

INDONESIAN TRADE UNDER CHINA FREE TRADE AREA

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Abstract

This paper investigates the implementation of CAFTA (China-Asean Free Trade Area) on the international trade flows across Indonesia, China and the rest of ASEAN using a gravitation model. It finds the evidence that the influence of diversion and creation effects on China are significant, while the influence of both effects on Indonesia are not significant. It also finds that the diversion effect, which leads to a decrease in society's wealth, is greater than that of the creation effect. As a consequence, the gap across countries involved in the trade agreement is wider.

Keywords: CAFTA, gravitation model, diversion effect, creation effect

JEL classification numbers: F13, F14, F15

Abstrak

Tulisan ini menyelidiki penerapan CAFTA (China-Asean Free Trade Area) pada arus perdagangan internasional antara Indonesia, China dan anggota ASEAN yang lain dengan menggunakan model gravitasi. Penelitian menemukan bukti bahwa pengaruh diversifikasi dan pengaruh kreasi terhadap Cina adalah signifikan, sedangkan pengaruh kedua efek tersebut terhadap Indonesia adalah tidak signifikan. Penelitian ini juga menemukan bahwa efek diversifikasi, yang mengarah pada penurunan kekayaan masyarakat, lebih besar daripada efek kreasi. Akibatnya, kesenjangan di negara yang terlibat dalam perjanjian perdagangan menjadi lebih luas.

Keywords: CAFTA, model gravitasi, pengaruh diversifikasi, pengaruh kreasi

JEL classification numbers: F13, F14, F15

INTRODUCTION

ASEAN and China have agreed to implement CAFTA (China-Asean Free Trade Area), a comprehensive economic cooperation, in 2002. The implementation will be conducted gradually over a period of 10 years. CAFTA is a form of agreement between the member countries to realize a free trade area by eliminating trade barriers in goods, both tariff and non tariff, increasing market access services, investment rules and regulations, and improving aspects of economic cooperation to promote economic relations in order to improve welfare of the members.

The created economic region has a market of 1.7 billion consumers, with a to-

tal GDP of 2 trillion dollars. Total trade that took place in this region is estimated to reach USD 1.23 trillion. CAFTA is anticipated as a free trade area which has the largest market share in the world. Another aim is to encourage trade between ASEAN and China. ASEAN and China since 2000 have experienced a dramatic growth rate. Theoretically, the implementation of CAFTA is beneficial for the countries involved in it. With the removal of trade barriers, economic inefficiency is expected to be minimal.

Indonesia, as one former member of ASEAN along with Malaysia, Singapore, Thailand, Philippines and Brunei, began to implement CAFTA in full on January 1, 2010. ASEAN countries which joined later,

namely Vietnam, Laos, Cambodia and Myanmar, will implement this agreement in 2015.

The implementation has actually started in 2004. China and ASEAN countries are required to remove import tariffs in almost all agricultural commodities. CAFTA aims to increase trade by lowering trade barriers, both tariff barriers and non-tariff. The implementation of this agreement was expected to increase trade flows among member countries of CAFTA. The increase in trade its creation and trade diversion effects as the result of this agreement has been reviewed by several researchers, such as Chen and Tu (2005) which conduct a study of the Chinese economy.

The increase in trade flows is also influenced by various factors such as the magnitude of the trading economies, the distance between countries that are generally represented by the cost of transportation, population size, and similarity of cultural and linguistic factors. Methods of analysis used to test the determination of these factors also vary, such as Computable General Equilibrium (CGE) model, partial equilibrium model, simultaneous equation model and gravity model. One of the most widely used instruments to test the determination of magnitude of this trade is the Gravity Model.

Carrere (2006) uses a gravity model to assess ex-post regional trade agreements, including 130 countries and is estimated with panel data over the period 1962–1996. The analysis shows that regional agreements have generated a significant increase in trade between members, often at the expense of the rest of the world.

Yuniarti (2007) conducts an empirical study to analyze the determinants of bilateral trade in Indonesia using a gravity approach. Analyses were performed using a panel data on 10 countries of Indonesia's main trading partners. She found that the domestic income and population have a

positive influence on trade in Indonesia, while the distance negatively affects the trade. She also found that the factor endowment and the RTA (Regional Trade Agreement) have no significant effect on trade in Indonesia.

Sattayunawat (2011) uses a gravity model with a Poisson Pseudo Maximum Likelihood (PPML) to estimate the magnitude of transportation costs and the influence of RTA on trade and FDI (Foreign Direct Investment). He found that the reduction in transportation costs can increase trade flows, with different decreasing coefficients over time. He also finds that regional trade in Southeast Asia are sensitive to distance, and that trade agreements affect trade. Another Important finding is that institutional quality, namely the security of transactions and contracts as well as the quality of public governance, have a strong influence on the increase of foreign direct investment entry in ASEAN countries.

Srivasta and Green (1986) use a gravity model to analyze the determinants of international trade in 45 exporting countries and 82 importing countries. They developed a model of gravity by using the Trade Intensity Index (TII) as a proxy for the value of exports and add non-economic variables such as political instability, a common language, religion, and colonization status. They suggest that the type of products exported affect international trade.

Chow and Zietlow (1995) use gravity model to find determinants of bilateral trade between the countries in the Asia Pacific region. The study was conducted in 1980 and 1989 at the APEC member countries (except Brunei). They make some adaptations in the gravity model using the Gross National Product to describe the magnitude of the exporter and importer markets. In addition, to analyze the effect of price on trading activity, they use export prices and import price indexes. Dummy variables are used to show cultural similarities between the exporter and importer

countries, participating industrialized countries exporters as the New Country (NICs) and the participation of the importing country in ASEAN. They found that the market size (magnitude of GNP of the importing country) is the strongest factor that influences the trade. Level of political stability and importing countries in the ASEAN membership have smaller effect.

Helmets and Pasteels (2005) conducted a study using a gravity model to see the potential of trade in developing countries and countries that are in a state of economic transition. The research sample includes 132 exporting countries and 154 country importing countries for the period of 2000-2003. In contrast to the previous studies, although the model used in this study is mentioned as a model of gravity, but GDP and population variables that form the core of gravity models are not included. Other variables included in this test are the distance between countries and borders, import tariffs, interrelation of language, namely the political variables involved whether or not the country who trade in conflict situations, as well as geographic location between exporter and importer countries. The results of this study indicate that the tariff plays an important role that can hinder trade, especially for commodities such as recycled products manufacturing, rubber and plastics, as well as electronics and electrical equipment. The cost of transportation, geography and border also has significant effects. Bilateral conflicts may hamper trade but only for certain commodities, namely oil industry, motorcycle and means of transportation, while the cultural and linguistic factors have a positive influence on trade. Countries that use the same primary language have a greater trade.

Chen and Tu (2005) conducted a study to build two models of gravity. This study uses panel data from 22 countries for the period 2000-2004. The study was conducted to analyze the effect of CAFTA im-

plementation on China trade. The Gravity model used in this paper is focused on both China's bilateral trade with its trading partner along with its effects, both creation and diversion effects. They showed that the diversion effect is greater than the creation effect.

Christie (2002), Rahman (2003), and Batra (2004) conducted studies on bilateral trade and trade potential. Christie (2002) analyzed the potential of trade in Southeast Europe using data from 1996 to 1999. The results showed that in the countries of the former Yugoslavia, the low GDP, high unemployment, and military conflicts in the past led to distortions of trade. Croatia and former Yugoslavia trading in small quantities, but they do trade on a large scale with the appropriate entities with them in Bosnia. Simultaneously, they have a large trade potential in the future with the European Union.

Rahman (2003) analyzed the potential of trade in Bangladesh using panel data. This study uses several economic factors such as the degree of openness and exchange rates. Trade intensity index shows that bilateral trade between India-Bangladesh is not as high as they should. Thus, there is room for expansion of mutually beneficial trade. To complete the trade between Bangladesh and India, both countries can develop vertical specialization through profit-sharing agreement. This allows both countries to strengthen their trade relations and achieve economies of scale through a focus on a specific production process in a value chain.

Batra (2004) uses a gravity model to analyze the flow of world trade and use it to predict the trade in India. This study used cross-section data in 2000. The results showed that the benefits from intra-industry trade, vertical integration, and industry restructuring is greater than the gains from the expanded trade. The advantage of the SAFTA can be improved if the scope is extended in the long run by including infra-

structure development and investment liberalization and services.

Cernat (2001) analyzed the effect of trade with the partial equilibrium model. The results obtained showed that in conditions of perfect competition, a regional trade agreement will increase trade volume among member countries, ie countries that have a cost structure that is less efficient and countries not members of which have a more cost efficient, which are the creation effects and the diversion effect of trade. The total effect of trade depends on the magnitude of both effects. Cernat (2001) uses a gravity model with panel data to analyze the effect of regional trade agreements (RTA) to the flow of trade between member countries of the RTA in developing countries. This study adds two variables to prove that the effect of creation and diversion effects resulting from RTA is efficient.

The implementation of this agreement since 2004 should have increased trade flows among member countries of CAFTA. The magnitude of the trade increase and both trade creation and trade diversion effects as a result of this agreement have been reviewed by several researchers. Various studies are generally done to the economy of China (Chen and Tu, 2005), considering the size of China's economy and its economic influence throughout the world. However, empirical studies on the influence of thi agreement against Indonesia have not been widely discussed. This paper aims to analyze the effect of the implementation of CAFTA on the magnitude of trade flows and the factors of determination Indonesia's trade with ASEAN countries and China.

METHODS

The tool of analysis used in this study is developed from the gravity model. Gravity model has been commonly and widely used in analyzing trade between countries. Gravity model is used for several reasons. First, the gravity model is supported by various

trade theories, including the classical trade theories and the new trade theories. Second, the gravity model can explain the influence of various variables of determination of trade, both macroeconomics variables such as aggregate income, per capita income, exchange rates, transportation costs, and social variables, such as population, political system, as well as cultural variables, such as the common language. Third, gravity models can be used to analyze the impact of a trade policy to the amount of trades flow. Policies that can be analyzed are the policy of cooperation (bilateral, multilateral, regional, financial, border), institutional policies, and other trade policies.

Gravity Model in International Trade Model

The Gravity model was first developed by Newton in 1687. This model shows the interaction between two particles, where the magnitude of the interaction is influenced by the mass and the distance between the particles. Newton's Universal Law of Gravitation can be written as follows:

$$F_{ij} = \frac{GM_i M_j}{D_{ij}^2} \quad (1)$$

where F is the gravitation between two objects, M is mass, D is distance, and G is the constant for gravitation.

This Newton's gravity model is then used to analyze the magnitude of trade flows between countries. Newton's gravity model specification for the trade can be described as follows:

$$X_{ij} = \frac{KY_i^\alpha Y_j^\beta}{T_{ij}^\theta} \quad (2)$$

where X_{ij} is export from i to j or total of trade, Y is size of economy (GDP, POP), and T is cost of trade.

This model is then used by Tinbergen (1962) in the analysis of international trade. According to Reinert (2009), the use of gravity models in international trade has few development alternatives. In the trade model, the theory of Newtonian gravity is converted into natural logarithm form.

$$\ln GF_{ij} = \ln M_i + \ln M_j - \ln D_{ij} \quad i \neq j \quad (3)$$

One form of the development of gravity models is to use per capita *GDP* of both countries to represent the mass of both particles (M_i and M_j) while the power of gravity (GF_{ij}) between the two particles is represented by the value of trade or exports from country i to country j , and distance between the two particles (D_{ij}) is represented by the great circle distance calculation. Gravity models that have been developed can be written in the form of mathematical equations as follows:

$$\ln E_{ij} = \tau + \delta_1 \ln \left(\frac{GDP_i}{POP_i} \right) + \delta_2 \ln \left(\frac{GDP_j}{POP_j} \right) \quad (4)$$

where δ_1 dan $\delta_2 < 0$ indicate that the higher a country's population growth in the exporting country, the higher the production of the exporting countries, as for the importing countries, population growth indicates an increase in exports due to the larger export destinations (Reinert, 2009).

This study aims to examine the effect of the implementation of CAFTA on the magnitude of the flow of Indonesia's trade with Asean countries and China for the period 2002-2010. The selected countries of the ASEAN are the initial members of the group, namely Malaysia, the Philippines, Singapore, Thailand, and Brunei Darussalam. This is because at the beginning of implementation (2004), these countries are the first time carry out an agreement, namely by removing all tariffs for agricultural commodities are traded. ASEAN members that joint later, namely Vietnam, Laos, Cambodia, and Myanmar, will im-

plement this agreement in 2015. This paper will analyze the trade creation effect and the diversion effect. The model used is static gravity model modified from the study Chen and Tu (2005).

The creation effect from a trade is a trade transfer process from the inefficient supplier to efficient rest members of the Regional Trade Agreement (RTA). In this case, a dummy variable will be used to measure the impact of CAFTA on the trade. This paper uses year 2004 as the starting point, since the agreement was first implemented in that year. Data pre 2004 are used to describe the flows o trade pre CAFTA implementation.

The model used to analyse the determinant of trade and the creation effect in this paper is as follows:

$$\begin{aligned} \ln X_{ej}^t = & \beta_0 + \beta_1 \ln(GDP_c^t GDP_j^t) \\ & + \beta_2 \ln DIST_{ej} + \beta_3 \ln ER_{ej} \\ & + \beta_4 \ln POP_j \\ & + \beta_5 \ln CAFTA_{ej}^t + u_{ej}^t \end{aligned} \quad (5)$$

- where
- X_{ej}^t is volume of export across Indonesia and its trade partners.
 - $GDP_c^t GDP_j^t$ is GDP of Indonesia and its trade partners.
 - $DIST_{ej}$ is distance from Indonesia and its trade partners.
 - ER_{ej} is exchange rates of Rupiah against currencies of its trade partners.
 - POP_j is population of countries of Indonesia's trade partners.
 - $IN_CAFTA_{ej}^t$ is dummy variable, 0 for years pre CAFTA, 1 otherwise.
 - β_0 is constant
 - $\beta_1, \beta_2, \dots, \beta_5$ is elasticity
 - u_{ej}^t is error term

The model used to analyse the determinant of trade and the diversion effect in this paper is as follows:

$$\begin{aligned} \ln IMP_{cj}^t = & \beta_0 + \beta_1 \ln(GDP_c^t GDP_j^t) \\ & + \beta_2 \ln DIST_{cj} + \beta_3 \ln ER_{cj} \\ & + \beta_4 \ln POP_j \\ & + \beta_5 IN_CAFTA_{cj}^t + u_{cj}^t \end{aligned} \quad (6)$$

where:

IMP_{cj}^t is volume of import across Indonesia and China and the other ASEAN members.

$GDP_c^t GDP_j^t$ is GDP of Indonesia, China, and other trade partners.

$DIST_{cj}$ is distance between Indonesia, China, and the other trade partners.

ER_{cj} is exchange rates of Rupiah against currencies of China and the other trade partners.

POP_j is population of countries of Indonesia's trade partners.

$IN_CAFTA_{cj}^t$ is dummy variable, 0 for years pre CAFTA, 1 otherwise.

β_0 is constant

$\beta_1, \beta_2, \dots, \beta_5$ is elasticity

u_{cj}^t is error term

Gross Domestic Product (GDP) represents the size of a country's economy. The larger the GDP, the greater the amount of goods and services can be traded, so the expected value of β_1 is positive. Distance is used to measure transportation costs, time costs, synchronization fees, and transaction costs. The greater the distance between countries, the greater the transportation costs, the less the flow of trade that occurs, so we expect a negative value of β_2 . As a

proxy for distance, this study used the distance across the capital cities. Exchange rate is one of the factors which may affect trade; the more expensive the currency of a country in relative terms, the more expensive the goods and services originating from the country. This increased prices will reduce the amount of demand for goods and services traded, so expect β_3 has a negative value. Population effect on trade is positive. Increase in population led to increased demand for goods and services for both the production and consumption activities, so the expected value for β_4 is positive.

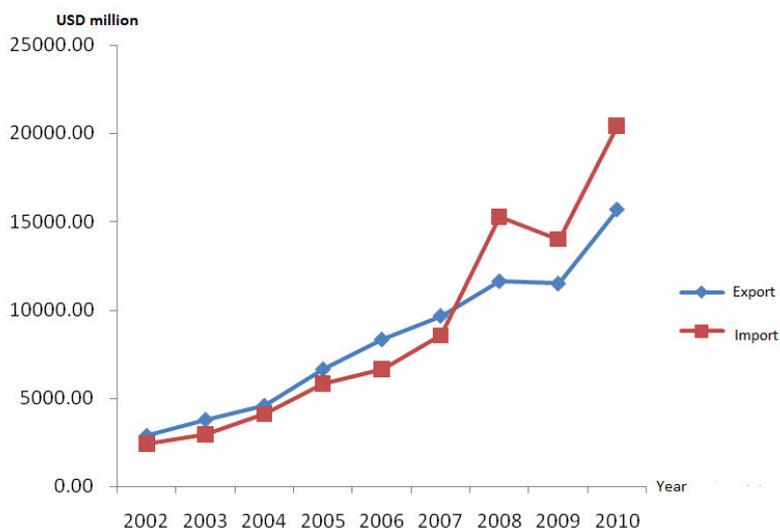
Trade data of exports and imports across Indonesia and China and other ASEAN members are obtained from the Publication of Foreign Trade Statistics, Indonesia Central Bureau of Statistics. The GDP and population data are obtained from the World Bank. Data on exchange rate are from Bank Indonesia, and the data on distance across the two countries data obtained from www.indo.com.

RESULTS DISCUSSION

The Development of Trade between Indonesia, China and the Rest of ASEAN

The development of Indonesia's trade with China and initial ASEAN members, namely Malaysia, the Philippines, Singapore, Thailand and Brunei Darussalam are presented in Figure 1 to 6.

Figure 1 shows a positive trend of Indonesian exports and imports with China. From the pictures, it can be seen that from 2002-2007, the Indonesian trade balance with China is still a surplus (Indonesia's exports to China is higher than Indonesia's import from China), but from the years 2008 to 2010, Indonesia's trade balance against China is deficit. Although Indonesia's export to China increases, the increase in Indonesia's import from China is still higher. The biggest increase in imports occurred in 2008, namely 44%.



Source: Data processed.

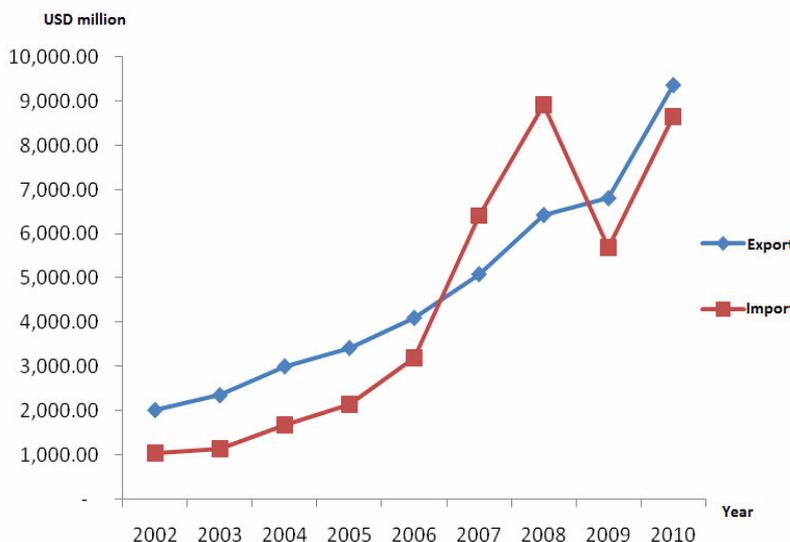
Figure 1: Trades across Indonesia and China

Figure 2 shows the development of exports and imports of Indonesia to Malaysia. From 2002 to 2006, Indonesia's trade balance across Malaysia is a surplus, but in 2007, there is a huge increase in imports, amounting to 50%, which makes the balance becomes negative. The increase in imports continue to occur until 2008, but in 2009 there was a large decline that led Indonesia to Malaysia's trade becomes balance positive again.

Figure 3 shows exports and imports across Indonesia and the Philippines. Indo-

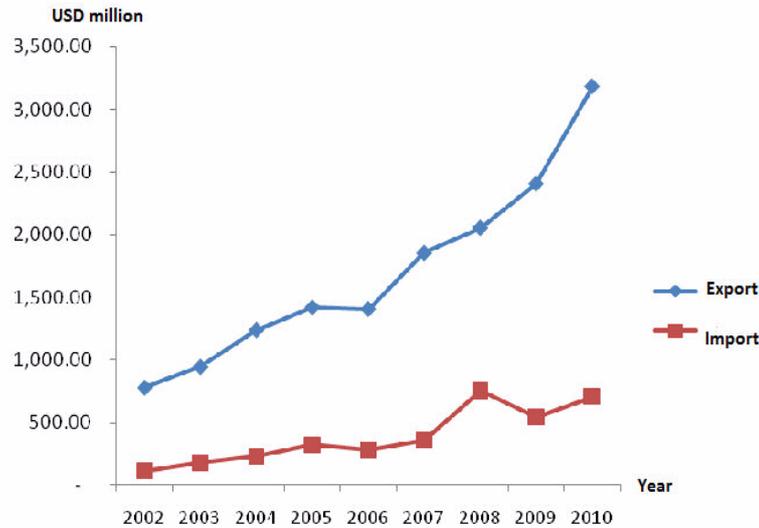
nesia's trade balance with the Philippines in 2002-2010 was a surplus. Even though Indonesian imports from the Philippines has increased, but the increase in Indonesian exports to the Philippines was much greater.

Figure 4 shows the data of Indonesian trade with Singapore. The value of Indonesian imports from Singapore is very volatile. During 2004-2010, Indonesian trade balance with Singapore was deficit. In 2008 there was a huge increase in imports (55%), but decreased again in 2009.



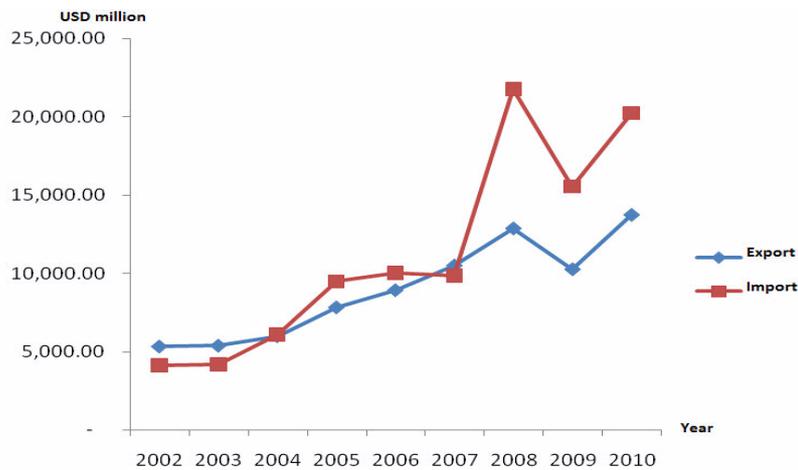
Source: Data processed.

Figure 2: Trades across Indonesia and Malaysia



Source: Data processed.

Figure 3: Trades across Indonesia and the Philippines



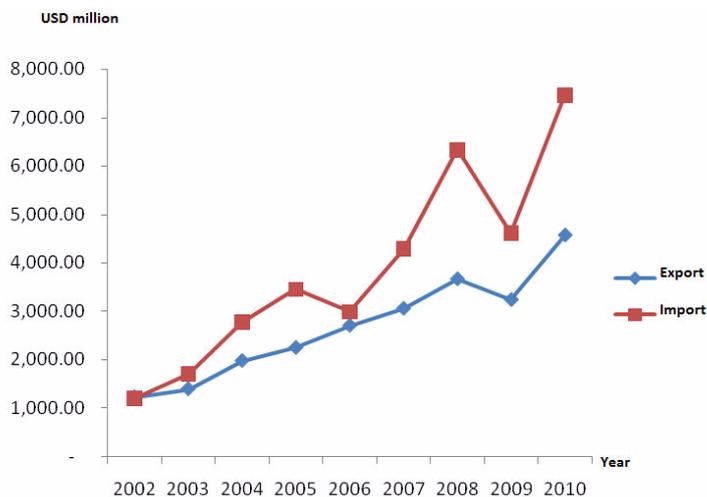
Source: Data calculation.

Figure 4: Trades across Indonesia and Singapore

Figure 5 shows that Indonesian trade balance with Thailand is of deficit. Despite some declines in Indonesian import for a couple of years, the value of Indonesian imports from Thailand is still larger than Indonesia's exports to Thailand. From 2009 to 2010, Indonesian imports from Thailand increased by 38%.

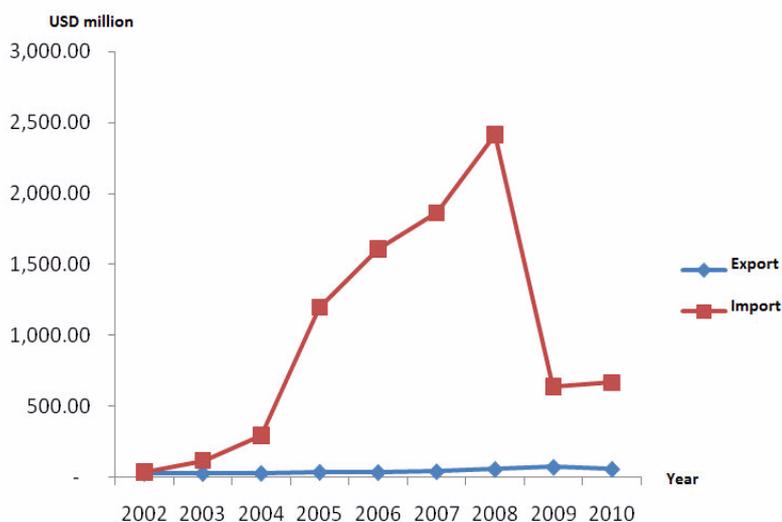
Figure 6 shows that Indonesia trade balance with the Brunei Darussalam are always deficit. Indonesian imports from

Brunei Darussalam continue to increase until 2008. In 2009, imports from Brunei Darussalam decreased by 278% from the previous year. This decline in imports is accompanied by a rise in exports, although only by 20% from 2008. Although the development of Indonesia's exports to Brunei continues to increase, but the value of imports from Brunei Darussalam Indonesia remains larger.



Source: Data processed.

Figure 5: Trades across Indonesia and Thailand



Source: Data processed.

Figure 6: Trades across Indonesia and Brunei Darussalam

Analysis Results of Factors Influencing the Increase in Trade Flows (Creation Effect)

The result of empirical analysis to test the creation effect is presented in Table 1. It shows the R^2 value of 0.928, indicating that 92.8% of variations in export value between Indonesia and China and ASEAN members can be explained by the variation in GDP, distance, exchange rates, popula-

tion, and dummy variables CAFTA, while the remaining 7.2% is explained by other variables.

The estimation equation is:

$$\ln X_{cj}^t = 18.4 + 1.219 \ln(GDP_c^t GDP_j^t) - 4.504 \ln DIST_{cj} - 0.306 \ln ER_{cj} + 1.02 \ln POP_j - 0.088 \ln CAFTA_{cj}^t \quad (7)$$

Table 1: Analysis Results of CAFTA's Impact on Indonesian trade with China and other ASEAN members for the Creation Effect Model

	Variable	Regression Coefficients	$t_{\text{statistic}}$	Significance Level
	Constant	18.405	8.287	.000
$GDP_c^e GDP_j^e$	GDP Ind + GDP-Ji	1.219	4.713	.000
$DIST_{cj}$	Distance Indonesia-Ji	-4.504	-14.277	.000
ER_{cj}	Exchange rates	-.306	-2.496	.016
POP_j	Population	1.020	14.164	.000
$IN_CAFTA_{cj}^e$	Dummy	-.088	-.384	.702
R^2	0.928			
$F_{\text{statistic}}$	123.995			
F_{critical}	2.41			
$t_{\text{statistic}}$	2.01			

Source: Data estimation.

From Table 1, it can be seen that GDP, distance, exchange rate, and population have significant effects on exports between Indonesia and China and ASEAN members, while the dummy variables of CA had no significant impact.

As can be seen from the model, when GDP rose by 1%, Indonesia's exports to China and ASEAN would increase by 1.219%. When the distance increased by 1%, Indonesian exports to China and ASEAN members decreased by 4.504%. When the exchange rate increased by 1%, Indonesia's exports to China and ASEAN members would decrease by 0.306%. When the population increased by %, Indonesia's exports to China and ASEAN members would increase by 1.020%. The expected signs met the economic theory, except in CAFTA. Indonesian decision to be bound within the CAFTA trade agreement does not have significant effect in Indonesian trade. The finding is consistent with the results of Yuniarti (2007) which suggests that the RTA had no effect on Indonesian trade. However, these results are different from that of Chen and Tu (2005) on trade in China, and Sattayunaward (2011) on the ASEAN countries, which suggest that the

effects of RTA on trade in these countries are real.

Analysis Results for Factors Influencing the Trade Flows (Diversion Effect)

The empirical results analysis on the *diversion effect* model is shown in Table 2. It shows the R^2 of 0.736, indicating that 73.6% of variation in Indonesian exports to China and ASEAN members can be explained by GDP, distance, exchange rates, population, and dummy variables CAFTA, while the remaining balance of 26.4% explained by other variables.

Table 2 also shows that GDP, distance, and the population have significant effects on exports across Indonesia, China and ASEAN members while the dummy variables CA and the exchange rate do not have significant effect.

The result can be expressed in the following equation:

$$\ln IMP_{cj}^t = 15.301 + 2.170 \ln(GDP_c^t GDP_j^t) - 3.2 \ln DIST_{cj} - 0.258 \ln ER_{cj} + 0.25 \ln POP_j - 0.043 IN_CAFTA_{cj}^t \quad (8)$$

Table 2: The Impact of CAFTA on Indonesian Trade with China and ASEAN Members, Diversion Effect Model

Variable	Regression Coefficients	$t_{\text{statistic}}$	Significance Level	
Constant	15.301	4.354	.000	
$GDP_i^e GDP_j^e$	$GDP\text{-}Ind + GDP\text{-}Ji$	2.170	5.304	.000
$DIST_{ej}$	Distance Indonesia- Ji	-3.200	-6.411	.000
ER_{ej}	Exchange rates	-.258	-1.331	.189
POP_j	Population	.250	2.193	.033
$IN_CAFTA_{ej}^e$	Dummy	-.043	-.118	.906
R^2	0.736			
$F_{\text{statistic}}$	26.746			
F_{critical}	2.41			
$t_{\text{statistic}}$	2.01			

Sumber: Data estimation.

As can be seen from the model, when GDP rose by 1%, Indonesia's import from China and ASEAN countries would increase by 2.170%. If the distance increased by 1%, exports from Indonesian to China and ASEAN countries would decrease by 3.2%. If the population increased 1%, imports of Indonesia to China and ASEAN countries increased by 0.25%.

Creation Effects and Diversion Effects, China-Indonesia

Comparison of creation and diversion effects across China-Indonesia is presented in Table 3. (Analysis on China has been conducted by Chen and Tu, 2005).

Comparing the results of this paper with that of Chen and Tu (2005), we can find that the implementation of CAFTA significantly influence the construction of the creation and diversion effects for China, but not for Indonesia. Chen and Tu (2005) suggest that when GDP increased by 1%, China's trade value increased by 0.86%. For the Indonesian case, 1% increase in GDP would increase trade flow by 1.2% (creation effect). The Indonesian creation effect is greater than that of China. How-

ever, if we consider size of their economies, the gap of the trade flows will be broader. China's economy as measured by the magnitude of China's Gross Domestic Product of USD 5.8 Trillion is much larger than the Gross Domestic Product Indonesia amounting to USD695.059 billion.

Analysis on the dispersion effect showed that changes the elasticity of GDP to trade flows (imports), which is 15.02%, is much bigger than the creation effect, which is 1.219%. Creation effect shows the movement of resources to more efficient activities of countries, while the dispersion effect shows a decrease in efficiency as the production moves from efficient non CAFTA members to the inefficient CAFTA members. It is obvious that creation effect will increase prosperity while diversion effect will reduce welfare. The high of dispersion effect indicates that a great reduction in welfare occurred in Indonesia's trade. However, since the analysis suggests that the influence of CAFTA on trade is not real, the lowering welfare is more influenced by the inefficiency in domestic industry than the result of the agreement.

Table 3: Comparison of Creation and Diversion Effects, China-Indonesia

No	Variable	Elasticity	
		Trade between Indonesia, China, and the Rest of ASEAN	Trade between China and its Trade Partners
Creation Effect			
1	<i>GDP</i>	1.219	0.86
2	Distance	-4.504	-0.71
3	Exchange Rates	-.306	
4	Population	1.020	
5	Dummy (<i>IN_CAFTAR</i>)	-.088	0.47
Diversion Effect			
1	<i>GDP</i>	2.170	0.92
2	Distance	-3.200	-0.91
3	Exchange Rates	-.258	
4	Population	.250	
5	Dummy (<i>IN_CAFTAR</i>)	-.043	-0.06
6	Surface Area	-	-0.42

Source: Data estimation.

The Indonesian *GDP* elasticity of import flows, 2.17%, is much larger than that of China, 0.92%. This suggests that with the presence of CAFTA, the increase in *GDP* of Indonesia would lead to imports of 2.17 times larger, while for China, the diversion effect is less than 1. The results of this analysis shows that gap of welfare across both countries will be high, as long as Indonesia does not make any policy to change the determinants of trade.

CONCLUSION

This paper investigated the implementation of CAFTA (China-Asean Free Trade Area) on the international trade flows across Indonesia, China and the rest of ASEAN using a gravitation model. The determinant factors for Indonesian trade were Gross Domestic Product, distance, and population size, but not the exchange rates and trade agreement on CAFTA. Diversion and creation effects did not significantly affect trades in Indonesia. The elasticity of Indo-

nesia's *GDP* to trade flows was greater than that of China. However, with a much smaller economy size, the flow of trade gap between both countries would be widen with the increasing *GDP* sizes in both countries.

The diversion effect of trade was much larger than the creation effect in Indonesia. The creation effect would increase prosperity while diversion effect would reduce welfare. Indonesian high diversion effect indicated a great reduction in welfare occurred in Indonesia's trade. However, since the analysis suggested that the influence of CAFTA on trade is not real, the lowering welfare was more influenced by the inefficiency in domestic industry than the result of the agreement.

Indonesia should initiate efforts to enhance the creation effect from its international trade, such as increasing efficiency in its production sector, particularly for the traded goods. The results of this study were empirical facts that support the opinion of

economists over the years. Efficiency could be boosted by improving infrastructure and bureaucracy, decreasing economic costs, and increasing competitiveness, as had been done by China and other ASEAN

members, before these countries join the CAFTA. Otherwise, the prosperity gap between Indonesia and China, and between Indonesia and ASEAN members, would be widen.

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