variable land-area shows positive value as expected and statistically significant and positive effect on agricultural trade both for exporting and importing countries. The coefficient of land area is expected to be positive significant on agriculture trade based on a reason that land area is accounted both for population and income, distances within a country relative to the proximity of neighboring countries may promote trade.³²

The study by Koo et al. (2006) proved that in general, the membership on FTA is positive and significant effect on trade in agriculture. The magnitudes of this variable are 0.673 for PTA and 2.369 for AFTA. Its means that member country in PTA trade 96.01 percent more than non-member and AFTA countries trade almost ten times (968.67%) than non-member. While EU show positive value but insignificant. Conversely NAFTA and CAN show negative value and significant effect on trade. The magnitude of NAFTA is -0.584 and CAN -0.834.³²

Sarker and Jayasinghe (2007) employed an augmented gravity model to analyse the impact of European Union (EU) on six major agro-food trade commodities: grains, meat, fruits, vegetables, sugar, and oilseed during period 1985-2000. A pooled cross section method was used in this research. The result shows that the estimated coefficients of GDP has positive signs as expected and statistically significant in all commodities. In 46 out of 50 equations, the magnitude of exporter and importer GDP are a range from 0.26 on fruits to 1.15 on vegetables. It means that 1 percent increase in exporter and importer income expected to increase on trade by 0.26 percent to 1.15 percent. The distance was found negative and statistically significant effect in all commodities, the magnitude range from -0.07 for meat to -0.92

for trade in grain. This study shows that the further the distance of partner countries the smaller trade among parties.³³

The main focus on this study was to examine the effect of membership in EU on trade. This study shows that economic integration within EU trade block is positive and statistically significant effect on trade with the magnitude ranges from 0.47 for trade in grain to 2.94 for trade in red meat. The coefficient of EU on grain was 0.47 which means that member of EU trade in grain was 60 percent higher than non-EU member countries. While the estimate coefficient of EU on red meat was 2.97 during 1998-2000, meaning that the member of EU trade about 17 times higher than trade to non-member. This result suggests that the EU members are trade more with each other than to non-member countries.³³

The effect of free trade agreement study on Turkish agricultural exports was conducted by Erdem and Nazlioglu (2008). A gravity model was developed to analyze the key determinants factors of Turkish agricultural export to European countries. The Hausman test on this study revealed that Random Effect Model (REM) was the suitable model. The results on gravity model estimation are reported that the sum of GDP represent the size of the economy has positive and significant effect on agricultural export. A one percent increase in the sum of GDPs of Turkey and EU countries was expected to increase exports of Turkish agricultural commodities by 0.83 percent. Correspondingly, population variable shows positive and significant impact on export, which means that one percent increase in EU member's population will increase imports of agricultural commodities from Turkey by 0.80%. The coefficient of TP indicates Turkish population in EU countries which has more than

100,000 people was positive and significant. The variable of TP shows that Turkish export to “TP” countries was 36.38 percent higher than other non “TP” countries.³⁴

The variable NMED represent non-Mediterranean country, which is mean the country that has different climate with Turkey. The variable of NMED indicates positive value and statistically significant impact on exports of Turkish agricultural commodities to the EU. The variable CU represents Turkish agricultural exports to the Turkish-EU FTA countries shows positive and significant which means that Turkish exports to the FTA countries were 130.82 percent higher than non-FTA members. As conclusion, this study show that conventional gravity variables (GDP, the population of importer countries and geographical distance) and other factors examined in this research have statistically significant effect on Turkish agricultural exports to European partner countries. In addition that agricultural export is benefits from the membership on free trade agreement.³⁴

Another study by Grant and Lambert (2008) examine the effect of the formation of free trade agreement on agricultural trade using the gravity model. The major purpose of this study was to answer the research question, do the membership of regional free trade agreement boost members’ trade in agricultural commodities. This study also desired to prove that the impact of the membership on RTA is higher on agriculture trade compare to non-agriculture trade. The reason is because pre-RTA trade barrier for agriculture trade is higher than non-agricultural trade. To realize the objective, this study investigated six different RTA including European Union, North America Free Trade Agreement (NAFTA), Canada-U.S. Trade Agreement (CUSTA), Mercado Comun Del Sur (MERCOSUR), Andean Pact, ASEAN and Closer Economic Relation (CER). The gravity model proposed in this study were consist of

dependent variable value of trade and other independent variable including GDP, represent size of economy, distance as proxy of transportation cost, contiguous, common language, landlocked and the participation on regional integration.³⁵

The empirical result on this study proved that the FTA formation enhance member's trade. The increasing trade on agriculture product was much larger compared to non-agriculture in all panel estimation and all FTA except ASEAN. The result shows that Regional Trade Agreement (RTA) increase member's agricultural trade. The estimate coefficients of total RTA effect on agriculture trade are 0.86 for NAFTA, EU: 1.61, MERCOSUR: 0.58, ANDEAN PACT: 1.34, ASEAN: 0.49 AND CER: 1.33. This result suggest that EU to be the most profitable free trade agreement on agriculture trade which boost members trade in the region by 400 percent ($\exp(1.61)-1$)x100). AFTA although has positive impact on agriculture trade, the effect are smallest compare to the other RTA, the coefficient of AFTA is 0.49 meaning that the membership on AFTA increase agriculture trade among member by 63.23 percent.³⁵

Amin, Hamid and Saad (2009) conducted a study on the effect of the formation of economic integration in ASEAN. The main purpose of this research was to examine whether ASEAN economic integration is trade diversion or trade creation. To achieve the objective, this study employed augmented gravity model both in aggregate and disaggregate commodity using the bilateral exports data from five ASEAN member countries, consisted of Indonesia, Malaysia, the Philippines, Singapore and Thailand during 1986 to 2006.³⁶

The estimation result of gravity model shows that the main variable of gravity model such as GDP and distance has found significant effect on trade. The variable of GDP has positive and significant impact on trade in food and live animal but insignificant effect on vegetable fat. The coefficient on GDP is 2.025 indicates that 1 percent increase in countries income, will increase trade in food and live animal by 2.03 percent. This study proved the hypothesis that higher income countries tend to promote trade. The distance as a proxy of transportation cost was found negative and significant impact on food and live animal trade, the coefficient was -0.736. Population show unexpected negative impact on agriculture commodity trade, this may occur as a result of self-sufficiency due to large population and then less dependent on international trade. The common border variable has found insignificant effect on agriculture trade.³⁶

The result on variable ASEAN, represent the economic liberalization among ASEAN members has positive impact on food and live animal (SITC0) and animal and vegetables oil (SITC4) however it only significant on food and live animal (SITC0) product. The magnitudes of this effect are range from 1.415 to 4.575 on four estimation model, meaning that ASEAN member trade in food and live animal was increase tree times to more than nine times compare to non-member. It can be conclude that intra trade within ASEAN has impact on the shift product origin from the higher cost country to the member with lower cost and higher efficiency.³⁶

Another study about impacts of free trade agreement on agricultural trade creation and trade diversion was conducted by Sun and Reed in 2010. The main idea of this study was to investigate agricultural trade creation and trade diversion effects of the most important FTA. The gravity estimation was chosen to examine the FTA

effects on trade flows using the Poisson Pseudo Maximum Likelihood (PPML) assessment method. Volume of export is the dependent variable in this study. While the independent variable consist of GDP for both importing and exporting countries, geographical distance, population, dummy variable common language, common border and participation on free trade agreement.³⁷

Panel data from 81 countries during 1993 to 2007 was used in this study. The estimated results show that exporter and importer GDP coefficients were positive and significant with the magnitude of 0.60 and 0.88 respectively. The distance was negative and statistically significant with magnitude -0.49 implies that one percent further in distance between countries will decline agriculture trade by 0.49 percent. The result also shows that participation on free trade agreement such as ACFTA, COMESA, EU-15, NAFTA and SADC have benefits on agricultural trade among FTA members with magnitude 0.98, 0.45, 0.16, 1.56 and 2.30 respectively.³⁷

Another study conducted by Makochehanwa (2012) on impacts of enrolment in the regional economic cooperation on trade in agrifood commodity. The impacts of FTA on intra-trade in three selected agrifood commodity in the three economic block cooperation, consisted of the Common Market for Easter and Southern Africa (COMESA), the East African Community (EAC) and the Southern African Development Community (SADC) was the main goal of this research. To attain its purposes, the research used both descriptive statistical analysis and an econometric analysis using gravity model trade on trade. The dependent variable in this study is the value of trade (exports plus imports) of six agro-food product including maize, rice and wheat. While the explanatory variable are nominal gross domestic product (GDP), population, geographical distance, common language, common border and the

main independent variable dummy variable free trade agreement. FTA included in this study are COMESA, EAC and SADC.³⁸

The empirical result from the study by Makochekanwa (2012) has found that estimated importer's income (GDP) and exporter's income were statistically significant and positive effect on agriculture trade. The coefficient of importer GDP was 0.22 on maize, bear a meaning that 1 percent raise on importer's GDP will increase trade by 0.22 percent on maize commodity. On the exporter side, increasing GDP by one percent will increase trade on rice by 0.41 percent. GDP was significant for all commodity except GDP importer of wheat which was positive but insignificant.³⁸

Independent variable population was significant on all equation. Population has significant positive effect on rice and maize. On the contrary, population of exporter country results in negative effect on trade. This may indicate larger demand on domestic consumption. Geographical distance shows negative value and significant impact on trade with the magnitude varies across the commodities. Theoretically distance variable has negative effect on trade. Increase in distance by 1 percent will cause reduction on trade by 0.18 percent, 0.49 percent and 0.83 percent on maize, rice and wheat commodities respectively. Another independent variable common border was positive and statistically significant. The dummy variable RTA has significant and positive effect for all the three regional economic integration including COMESA, EAC and SADC. The membership on COMESA was 7.2 for maize, 1.89 on rice and 0.8 for wheat. In case of wheat, although the coefficient is positive COMESA was insignificant effect on trade. The coefficient of SADC was positive in all commodities but insignificant effect on maize. The last FTA is EAC

which has significant and positive effect on trade in maize but unfortunately negative and significant effect on wheat. The negative effect of the formation of free trade agreement may indicates that wheat trade was generally under the expected level even in the absent of tariff under free trade agreement.³⁸

2.2 Indonesian Agriculture Trade and Free Trade Agreement

Several studies have been conducted to analyze of the impact of free trade agreement (FTA) on Indonesia's agriculture trade. Erwidodo and Hadi (1999) study about effects of agriculture trade liberalization in Indonesia: both institutional and structural aspects. The objective of this study was to evaluate the economic development, review infrastructure and performance of Indonesian agricultural trade after the liberalization on agriculture trade within regional economic integration.³⁹

The results showed that trade liberalization in this study within WTO, APEC and AFTA, will substantially reduce barriers to trade and expected to provide opportunity to Indonesia for demand expansion on their products in the world market. The result also shows that Indonesia could expand exports of agricultural products such as coffee, palm oil and rubber to European Union, Sub-Saharan Africa and Australia/New Zealand. Exports of livestock product were also estimated to increase, especially to the European Union and the rest of world. However, Indonesian exports of forestry, fishery and agricultural processed products are shown to decline to all export destinations.³⁹

Oktaviani and Drynan (2000) employed computable general equilibrium models to explored The Impact of APEC Trade Liberalization on The Indonesian Economy and Agricultural Sector. The objectives of this study were to examine the

effect of the participation on APEC both on Indonesian economic and especially in the agriculture sector. Using computable general equilibrium model, the study found that trade liberalization tends to decrease capital cost and increase the FOB price, which encourages investment and the production of exports commodities. As the result there has positive impact of APEC trade liberalization on the output of most estate crops. Within the agriculture sector, almost all estate crops (tea, rubber, palm oil and coffee) expand their output. For instance palm oil was expected to increase output by 7.24 percent and 37.55 percent in export volume. Rubber was expected to increase its output by 6.38 percent and 112.8 percent in export volume. Another commodity experience positive effect of APEC liberalization was coffee which is expected to increase in output by 1.71 percent and 22.69 percent in volume exports. While the effect of APEC on coconut commodity has unexpected negative sign by -1.64 percent in output and -4.21 percent in exports.⁴⁰

Feridhanusetyawan and Pangestu (2003) investigated the different paths of liberalization that Indonesia has followed and measures their effects on the economy on their paper entitled Indonesian Trade Liberalization: Estimating the Gains. Another objective of this study is to compare the potential benefit of economic liberalization and formulate the kind of free trade agreement that profitable for Indonesia. Using a global Computable General Equilibrium (CGE) framework known as the Global Trade Analysis Project (GTAP), they showed that the full implementation of Uruguay Round forces the removal of domestic distortion in agriculture, which consequently increases Indonesia's welfare by about 0.5-1.1 percent of GDP. The benefit from the participation on Uruguay Round and APEC are around US\$ 2.1 billion. The inclusion of the agricultural sector in the and AFTA (ASEAN Free Trade Area) liberalization

benefits Indonesia as major agricultural exporting country in ASEAN as consequence of becoming more competitive in agriculture than the other members. It's because AFTA makes cheaper agricultural import products from Indonesia to other ASEAN countries to due to high tariffs which were maintained against more efficient non-ASEAN producers. The gain from the membership in AFTA plus Uruguay Round (combine) was around US\$ 1.6 billion.⁴¹

Using the gravity model analysis approach, Hapsari and Mangunsong (2006) investigated the determinants of trade flows of AFTA members, including the impact of creation of AFTA on its intra-regional and extra-regional trade flow by comparing trade patterns of AFTA countries with AFTA members and non-members. The research's result showed that the standard gravity variables i.e. both reporting and partner country GDP, distance, common language, common border and whether the partner country is landlocked or not, have significant effects on the bilateral exports of ASEAN members. For instance, one percent increase of GDP in the reporting countries will increase 0.74 percent on exports and 1 percent increase of GDP in the partner countries leads to a 0.65 percent on exports. The variable distance represents a barrier in trade with implicit assumption that transport costs increase with distance. One percent increase in the distance between two countries will decrease export by 1.31 percent. The liberalization on trade by removal on tariff was found to have a significant positive effect on exports of ASEAN countries. The result indicates a positive and significant effect from reduction on tariff to exports value. One percent decrease in tariff leads to an increase in exports by 2.44 percent. The variable of ASEAN represents the membership on economic integration within ASEAN show positive and significant effect on export. The magnitude of this variable is 0.70

meaning that the participation on ASEAN will increase exports by 101.38 percent (exp. $(0.70)^{-1} * 100$). Therefore, effective implementation of the AFTA CEPT scheme to reduce or eliminate tariff barrier may be expected to boost the trade of ASEAN members.⁴²

Oktaviani, Puspitawati and Haryadi (2008) conducted research on Impacts of ASEAN Agricultural Trade Liberalization on ASEAN-6 Economies and Income Distribution in Indonesia. The main objectives of this research was to analyze the impacts of ASEAN trade liberalization on the macroeconomic variables and agricultural industries (output, exports and imports) in the ASEAN 6 countries (Indonesia, Malaysia, the Philippines, Thailand, Singapore, and Viet Nam). This research employed Computable General Equilibrium (CGE) or known GTAP model as the main tool of analysis to achieve its objectives. The results shows that the implementation of zero tariff on agriculture products among ASEAN member countries leads to increase Indonesian trade balance by US\$ 17.494 million and nominal GDP by 0.011 percent, while Indonesian real GDP does not change (almost zero per cent). The effects of the membership in ASEAN on Indonesian agriculture output were varied among commodities. Sugar and animal product were expected to get positive gain. The magnitudes of these commodities were 0.001 for sugar and for animal product. While the other commodity are experience negative impact such as wheat (-0.002), cattle (-0.001), vegetables oil (-0.022) and oil seed (-0.015). Another result of this study was the effect of ASEAN agriculture liberalization on export. For Indonesia, rice, sugar, plant based fiber and animal product get positive effect on export, but other commodity show decreasing in export. The coefficient of rice export was 0.372, sugar 0.090, plant fibber 0.003 and animal product 0.005. The negative

effects were on vegetable (-0.008), vegetables oil (-0.055), oil seeds (-0.009) and cattle -0.014.⁴³

Tambunan and Suparyati (2009) study on ASEAN-China Trade liberalization effect on Indonesian agricultural production and trade. This study aims to examine the effect of Early Harvest Program (EHP) on Indonesian agricultural production and trade, especially on how important China for ASEAN export and the possibility gain of Indonesia on the formation of ASEAN-China economic integration. To get the objectives, this study use two analytical methods, using trade competitiveness analysis by employed Revealed Comparative Advantage (RCA) index and Trade Specialization Index (TSI). The second method is using computable equilibrium model, known as Agricultural Trade Policy Model (ATPSM) and Global Trade Analysis Project (GTAP).⁴⁴

The result show that the declining in tariff to 0 percent on EHP as an implication of ASEAN-China free trade agreement gave positive impact in general although in small amount. Total agricultural export was expected to increase to 0.06 percent. The effect on agriculture commodity is positive except for paddy which suffers from this economic liberalization. Paddy export will decreased to 33.33 percent. While other commodities have enjoy increasing result, for example soybean exports which will increase by 3.33 percent, sugar 4.65 percent and vegetables 6.51 percent.⁴⁴

Suryanta (2012) conducted a study about the impact of ASEAN free trade agreement on Indonesian Agricultural trade flow to partner countries in ASEAN. He organized this research using the application of augmented Gravity Equation Model

on Indonesian Trade Flows with Trading Partners from ASEAN. The goal of this study was to examine on what prominent commodity of Indonesia compared to its counterparts in ASEAN. To attain the goal this research developed the augmented gravity model. The estimation result showed that GDP of Indonesia was negative and statistically significant. This means that 1 percent increase on GDP of Indonesia will decrease trade on agro-based product to Malaysia, the Philippines, Singapore and Thailand about 10.05 percent, 3.28 percent, 3.10 percent and 2.92 percent. Distance variable as a proxy of transportation cost has negative sign as expected and significant for Indonesia's trade with Malaysia, the Philippines, Singapore and Thailand. Data shows that The Philippines is the most expensive trading partner country in term of distance. Where 1 percent increases in distance will decrease 25.68 percent of agro-based product trade between Indonesia and the Philippines. The exchange rate variable shows positive value with statistical significance for Indonesian Rupiah (IDR) to Ringgit Malaysia (RMY), The Philippines Pesos, Brunei's Dollar and Singapore Dollar. This result suggesting that appreciation of rupiah to foreign exchange will increase agro-based product trade. This result also shows that tariff elimination is significant influence on agriculture trade among Indonesia and trading partners in ASEAN.⁴⁵

A study about the impact of free trade agreement on Indonesian agriculture trade was conducted by Dianniar in 2013. The objective of this research is to analyze the impacts of free trade agreements on Indonesia's agricultural trade flows and to investigate the existence of "Linder Effect" on Indonesia's bilateral trade. Using the gravity model, this research shows that GDPs variable were positive and has statistically significant impact on Indonesia's agricultural trade. In import side,

holding other variables constant, one percent increase in GDP will result in 0.77 percent increase in Indonesia's agriculture imports. However in export side, the coefficient of GDP Indonesia shows unexpected negative sign. On the contrary distance has no significant impact on Indonesian trade. Its means that the transportation cost is not an obstacle factor for Indonesia's agricultural. While the Indonesia's participation in AFTA and ACFTA does not have significant impact on Indonesia's agricultural trade flows. However, this does not necessarily mean that become a member of FTA will not be a favorable policy for Indonesia. The participation on AFTA contributed a little additional welfare gain for Indonesia because ASEAN remains a weak regional group with a small market size in the global economy and because most of Indonesia's international trade is with non-ASEAN countries. Hence, the expected gain from tariff reductions under the CEPT scheme is very small because the tariff reduction is applied only to ASEAN members.⁴⁶

Based on the above discussion, regarding the effect of the formation of free trade agreement on agriculture trade according to the previous research as showed in Table 2.2, it can be noted that country's income (GDP), distance, population, real exchange rate, arable land and the membership on free trade agreement are the most gravity model variable which were used to estimate the effect of FTA on agricultural trade. Another independent variable used in the studies is representing trade barrier for instance, common border, common language, common colony, common currency and landlocked.

The impact of free trade agreement on agriculture trade and exports in many region around the world, in general has positive and significant impact on agriculture

trade. The magnitudes of this effect are vary from SAPTA 145% (DeRosa and Govindan, 1996), EU: 0.80** – 2.94*** (Sarker and Jayasinghe, 2007) to ASEAN 11.958 (Amin et al., 2009). Based on this result, it has been proved that the membership in free trade agreement is benefit for agriculture trade.

Table 2.2 Research Variables Affecting Agriculture Trade and Export

Variable	Result: Impact of on Agriculture
GDP	(+) Positive GDP: 0.7*** – 0.9*** >> Larger countries trade more than smaller countries, but a one percent increase in GDP gives small impact on the value of agriculture trade compare to non-agriculture trade. Grant and Lambert (2005) , Amin, Hamid and Saad (2009)
Distance	(-) Negative Distance:-0.07 – (-0.92) >> Agriculture products are relatively perishable and bulkier than manufacture product. Trade diminished as distance increase. Sarker and Jayasinghe (2007), Dianiar (2013).
Population	(+) Positive POP: 0.32** – 0.67** >> Importer population increase trade since the larger population meaning the larger consumption. Makochekanwa (2009).
Land	(-) Negative Arable Land: -0.23** >> the importing countries which have arable land has ability to produce more agriculture product. Erdem and Nazliorglu (2008)
Exchange Rate	(+) Positive EXC: 0.88** >> Indonesian rupiah depreciation increase Indonesian food product export. Suryanta (2012), Amin et al. (2009)

Source: compiled by author

The negative and significant effect of FTA on trade also found in several study for example on the coefficient of MERCOSUR: -0.9358 (Zahniser et al., 2002), and NAFTA:-1.224 (Koo et al. 2006). The reason of the negative effect of FTA on agriculture may happen because of the proliferation of FTA has led to trade diversion

among FTA members. Another reason may happen because of FTA formation increases demand on import goods from non-member countries.

Table 2.3 Impact of FTA on Agriculture Trade Based on Previous Study

Variable	Result: Impact of FTA on Agriculture
Free Trade Agreement	<p data-bbox="491 544 866 577"><u>(+) Positive and Significant</u></p> <p data-bbox="491 600 1225 633">SAPTA 145% (agriculture aggregate) and 189% (food) ;</p> <p data-bbox="491 663 1385 819">Increasing demand for agriculture commodity especially food product due to increasing demand for food security for the fast-growing population in south Asia (India and Bangladesh). DeRosa and Govindan (1996).</p> <p data-bbox="491 846 850 880">NAFTA-Mexico: 0.3437**</p> <p data-bbox="491 887 1385 987">Mexico's elimination on its import-licensing requirement for U.S. agriculture commodities likely to have increased demand for U.S. products. Zahniser et al. (2002) p.796</p> <p data-bbox="491 1025 847 1059">CFTA-Canada: 0.3518**;</p> <p data-bbox="491 1088 1374 1205">Canadian protection on U.S. export is relatively low before CFTA. Canadian size of economy and historically close trading relationship with U.S. Zahniser et al. (2002)</p> <p data-bbox="491 1272 1385 1391">MERCOSUR: 90%; Tariff for agricultural product is high before the implementation of FTA, ranges from 115 percent in Africa to 206 percent in CER countries. Grant and Lambert (2005).</p> <p data-bbox="491 1473 874 1507">AFTA: 0.817*** - 2.369***;</p> <p data-bbox="491 1536 1385 1738">Strong relationship resulting from close proximity (common border) Although the coverage of reduction tariff in agriculture product is smaller than manufacturing produce, the agreement on trade liberalization in agriculture product created trade opportunity; Koo, Kennedy and Scripnitchenko (2006).</p> <p data-bbox="491 1765 890 1798"><u>(+) Positive and Insignificant</u></p> <p data-bbox="491 1821 743 1854">AFTA 0.36 – 2.03;</p> <p data-bbox="491 1883 1385 1984">The most Indonesian trading partner is non-AFTA countries and economic liberalization within AFTA is growth slowly, intra trade within AFTA also small. Dianiar (2013) p.40</p>

Source: compiled by author

Table 2.3 Impact of FTA on Agriculture Based on Previous Study (continued)

Variable	Result: Impact of FTA on Agriculture
Free Trade Agreement	<p><u>(-) Negative and significant</u></p> <p>MERCOSUR-Brazil: -0.9359***;</p> <p>May be sign of trade diversion because of MERCOSUR implementation. The data shows that U.S. agriculture export to Brazil grew more slowly during 1991-1999, U.S. wheat export to Brazil dropped from annual \$23 million to only \$4 million during 1997-1999, While Brazil wheat import from Argentina increase from \$183 million to \$801 million. Zahniser et al. (2002) p.795-796</p> <p>AFTA: -90%:</p> <p>AFTA countries do not have comparative advantage in agricultural production AFTA member trade less after the establishment of FTA. There is an increasing import from non-member of AFTA. Grant and Lambert (2005) p.14</p> <p>NAFTA: -1.224 – (-0.584)***,</p> <p>The formation of FTA increases the demand for imports from nonmember countries Agricultural commodities are low in degree of substitutability. Koo et al. (2006)</p> <p>EU: -0.34 – 0.58** (sugar),</p> <p>EU is the world's largest importer of oilseeds and oilseed derivatives. Sarker and Jayasinghe (2007) p.100</p> <p><u>(-) Negative and Insignificant</u></p> <p>ACFTA: -0.21 – (-1.21);</p> <p>ACFTA is not significant may because the short period of research (1990-2010). Only six years since ACFTA en force is relatively short time to evaluate the effect of trade liberalization on agriculture trade. Although insignificant, the negative sign for ACFTA may because trade liberalization with China increase demand for imported agriculture product from China. Decreasing agriculture land and poor infrastructure may decrease the competitiveness of Indonesian agriculture product. Dianiar (2013)</p>

Source: compiled by author

Regarding the impact of free trade agreement on Indonesian agriculture trade and exports, most FTA who becomes the object of the study from previous research are WTO, APEC, AFTA and ACFTA. It can be noted that the impact of Indonesian membership on agriculture are vary among several study. 7 out of 8 studies proved

that in general the agriculture liberalization is profitable for Indonesian agriculture. The magnitudes of this positive effect are vary among study. In term of commodity aspect, the results are also vary. Some commodity which has competitive advantage will enjoy the positive effect, while other commodity is suffered since the implementation of trade liberalization. For example the research by Oktaviani and Drynan (2000) which shows positive impact of FTA for palm oil, rubber and coffee, but negatively effect on coconut. Only study from Dianiar (2013) concluded that AFTA and ACFTA have no significant impact on Indonesian agricultural trade.



CHAPTER 3

INDONESIAN AGRICULTURE EXPORT AND FREE TRADE AGREEMENT

3.1 Introduction

This chapter presents the position of agriculture sector in Indonesia and performance of Indonesian agriculture exports. Included in this chapter were major indicators of Indonesian agriculture sector such as agriculture share to GDP, agriculture employment and Indonesian agriculture exports. This chapter also discussed free trade agreement and performance of agriculture export on Indonesian participation on free trade agreement.

3.2 Agricultural Sector in Indonesia

Agriculture is the key sector on Indonesian economy. In 1960 agriculture sector shared more than a half Indonesian economy, while other sector like industry and service only provide 15 percent and 33 percent respectively.⁷ However like other developing countries, Indonesia also senses an industrialization process which is changes the economic structure from an agricultural country to become more industrialized country. This process changes the share of agriculture on economy.

Figure 3.1 shows the contribution of agriculture sector in Indonesian economy. In 1960 agriculture shared 51 percent of total GDP account US\$ 14 billion. Ten years later in 1970 the share decline to 45 percent, then dropped drastically almost a half to become only 24 percent a decade later and overtaken by industry sector which is contributed 41 percent of GDP in 1980. This decreasing trend in the share of agriculture on Indonesian economy continues until 1990s became only 19 percent and

entering the new millennium in 2000 agriculture only contribute 15 percent of economy. Moreover, in the last decade the share of agriculture was quite stable in the range 13 percent -15 percent of GDP.

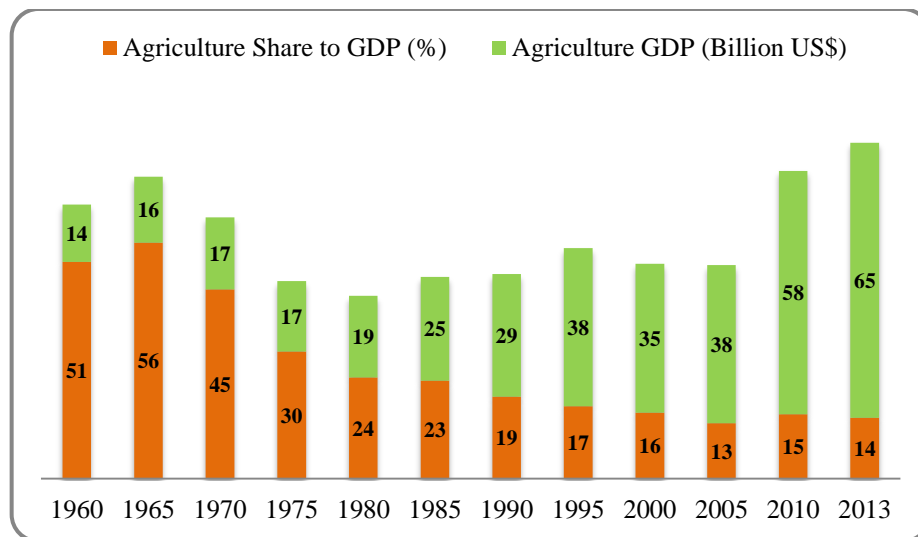


Figure 3.1 Indonesian Agriculture Sector Share to GDP
(Source: Statistics Indonesia⁵, World Bank.⁷)

Nevertheless, although there was a declining trend in the share on national income (GDP), agriculture was still an important sector in Indonesian economy. Agriculture sector is the largest contributor of employment in the country. Figure 3.2 shows the share of agriculture sector on the labor force in Indonesia.

Figure 3.1 shows that in 1980 agriculture provided more than a half or 56 percent of labor force in Indonesia and absorbed 29.07 million jobs. This figure didn't change much for ten years later in 1990 which was 55 percent of workforce or 42.38 million people were still working in this sector. After the 1990s along with the increasing of industrialization process, there was a decreasing trend in the share of agriculture employment to the total workforce almost 10 percentage point to become 45% in the beginning new millennium in 2000. The downward trend continued few

years later became 35% in 2013 ⁶. In spite of that, agriculture sector position as the largest contributor to Indonesian workforce has not been replaced until now.

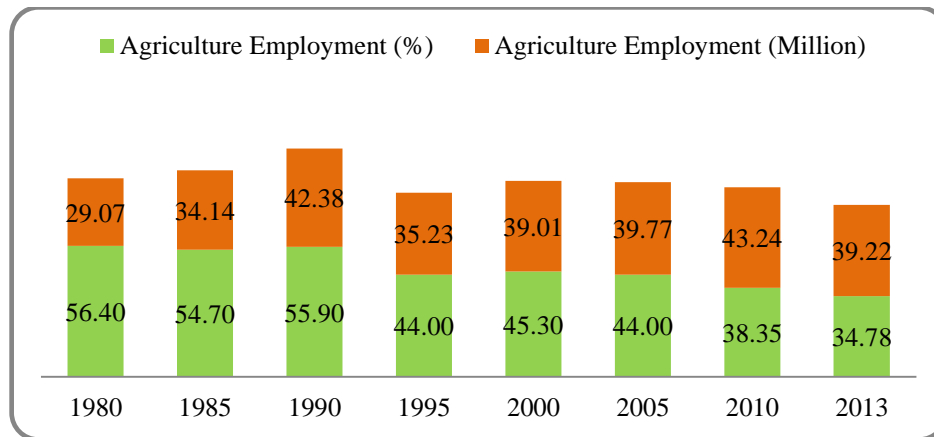


Figure 3.2 Indonesian Agriculture Sector Share to Employment
(Source: Author, computed based on World Bank ⁴⁷, ILO ⁴⁸ and Statistics Indonesia. ⁶)

Although there was a declining trend in the share of agriculture to GDP and employment, agriculture sector still played as a key factor in Indonesian economy. The primary reason agriculture sector was still become an influential factor in Indonesian economy in spite of the reduction share in economy, was because the share of agriculture to employment was remain important. Figure 3.3 shows the share of agriculture to Indonesian economy and employment from 1980 to 2013.

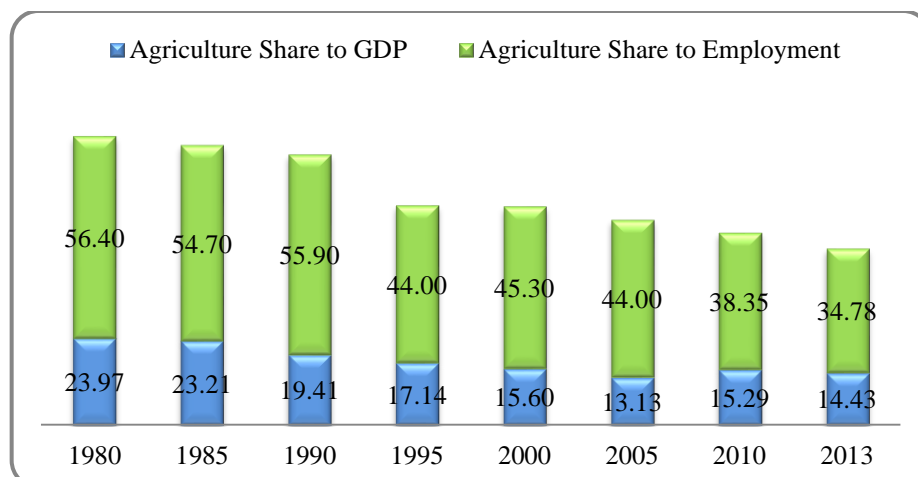


Figure 3.3 Agriculture Share to GDP and Employment (%)
Source: Author, Computed based on World Bank ⁷, ILO ⁴⁸ and Statistics Indonesia ⁶

3.3 Indonesian Agricultural Export

Indonesia is a country which is developed by agriculture sector, this key sector accounting for more than one third of employment. Table 3.1 shows the share of agriculture export to the non-oil gas export on the last five years. Based on the table 3.1, the value of agriculture exports in 2009 was US\$ 35.4 billion. It contributed 22.13 percent of non-oil and gas export. One year later on 2010 the value of agricultural export increased almost fifty percent to become US\$ 30.86 billion followed by increasing on the share to non-oil gas export by seven point five percent. This increasing trend in agriculture export continued in 2011 as the highest record which reached the value of US\$ 41.799 billion and contributed more than a quarter of non-oil gas exports.

Soon afterwards agriculture export run into decreasing trend in 2012 with the value of US\$ 37.9 billion, the contribution to non-oil gas export also decreased more than one percentage point to 24.77 percent. This tendency continued in 2013 with the value of US\$ 35.4 billion or provided 23.6 percent of total non-oil and gas export of the country. Although there was declining trend in exports, the share of agricultural exports to total non-oil gas exports was quite stable in the range of 22 percent to 25 percent in the last 5 years.

Table 3.1 Indonesian Agricultural Exports 2009-2013 (US\$ Billions)

Exports (Billion US\$)	Year				
	2009	2010	2011	2012	2013
Non-Oil Gas Exports	97.492	129.740	162.020	153.043	149.919
Agricultures Exports	21.572	30.860	41.799	37.907	35.379
% Agriculture Export to Non-Oil Gas Exports	22.13%	23.79%	25.80%	24.77%	23.60%

Source: Author, computed based on UN-Comtrade⁸ and Ministry of Trade⁴⁹

In term of commodity aspect, almost two third of Indonesian Agricultural exports were made up by five major commodity. Palm oil and rubber were dominating the basket of exported goods. As primary export commodity, Palm oil still become the largest contributor for agricultural exports with value of US\$ 106.7 billion or 43 percent of total agricultural exports. Figure 3.4 shows the composition of Indonesian Agricultural exports for year 2004-2013.

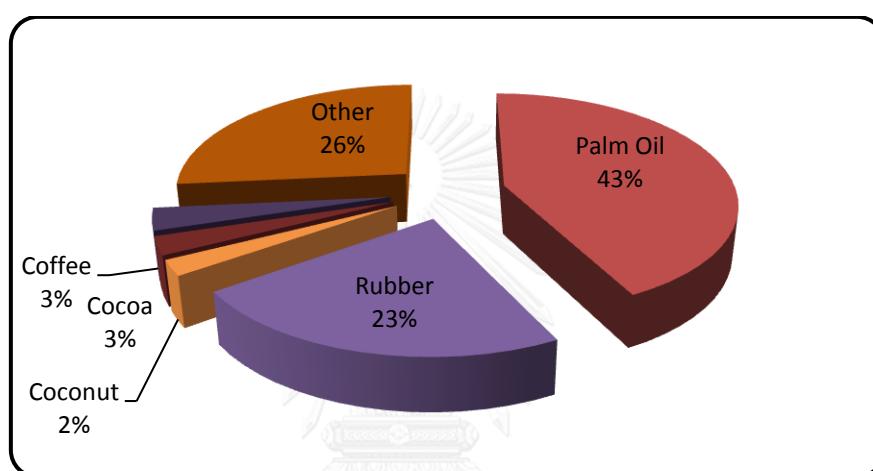


Figure 3.4 Composition of Indonesian Agricultural Exports 2004-2013
(Source: Author, computed based on UN-Comtrade.⁸)

The second largest provider for Indonesian agricultural exports was rubber commodity, with value amount US\$ 57.11 billion or 22.8 percent of total agricultural exports. Coffee followed in the third position worth US\$ 8.11 billion composed 3.2 percent of total agriculture export. Furthermore Cocoa worth US\$ 6.64 billion (2.6%) and Coconut worth US\$ 5.66 billion (2.3%).⁸

Food and Agriculture Organization (FAO) mentioned that this five Indonesian major agriculture commodities also the major commodities in the world. For example Indonesia is the biggest palm oil exporter in the world since 2006. For rubber commodity Indonesia was second rank with value US\$ 11.7 billion in 2011. Whilst coffee, coconut and cocoa were fifth, sixth and seven in the world rank.⁵⁰

During 2004-2013 Indonesia's agricultural exports reached US\$ 250.86 billion for 224 countries in the world. India became Indonesia's largest market with a share of 14.54 percent (US\$ 36.7 billions), followed by China as the second exports market with an export share 12.45 percent worth US\$ 31.23 billion. United States closely followed in third position with US\$ 25.66 billion worth of 10.23 percent of exports sales. Malaysia and Netherland were in the fourth and fifth position by 7.34 percent (US\$ 18.41 billions) and 6.34 percent (US\$ 15.9 billions) respectively. Singapore, Japan, Germany and Bangladesh together represented 14.54 percent of Indonesian agricultural exports equal to the share of India.

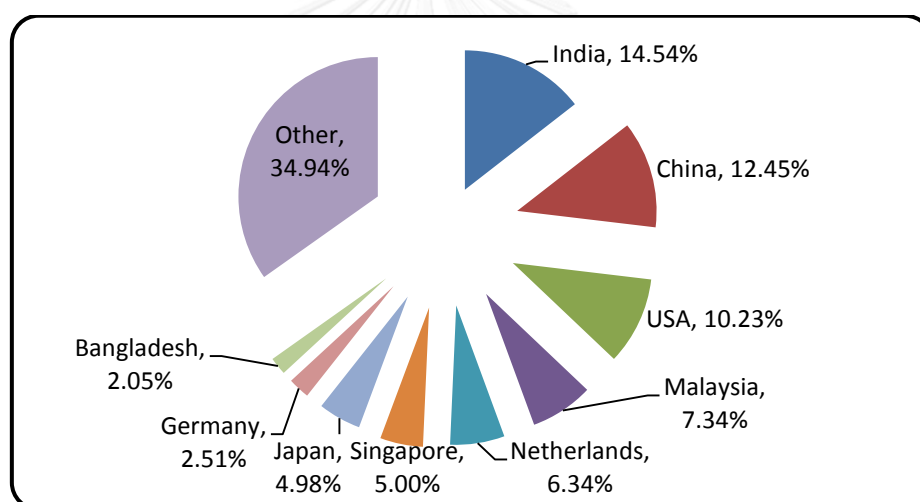


Figure 3.5 Indonesian Agricultural Exports Destination Countries 2004-2013
(Source: Author, computed based on UN-Comtrade.⁸)

Based on region destination, Asia was the major region for Indonesian agricultural export during the year 2004-2013. Account for more than 60 percent of exports worth US\$ 152.3 billion, with ASEAN contributed 16.8 percent value of US\$ 42.13 billion. The second region export market was Europe account for US\$ 46.4 billions or 18.5 percent exports. America came third in the ranking as region target, account US\$ 35.63 (14.2%), while Africa and Oceania region absorbed 6.59 percent of agricultural exports worth US\$ 16.52 billion.

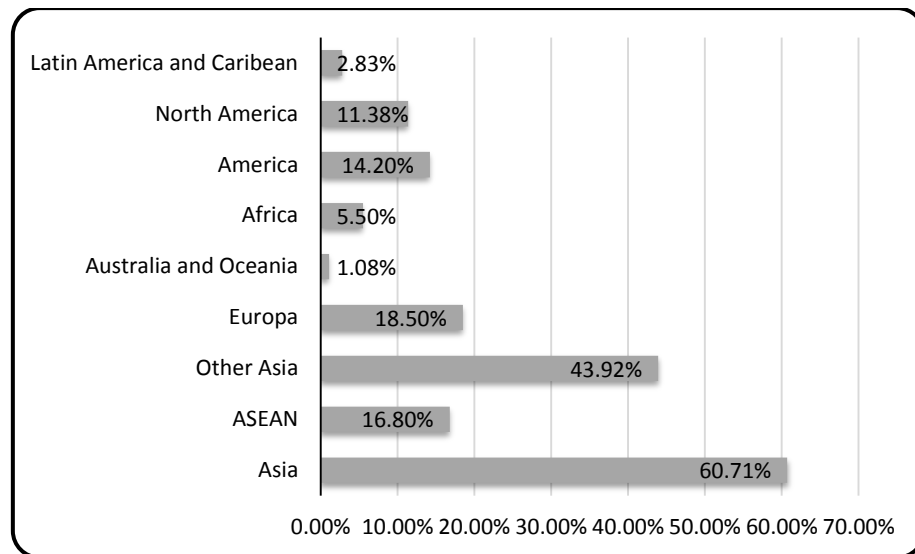


Figure 3.6 Indonesian Agricultural Exports Region Destination 2004-2013
(Source: Author, computed based on UN Comtrade.⁸)

3.2 Indonesian Agricultural Export and Free Trade Agreement

Since the past two decades there has been a rapid spread of economic integration in the world. This can be seen by phenomenon of free trade agreement (FTA) formation. As an effort to boost trade, Indonesia has been involved in several free trade agreements. Based on Ministry of Trade Republic of Indonesia⁴⁹ and Asian Development Bank Report⁵¹ as January 2015 Indonesia involved in twenty eight FTAs which was seven of them are already in force.

Table 3.2 shows Indonesian participation in 29 free trade agreement which is 21 FTAs were still under negotiation and seven other FTA are already in effect. The FTA already took in effect were included five regional trade agreement and two bilateral agreement, namely ASEAN Free Trade Area, ASEAN-China Free Trade Area, ASEAN-Korea Free Trade Agreement, ASEAN-Australia New Zealand Free Trade Area and ASEAN-India Free Trade Agreement, Indonesia-Japan Economic Partnership Agreement and the latest one was Indonesia-Pakistan FTA. With this seven FTAs means Indonesia has 16 partner countries which were ties in FTA.

Table 3.2 List of FTA Involved by Indonesia

No	FTA	Status
1	ASEAN Free Trade Area (AFTA)	Signed and In Effect
2	ASEAN - China Free Trade Agreement (ACFTA)	Signed and In Effect
3	ASEAN - India Free Trade Agreement (AIFTA)	Signed and In Effect
4	ASEAN - Korea Free Trade Agreement (ACFTA)	Signed and In Effect
5	ASEAN - Australia, New Zealand FTA	Signed and In Effect
6	Indonesia-Japan Economic Partnership (IJEPA)	Signed and In Effect
7	Indonesia-Pakistan Preferential Trade Agreement	Signed and In Effect
8	Trade Preferential System of the Organization of the Islamic Conference	Signed but not yet In Effect
9	Preferential Tariff Arrangement-Group of Eight Developing Countries	Signed but not yet In Effect
10	Indonesia-European Free Trade Association Free Trade Agreement (Indonesia-EFTA)	The 3rd Round of Negotiation
11	Indonesia-Iran FTA	The 1st Round of Negotiation
12	ASEAN-EU Free Trade Agreement	Negotiations launched
13	Regional Comprehensive Economic Partnership	Negotiations launched
14	Indonesia-Korea Free Trade Agreement	Negotiations launched
15	India-Indonesia Comprehensive Economic Cooperation Arrangement (II-CECA)	Negotiations launched
16	Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA)	Consultation Pre Negotiation
17	Indonesia-European Union Comprehensive Economic Partnership Agreement (Indonesia-EU CEPA)	Consultation Pre Negotiation
18	Indonesia-Chile Free Trade Agreement	Joint Study Group
19	Indonesia-Egypt	Joint Study Group
20	Indonesia-Tunisia	Joint Study Group
21	Indonesia-Turkey FTA	Joint Study Group
22	ASEAN-Hong Kong, China Free Trade Agreement	Proposed/under study
23	ASEAN-Pakistan Free Trade Agreement	Proposed/under study
24	Comprehensive Economic Partnership for East Asia (CEPEA/ASEAN+6)	Proposed/under study
25	East Asia Free Trade Area (ASEAN+3)	Proposed/under study
26	Indonesia-Peru FTA	Proposed/under study
27	Indonesia-Taiwan FTA	Proposed/under study
28	United States-Indonesia Free Trade Agreement	Proposed/under study

Source: Compiled by the Author, based on ADB (2015)⁵¹, WTO (2015)⁴.

Table 3.2 indicates that there are seven FTAs which is already signed and took in effect. Five out of seven FTAs are became effective in the range 2005 until 2010. ASEAN Free Trade Area (AFTA) was the first FTA that Indonesia has been followed which was signed in 28 January 1992 and started to take in effect on 1 January 1993,

followed by ACFTA in 2005, IJEPA in 2008, AKFTA, AIFTA and AANZFTA in 2010. The latest one was Indonesia Pakistan Preferential Trade Agreement signed on 3 February 2012 and took effect on 13 September 2013.

Table 3.3 List of Indonesia's FTA in Effect

No	FTA	Member	Date in Effect
1	ASEAN Free Trade Area (AFTA)	Indonesia; Malaysia; Brunei Darussalam; Singapore; Cambodia; Myanmar; Lao People's Democratic Republic; Philippines; Viet Nam; Thailand (ASEAN -10)	01 January 1993
2	ASEAN China Free Trade Agreement (ACFTA)	ASEAN-10 and China.	01 January 2005 (Goods) 07 January 2007 (Services)
3	ASEAN Korea Free Trade Agreement (AKFTA)	ASEAN-10 and Korea, Republic of.	01 January 2010 (Goods) 01 May 2009 (Services)
4	ASEAN India Free Trade Agreement (AIFTA)	ASEAN-10 and India.	01 January 2010
5	ASEAN Australia - New Zealand Free Trade Agreement (AANZFTA)	ASEAN-10 plus Australia and New Zealand.	01 January 2010 10 January 2012 (Indonesia)
6	Indonesia Japan Economic Partnership (IJEPA)	Indonesia; Japan.	01 July 2008
7	Indonesia Pakistan Preferential Trade Agreement	Indonesia; Pakistan.	1 September 2013

Source: Author, compiled based on WTO RTA Database³, ADB (2014)⁵¹

3.1.1 Comparison among Free Trade Agreements (FTAs)

As mentioned in Table 3.3, Indonesia has been involved on seven FTAs which was signed and took in effect. Consist of AFTA, ACFTA, AIFTA, AKFTA,

AANZFTA, IJEPA and Indonesia-Pakistan PTA. This study will be discussed on six FTAs, including AFTA, ACFTA, AIFTA, AKFTA, AANZFTA and IJEPA since the countries on these FTA are the major partner of Indonesian agricultural exports on the last decade. These six FTA member countries consist of fifteen countries are market for more than a half of Indonesian agriculture export or 51.53 percent total Indonesian agricultural exports account US\$ 129.25 Billion over 2004-2013 (see Figure 3.6). Indonesia-Pakistan PTA was not included in this research because this FTA already in force after mid-year 2013.

3.1.1.1 ASEAN Free Trade Area (AFTA)

The ASEAN Free Trade Area (AFTA) was the first FTA that Indonesia has been involved. Signed on 28 January 1992 in Singapore by six ASEAN member which was known as the original member of ASEAN or “ASEAN-6” included Indonesia, Malaysia, Thailand, Singapore, Brunei and the Philippines. They agreed to increase their economic partnership by establishing free trade agreement namely ASEAN Free Trade Area (AFTA). Three years later in 1995 Vietnam joined the agreement followed by Myanmar and Laos in 1997 and Cambodia as the latest member joined in 1999.⁵²

Trade liberalization within AFTA started in 1993 and the agreement was completed in 2003. Within the Common Effective Preferential Tariff (CEPT) plan, AFTA member's countries concurred to reduce customs duty from 20 percent to 5 percent or less in 2003. For original ASEAN members (Indonesia, Thailand, Singapore, Malaysia, Brunei and The Philippines), already eliminated tariff for almost all product under AFTA CEPT scheme in January 2010. The number of items with tariff elimination achieved 99 percent. While for newer ASEAN member countries

consisting Cambodia, Laos, Myanmar and Viet Nam (CLMV) were scheduled to remove tariff for almost all products by January 2015.⁵³

To achieve the ultimate target of ASEAN free trade area that was the total liberation of import tariff on all products, AFTA Council had agreed that this target will be achieved in 2015 for original ASEAN member countries and 2018 for the newer members. This step was expected to make ASEAN as an integrated market region where there was free flow of goods in the region and shall give maximum effect to enhance ASEAN economic competitiveness.⁵²

Based on AFTA agreement, products under CEPT were categorized on four groups: Inclusion List (IL), Temporary Exclusion List (TEL), Sensitive List (SL) and General Exception (GE). The Inclusion List product are those which have to be implemented immediately CEPT tariff rates and remove all tariff and non-tariff barriers. Tariff on this category should reduce to 0-5% in 2002 for ASEAN-6, after 2006 for Viet Nam, 2008 for Lao PDR and Myanmar, and 2010 for Cambodia.

Products under Temporary Exclusion List (TEL) were suspended from liberalization just for a while. All products under this category were expected to transfer into the Inclusion List on 2003 for ASEAN-6, 2013 for Viet Nam, 2015 for Laos and Myanmar and 2017 for Cambodia. The third category was the product under Sensitive List (SL) which was consisted of unprocessed agricultural products (Chapter 01-24 under Harmonized System Code). These kinds of product were given a longer time before liberalization. Finally the product under General Exception List (GEL), contains product were excluded from the AFTA agreement permanently for the

reason to protect public morals, human, national security, health and historical value.⁵³

Regarding with the agriculture product, based on Article 1 point 7 of the AFTA Agreement on the Common Effective Preferential Tariff Scheme (CEPT), agricultural product were defined as non-processed product rounded up on Chapter 01 to Chapter 24 Harmonized System and other product which were similar to unprocessed agricultural material on other chapter for example on Chapter 40 (rubber), 41 (raw hides) and Chapter 44.⁵⁴

Table 3.4 Time Frame of Liberalization on Agriculture Product under AFTA

Country	Start	Complete	Tariff lines
Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand	1 January 2001, and no later than 1 January 2003	1 January 2010	28
Viet Nam	1 January 2004, and no later than 1 January 2006	1 January 2013 (on 1 January 2010 for sugar)	0
Laos PDR and Myanmar	1 January 2006, and no later than 1 January 2008	1 January 2015	11
Cambodia	1 January 2008, and no later than 1 January 2010	1 January 2017	54

Source: Author, compiled based on AFTA agreement.⁵²

In regards to the liberalization process on agriculture product, the Protocol on the Special Arrangement for Sensitive and Highly Sensitive Product under AFTA-CEPT agreement, agriculture product was categorized on the Sensitive List (SL). As

mentioned on Article II regarding the Time Frame, trade liberalization on agricultural product is following special schedule. Original ASEAN-6 member countries should lower or remove tariff to 0-5 percent to year 2010 for ASEAN-6, 2013 for Viet Nam, 2015 for Laos and Myanmar and 2017 for Cambodia.⁵³

3.1.1.2 ASEAN-China Free Trade Agreement (ACFTA)

Following the success on trade liberalization among members, on November 4th 2002 in Phnom Penh, Cambodia, ASEAN and China agree to sign an economic partnership agreement called ASEAN-China Free Trade Area (ASEAN-China FTA). The purpose of this FTA was to boost economic partnership among members, reduce or even remove trade barriers in either tariff or non-tariffs, increasing investment and to facilitate economic integration between ASEAN and China.⁵⁵ The agreement on trade liberalization on goods was signed in 2004 and took in effect on 1st July 2005 for ASEAN countries and 20th July 2005 for China. According to this Agreement, the ASEAN-6 countries (Indonesia, Brunei Darussalam, Malaysia, Singapore, the Philippines and Thailand) and China have to remove import duties on 90 percent of their tariff lines by 2010, whereas newer ASEAN countries consisting Cambodia, Lao PDR, Myanmar and Vietnam (CLMV) were started on 2015.¹

The agreement on tariff reduction on goods was divided in two categories: Normal Track and Sensitive Track. Under normal track, China and ASEAN-6 has agree to remove almost all tariff duties on 1st January 2010 and with the flexibility to liberalize all tariff line no later than 1st January 2012. For ASEAN newer member countries (Cambodia, Laos, Myanmar and Viet Nam) have to finish eliminate tariff on 1st January 2015 with flexibility not exceed 1st January 2018.⁵⁶

Table 3.5 ASEAN-China Tariff Reduction Schedule under ACFTA

Country	Normal Track	Sensitive Track	
		Sensitive List	Highly Sensitive List
ASEAN-6 and China	1 January 2005, to 1 January 2010	1 January 2012 (maximum 20%) 1 January 2018 (0-5%)	1 January 2015 (maximum 50%)
CLMV (Cambodia, Laos PDR, Myanmar, Viet Nam)	1 January 2005, to 1 January 2015	1 January 2015 (maximum 20%) 1 January 2020 (0-5%)	1 January 2018 (maximum 50%)

Source: Author, compiled based on Annex 2 ACFTA agreement.⁵⁷

Products under Sensitive Track on ACFTA agreement were divided into two categories: Sensitive List (SL) and Highly Sensitive List (HSL). Tariffs on Sensitive List will be reduced to maximum 20 percent in 2012 and become 0-5 percent in 2018. Products under Highly Sensitive List, tariff reduction was planned to not more than 50 percent on 2015. The rule of origin for the ACFTA products are following the general requirement of 40 percent regional content.⁵⁸

Table 3.6 China's Agriculture Product on Sensitive List under ACFTA

HS Code	Product	Tariff 2012
0901.11	Coffee, not roasted or decaffeinated	8-20%
0904.11	Dried pepper (excluding crushed or ground)	20%
1001.10	Durum wheat	20%
1001.90	Seeds of Spelt, common wheat & muslin	20%
1510.10/90	Crude Palm Oil (CPO), RPO	9%
2008.20	Pineapples	10%
2009.40	Pineapple juice	10%
2009.80	Coconut juice	10%
2401.10	Tobacco, not stemmed/stripped	10%

Source: Compiled by Author from ASEAN secretariat.⁵⁷

Liberalization on agriculture product under ACFTA was started in 2005 when member parties agree to reduce tariff on early harvest product which was covered under chapter 01 to 08 HS code consist of live animal, meat, fish, dairy products, live trees, edible vegetable and fruits. However, several agriculture commodities still under sensitive and exclusion list for instance palm oil, coffee and pepper.

3.1.1.3 ASEAN-India Free Trade Agreement (AIFTA)

Economic integration between ASEAN and India was started by the signing of the initial framework agreement on October 8th 2008 in Bali Indonesia and the final agreement was signed on the 13th August 2009 in Bangkok Thailand by the ASEAN Economic Ministers and the Minister of Commerce and Industry of the Republic of India in Bangkok, Thailand. The FTA agreement comes into effect on 1 January 2010. Since August 2011, India and 10 ASEAN countries including Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Myanmar, Lao PDR and Viet Nam executed the agreement.⁵⁴

Products under AIFTA branched into two categories: Normal Track and Sensitive Track. Under Normal Track, India and Indonesia, Thailand, Singapore, Malaysia and Brunei agree to eliminate tariff (0%) by 2016. While the Philippines will complete eliminate tariff under normal track on 2019. The New ASEAN member's countries were given more time to eliminate their tariff under normal track. Product under Sensitive Track should reduce to 5% in 2016 for Brunei Darussalam, Malaysia, Indonesia, Singapore, Thailand and India; for the Philippines in 2019 and 2021 for newer ASEAN countries Cambodia, Laos, Myanmar and Viet Nam.⁵⁴

Table 3.7 Product Category and Schedules of Tariff Reduction under AIFTA

No	Product Category	Tariff Reduction Schedule and Provisions
1	Normal Track	<p>Tariff rates for product under normal track are 0 percent, if the tariff has been lowered to 0 percent they will remain at 0 percent. For Normal Track 1, since 1 January 2010 to 31 December 2013 for India, Brunei, Indonesia, Singapore, Malaysia, and Thailand and 1 January 2010 to 31 December 2018 for the Philippines, Viet Nam, Lao PDR, Myanmar and Cambodia.</p> <p>Under Normal Track 2, start on 1 January 2010 to 31 December 2016 for Brunei, Indonesia, Malaysia, Singapore, Thailand and India. From 1 January 2010 to 31 December 2019 for the Philippines and start on 1 January 2010 to 31 December 2021 for Cambodia, Lao PDR, Myanmar and Viet Nam.</p>
2	Sensitive Track	<p>Tariff rate for the product under sensitive track shall be reduced to five (5) percent, with the schedule: 1 January 2010 to 31 December 2016 for Brunei, Indonesia, Malaysia, Singapore, Thailand and India; 1 January 2010 to 31 December 2019 for the Philippines; 1 January 2010 to 31 December 2021 for Cambodia, Lao PDR, Myanmar and Viet Nam.</p>
3	Special Products	<p>Special products are refer to India's products of CPO (Crude Palm Oil), Refine Palm Oil (RPO), pepper, coffee and black tea. See Table 3.8</p>
4	Highly Sensitive List	<p>Tariff reduction will be reached on 31 December 2019 For Indonesia, Malaysia and Thailand, 31 December 2022 for the Philippines and 31 December 2024 for Cambodia and Viet Nam. Brunei, Laos, Myanmar and Singapore are excluded on the Highly Sensitive List product.</p>
5	Exclusion List	<p>Tariff product under exclusion list will be review annually in order to improvement on the market access</p>

Source: Author, compiled based on AIFTA Agreement.³⁹

Several agricultural products were classified as special product within AIFTA agreement. Included in this category were major Indonesian agricultural export commodity such as palm oil and coffee. Base tariff rate for this product were ranged from 70 percent to 100 percent. Under AIFTA agreement tariff rates were planned to be reduced for maximum 50 percent in 2019.

Table 3.8 Tariff Reduction Schedule for Special Product under AIFTA

Product	Base Rate	Tariff Reduction Schedule (not later than 1 January)										31 December 2019
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Palm Oil	80	76	72	68	64	60	56	52	48	44	40	37.5
RPO	90	86	82	78	74	70	66	62	58	54	50	45
Coffee	100	95	90	85	80	75	70	65	60	55	50	45
Tea	100	95	90	85	80	75	70	65	60	55	50	45
Pepper	70	68	66	64	62	60	58	56	54	52	51	50

Source: BTMU Economic Research Office.⁶⁰

3.1.1.4 ASEAN Korea Free Trade Agreement

Another free trade agreements followed by Indonesia was ASEAN-Korea Free Trade Agreement (AKFTA). The agreement to liberalized trade between ASEAN countries and Republic of Korea was proposed during ASEAN-Republic of Korea Summit in October 2003 which was held in Bali, Indonesia. Negotiation on this agreement was started in 2005 and entered into force in June 2007. The main objectives of this agreement were to reinforce and enhance economic cooperation, increase trade and foreign direct investment among ASEAN Member States and Korea by liberalizing and endorse trade in goods and services and facilitating investment.⁶¹

Products under AKFTA agreement were classified into two categories namely Normal Track and Sensitive Track. Products that were categorized in normal track will be liberalized by reducing all tariffs in 2010 for Korea and ASEAN-5 (Indonesia, Brunei, the Philippines Malaysia and Singapore) with the flexibility to 2012. For ASEAN new member countries consist of Cambodia, Myanmar, Laos and Viet Nam were given longer time from this scheme. The liberalization on Normal Track by reduced tariff until maximum 5 percent for Viet Nam was not later than 1st January

2013, while for Cambodia, Myanmar and Lao are not later than 1st January 2015. Thailand which was ratified the agreement on 2007 has different schedule of liberalization. Thailand's product under normal track would remove all tariffs not later than 2016.

Table 3.9 Korean Agriculture Product Tariff Schedule under AKFTA

No	HS Code	Definition	FTA Rate				
			2012	2013	2014	2015	2016
1	180100	Cocoa beans, whole or broken, raw or roasted	0%	0%	0%	0%	0%
2	151311-151319	Coconut (copra) oil or fractions simply refined	0%	0%	0%	0%	0%
3	090111-090122, 090190	Coffee, whether or not roasted or decaffeinated; coffee substitutes containing coffee in any proportion;	0%	0%	0%	0%	0%
4	151110	Palm oil, crude	0%	0%	0%	0%	0%
5	400110-400129	Natural rubber latex, whether or not pre-vulcanized, other	0%	0%	0%	0%	0%
	01-24	Agriculture Product	0%-754.3%				0%-603.4%

Source: compiled by author from Annex 1 AKFTA Tariff Commitment⁶²

Whilst tariff for the product on the sensitive track will be removed for maximum 20 percent in 2012 and planned be fully liberalized with the tariff reach 0 percent in 2018. Based on appendix 2 on the Agreement on trade in goods under AKFTA, Korea still include several agriculture product under category of highly sensitive list, such as shrimps, oranges and ginseng. Tariff line for this kind of product

was subjected to 50 percent until 754.3 percent (such as HS.2106903029, red ginseng).⁶³

3.1.1.5 ASEAN Australia, New Zealand

The agreement on economic partnership between ASEAN, Australia and New Zealand namely The ASEAN-Australia and New Zealand Free Trade Area (AANZFTA) was signed on 27 February 2009 and come into effect on 1st January 2010 for Australia, Brunei, Malaysia, Myanmar, New Zealand, Singapore, the Philippines and Viet Nam. Thailand entered into force on 12 March 2010, Lao PDR on 1 January 2011, Cambodia on 4 January 2011 and the last member is Indonesia which was taken into effect on 10 January 2012. The main idea of this economic cooperation was to liberalize and facilitate trade in goods and service among parties, promote and enhance investment and strengthen economic links among parties.⁶⁴

To achieve the objective of this economic partnership, AANZFTA member parties were agree to reduce trade tariffs since the agreement come into effect and even remove tariffs on at least 90 per cent of all their tariff lines⁶⁵. Since becoming effective, Australia already removes tariffs on 96.4% of items and New Zealand for 84.7%. In 2011 96.7 percent tariff lines of Australia and 91.3 percent tariff lines of New Zealand was zero or maximum 5 percent. The full coverage of tariff reduction for both Australia and New Zealand is was expected to be achieved in 2020.

Regarding with the liberalization on agriculture product, based on AANZFTA tariff reduction schedule, agriculture product under HS 20 consisted of fruit and vegetable juices, processed and preserved fruit and vegetables, and rubber (HS 40) are among the products that will enjoy trade liberalization at the time entry into force of

this agreement. Average custom duty on agriculture product from chapter 01 to chapter 24 HS was between 0 percent until 5 percent. Table 3.10 shows tariff rate for Australia and New Zealand under AANZFTA on agriculture products.

Table 3.10 Australia and New Zealand Agriculture Product Tariff Duty under FTA

No	HS Code	Definition	FTA Rate				
			2009	2010	2011	2012	2013
1	180100	Cocoa beans, whole or broken, raw or roasted	0%	0%	0%	0%	0%
2	151311-151319	Coconut (copra) oil or fractions simply refined	0%	0%	0%	0%	0%
3	090111-090122, 090190	Coffee, whether or not roasted or decaffeinated; coffee substitutes containing coffee in any proportion;	0%	0%	0%	0%	0%
4	151110	Palm oil, crude	0%	0%	0%	0%	0%
5	400110-400129	Natural rubber latex, whether or not pre-vulcanized, other	0%	0%	0%	0%	0%
	01-24	Agriculture Product	0%-5%				

Source: compiled by author from Annex 1 AANZFTA Tariff Commitment⁶²

3.1.1.6 Indonesia-Japan Economic Partnership (IJEPA)

Indonesia not only involved in economic integration within the scope of regional economic integration, but also established economic cooperation within bilateral agreement frame work. There are two Indonesia's bilateral economic integrations in which Indonesia involved was already into effect. The first bilateral economic integration was Indonesia-Japan Economic Partnership (IJEPA) and the second is Indonesia-Pakistan Preferential Trade Area (IP-PTA). Indonesia-Japan Economic Partnership agreement was aimed to enhance economic cooperation

between the two countries by boosting bilateral trade, facilitating investment, strengthen and promote mutually beneficial economic ties and contribute to realizing multi-layered cooperation in various ways.

Table 3.11 Japan Tariff Duty under IJEPA 2012

HS Code	Definition	IJEPA Rate
151311-151319	Coconut (copra) and fractions thereof, whether or not refined, but not chemically modified	0%
0901.11	Coffee, whether or not roasted or decaffeinated	0%
1511.90	Palm oil and its fractions, whether or not refined, but not chemically modified.	0%
1801.00	Cocoa beans, whole or broken, raw or roasted	0%
4001.10	Rubber and articles thereof	0%
01-24	Agriculture Product	0%-23.5%

Source: compiled by author from Annex 1 IJEPA⁶⁶

The two countries began formal negotiation to establish the cooperation in July 2005 and came into force on 1 July 2008. Indonesia and Japan concurred to remove tariff for more than 90% of goods traded between the two countries. For agriculture product from chapter 01 to chapter 24, base rate under IJEPA agreement are from 0 percent to 23.5 percent.

Japan excluded several agriculture products from the trade liberalization under IJEPA agreement. Most of the products under exclusion list within IJEPA agreement are processed agriculture product were the applied tariff as high as 100 percent on tobacco, 30 percent on vegetables-based spread and for several food preparation products.

3.1.1.7 Indonesia-Pakistan Preferential Trade Agreement (IP-PTA)

Indonesia's newest bilateral agreement is Indonesia-Pakistan Preferential Trade Agreement (IP-PTA). Negotiation to establish this cooperation was began in November 2005 and after the final eight round negotiations, this agreement then finally signed on February 2012 and come into effect on September 2013. Indonesia offered market access to Pakistan for 216 products at preferential rates under this agreement. Pakistan offered list to Indonesia similarly in a total of 287 tariff lines.

Table 3.12 Pakistan's Agriculture Product Tariff rate under IP-PTA

HS Code	Definition	FTA Rate
151311-151319	Coconut (copra) and fractions thereof, whether or not refined, but not chemically modified	Not on the list
0901.11	Coffee, not roasted or decaffeinated	5%
1801.00	Cocoa beans, whole or broken, raw or roasted	0%
1511.90	RBD Palm oil	Rs.9180/MT
4001.22	Technically specified natural rubber (TSNR)	0%
02-24	Agriculture Product	0%-24%

Source: IP-PTA Pakistan Offer list.⁶⁷

Pakistan exempted tariff rate on 82 tradable import products from Indonesia after the agreement took in effect from 1 September 2013. There are total 313 tariff lines offered by Pakistan to Indonesia which reducing tariff from 24 percent until 0 percent. The reducing tariff also offered by Pakistan for agricultural product. Around 129 tariff lines for agricultural commodity were included in the liberalization process. On reciprocal, Indonesia offer 311 tariff lines, with the range of tariff from 0 percent to 24 percent, which 59 of the tariff lines were for agriculture commodities. Table 3.13 shows the comparison status of seven FTA Indonesia in effect.

Provision	AFTA	ACFTA	AIFTA	AKFTA	AANZFTA	IJEPA	IPFTA
Agreement Name	ASEAN Free Trade Area	ASEAN - China Free Trade Agreement	ASEAN - India Free Trade Area	ASEAN - Korea Free Trade Area	ASEAN - Australia - New Zealand Free Trade Area	Indonesia-Japan Economic Partnership	Indonesia-Pakistan Preferential Trade Agreement
Date of signature	28 January 1992	29 November 2004	13 August 2009	24 August 2006	27 February 2009	20 August 2007	03 February 2012
Implementation Date	01 January 1993 (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand)	01 July 2005	01 January 2010 (India, Malaysia, Singapore, Thailand 1 June 2010 (Brunei, Myanmar, Vietnam) 1 October 2010 (Indonesia) 1 January 2011 (Laos) 17 May 2011 (Philippines) 15 July 2011 (Cambodia)	01 January 2010	01 January 2010 (Australia, Brunei, Malaysia, Myanmar, New Zealand, Philippines, Singapore, Vietnam) 12 March 2010 (Thailand) 1 January 2011 (Laos) 4 January 2011 (Cambodia) 10 January 2012 (Indonesia)	01 July 2008	1 September 2013
End of Implementation	2018	2020	See: article 23 2024	2024	2025	2023	2025
Duty Phase-Out	2010 (6 Member) 2015 (new member)	2012 (ASEAN 6 – China) 2018 (CLMV)	2019	2012	2020	2018	2020

Source: compiled by author from ASEAN¹, Ministry of Trade.²

Table 3.13 Comparison among FTAs Indonesia Involved (continued)

Provision Member	AFTA	ACFTA	AIFTA	AKFTA	AANZFTA	IJEPA	IPFTA
	Brunei Darussalam; Cambodia; Indonesia; Lao PDR; Malaysia; Myanmar; Philippines; Singapore; Thailand; Viet Nam	ASEAN China	ASEAN India	ASEAN Korea	ASEAN Australia New Zealand	Indonesia Japan	Indonesia Pakistan
Market Size	640 (million)	1,939 (million)	1,814 (million)	647 (million)	625 (million)	(million)	(million)
Coverage	Goods	Goods and Service	Goods	Goods and Service	Goods and Service	Goods and Service	Goods and Service
Rules of Origin	Region Value Content (RVC) at least 40%	RVC at least 40%	RVC at least 40%	RVC at least 40%	RVC at least 35%	RVC at least 40%	RVC at least 40%
Product Category	TEL Sensitive and Highly Sensitive	Normal Track Sensitive Track Exclusion List	Normal Track Sensitive Track	Normal Track Sensitive Track	Normal Track Sensitive Track	Normal Track Sensitive Track	Normal Track Sensitive Track
Liberalization on Agriculture Product	ASEAN -6 1 January 2003 Vietnam 1 January 2006 Lao, Myanmar 1 January 2008 Cambodia 1 January 2010	01 July 2005	01 January 2010 India, Malaysia, Singapore, Thailand 1 June 2010 (Brunei, Myanmar, Vietnam) 1 October 2010 (Indonesia) 1 January 2011 (Laos) 17 May 2011 (Philippines) 15 July 2011 (Cambodia)	01 January 2010	01 January 2010	01 July 2008	13 September 2013

Source: compiled by author from ASEAN¹, Ministry of Trade.²

3.1.2 Indonesian Agricultural Exports and FTA

Indonesia exports agricultural product reached US\$ 250.84 Billion during 2004-2013, which 51.52 percent or US\$ 129.25 Billion belonged to partner countries that has free trade agreement relation. While another 48.4 percent or account US\$ 121.4 Billion were to non-FTA countries. Over the last ten years, the value of agriculture exports to FTA partner countries expanded almost quadruple from US\$ 4.46 Billion in 2004 to US\$ 17.11 Billion in 2013. Figure 4 shows Indonesian agricultural exports to FTA and non-FTA partner countries from 2004 to 2013.

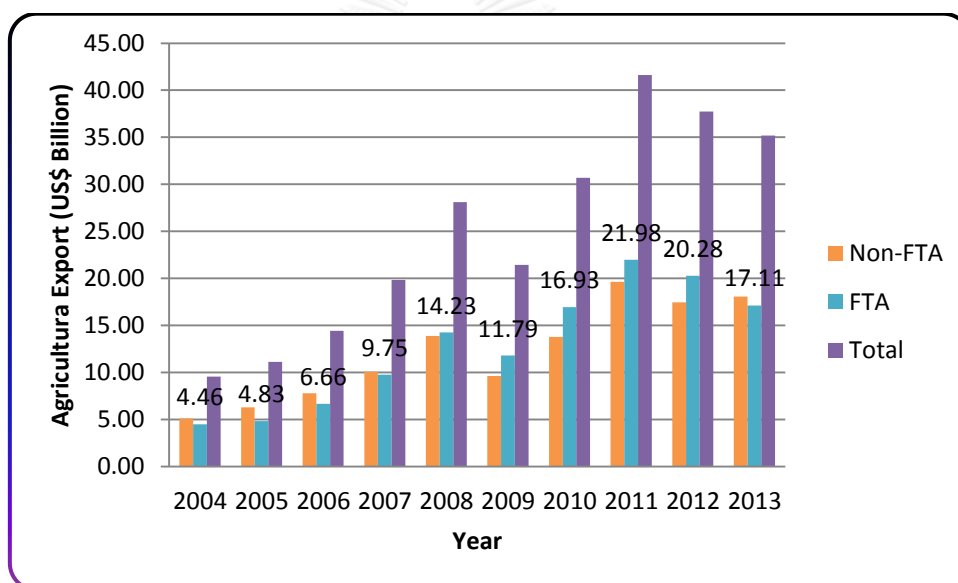


Figure 3.7 Indonesian Agricultural Export to FTA and Non-FTA Countries
Source: UN-Comtrade Database.⁸

Figure 3.7 shows that since 2004 Indonesian agricultural export have increased trend both for FTA and non-FTA countries. Indonesian agricultural export to FTA countries were lower than to non-FTA countries from 2004 to 2007, but since 2008 FTA countries absorbed Indonesia's agricultural exports worth US\$ 14.23 Billion more than the non-FTA countries which were only worth US\$ 13.87 Billion.

This trend continued until 2012 when exports experience decreasing trend then export to FTA countries surpassed in 2013 by the value of exports to non-FTA countries.

From all FTA Indonesia involved in, AFTA countries still become the largest market for Indonesian agricultural exports during 2004-2013, accounted for 32 percent of total agricultural exports to FTA countries, followed by India (AIFTA) and China (ACFTA) in the second and third position worth 28 percent and 24 percent respectively.

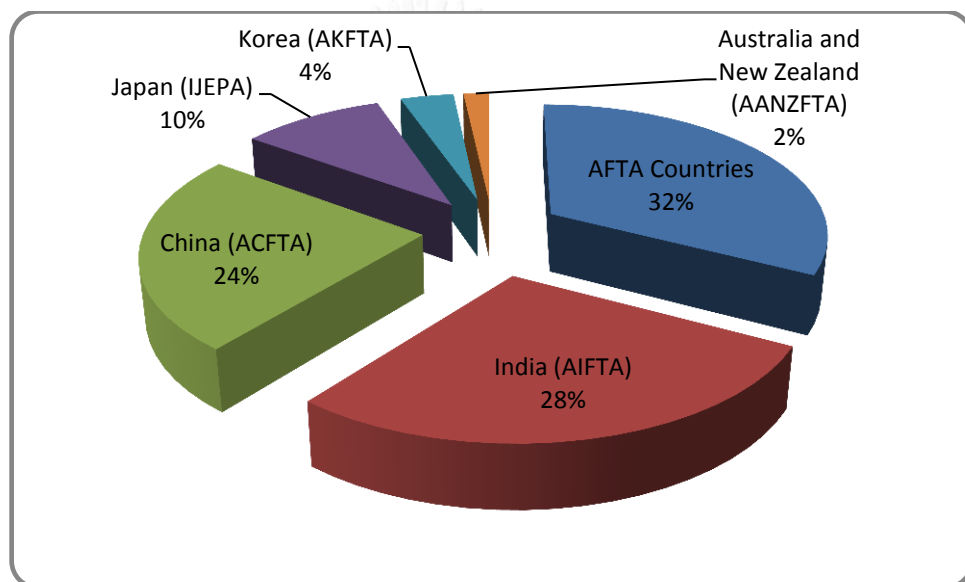


Figure 3.8 Distribution of Indonesian Agricultural Export to FTA Countries
Source: UN-Comtrade Database.⁸

Figure 3.8 shows the distribution of Indonesian agricultural exports to FTA partner countries between 2004 and 2013. AFTA remain the most important FTA for Indonesian agriculture exports as the largest market, while Australia and New Zealand combine only absorbed 2 percent of exports. Detail explanation about Indonesian agricultural export commodity to FTA countries during 2004-2013 is showed on Table 3.13. Based on Table 3.13, India was the major Indonesian agriculture export market in the last decade, account US\$ 36.48 billion.

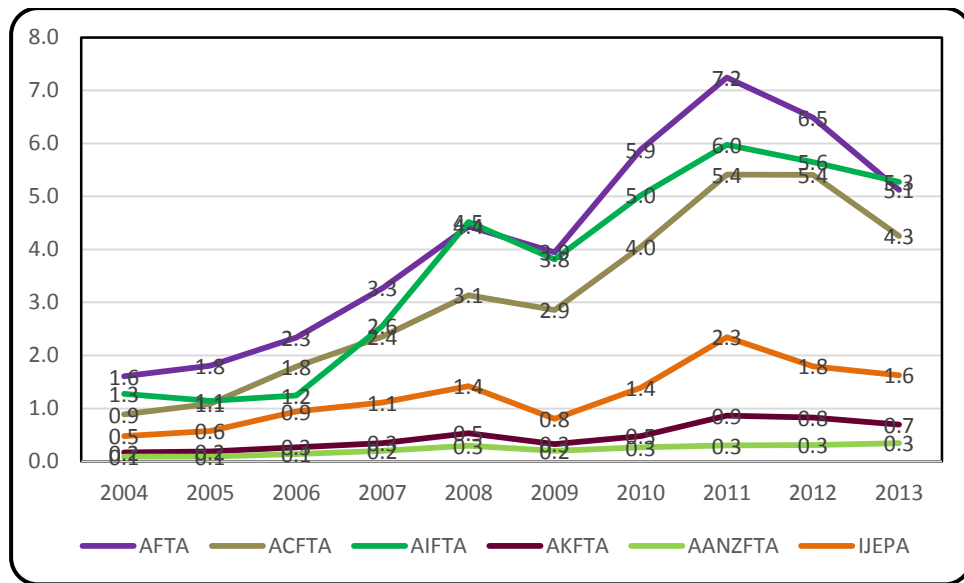


Figure 3.9 Indonesian Agricultural Export to FTA block (US\$ Billion)
 Source: UN-Comtrade Database.⁸

Figure 3.9 show Indonesian agricultural export to six FTA Indonesia involved during 2004-2013. AFTA as the first FTA was still become the largest market for Indonesian agricultural export. The value of export to AFTA countries is US\$ 1.6 billion in 2004. Four years later increased almost 300 percent to become US\$ 4.6 billion in 2008. However there were decreasing in export in 2009, 2012 and 2013. Indonesian agricultural export to AFTA countries has an upward trend in general.

Indonesia's economic integration with China within ASEAN-China FTA also showed good performance on agricultural export. There was a decreasing on export in 2005 however it showed significant increase and reached the peak on 2011 with the value US\$ 6.0 billion which increase more than 6 times since 2004 account US\$ 0.9 billion. Another FTA such as ASEAN India FTA and Indonesia and Japan economic partnership experience same pattern on exports during 2004-2013. Detail explanation about Indonesian agriculture exports performance shows on Table 3.14 below.

Table 3.14 Indonesian Agriculture Export to FTA Countries 2004-2013 (US\$ Million)

No	Country	FTA	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
1	Australia	AANZFTA	70	75	106	152	197	154	171	176	186	193	1,482
2	Brunei	AFTA	12	11	8	9	11	10	12	15	18	17	122
3	Cambodia	AFTA	42	60	65	81	124	163	174	187	207	226	1,327
4	China	ACFTA	886	1,087	1,789	2,354	3,138	2,859	4,046	5,415	5,407	4,254	31,235
5	India	AIFTA	1,274	1,143	1,244	2,558	4,519	3,814	5,021	5,977	5,649	5,271	36,472
6	Japan	IJEPA	477	573	943	1,110	1,421	804	1,388	2,345	1,795	1,628	12,484
7	Korea Rep. of	AKFTA	168	187	267	342	531	324	479	866	826	697	4,687
8	Lao PDR	AFTA	0.00	0.26	0.63	0.10	0.30	0.30	0.16	1.21	0.00	1.08	4.04
9	Malaysia	AFTA	724	736	883	1,143	1,941	1,897	2,968	3,557	2,804	1,766	18,419
10	Myanmar	AFTA	19	20	80	190	145	81	134	156	119	266	1,209
11	New Zealand	AANZFTA	19	18	32	47	100	46	95	125	120	153	755
12	Pakistan	IPPTA	247	381	420	636	486	236	210	444	870	972	4,904
13	Philippines	AFTA	114	139	156	221	240	241	407	544	604	566	3,233
14	Singapore	AFTA	534	665	868	1,231	1,442	1,079	1,543	1,946	1,827	1,404	12,539
15	Thailand	AFTA	58	72	72	82	138	134	173	345	372	357	1,802
16	Viet Nam	AFTA	103	100	206	310	396	342	475	491	535	521	3,478

Source: compiled by author from UN-Comtrade Database.

Table 3.14 show Indonesian agricultural export to 16 partner countries which has economic cooperation or become a member of free trade agreement with Indonesia. 14 out of 16 FTA partner countries were come from Asian region because most of Indonesia's FTA partners were come from the Asian countries.

According to Table 3.14, India was the largest market of Indonesian agricultural export. In 2004 India imports Indonesian agricultural commodities amount US\$ 1,274 million, although there were decreasing in Indian import in 2005 and 2006 in general during 10 years since 2004 to 2013 Indonesian agricultural export to India experience increasing trend. The value of Indonesian export to India in 2013 was US\$ 5,271 million, more than 4 times since 2004.

India was followed by China in the second rank as the second largest market for Indonesian agriculture export. Huge population and fast growing economic development in China represent in the trend of China's export for agricultural products from Indonesia. In 2004 china's imports on Indonesian agricultural commodities was only US\$ 886 million, ten years later the value of Indonesian agriculture export to China increase almos 5 times (around 480%) to become US\$ 4,254 million.

The third largest market for Indonesian agricultural exports was Malaysia. During 2004 to 2013 Malaysia imported agriculture commodity with the value US\$ 18,419 million. Indonesian agricultural export to malaysia growing around 243 percent from US\$ 724 million in 2004 to become US\$ 1,766 million in 2013. The neighboring country which has almost similar culture and language with Indonesia and the close proximity may encourage Indonesian agriculture export to Malaysia.

CHAPTER 4

METHODOLOGY

4.1 Methodology

4.1.1 The Gravity Model

Empirical research which analyzed the impact of free trade agreements (FTAs) have used variety of techniques ranging from simple method descriptive statistic approaches to complex method using computable general equilibrium (CGE) model, with the gravity model in-between. The gravity model estimation method has been used in a numerous fields of studies such as human migration, regional trade analysis, and investment flow. Its utilization in international trade analysis seems to dominate its overall use.³⁸

Kepaptsoglou, Karlaftis and Tsamboulas (2010) concluded that the gravity model estimation has been widely used in international trade studies for the last 40 years by reason of its considerable empirical robustness and explanatory power. Since their introduction in the 1960's, gravity models have been used for investigating trade policy implications and for analyzing the impact of free trade agreements on trade recently.⁶⁸

Chenyi He, Quagraine and Wang (2013) mentioned on their paper that the gravity model in international trade is used to investigate trade flow between two or more countries, based on their size of economy and geographical distance between them.⁶⁹ Jan Tinbergen (1962), a Dutch economist is widely known as a first scholar who introduced gravity model to examine international trade flows. Using the concept

of Newton's law of gravitation, Tinbergen explained theoretical model for bilateral trade with the form⁷⁰:

$$F_{ij} = G (M_i * M_j) / D_{ij}^2 \quad (1)$$

Where F_{ij} is gravitational attraction between two entities i and j and denotes value of trade from country i to country j . M_i and M_j , represent respective masses of this two entities, in essence their economic size. While D_{ij} represent geographical distance between them. G is gravitational constant.⁶⁹

Based on the basic principle of gravity model as mentioned in equation (1), it can be concluded that trade flow between two countries is the proportional function of the gross domestic product (GDP) of each country and oppositely to the gap between them (distance).⁷¹ Therefore the gravity model for international trade can be stated as:

$$F_{ij} = \beta_0 (GDP_i * GDP_j)^{\beta_1} / (Distance_{ij})^{\beta_2} \quad (2)$$

In order to show linier relation, the equation (2) can be transformed into log form for econometric analysis. The equation is present in Equation 3 below:

$$\ln F_{ij} = \beta_0 + \beta_1 \ln(GDP_i) + \beta_2 \ln(GDP_j) + \beta_3 \ln(Distance_{ij}) + \mu_{ij} \quad (3)$$

In the equation (3), F_{ij} is the value of trade flow β_0 is constant, represents all unobserved factor affecting trade, GDP_i represent gross domestic product of exporter country, GDP_j represent gross domestic product of importer country and $Distance_{ij}$ is denotes geographical distance between country or capital/economic city and μ_{ij} is error term. While β_0 to β_3 is coefficient of each variable.⁷¹

4.1.2 The Gravity Model Specification

The effect of free trade agreement on Indonesian agricultural exports major commodity can be analyzed with gravity model. The gravity model estimation is extensively used tool to analyze factor affecting agricultural of trade flows such as free trade agreement, exchange rate, common border, language commonality and arable land.³⁴

The traditional basic gravity model established by Tinbergen (1962) underlying the value of exports from country i to country j , X_{ij} is a positive function of countries gross domestic product (GDP), but negatively related to the distance between countries. While many literatures agree to the empirical model that GDP and distance is the main explanatory variable, many studies uses other variable to be included as another explanatory variable. Ghosh and Yamarik (2004) showed a list of 48 independent variables that has been used in literature to estimate the gravity model in various combinations.⁷⁰

Sohn (2005) concluded that in gravity model equation, bilateral trade flows and exports were the most common dependent variables. While the independent variables were factors indicating demand and supply of trading countries, and impedance factors of trade flow between countries. The proxies for demand and supply are measured the countries economic and market size such as income level, population, land area and per capita GDP. GDP per capita represented the income level or purchasing power of exporting and importing countries.⁷²

Greene (2013) used a Gravity Model Approach stated that the most often used as dependent variable in gravity model were total trade (exports + imports), exports

and imports. While on the right hand side as independent variable, most researcher included country income level, geographical distance, land area, population, real exchange rate, market openness, FTA membership and other geographic characteristic (Island, landlocked, etc.).⁷¹

To this end, this research follows Erdem and Nazlioglu (2008) and Greene (2013) gravity model specification, the model is as follows:

$$\begin{aligned} \mathbf{LnE}_{ijt} = & \beta_0 + \beta_1 \mathbf{lnGDP}_{it} + \beta_2 \mathbf{lnGDP}_{jt} + \beta_3 \mathbf{lnDist}_{ij} + \beta_4 \mathbf{lnP}_{it} + \beta_5 \mathbf{lnP}_{jt} + \\ & \beta_6 \mathbf{Land}_{jt} + \beta_7 \mathbf{EX}_{it} + \beta_8 \mathbf{EX}_{jt} + \beta_9 \mathbf{PRICE}_{ij} + \beta_{10} \mathbf{FTA}_{ij} + \varepsilon_{ijt} \end{aligned} \quad (4)$$

The dependent variable used in this study is the log natural agricultural exports from Indonesia (*i*) to partner country (*j*) during the years 2004-2013. On the right hand side as explanatory variables are real GDP, geographical distance, population, real exchange rates, importer irrigated land, price indices and dummy variables FTA.

The equation (4) also employed to examine the impact of each free trade agreement on agriculture export by adding dummy variable FTA which Indonesia's involved including AFTA, ACFTA, AIFTA, AKFTA, AANZFTA and IJEPA. as follows:

$$\begin{aligned} \mathbf{LnE}_{ijt} = & \beta_0 + \beta_1 \mathbf{lnGDP}_{it} + \beta_2 \mathbf{lnGDP}_{jt} + \beta_3 \mathbf{lnDist}_{ij} + \beta_4 \mathbf{lnP}_{it} + \beta_5 \mathbf{lnP}_{jt} \\ & + \beta_6 \mathbf{Land}_{jt} + \beta_7 \mathbf{EX}_{it} + \beta_8 \mathbf{EX}_{jt} + \beta_9 \mathbf{PRICE}_{ij} + \beta_{10} \mathbf{AFTA}_{ij} \\ & + \beta_{11} \mathbf{ACFTA}_{ij} + \beta_{12} \mathbf{AIFTA}_{ij} + \beta_{13} \mathbf{AKFTA}_{ij} + \beta_{14} \mathbf{AANZFTA}_{ij} \\ & + \beta_{15} \mathbf{IJEPA}_{ij} + \beta_{16} \mathbf{FTA}_{ij} + \varepsilon_{ijt} \end{aligned} \quad (5)$$

4.2 Research Variables

4.2.1 The Dependent Variable

LnE_{ijt} was the natural log of total Indonesian agricultural exports (aggregate data) and total commodity export (disaggregate data) of Palm Oil, Rubber, Coconut, Cocoa and Coffee from Indonesia (i) to partner countries (j) measured in current in 2013 United States of America (U.S.) dollars.

4.2.2 The Independent Variables

The independent were consist of GDP of Indonesia as exporting country, GDP of trading partner/importing countries, geographical distance between Indonesia and partner countries, population, real exchange rates, importer irrigated land, price indices and dummy variables free trade agreement (FTA). The FTA variables were consist seven FTAs including AFTA, ACFTA, AIFTA, AKFTA, AANZFTA and IJEPA.

GDP_{it} and GDP_{ij} were the sum of gross domestic product (GDP) (real value) of Indonesia (i) and partner (j) countries measured in 2005 U.S. dollars. GDP was a proxy of country's income and stage of development. Income effect on export was expected to be positive. Literature suggested that increasing in income will increase in production for exporter country.³⁶ Similarly, on the importer side increasing in income will increase consumption on imported goods.³² The greater the GDP of Indonesia and trading partners, the greater Indonesia's agricultural exports. GDP_i , GDP_j were hypothesized to have positive effect on Indonesian agriculture export.

Dist_{ij} was geographical distance between capital cities of Indonesia (Jakarta) and the capital city of partner countries (j) in kilometers. Distance is represented

transportation cost and barrier of trade. The further distance between exporter and importer countries, the higher in cost will take which reduce importer profit. Therefore, distance was hypothesized to be negative effect on agricultural export.⁷¹

P_{it} and P_{jt} were Indonesian population and partner country population. Population is represented country's market size and potential domestic consumption.. Indonesian population as an exporter was expected to have significant positive impact on agriculture export because of larger population can supply more variety of exporter goods. On the other hand, partner countries population as an importer also expected to have positive impact on Indonesian agriculture export for the reason that larger market tends to consume more importer goods.⁷³ Nevertheless according to Amin et al (2009), the effect of population on export was uncertain for the reason that the size of population may increasing or decreasing on export. On the one side, domestic population may leads to encourage labor division that can create great variety of product. On the other side, larger population may refer to self-sufficiency and less dependency to imported goods.³⁶

$Land_{jt}$ represented total irrigated land of importer partner country j in hectares. The extent of irrigated land may interfered the importing country's ability to produce more agricultural product.³⁴ Therefore the irrigated land variable was expected to have negative effect on Indonesian agricultural exports.

The next variables were Ex_{it} and Ex_{jt} which were Indonesian currency real exchange rate and partner countries currency real exchange rate per US\$ dollar. Real exchange rate variable is represented financial risk, relative price and purchasing power parity.⁷¹ The expected sign of these variables is can be positive or negative.

The literature suggested that the appreciation of exporter currency can decrease exports due to increasing export price.⁷¹ On the contrary depreciation of exporter currency can enhanced export.⁷⁴

Price_{it} represented Indonesian agricultural price index and average price of agricultural commodities. Literature suggested that exporter commodity price was the one of the determinant factor of export. An increasing in export price was predicted to reduce export because of decreasing on the demand of agriculture goods.⁷⁵

Table 4.1 below shows the previous researches that proved the empirical relationship between independent variable and agricultural trade/exports and their expected sign.

Table 4.1 Independent Variable and Expected Sign from Previous Research

Independent Variable	Paper	Result
<i>GDP_i, GDP_j</i>	Koo et al. (2006), Sarker and Jayasinghe (2007), Amin, Hamid and Saad (2009), Sun and Reed (2010), Dianniar (2013),	Positive
<i>DIS_{ij}</i>	Hapsari and Mangunsong (2006), Amin, Hamid and Saad (2009), Makochekanwa (2012)	Negative
<i>POP_i, POP_j</i>	Erdem and Nazliogrlu (2008), Sun and Reed (2010), Makochekanwa (2012), Dianniar (2013).	Positive / Negative
<i>Exch_i</i>	Samad, Anshari and Othmand (2009), Suryanta (2012),	Negative
<i>Exch_i</i>	Samad et al. (2009),	Positive
<i>Land_j</i>	Erdem and Nazliogrlu (2008), Dianniar (2013).	Negative
<i>Price_{it}</i>	Samad et al. (2009) ⁷⁵ , Zheng (2013) ⁷⁶	Negative
<i>FTA_{ij}</i>	Zahniser et al.1 (2002), Feridhanusetyawan and Pangestu (2003), Sarker and Jayasinghe (2007), Erdem and Nazliogrlu (2008), Oktaviani, Puspitawati and Haryadi (2008), Makochekanwa (2012)	Positive

Source: compiled by author.

The last variable was dummy variable FTA. This study included few dummy variable free trade agreements (FTA) which was equal to one when Indonesia and the partner country were free trade agreement member. The formation of FTA by Indonesia and partner countries was expected to boost the volume and value of Indonesian agriculture export because FTA would reduce or even remove tariff and nontariff barriers.⁷¹ Many studies found that the membership of free trade agreement was positive and had significant impact on agriculture export. For instance the research by Zahniser et al. (2002),³⁰ Kristjánsdóttir⁷⁷ Erdem and Nazlioglu (2008)³⁴

ε_{ijt} was log normal error term.

4.3 Data Source

The yearly data of agricultural export commodities are obtained from Statistics Indonesia, Ministry of Agriculture and United Nation Commodity Trade Database. The data on GDP, population and exchange rate are obtained from World Development Indicators (WDI) database of the World Bank. Data of Free Trade Agreement (FTA) are come from World Trade Organization (WTO) regional trade agreement database, ASEAN secretariat and the official website of the FTA.

Data on Price were obtained from Statistics Indonesia⁷⁸ and World Bank Global Economic Monitor Commodity Price.⁷⁹ While data on distance were collected from Centre d'Etudes Prospectives et d'Informations Internationales⁸⁰ and data of irrigated land were collected from Food and Agriculture Organization.⁸¹ This study will used panel data that were collected for periods 2004-2013. This period was selected because covered the time when all FTA which followed by Indonesia were in force.

4.4 Hypotheses

The hypotheses of this study were:

$$H_0 = \beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}, \beta_{11} = 0$$

(Each variable did not influence Indonesia's major commodity agricultural exports to trading partner).

$$H_1 \neq H_0$$

- There was significant effect of $\ln GDP_{it}$, $\ln GDP_{jt}$, $\ln Dist_{ij}$, $\ln P_{it}$, $\ln P_{jt}$, EX_{it} , EX_{jt} , $\ln Price_{it}$ and FTA_{ij} , on Indonesian agricultural exports to trading partner.
- GDP_{it} , GDP of Indonesia was hypothesized to have positive and significant effect on Indonesian agriculture export.
- GDP_{ij} , GDP of Indonesia's partner countries was hypothesized to have positive and significant effect on Indonesian agriculture export.
- $Dist_{ij}$, distance represented transportation cost and barrier of trade. Therefore, distance was hypothesized to be negative effect on agricultural export.
- P_{it} and P_{jt} were Indonesian population and partner countries population which was hypothesized to have positive and significant effect on Indonesian agriculture export.
- $Land_{jt}$ represented total irrigated land of importer partner country j in hectares was hypothesized to have negative effect on Indonesian agricultural export.

- Ex_{it} was Indonesian currency exchange rate represent financial risk and relative price, the appreciation of Indonesian currency was hypothesized to have negative and significant effect on Indonesian agriculture export.
- Ex_{jt} was partner countries currency exchange rate per US\$ represented purchasing power parity. The appreciation of partner countries currency was hypothesized to have positive and significant effect on Indonesian agriculture export.
- $Price_{it}$ represented Indonesian agricultural price index and average price of agricultural commodities. Increasing Indonesian agricultural export commodities was hypothesized to have positive and significant effect on Indonesian agriculture export.
- The last variable was dummy variable free trade agreement (FTA). Indonesia and partner countries membership in FTAs were hypothesized to have positive and significant effect on Indonesian agriculture export.

4.4 Model Selection

The gravity models that have been constructed above were estimated using panel data. Panel data was chosen because of it's kind of data that provide additional advantages, capture relationship over variables in time and observe individual effects between trading partners (Dianiar, 2013). According to Wooldridge (2013)⁸² the estimation method for panel data model can use the ordinary least squares (OLS), the fixed-effects model (FEM), the random-effects model (REM) or first difference estimation (FD).

Egger (2000) pointed out that the random effects model (REM) would be more appropriate when estimating trade flows between randomly drawn samples of trading partners from a larger population. While, the fixed effects model (FEM) would be a better choice than REM when one is interested in estimating trade flows between a predetermined selections of nations. Since our sample only included trade exchanges between Indonesia and its trading partners, the FEM might be the most appropriate estimation. However, Hausman test was also conducted to check whether the REM was more efficient than the FEM estimation.⁸³

According to Dianniar (2013), the using of FEM estimation will cause the problem since FEM cannot directly estimates variables that do not change overtime, such as distance, contiguous and common language because the inherent information tends to wipe out such variable. Therefore to deal with this, the variables can be estimated in a second step regression i.e. after regressing standard FEM, it can be followed by running a cross-section regression with the country-specific individual effects as the dependent variable and distance and dummies as independent variables.

CHAPTER 5

RESEARCH RESULT

5.1 Descriptive Statistics of the Data

This part shows the descriptive statistics of dataset used in this study, the maximum, minimum, mean and standard deviation are provided for each variable. Table 5.1 portrays the characteristic of the dataset in aggregate data (agricultural exports), consist of 1400 observations which contain 140 Indonesia's partner countries (importing countries) over the period 2004-2013.

Table 5.1 Descriptive Statistics for Each Variable (Agricultural Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	5,977.34	0.00	175.88	574.62	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (2005=100)	193.92	92.57	147.64	33.69	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Based on Table 5.1 export average of agriculture product from Indonesia to importer countries are US\$ 175.88 Million in one year. The maximum export to one

partner country in one year is US\$ 5,977.35 Million. If we look at the importer countries size of economy (GDP_j), it can be seen that Indonesia has very varied partner country. From the “small” country with the size US\$ 0.12 Billion to the biggest one with the size of GDP account US\$ 14,498.62.

Table 5.2 Descriptive Statistics for Each Variable (Cocoa Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	550.92	0.00	4.76	33.69	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (\$/Kg)	3.13	1.75	2.33	0.48	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Table 5.2 shows the descriptive statistics of cocoa exports partner countries since the last 10 year from 2004-2013. Average exports of Indonesia’s cocoa are US\$ 4.76 Million to one importer in one year. Indonesian cocoa exports are spreads from the closest country distance (886 km) to the farthest importing country’s distance as far as (18,649 km). The population of importing countries as representations of market size are varies from the smallest country with 0.05 million population account to the biggest importing country population with 1,357.38 million populations.

Another dataset in Table 5.3 shows the descriptive statistics of coconut exports variable. The maximum export of Indonesia's coconut is US\$ 272.20 Million to one importer in one year with the average exports reach US\$ 4.03 Million per year. The Price of this commodity are ranges for the maximum US\$ 1,588.10 per metric ton to the lowest ones US\$ 674.90 per metric ton. Indonesian currency exchange is Rp 8,775.20 per U.S. dollar in average, with the highest rate is Rp 6,417.07 per U.S. dollar and the lowest rate is Rp 11,447.91 per U.S. dollar

Table 5.3 Descriptive Statistics for Each Variable (Coconut Oil Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	272.20	0.00	4.03	21.54	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (\$/MT)	1,588.10	674.57	957.42	281.69	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Table 5.4 shows the descriptive statistics for coffee commodity. According to the data, coffee export reach maximum value at US\$ 272.20 Million with the average account US\$ 4.03 Million. Coffee price is fluctuate during 10 year of this study, from the lowest US\$ 0.93 per Kg to the highest price US\$ 2.26 per kg or more than double.

Table 5.4 Descriptive Statistics for Each Variable (Coffee Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	331.22	0.00	5.74	22.33	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (\$/Kg)	2.26	0.93	1.78	0.40	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Table 5.5 Descriptive Statistics for Each Variable (Palm Oil Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	5,256.45	0.00	75.49	348.73	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (\$/MT)	1,033.05	481.26	768.61	181.41	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Table 5.6 Descriptive Statistics for Each Variable (Rubber Export)

Variable	Maximum	Minimum	Mean	Std. Dev.	Observations
EXPORTS (Mill.US\$)	2,789.27	0.00	40.40	182.66	1400
GDPI (Bill. US\$)	452.33	270.47	353.47	58.05	1400
GDPJ (Bill.US\$)	14,498.62	0.12	346.14	1,297.72	1400
POPI (Million)	249.87	221.29	235.74	9.17	1400
POPJ (Million)	1,357.38	0.05	43.58	152.31	1400
EXCI	11,447.91	6,417.07	8,775.20	1,384.64	1400
EXCJ	36,878.18	0.33	1,039.49	3,581.46	1400
DISTANCE (Km)	18,499.46	886.14	6,389.19	3,984.93	1400
LAND (Ha)	69,390,000	20	4,572,918	13,446,736	1400
PRICE (\$/Kg)	4.43	1.51	2.62	0.85	1400
AFTA	1.000	0.000	0.053	0.224	1400
ACFTA	1.000	0.000	0.064	0.245	1400
AIFTA	1.000	0.000	0.026	0.160	1400
AKFTA	1.000	0.000	0.029	0.167	1400
AANZFTA	1.000	0.000	0.030	0.171	1400
IJEPA	1.000	0.000	0.004	0.065	1400
FTA	1.000	0.000	0.084	0.278	1400

Source: Author calculation using Eviews-8

Table 5.5 and Table 5.6 show the descriptive statistics of palm oil exports and rubber exports. The exports average of Indonesian palm oil account US\$ 75.49 Million and US\$ 40.40 Million for rubber. Average price of palm oil export during year 2004-2013 is US\$ 768.61 per metric ton, while rubber price reach US\$ 2.62 per kilogram in average. The maximum value of palm oil export is US\$ 5,256.45 Million per year to one importer, compared to rubber reach maximum value of US\$ 2,789.27 Million. Palm oil and rubber is the major commodity of Indonesian agricultural exports. These two commodities are shared 66 percent of Indonesian agricultural exports during 2004-2015 (UN Comtrade, 2014). From 140 partner countries during period 2004-2013, the largest irrigated land area is 69,390,000 hectares, reflects the potential ability of importing countries to produce agricultural product.

5.2 Empirical Results

The purpose of this study is to examine whether Indonesian membership on free trade agreement (FTA) are profitable for agricultural exports. This part shows the gravity model estimation results of the effect of free trade agreement on Indonesian agricultural exports over the period 2004-2013.

5.2.1 Gravity Model Result for Agricultural Product (aggregate data)

The estimation results of gravity model are presented in Table 5.7. The Hausman test and Wald test shows that the Fixed Effect Model (FEM) was found to be the most suitable model for this study.

Table 5.7 shows the panel data estimation from 1400 observations of Indonesian agricultural exports with their trading partners since year 2004 to 2013 in four equation model. Model 1 is examined the effect of FTA (all FTAs combine) on agriculture export. While the Model 2 only included AFTA as the first FTA of Indonesia. Model 3 included FTA and AFTA and the Model 4 included all FTAs that were Indonesia. The purpose of these four models was to see the different effect of FTA on dependent variable Indonesian agricultural export.

The R square value for Model 1 to Model 4 were 0.843 to 0.844 value, means that 84.3 percent to 84.4 percent of the variation on Indonesian agricultural exports across the data set during 2004-2013 can be explained by the model. The value of R square was not quite different among model, only in the Model 4 the R square value slightly increased to become 0.844. According to the value of R square value, it can be seen that the Model 4 was the best model to explain the variation on Indonesian agricultural export since the Model 4 had the highest R square value.

Table 5.7 Estimation Result of Agricultural Export in different model specification

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	-418.781*** (0.000)	-423.169*** (0.000)	-425.238*** (0.000)	-438.889*** (0.000)
LN_iGDP_i	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN_jGDP_j	-0.689 (0.317)	-0.888 (0.203)	-0.878 (0.209)	-0.792 (0.274)
LN_{ij}DIST_{ij}	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN_iPOP_i	24.690*** (0.000)	25.053*** (0.000)	25.182*** (0.000)	25.915*** (0.000)
LN_jPOP_j	-0.066 (0.962)	0.074 (0.958)	0.040 (0.977)	-0.050 (0.972)
LN_jLAND_j	-0.562† (0.171)	-0.571† (0.164)	-0.573† (0.163)	-0.583† (0.157)
LN_iEXC_i	-2.075** (0.024)	-2.076** (0.023)	-2.085** (0.023)	-2.171** (0.019)
LN_jEXC_j	-0.007 (0.950)	-0.010 (0.925)	-0.012 (0.916)	-0.013 (0.903)
LNPRICE	0.137 (0.791)	0.139 (0.788)	0.136 (0.793)	0.095 (0.855)
FTA	0.334 (0.504)	-	-0.162 (0.784)	0.046 (0.946)
AFTA	-	1.544* (0.088)	1.699† (0.111)	1.846* (0.108)
ACFTA	-	-	-	-0.060 (0.922)
AIFTA	-	-	-	0.001 (0.999)
AKFTA	-	-	-	-0.269 (0.802)
AANZFTA	-	-	-	-0.231 (0.808)
IJEPA	-	-	-	-0.569 (0.705)
R-squared	0.842	0.842	0.842	0.843
F-statistic	45.433	45.539	45.199	43.599
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	FEM	FEM	FEM	FEM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level. LnGDP_i Omitted due to collinearity. Figure in parentheses is p-value. † denotes statistical significant at 10% (one side)

Source: Author's own estimation using E-views 8.

The F-statistic was found positive in all models and statistically significant at 1 percent, meaning that the model that was proposed in this study as a whole has statistically significant ability to explain Indonesian agriculture exports.

The estimated coefficient of the GDP_i as a proxy for the income effect of the exporter country was omitted due to collinearity, while the estimation result of GDP_j denoted the importer income effect and size of economy was unexpected negative sign in all model but insignificant effect on Indonesian agricultural exports. Although insignificant, the negative sign on importing countries income may occur because agriculture sector usually has small share on importing countries GDP (Grant and Lambert, 2005).³¹ Another reason is because mostly agriculture product is basic necessities, so when country's income increases they may consider expanding consumption in non-agriculture product.

The estimation result of distance was showed in Table 5.8. Distance as one important variable on gravity model was negative in all model but insignificant impact on Indonesian agricultural export. Its means that distance as a proxy of transportation cost was not an obstacle factor for Indonesia to develop trade with partner countries around the world. Insignificant effect of distance on agriculture export might due to some reason. The development in transportation and technology leads to the more efficient and cheaper transportation cost. Nowadays transportation cost is not a big portion of trade cost since the marginal cost of land and shipping transportation is low. (Wu, 2015).⁸⁴

Table 5.8 Regression Result with Time-Invariant Variable (aggregate exports)

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.677 (0.950)	-1.716 (0.875)	-1.708 (0.875)	-1.622 (0.882)
LnDIST_{ij}	-0.706 (0.541)	-0.456 (0.698)	-0.470 (0.689)	-0.476 (0.685)
R-squared	0.006	0.002	0.003	0.003
No. Observations	1400	1400	1400	1400
Estimation Method	FEM	FEM	FEM	FEM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level.

Figure in parentheses represent p-value.

As indicates in Table 5.8, although insignificant effect on exports, it is still interesting to explore the coefficient on distance. The magnitudes distance variables of each model from 1 to 4 are -0.706, -0.456, -0.470 and -0.476 respectively. The coefficient of distance in Model 4 was -0.476, means that 1 percent increase the distance between Indonesian capital city to partner country capital city will lower Indonesian agricultural export by 0.48 percent. The R-square's was very small shows that there was other factor that influence exports.

The independent variable population of Indonesia as an exporter represents was the coefficient of $POPI$ shows positive sign as expected in all models and statistically significant at 1 percent level. Indonesia is biggest country in ASEAN with the population reach 249.87 million in 2013; this result proved the hypothesis that the larger population lead to the larger ability to produce a product, increase specialization and at the end leads to enhance production of commodities for exports (Dianiar, 2013). The estimates coefficient on Indonesian population was 25.915 in model 4, means that a 1 percent increase in Indonesian population leads to boost agricultural exports by 25.92 percent.

While the population of partner country as represent in the coefficient $POPj$ showed unexpected negative sign but insignificant. A negative effect of population on export in line with the result of other study conducted by Koo et al. (2006) and Sun and Reed (2010) which might indicate that a country with a large population tend to focus on domestic market than to international market. On the importer country side, according to Zarzozo (2003)⁸⁵, the negative sign of importing country's population may occur since the growing population lead to the larger domestic market and then less dependent on International trade.

Another variable was importer irrigated land area, represent in coefficient of LAND_j showed negative sign in all four model but statistically insignificant effect on Indonesian agricultural exports. The insignificant effect of land on export may due to the difference on climate, which is caused different types of agriculture commodities (Wu, 2015). So, even the importing countries have larger irrigated land but still need agriculture product from Indonesia. The magnitude of this variable was -.535 in Model 4 means that the extent of irrigated land owned by partner country will decrease Indonesian export by 0.54 percent.

Real exchange rate of Indonesia (EXCi) represented of the fluctuation of Indonesian currency Rupiah was found negative in all model and statistically significant on agricultural exports. The negative result of Indonesian Rupiah exchange rate indicated that price competitiveness was important factor on Indonesian agriculture exports (Greene, 2013). The coefficients of Indonesian exchange rate (EXCi) were ranges from -2.075 in Model 1 to the highest -2.171 in Model 4. The coefficient on Indonesian real exchange rate in Model 4 was -2.171, implies that the appreciation of Indonesian currency rupiah by 1 percent leads to decrease Indonesian agriculture export by 2.17 percent. Whilst real exchange rate of importer countries (EXCj) showed negative sign in all model but statistically insignificant, meaning that fluctuation of partner country's currency exchange rates did not effect on exports. The insignificant effect of change in real exchanger rate indicated that low exchange rate risk was not the determinant factor on agriculture export commodities (Amin, 2009).

Price variable indicated the Indonesian agriculture price indices reveal unexpected positive sign in all model but statistically insignificant on Indonesian agriculture exports. The p-value of these variables were 0.791, 0.788, 0.793 and 0.946

in Model 1 to Model 4 respectively which means cannot reject the null hypothesis in essence price is statistically insignificant effect on export. The insignificant effect of commodity price on agriculture export means that price was not the determinant factor of Indonesian agriculture export. This result was correspond with the previous research for example a recent study by Yeboah, Naanwaab and Pokku (2015) which showed that price was not the determinant factor for agriculture commodity export.⁸⁶ The insignificant effect of price on export indicated that the devaluation of exporter countries currency will not improve agriculture commodity export (Folaweo and Olokojo, 2010).⁸⁷

The effect of free trade agreement (FTA) as a proxy of country's economic integration were positive on AFTA and AIFTA, but only AFTA showed statistically significant impact for agricultural exports. This result might because proximity of AFTA countries. Koo et al. (2006) on their paper about Regional Preferential Trade Agreement pointed out that AFTA had significant impact on agriculture due to a strong relationship in trade among AFTA countries as a result of close borders among member countries. Another reason was because AFTA was the longest Indonesian FTA that has been followed since 1993, so the economic integration process within AFTA already long enough. AFTA had the most outstanding impact on Indonesian agricultural exports. The magnitude of this variable was 1.846 meaning that Indonesian agricultural export to AFTA countries approximately five times ($[(1.846)-1*100] = 5.33$) larger than those to non AFTA countries.

AIFTA showed positive sign but insignificant impact on agricultural exports. While ACFTA, AKFTA, AANZFTA and IJEPA exhibit unexpected negative sign and but statistically insignificant. The magnitude of these variables were -0.060, -0.269, -

0.231, -0.569 for ACFTA, AKFTA, AANZFTA and IJEPA respectively. The insignificant effect of these FTAs might be because the period of this study was very short (2004-2013) only 3 years after the implementation of the free trade agreement which mostly occur on 2010 (AFTA, AKFTA, AANZFTA).

The variable of FTA represented the Indonesian membership on all FTA showed positive sign in Model 1 and Model 4 but statistically insignificant effect on agricultural export. The coefficient of FTA was 0.046 in Model 4 bear a meaning that Indonesian export to partner countries which are members of the FTA will be 4.71 percent [$\exp.(-0.046)-1*100$] higher than for countries that were not affiliated with the FTA. This result was in line with the theory and previous research that the participation on free trade agreement will increase trade due to decreasing trade barriers among countries involved. It indicates that there was a tendency to become a member of a free trade agreement will actually increase Indonesia's agriculture exports.

The small benefit from the formation of free trade agreement on agricultural export might be because the liberalization on agriculture commodities was growing slowly since agriculture commodities often excluded from the reduction on tariff within FTA and even included in the agreement, tariff reduction on agriculture commodities often takes longer time than in other commodities. For instance the agriculture liberalization on AFTA, even AFTA agreement been in effect since 1993, but agricultural commodities was excluded in AFTA agreement on reduction tariff (agricultural product included in the sensitive list). Trade liberalization on agricultural commodity within AFTA start in 1 January 2003 for ASEAN-6 and completed in 1 January 2010 for all member countries.

5. 2. 2 Gravity Model Result for 5 Agricultural Commodities (disaggregate data)

The estimated regression result for 5 major commodities of Indonesian agricultural exports are shown on Appendix B to Appendix F. Similarly with the estimation result for agriculture export (aggregate) there are 4 estimation models on every commodity. Model 1 was examining the effect of FTA (all FTAs combine) on agriculture export. While the Model 2 only included AFTA as the first FTA of Indonesia. Model 3 include FTA and AFTA and the Model 4 included all FTAs Indonesia follow.

The Hausman test and Wald test reveals that the Fixed Effect Model (FEM) was found to be the best suitable model for cocoa, coffee, palm oil and rubber (model 3 and 4). While for coconut, Random Effect Model (REM) was found to be the best estimate model. The First Difference (FD) method proved to be the best estimation method on rubber commodity (model 1 and 2).

The R-squared are a range from 0.011 on rubber (model 1) to 0.894 on coffee (model 4). In 20 possible cases across 5 commodities, model 4 was found to be the best model to estimate the impact of FTA on commodity level since the R square value in model 4 in all commodities was the highest value. The R square for cocoa in model 4 is 0.774, 0.094 for coconut, 0.894 for coffee, 0.835 for palm oil and 0.877 for rubber respectively. For example R-squared of palm oil was 0.877 meaning that 87.7 percent the variation on Indonesian palm oil export can be explained by the model. In 20 possible models around 5 commodities, the F-statistic was found positive in all model and statistically significant at 1 percent. Bear a meaning that the model proposed in this study as a whole has statistically significant ability to explain the exports Indonesian five major agriculture commodity.

The estimated coefficient on GDP_i denotes Indonesian national income (GDP) are positive in coconut and rubber (model 3 and 4) but statistically insignificant on export. This result reveals that the positive growth on Indonesian economy has no effect on coconut and rubber exports. Importer income as represent by variable GDP_j are found positive value on cocoa (model 2, 3 and 4), coconut, coffee, palm oil (model 2, 3 and 4) and rubber (model 1, 2 and 3), but significant effect only on coconut exports. The magnitudes for this variable are span from 0.048 to 2.616. For instance the magnitude of coconut importer coefficient was 1.084 meaning that 1 percent increase in importer income will increase Indonesian coconut export by 1.08 percent. This result indicates that the growth of partner countries income leads to increase coconut exports but does not impact on other commodity exports. It can be concluded that big country trade more than small countries in several commodities.

The parameter estimates of Indonesian population (POP_i) showed positive and statistically significant as expected on coffee (model 2) and palm oil, but unexpected negative and statistically significant on cocoa. Indonesian population also showed negative sign on coconut, palm oil and rubber but insignificant effect on export. This result revealed that Indonesian population growth had a strong positive effect on coffee exports but negatively impact on cocoa exports. The population growth in Indonesia may increase domestic demand for cocoa product. Another reason is the government policy to increase self-sufficiency for these commodities. As we know, in order to ensure domestic supply of palm oil product, Indonesian government has issued some policies on palm oil export regulation such as the issuance of ministerial regulation from Indonesian Ministry of Finance (PERMENKEU) Number 75/PMK-001/2012 about The List of Export Goods subject to Export Duties and Export Tariff

Duties.⁸⁸ According to this regulation, in order to maintain domestic supply for cocoa product, Indonesian government imposed export tariff duties for cocoa export commodities from 5 percent to 15 percent.

Population of exporting countries showed positive on cocoa but insignificant effect on export. On the contrary partner countries population has negative sign on coconut, coffee, palm oil and rubber but significant effect on coffee. This result indicates that the growth of partner countries population decline coffee exports. The estimates coefficient on partner countries population on coffee was -6.3 (model 4), bear a meaning that increasing on population of importing country leads to decrease coffee export by 6.3 percent. This result in line with the estimation result for aggregate agricultural export which is population has unexpected negative effect on import. The declining in export due to the growing of partner countries population may because larger population tend to increase self-sufficiency and then quite independent on international trade.

The regression result showed that the irrigated land variable had negative effect and statistically significant on coffee and palm oil exports as expected. A negative sign for partner countries irrigated land is expected since the country with larger irrigated land tend to produce more agriculture product and then less in exports. Partner countries irrigated land was the proxy of comparative advantage (Wang, 2015).⁶⁹ The magnitudes of this variable were almost same in these two commodities ranges from -1.329 to -1.583. The estimated coefficient of $LAND_j$ on palm oil was -1.583 means that 1 percent increase on palm oil importer irrigated land will decrease palm oil export by 1.58 percent. While the estimates coefficients of land on cocoa and rubber showed unexpected positive sign but insignificant effect on exports.

The elasticity of the variable real exchange rate of Indonesia ($EXCi$) was negative sign on coconut and rubber but statistically significant effect only on rubber export. This result indicated that the appreciation of Indonesian currency Rupiah lead to decrease export on rubber product. In other word, rubber was more sensitive to the changes in rupiah exchange rate than other commodities. The magnitudes of this variable were around -2.433 in Model 3 to the highest -2.622 in Model 2. The coefficient on Indonesian real exchange rate in Model 3 was -2.433, indicates that the appreciation of Indonesian currency rupiah by 1 percent leads to decrease Indonesian rubber export by 2.43 percent. While the partner countries real exchange rate showed negative sign in all commodity bus statistically significant only on coffee and palm oil exports (model 1, 2 and 4). This result reveals that coffee and palm oil exports were sensitive to the fluctuation of partner country's currency exchange rate.

The parameter estimates of $PRICE_i$ were negative on cocoa (model 3), coconut, coffee and palm oil as expected but significant only for coffee. Variable price showed unexpected positive sign on rubber but insignificants effect on exports. This result indicated that commodity price fluctuation only impact on coffee and does not significant impact on other commodities. In other word, Indonesian coffee exports were more sensitive on the change in price of coffee. The magnitudes of price are vary in all commodities, span from -0.002 on cocoa to -1.487 on coffee. For instance the coefficient of $PRICE$ on coffee was -1.329 (model 4) means that 1 percent increase in coffee price will lower Indonesian coffee exports by 1.33 percent.

Appendix G showed the coefficient of distance as a proxy of transportation cost show as expected in negative value on coconut, coffee and palm oil (model 3 and 4 and significant impact on export). Surprisingly distance variable showed positive and significant impact on cocoa (model 1, 3 and 4) and rubber (model 4) exports. This finding implies that distance have negative impact on coconut, coffee and palm oil but positive and significant effect on cocoa and rubber export. While the effect of distance on rubber in model 1, 2 and 3 is insignificant. The positive effect of distance on exports might be able to be explained by the reason that the further distance between countries the more different on their factor endowment (Dryer, 2014).⁸⁹ This condition leads to the more diverse the commodity they produced which was boosted trade between them. As indicated in Appendix I, the magnitude of distance variable for coffee was -4.102 (model 1), means that 1 percent increase the distance between Indonesian capital city to partner country capital city will decrease Indonesian coffee export by 4.1 percent.

Lattermost, regarding with the effect of the participation on free trade agreement (when Indonesia and partner countries are members of FTA), the variable FTA_{ij} denotes the membership on FTA was found to be positive and statistically significant impact on cocoa. Bear a meaning that the membership on FTA promotes cocoa export. The participation on FTA showed positive sign on coffee and coconut but insignificant impact on exports. While the effect of FTA on other commodity, in essence palm oil and rubber found unexpected negative sign but significant only on palm oil exports (model 3). It can be concluded that in general, the membership on FTA was positive for some commodity export, but did not impact on the other commodities and even gave negative impact on exports.

If we look at the selected FTA, the effects of the participation on free trade agreement are diverse. An FTA may effect on one commodity but insignificant effect to another commodity. AFTA for example, has positive value on rubber (model 2) but insignificant effect on export. On the contrary, AFTA has negative and statistically significant effect on coconut (model 4) and palm oil (model 2). Means being a member of ASEAN free trade agreement is profitable for rubber export but unfavorable for coconut and palm oil exports.

Another FTA is ASEAN-India FTA, the coefficient on AIFTA were positive on cocoa and rubber but statistically significant only on rubber. Conversely the coefficient of AIFTA has negative sign on coffee, palm oil and coconut but insignificant effect on exports. Thus, Indonesia's participation on AIFTA brings positive impact only for rubber product. Free trade agreement with India within ASEAN framework had decrease tariff in several commodities, but India still impose high tariff on special product which was the major agriculture export commodity of Indonesia, such as palm oil. The tariff duty of palm oil in 2013 for example was 64 percent from the base rate 80 percent. So, even after 3 years of the FTA implementation, tariff reduction for this commodity is still small to promote trade. While for rubber, this commodity was not include in the special tariff product so may enjoy the benefit from FTA.

In comparison, free trade agreement with China within ASEAN-China FTA showed positive sign on coffee, palm oil and rubber but insignificant effect on exports. Conversely ACFTA shows negative sign on cocoa and coconut and rubber but also insignificant on exports. This result indicates that the formation of FTA with china did not give benefit for exports of 5 commodities otherwise bring negative and

significant impact on coffee. The insignificant effect of the establishment of FTA with china may due to some reason. Even the liberalization on trade within China already begun on 2005 but for agricultural commodities the reduction on tariff is growth slowly. Many agriculture product were included on sensitive track which was the reduction on tariff was start on 1 January 2012 for China and Asean-6 and 1 January 2015 for the newer member countries of ASEAN, including Viet Nam, Cambodia, Myanmar and Laos. Hence, the expected positive benefits from the formation of ASEAN-China FTA may only be obtained in the next few years.

Another FTA is the FTA with Korea on the ASEAN-Korea FTA framework. The coefficient of AKFTA was found positive as expected on coconut, coffee and rubber but only significant impact on coffee export. While for other commodities, AKFTA showed unexpected negative sign on cocoa and palm oil, but insignificant impact on export. This result indicated that the formation of FTA with Korea promotes coffee exports but did not impact on four commodities export. The coefficient on AKFTA for coffee was 2.295 implies that the membership on AKFTA boost coffee exports 8.92 times higher than to non-AKFTA countries. While the insignificant effect of AKFTA on four commodities might because Indonesian agriculture export to Korea was very small portion than to other partner countries. The data from United Nation Commodity Trade Database (2014)⁸ showed that Indonesian agriculture export to Korea during 2004-2013 share only 1.87 percent (value US\$ 4.69 billion) from total agriculture export of Indonesia to the world.

The same thing also happened with IJEPA, Indonesia bilateral free trade agreement with Japan. The IJEPA coefficient was positive for rubber but negative on cocoa, coconut, coffee and palm oil, all were insignificant effect on export. This result

implies that sharing an FTA with Japan does not boost Indonesian export on cocoa, coconut, coffee, palm oil and rubber. Even Japan was the second largest market for Indonesian total export, in term of agriculture commodities Japan only absorb 4.98 percent (value US\$ 12.48 billion) of total agriculture export of Indonesia to the world. Even in the formation of FTA, japan still imposes high restriction on agriculture import to protect domestic agriculture product.

The last FTA is the free trade agreement with Australia and New Zealand within the framework ASEAN-Australia and New Zealand FTA. The coefficient estimate of AANZFTA was positive on cocoa, coconut, coffee and palm oil commodities, but insignificant impact on export. On the contrary, AANZFTA shows negative sign on rubber and significant effect on exports. Australia and New Zealand is the small market of Indonesian agriculture export, this two countries combine only absorbs not more than 1 percent (0.8 percent) of Indonesian agriculture exports during 2004-2013. On the contrary Australia was the largest agriculture exporter to Indonesia account 19.82 percent from total agriculture import of Indonesia in 2013 (Ministry of Agriculture, 2014).⁹⁰ It seems that the formation of AANZFTA did not have benefit for Indonesian agriculture exports.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

The main idea of this study is to examine the impact of free trade agreement (FTA) on Indonesian agricultural exports in the course of the years 2004-2013. The gravity equation is employed in the study included standard gravity variables plus dummy variable FTA. The results are based on the study of 140 Indonesian trading partners over a 10 year period. Regression analysis was performed on panel data in four ways: pooled OLS, the random-effect model, the fixed-effect model and first difference estimator.

For agricultural export aggregate data, the fixed-effect model was selected because it fits the data and more efficient than OLS, the random-effect models or first difference estimators. In case of commodity aspect, the selected model is varied between fixed effect model, random effect model and first difference estimator. The fixed effect model is the best model to estimate cocoa, coffee, palm oil and rubber (Model 3 and Model 4). While the random effect model is the best tool to estimates coconut exports and the first difference estimator become the excellent choice for estimating rubber exports (Model 1 and Model 2).

The estimation result shows that the variable of GDP of importing countries is found positive and significant effect on coconut export. The distance variable as proxy of trade has negative sign as expected and significant effect on coconut, coffee and palm oil, but surprisingly positive and significant impact on cocoa and rubber export. Indonesian population shows positive and significant impact on agriculture

export aggregate and coffee exports but unexpected negative sign and significant effect on cocoa. Partner country's population also have negative sign and significant but only for coffee.

Independent variable partner countries irrigated land (LAND) has negative sign as expected and significant effect on coffee and palm oil, but statistically insignificant for agricultural export, cocoa and rubber. Surprisingly irrigated land variable show positive and significant effect on coconut exports. The Indonesian currency real exchange rates shows negative and significant impact on Indonesian agriculture aggregate and rubber exports, but statistically insignificant impact on coconut and coffee exports. Importer currency exchange rate has negative sign on agricultural export and all five commodities but significant only on coffee and palm oil export. Price represents the relative price of Indonesian agricultural export commodities is found negative and statistically significant on coffee export as expected, but insignificant impact for agricultural export, cocoa, coconut, palm oil and rubber export.

This study proved that Indonesia's membership on ASEAN Free Trade Agreement (AFTA) is positive and statistically significant for agricultural exports in aggregate level. On the contrary AFTA found negative impact and significant on commodity export of coconut and palm oil. ASEAN-India FTA is found positive and statistically significant impact on rubber export. The ASEAN-Korea FTA also found positive and significant effect on coffee exports. An astonishing result is shown by ASEAN-Australia and New Zealand FTA which is negatively impact on rubber export and significant. Another FTA Indonesia involved such as ASEAN-China and bilateral FTA between Indonesia and Japan has no significant impact in term of

export. The FTA variable that represents the combination of all FTA has significantly positive impact on cocoa, but it has significantly negative impact on palm oil export.

6.2 RECOMMENDATION

The policy implication that can be suggested from this research is that Indonesian government should maintain policy that optimizing growth on Indonesian population, since positive growth on population is one of the determinants factor of agricultural exports. Population provides labor that can drive production of goods to export. The improvement on human resources leads to the increasing on productivity which in turn increases the ability to produce of export products.

The stability of Indonesian currency Rupiah is an important factor on agricultural export. Indonesian government should cooperate with Bank of Indonesia as an authorized institution on monetary sector to maintain Rupiah exchange rate. Another policy is to improve infrastructure on transportation to ascertain the transportation cost. Since the transportation cost still become an obstacle of agriculture commodity exports.

Regarding with the policy on the participation of free trade agreement (FTA), although AFTA still the most profitable FTA for Indonesian agricultural exports than other FTA Indonesia involved, but since the market is smaller than other partner countries like China and India, Indonesia should explore more benefits from the membership on FTA with India and China. Moreover at this time, China and India are the country with relatively high economic growth compared to other ASEAN countries. The high economic growth in China and India is an opportunity for Indonesian agricultural export products to meet the market in those countries.

The government of Indonesia should accurate on tariff reduction policy to avoid the negative effect in participation on free trade agreement. Indonesian government in this case the ministry of trade should evaluate the agreement on FTA with Australia and New Zealand in order to avoid losses and get benefit from the formation of free trade agreement.

Lattermost, this research is employed few in its explanatory variable. Hence, for further development of this study it is obligatory to consider include more explanatory variable that already proved by other previous research, such as dummy variable common language, colonial link and investment.



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APPENDICES

Appendix A List of Country Used in the Study

No	Country	No	Country	No	Country	No	Country
1	Afghanistan	36	Cote D'Ivoire	71	Kyrgyzstan	106	Romania
2	Albania	37	Croatia	72	Lao PDR	107	Russian Federation
3	Algeria	38	Czech Rep.	73	Latvia	108	Rwanda
4	Angola	39	Denmark	74	Lesotho	109	Saint Kitts and Nevis
5	Antigua and Barbuda	40	Djibouti	75	Liberia	110	Saint Lucia
6	Argentina	41	Dominican Rep.	76	Lithuania	111	Saint Vincent and Grenadines
7	Australia	42	Ecuador	77	Macedonia TFYR of	112	Sao Tome and Principe
8	Austria	43	Egypt	78	Madagascar	113	Saudi Arabia
9	Azerbaijan	44	El Salvador	79	Malawi	114	Senegal
10	Bahrain	45	Fiji	80	Malaysia	115	Serbia
11	Bangladesh	46	Finland	81	Mali	116	Singapore
12	Belarus	47	France	82	Mauritius	117	Slovenia
13	Belgium	48	Gabon	83	Mexico	118	South Africa
14	Belize	49	Gambia	84	Moldova Rep. of	119	Spain
15	Benin	50	Georgia	85	Mongolia	120	Sri Lanka
16	Bhutan	51	Germany	86	Morocco	121	Suriname
17	Bolivia	52	Ghana	87	Mozambique	122	Swaziland
18	Botswana	53	Greece	88	Myanmar	123	Sweden
19	Brazil	54	Grenada	89	Namibia	124	Switzerland
20	Brunei Darussalam	55	Guatemala	90	Nepal	125	Tajikistan
21	Bulgaria	56	Guinea-Bissau	91	Netherlands	126	Tanzania United Rep. of
22	Burkina Faso	57	Guyana	92	New Zealand	127	Thailand
23	Burundi	58	Haiti	93	Nicaragua	128	Timor-Leste
24	Cambodia	59	Hong Kong SAR China	94	Niger	129	Togo
25	Cameroon	60	Hungary	95	Nigeria	130	Trinidad and Tobago
26	Canada	61	India	96	Norway	131	Tunisia
27	Cape Verde	62	Iran	97	Oman	132	Turkey
28	Central African Rep.	63	Iraq	98	Pakistan	133	Uganda
29	Chad	64	Israel	99	Panama	134	Ukraine
30	China	65	Italy	100	Paraguay	135	United Kingdom
31	Colombia	66	Japan	101	Peru	136	United States of America
32	Comoros	67	Jordan	102	Philippines	137	Uruguay
33	Congo Dem. Rep. of the	68	Kazakhstan	103	Poland	138	Viet Nam
34	Congo Rep. of	69	Kenya	104	Portugal	139	Yemen
35	Costa Rica	70	Korea Rep. of	105	Qatar	140	Zambia

Appendix B Estimation Result of Gravity Model for COCOA

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	216.204** (0.023)	201.531** (0.033)	218.243** (0.021)	228.121** (0.019)
LN_iGDP_i	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN_jGDP_j	-0.032 (0.970)	0.345 (0.700)	0.259 (0.772)	0.195 (0.830)
LN_{ij}DIST_{ij}	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN_iPOP_i	-12.934** (0.023)	-12.142** (0.032)	-13.174** (0.020)	-13.657** (0.019)
LN_jPOP_j	1.048 (0.543)	0.478 (0.784)	0.775 (0.657)	0.768 (0.661)
LN_jLAND_j	0.469 (0.355)	0.469 (0.356)	0.476 (0.348)	0.446 (0.380)
LN_iEXC_i	1.474† (0.193)	1.454† (0.199)	1.473† (0.193)	1.611† (0.160)
LN_jEXC_j	-0.025 (0.852)	-0.030 (0.823)	-0.022 (0.868)	-0.030 (0.824)
LN_{ij}PRICE_{ij}	0.045 (0.944)	-0.002 (0.998)	0.023 (0.971)	0.073 (0.909)
FTA	1.385** (0.028)	-	1.477** (0.020)	1.789** (0.019)
AFTA	-	-0.590 (0.526)	-0.914 (0.331)	-0.528 (0.605)
ACFTA	-	-	-	-1.140 (0.237)
AIFTA	-	-	-	1.118 (0.322)
AKFTA	-	-	-	-1.602† (0.140)
AANZFTA	-	-	-	0.553 (0.595)
IJEPA	-	-	-	-1.053 (0.563)
R-squared	0.773	0.772	0.773	0.774
F-statistic	28.952	28.818	28.761	27.832
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	FEM	FEM	FEM	FEM

*Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level. LnGDP_i Omitted due to collinearity. Figure in parentheses represent p-value. † denotes statistical significant at 10% (one side)*

Appendix C Estimation Result of Gravity Model for COCONUT

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	400.016 (0.576)	373.348 (0.601)	378.228 (0.597)	354.469 (0.621)
LN_iGDP_i	11.781 (0.338)	11.347 (0.356)	11.384 (0.354)	10.045 (0.416)
LN_jGDP_j	1.057*** (0.000)	1.096*** (0.000)	1.091*** (0.000)	1.084*** (0.000)
LN_{ij}DIST_{ij}	-2.646*** (0.000)	-2.977*** (0.000)	-2.902*** (0.000)	-2.998*** (0.000)
LN_iPOP_i	-36.363 (0.502)	-34.225 (0.527)	-34.566 (0.523)	-31.641 (0.560)
LN_jPOP_j	-0.104 (0.782)	-0.147 (0.694)	-0.143 (0.703)	-0.125 (0.735)
LN_jLAND_j	0.338* (0.087)	0.336* (0.088)	0.333* (0.091)	0.329* (0.090)
LN_iEXC_i	-1.023 (0.514)	-1.048 (0.503)	-1.042 (0.506)	-0.691 (0.662)
LN_jEXC_j	-0.108 (0.349)	-0.095 (0.414)	-0.096 (0.409)	-0.101 (0.379)
LN_{ij}PRICE_{ij}	-0.448 (0.592)	-0.435 (0.602)	-0.431 (0.605)	-0.305 (0.716)
FTA	0.076 (0.921)	-	0.346 (0.663)	0.692 (0.478)
AFTA	-	-1.208 (0.243)	-1.337 (0.215)	-2.072* (0.088)
ACFTA	-	-	-	-0.654 (0.587)
AIFTA	-	-	-	-0.098 (0.947)
AKFTA	-	-	-	0.915 (0.518)
AANZF_{ij}FTA	-	-	-	0.586 (0.664)
IJEPA	-	-	-	-2.578 (0.260)
R-squared	0.088	0.089	0.089	0.094
F-statistic	13.376	13.577	12.362	9.007
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	REM	REM	REM	REM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level. LnGDP_i Omitted due to collinearity. Figure in parentheses represent p-value. † denotes statistical significant at 10% (one side)

Appendix D Estimation Result of Gravity Model for CAFFEE

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	-51.846 0.577	-56.924 0.540	-51.353 0.581	4.308 0.964
LN GDP_i	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN GDP_j	0.357 0.666	0.456 0.603	0.427 0.627	0.257 0.772
LN $DIST_{ij}$	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN POP_i	8.844 0.112	9.130* 0.100	8.786 0.115	5.731 0.313
LN POP_j	-6.387*** 0.000	-6.552*** 0.000	-6.453*** 0.000	-6.300*** 0.000
LN $LAND_j$	-1.468*** 0.003	-1.468*** 0.003	-1.466*** 0.003	-1.413*** 0.005
LN EXC_i	0.663 0.551	0.656 0.555	0.662 0.551	1.051 0.349
LN EXC_j	-0.238** 0.072	-0.240** 0.070	-0.238** 0.073	-0.228** 0.085
LN $PRICE$	-1.473** 0.019	-1.487** 0.018	-1.478** 0.019	-1.329** 0.035
FTA	0.470 0.446	-	0.492 0.430	0.252 0.734
AFTA	-	-0.113 0.901	-0.221 0.811	-1.506† 0.133
ACFTA	-	-	-	0.177 0.851
AIFTA	-	-	-	-0.532 0.631
AKFTA	-	-	-	2.295** 0.031
AANZFTA	-	-	-	0.139 0.892
IJEPA	-	-	-	-0.029 0.987
R-squared	0.893	0.893	0.893	0.894
F-statistic	71.038	71.002	70.506	68.647
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	FEM	FEM	FEM	FEM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level. Ln GDP_i Omitted due to collinearity. Figure in parentheses represent p-value. † denotes statistical significant at 10% (one side)

Appendix E Estimation Result of Gravity Model for PALM OIL

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	-1365.735***	-1345.722***	-1361.845**	-1417.471***
	0.000	0.000	0.000	0.000
LN_iGDP_i	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
	-	-	-	-
LN_jGDP_j	-0.422	0.048	0.132	0.481
	0.708	0.968	0.912	0.691
LN_{ij}DIST_{ij}	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
	-	-	-	-
LN_iPOP_i	73.834***	72.382**	73.378***	76.432***
	0.000	0.000	0.000	0.000
LN_jPOP_j	-1.666	-1.900	-2.186	-2.579
	0.470	0.415	0.349	0.270
LN_jLAND_j	-1.519**	-1.497**	-1.504**	-1.583**
	0.025	0.028	0.027	0.020
LN_iEXC_i	1.331	1.347	1.329	0.926
	0.379	0.374	0.380	0.545
LN_jEXC_j	-0.315*	-0.302*	-0.310*	-0.315*
	0.081	0.094	0.086	0.081
LN_{ij}PRICE_{ij}	-0.852	-0.869	-0.893	-1.063
	0.319	0.310	0.296	0.215
FTA	-1.599*	-	-1.425*	-1.253
	0.057	-	0.094	0.216
AFTA	-	-2.056*	-1.744	-0.541
	-	0.098	0.165	0.692
ACFTA	-	-	-	0.139
	-	-	-	0.914
AIFTA	-	-	-	-2.130
	-	-	-	0.158
AKFTA	-	-	-	-1.563
	-	-	-	0.281
AANZFTA	-	-	-	1.555
	-	-	-	0.263
IJEPA	-	-	-	-1.513
	-	-	-	0.534
R-squared	0.833	0.833	0.834	0.835
F-statistic	42.626	42.589	42.382	41.180
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	FEM	FEM	FEM	FEM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level. LnGDP_i Omitted due to collinearity. Figure in parentheses represent p-value. † denotes statistical significant at 10% (one side)

Appendix F Estimation Result of Gravity Model for RUBBER

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	<i>omitted</i>	<i>Omitted</i>	188.635 (0.766)	214.092 (0.736)
LN_iGDP_i	-0.554 (0.972)	-1.179 (0.941)	2.132 (0.845)	2.688 (0.806)
LN_jGDP_j	2.616 (0.224)	2.441 (0.254)	0.111 (0.916)	-0.143 (0.893)
LN_{ij}DIST_{ij}	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>	<i>Omitted</i>
LN_iPOP_i	-9.483 (0.888)	-7.782 (0.908)	-12.181 (0.800)	-14.296 (0.767)
LN_jPOP_j	-0.189 (0.975)	-0.018 (0.998)	0.835 (0.684)	1.222 (0.552)
LN_jLAND_j	0.670 (0.562)	0.676 (0.558)	-0.239 (0.688)	-0.158 (0.791)
LN_iEXC_i	-2.614** (0.030)	-2.622** (0.030)	-2.433** (0.080)	-2.495* (0.074)
LN_jEXC_j	-0.049 (0.846)	-0.051 (0.838)	-0.219 (0.169)	-0.220 (0.166)
LNPRICE	1.036 (0.182)	1.068 (0.169)	1.120 (0.137)	1.125 (0.136)
FTA	-0.086 (0.789)		-0.800 (0.285)	-0.676 (0.447)
AFTA	-	0.140 (0.729)	-0.909 (0.411)	-1.428 (0.234)
ACFTA	-	-	-	0.615 (0.587)
AIFTA	-	-	-	2.388* (0.072)
AKFTA	-	-	-	1.791 (0.160)
AANZF_{TA}	-	-	-	-3.806*** (0.002)
IJEPA	-	-	-	1.814 (0.396)
R-squared	0.011	0.011	0.875	0.877
F-statistic	-	-	58.890	57.399
Prob.(F-statistic)	0.000	0.000	0.000	0.000
No. Observations	1400	1400	1400	1400
Estimation Method	FD	FD	FEM	FEM

Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level.

Figure in parentheses represent p-value. † denotes statistical significant at 10% (one side)

Appendix G Regression Result with Time-Invariant Variable Distance

Commodity	Equation Model	Independent Variable Constant	LnDIST _{ij}	R-squared	Number of Observations
COCOA	Model 1	-15.751*** (0.000)	1.451*** (0.000)	0.194	1400
	Model 2	-5.842** (0.036)	0.393 (0.194)	0.020	1400
	Model 3	-12.104*** (0.000)	1.060*** (0.001)	0.118	1400
	Model 4	-9.796*** (0.001)	0.812*** (0.009)	0.081	1400
COFFEE	Model 1	26.943 (0.178)	-4.447** (0.043)	0.057	1400
	Model 2	24.650 (0.250)	-4.197* (0.073)	0.045	1400
	Model 3	23.882 (0.260)	-4.102* (0.077)	0.044	1400
	Model 4	28.351 (0.152)	-4.595** (0.034)	0.062	1400
PALM OIL	Model 1	12.051 (0.401)	-2.346 (0.132)	0.032	1400
	Model 2	13.443 (0.339)	-2.438 (0.110)	0.035	1400
	Model 3	17.474 (0.229)	-2.895* (0.067)	0.045	1400
	Model 4	19.627 (0.198)	-3.118* (0.060)	0.046	1400
RUBBER	Model 1	-9.577*** (0.009)	0.488 (0.216)	0.018	1400
	Model 2	-10.069*** (0.005)	0.569 (0.136)	0.026	1400
	Model 3	-7.087** (0.036)	0.236 (0.516)	0.005	1400
	Model 4	-11.646*** (0.003)	0.734* (0.080)	0.035	1400

*Note: ***/ **/* denotes statistical significance at 1%, 5% and 10% level.
Figure in parentheses represent p-value.*

VITA

Heri Akhmadi was born on 26 January 1982 in Kebumen, Central Java, Indonesia. He was raised in small farm village near the shore of Petanahan beach which is the part of Indian Ocean, on the south side of Java Island. Heri earned his bachelor degree in agricultural economics from Department of Agricultural Socio-Economics, University of Jenderal Soedirman (UNSOED), Purwokerto, Indonesia. After graduated from UNSOED, he involved in farmer economic empowerment organization namely Perhimpunan Petani Nelayan Sejahtera Indonesia (Farmers and Fishermen Welfare Association of Indonesia). In 2008 he worked with Ministry of Agriculture as a companion assistance for the PUAP (Pengembangan Usaha Agribisnis Perdesaan) program or Rural Agribusiness Development Program, a program which is design to assist group of farmer business in order to manage their economic activities and organization management.

In 2013 Heri earned ASEAN Scholarship from Chulalongkorn University, to continue his education on graduate level in Master of Arts in Business and Managerial Economics (MABE) Faculty of Economics. While studying his master degree in MABE Program, he is also actively involved in student organization. Including Indonesian Student Association in Thailand (PERMITHA), as Coordinator of NGAJIKOK (Indonesian Muslim Student Group in Bangkok) and become a member of Junior Indonesia-Thai Chamber Association (INTCC). He was also active in several other activities organizing by Embassy of The Republic of Indonesia Bangkok such as a member of General Election and Presidential Election committee in 2014.