Competitiveness analyses of Indonesian and Malaysian palm oil exports

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Article Info

Abstract

This study investigates the competitiveness of Indonesian and Malaysian palm oil export with special focus on five major importing countries, namely China, Singapore, India, Pakistan, and Netherlands, from 2001 to 2014. The methods used are Revealed Comparative Advantage (RCA), Revealed Symmetric Comparative Advantage (RSCA) and Constant Market Share (CMS). **Findings/Originality**: The RCA and RSCA calculations show that Indonesia and Malaysia have positive indices. Yet, Indonesia's RCA and RSCA indices from 2001 to 2014 are higher than those of Malaysia. It demonstrates that Indonesia's palm oil is more competitive than that of Malaysia. Based on CMS calculation, the findings show the following. Firstly, palm oil commodity is influenced by high demand from 2001 to 2014 in five major importing countries. Secondly, both countries have concentrated on the export commodity whose markets have been growing relatively fast. Thirdly, Indonesia's palm oil commodity experiences rapid growth in the selected markets while Malaysia experiences stagnant growth. Overall, Indonesia's palm oil competitiveness is higher than that of Malaysia in five major importing countries.

Introduction

During the past few decades, the Dutch colonial first introduced the oil palm to Indonesia in the 20th century. The industry of palm oil continues to grow since then. Budidarsono, Susanti, and Zoomers (2013) stated that during the Dutch colonial era, oil palms were first cultivated in the east coast area of Sumatra for commercial production since 1911. USDA-FAS 2009, (cited in Rist, Feintrenie, & Levang, 2010) asserted that under the Dutch colonial oil palms continue to increase for about 80% of total Indonesian production. A rapid growth of oil palms during the Dutch occupation in Indonesia was able to dominate the world market and it was able to shift the export capacity of African countries, which is incidentally the native habitat of oil palm. The climatic tropical condition of Indonesia supports the basic requirements for the habitat environment of oil palm.

The area of oil palm plantations in Indonesia from 2001 to 2014 as shown in Figure 1 tends to show a fast-growing increase. For 14 years, the area of oil palm plantation shows a big significance change. In 2001, the plantations for oil palm recorded covering an area of 4.71 million hectares. It increases into a whopping 10.75 million hectares in 2014 or an increase of 128 percent. The area of oil palm plantation is growing much bigger than four other superior plantation commodity exports. It indicates that the world demand for palm oil is growing rapidly due to increasing uses of palm oil products. The plantations area of oil palm spread in some regions of Indonesia. Rianto, Pratikto, Santoso, and Ponnusamy (2010) claimed that the distribution of plantation areas in 2009 was located in Kalimantan for 26%, 3% for other regions

in Indonesia such as Sulawesi, Java and Papua while the most concentrated area is Sumatra for 65% of total plantation area.
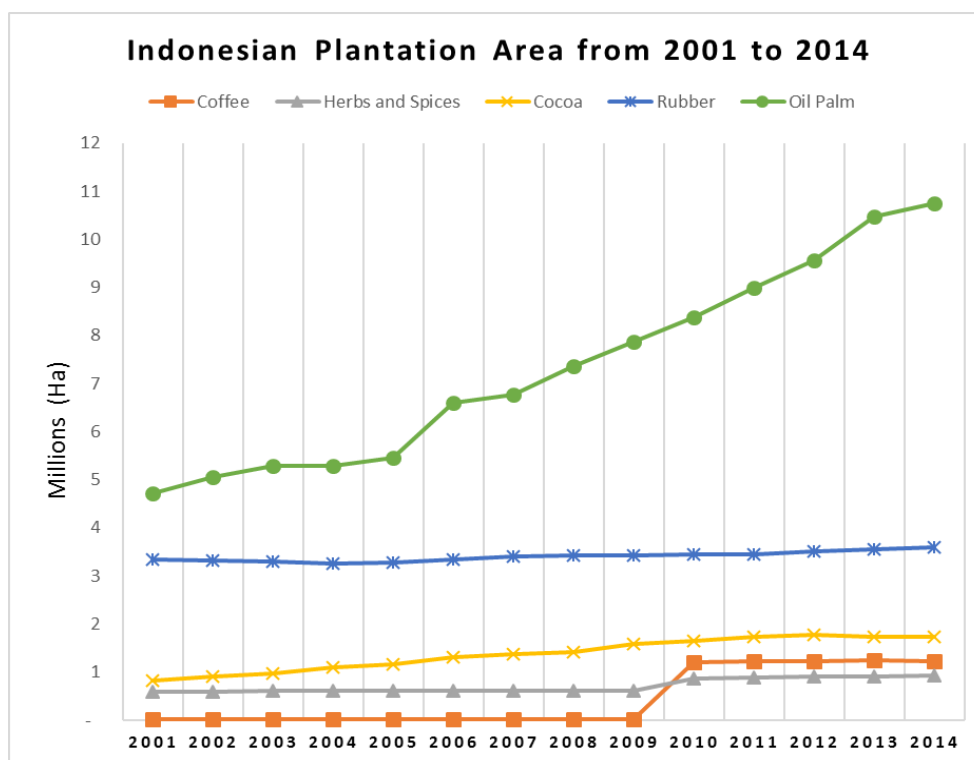
Source: Ministry of Agriculture Republic of Indonesia (2017)

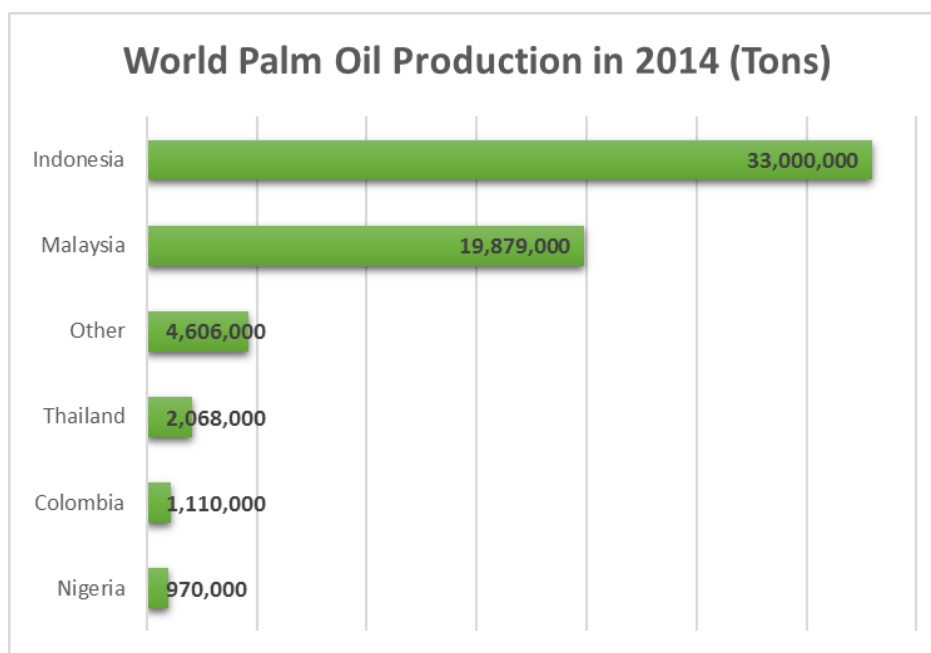**Figure 1.** Indonesian Plantation Area 2001-2014

As shown in Table 1. According to the category of producer, most of the production of palm oil in 2014 produced by private estates for 16.48 million tons (57.53%). While the production of smallholder is 2.23 million tons (7.61%) and government estates produces 10.20 million tons (34.86%). The development of crude palm oil from 2007 to 2014 grows for about 6.42 percent every year. In 2007, the production of crude palm oil (CPO) is 17.80 million tons. It increases to be 29.28 million tons in 2014 or it significantly increases for 64.50 percent for seven years.

Table 1. Production of Oil Palm Plantation by Category of Producers
in Indonesia (Tons), 2007-2014

Years	Category of Producers			Production of Crude Palm Oil (CPO)
	Smallholders	**Government Estates**	**Private Estates**	
2007	6,358,388	2,174,897	9,263,089	17,796,374
2008	6,923,042	1,820,594	10,657,158	19,400,794
2009	7,517,724	1,943,212	11,929,390	21,390,326
2010	8,458,709	1,921,660	12,116,488	22,496,857
2011	8,797,925	2,154,218	13,043,830	23,995,973
2012	9,197,729	2,133,007	14,684,783	26,015,519
2013	10,010,728	2,144,651	15,626,625	27,782,004
2014	10,205,395	2,229,336	16,843,458	29,278,189

Source: BPS-Statistics Indonesia (2016)

Indonesia is the largest producer and consumer of palm oil in the world followed by Malaysia. Palm oil is one of plantation commodity, which has an important role in Indonesian economic activity. It is one of the Indonesian export commodity, which is also important to generate foreign exchange other than oil and gas. Indonesia contributes for roughly half of the world's supply of palm oil. According to Paoli et al. (2013), Indonesia generates billions of dollar in foreign exchange income annually from palm oil export as an economic engine. FAOSTAT 2015, (cited in Petrenko, Paltseva, & Searle 2016) claimed that Indonesia contributes for almost half of palm oil exports in the world and become the world's number one producer of palm oil.

World Palm Oil Production in 2014 (Tons)

Country	Production
Indonesia	33,000,000
Malaysia	19,879,000
Other	4,606,000
Thailand	2,068,000
Colombia	1,110,000
Nigeria	970,000

Source: USDA Foreign Agricultural Services (2017)

Figure 1. World Palm Oil Production in 2014 (Tons)

In becoming the world's king palm oil producer and exporter, Indonesia must compete with the neighboring country Malaysia that also has a positive record with palm oil exports. Indonesia and Malaysia are the two world's major countries in producing and exporting palm oil. Indonesia and Malaysia generate 86% of palm oil production globally in 2012 to 2013 (Pittman, Carlson, Curran, & Ponette-Gonzalez, 2013). As shown in Figure 2, Indonesia is the world's top producer of palm oil. Indonesia reached to 33 Million tons of production volume, which dominated 53.54% of world palm oil production. While Malaysia ranks second that produce only 19.88 million tons of production volume and it represents 32.25% of world palm oil production supply. Based on the report data from USDA Foreign Agricultural Services (2017), Indonesia ranks at the top in 2014 with an export volume of 25.96 million tons amounted for 54.70% of world palm oil export, while Malaysia exported 17.38 million tons and it represents 36.61% of total palm oil export in the world.

The competition is getting tighter for palm oil between Indonesia and Malaysia because the palm oil consumption in the world is increasing. The demand for palm oil is rising over the year, many products are derived from palm oil. World Growth (2011) has given a description of the use of palm oil for edible and non-edible products. For edible products, palm oil is used to make cooking oil, margarine, noodles, baked goods, etc., while for non-edible products, palm oil

is used as an ingredient in the production of biofuel, soaps, detergent and surfactants, cosmetic, pharmaceutical, and other variety of household and industrial products.

Indonesia and Malaysia now are racing to produce palm oil in high quantity amount. The high demand of palm oil use is related to consumer attention of trans-fat use in a food product, which increases health adverse over the year and some world organization recommend to decrease trans-fat consumption and substitute it with palm oil. World Health Organization (2015) claimed that there is evidence that trans-fat can cause a health risk, trans-fat consumption increase the probability risk of coronary heart disease (CHD). Because of this reason Sanders, Balagtas, and Gruere (2013) stated that there is a change of health food policy in Europe from using trans-fat to switch to use palm oil in the production of food companies. Therefore, the demand for palm oil in Europe is increasing continuously for the use of a food company and some countries in Europe use palm oil as an ingredient in biofuel production.

Various previous studies have shown the competition of palm oil commodities between Indonesia and Malaysia in certain markets. Arip, Yee, and Feng (2013), which use Revealed Comparative Advantage (RCA) analysis, shows that Malaysia has been more competitive in almost all the downstream product of palm oil in the study period from 1989 to 2010. Dewanta, Arfani, and Erfita (2016) using RCA analysis method, concluded that comparative advantage of Indonesian palm oil in Indian market experience a decline during the period 1990-2014. Rifin (2010) uses CMS analysis in two study period from 1999 to 2001 and 2005 to 2007, found that in the European market Malaysian crude palm oil (CPO) win its competitiveness against Indonesian CPO, Indonesia lost its competitiveness due to the black campaign by NGO in Europe. However, in Asian and African market, Indonesia wins its competitiveness against Malaysia for crude palm oil (CPO) and refined palm oil. Mohd, Ahmad, and Mohd (2011), which use analysis RCA for period 1998 to 2007, shows that Malaysia had an advantage over Indonesia in exporting palm oil and its fraction in Arab Gulf market. Sari (2010), which took up study from 2004 to 2008 in the ASEAN market using RCA and CMS analysis, shows that Indonesia's RCA for palm oil commodities recorded high value. From CMS result shows that Indonesian palm oil can respond to the demand in the market since it has an abundance supply of palm oil commodities and it was boosted by a large plantation of oil palm during 2004-2008. Obado (2008), using RCA analysis, shows that Indonesia had high competitiveness in China and India markets from 2004 until 2005. Sulistyanto and Akyuwen (2011) investigate factors affecting the performance of Indonesia's crude palm oil export, using multiple regression method. The result shows that in the European market, Indonesia's share of CPO experiences a decline due to a black campaign.

Methods

Revealed comparative advantage (RCA)

The researchers analyze the export share of certain country's product in the market mostly use Revealed Comparative Advantage (RCA) (Arip et al., 2013). According to Balassa 1965 study, published in volume 33 of *The Manchester School of Economic and Social Studies,* (cited in Arip, Yee, & Feng, 2013, 140) RCA is a tool to measure a country's comparative advantage based on the ratio of the country's of certain commodity export over the worlds' export. International economics use RCA to calculate the relative advantage or disadvantage of a product in a certain class of goods or services (Granabetter, 2016). The formula for Balassa's index of RCA is as follows (Abu Hatab & Romstad, 2014):

$$RCA_{ad} = \frac{(x_{ad}/x_a)}{(x_{wd}/x_w)} \qquad (1)$$

Where RCA_{ad} is revealed comparative advantage for commodity d of a country a; X_{ad} is the export commodity d of a country a; X_a is the total export of country a; X_{wd} is total world export of commodity d; X_w is the total world export. The country has a revealed comparative advantage if the ratio is more than one but if the value of the RCA index is less than one, it indicates that the country has revealed a comparative disadvantage.

Revealed symmetric comparative advantage (RSCA)

According to Amir, Chizari, Sohrab, and Sadafi (2016), the value between zero and one of RCA calculation is a lack of specialization, it has a risk of non-normality and regression analysis using RCA gives too much weight value more than one. Since the distribution of RCA is not symmetrical, Laursen 1998 study, published in *DRUTD Working Paper*, (cited in Amir et al., 2016, 43) suggested a simple transformation of RCA called Revealed Symmetric Comparative Advantage (RSCA) as follows:

$$RSCA = \frac{RCA - 1}{RCA + 1} \tag{2}$$

The interval result of RSCA is between -1 to 1. The result of ratio analysis is the same as the old RCA. If the ratio is greater than zero, it indicates that the country has revealed comparative advantage. Conversely, if the result is less than zero, the country has revealed a comparative disadvantage.

Constant market share (CMS)

In Tambunan and Tulus 2000, (cited in Suhana et al., 2016, 1252) explained that Constant Market Share Analysis is a measurement tool to measure the dynamics of competitiveness level of a country's product. Constant Market Share is used as an analysis model to determine competitive advantage or export competitiveness in the world market. According to Leamer and Stern (1970), the method of CMS analysis is based on the assumption that the market share of a country in the world market is constant all the time. Following Leamer and Stern (1970) the export analysis of a country between two periods is broken down into the following parts:

$$V' - V \equiv \underbrace{\sum_j r V_{.j}}_{1} + \underbrace{\sum_j (r_i - r) V_{.j}}_{2} + \underbrace{\sum_i \sum_j (r_{ij} - r_i) V_{ij}}_{3} + \underbrace{\sum_i \sum_j (V'_{ij} - V_{ij} - r_{ij} V_{ij})}_{4} \tag{3}$$

Where:
V' is the value of A's export in period 2;
V is the value of A's export in period 1;
r is a percentage increase in total world exports from period 1 to 2;
$V_{.j}$ is the value of A's export to country j in period 1;
r_i is a percentage increase in world exports of commodity i from period 1 to period 2;
r_{ij} is a percentage increase in world exports of commodity i to country j from period 1 to period 2;
V_{ij} is the value of A's export of commodity i to country j in period 1;
V'_{ij} is the value of A's export of commodity i to country j in period 2.

The four parts of Constant Market Share identity decompose a country's exports into four effects. (1) World trade effect, which relates any change to A's actual export to a general rise in world exports. (2) Commodity composition effect, which indicates the extent to which A's exports differential because of specialization in a specific commodity where its export demand is growing faster than the world average. A positive value means that the relevant country had concentrated on the export commodities whose markets were growing relatively fast and if the value is negative, the relevant country had concentrated in slowly growing commodity markets. (3) Market distribution effect, which measures whether country A's export concentration in the

destination market is experiencing relatively rapid growth than the world average. A positive value means the relevant country had concentrated its exports in markets that were experiencing rapid growth but if the value is negative means that the relevant country concentrated in more stagnant regions. (4) Competitiveness effect, which reflects the difference between the actual export growth and the growth that would have occurred if A had maintained its share of the exports of each commodity to each country. A negative value is reflecting a failure to maintain the market share where it is necessarily associated with a rise in relative prices

Data

This research used HS Code data at a 4-digit level which is 1511 (palm oil and its fractions, whether or not refined, but not chemically modified). Data were obtained online from UNCOMTRADE and it was analyzed purposely for this study. The analysis is taken between 2001 and 2014. The specified data are: Indonesian data consists of Indonesian palm oil export (1511) to China, Netherlands, Pakistan, India and Singapore in US$; and total Indonesia's all commodities export to China, Netherlands, Pakistan, India, and Singapore in US$. Malaysian data consists of Malaysian palm oil export (1511) to China, Netherlands, Pakistan, India and Singapore in US$; and total Malaysia's all commodities export to China, Netherlands, Pakistan, India and Singapore in US$. World data consists of world palm oil export (1511) to China, Netherlands, Pakistan, India and Singapore in US$; and total world's all commodities export to China, Netherlands, Pakistan, India and Singapore in US$.

Results and Discussion

Revealed Comparative Advantage (RCA) and Revealed Symmetric Comparative Advantage (RSCA)

Figure 3 shows the estimated result for Revealed Comparative Advantage (RCA) indices for Indonesia and Malaysia. The result shows that for the last fourteen years, Indonesia and Malaysia recorded high RCA indices in five major importing countries, they are China, Netherlands, Pakistan, India, and Singapore. This is self-explanatory because Indonesia and Malaysia are the world's biggest palm oil producers. Indonesia won its competitiveness over Malaysia from 2001 to 2014, which is shown by the value of Indonesia's RCA indices that is higher than Malaysia. Yet, Malaysia also recorded to have more stable RCA indices from 2001 to 2014 in the same market. It has proven that Malaysia is also competitive in the market alongside Indonesia.

From 2001 to 2004, Indonesia's RCA increased into a whopping from the value 17.84 to 33.61. While during those years, Malaysia did not show any significant increase for the RCA indices, its RCA value from 2001 to 2004 is 15.09 to 14.44. Malaysia's RCA indices experience a decrease to 0.65 points during those years. It might due to the massive expansion of oil palm plantation areas by Indonesia with the support of the government in many strategies to improve palm oil industry, while Malaysia has limited oil palm plantation areas.

Indonesia's RCA experienced a decrease from 2005 to 2010, which its RCA value respectively is 31.92 to 29.35. Indonesia's RCA decreases to 2.57 points. In contrast, Malaysia experienced an increase of 1.5 points for the RCA value, which its value from 2005 to 2010 respectively is 13.20 to 14.70. The decrease for Indonesia's RCA during those years might be due to the black campaign by NGO (Non-Governmental Organization) in Europe especially in the Netherlands. Firman Subagyo, Member of Commission IV of the House of Representatives, asserted that Mighty Earth (NGO from the United States) and AidEnvironment (NGO from Europe or Netherlands) are two NGOs that actively attack Indonesian palm oil industry by doing a black campaign about the industry (cited in Novriansyah, 2017). The black campaign towards the palm oil industry is related to the environmental damage or deforestation that may threaten

the habitat for many endangered species. Based on the previous research conducted by Rifin (2010), during 2005 until 2007, Indonesia experienced a decline in CPO market share in western Europe due to the black campaign, in the European countries, such as Netherlands, Germany, Spain, France, and Belgium. Sulistyanto and Akyuwen (2011) also expressed the same idea that in European market Indonesia experienced a decline in crude palm oil started from 2005 to 2008. Thus, the black campaign in Europe such as in the Netherlands has influenced the RCA value for Indonesia to decrease from 2005 to 2010. Even though during those years Malaysia did not need to compete with Indonesia, but Malaysia benefited from the loss of Indonesia's competitiveness in the Netherlands to raise Malaysia's RCA value.
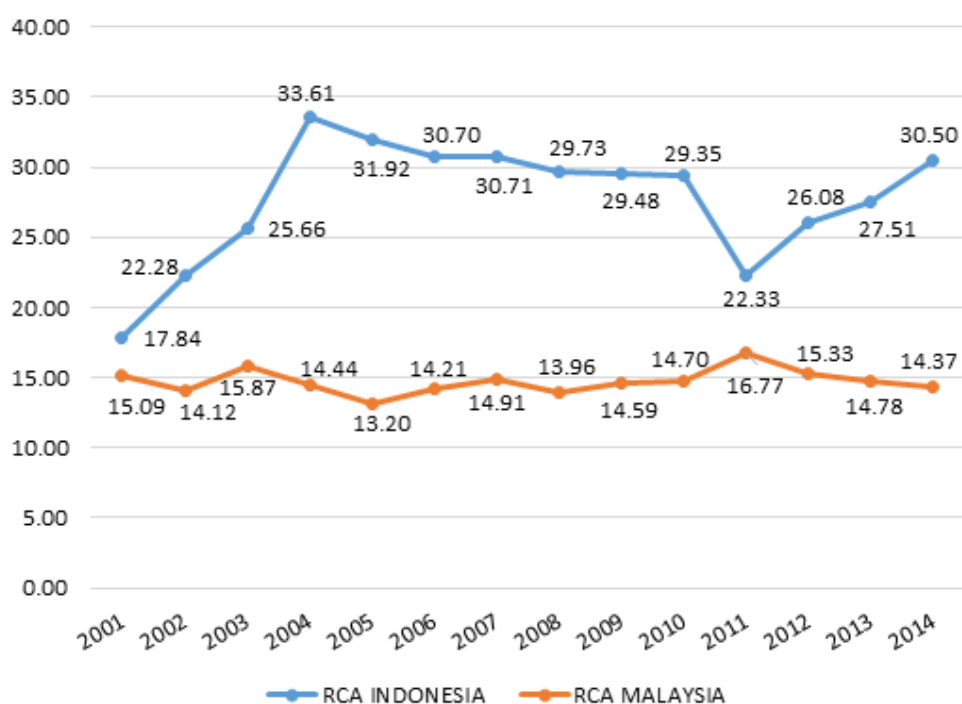
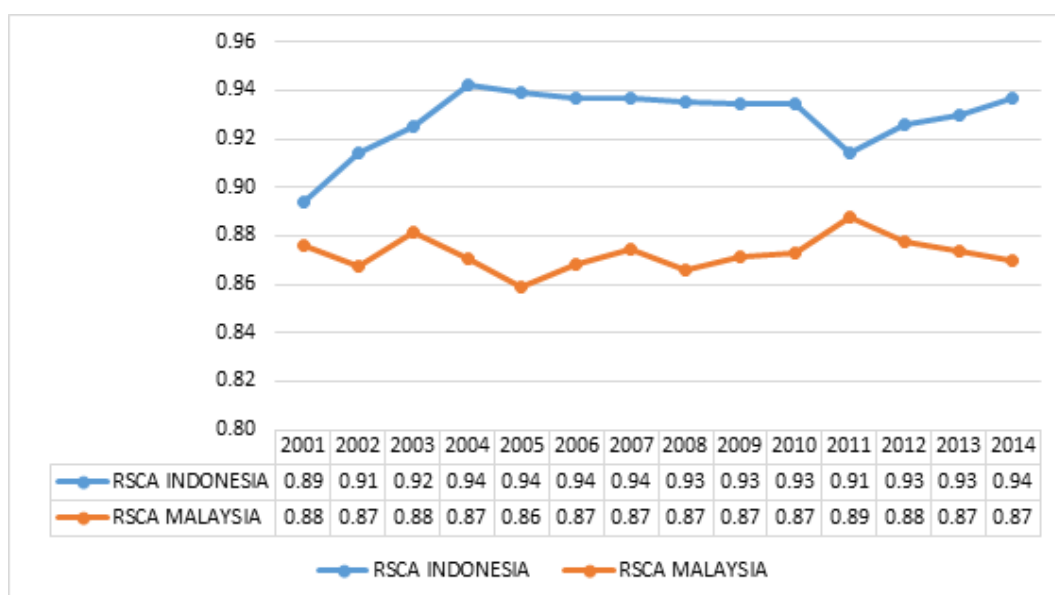Source: Authors calculation based on data from UN Comtrade

Figure 3: RCA Indices of Indonesian & Malaysian Palm Oil Export to Five Major Importing Countries, 2001-2014

From 2011, Indonesia's RCA value experienced a decline for 7.02 points. The RCA value in 2011 is 22.33, in 2010 is 29.35. On the contrary, Malaysia experienced an increase to 16.77, the RCA value increased for 2.07 points. The decrease of RCA value for Indonesia was due to a decrease in export value in 2011 to five major importing countries that reached 1.45 billion US$. It is because there was a decline in Indonesian palm exports to the Netherlands in that year. Malaysia, on the contrary, had an increasing exports value for palm oil in 2011, the increase amounts to 2.8 billion US$. This condition occurred because the performance of the export of Malaysian palm oil to five major countries increased.

From 2012 to 2014, Indonesia's RCA value rose. The RCA value from 2012 to 2014 respectively was 26.08 to 30.50. After experienced a decline in 2011, Indonesia succeeded to reach its competitiveness to the high level in 2014 and regained the trust from the market as the best palm oil producer in the world. Malaysia's RCA from 2012 to 2014 was 15.33 and 14.37. It means that Malaysia's competitiveness in palm oil was decreasing. As a matter of fact, the market recognizes the palm oil product from Indonesia is better than Malaysia. It is because Indonesia

has cheap labor cost and it causes the price of Indonesian palm oil is lower than its competitor, Malaysia. Not to mention, Indonesia has a vast oil palm plantation area scattered in many islands of Indonesia while Malaysia has limited plantation land.

    Since the calculation of RCA has no absolute limit and it might suffer from non-normality risk, this research also uses another tool of analysis similar to RCA, which is RSCA, that may normalize estimated RCA results to be more symmetrical. Figure 4 shows the estimated result of RSCA for Indonesia and Malaysia from 2001 to 2014. The result shows that both Indonesia and Malaysia recorded the positive value of RSCA, it means that both countries have competitiveness towards commodity 1511 (palm oil and its fractions, not chemically modified). The result of RSCA is in line with the result of RCA, which shows that Indonesia and Malaysia have positive value but in more symmetrical indices result. Indonesia has high competitiveness over Malaysia from 2001 to 2014 in five major importing countries. This finding is also the same as RCA calculation as shown in Figure 3.

Source: Authors calculation based on data from UN Comtrade

Figure 4: RSCA Indices of Indonesian & Malaysian Palm Oil Export to Five Major Importing Countries, 2001-2014

    From 2001 to 2004, the competitiveness level of Indonesian palm oil commodity increased. The competitiveness level of Malaysia's palm oil during this period still fluctuated with unstable RSCA indices result. Starting from 2005, Malaysia's RSCA value tended to decrease to the value 0.86 while Indonesia had competitiveness against Malaysia with RSCA value 0.94. Starting from 2006 to 2007, Malaysia experienced an increase in competitiveness with RSCA value is 0.87 but Indonesia's palm oil competitiveness was still on top of Malaysia with the RSCA indices value that was stable during 2005 to 2007 which was 0.94.

    From 2008 to 2010, the RSCA value of Indonesia and Malaysia were constant, the values of RSCA indices are 0.93 and 0.87 respectively. In 2011, the competitiveness level of Indonesian palm oil tended to decline to the value of 0.91 while Malaysia experienced an increase in RSCA indices to the value 0.89. On the contrary, compared to the period of 2012 to 2014, Indonesia's RSCA value experienced a steady growth with the value grew from 0.93 to 0.94 while Malaysia during that period experienced a decline indicating that the competitiveness for Malaysian Palm oil is decreasing.

The researchers also conducted Jarque-Bera's normality test and paired sample T-test on RCA and RSCA result of Indonesia and Malaysia. In Jarque-Bera's normality test, the test used 2 degrees of freedom and significance level is at 5%, then the chi-square value is 5.99146. Jarque-Bera and probability value of Indonesia's RCA are 1.696706 and 0.428120, respectively. While for Malaysia's RCA, Jarque-Bera and probability value are 1.273547 and 0.528997, respectively. The decision for both Indonesia's and Malaysia's RCA is to accept the null hypothesis. Since Jarque-Bera value is less than critical value and the p-value is more than alpha 5%. It highlights the conclusion that the data do not suffer from non-normality risk. The data are distributed normally. For RSCA of Indonesia, Jarque-Bera and probability value are 5.990709 and 0.050019, respectively. While for RSCA of Malaysia, Jarque-Bera and probability value are 0.324248 and 0.850336, respectively. The decision for both Indonesia's and Malaysia's RSCA is to accept the null hypothesis. Both RSCA of Indonesia and Malaysia are distributed normally.

Paired sample T-test was conducted to examine the differences between the two observation. In this research, the researchers conducted a test on RCA and RSCA of Indonesia and Malaysia. The hypotheses used are H_0: μIndonesia $\leq$ μMalaysia and H_1: μIndonesia > μMalaysia. The test used 13 degrees of freedom and alpha is at 5% level, then the critical value from the T table is 2.160. For the test on RCA of Indonesia and Malaysia, T value and probability value are 9.866131 and 0.0000, respectively. The decision is to reject the null hypothesis. Since T value is more than T table and the p-value is less than 0.05 (95% confidence level). It means that Indonesia's RCA is higher than Malaysia's RCA. It highlights the fact that Indonesian palm oil is significantly more competitive than Malaysia. For the RSCA of Indonesia and Malaysia, T value and probability value are 11.97894 and 0.0000, respectively. The decision is to reject the null hypothesis. Since T value is more than T table and the p-value is less than 0.05 (95% confidence level). It is similar to the test on RCA that RSCA of Indonesia is higher than Malaysia. Indonesian palm oil is significantly more competitive than Malaysia.

Constant Market Share (CMS)

This analysis examines the Constant Market Share of Indonesian and Malaysian Palm Oil Commodity (1511) within 2001-2014 to five major palm oil importing countries namely, China, Netherlands, Pakistan, India, and Singapore. The result of commodity examined is shown in Table 2.

Table 2. Constant Market Share (CMS) Analysis of Indonesian and Malaysian Palm Oil, 2001-2014

Value in thousand US$

	CMS Decomposition	Value	Share
		Indonesia	
I	World Trade Effect	2,352,505	31%
II	Commodity Composition Effect	377,643	5%
III	Market Distribution Effect	2,304,031	30%
IV	Competitiveness Effect	2,600,368	34%
	Change in Export (I + II + III + IV)	7,634,549	100%
		Malaysia	
I	World Trade Effect	14,899,620	326%
II	Commodity Composition Effect	10,268,457	225%
III	Market Distribution Effect	-17,072,478	-373%
IV	Competitiveness Effect	-3,522,472	-77%
	Change in Export (I + II + III + IV)	4,573,128	100%

Source: Authors calculation based on data from UN Comtrade

Based on Table 2, it is suggested that palm oil commodity was influenced by high demand in 2001-2014. This is seen from the positive result of world trade effect for Indonesian and Malaysian palm oil. The values of world trade effect of Indonesia and Malaysia were 2,352,505 (thousand US$) and 14,899,620 (thousand US$) during 2001-2014. It indicates that the increase of world exports give a positive impact on the increase of Indonesian and Malaysian Palm Oil commodity 1511 exports. Malaysia's world trade effect was higher than Indonesia because the portion of the percentage increase in total world exports was bigger. The overall effect for both countries was dominated by the world growth effect, in the case of Malaysia, world trade effect is higher than the actual export growth. It is indicating that the relevant country is unable to take advantage of the globalization effect efficiently because it has weaknesses in domestic policy (Mahmood, 2015).

Commodity composition effect for both Indonesia and Malaysia was positive. This trend highlights that both countries had concentrated on the export commodity whose markets were growing relatively fast. Another reason is both countries' export of palm oil commodity increased was due to the increasing demand for the commodity. Palm oil commodity in five major importing countries namely China, Singapore, India, Pakistan, and Netherlands had a rapid growth for Indonesian and Malaysian export. The increase of this commodity during 2001-2014 was mainly driven by palm oil usage as a cooking oil in Asian countries such as China, India, and Pakistan. Palm oil commodity experienced rapid growth in China, India, and Pakistan due to steady economic growth that was supported by a large number of population (Rifin, 2010). While in Europe such as the Netherlands, the demand for palm oil was likely used as a biofuel and vegetable oil for processed food items in food companies. Malaysia's commodity composition effect is higher than that of Indonesia due to higher growth rates than the average rate.

In market distribution effect, Indonesia had a positive result. The trend highlights that Indonesia had concentrated its exports in markets that were experiencing rapid growth. Another reason is because of Indonesia's growth of export results from the right market selection. On the contrary, Malaysia has a negative effect, it indicated that Malaysia had concentrated in more stagnant regions. The trend is likely to happen because Malaysia's export in the selected markets did not grow as fast as the growth of the world.

The demand growth of Malaysia's palm oil was slower in the selected market countries (five major palm oil importing countries) than global average while Indonesian palm oil growth demand was higher in the selected market countries (five major palm oil importing countries) than the global average. Hence, the conclusion is drawn that the stagnancy in destination countries (namely, China, Netherlands, Pakistan, India, and Singapore) for Malaysia's export palm oil commodity (1511) is lower than the world increase with the same commodity export to those countries (five major palm oil importing countries).

The competitiveness effect is positive for Indonesia. It implies that Indonesia succeeded to maintain its market share in the five major palm oil importing countries. This trend highlights the fact that Indonesia can respond to the changing world market situation and fulfill the amount of supply needed. Another reason is the massive expansion strategy of oil palm plantation area by the Indonesian government (see Figure 1) to produce palm oil in a tremendous amount of quantity. On the contrary, Malaysia has a negative result of the competitiveness effect. It indicates the fact that Malaysia failed to maintain its market share in the five major palm oil importing countries. This trend is associated with the rise of the relative price (Leamer & Stern, 1970). The price of Indonesian palm is cheaper than that of its competitor Malaysia. Palm oil market in Asian countries such as China, India, and Pakistan is price sensitive, an increase in price will influence the buyer to purchase from another supplier (Rifin, 2010).

Based on the trend of competitiveness effect, Aswicahyono and Pangestu 2000 study, published in volume 38 of *Development Economic*, (quoted in Suhana et al.. 2016, 1253) asserted that

if exports by country A of product i to country J is experiencing a rapid growth than other countries' exports to certain countries, it leads to an increase in A's market share in the country J. It means that a certain commodity of country A has higher competitiveness. In this case, Indonesian palm oil exports to five major palm oil importing countries experience a rapid growth than that of its competitor Malaysia. It highlights that Indonesia's market share in five major palm oil countries increases. It means that Indonesian palm oil commodity (1511) has higher competitiveness over Malaysia.

The actual growth export (change in export) of Indonesia is higher than Malaysia because all components in constant market share show a positive result. While Malaysia's actual growth export is relatively small due to other components such as market distribution effect and competitiveness effect are negative. It shows that Malaysia concentrated on export while markets were growing relatively slow during 2001-2014 and Malaysian palm oil commodity lost its competitiveness against Indonesia.

Conclusions

This study aims to measure the competitiveness of palm oil commodity export between Indonesia and Malaysia from the year 2001 to the year 2014 in five major palm oil importing countries. The researchers' findings based on RCA and RSCA result show that Indonesia has a high comparative advantage than Malaysia in palm oil export for the period that the study was carried out. Similarly, using CMS analysis showed that Indonesia's export performance was found to be better than Malaysia in five major palm oil importing countries. Because the demand for Indonesia's' palm oil to the destination market is growing relatively fast while Malaysia's is growing relatively slower than the world. In term of gain competitiveness, the price factor is the cause Malaysia lost its competitiveness against Indonesia in five major palm oil importing countries.

Given that Indonesia's palm oil 1511 is more competitive than Malaysia, more palm oil commodities should be analyzed in future research to make a specific explanation of competitiveness in different palm oil commodities. The scope area of the study should be broadened not only in five major palm oil importing countries (China, Netherlands, Pakistan, India, and Singapore) but also in other regions that have the market potential for palm oil commodity. Indonesia should strengthen research and development (R&D) of palm oil commodity by allocating more budget or fund and investment in research and development. In relation to this, the government needs to cooperate with private palm oil companies and research institutions (university, research center, etc) in order to increase palm oil production that will increase competitiveness. The government needs to improve the promotion strategy management and advocacy in confronting black campaign toward Indonesian palm oil. Moreover, the government should have strong regulation to use degraded land to reduce the destruction of biodiversity. Indonesia can protect its biodiversity by stopping the conversion of natural forest into palm oil. Apart from that, the government should not only focus on crude and refined palm oil products but the government should also diversify palm oil products by processing palm oil up to the downstream sector.

This research has limitations on commodity analyzed and the methods being used to measure competitiveness. The number of commodities covered in this study is limited to only one commodity, which is commodity 1511 (palm oil and its fractions, whether or not refined, but not chemically modified). The method used to measure competitiveness are Revealed Comparative Advantage (RCA), Revealed Symmetric Comparative Advantage (RSCA) and Constant Market Share (CMS) Analysis, which there is a likelihood that these analysis tools have some weaknesses. The calculation of the CMS method proposed by Leamer and Stern (1970) have some limitations to the trustworthiness of the interpretation result of the component effects.

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