THE IMPACT OF ACFTA IMPLEMENTATION ON INTERNATIONAL TRADE OF INDONESIA

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Abstract

This study analyze the impact of the implementation of trade agreements within the framework of ACFTA on Indonesia's export by using the GTAP model; a Multi Regional Computable General Equilibrium Model. Results shows that ACFTA provide opportunities for increased export from Indonesia; Indonesia obtained a net trade creation of international trade amounted to 2% and total exports growth increased by 1.8. However, the export performance of Indonesia in the period showed a decrease of competitiveness, as shown by the decline in share of Indonesian export commodities which are highly competitive and high intra-industry linkage. This paper also find that because the commodity structure of China and the non compeeting behavior of ASEAN countries including Indonesia (tends to complement), China is relatively easier to penetrate export to the Asean market. The entering products from China should provide opportunities for domestic producers to increase production capacity in ASEAN, due to wider choice of relatively cheap capital goods imports.

JEL Classification: C67, F14, R12

Keywords: ACFTA, trade, export, GTAP, *Revealed Comparative Advantage*, CGE.

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1. INTRODUCTION

The development of international trade leads to more liberal forms of trade that are accompanied by various forms of bilateral, regional and multilateral cooperation. One of the main objectives of international trade agreements is to reduce or eliminate trade barriers. Liberalization of world trade, with the pattern of international cooperation, provide a positive implication on the growth of world economy. The value of world trade grew more than twice the growth in gross domestic product (GDP) of real world (Krueger, 1999).

In the mid-1980s, preferential trading arrangements (PTA), developed as a complement to international cooperation. In contrast to international cooperation, PTA involves two or more countries. Based on the theory of PTA, as described by Kemp (1964) and Vanek (1965), the impact of two or more countries that make up a custom unions (common external tariff) is the growing prosperity of the countries that joined the union and it does not cause any decline on the welfare of countries outside the union. This is proved in a study by Ohyama (1972) and Kemp and Wan (1976). Rather than setting a common external tariff, a more developed pattern of PTA is the elimination of intra-trade barriers or more familiar known as the free trade agreement (FTA). Some FTAs that have been running are the North American Free Trade Area (NAFTA), the European Economic Area (EEA), the African Free Trade Zone (AFTZ) and the South Asia Free Trade Agreement (SAFTA).

Likewise with Indonesia which has agreed on trade cooperation both bilaterally, regionally and internationally. Although Indonesia's involvement in these various trade cooperation causes a challenge to domestic products, the goal of these agreements are provide positive impact to the economy of the countries involved and to economy of Indonesia in particular.

Related to the regional area, Indonesia joined the ASEAN Free Trade Area (AFTA) which was signed on January 28, 1992. In its development, the cooperation extended to involve other countries including China, known as the ACFTA. In particular, the involvement of Indonesia in ACFTA need for further observed. This is related to many factors such as the readiness of domestic products to encounter the rush of imported goods from China and the ASEAN market that is potentially reduced for domestic products. Many literatures and existing studies have widely reviewed the impact of ACFTA by various dimensions and analysis tools. This research is expected to become one of the complementary study on the impact of ACFTA with new added value. Thus, information associated with the study of ACFTA market trading will be more complete.

The objective of this paper are (i) To contribute to the study of external sector, particularly the international trade of Indonesia, (ii) To provide an understanding of Indonesia's trade structure,

especially within the scope of the ASEAN-China region, (iii) To measure the impact of the implementation of ACFTA towards, on generally, the member countries in terms of agreements on international trade, and for Indonesia in particular, and (iv) To map the opportunities and challenges presented by the characteristics of Indonesian exports. Many opportunities are associated with the opening of Chinese markets for export commodities of Indonesia. Yet challenges also emerge with China competing in the ASEAN market.

The impact of ACFTA trade on the Indonesian economy covers many aspects that can be further development of analysis such as GDP, employment, investment, inflation and international trade. To provide added value on the existing ACFTA topics, this study will focus on ACFTA impact on Indonesia's exports. Analysis of various indicators of performance and characteristics of Indonesian exports are specifically addressed to ACFTA market coverage.

In terms of analysis tool, we will only review the results of GTAP model that are related to the trading impact of Indonesia's export, especially with trading partner countries of ACFTA region. Based on the results of the GTAP model, further analysis will be carried out either by using analytical tools for international trade indicators such as the RCA, IIT, IES, IEO.
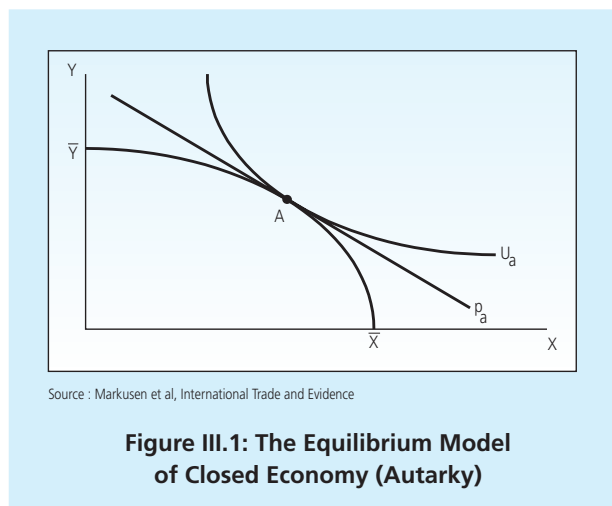
The second part of this paper will describe the empirical ground and literature review on trade and economic balance, the third part covers the methodology, the fourth section discusses the results and interim analysis, while conclusions and implications will wrap the paper.

II. EMPIRICAL GROUND AND LITERATURE REVIEW

II.1. The Basic Model of International Trade

The economy of a country is an aggregation of the behavior of each individual. The balance of goods in one country can be explained based on the interaction of profit maximization behavior of producers and utility maximization of consumers. In a closed economy (autarky), in equilibrium (point A), the composition of goods and prices of goods is the result of the interaction mechanism of aggregate demand and aggregate supply in the country (Figure III.1).

Aggregate supply is strongly influenced by the available factors of production (endowment) and the level of productivity, represented by the production and technology function. In the other hand the aggregate demand curve is strongly influenced by the level of consumer utility (U) and available consumption baskets. The level of production, consumption and the level of consumer utility depend on the endowment and type of products available in the economy. Manufacturers only have the option to produce a collection of specific types of product and try to maximize profits based on the available endowment and production function. On the other

Source : Markusen et al, International Trade and Evidence

**Figure III.1: The Equilibrium Model
of Closed Economy (Autarky)**

hand, consumers can only maximize utility by consuming a combination of product types manufactured domestically and indirectly, the level of utility will be very limited.

Endowment differences between countries, as well as different levels of production and technology and the types of products cause large variations in the type of product produced between countries. And differences in tastes and individual utility level among countries will imply on a high demand of variation of consumption basket desired by consumers within the region. In a broader scope and in line with the era of globalization, the economy is no longer limited to the scope of a country but it has evolved and crossed the border. The corporates' profit maximization and consumers' utility maximization are no longer limited in national scope but as well as inter-nations scope.

In the open economy equilibrium model, there are opportunities to maximize the profits by expanding into foreign markets and by producing goods exceeding the domestic demand. On the other hand, consumers also have the opportunity to maximize utility by consuming a certain product types exceeding the domestic supply or by consuming a more diverse product types, not just limited to the types of products within the country. Both of the above mentioned will eventually drive the exchange of goods between countries.

The results from the interaction of individuals in a certain country with individuals in other country will lead to the exchange of goods, services, and factors, which is commonly known as international trade, that caused a shift in the balance of the beginning (point A) toward the balance on the basis of international trade (point C) (Figure III.2). Excess demand for product x (x_c-xp) can be met by imports from other countries so that consumers can choose a basket of consumption that generate a higher level of utility, which is point C. The production

Source : Markusen et al, International Trade and Evidence

Figure III.2:
The Equilibrium Model of Open Economy
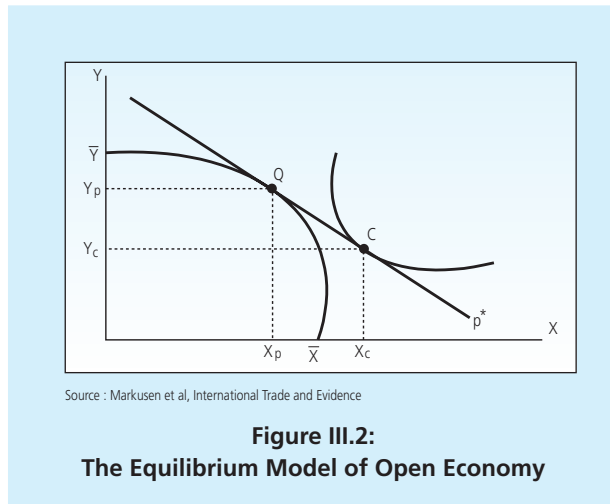
of product y that exceeds domestic demand is a surplus and will be exported in international market. In other words, international trade is the exchange of goods, services and factors that occur between countries or one that has passed the national/international boundaries.

Theoretically at least there are 5 advantages from trade. The *first* advantage is the benefits from the exchange. By trading, a country can produce a product exceeds its domestic demand and export the surplus (excess supply) on international markets that will eventually expand the market and increase profitability. On the other hand, excess demand for a product can be met by imports from other countries so that consumers can choose a basket of consumption that generates a higher level of utility.

The *second* advantage is the benefits of the specialization. By trading, a country can be more focused on one type of product which they can produce with a relatively high level of efficiency. While the need for a product that can not be efficiently produced domestically can be met by importing these products from other countries.

The *third* advantage, that can be gained from trade, is associated with the diversity of individual preferences. The existence of trade provides more choices of products to consumers which will assist in the fulfillment and even can raise the level of consumer utility.

The *fourth* advantage is associated with diversity of endowment owned by a country. By trading, a country that prior trading did not have any or very limited access to any type of product, will have the demand fulfilled. The *fifth* advantage that might be achieved is the transfer of modern technology. With international trade, a country will have the opportunity to learn a more efficient and modern production techniques.

The literatures state that a country will tend to export a product that is abundant domestically or in other words will tend to export a product that excess supply. On the other hand, the Ricardian model predicts that a country will focus the production on the type of product that has the highest comparative advantage.

Heckscher-Ohlin theorem states that a country will tend to export commodities that intensively use the abundant factor of production. For example, a country with abundant labor but with a limited level of capital will tend to export products that are labor intensive and will tend to import products that are capital intensive. Differences in the production function of a country will also contribute to determine the direction of the country's trade. A country that can produce relatively more efficiently in a type of product will tend to become exporter of this products.

In fact, free trade does not literally take place freely. Barriers to trading can take the form of tariff and non-tariff. Tariff setting has influence over the balance of output and prices. Such constraints may lead to higher prices resulting in reduced demand for goods from abroad, according to the demand-supply mechanism.

As an illustration, the increase in import tariffs may cause the price of imported goods become relatively more expensive and reduce demand for the goods. This provides an incentive for domestic production of goods. On the other hand, export subsidies cause the price of domestically produced goods to become relatively cheaper and will increase the demand from overseas markets.

II.2. The Theories of International Trade Coorporation

With the liberalization of trade in both international and regional scope, trade barriers can be reduced and even be eliminated. Regional economic integration is a process where several economies in the region agreed to remove barriers and ease the traffic flow of goods, services, capital and labor. Reduction or even elimination of tariff and non tariff barriers will accelerate regional economic integration as the traffic of goods, services, capital and labor getting smoother.

Regional free trade or arrangement is expected to generate efficiencies and improve welfare. It cannot be denied that trade arrangement would also increase competition among the members. But if it is addressed wisely, there are benefits that can be gained among others, which are the increasing specialization and the increased trade. With the comparative advantage of each country, each country can focus on the production of goods that have a comparative advantage that will trigger reallocation of production factors. In the end it will create a balance of lower prices and greater output that will provide greater prosperity to the countries involved.

Many studies conclude that free trade has a positive impact for the countries involved. In addition to improving welfare (Kindleberger and Lindert, 1978), free trade will also increase the quantity and efficiency of world trade (Hadi, 2003; Stephenson, 1994). Urata and Kiyota (2003) found that the FTA in East Asia provide a positive influence on the economy. Exports with high competitiveness will increase. The study of Saktyanu et al. (2007) showed that a decrease of export subsidies in developed countries have an impact on increasing agricultural production of Indonesia. In contrast to the results of most studies that generally state the positive impacts, Haryadi et al. (2008) show that trade liberalization, by removing all trade barriers, causes a reducing impact at the GDP of Indonesia and Australia-New Zealand.

One indicator to measure the impact of international trade arrangement is to look at the occurrence of trade diversion and trade creation (Vinerian, 1950; Krueger, 1990). The positive effects of trade creation is the occurrence of trade due to the shift of consumption of domestic products which are high-cost to imported products from abroad which are low-cost (Vinerian, 1950); in other words the trade is increased among intra-country trade partners. However, along with the difference in tariffs applied to partners and non-partners, it will change the direction of trading trend, and impose negative effects of trade diversion, which refers to the replacement of imported products that are low-cost from non-member countries with imported products that are high-cost from partner countries (Vinerian, 1950). In other words there is a decline of trade with the non-partner countries. Trade diversion would reduce the welfare effects due to changes in supply orientation to a source that is relatively more expensive.

Benefits of free trade or regional cooperation are very much determined by one of the more dominant effect. The overall effect can be positive, negative or neutral, it depends on the size of the magnitude of trade creation and trade diversion. Free trade or the PTA would be very advantageous if the impact on trade creation is greater than the impact on trade diversion. Studies conducted by Lee and Shin (2006) confirmed that RTA will increase the trade between its members. However, there was no significant decrease in trade between the RTA of members and non-members countries. Even in some of the RTAs, trade among member and non-members countries have increased. Despite the trade creation and trade diversion, RTA gives an overall positive impact on trade.

II.3. Agreements on ASEAN China Free Trade Area (ACFTA)

Trade between ASEAN countries and China continues to show improvement from year to year. For ASEAN countries, China is a major trading partners as an export destination. The average share of exports to China by ASEAN countries from 2001-2008 varies but generally

quite high. Vietnam as a country that puts China as a major trading partner with the highest share of 9%, while the Indonesian share of exports to China is recorded at 7% (Figure III.3). For China, ASEAN countries became an important trading partner especially for the supply of raw materials. The share of China's imports from Singapore recorded 35% of total imports from ASEAN or the highest market share among other Asean countries (Figure III.4). The share of imports of goods from Indonesia is amounted to 13% of total imports from ASEAN. Trade between ASEAN and China have a tendency to continue to rise which show the relative importance of ASEAN-China trade for both sides. Thus, the potential gains from removing trade barriers between ASEAN-China region will be relatively large.

The awareness on how important the role of each party, will raise the consciousness to pioneer an agreement of economic cooperation. On November 4, 2002, an agreement of cooperation framework emerged which is often called the "Framework Agreement on Comprehensive Economic Cooperation". Within the framework, it was agreed that the free trade formation for goods would take place in 2004, the service sector in 2007, and investment in 2009. In terms of readiness for ASEAN, the free trade also applies gradually. Free trade will be commenced in 2010 between China and ASEAN-6 which includes Indonesia, Singapore, Thailand, Malaysia, Philippines, and Brunei. While in 2015, it will apply to China with ASEAN-4: Cambodia, Vietnam, Laos, and Myanmar. Several issues related to the development of ACFTA, especially in Indonesia, are shown in Diagram III.1.

From literature studies, among others by Park et al (2008), that analyzed the advantages and prospects of ACFTA and revealed that ACFTA, which consists of 11 economies with a quite large total population and GDP; it is possible for ACFTA to become an effective regional economic cooperation. Relatively large intra-region tariff level is also the potential to increase trade creation. Although China and ASEAN have sought to liberalize commerce, in fact, the level of tariffs and barriers between them was still quite high, allowing the trade creation to take place. China imposes tariffs on average by 9.4% for goods from ASEAN. In contrast, ASEAN nations imposed tariffs on goods from China in average of 2.3%.

But it can not be denied that along the opportunities, there are the challenges with the enactment of ACFTA. The biggest challenge is the raising product competition. Fear of inability to compete in domestic market against the rushing flow of imported products from China and the fear of inability to penetrate China's wide open-potential market, is a challenge which, if managed wisely, can turn into a potential opportunity. Yue (2004) takes the increase in intra-industry trade in machinery and electrical equipment as an example of the impact of increased trade ACFTA that considered quite successful. There are numerous studies that have considered the impact of ACFTA trade, as shown in Table III.1.
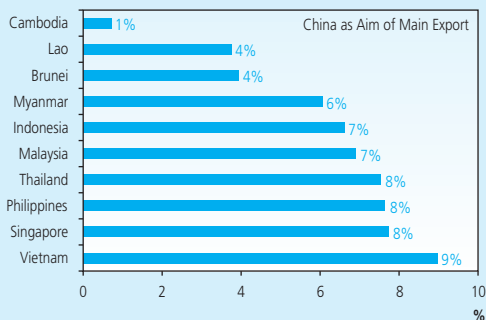
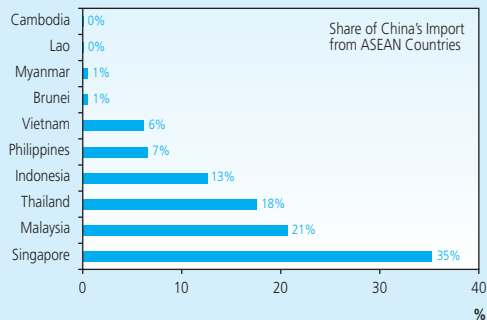**Figure III.3:
Market Share of Exports to China**

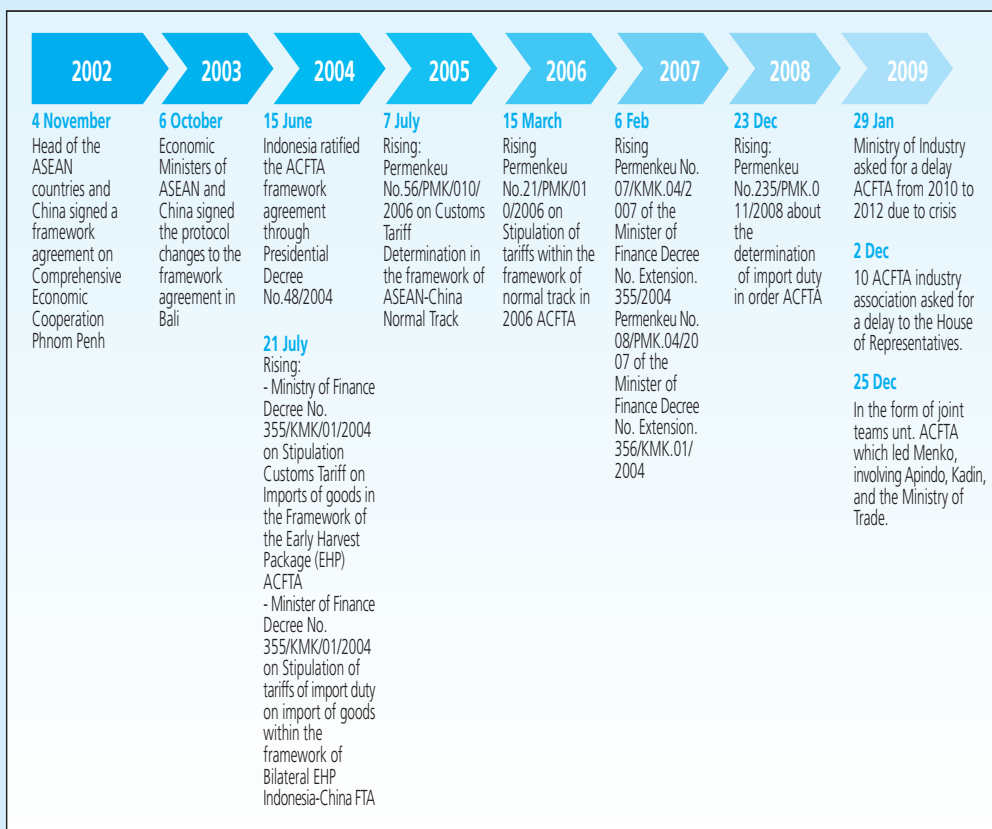**Figure III.4: China's Import from
ASEAN Countries**

**Diagram III.1:
Road Map of ACFTA Agreement**

Table III.1 Previous Studies on ACFTA			
Researcher	**Year**	**Analysis Method**	**Finding(s)**
Park et al	2008	Trading Indicator and GTAP	- Overall, ACFTA will increase net trade, output and regional welfare - The impact on each country varies - Big advantage goes to countries like Singapore, Malaysia, Indonesia and Thailand than other member countries that are relatively poorer such as Cambodia, Laos and Myanmar. - Optimistic about the prospects for implementation of ACFTA
Park	2007	Qualitative	- ASEAN is a potential huge market for Chinese exports as well as alternative import sources - China is a potential market for ASEAN exports products mainly for intermediate and capital goods - ACFTA will provide significant economic benefits to the economy of ASEAN and China - The pressure of competition from China will bring negative impact in the short term but will have a positive impact by increasing productivity and efficiency in the long term
Jiang & McKibbin	2008	GTAP	- This study compares the impact of various trade cooperation, followed by China. The findings for ACFTA showed that China will benefit from its participation in the ACFTA
Tambunan	2005	Trading indicator	- Improvement of ASEAN exports to China - Competition with imported products from China - There was a trade creation of ASEAN-China which tends to be higher than the growth of intra-trade among ASEAN countries
Okamoto	2005	Trading indicator	- Singapore and Malaysia to obtain the benefits of inter-and intra-industry specialization while Thailand gain the advantage of intra-industry specialization. However, Indonesia and the Philippines do not gain much
Universal Acces to Compititiveness and Trade (UACT)		GTAP	- Improvement of ASEAN exports to China and vice versa - Indonesia, Malaysia, Singapore and Thailand will experience the biggest benefit in terms of exports - The main export commodities of ASEAN to China are the intermediate goods so that China's increased exports would encourage increased exports of ASEAN - ASEAN's GDP rose by 0.9% while China's GDP increased by 0.3%
Yue	2004	GTAP	- Economic benefits: improved specialization and trade. However, trade diversion will also occur with the significant non-members. - Impact of trade: an increase in ASEAN exports to China and vice versa. The biggest increase in exports will be experienced by Indonesia, Malaysia, Singapore and Thailand. By sector, the biggest advantage will be enjoyed by textile and clothing products, machinery and electrical equipment, and other industries. There is a significant improvement for intra-industry trade. - Impact on GDP: ASEAN's GDP will increase by 0.9% and by 0.3% for China's GDP. Vietnam will experience the largest increase. While Indonesia will experience a decline in GDP. - Non-economic benefits: an increase in political and social relationship.

III. METHODOLOGY

III.1. Computable General Equilibrium Model

There are several approaches in the study of world trade, which two of the classifications are the general equilibrium and partial models. General equilibrium theory explains the linkages of the entire market mechanism as a system that interacts simultaniously. If the market, in the equilibrium condition, changes or if there is any partial interference on the market, then there will be adjustments in the relevant market and other markets. One model that is often used in various studies is the General Trade Analysis Project (GTAP), a Computable General Equlibrium (CGE) model developed by Purdue University.

CGE model is often used for the industrial, trade and fiscal sector[2]. In this model, production factors market conditions and market of production output are in equilibrium. The primary basis of the CGE model is an understanding on how the economy works and then the usage of the data in accordance with the developed model.

In this GTAP model, the economy is assumed to be in general equilibrium state, where all agents in the economy do not have the ability to influence prices or act as a price taker, so the price, that is entirely formed, is the interaction between demand and supply. Implicitly this assumes that every market is in the perfect competition (competitive) condition and this approach is widely referred as the Walrasian General Equilibrium

The general equilibrium in the CGE model is reflected in nominal terms (quantity multiplied by price) that represent the flow of funds, either accompanied by the flow of goods (transaction) or not (transfer). The CGE model consists of equations representing the balance of the entire market, from the input markets to output markets for the whole sectors that are analyzed. The CGE model also explicitly models the rational behavior of economic agents like producers who tend to maximize their profits, households who maximize the satisfaction (utility) and other economic agents. Included in this CGE model is the specification of the specification that is related with the flow of funds between agencies, and other equations that define the formation of price and quantity. Overall, the CGE model is a set of mathematical equations that can be solved simultaneously.

GTAP model is a multi-sectors and multi-regions CGE model. Standard GTAP model consists of households, government, and companies in each economy[3] (Diagram III.2). Social welfare function is assumed to consist of private expenditure, national savings, and government spending.

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2 Working Paper 2009, Semar 2009: Suatu Model Financial Computable General Equilibrium, BRE DKM.

3 TSQ Discussion Paper, How Will the Regional FTAs Shape the Indonesian Economy? Evaluation by the Computable General Equilibrium Model, Masahiko Tsutsumi, August 2001.

Savings is considered as a proxy of the delayed consumption. Under the regional income constraint, principal agents are to maximize their welfare.

Like the other CGE models. the GTAP standard model provides the specification of various theories and the behaviour of agents, explicitly in the form of mathematical equation. Selection of functional form refers to two main things, (i) the suitability of the theory, and (ii) empirical facts, and (iii) the need for research. One form of the function (henceforth we refer as *nesting*), which is often used, is a Cob-Douglas function where the parameter that indicates the proportion of the forming components assumed to be fixed. If the relative price of a commodity changes, the user – let say for consumption - will also experience changes to maintain the nominal proportion in accordance with the amount of the which was previously determined (relative share).

Source: A Graphical Exposition of GTAP Model, Brockmeier, 1996

Diagram III.2:
Agen Blocks in GTAP Model

Consumption expenditure consists of a variety of tradable commodities in the model. The households determine their demands for each commodity based on three factors: relative price, minimum consumption, and income level. This demand system called the Constant Difference elasticity (CDE). On the other hand, government spending on individual commodities is still formulized under the Cob-Douglas function.

Commodities are produced by both domestic and foreign producers. Both party then later combined in a bundle of commodities which is a composite of domestic and import

products. In the GTAP model, the composition of both products follows the Constant Elasticity Substitute (CES) function. This import-domestic demand system is proposed by Armington (1969) that allows the modeler to change elasticity of substitution between domestic and import products depend on the experiments.

The companies are assumed to maximize their revenues. In the process of production, labor, capital, land form the composite of primary input to follow the form of the CES nesting, thus allowing the substitution of the three primary inputs. This is consistent with the theory and empirical facts in which a sector can switch from labor-intensive to capital-intensive or otherwise.

The composite of primary input is then combined with the intermediate input within the nesting that takes form as a Leontief function. These specifications are clearly required to maintain the complementarity between primary inputs with the intermediate inputs as it is difficult to imagine if labor can be replaced, let say, by cooking oil in the production process in hotels and restaurants sector, for example. Land is immobile while the labor and capital are mobile within the industry. In this standard model of GTAP, the international mobility of endowments is not allowed.

Saving in each country is carried out (collected) by a fiction institution, that is, global banks and is allocated as a source of finance for investment. How to connect a savings to investment depends on the theories and the empirical facts that can be altered based on the purpose of the research.

In general, any question proposed in a research must be translated into a simulation model. This simulation setting is critical and one of the important components is the closure, which is the division of variables to be placed as an endogenous or exogenous variables. This closure greatly affect the interest and the simulation results, one of them is to restrict whether the dimension of this simulation is short-term (one of which is marked by the fixed sectored capital) or long term.

III.2. Analysis Flow

This research aims to measure the impact of international trade ACFTA for Indonesia and how they impact on Indonesia's export commodities. Related to this, described in this section is the analysis flow performed as shown in Diagram III.3.
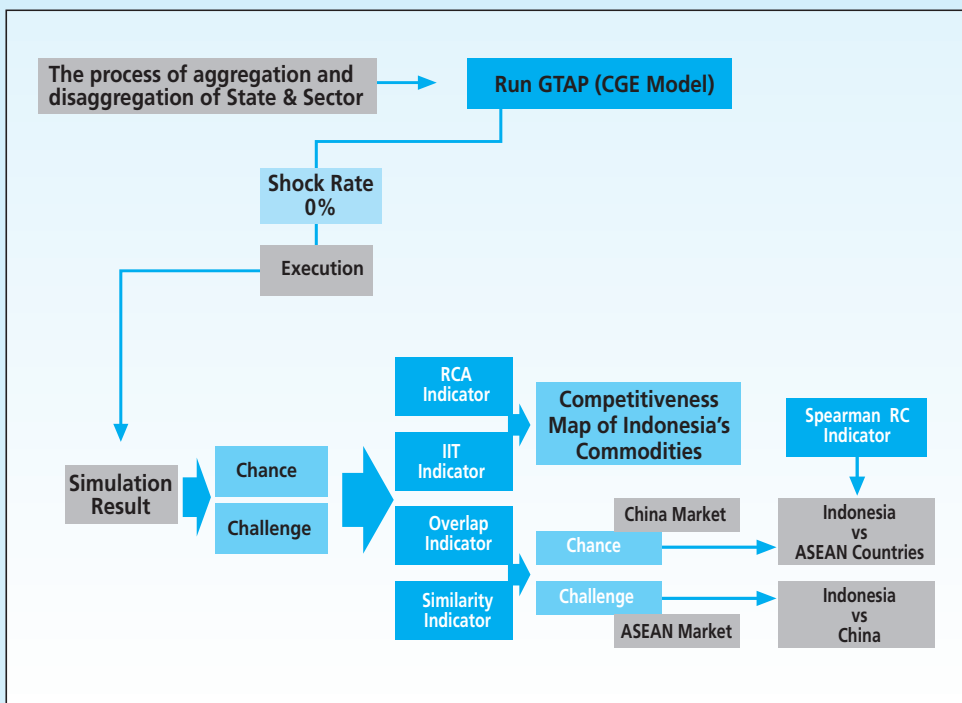
Diagram III.3:
Analysis Flowchart

The first stage is the process of aggregation and disaggregation of the countries and commodities categories. Next is running the CGE model, using the GTAP model which is a CGE model to perform simulation specifically related to international trade. After applying the shock, in this case on the tariffs, then the model starts to run. The data used is the trade data world-wide in 2004 is the standard data included within the GTAP model version 7 in 2008.

The simulation results based on CGE models are then analyzed to see the opportunities and challenges which are encountered in real terms of economy as already simulated. The simulation model will also be confronted with the analysis of international trade indicators on export and import data from UNCOMTRADE period 2001-2008.

For period 2001-2008, the analysis is divided into two periods: Period I, in 2001-2004 which can be viewed as the period before implementation of the ACFTA. The next one is Period II in 2005-2008 which is considered as the implementation period of ACFTA. The data used is a 3-digit SITC data (ver.3) which is aggregated into 2 digits. Meanwhile, regrouping is done to

equlize the commodity code between GTAP version with the version of SITC to achieve compability of these two tools. Conversion from SITC commodity groups to the GTAP is using primary reference presented in the GTAP website.

III.3. Setting of GTAP Model Simulation

Generally, closures that are used in the simulation follow the standard GTAP closure, which are:[4]

1. Price and quantity variable of tradable commodities across countries that are not included in the category of endowment commodities, are treated as endogenous variable.
2. Revenue from each region is endogenous.
3. All policy variables, productivity (technical changes) and populations are treated as exogenous

In simulating the impact of ACFTA implementation on international trade of ASEAN in general and Indonesia in particular, particularly related to exports, the shocks applied are:

1. The tariffs applicable between the ASEAN countries with China is 0% (not applicable).
2. ACFTA member countries still impose tariffs on the non ACFTA member (rest of the world, ROW).
3. Vice versa, ROW charges against members of ACFTA

III.4. Correlation Test on International Trading Indicator

Based on the previous GTAP model simulation results, to view the competitiveness map of Indonesia and the challenges and opportunities encountered as the result of the establishment of a forum for international trade, ACFTA, for international trade in Indonesia, the analysis is resumed by using several trading indicators: (i) Revealed Comparative Advantage (RCA), (ii) Intra-Industry Trade (IIT), (iii) Index of Export Overlap (IEO), and (iv) Index of Export similarities (IES).

Indicators of international trade are used to provide clarification and additional information on the findings by GTAP. The trade indicators also complement the results of research because they can provide information on the performance of Indonesia's export commodities in greater detail.

On the RCA indicators, we conducted Spearman's rank correlation coefficient (SRC) which is a statistical measure of non-parametric and can be calculated by the following formula:

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4 The setting of this simulation is available by the author.

$$\rho = \frac{\Sigma_i(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\Sigma_i(x_i - \bar{x})^2 \Sigma_i(y_i - \bar{y})^2}} \tag{III.1}$$

This test is needed to see if there are similarities on competitiveness rankings of the two countries in pairs that were observed. Signs of the SRC indicate the direction of the relationship between independent variable X and dependent variable Y. The value of SRC is between 0 and 1 that when X and Y perfectly monotonically related, then the SRC will be 1.

A. Revealed Comparative Advantage (RCA)

To see the competitiveness of export products, the indicator used is the Revealed Comparative Advantage (RCA) indicator where if RCA> 1, it indicates the existence of comparative advantage.

RCA = $(Xi_j / Xj) / (Xi_w / X_w)$

where:

X_{ij} = exports of commodity i of country j

X_j = total exports of country j

X_{iw} = world exports of commodity i

X_w = total world exports

B. Intra Industry Trade (IIT)

To see the flow of international trade we use the indicator of Intra-Industry Trade, or also often called the Grubel-Lloyd index (IIT). Based on the formula, the indicator is in a value between 0 and 1. IIT that is approaching 0 reflects trade flows that are inter-industry, while if IIT is approaching 1, it indicates that trade flows are intra-industry. In general, this indicator explains that, a commodity of a country tends to have be related in the chain of international trade if value is close to 1. This can be illustrated with export and import trade of a country for manufacturing industry in the same group of goods (usually refers to groups of goods according to SITC). A country can export electronic components and at the same time import of electronic articles. On the other hand, for the trade of certain commodities such as natural resource-based commodities such as oil and gas, a country tends to act as an exporter and do limited or no import at all. If this happens then, the value of oil and gas commodity IIT is close to 0, or that the trade is inter-industry.

To measure the IIT level, then the Grubel and Llyod is used as follow:

$$GLI(j,t) = \frac{\sum_i \left(X(i,j,t) + M(i,j,t) - |X(i,j,t) - M(i,j,t)| \right)}{\sum_i \left(X(i,j,t) - M(i,j,t) \right)}$$

(III.2)

Where:

$X(i,j,t)$ is the export value of commodity i of country j in year t

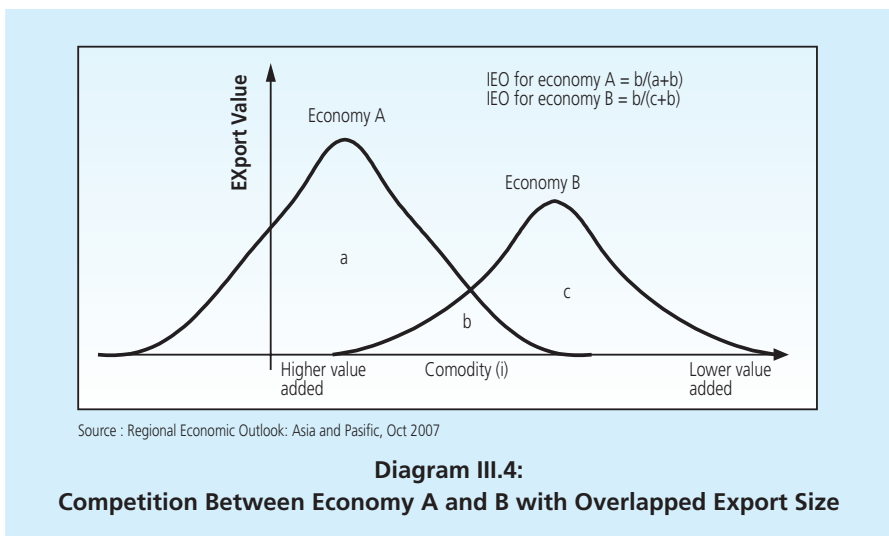$M(i,j,t)$ is the import value of commodity i of country j in year t

The calculation here is using 3 digit-SITC data classification of commodity i which is then aggregated into 2 digits. In the GLI calculation there is a tendency that the more detailed data of commodities, the smaller the value of GLI will become. Referring to previous studies, this research also uses 2 digits considering that it is sufficient to identify the IIT process in ACFTA countries

C. Index of Export Overlap (IEO)

To measure the level of each ASEAN country competition with China in trade ACFTA and also the level of competition among ASEAN countries in utilizing the export opportunity to China, the index of export overlap (IEO) is used. The equation of overlapping index is expressed by this equation:

$$IEO(j_1, j_2, t) = 100 \times \sum_t \min (X(i, j_1, t), X(i, j_2, t) / \sum_t X(i, j_1, t)$$

IEO size is used to measure the level of competition which is indicated by the export share that overlap between total export of the two economies. The greater the overlap area (area b) indicates a greater competition between the two countries. The index ranged from 100 which means the full overlap and 0 which means no overlap.

Source : Regional Economic Outlook: Asia and Pasific, Oct 2007

Diagram III.4:
Competition Between Economy A and B with Overlapped Export Size

D. Index of Export Similarity (IES)

Index of Export Similarity is used to measure the extent of similarity of the export products composition from two economies. The similarity index equation is expressed as the following:

$$IES\ (\ j_1, j_2, t\ )\ =\ 100\ \text{x}\ \sum_i s\ (i, j_1, t) s\ (i, j_2, t) / \sqrt{\sum_i s\ (\ i, j_1, t\ )^2} \ \sqrt{\sum_i s\ (\ i, j_2, t\ )^2}$$

where:

$s(i,j,t)$ is the share of the export commodity i toward the total economy export j in year t

IES index value ranges from 0 to 100 where 100 indicates that the export composition of the two economies are identical, whereas 0 if the two are very different. As IES ignores the size effect of its exports, IES analysis is always juxtaposed with the IEO indicator.

III.5. Data

As stated before, The data used in the analysis of this research are derived from GTAP version 7.0 data with benchmark data in 2004. The coverage of countries in the data base of GTAP reaches 113 countries with 57 details of the commodities sector. Meanwhile, for the analysis of the indicators of international trade we use data from UNCOMTRADE which mainly include import export data to the countries within the scope of observation, which is ACFTA members. The processed data is in period 2001-2008

IV. RESULT AND ANALYSIS

Results of the simulation generated from the GTAP model includes a variety of indicators that may be developed further. But even so, this research is more focused on the analysis of export commodities of ACFTA member, especially Indonesia. In general there are two parts of focus on the analysis. The first part is to see the effects of shocks giveb to the member countries of ACFTA, while the second part leads to the quantitative impact of trade by commodity details. The result of the first part of the analysis is to see how the balance between the impact of trade direction and trade creation as a result of the implementation of the FTA.

IV.1. Calculation Result with GTAP Model

Various literature studies provide a general picture of the impact of trade between member countries in a trading arrangement which tend to increase. But the trade with the non-member countries will decline. Analysis of trade effects in a trade group is often known by the analysis of trade creation and trade diversion. We can see the impact entirely, by comparing the magnitude of each of the two trading effects. If the trade creation impact is larger, in general the trade agreements benefit the members. And vice versa if the trade creation impact is lower, then the trade agreements do not benefit the members overall

Though it was found that the impact of trade creation is more prominent than trade divertion, we need a further observation in general to see, whether positive results are enjoyed equally by member countries or not. Likewise, the details of export commodities which have increased need to be further explored of whether a generic commodity, in general, is in control by all or a certain group of member country

The increase in trade volume among ACFTA member is mainly caused by the introduction of the Chinese market and the enactment of a lower tariff. Thus, the occurrence of trade diversion which was originally addressed to the non-ACFTA trading partners shifts toward the fellow members of the ACFTA. This process of change can be in analogy with the existence of a nominal amount of funds held by economic agents (countries) that can be spent with more goods as a result of declining prices. Importer preferences also change in the face of dynamics of changes in import prices as a result of tariff reduction. If the reduction in import tariffs causes the price to be cheaper than the price of goods originating from non-member countries (assuming the quality of goods are the same), then a decline in trade with non-member country or trade divertion will take place

GTAP simulation results to measure the impact of trade (trade effect) as a whole (net effect) for ACFTA member countries are reflected in Figure III.5 and Figure III.6. Total net trade creation in the region of ACFTA is 2.1%, sourced from the trade creation among member countries ACFTA by 18.4% and the decline in trade diversion which is the reduction in trade with non-member countries (rest of the world) by 1.8%[5].

Figure III.5 The Impact of ACFTA Policy on Trade in ASEAN

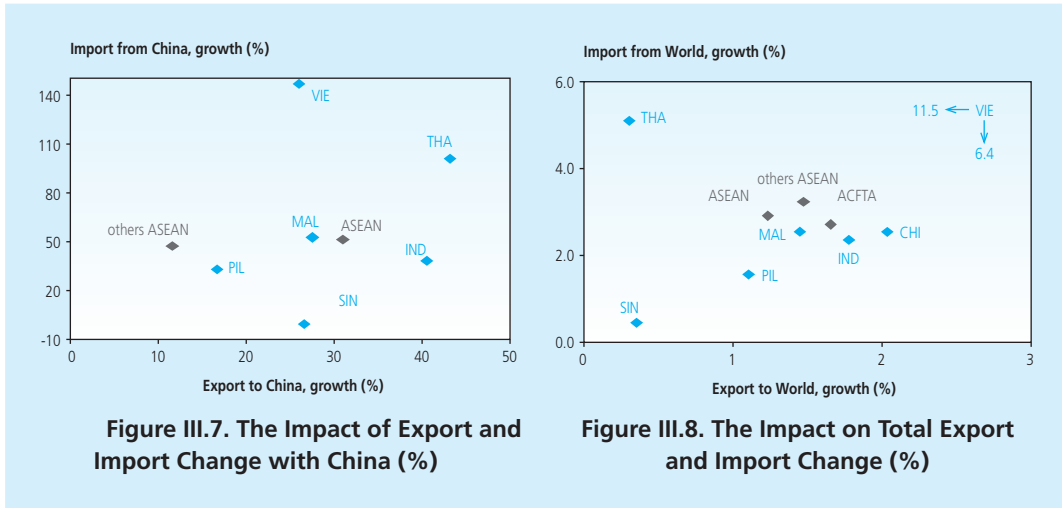**Figure III.6. The Impact of ACFTA on Net Trade Creation**
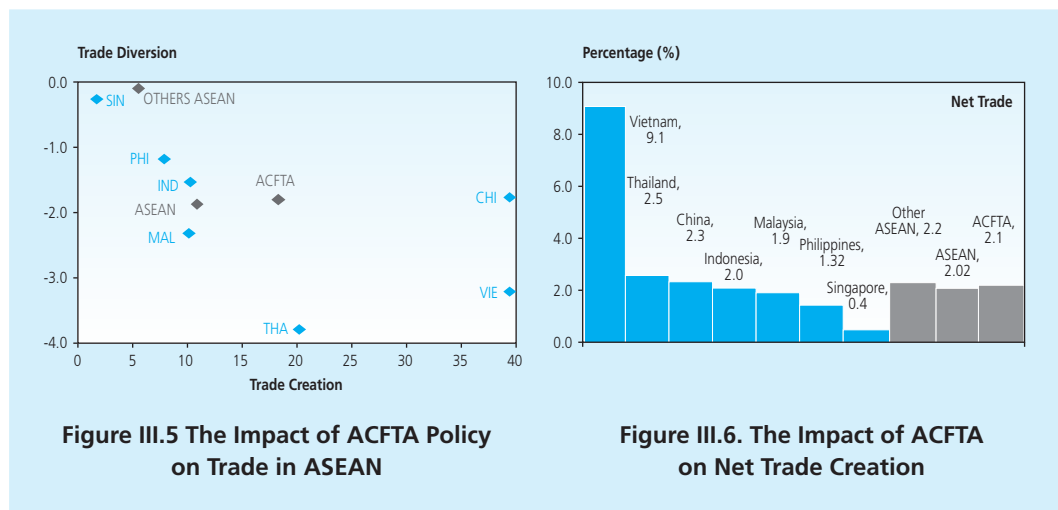
From individual member states ACFTA, Vietnam and Thailand have the largest trade creation, respectively 9.1% and 2.5%, while Singapore got the minimal results of 0.4% (Figure III.6). The net value of trade creation is influenced by import tariffs during the simulation. The average import tariff in Vietnam and Thailand are still relatively high, while in Singapore it has recorded 0%. Based on preliminary data of GTAP, import tariffs for composite goods from China in Vietnam and Thailand are respectively 18.0 and 11.3%. as for other countries successively Indonesia (11.3%), Malaysia (7.5%), Philippines (5.3%), as well as other ASEAN (7.8%). The amount of tariff goods are generally in line with tariffs imposed by China on goods originating from those countries. Except for goods from Singapore where the China is still applying the composite tariff of 4.2%

With the enactment of ACFTA trade agreements, the import export development among ASEAN countries with China is changing. Import of goods from China to Vietnam and Thailand is raising high by 147%, and 101%, while Singapore recorded a decline in imports by 1.2% (Figure III.7). This is aligned with the previous explanation that the sensitivity of changes in import tariffs is in line with the import conditions which was previously high and after the

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5 The complete calculation result is shown at appendix 1.

shock of 0% tariff (post ACFTA). With the changing dynamics of exports and imports as a result of tariff changes in the scope of ACFTA is reflected in (Figure III.8).

The bilateral pair of Vietnam and China, before the implementation of ACFTA, also apply high tariff structure on a reciprocal basis. Post-implementation of ACFTA, the simulation results show the a great change in total exports and imports respectively 6.4% and 11.5%.[6]

Figure III.7. The Impact of Export and Import Change with China (%)

Figure III.8. The Impact on Total Export and Import Change (%)

For Indonesia, the impact of net creation is by 2.0% which is caused from the trade creation by10.3% and the trade diversion by 1.5% (Figure III.5 and III.6). The calculation of trade creation and trade diversion above is based on the total international trade which is the sum of total value of exports and imports of Indonesia with all its trading partner countries. Meanwhile, the calculation of net value creation, with approach to the total exports value minus total imports (net exports), is conducted to see the impact on the balance of payments. From the simulation of the impact to the balance of payments Indonesia, there is an increase in total imports by 2.3% or higher compared with the rising in exports by 1.8%. Thus, overall the Indonesia's trade surplus fell by 2.3% or USD247 million (Figure III.9 and see Appendix 1 for complete results of net creation with the calculation of total exportsimports and the net exports)

Although the surplus of Indonesia's trade balance within the ACFTA region recorded an increase, the overall impact on the total trade balance still recorded a decrease of surplus. This is due to the share of Indonesia's trade with ROW is more dominant compared with the

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6 The value of export and import growth, in the results of the GTAP model, is recorded as a change from the base value which is used in the GTAP model data base
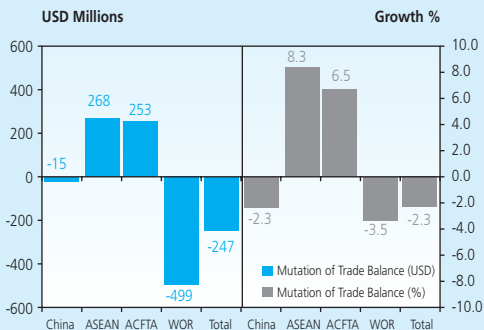
**Figure III.9. The Impact of ACFTA
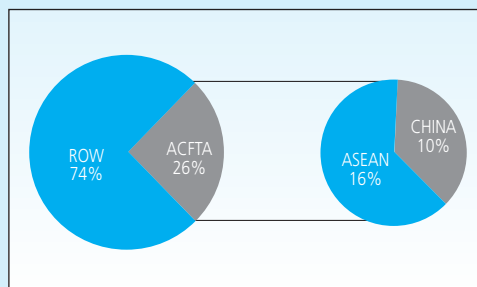on Indonesia's Net Exports (%)**

**Figure III.10. The Share
Export of Indonesia – GTAP Data (%)**

ACFTA region. As an illustration, Indonesia's exports (GTAP level data base) with ROW trading partners reached 74%, or far larger than the export with fellow members of the ACFTA by 26% (Figure III.10)

From the simulation results we obtained the change in Indonesia's import and export, with trading partners among members of ACFTA, each grew by 11.7% and 9.1%. With the increase in exports greater than imports, the impact on Indonesia's trade surplus recorded an increase of 6.5% or USD253 (Figure III.9). Meanwhile, Indonesia's import and export transactions with trading partners from the ROW recorded a negative growth each by -1.7% and -1.3%, thus the balance of trade fell by 3.5% or USD499 million
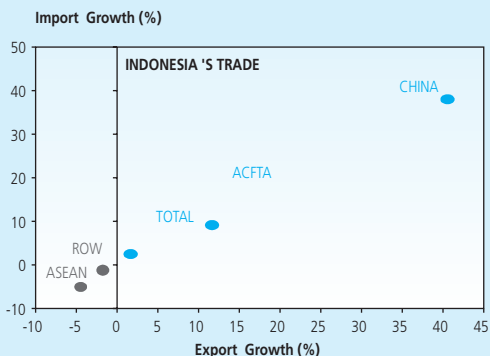

**Figure III.11. The Impact of ACFTA Policy
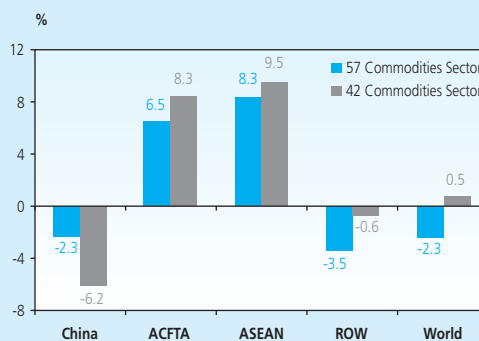on Indonesia's Export and Import Change**

**Figure III.12. The Impact of ACFTA
on Commodity Sectoral (%)**

Based on figure III.9 above, it has been shown that the simulation results in the growth of the trade balance fell by 2.3%. Simulation of the GTAP model of exports and imports are derived from details of the 57 commodities consist of 42 export and import (tradable) commodities, while the other 15 commodities are in the form of services or of non-tradable commodities (Grouping Table of 42 tradable sectors and the conversion tables are available in appendix 2 to 5). Separation of these groups of goods are required to facilitate the subsequent analysis which use the import export data from UNCOMTRADE. As known, import export statistics on international trade in various publications including UNCOMTRADE, are tradable commodities. Meanwhile, in the analysis of the real sector in the context of GDP, the discussion of commodities consists of tradable and non-tradable commodities. Therefore, the import and export simulation results derived from GTAP can be further learnt for a more detailed analysis, one of them by analyzing the tradable commodity

There is a difference the result of simulation when we compare the total results of 57 commodities and the 42 tradable commodities. The overall changes of impact in Indonesia's net exports toward the 42 commodities are presented in appendix 2. However, to facilitate tabulation, the 42 tradable commodities can be further aggregated into 6 types of main tradable commodities, as seen in table III.2 and III.3 (The conversion table of 6 types of primary tradable commodities and 1 service commodity is shown in appendix 5). From Figure III.12 and table III.3 we can see that the simulation results of total net exports in 42 commodities (tradable) have grown by 0.5%. The simulation results of other tradable commodities of Indonesia's exports to China increased high enough to 41.4% so that the overall exports to the ACFTA rose 11.9% (Table III.2). Meanwhile, a negative impact of net exports (trade balance) arises in trading with China and ROW (Table III.3).

Table III.2 The Post Impact of ACFTA Policy on the Growth of Indonesia Export Commodities (in %)					
Commodities Sector	**ASEAN**	**ACFTA**	**China**	**ROW**	**World**
Agricultural Products	-10.9	-5.3	33.9	-0.5	-2.0
Food Products	-4.7	4.7	16.5	-1.8	-0.1
Extractive Industries	-0.3	2.2	5.2	-0.6	-0.1
Light Industry	-21.3	17.6	60.4	-1.7	0.5
Heavy Industry	-3.2	18.2	48.7	-3.0	4.7
Technology Intensive Industries	-3.11	2.3	63.1	-1.8	3.9
Total	-4.4	11.9	41.4	-1.7	2.1

Table III.3 The Post Impact of ACFTA Policy on the Growth of Indonesia Net Export Commodities (in %) [7]					
Commodities Sector	**ASEAN**	**ACFTA**	**China**	**ROW**	**World**
Agricultural Product	-14.3	-49.2	-7.8	1.2	-3.8
Food Product	-37.8	4.9	9.3	-3.1	-1.9
Extractive Industries	2.5	-0.5	-30.2	-1.1	-1.7
Light Industry	-32.2	-90.2	-256.2	0.3	-1.7
Heavy Industry	27.7	79.3	70.7	-20.9	20.6
Technology Intensive Industries	27.7	-9.2	-43.3	15.9	1.3
Total	9.5	8.3	-6.2	-0.6	0.5

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7 Negative growth indicates a contribution in declining the trade balance, while the positive balance of trade means a controbution in raising the balance

IV.2. The Analysis Result on International Trade Indicator

Based on the output generated by the GTAP model, the development of analysis is aimed at the direction of the opportunities and challenges of Indonesia's export product development. Development of the analysis is done by basing the GTAP model simulation results which are combined with the analysis of trading indicators. Based on the findings in the model in the previous section, we have produced details of commodities which hold the chance of positive contribution to the balance of trade in some 42 commodities in the tradable goods groups. From the increasing number of export commodities, we will map further by looking at the competitiveness of the commodity in the ACFTA market.

At this stage of data processing, there are two main sources of the commodity details based on the GTAP commodity and SITC 3-digit (ver.3). Therefore it is necessary to convert some of the details of SITC commodities, as much as 261, into the details of commodities which is in accordance with the number of GTAP commodities, which is only 42. The main source of the conversion comes from the GTAP model discussion forums at Purdue University website. [8]

Meanwhile, to provide a better analysis, we divide the period of observation of the arranged indicators. This periode separation, referred as period I and II, is also intended to see the impact of international trade before and after the implementation of ACFTA policies. The first period covers the incoming data of the year 2001-2004, while the period II covers the year 2005-2008. The dividing line of this two period separation, is the time ACFTA policy was in

	Table III.4 The Growth of Reduction on Import Tariff															
Duty Tariff	**Y E A R**															
	2005		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**		**2012**	
	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage	Total Tariff Post	Percentage
0%	2,857	25.6%	2,864	25.6%	2,639	30.2%	2,639	30.2%	5,709	65.3%	7,306	83.6%	7,306	83.6%	7,778	89.0%
5%	3,893	34.8%	3,888	34.8%	3,218	36.9%	3,219	36.8%	2,219	25.4%	622	7.1%	622	7.1%	150	1.7%
8%					86	1.0%	85	1.0%	33	0.4%	33	0.4%	33	0.4%	33	0.4%
8%					1,850	21.2%	1,866	21.4%	3	0.0%	3	0.0%	3	0.0%	3	0.0%
10%	1,702	15.2%	1,702	15.2%	131	1.5%	131	1.5%	95	1.1%	95	1.1%	95	1.1%	95	1.1%
12%					90	1.0%	90	1.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%
13%	18	0.2%	18	0.2%	48	0.5%	48	0.5%	48	0.5%	48	0.5%	48	0.5%	48	0.5%
15%	1,537	13.8%	1,537	13.8%	315	3.6%	304	3.5%	278	3.2%	278	3.2%	278	3.2%	278	3.2%
20%	269	2.4%	269	2.4%	126	1.4%	123	1.4%	123	1.4%	123	1.4%	123	1.4%	123	1.4%
25%	318	2.8%	318	2.8%	20	0.2%	20	0.2%	19	0.2%	19	0.2%	19	0.2%	19	0.2%
30%	39	0.3%	39	0.3%	39	0.4%	39	0.4%	39	0.4%	39	0.4%	39	0.4%	39	0.4%
>30% :	538	4.8%	538	4.8%	170	1.9%	173	2.0%	172	2.0%	172	2.0%	172	2.0%	172	2.0%
TOTAL	11,171	100.0%	11,173	100.0%	8,732	100.0%	8,737	100.0%	8,738	100.0%	8,738	100.0%	8,738	100.0%	8,738	100.0%
AVERAGE OF DUTY TARIFF	9.57%		9.49%		6.38%		6.38%		3.83%		2.92%		2.92%		2.65%	

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8 Complete conversion table is available and can be requested to the author or to the editor of BEMP.

implementation by 2004[9] . Based on data from the Ministry of Trade of Indonesia, the implementation of ACFTA with the application of import tariffs has been gradually running the 25.6% or as many as 2857 tariff alredy recorded 0% in 2005 (Table III.4). Growth of these 0% tariffs continued to increase to 83.6% or as much as 7306 postal tariffs in 2010. The progress to all 0% tariff for members of the ACFTA, is according to the phasing scheme which has been arranged in staging scheme of early harvest program, normal track and sensitive/highly sensitive list.

IV .2.1. The Analysis Approach on Competitiveness of RCA and IIT Product Linkages

There are two main indicators used for the analysis in the following sections. The use of RCA and IIT indicators together, among others, presents in the Yumiko's (2005) work. The similar competitiveness of the commodities from the measurement of produced by the RCA indicator will be tested further using the Spearman rank correlation (SRC). This SRC test also has been used in a study conducted by Shafaeddin (2002).

RCA in this section analysis calculation is using market trading partners' data in the ACFTA region as Indonesia's total exports. The scope of coverage is to portray the RCA competitiveness of Indonesian commodities in the market ACFTA. Similarly for the approach in measuring IIT indicator we use the import export data with trading partners in the region coverage ACFTA. Using this combination of the two indicators, the first step is to identify the distribution of Indonesia's export commodities based on comparative advantage and IIT indicators.

Thus the data processed will be mapped based on certain restrictions. For RCA, the restriction of commodities with high and low competitiveness is determined by the division of RCA values below and above 1. Meanwhile, the central determinant for IIT indicator is 0.5. Based on the quadrant map, as reflected in Figure III.13 - III.14, quadrant I is also called the main quadrant where the commodities with RCA above 1 and has a high-linkages in the chain of trade with partner countries of the ACFTA region based on the IIT indicators. In general, commodities with high IIT and RCA have the potential to have a greater chance to survive and make penetration in a competitive market. High IIT indicators show a level of confidence of export competitiveness of the RCA with a more convincing chance. Quadrants II and IV are also considered potential since they have either high RCA or IIT as an advantage. Meanwhile the quadrant III is the development quadrant since it has low value of RCA and IIT.

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9 Ratification of ACFTA agreement framework through Keppres No.48/2004

In the two observation periods which are periode I and II, from Figure III.13 – III.16 we can obtain a general picture that there is a tendency to decreasing of the competitiveness quality of Indonesian export commodities in ACFTA region. Based on the pattern of distribution of commodities in the two periodes, as depicted in Figure III.13 and III.14, we can see the development of export share shifts per quadrant. The export value share in quadrant I declined from 33% to 19% with the number of commodities remains the same which is 9 (with different composition or type). Some of Indonesia's prime commodities that remain in the main quadrant are oil, motored vehicles, textiles, and beverages. Relatively ideal conditions occur if the development indicate a larger increase in export share in the quadrat I. The complete results of composition and scope of the commodity per quadrant as measured in the RCA and IIT matrix, are presented in appendix 6. To simplify the matrix table in appendix 6 can be simplified as shown in Figure III.13 and III.14 for the 42 types of tradable commodities.

Figure III.13.
Quadrant of RCA and IIT in Period I

Figure III.14.
Quadrant of RCA and IIT in Period II
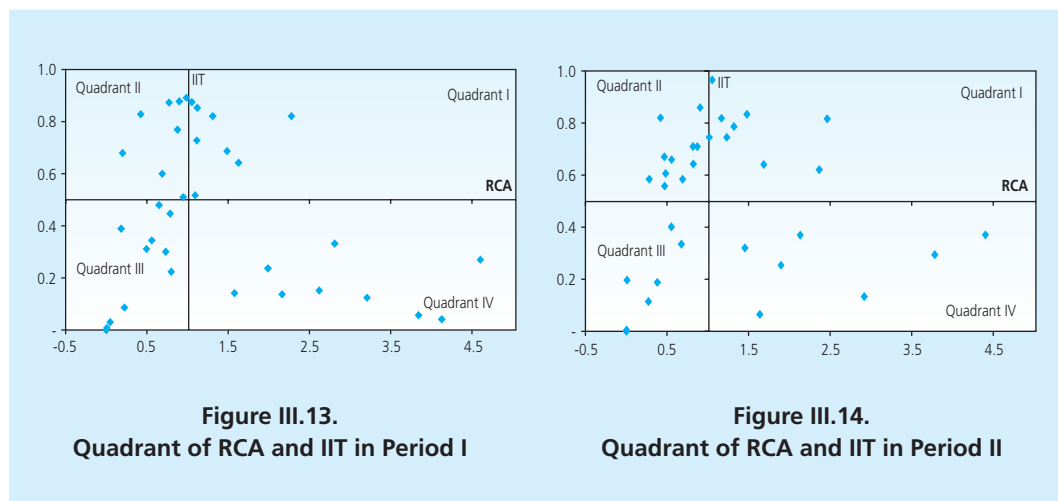
Meanwhile, a more pessimistic result is shown when oil and gas commodities are excluded in the calculation of RCA and IIT indicators. By using the data in the second period, the share of export commodities in the first quadrant decreased from 19% to 12%. This development has become important to be observed given the diminishing role of oil and gas commodities, while the development of the non-oil commodities is still challenged by various obstacles. The complete results for the analysis of this section are presented in Appendix 6, including the commodities in each quadrant
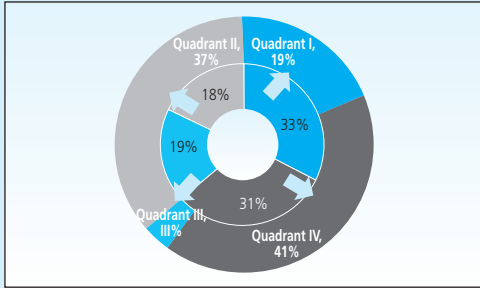
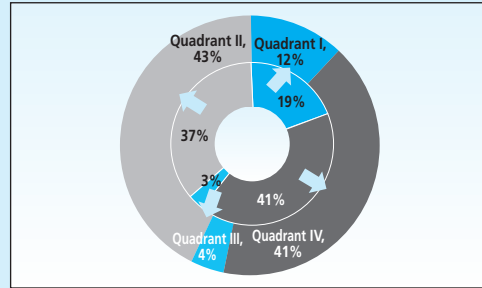**Figure III.15. The Growth of Export Share
per Quadrant from Period I to II**

**Figure III.16. The Export Share Quadrant II
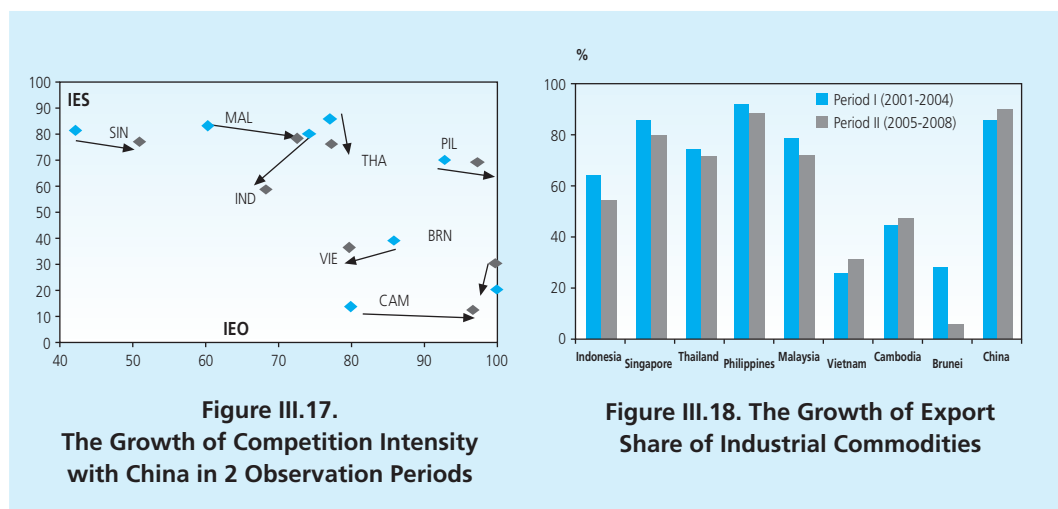With and Without Oil and Gas**

IV.2.2. The Analysis Approach of Competition Intensity

To provide a more complete result, this study also illustrates the challenges and opportunities of Indonesia's export commodities in ACFTA market. The analysis is done by using the index of export similarity (IES) and the index of export overlap (IEO) indicators. Technical analysis is conducted by comparing the characteristics of each country's exports in ASEAN bilaterally with China. After the result of IEO and IES indicators is generated for each country, the next stage is to compare the results between the two periods of observation: period I (2001-2004) and period II (2005-2008). With the two observation period, the dynamics that occur can be more interesting to be further reviewed

As China join the ASEAN market, there is a threat of a decline for Indonesian exports among ASEAN member trading partners that have been established so far. From the measurement of competition intensity of exports of each country in ASEAN with China, we gain an overview of developments which tend to decrease the intensity of competition in two observation periods (Figure III.17) [10] . The intensity of competition tends to increase when both indicators are showing an increase. Of the two observation periods of both indicators, we obtain that the development of Indonesian products have the tendency to diminish their intensity of competition with the presence with China's export products. The reduced intensity of competition of Indonesian products in China are in line with the rising share of Indonesia's exports of natural resource-based commodities such as mining and other natural products such

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10 The first period is shown in blue and the seconf perios is shown in red.

as oil and gas, palm oil and rubber along with rising prices and global demand. On the other hand, the composition of Chinese exports are likely to lead to industrial products (Figure III.18)[11] . Based on the observation of IEO indicator, countries with relatively small scale of economies have a relatively high index value such as Brunei, Philippines, Chambodia, and Vietnam. Meanwhile, from the IES, a relatively advanced countries like Singapore, Malaysia, and Thailand have a relatively high index. The high index of IES of some relatively advanced countries in the ASEAN countries with China is also aligned with the development of the Chinese exports proportion that is relatively high in industrial products.

**Figure III.17.
The Growth of Competition Intensity
with China in 2 Observation Periods**

**Figure III.18. The Growth of Export
Share of Industrial Commodities**

To provide support for the above analysis conclusion, where the intensity of export commodities competition, particularly between Indonesia and China that are increasingly declining, we conducted a test with additional analysis tools. Tests are conducted by performing Spearman rank correlation test (SRC) on the RCA indicator. SRC test for RCA of Indonesia and China concluded a negative relationship with a significant level of 1% to 50 commodity criteria and RCA> 1 (Table III.5). By testing on the largest 50 commodity categories we obtain coefficient of -0.3 with the significant level of 5%[12] . Similarly to the tests on the commodities which have high competitiveness or RCA> 1 it yielded coefficient of -0.54 with significant level of 1%. As for the test on the overall commodity based on 2-digit SITC amount 69 commodities, it produced negative but insignificant relationship. The negative Spearmans's Rho coefficient can be interpreted a different structure on the competitiveness of Indonesian export commodities to

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11 The share of industrial exports is derived from the sum of the value of exports in SITC with code digit that begin with 5 to 9, while for the code digits from 0 to 4 are not the industry

12 The test is based on the 50 largest commodities, based on the share that ranges around 90 percent.

China. These results may also mean that Indonesia's main export commodity is not the Chinese leading export. Tests on the two observation periods show consistent results for Indonesia, which yield negative and significant coefficient.

	Period I (2001 - 2004)								Period II (2005 - 2008)							
Table III.5 — The Spearman Rank Correlation Test on RCA	China								China							
	IND	SING	THAI	PHI	MAL	VIET	CAMB	BRU	IND	SING	THAI	PHI	MAL	VIET	CAMB	BRU
All Commodities (69 Commodities)																
Spearman's rho:	-0.04	0.03	0.03	0.08	-0.31	0.34	0.08	0.34	-0.20	0.04	0.02	-0.02	-0.18	0.21	0.16	0.31
degrees of freedom:	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
P-value:	0.71	0.82	0.79	0.52	0.01	0.00	0.53	0.00	0.10	0.75	0.90	0.86	0.13	0.09	0.18	0.01
50 Commodities																
Spearman's rho:	-0.30	-0.25	-0.14	0.00	-0.57	0.19	0.02	0.28	-0.47	-0.28	-0.28	-0.14	-0.53	-0.07	-0.19	0.16
degrees of freedom:	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
P-value:	0.03	0.08	0.34	1.00	0.00	0.20	0.90	0.05	0.00	0.05	0.05	0.32	0.00	0.62	0.20	0.26
RCA >1																
Spearman's rho:	-0.54	-0.10	-0.07	-0.28	-0.59	-0.23	-0.7	10.00	-0.51	-0.61	-0.37	-0.69	-0.56	-0.36	-0.28	
degrees of freedom:	31	18	30	7	18	21	17	2	28	19	29	11	23	24	7	
P-value:	0.00	0.67	0.69	0.46	0.01	0.29	0.00	1.00	0.00	0.00	0.04	0.01	0.00	0.07	0.46	

Similar results to Indonesia are also found in other ASEAN countries. In general, the test on 50 commodities, and on commodities with high RCA showed a negative and significant relationship. This shows that the Chinese exports commodities to ASEAN is not a primary commodity from other ASEAN countries.

With the intensity of competition indicators and SRC test for the RCA indicator, we obtained that more evidence for the conclusion that the decrease in the intensity of competition between China and Indonesia is accompanied with the structure of export commodities which does not compete one with another, which is similar with the exports commodities of other ASEAN members. These results illustrate the existence of a more complementary relationship so that the Chinese export to ASEAN is relatively easy. From the quantitative results of GTAP model, it is also shown the increase of Chinese exports to ASEAN that reached 50.5% (Appendix 1).

Analysis of China's market opening opportunities can also be done with the IES and the IEO indicators. Unlike the measurement of IEO and IES indicators in the previous section, in which China became the center of attention, we can use Indonesia as the central point of attention. Bilaterally between Indonesia and each ASEAN country, there is a pattern of diminishing competition relationships, supported by the IEO and IES indicators that go down (Figure III.19). This indicates the relatively reduced level of product competition among ASEAN countries to China. The GTAP simulation results also indicated that the overall exports from ASEAN to China

increased by 31.1% with the lowest range of Philippine exports of 16.1% and the highest is Thailand's exports by 43.3% (Appendix 1). Unlike the case when the export commodity that is used is the total exports of each country. Figure III.18 reflects the degree of homogeneity between Indonesian export products with each of the ASEAN countries in the world market is higher than exports to the market ACFTA[13]. Among ASEAN countries, Vietnam export products relative have the highest index of IES.
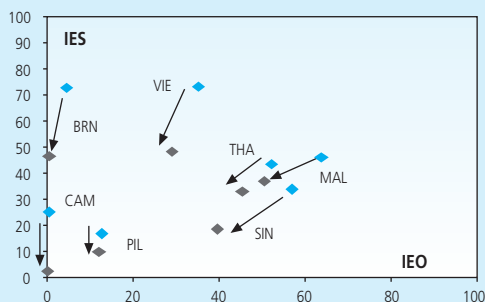

Figure III.19. The Growth of Indonesia's Competition Intensity with ASEAN to Chinese Market
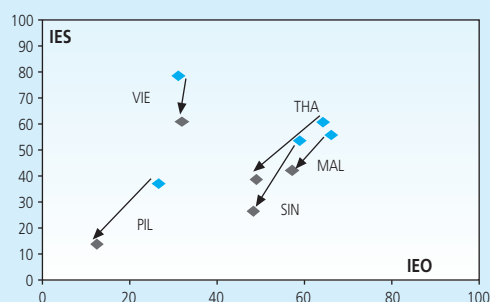
Figure III.20. The Comparation of Growth of Competition Intensity in ACFTA and World Market

V. CONCLUSIONS

Trade arrangement within the ACFTA framework provides opportunities to increase exports of Indonesia. From the results of GTAP model, Indonesia overall has a net trade creation of 2% that comes from the effects of trade creation of 10.3% from ACFTA members and trade diversion of -1.5% with ROW trading partners. Although the cooperation agreement ACFTA imposes negative impact on overall Indonesia's trade balance by a decrease of 2.3%, the results of further analysis of the international export commodities (tradable) show the positive impact of 0.5%.

In terms of export, Indonesia commodities are likely to increase by 2.1% mainly due to the increase in exports to China. Opportunities for market expansion into China is supported by the characteristics of the export commodities of Indonesia and other ASEAN countries which have a relatively low degree of competition. Thus, export goods from Indonesia and ASEAN in

13 Blue field represents the index size for export to the world market, and the red field represents the export to the ACFTA market

general are much easier to expand. Result analysis of IEO and IES indicators in the two periods of observation lead to the conclusion that, the degree of competition intensity, of Indonesian export goods to the ACFTA region bilaterally with individual ASEAN countries, is declining. The conclusion is also supported by the degree of homogeneity of export commodities to ACFTA that is lower than the overall exports to world markets. With such a low homogeneity, the level of competition with other ASEAN countries to the Chinese market is relatively reduced.

However, Indonesia's exports face a new challenge with the entry of imported goods China in ASEAN region. The trade with other countries in the region, which has been interwoven so far, is potentially decreasing. From the results of GTAP model, we obtained the estimates of ASEAN countries' exports to the ASEAN region that has decreased by 4.9%, including Indonesian exports decline by 4.4%. On the other hand, China's export to ASEAN increased by 50.5%. The results of this paper shows that the export commodities of China and ASEAN countries tend to indicate the decline of the level of commodity equation. This is in line with the growth of goods exports from China that are moving towards exports of industrial goods. From the Spearman Rank Correlation test results on RCA indicators, it generally shows a more complementary relationship between China's export goods with ASEAN countries.

The challenge of improving Indonesia's exports in ACFTA era is increasing with the declining of Indonesian exports competitiveness of. Based on historical data which is divided into two periods, we found that the share of principal commodity groups decreased from initially 33% to 19% of total Indonesian exports. The challenge is growing as one component in the formation of export share comes from oil and gas sector. If we remove the oil and gas export commodities in the calculation, the share of primary commodity exports which intially reached 19% will be dropped to 12%.

To take advantage of the ACFTA agreement on export development, we need a strategy to move the basket of commodities, especially non-oil exports from quadrants II and IV to the quadrant I. Development of export commodities which have high competitiveness needs to consider also the characteristics of commodities that have high relevance within the international trade chain. The results of this research show that potential commodities with high IIT indicators that need to have the competitiveness strengthened are the machinery and parts, chemical industry, electronic equipment, and metal and iron industry. As for potential commodities with high RCA but need a high added value, in general are natural resource-based commodities that should be processed further in the form of product diversification and higher value products.

Meanwhile, related to the challenges faced by the rampage of China's products, we should utilize the imported goods from China with medium and high technology which comes

from countries outside the region. Thus, we can provide a broader option for producers to invest in machinery and equipment with a range of goods from China with more competitive price. Furthermore, we expected that the direction from ACFTA cooperation can improve welfare in the region and particularly for Indonesia.

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