Elasticity and competitiveness of Indonesia's palm oil export in India market

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Article Info

Abstract

This study examines the elasticity and competitiveness of Indonsia's palm oil export in the India market, 1990-2014. The methods used are Error Correction Model (ECM) and Revealed Comparative Advantage (RCA) approach. The results shows that the price is inelastic in short-term but it is elastic in long-term. The income and exchange rate are elastic in the long-term. There is also a decline in competitiveness in the market India. These findings also demonstrate that palm oil is normal goods and can be easily substituted with the same products of other countries or other vegetable oils. It threatens the Indonesian palm oil competitiveness in the Indian market.

Abstrak

Penelitian ini mengkaji elastisitas permintaan dan daya saing ekspor minyak sawit di pasar India pada periode 1990-2014. Penelitian ini menggunakan pendekatan *Error Correction Model* (ECM) dan pendekatan *Revealed Comparative Advantage* (RCA). Hasil penelitian menunjukkan bahwa harga bersifat inelastis dalam jangka pendek tetapi elastis pada jangka panjang. Sedangkan pendapatan dan nilai tukar berdampak elastis dalam jangka panjang. Terdapat indikasi penuran daya saing minyak kelapa sawit di pasar India. Temuan menunjukkan bahwa minyak sawit barang normal dan dapat dengan mudah diganti dengan produk minyak sawit dari negara lain atau minyak nabati lainnya. Semua itu mengancam daya saing minyak sawit Indonesia di pasar India.

Introduction

Since October 2014, the government set the reference price of CPO (crude palm oil) amounted to USD $ 750 per ton. When the CPO export price is above the reference price of CPO, the Indonesian palm oil exporters will have to pay the export tax on crude palm oil CPO USD $3 - $200 per ton. For the period from May 2016, the Ministry of Trade set a reference price of palm oil products amounted to the US $ 754.1 per metric ton (Regulation of Trade Minister, No. 29/M-DAG/PER/ 4/2016). This reference price statute means exporters will be hit CPO export tax of USD $ 3 per ton. The policy may have implications on the stability of the palm oil supply in the domestic and decrease in export demand for palm oil in Indonesia. The decline in export demand for palm oil has implications for the balance of payments (BOP) for oil palm which is a key foreign exchange earner for Indonesia's non-mining export products.

In 2014, Indonesian palm oil exports amounted to 48% of all exports of palm oil in the world with an export volume of 25.3 Million tons, while Malaysia exported only 36% of palm oil from the total palm oil exports in the world with an export volume amounted to 17.4 million tons (The Atlas of Economic Complexity, 2016). Indonesia plays a significant role in global trade and the primary market of India. India's import became the world's largest palm oil. India imports palm oil, which reached US $ 6.19 billion, from Indonesia by 60% ($ 3.73 billion) and Malaysia accounted for 38% (US $ 2.34 billion). India demands high import of vegetable oils about 18 million tons (2014). About 11 million tons of imported or of which 7.559 million tons (45%) are from palm oil.

For Indonesia, the economic benefits of palm oil, among others, is to provide employment and income opportunities in the agricultural sector. Oil palm cultivation occupies the second place as the primary source of revenue after the farmers' rice crops. Development of palm oil plantations has increased incomes and prosperity in some rural areas in Indonesia (World Growth, 2011). The agricultural sector,

which accounted for only about 14 percent of GDP, provides more than 41 percent of Indonesia's population and nearly two-thirds of the income of rural households. The palm oil industry is a significant contributor to earnings in rural Indonesia. By 2015, vast palm oil plantations people reached 4.74 million hectares or 41.42% of the total land with palm oil production of 11.31 million tons, or 36.55% of total production and involved 1.83 million heads of families of smallholders (Ministry of Agriculture, 2016). When the price of fresh fruit bunches (FFB) of palm oil at Rp 1,660 per kg, then the head of each farmer earn gross revenues of about USD 10.24 million per year.

On the other hand, the conversion of forest land into palm oil plantations has invited the attention of the world to influence the Indonesian government took a policy to reduce land clearing of new oil palm plantations. In May 2010, Indonesia and Norway signed a Letter of Intent which consists of a framework of Indonesia and Norway. Norway contributes financial, and Indonesia provides rewards for the implementation of emission reduction policies and a two-year suspension on all new concessions for conversion of peat and natural forest (Lang, 2015). In July 2010, the World Bank proposed a framework that consider the palm oil sector (International Finance Corporation, 2011).

The condition is a dilemma. The opening of new plantation land and increased production have provided prosperity of the rural population, but also environmental problems as a result of the massive land clearing. In real conditions, India's dependence on Indonesia's palm oil and the growing demand for palm oil derivative products (including alternate, biodiesel energy) will continue to rise the price of crude palm oil. Increasing prices encouraging the expansion of palm oil plantations become interesting study. When palm oil is a normal good, the revenue decline will reduce the consumption of palm oil, and palm oil price increase will reduce consumption of palm oil. In the context of international trade, a reduction in demand for palm oil will be replaced by other vegetable oils or replaced by cheaper palm oil from other countries. So when Indonesia has a comparative advantage over palm oil, the price elasticity of demand for palm oil exports become inelastic. Therefore, this study takes the case of palm oil exports to India in the period 1990-2014. The problems of this study are whether the export is price and income elastics both short and long run; and whether the Indonesia's palm oil comparative advantage continues to increase both in world markets and the Indian market.

In empirical studies, Ostry and Rose (1992) proved that real devaluation does not affect the trade balance, while Reinhart (1995) showed that the real devaluation affects the trade balance. It is because (1) the volume of international trade takes a time to adjust to changes in income trading partners and also changes in relative prices, and (2) most macroeconomic time series data is non stationer. When the equations were found a unit root, then the waiver nonstationarity will lead to an independent variable becomes insignificant (Montenegro & Senhadji (1999). Montenegro and Senhadji (1999) provides estimates of price and income elasticities of export demand for 53 industrialized and developing countries during 1960-1993 and it was about -1 and 1.5 in the long term. The high income elasticity explained that exports as an engine of growth (especially in Asia). Using ARDL approach for the long term, Bahmani-Oskooee and Kara (2005) provides an estimate of the income elasticity of demand exports of 28 countries over the period 1973 to 1998 which was approaching 1.4, whereas developing countries face a lower income elasticity of demand compared with the industrialized nations. While the price elasticity of demand for exports was about -1.2. UNCTAD (2009), which uses India data 1970-2008 period, found that the price elasticity in India was nearly -0.5 while the income elasticity was about 1.9.

In the case of India, Sinha (2001), which uses export data aggregate annual India 1960-1996 period, estimate the price elasticity of Indian exports at about -0.5, but the income elasticity is not significant. Garg and Ramesh (2005), with data for the period 1970 to 2002, obtained estimates of the price elasticity is not significant, and income elasticity is about 2.5. Kapur and Mohan (2014), which uses ECM approach and the period covering 1980-2007, found the income elasticity of demand for Indian exports was about 1.3, and the long-term price elasticity was about -0.4. Similarly, case other South Asian countries, Sajaeewani and Wijeweera (2008), which uses EMC analysis and the period from 1950 to 2005, the income elasticity of export demand is elastic amounting 0.17 to 4.23 for a long term and 0.79 to 3.61 for a short term. The price elasticity was varying between 0.5-0.7 for a long term and 0,13-0.78 for a short term. The high income elasticity shows that export commodity of South Asia countries are dominated by primary products and agricultural commodities.

In the case of Indonesia, Ernawati, Arshad, Shamsudin, & Mohamed (2006) explains that trade liberalization resulted increasing in the domestic price of palm oil, and declining the world price of palm oil. Indonesia export demand for palm oil is influenced by the ratio between the price of soybean oil and

palm oil prices, the index of production of goods, and demand for Indonesia's palm oil exports in the previous year. The elasticity of each of these variables were 2.74 (for ratio price), 2.69 (for the index of production of goods), and 0.89 (for the previous demand) in the Indian market; 0.24, -0.59, and 1.39 in the Chinese market; and 0.43, 0.42, and 0.83 in the European market. Likewise, Munadi (2007), which uses the data from Indonesia in 1969-2006, showed that Indonesia's palm oil export quantities to India are affected by the ratio between the price of soybean oil and palm oil world prices, the index of production of goods, and Indonesian palm oil export demand to India in the previous year. The elasticity of each of these variables were 2.74 (for ratio price), 2.69 (for the index of production of goods), and 0.69 (for the previous demand) in the short term. In the long term, these three variables were not significant.

Rifin (2010), which also uses data Indonesia 1999-2007 and ARDL approach, showing that demand for Indonesian exports was affected by palm oil prices and oil prices in the Chinese market and Netherland, and by palm oil prices, domestic prices and liberalization in the India Market. Price elasticity is elastic in the Chinese and Indian markets. Furthermore, Abdullah (2011) which uses the data of Indonesia in 1996-2010, found that the price elasticity of demand for palm oil exports is -0.54 (short term) and -0.41 (long-term). The income elasticity of demand for palm oil export is 0.61 (short-term) and 0.49 (long-term). Indonesian palm oil export demand is a normal good with long-term elasticity is lower than the short-term elasticity, and soybean oil price factor (as palm oil substitutes) are not significant.

In the case of other countries, Awad, Arshad, Shamsudin, and Yusof (2007) which uses model approach ARDL and ECM, give an opinion that import demand in MENA[1] countries is influenced by variables palm oil prices, the price of oil substitutes, national income, and factors specific to each country. Egwuma, Shamsudin, Mohamed, Kamarulzaman, & Wong (2016), that use the data from 1970 to 2011 and Nigeria and autoregressive model (ARDL), explains Nigerian export palm oil industry was affecged by palm oil prices, technological improvements, income level, and government spending for development agriculture.

In the context of comparative advantage, the Indonesian palm oil commodities faced competition from Malaysia in certain markets. Sari (2010) revealed that Indonesia has a comparative advantage in all palm oil products in the ASEAN market in the period 2004 to 2008, and can respond to market changes and adjust the amount of supplies needed because Indonesia controls the world palm oil production. Sinaga (2007), which took up the study from 1999 to 2005, comparing the competitiveness of palm oil exports Indonesia and Malaysia in the Chinese market. Malaysian palm oil and Indonesia have high competitiveness in the Chinese market, but the performance of the competitiveness of Malaysian palm oil is relatively better compared to the competitiveness of Indonesian palm oil. Similarly, Huat (2001), which uses the year 1987 to 1998, shows that the competitiveness of Indonesia's palm oil exports showed an increase compared with the competitiveness of Malaysian palm oil exports in the markets of China, Pakistan, and India. It was caused by an increased share of Indonesia's palm oil exports in the world market. However, Malaysian palm oil has a better chance to increase exports to the EU countries. The same opinion was delivered by Rifin (2010) and Arip, Yee, and Feng (2013). Rifin (2010), using the data from 1999 to 2007, the performance of the competitiveness of crude palm oil and refined palm oil Indonesia showed an increase compared to the Malaysian palm oil market in Asia, Africa, and Europe. Arip et al. (2013), which took years of research from 1989 to 2010, making comparisons of palm oil and its derivatives commodities between Malaysia and Indonesia. The competitiveness of Malaysian and Indonesian palm oil are not stable, and Malaysia has a competitive advantage in the production of palm oil downstream.

Compared to other export commodities, the competitiveness of oil palm commodities still shows a comparative advantage. Hardin and Rohnawintang (2016), which use analysis Revealed Comparative Advantage (RCA) and Comparative Export performance (CEP), shows that the nine competitive commodities[2], and 8 of products[3] that can be used to a specialization of export for Indonesia in the study period from 2011 to 2014. However, studies Ermawati and Saptia (2013), which uses RCA analysis and CMS for the years 2004-2012, concluded the export performance of Crude Palm Oil (CPO) and Palm Kernel Oil (PKO) Indonesia is lower than Malaysia and Thailand, but the same with Colombia.

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[1] Algeria, Egypt, Iran, Jordan, Libya, Morocco, Saudi Arabia, Sudan, Syria, and Turkey.
[2] Potatoes (with RCA average of 2.62); sweet potato (1.80); cashew nut shells (5.67); coffee (1.80); turmeric (3,18); copra (3.81); palm (4.04); cocoa beans (with 4.61); tobacco (2.22).
[3] Sweet potato (with an average of $ 2.96 CEP); cashew nut shells (4.07); coffee (5.13); pepper (2.01); copra (21.71); palm oil (49.55); cocoa beans (4.27), and rubber (1.92).DY

Meanwhile, the results of the analysis of CMS, the export performance of CPO and PKO are also likely to decline compared with export growth throughout the world products.

Research Method

In developing countries with limited access to international finance, export plays a significant role in the provision of financial and foreign exchange to import energy and the capital goods. Exports become the engine of growth (Lewis, 1980). To maintenance competitive export products price, countries played the exchange rate policy that is determined by the income and price elasticity of export demand (Faini, Clavijo, & Senhadji-Semlali, 1992). The higher the income elasticity of demand for exports, the greater the power of the export products became the backbone engine of growth. The higher the price elasticity of demand for exports, the currency depreciation policy plays a significant role in maintaining export earnings. The competitive real exchange rate is important to facilitate developing countries' exports. In the face of external shocks, the international relative prices is being flexible with the exchange rate as a shock absorber, and can help improve developing countries' exports in short term. However, structural repairs and production technology will increase the exchange rate which then increased effectiveness in reducing the impact of adverse external shocks, and will increase the long-term export.

$$Q_{it}^d = x[rp_{it}, y_{it}^*, e_{it}]$$

where

Q_{it}^d (EXPORT) is the logarithm of the volume of Indonesia's palm oil exports to India in 1990-2014 (tons).
rp_{it} (PRICE) is the logarithm of the international price of palm oil in 1990-2014 (unit of United States Dollars)
y_{it}^* (GDPCap*) is a proxy Gross Domestic Product per Capita of India in 1990-2014 (unit of United States Dollars).
e_{it} (EXCH) is the value of the rupiah against the US dollar in 1990-2014.

Therefore, the time series data are often not stationary, causing the spurious regression. To solve this problem this research use Two Step Engle-Granger Error Correction Model:

$$\Delta Q_t^d = \beta_o - \beta_1 \Delta logPRICE_t + \beta_2 \Delta logEXCH_t + \beta_3 \Delta logGDPCap_t^* + \beta_4 ECM_{t-1} + \varepsilon_t$$

where
β_1 = price elasticity
β_2 = elasticity of exchange rate
β_3 = income elasticity
β_4 = coefficient of adjustment
ECM_{t-1} = Error Correction Term
ε_t = residual

        After obtaining the export demand function, the question arises: Is export demand is supported by the increase in comparative advantage? Therefore, this study used a "revealed comparative advantage" (RCA). The spirit of this approach is the use of ex-post specialization patterns to infer the patterns of comparative advantage of a country. A country has a high specialization in an activity can be seen from the evidence indicated that the country has a strong comparative advantage in these activities (Balassa, 1977). Based on this basic methodology, many different RCA indices have been proposed and debated. In this study, testing the comparative advantage that is used *is* the standard RCA of Balassa (1997). When Xij indicates a commodity exporting country i to j, then

$$RCA_{ij} = \frac{s_{ij}}{s_i}$$

where

$s_{ij} = \frac{x_{ij}}{\Sigma_i x_{ij}}$ shows the share of country i in the export market of commodity j.

$s_i = \frac{\Sigma_j x_{ij}}{\Sigma_i \Sigma_j x_{ij}}$ shows the share of total exports of country i to total exports world of commodity j.

X_{ij}= Indonesian palm oil exports to the Indian market (or to the world market) in 1995-2014

$\sum_i X_{ij}$= Total value of Indonesia's exports to the Indian market (or to the world market) in 1995-2014

$\sum_j X_{ij}$= value of total exports of palm oil to the Indian market (or to the world market) in 1995-2014

$\sum_i \sum_j X_{ij}$= value of total exports of goods to the Indian market (or to the world market) in 1995-2014

The RCAij measure comparative advantage in commodities i country j by comparing the competitiveness in the commodity market j (measured by its share of the market) and the competitiveness of total exports (measured by market share throughout the world). So, when RCAij> 1, it shows that specialization exporting country i in commodity j (measured by Sij) is higher than a specialization average export world in product j (measured by Sj), and means the country i has a comparative advantage in commodities j. Thus, the country i is said to have the "revealed comparative advantage" in exporting goods commodities j. Conversely, when RCAij <1, this value implies that the country i less competitive in market commodity j than in other commodity markets (Cai, Leung, & Hishamunda, 2009)

Data

This study uses secondary data from a variety of sources:
(1) Badan Pusat Statistik. (2016). *Ekspor Kelapa Sawit Menurut Negara Tujuan Utama (Exports of Palm Oil by Major Countries of Destination) 2008-2014*. Retrieved March 9, and August 16, 2016, from http://www.bps.go.id/
(2) Commodity Prices. (2016). Retrieved April 14, and August 16, 2016, from http://www.indexmundi.com/commodities/
(3) Directorate General of Estate Crops. (2014). *Statistik Perkebunan Indonesia (Tree Crop Estate Statistics of Indonesia) 2013-2015*. Jakarta: Directorate General of Estate Crops, Ministry of Agriculture, Republic of Indonesia.
(4) Ministry of Trade of the Republic of Indonesia. (2016). *Ekspor Impor Indonesia (Export and Import of Indonesia)*. Retrieved March 7, and August 16, 2016, from http://www.kemendag.go.id/id/economic-profile/indonesia-export-import
(5) The Atlas of Economic Complexity. (2016). Retrieved April 14, and August 16, 2016, from http://atlas.cid.harvard.edu/
(6) World Bank. (2016). Official exchange rate (LCU per US$, period average). Retrieved March 09, 2016, from http://data.worldbank.org/indicator/PA.NUS.FCRF
(7) Trade Statistics - United Nations Statistics Division. (2016). Retrieved August 16, 2016, from http://unstats.un.org/unsd/trade/default.asp
(8) USDA United States Department of Agriculture Foreign Agricultural Service. (2016). Retrieved August 16, 2016, from http://www.fas.usda.gov/

Results and Discussion

Having passed the test of stationary and cointegration, the ECM can be used to estimate the Indonesian palm oil export demand in the Indian market. ECM estimation results for the long term in Table 1, and for short periods shown in Table 2. In Table 1, the price factor, GDP per capita India, and exchange rate Rupiah against USD affect demand for palm oil exports. All variables are elastic, in which the coefficient of dependent variables are greater than 1. In Table 2, price factor has influenced the demand for palm oil in the short term, while the factor of India's GDP per capita (as a proxy for income) and the factor of exchange rate had no effect. In the short term, the price factor is inelastic, where the coefficient of price variable is smaller than 1.

Table 1. Empirical Estimation in Long Term

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.51784	2.834212	-4.416692	0.0002
LOG(GDPCap)	2.270097	0.603929	3.758884	0.0012
LOG(PRICE)	-1.138132	0.577507	-1.970769	0.0621
LOG(EXCH)	1.344672	0.359607	3.739280	0.0012

Table 2. Empirical Estimation in Short Term

Independent Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.028568	0.174028	-0.164158	0.8713
D(LOG(GDPCap))	2.759502	1.662557	1.659794	0.1134
D(LOG(PRICE))	-0.858762	0.417835	-2.055267	0.0539
D(LOG(EXCH))	0.240796	0.573531	0.419848	0.6793
RESID02(-1)	-0.473934	0.204707	-2.315182	0.0319

The summary of the estimated demand equation for palm oil exports in India market with ECM approach is shown as follows:

Table 3. Estimated Elasticity Demand for Palm Oil exports to India, 1990-2014

Period	Constant	PRICE	EXCH	GDP*	ECM	R²
Short-run	– 0.0286	– 0.8588⁻	0.2408	2.7595	– 0.4739⁻	0.3805
Long-run	– 12.5178⁻⁻	–1.1381⁻	1.3447⁻⁻	2.2701⁻⁻	-	0.8617

Note: ***, ***, and * Significant at 1%, 5%, and 10%

Based on estimates demand for Indonesia's palm oil exports to India in the short term, only the price factor influence on the volume of demand for Indonesian palm oil exports by India, while exchange rate factors and the Indian national income are not significant. It identifies that the volume of demand for palm oil export price is determined by the price elasticity is inelastic. When there is a change in palm oil prices by 1%, the volume of demand for palm oil exports declined by 0.86% or in a smaller proportion. In the short term, palm oil processing industry (in India) has not responsive to price changes. In response to changes in prices, palm oil processing industry (in India) will adjust the demand for palm oil in the long term, with lower demand for Indonesian palm oil and replace with palm oil supply from other countries cheaper. India to get supplies of palm oil from Malaysia (which has a share of 38%), Thailand (1.2%), the Philippines (0.4%) and Iran (0.2%).

In the long term, a third variable (export prices, the GDP per capita of India, the rupiah exchange rate against the dollar) affect the volume of Indonesian palm oil export demand in the Indian market with an adjustment period of about four months. Factors export prices negatively affect demand for Indonesian palm oil export demand in the Indian market. This condition indicates that the oil price competition in the Indian market is quite competitive. In the long term, oil price changes by 1%, will reduce Indonesia's palm oil demand in the Indian market with a 1.14% or greater in proportion. Palm oil demand is sensitive to price changes. Therefore, governments need to clarify further the objectives of tax policy for the export of palm oil (Regulation of the Minister of Finance, No. 75/PMK.011/2012), which began to be implemented in 2014. Palm oil export tax purposes are (1) to control the export of CPO overload can interfere with the needs of domestic cooking oil and can lead to inflation, (2) the spirit downstream. This regulation does not explain to use the revenue from palm oil export tax. Capturing the benefit of smallholders should be returned for the benefit of the development of oil palm cultivation technology and derivative products. Such use can be justified if the productivity of palm oil and its derivatives showed an increase. Without improved processing technology production of palm oil and its derivatives in the country, palm oil export tax only affects the decline in the comparative advantage of palm oil than the increase in the added value resulting from the value of palm oil products.

Factors India's GDP per capita, which became a proxy income trading partners, has an influence on the volume of demand for Indonesian palm oil exports in the long term. The income elasticity of export demand is elastic, i.e., 2.27. When India's GDP per capita grew by 1%, then the demand for palm oil exports from Indonesia increased by 2.27%, or in a larger proportion. For residents of India, palm oil is a normal good. It indicates that the economic growth in India will increase the demand for palm oil exports. In contrast, the decline in India's economic growth will reduce demand for palm oil exports for Indian consumers.

The factor of the exchange rate of rupiah against the US dollar is also a positive effect in the long term. It means that depreciation will increase the volume of exports to India. Each of the rupiahs against the dollar depreciated by 1%, demand for palm oil exports increased by 1.34%. In other words, palm oil exports to India are protected by the exchange rate. The advantages of oil palm commodities covered by the exchange rate. These conditions need to improve the technology and productivity of palm oil

production, especially smallholders (farmers plasma). Based on data from USDA (2016), the productivity of palm oil plantations Indonesia (3.28 tons/ha in the period 1975-2015) is relatively lower than the productivity of palm oil plantations Malaysia (3.86 ton/ha). Meanwhile, the productivity of smallholder plantations of oil palm Indonesia reached 3.01 tons/ha in the period 1982-2015.

These two factors (the exchange rate and the GDP per capita of India), which does not affect the demand for Indonesia's palm oil exports short term, probably because the proportion India imports palm oil is relatively small compared to total imports of India. Despite India being the biggest importers of Indonesian palm oil, the average contribution of the palm oil import value amounted to 0.85% (during 1995-2014). Similarly, the average ratio of the value of imports of Indonesian products to the value of total imports of India is also relatively small, namely 2.74% during the years 1995-2014. However, for Indonesia, India became a relatively large trading partner. Or in other words, India is an important trading partner for Indonesia, but Indonesia is not an important trading partner for India. The condition can be supported by the map data of trade between Indonesia and India in 2015 (Figure 1).
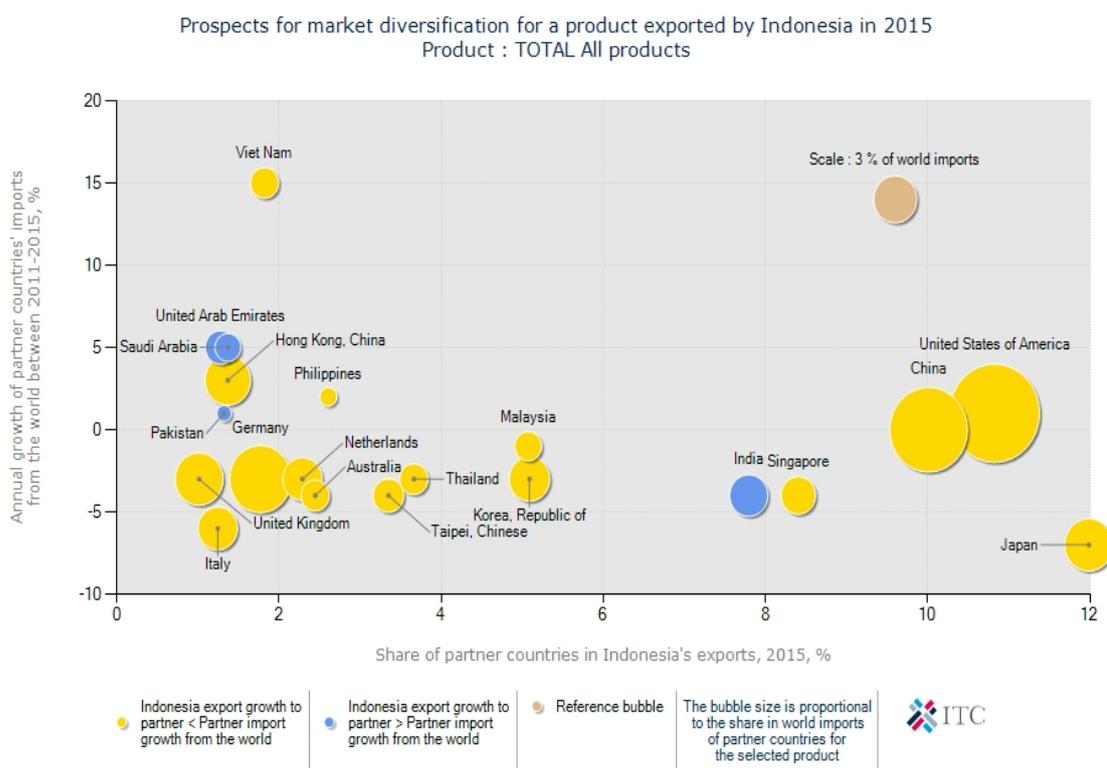

Figure 1. Share of Partner Countries in India's Export and Indonesia's Export, 2015
Source: Adapted from the data UN-Trade Statistics (2016).

RCA analysis results can be a preliminary analysis for decision making. In the RCA analysis conducted with the formulation of a standard RCA, oil palm commodities Indonesia still has a comparative advantage in the world market, and showed an increase in comparative advantage. It is supported by the average growth of the land, which amounted to 11.34% per year and an average productivity growth of 0.54% per year during the years 1975-2015, is relatively higher compared to Malaysia. The average growth of palm oil plantations in Malaysia amounted to 6.60% per year, with an average productivity growth of 0.39% per year (Figure 2).

However, RCA's palm oil exports to India, Indonesia palm oil commodities showed a decrease in comparative advantage even though they have a comparative advantage in the Indian market. The findings are supported by the results of previous studies that use RCA approach. In studies using the period until 2007's, the comparative advantage of Indonesia's palm oil industry showed an increase (Huat, 2001; Sinaga, 2007; Sari, 2010; Rifin, 2010). However, research in the period to 2014's, Comparative advantage

Indonesian palm oil industry decreased (Arip et al. 2013; Ermawati & Saptia, 2013; Hardin & Rohnawintang, 2016).
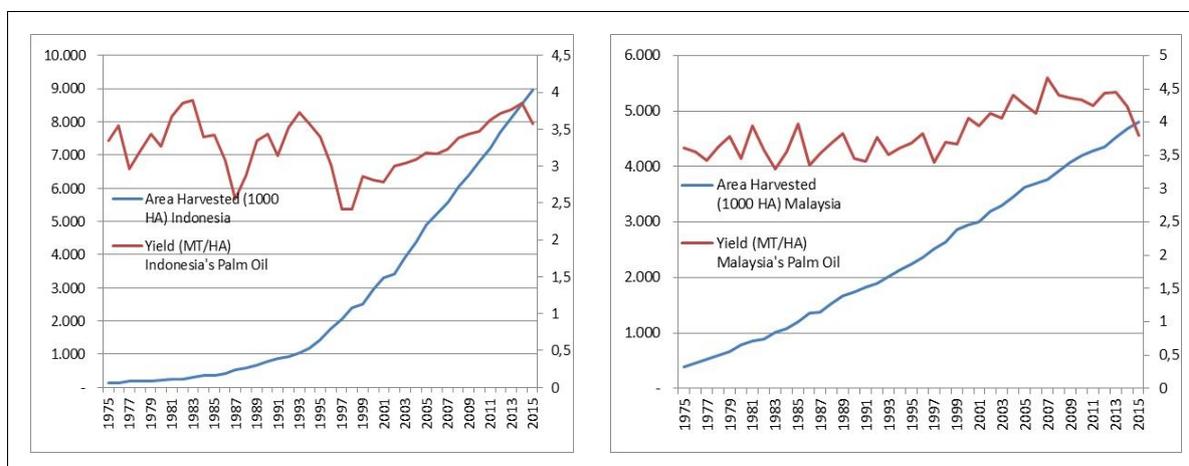
Source: Calculated from USDA data (2016)

Figure 2. Area Harvested and Yield Palm Oil in Indonesia and Malaysia, 1975-2015
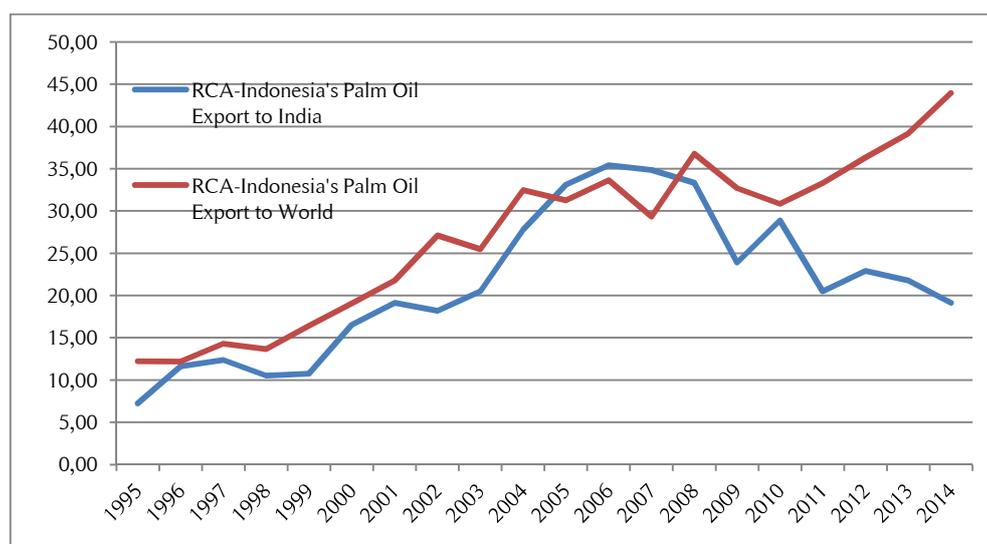

Figure 3. Calculation RCA Indonesian Palm Oil Export to the World and India, 1995-2014.

The decline in comparative advantage can also be explained by fluctuation vegetable oil prices (crude palm oil and soybeans) and fluctuation the rupiah against the US dollar and the exchange rate of Rupee against the USD. In the 2005's, there was an increase in palm oil prices the world. The price increase in export demand resulted in a decrease in the Indonesian palm oil in greater proportion. At the same time, the Indonesian rupiah and the Indian rupee depreciated against the USD. Indonesian palm oil export profits, as a result of decrease Rupiah, becomes neutral because India also reduces the import of goods because of rupee depreciation against the USD. Therefore, the increase in the price of palm oil has implications for a decrease in export volume of palm oil Indonesia in the India market, and a value of RCA in the Indian market becomes decreasing.

This condition needs to make decision makers attention because India is the market's largest palm oil exports for Indonesia. The suggestions of the problem are:

(1) intensively opening new markets like palm oil exports for comparative advantage of palm oil in the world market still showed an increase:

(2) intensively approach to the buyer and the Indian government to minimize trade barriers; and

(3) increase the efficiency of production of palm oil and other dairy products.
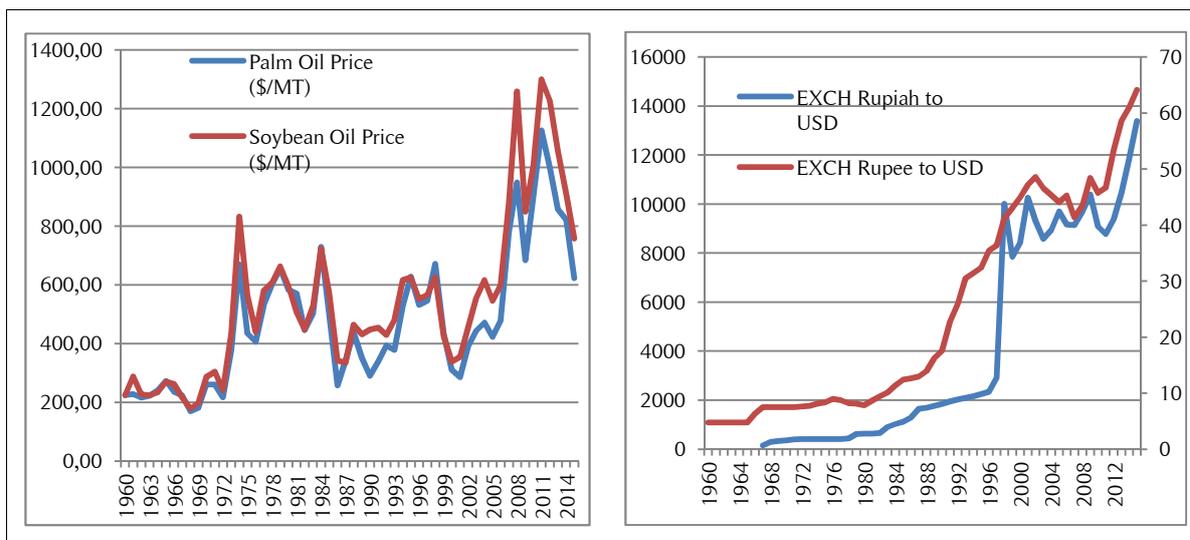
Source: Calculated from Commodity Prices (2016).

Figure 4. Fluctuation palm oil price and soybean oil price, 1960-2015, and Fluctuation Exchange Rate Rupiah against USD and Exchange Rate Rupee against USD, 1960-2015

Conclusion

This study aims to determine the comparative advantage and the factors that influence the demand for Indonesia's palm oil exports to India. Based on analysis it can be concluded that the Indonesian palm oil exports in India was price elastics both in the short run and long run. It was also income elastic to the Gross Domestic Product (GDP per capita) India (as a proxy for income) in the long run. Palm oil was still having a comparative advantage in the world market. However, comparative advantage, the oil palm commodities in the Indian market, showed a decline during the period 1990-2014. The policy implications that can be proposes are the revenue from tax palm oil exports shoul be used to develop the palm oil downstream industries. Excess production of palm oil in the country can be absorbed by the palm oil processing industry, and Indonesia people can enjoy the value-added production. The government should intensify the opening of new export markets to exploit a comparative advantage in world markets. To maintain palm oil production, the government should not open the new areas of palm oil plantations, but start rejuvenate old and not productive palm oil plantations. In 2015, the planted area of oil palm, which had reached 11.44 million hectares (or nearly equal to the size of the island of Java 12.83 million hectares), has exceeded the economic life of 30 years. It shows that the rejuvenation of palm oil plantations has been required, and it is to stop land conversion. Establishment of cooperation among producers of palm oil in the market is needed to develop the technology of palm oil processing.

Acknowledgement

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