ANALYSIS OF THE IMPACT OF FREE TRADE AGREEMENTS POLICY ON INTERNATIONAL PALM OIL TRADE FLOWS

ANALISIS DAMPAK PERJANJIAN PERDAGANGAN BEBAS TERHADAP ALIRAN PERDAGANGAN INTERNASIONAL MINYAK KELAPA SAWIT

Riska Pujiati[1]

Direktorat Jenderal Perundingan Perdagangan Internasional, Kementerian Perdagangan
Jl. M.I Ridwan Rais No 5 Jakarta Pusat
Telp.021 23528600

Abstrak

Pertanian memainkan peran penting bagi negara-negara berkembang, sebagian besar negara berkembang mengekspor bahan mentah ke pasar internasional sebagai sumber pendapatan utama. Kawasan Asia Tenggara adalah wilayah yang memiliki banyak negara berkembang dengan pendapatan menengah, dengan dua negara yang menjadi eksportir minyak sawit utama, yaitu Indonesia dan Malaysia. Minyak kelapa sawit diekspor sebagai dua bentuk utama, *crude* dan *refined*. Kelapa sawit memiliki nilai yang tinggi di pasar internasional dan diekspor ke lebih dari 50 negara dan memiliki banyak turunan. Perkembangan terakhir dari kebijakan perdagangan internasional untuk Indonesia dan Malaysia adalah pembentukan perjanjian perdagangan bebas (*Free Trade Agreements*), baik bilateral maupun regional. Sebagai produsen utama, bergabung dalam perjanjian perdagangan bebas menjadi peluang bagi Indonesia dan Malaysia untuk mempromosikan perdagangan karena mengurangi hambatan perdagangan. Meskipun Indonesia dan Malaysia memperdagangkan komoditas yang serupa, keterlibatan dalam perjanjian perdagangan bebas akan memberikan hasil yang berbeda dalam aliran perdagangan. Berdasarkan latar belakang tersebut, tujuan dari penelitian ini adalah untuk menganalisis dampak penerapan kebijakan perjanjian perdagangan bebas terhadap aliran perdagangan kelapa sawit Indonesia dan Malaysia. *Model Gravitasi* dengan *Regresi Poisson Pseudo Maximum Likelihood* (PPML) digunakan untuk mengukur perubahan aliran perdagangan kelapa sawit. Hasil regresi menunjukkan dampak positif dari FTA terhadap Indonesia dan Malaysia berdasarkan jenis minyak sawit.

Kata Kunci: Kelapa sawit, Kebijakan perjanjian perdagangan bebas, Model Gravitasi

[1]Email : r.pujiati@gmail.com

Abstract

Agriculture plays an important role for developing nations, majority of developing nations export agricultural raw materials to international market as a main source of income. Southeast Asia is a region that contains of middle income developing economies, with two countries contributing as the region's major exporters of palm oil, they are Indonesia and Malaysia. Palm oil is exported as two main form, crude and refined. Palm oil has high value in international market and it is exported to more than 50 countries and has many derivatives. Latest development of international trade policy for Indonesia and Malaysia is the establishment of free trade agreements, both bilateral and regional. As two of the major producers, joining free trade agreements become an opportunity for both Indonesia and Malaysia to promote trade because of the reduction in trade barriers. Although Indonesia and Malaysia trade similar commodities, involvement in the free trade agreement will give different results in the flow of goods. Based on the explanation above, the objective of this research is to analyze the impact of the establishment of free trade agreements policy on Indonesia and Malaysia's palm oil trade flows. The Gravity Model with Poisson Pseudo Maximum Likelihood (PPML) regression are utilized to quantify the changes of palm oil trade flows. The regression result give positive impact for Indonesia and Malaysia export depend on the form of palm oil (crude and refined) export.

Keywords*: Palm Oil, Free Trade Agreements policy, Gravity Model*

1. BACKGROUND

The report from the World Trade Organization (WTO) shows that the total value of international trade in 2015 is three times larger than in 2000. The value of international trade is estimated at around US$ 16.2 trillion in 2015, while in 2000, the value reached US$ 6.4 trillion. Furthermore, more than 50 percent of international trade involve the countries which engaged in regional trade agreement. There are some reasons for a country joining Free Trade Agreements, such as political and economic factor. Free Trade Agreement (FTA) is application of economic integration among countries. The basic principal of integration economic is to reduce trade barrier and to enhance the flow of goods and services among its member. The main goal joining FTA is to reach welfare which will be achieved by the efficiency in trade and decline in trade cost. Trade policy is established as a tool to create wider market and it is estimated to increase a growth of country´s economy. The latest progress is the form of regional trade agreements happen in each part of the world.

The sectors that contribute to the world trade are agriculture (10 percent), fuels and mining (13 percent) and manufacturing (73 percent). For the agriculture sector, export value has increased from US$ 0.5 trillion in 2000 to US$ 1.5 trillion in 2015 (World Trade Organization [WTO] 2015). Agriculture has a significant role for developing countries, the share of agricultural export from developing countries is increased from 37% in 1990 to 43% in 2010 (Cheong et al., 2013). Beside the increasing in its share, export of agricultural raw materials acts as a primary source of income for developing countries (Aksoy & Beghin, 2004).

Southeast Asia is a region that contains middle income emerging countries. Two countries of the region are major exporters of palm oil: Indonesia and Malaysia. Palm oil has high value in international market, based on data from Food and Agriculture Organization (FAO), the combined export value of palm oil between Indonesia and Malaysia reached for US $23 billion in 2016 (FAO Statistics Division, 2016). The massive use of palm oil in various sectors such as the food, non-food and energy causing high

demand of palm oil in the international market. Palm oil has more advantages compared to soybean and rapeseed oil: cheaper price and higher yield.

According to data from WTO, Indonesia and Malaysia have different shares of the palm oil market between the periods of 1989-2016. The European Union (EU) was the main trading partner of Indonesia with the total market share reach by 82 percent in 1989, this share dropped significantly to 14 percent in 2016. Meanwhile, the share of Malaysia for the EU increased slightly from 8 percent in 1989 to 12 percent in 2016.

China which known as the new emerging economy and population shows a remarkable increase in the consumption of the palm oil. For palm oil originating from Indonesia, the export share to China reached 11 percent in 2016 compared to 3 percent in 1989, while for Malaysia, the export share to China remain steady at 9 percent both in 2016 and 1989. Another country which shows increasing import of palm oil is India. In 2016, Indonesia's palm oil export share reached 24 percent while in 1989 the share was only 7 percent. Similar cases apply to Malaysia, where the export share to India reached 19 percent in 2016, three times larger than in 1989 at only 5 percent. Similar to China and India, the export share of Indonesia's palm oil to countries grouped to the Association of Southeast Asian Nations (ASEAN) has increased to 11 percent in 2016. Contrary to Malaysia, the export share of Malaysia´s palm oil to ASEAN market decreased from 25 percent in 1989 to 12 percent in 2016.
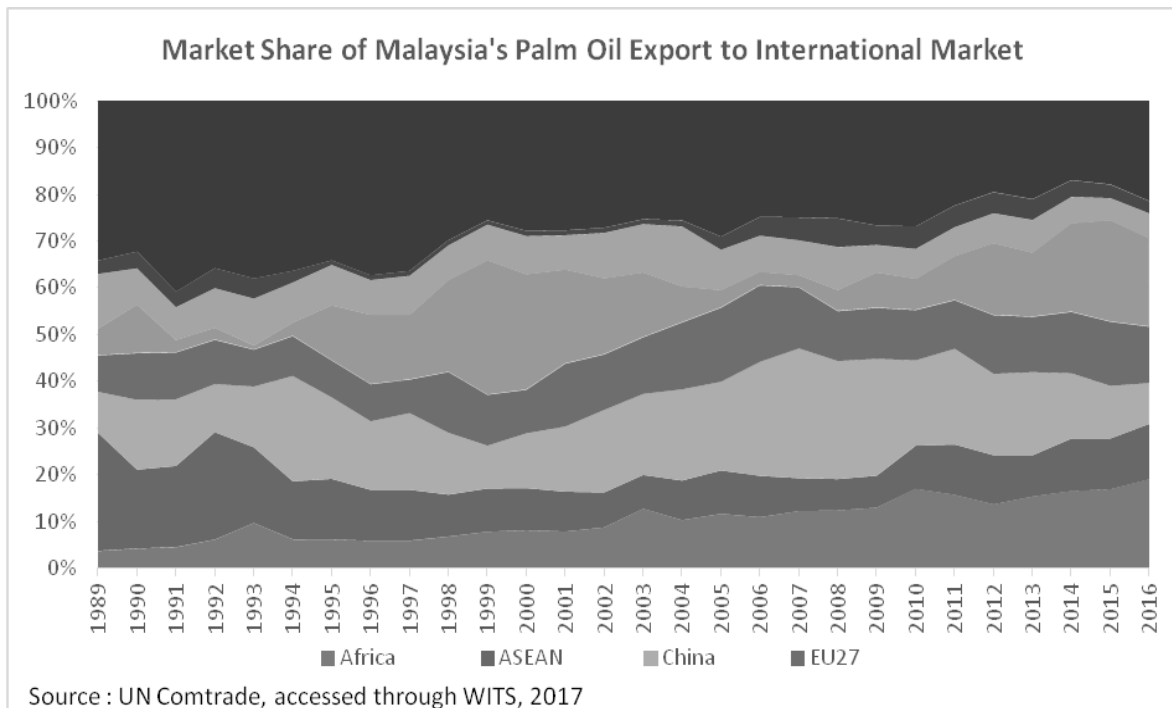

Market Share of Indonesia's Palm Oil Export to International Market

Source : UN Comtrade, accessed through WITS, 2017
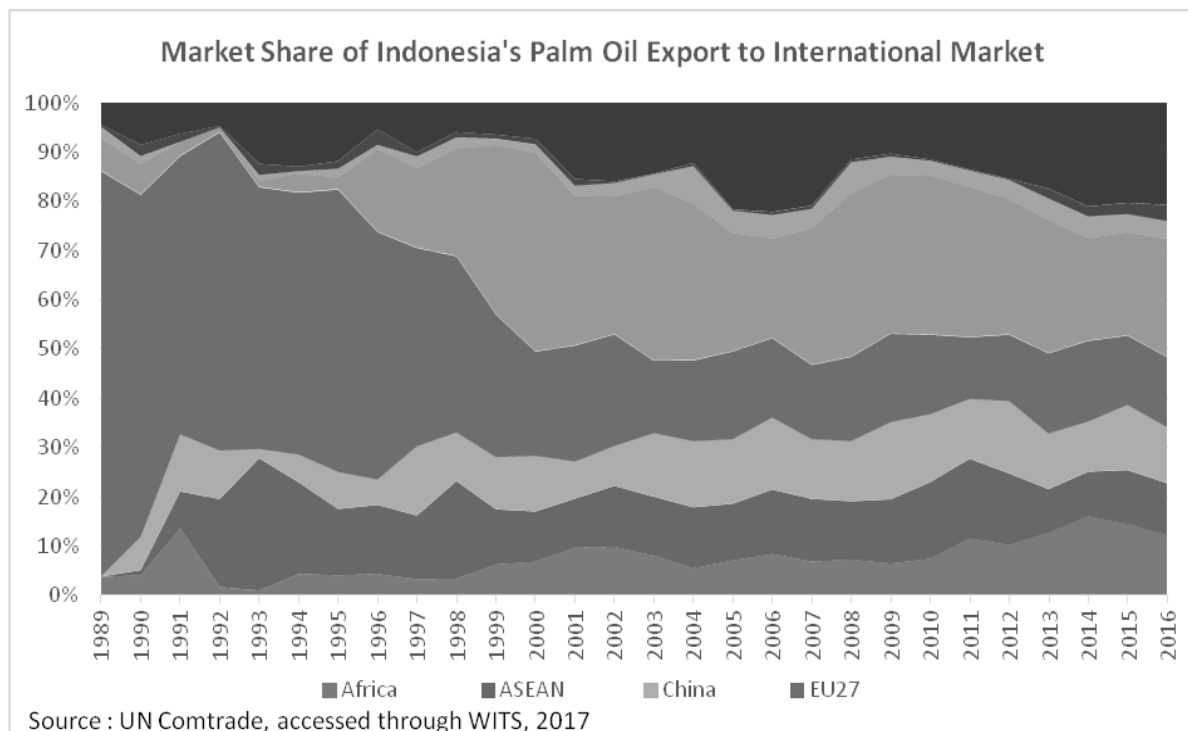
Figure 1. Market Shares of Indonesia and Malaysia´s Palm Oil Export
Source : UN Comtrade, accessed through WITS, 2017

The change of the palm oil export share is affected partly by the formation of Free Trade Agreements among countries. Indonesia and Malaysia are engaged in several Free Trade Agreements. Both Indonesia and Malaysia joining ASEAN Free Trade Area (AFTA) Agreement. During the period between 2000 and 2016, there has been an extension of partnership of ASEAN with China (2005), Korea (2007), Japan (2008), India (2010) and Australia/New Zealand (2010), also the addition of an establishment of Preferential Tarif Arrangement with eight developing countries in 2011, the member are Bangladesh, Indonesia, Malaysia, Pakistan, Egypt, Iran, Nigeria, and Turkey.

Joining the FTA become a chance for Indonesia and Malaysia to increase trade because of the reduction of tariffs. Although Indonesia and Malaysia trade similar commodities, involvement in the FTA will give various results in the flow of goods. Based on the explanation above, the objective of this research is to analyze the effect of the establishment of Free Trade Agreements on Indonesia and Malaysia's palm oil trade flows.

2.   LITERATURE REVIEW AND FORMER STUDIES

2.1.   International Trade Theory and Free Trade Agreement Definitions

International trade is a part of international economics which has definition "the exchange of goods and services among the countries in the world" (Reinert, 2012). British economist, Adam Smith, developed the theory of international trade. Smith (1776) stated that trade between nations is caused by its absolute advantages (Reinert 2012). When a

country has specialization in the production of one good and the best technology so it has an absolute advantage. The country which has an absolute advantage will get benefit from export (Feenstra and Taylor 2008).

Later development, Ricardo (1821) constructed the theory of comparative advantage. He stated that even if a country has no absolute advantage in producing two types of goods than any other country, the trade can occur as long as the price ratio between countries are different than in a no trade (autarky) situation. As stated by Krugman (2012) "A country has a comparative advantage in producing a good if the opportunity cost of producing that good in terms of other goods is lower in that country than it is in other countries" (p. 56). The classical trade theory was established to measure the economic efficiency of resource distribution in the production of goods.

Heckscher (1919) and Ohlin (1924) described that comparative advantage starts from differences in a country´s endowment factor. The Heckscher Ohlin (HO) theory is also called the factor-proportion theory because it focuses on the interaction between the different proportions of the country's production factors, as well as the differences in the usage of these factors on producing a wide range of items (Krugman,et al. 2012). The assumption of this theory is that the technologies are the same across trading countries. The HO Model expects that a country tends to export the good which uses its abundant factor intensively (Feenstra & Taylor 2008).

A new trade theory comes from the modification of assumptions on the HO and Ricardian Models, the assumption of homogenous goods changes into differentiated goods. The market structure in this new trade theory is different from that of perfect competition. Krugman introduced the concept of monopolistic competition, he states that the two main assumption are differentiated goods and increasing returns to scale. By creating several types of products, firms are able to control the product´s price. In monopolistic competition, a firm cannot set prices as high as in a complete monopoly (Krugman, 1980). The development of the new trade theory by Melitz and Bernard in 2003 focused on the existence and behavior of heterogeneous firms in the international market. The assumption is, only several firms are actively exporting due to the higher costs to send a product to the international market. Therefore, only firms which have high productivity are able to cover all costs and export their products.

Free Trade Agreement is "a contractual arrangement between two or more countries under which they give each other preferential market access, usually called free trade. In practice, free-trade agreements tend to allow for all sorts of exceptions, many of them temporary, to cover sensitive products. In some cases, free trade is no more than a longer-term aim, or the agreement represents a form of managed trade liberalization. Researchers have noted that many recent free-trade agreements have run to several hundred pages, whereas a true free-trade agreement would require only a few lines". While free trade area stand for "a group of two or more countries or economies, customs territories in technical language, that have eliminated tariff and all or most non-tariff measures affecting trade among themselves. Participating countries usually continue to apply their existing tariffs on external goods" (WTO, 2003).

WTO then defines the term of "regional trade agreement" as the "regional trade arrangement". The term define as a free-trade agreement, customs union or common market consisting of two or more countries" (WTO 2003). Presently, the number of regional trade arrangement which have been notified to the WTO between 1947 and the present reach more than 2000. The WTO established a Committee on Regional Trade Agreements to observe its effect on the international trading system in early 1996.

2.2. Impact of Free Trade Agreement

Viner (1950) introduced the terms trade creation and trade diversion; trade creation denotes to a shift of product origin from expensive domestic producers to more efficient producers which are a member of trade agreement. The term trade creation indicates the benefit of a country by joining FTA. Countries begin to trade, whereas they previously produce all goods internally at a high cost. The definition of trade creation is the converting of imports from a high cost producer to a low cost producer (Viner, 1950). Contrary to trade creation, trade diversion represents the negative efficiency effect of FTAs, when a country begins to trade, a country which had previously been importing good from a non member with lower production costs must begin importing from a member country with higher production costs due to the establishment of trade agreement (Feenstra & Taylor 2008; Reinert 2012).

The dynamic effects of FTA also important to be analyzed because the dynamic effect is more significant and widespread (Plummer, et al. 2010); it is important to count how they affect the country's development. Some of the important dynamic effects in FTAs are: economies of scale and variety, technology transfer and Foreign Direct Investments (FDI), structural policy change and reforms, as well as competitiveness and long run growth effects. In term of impacts on Foreign Direct Investment, the establishment of FTA can cause a more integrated marketplace and a larger risk sharing flow of investment. Multinational companies get benefit such as lower transaction costs and the developing economies of scale. Due to these effects, there is a term called "investment creation" and "investment diversion".

Another dynamic impact of the establishment of FTA is the change of policy in some aspects such as quality standards, corporate and public governance laws, customs procedures; the national treatment of partner-country investors, competition policies, the reform of state-owned enterprises, and other sectors that have an important impact on the economy. The presence of these issues in FTA causing the member countries to shaping and harmonizing their domestic policies. Generally, a FTA member will respond by improving the domestic business environment through cost reduction, extending the opportunity to join the FTA to foreign investors, and by pushing policy reforms to encompass best practices (Plummer et al. 2010).

2.3. Gravity Model on Trade

The Gravity Model was introduced by Tinbergen. According to this model, trade between countries is explained by economic sizes, population, direct geographical distances and a set of dummy variables (Tinbergen, 1962). The initial Gravity Model can expressed as:

$$(2.1) \quad X_{ij} = \beta_0 (Y_i)^{\beta_1} \left(Y_j\right)^{\beta} \left(D_{ij}\right)^{\beta_3} \mu_{ij}$$

where X_{ij} is the value of bilateral trade (export or import) in current US dollars, Y_i and Y_j represent exporter and importer´s economic size, D_{ij} is the distance between the two countries, μ_{ij} is the disturbance term, and the β_s are the unknown parameters of the equation. The microeconomic foundation of gravity equation was established by Anderson (Anderson, 1969).

In Anderson´s theory, the goods are differentiated by their origin. However, Anderson´s model was not really recognized by trade economists (Head & Mayer, 2013).

The next theoretical foundation of the gravity equation set by Bergstrand who developed a connection between endowment factors and the bilateral trade model (Bergstrand, 1985). Bergstrand shows that the gravity model is a practical example of the monopolistic competition theory as developed by Krugman in 1980 (Bergstrand, 1989).

The renowned work of Anderson and Van Wincoop "gravity with gravitas" has successfully laid the theoretical foundation of the gravity equation and has been completed by many other researchers. Principally, the Anderson and Van Wincoop (AVW) Gravity Model originated from a demand function. The structure of the model was based on the final formula of the constant elasticity of substitution equation for consumer preferences. Consumers have "love of variety", by consuming a greater variety of goods, the overall utility increases (Anderson & Wincoop, 2003). The second assumption of the AVW gravity model follows Krugman´s production function; under the condition of increasing returns to scale, each firm produces one particular product. The large number of firms diminish the competition, the price is constant and can cover the firm´s marginal costs and fixed costs. In international trade, trade cost´s regularly occur and become somewhat of a barrier (Krugman, 1980).

The AVW model shows the importance of controlling relative trade costs. Their results indicate that bilateral trade is influenced by relative trade cost. Country j imports from country i and must pay a price which is influenced by the weighted average trade cost being paid to all other trading partners. The derivation of the AVW model can be seen in the appendix. The cross sectional gravity equation by AVW is summarized below:

$$(2.2) \quad X_{ij} = \frac{Y_i Y_j}{Y} \left(\frac{\tau_{ij}}{\Pi_i P_j} \right)^{1-\sigma}$$

Taking the logarithm on both sides:

$$(2.3) \quad \ln X_{ij} = \ln Y_i + \ln Y_j - \ln Y + (1 - \sigma) \ln \left(\frac{\tau_{ij}}{\Pi_i P_j} \right)$$

where X_{ij} is the trade value from country i to j, and Y represents the world GDP. Y_i is the GDP of country i, Y_j is the GDP of country j, σ_k denotes the elasticity of substitution and τ_{ij}^k represents trade costs. Two important features of the AVW model is the two additional variables, Π_i^k and P_i^k. Π_i^k is called the outward multilateral resistance, and P_i^k is called the inward multilateral resistance. The outward multilateral resistance denotes the exports from country i to country j depending on trade costs across all possible export markets. The inward multilateral resistance denotes the imports into country i from country j depending on trade costs across all possible suppliers (Shepherd, 2013). Generally, these figures are low if a country is isolated from world market (Baccheta, 2012). Inward multilateral resistance is also called the price index and outward multilateral resistance is called competition (Fally, 2012).

2.4. Previous Studies

Specific on agricultural commodities, the impact of FTA establishment was analyzed by Lambert and McKoy in 2009. Their results from the Gravity Model estimation indicates that FTA generally increases trade in agriculture and trade sector (Lambert & McKoy, 2009). Philippidis et al. examine the bilateral trade flow on 20 single agricultural commodities between period 2001 to 2004 within 95 countries, their result shows that the FTA has significant impact to trade on three commodities, they are wheat and other cereal gains; and paddy rice (Phillipidis, Resano,-Ezcaray, & Sanjuan-Lopez, 2013).

Extensive research has been conducted to examine the determining factor of palm oil trade in the international market. Suryana, Tondok Ibrahim, and Basiron analyzed the outlook of palm oil in the international market for Indonesia and Malaysia (Suryana, 1986),(Tondok, 1998),(Ibrahim, 1999),(Basiron, 2001). Shamsuddin et al. study the determinant and implication of policy instruments on the Indonesian and Malaysian palm oil (Shamsuddin, Lubis, & Zainalabidin, 1997). Lubis, Shamsuddin et al., and Susila who examined Malaysia´s palm oil supply and demand system (Lubis, 1994), (Shamsuddin, Fatimah, Zainalabidin, & Lubis, 1994), (Susila, 1995).

The impact of the Free Trade Agreements (FTA) proliferation to a country´s overall trade especially palm oil was describe by Ernawati et al., The simulation shows that a reduction of tariff in export and import has varying impacts on partner country. The demand of palm oil is influenced by several factor such as price, subtitution price of rapeseed oil and soybean oil; exchange rate and lag export, are also shown to be influenced in the simulation (Ernawati, Arshad, Zainal, & Shamsudin, 2006). Rifin performed a study comparing the market share of Indonesian and Malaysian palm oil in Asia, Europe, and throughout Africa. The commodities were differentiated into crude and refined palm oil. The market share was analyzed by constant market share analysis (CMSA) (Rifin, 2010). Furthermore, another study concerning the impact of FTAs was conducted by Balu & Ismail in 2011. According to their descriptive study, for Malaysia´s palm oil industry, the FTAs was a good opportunity because it helped to increase market share and tariff reduction lead to a higher profit. The competitiveness of traded goods will likely enhance due to liberalization of tariffs (Balu & Ismail, 2011).

This study is a further development of the impact of formation of FTA on diaggregrated (single) commodity. The research also use more database due to the number of countries and time series period rather than previous studies.

3. RESEARCH METHODOLOGY

3.1. Data Type and Source

This research uses secondary data originated from various sources. The bilateral trade of palm oil annual data from the period between 1996 and 2016 has been generated from the United Nations Commodity Trade Statistic Database (UN COMTRADE). The data consists of a nominal value of bilateral trade from Indonesia and Malaysia to 91 partner countries that have conducted trade more than ten times within the 24 year period.

The total palm oil and its fraction which has Harmonized System (HS) code: 1511, divided into crude palm oil (HS code: 151110) and refined palm oil but no chemically modified (HS code: 151190). The geographical distance between countries was obtained from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), economic distance is gained by multiply geographical distance with the average of crude oil price the importer´s GDP data came from the World Bank, along with FTA information from the Asia Regional Integration Centre (ARIC). The value of palm oil production is generated from the FAO.

3.2. The Gravity Analysis

The Gravity Model estimation is applied to examine whether the trade agreement influences trade flow or not. This study use Poisson Pseudo Maximum Likelihood (PPML) in order to control zero trade data and heteroskedasticity. PPML method was led by Gourieroux et al. (1984) and is normally used for the count data model. The most prominent study concerning the use of PPML as a tool for estimating the Gravity Model was conducted by Santos Silva and Tenreyro. They argued that the log linear transformation result in an inconsistent bias in the presence of heteroskedasticity, the result from the PPML estimation will give better result by including the zero value rather than truncating OLS. (Santos Silva & Tenreyro, 2006). The following research by Santos Silva and Tenreyro in 2011 shows that the PPML is constant and performs well in the presence of over dispersion (the conditional variance is not equal to the conditional mean) and excess zero values (Santos Silva & Tenreyro, 2011).

Sun and Reed was the first author who utilized PPML on the effect of FTAs with disaggregated data for agriculture commodities (Sun & Reed., 2010). The result of PPML is better than the OLS result. Following Sun and Reed (2010), the empirical model is stated as:

$$Y_{ijt} = \exp\{\beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln D_{ij} + \beta_4 FTA_{ij} + \pi_{ij} + \delta_i + \varphi_j + \gamma_t + \varepsilon_{ijt}\}..1)$$

where Y_{ijt} represent the export value from country i to j at time t, δ_i stands for the fixed effect of country i (exporter fixed effect), φ_j represent the fixed effect of country j (importer fixed effect), π_{ij} denotes the country pair fixed effect, and γ_t refers to the time effect.

Econometric Modelling of International Palm Oil Trade

Estimating the Gravity Model for a disagregrate commodity can lead to biased estimations if the GDP of exporter countries are used as a proxy for the economic size of the exporter (GDP_{it}). Therefore, the production value of palm oil is used in this study as a proxy for the exporter's economic size. In order to examine the impact of multilateral trade, the dummy variable (FTAs) is divided into two parts: one before and one for after the year 2000. The main reason for splitting up the dummy variable is the proliferation of FTAs for both Indonesia and Malaysia after 2000, which increase the member of free trade agreement in Southeast Asia region. The Gravity Model of international palm oil takes the following form:

(3.1)

$$\ln Y_{ijt} =$$
$$\beta_0 + \ln Prod_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln D_{ij} + \beta_4 FTAs\_b2000\_id_{ijt} + \beta_5 FTAs\_a2000\_id_{ijt} + \beta_7 FTAs\_b2000\_my_{ijt} + \beta_8 FTAs\_b2000\_my_{ijt} + + \pi_{ij} + \delta_i + \varphi_j + \gamma_t + \varepsilon_{ijt}$$

....2)

$$Y_{ijt} =$$
$$\exp\{\beta_0 + \ln Prod_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln D_{ij} + \beta_4 FTAs\_b2000\_id_{ijt} + \beta_5 FTAs\_a2000\_id_{ijt} + \beta_7 FTAs\_b2000\_my_{ijt} + \beta_8 FTAs\_b2000\_my_{ijt} + + \pi_{ij} + \delta_i + \varphi_j + \gamma_t + \varepsilon_{ijt}\}$$

...3)

where

Y_{ijt} = annual palm oil export from i to j at year t in US$

$Prod_{it}$ = annual palm oil production value of i at year t in US$

GDP_{jt} = annual GDP of importer country (j) at year t in US$

D_{ij} = bilateral economic distance between countries

$FTAs\_b2000\_id_{ijt}$ = Dummy variable for FTAs before year 2000, 1 if Indonesia as an exporter and have signed agreement with importer country (j) at time t, otherwise 0

$FTAs\_a2000\_id_{ijt}$ = Dummy variable for FTAs after year 2000, 1 if Indonesia as an exporter and have signed agreement with importer country (j) at time t, otherwise 0

$FFTAs\_b2000\_my_{ijt}$ = Dummy variable for FTAs before year 2000, 1 if Malaysia as an exporter and have signed agreement with importer country (j) at time t, otherwise 0

$FTAs\_a2000\_my_{ijt}$ = Dummy variable for FTAs after year 2000, 1 if Malaysia as an exporter and have signed an agreement with importer country (j) at time t, otherwise 0.

With the setting we expect positive sign for the coefficient of importer's GDP and the coefficient of palm oil production. This means that the export of palm oil will increase as long as there is growth in a country economy. The distance variable is expected to have negative sign because it is considered as trade barrier. The further destination country the less export quantity is expected. FTAs dummy variable is expected to have positive sign since the commencement of FTAs is meant to reduce trade barriers.

4.   RESULT AND DISCUSSION

### 4.1.   Trend of Indonesia's and Malaysia's Palm Oil Export

The trend of palm oil export is fluctuated between the period from 1996 to 2016. Generally, the value of palm oil export from Malaysia and Indonesia show an increasing number along with the increasing in palm tree plantation area. The explanation of exporting partner countries are analyzed as follow.

India has become main destination of Indonesian palm oil export, this can be seen from the export value reach US$ 5.2 billion in 2011 for total palm oil, with the average annual growth rate reach by 23 percent from the period 2000 to 2016. The tremendeous number of export in 2011 is caused by the establishment of trade agreement with the ASEAN in 2010. Another factor that cause the high demand of palm oil is the high per capita consumption reach 15 kg per year and the India's population reach 1.3 billion in 2016. In India, palm oil known as most consumed oil and commonly used as household cooking oil therefore, the market share reach 80 percent (USDA 2013).

Contrary to India, Indonesian refined palm oil has higher market share in China rather than in India's market, with the average growth reach by 35 percent from year 1996 to 2016. The highest value of Indonesian refined palm oil export occur in 2012, the value reach US$ 2.6 billion. The increasing trend is caused by the CAFTA (China ASEAN Free trade Agreement) in 2005. Crude palm oil export to China remaining low with the value of export under US$ 0.5 billion from year 2000 to year 2016. The proportion of palm oil consumption in China reach second rank after the consumption of soybean oil. China's per capita palm oil consumption is higher than India, it is reach 25.3 kg per year. Indonesia has an opportunity to increase palm oil export to the high demand in China

market. Palm oil commonly used in food industry as an industrial cooking oil in instant noodle, potato snack food, fried chicken, and other traditional snacks.

Compared to the India and China, ASEAN countries become main destination for Indonesian crude and refined palm oil export. The average growth reach by 18percent and 29 percent between period from 1996 to 2016 for crude and refined. The highest value of export is in 2011 (US$ 2 billion) for crude and in 2012 (US$1.4 billion) for refined. The refined palm oil export to ASEAN countries shows a fluctuated trend, in term of value, the export is less than crude palm oil export. The factor that influence the high number of palm oil export to ASEAN market is the application tariffs reduction schedule or Common Effective Preferential Tariffs (CEPT) scheme. Under this policy, the importing tariff among ASEAN are set up to maximum 5 percent, while Malaysia and Singapore have free duty rates. Among ASEAN member, Indonesian CPO mostly sell to Malaysia as a stock for its refineries and downstream processing. Malaysia also doing an investment in Indonesia by owning palm plantation area in Indonesia. The Indonesian refined palm oil is also exported to Singapore to be processed into various form. Majority of palm oil traded in form of crude palm oil between ASEAN member. This is denote the existence of refineries facilities outside a producer's country.
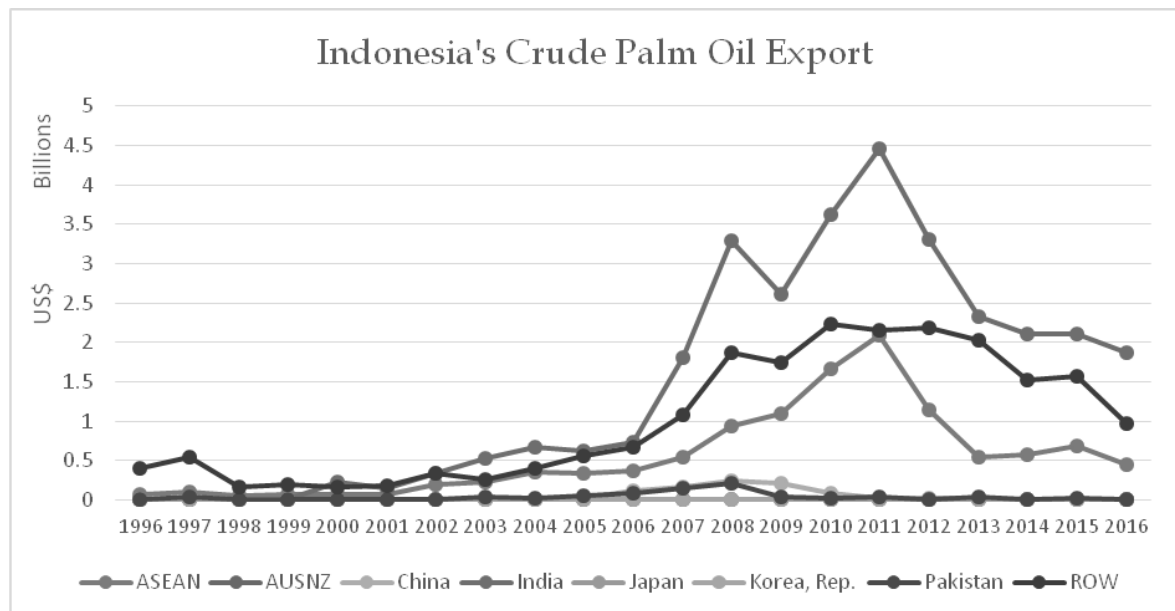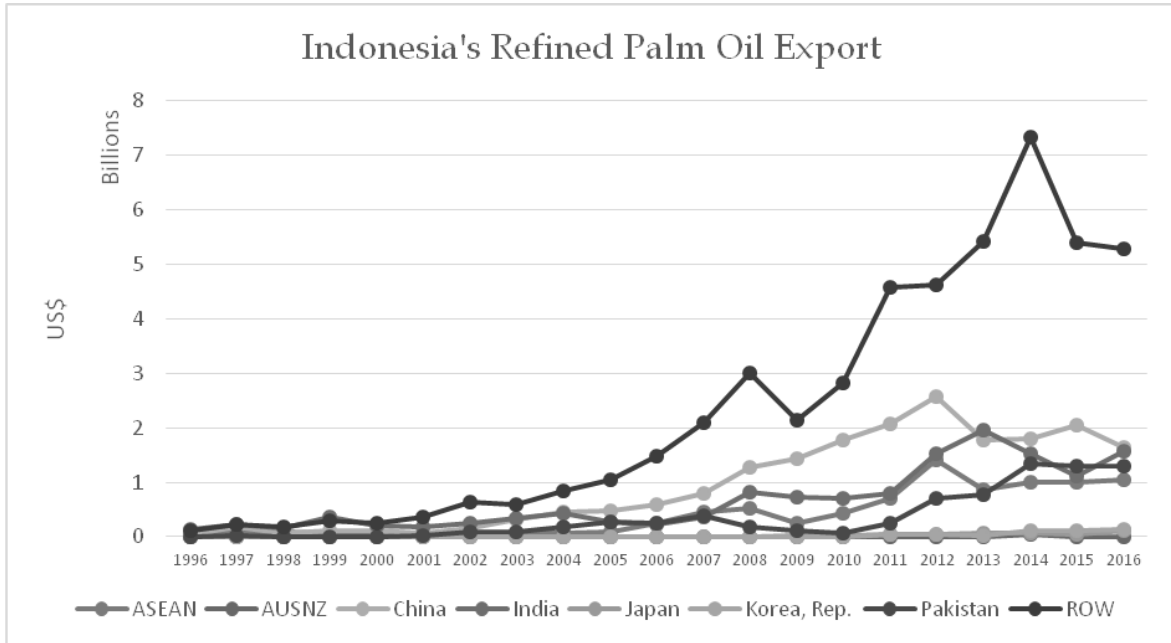
Figure 2 Indonesia´s Crude and Refined Palm Oil Export
Source: UN COMTRADE

Indonesia tend to export the refined palm oil to the countries outside the member of trade agreements. Based on the graph above, the export of refined palm oil tend to increase within period 1996-2016, in 2009, the declining in export due to the occurrence of financial crisis in United States of America (USA). The export of refined palm oil has higher value than the crude one.

The Malaysia's palm oil export of has similar characteristic with Indonesian palm oil. Malaysia also tend to sells its palm oil to a country which not belong to a member of free trade agreements. According to Figure 4, during period 1996 to 2016, the palm oil export outside member of FTA shows an increasing trend except in 2009, due to global financial crisis, the demand for palm oil in international market is declined. In European market, Netherland is known as major importer of palm oil. The percentage of palm oil import shipped through Rotterdam port reach by 60 percent from total EU´s vegetable oil import. Netherland get profit from the company which invest in palm oil processing facilities. Netherland also re-exports the derivative form of palm oil (palm olein, palm stearin, hydrogenated or inter-esterified palm oil) and biodiesel. The increasing trend of palm oil export to European area can caused by the extensive use of palm oil as a source of biodiesel.
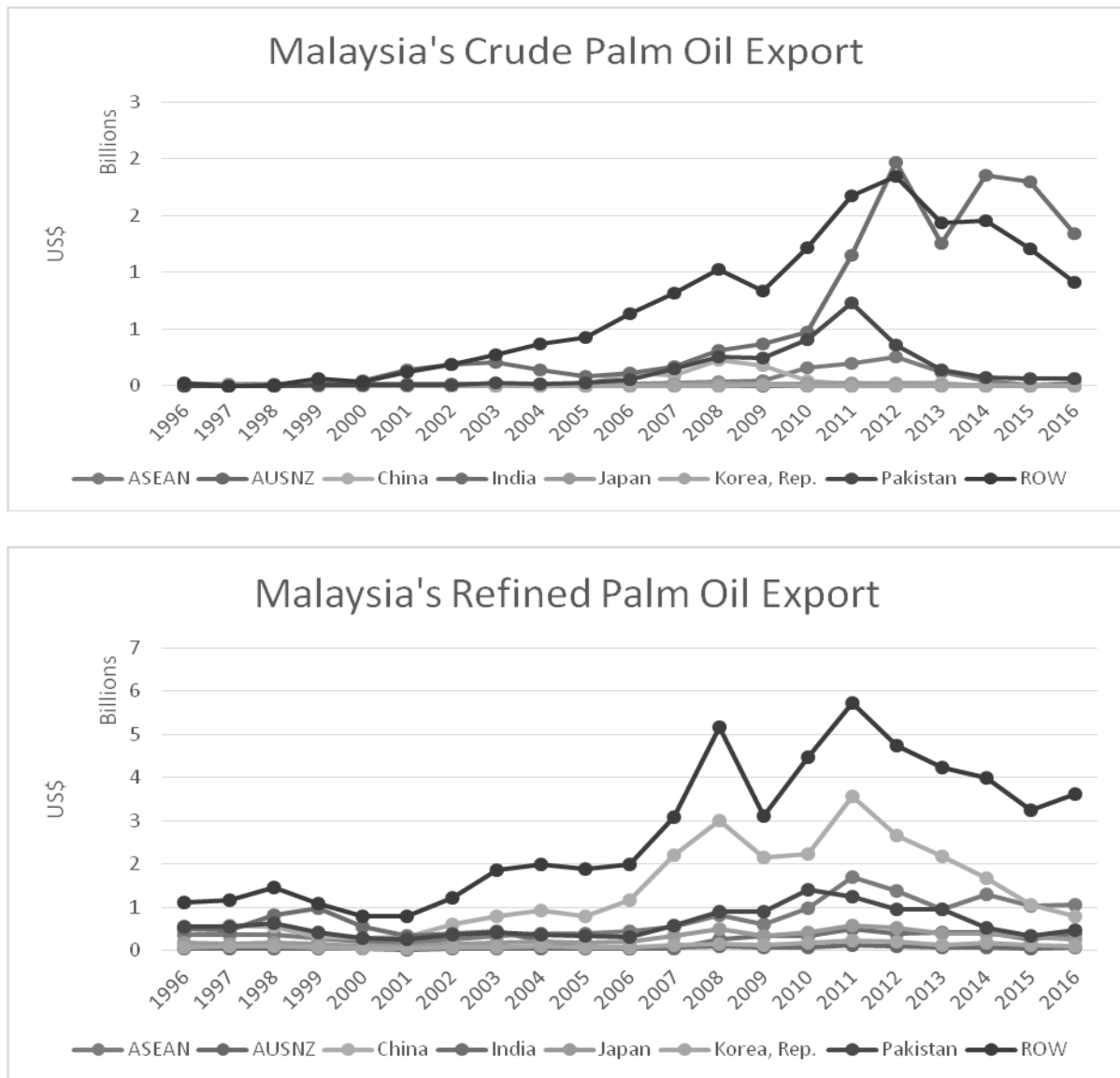
Figure 3 Malaysia´s Crude and Refined Palm Oil Export
Source: UN COMTRADE

The Malaysian palm oil export to India market has no differences with Indonesia´s, whereas the crude palm oil export are higher than the refined one. The value of export reach almost US$ 2 billion in 2011 after the signing of trade agreement, and remain above US$ 1 billion in 2013-2016, while the value of refined palm oil export is less than US$ 1 billion during the year 1996-2016. The latest development of Indian government policy concerning import of palm oil is the application of tax to crude palm oil import.

The result is different in China market, the export value of refined is higher than the crude one. After the establishment of CAFTA in 2005, crude palm oil export only reach US$ 0.2 billion in 2008 while the refined export reach US$ 3.5 billion within same year. Overall, the export of refined palm oil shows an increasing trend between the period from 1996 to 2016, with annual growth reach 9 percent.

The malaysia's palm oil export tend to increase in Pakistan market. The average annual growth reach 4 percent. The highest value of export occurred in 2011 (US$ 1.9

billion), for crude and refined type due to the signing of bilateral agreement between Malaysia and Pakistan. Pakistan rank fourth as Malaysia' market destination.

ASEAN also become main destination for Malaysian palm oil export, it can be seen from the average growth of crude and refined reach 28 percent and 10 percent after year 2000. The highest export of refined palm oil is in 2011 (US$ 1.6 billion), while in 2012, the highest value of crude palm oil export reach US$ 0.6 billion. Thailand and Vietnam mostly import crude palm oil due to the raising in their refining capacity.

4.2. Trend of Indonesia´s and Malaysia´s Palm Oil Export

The PPML estimation result is utilized to analyze concerning the impact of FTAs on the commodity trade flow. The FTA dummy variable is utilized to quantify the change of trade flow due to the establishment of the trade agreements. The estimation use two main separate dummy variables, before and after year 2000. Furthermore, based on the results from table 1, the PPML with the combination of time, country pairs and country specific effect is applied to the next estimation. In particular, the dependent variable are divided into two, they are crude palm oil (HS151110), and refined palm oil but no chemically refined (HS151190). The result of the PPML estimation for different palm oil export type can be seen in Table below.

For crude palm oil, the estimated coefficients for palm oil production have the expected positive signs and are statistically significant at the five percent level, this means that one percent increase in palm oil production would be associated with an increasing in the average export of palm oil by approximately 0.11 percent, *ceteris paribus* (cp). A positive sign was also determined for refined palm oil (HS 151190), with the average export value increasing by about 0.01 percent when the production value increases by one percent, *cp*. The GDP coefficient has a positive influence on the palm oil export, the GDP variable was not influential on the palm oil export and is statistically significant for refined palm oil export.

Table 1. PPML Estimation Result for Palm Oil Export as Dependent Variable

VARIABLES	HS 151110 crude	HS 151190 refined
l_gdp	0.369***	0.0362***
	(0.00165)	(5.54e-07)
l_dist	-0.878***	-0.0773
	(0.00429)	(0.856)
l_prod	0.0117	0.117***
	(0.659)	(0)
FTAs_b2000_id	0.135	0.796***
	(0.524)	(0.00383)
FTAs_a2000_id	-0.298**	0.216***
	(0.0429)	(6.55e-05)
FTAs_b2000_mys	0.0645	0.0769
	(0.832)	(0.500)
FTAs_a2000_mys	0.118	0.0887***
	(0.424)	(0.000113)
Constant	-2.127	-0.463

VARIABLES	HS 151110 crude (0.542)	HS 151190 refined (0.886)
Observations	3,250	4,375
R-squared	0.544	0.511

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The estimation results are inline to the gravity theory that trade is influenced by the economic size of the importer. As expected, the distance variable has a negative sign and is statistically significant at the one percent level for crude palm oil (HS 15110). This indicates that when the bilateral economic distance increases by one percent,the average crude palm oil export will fall by 0.8%. This result indicates that distance acts as trade barrier. This result indicates that for high value product (refined palm oil), the distance does not influenced trade.

Furthermore, the trade flow experiences different changes for Indonesia and Malaysia due to the establishment of trade agreements. Generally, for Indonesia with FTA before 2000, the coefficients are statistically significant and have a positive sign for all refined palm oil. The estimated FTA after 2000 coefficients have a negative result for crude palm oil, and the sign is statistically significant for crude palm oil. For Malaysia with FTA before 2000, the coefficients are statistically not significant and have a positive sign for all type of palm oil. The estimated FTA after 2000 coefficients have a positive result for crude and refined palm oil, and the sign is statistically significant for refined palm oil.

For FTA before year 2000, the results show different effects for Malaysia. For Malaysia, the average export of crude palm oil increases by 6.6 percent, while for refined palm oil, FTA establishment causes an average export rise of 7.9 percent respectively, *ceteris paribus* (*c.p.*). In particular, the tremendous effect occurs for Indonesia´s refined palm oil export, as indicated with the variable FTA before year 2000, the average refined palm oil export increased by 121.7 percent, and for crude 14.5 percent, *c.p.*

The average export of Indonesian crude palm oil decreased by 25.8 percent after the establishment of the FTA from 2001 to 2011. For refined palm oil, the average export increased by 24.1 percent t higher than export without FTA, *c.p.* The use of crude palm oil for domestic consumption may cause why the decline in export of crude palm oil is different than the refined palm oil. In fact, Indonesia is known as the largest consumer of palm cooking oil. The increase in Indonesia´s refined palm oil export after the establishment of AFTA could be caused by the higher demand of palm oil in the international market. The high growth of economy size in the Asia region may become the primary factor for the rising of consumption of palm oil, therefore, Indonesia's prefer to export its palm oil to the member of FTA.

Furthermore, the FTA after year 2000 give positive result to the the total value of Malaysia´s palm oil export. The establishment of FTA after year 2000 caused the average export value decrease by 12.5 percent for crude and 9,2 percent for refined export.

Table 2. The Change of Palm Oil Export due to FTA establishment (%)

Palm Oil HS	Indonesia (%)		Malaysia (%)	
	Before 2000	After 2000	Before 2000	After 2000
HS 151110 (Crude)	14,50	-25,80	6,60	12,50
HS 151190 (Refined)	121,70	24,10	7,90	9,20

Source : Author´s Calculation
[1] The effect of FTA calculated by $\{[\exp^{(\beta)}-1] \times 100\}$

In fact, the market share of Malaysian palm oil in China´s market has reached 65 percent, while the Indonesian share in China's market only reaches 40 percent. Moreover, the Malaysian company has built a refinery in China by doing a joint venture mechanism with a China´s company in the beginning 1995.

Due to this finding, along with the FTA establishment, Malaysia has additional opportunities to process refined palm oil into downstream products such as oleochemicals (Nor, 2012)[2]. This is one of the examples of the dynamic effect that has occurred due to the establishment of RTAs, the investment creation effect.

Furthermore, the Malaysian export oriented policy has pushed the development of refineries in Malaysia itself, the refined palm oil is then exported to fulfill the demand for countries outside of the Asian region. Since the year 1990, Malaysian palm oil has acquired the oleochemical industries in several developed countries such as the Netherlands, Germany, Switzerland and the United States (Nor, 2012).

5. CONCLUSION AND POLICY RECOMMENDATION

In summary, the flow of exports is influenced by other factor, such as by the government policies that are put into effect. The different policy give different result. The Malaysian government has also further utilized free trade agreements by doing investment in the downstream palm oil industry in other FTA membership countries, especially with China. This is one of the example for the positive dynamic effect of FTAs. The government institution should colaborate to get benefit from FTA establishment.

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[2] Malaysia acquired Shanghai Jinshan Jinwei Chemical Company Ltd on 2007 (specialty chemicals) (Nor, 2012)

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