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Competitiveness of Indonesia's Crude Palm Oil (CPO) in International Markets: Based on Database 2018

Betrix[1], Halimah Cahyaning Fajri[2], Stanny Sicilia Rawung[3]
Universitas Negeri Manado[1,3]
Institut Bank Indonesia[2]
Correspondence Email: betrix@unima.ac.id
ORICID ID: https://orcid.org/0000-0002-7964-8592

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ABSTRACT

As one of the largest CPO exporting countries in the world, Indonesia has a CPO production that continues to increase every year. Through this study, an analysis of the factors affecting Indonesia's CPO competition in the international market in recent years was carried out. The growth of export volume has a positive and significant influence on the competitiveness of Indonesia's CPO in the international market, while the selling price and inflation in the main export destination countries show a negative and significant influence on the competitiveness of Indonesia's CPO. Policy that can be taken to continue to be able to improve the competitiveness of Indonesia's CPO by developing technology so that the quality and efficiency of Indonesia's CPO production will increase. Increasing production efficiency accompanied by improving CPO quality has the opportunity to reduce Indonesia CPO price, thereby increasing export volumes and increasing the competitiveness of CPO itself. If the competitiveness of Indonesia CPO continues to increase, the world market tends to increase the demand for CPO imports from Indonesia, so that in the long run it has implications for the positiveness of Indonesia trade balance and increased growth Indonesia's economy.

Keywords: CPO, Data Panel, International Market, RCA

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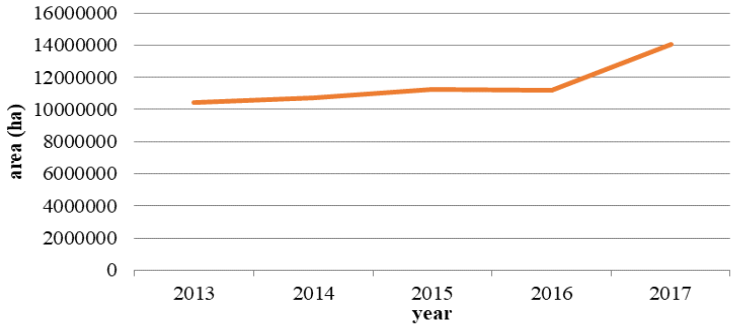
INTRODUCTION

Since the implementation of the ASEAN-China Free Trade Area (ACFTA) began in January 2010, it has an impact on increasing aspects of economic cooperation between ASEAN member countries and China. The increasing aspects of economic cooperation are realized by the reduction of trade barriers (Ditjen Kerjasama Perdagangan Internasional 2010). The export value and market share of Indonesia's CPO in ACFTA countries have the potential to be increased (Dewan Minyak Sawit Indonesia 2016; Hidayati *et al*. 2016). Not only to countries that are members of the ACFTA, Indonesia has the potential to increase exports to other countries so that the existence of Indonesia's CPO in the world market is higher and more sustainable.

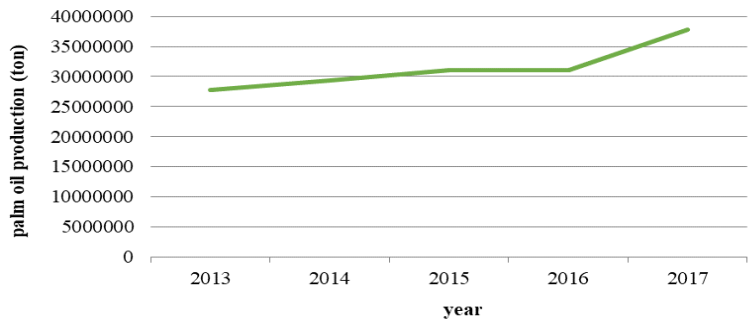
Figure 1. Area of Indonesia's Palm Oil 2013-2017



Source: Direktorat Jenderal Perkebunan Indonesia (2018)

The largest area of oil palm plantations as well as CPO producers, especially in the world is Indonesia (Dewan Minyak Sawit Indonesia 2016) and every year the increase in oil palm plantations in Indonesia tends to increase (Kementerian Pertanian Republik Indonesia 2014) which is 25.26 percent in 2016 to 2017 (Direktorat Jenderal Perkebunan Indonesia 2018). Referring to Figure 1, in 2017 Indonesia's palm oil area increased very quickly, namely 14 million ha (Direktorat Jenderal Perkebunan Indonesia 2018). The increase in the area of oil palm plantations in Indonesia has a significant positive effect on the increase in Indonesia's CPO production (Kementerian Pertanian Republik Indonesia 2014). Looking at Figure 2, in 2017 the increase in Indonesia's CPO production was very fast compared to other years (Direktorat Jenderal Perkebunan Indonesia 2018).

Figure 2. Indonesia's CPO Production 2013-2017

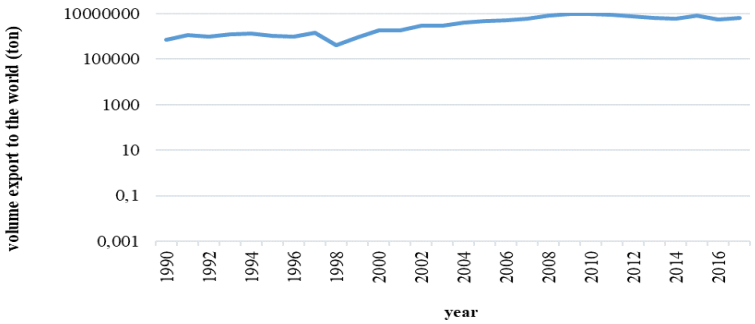


Source: Direktorat Jenderal Perkebunan Indonesia (2018)

Not only the growth of Indonesia's CPO production tends to rise, the volume of Indonesia's CPO exports to the world tends to increase every year (United Nations

Commodity Trade Statistics Database 2018). Through Indonesia's trade cooperation with ACFTA member countries in 2010, it can be used as an opportunity for Indonesia to maximize export volume to the international market. Minimizing trade barriers can spur an increase in the export volume of Indonesia to ACFTA member countries (Ditjen Kerjasama Perdagangan Internasional 2010). Looking at Figure 3, the export volume of Indonesia to the world tends to increase since 1990-2017 and the rapid increase in export volume of Indonesia to the world occurred in 2007-2008 and 2014-2015 (United Nations Commodity Trade Statistics Database 2018).

Figure 3. Development of Indonesia's CPO Exports to the World



Source: United Nations Commodity Trade Statistics Database 2018

Optimizing the increase in export volume of Indonesia as a leading export commodity is very important (Kementerian Pertanian Republik Indonesia 2014; Kementerian Perdagangan Republik Indonesia 2018) which is shown by the very large contribution to total non-oil and gas exports compared to other leading commodities. Indonesia's CPO attribution reached 12.13 percent in 2017 (Badan Pusat Statistik 2018). Thus, progressive steps are needed to develop Indonesia's CPO production to meet the increasing demand from the world (Kementerian Pertanian Republik Indonesia 2014; Tampubolon *et al*. 2017; International Trade Centre 2018).

The development is sought to be able to absorb the number of workers on a large scale starting from the upstream to downstream sectors. Indonesia's CPO production is a labor-intensive plantation business sector (Kementerian Pertanian Republik Indonesia 2014) because it is able to absorb a very large amount of labor, starting from the hatchery process, planting, maintenance, harvesting, and transportation process to the upstream sector management site. The absorption of a large number of workers is indicated to reduce the percentage of poverty and unemployment rate in Indonesia (Blanchard and Johnson 2012).

After the enactment of the 2010 ACFTA, there are indications that Indonesia is unable to take advantage of these trade cooperation opportunities with China, Singapore, and Malaysia which is indicated by the tendency export volume of Indonesia to China, Singapore, and Malaysia not to develop (Tampubolon *et al*. 2017; International Trade Centre 2018; Kadarusman and Herabadi 2018). This indicates that the decline in Indonesia's CPO exports is a symptom of Indonesia's low existence and competitiveness in the international market.

The growth of export volume from Indonesia to destination countries tends to soar (United Nations Commodity Trade Statistics Database 2018) which indicates that Indonesia is unable to optimize the productivity and efficiency of CPO production in Indonesia. Through the 2010 ACFTA agreement, it should be utilized by Indonesia to

accelerate the growth rate of Indonesia's CPO exports, optimizing its exports so that the implications for Indonesia's competitiveness to destination countries are increasing.

Although Indonesia's CPO production is increasing every year, Indonesia's CPO productivity tends to decline during 2016-2017, namely -1.09 percent (Direktorat Jenderal Perkebunan Indonesia 2018). Indonesia has not been able to produce CPO in a shorter harvest duration (Kamarulzaman and Nawi 2009; Dirjen Perkebunan Kementerian Pertanian 2017) and environmentally friendly. The existence, competitiveness, and productivity of Indonesia's CPO are also relatively weak. Contributions and synergies between parties, namely: the government, palm oil entrepreneurs, stakeholders, and farmers are needed to increase the productivity of Indonesia's CPO (How 2017; Kadarusman and Herabadi 2018). Factors of the influence of not increasing the competitiveness of Indonesia's CPO to the destination country are estimated and analyzed in this study.

LITERATURE REVIEW

Impact of The Free Trade Area (FTA): Trade Creation and Trade Diversion. Wibowo (2009) defines trade creation as an opportunity for countries that have never previously joined as members to establish a trading scheme. Trade creation makes it easier for member countries to sell and buy each other's products to be more efficient than fellow member states that are members. According to Wibowo (2009); Firdaus (2011); and Mattoo *et al*. (2017), trade creation has a good impact on its member states. Firdaus (2011) and Darsono (2015) revealed that the good impact was also received by non-member countries as a result of the specialization of production and caused an increase in exports to countries the Rest of the World (RoW).

Trade diversion according to Firdaus (2011) and Darsono (2015) is the transfer of trade from non-member countries but producing more efficiently at relatively low prices to member countries whose production is less efficient at relatively high prices. Prior to the occurrence of ACFTA economic cooperation, Indonesia supply was less than Indonesia demand. This indicates that Indonesia imports as much as the difference between Indonesia demand and Indonesia supply. After ACFTA economic cooperation, the agreement on reducing or eliminating tariffs caused the price of goods to be cheaper thus increasing Indonesia's imports. The ACFTA supply with non-tariff shows the magnitude of the change in ACFTA member offerings after the tariff is abolished and the price formed becomes cheaper.

Trade creation caused the import of an ACFTA member country is obtained from other ACFTA member countries that produce product efficiently with cheaper prices so as to improve the welfare of the importer country because the price of goods is cheaper and increases consumption its citizens. Trade diversion occurs when a non-ACFTA member country produces more efficiently and cheaper than an ACFTA member country. The enactment of ACFTA economic cooperation causes importing countries to continue to import from other ACFTA member countries even though production from non-ACFTA member countries is more efficient and cheaper. Based on result Park (2007) which explained that the transfer of imports from countries outside the member to countries that are members of the ACFTA is caused by the establishment of high tariffs for non-ACFTA member countries. The tariff determination by members of the customs union caused non-member countries to reduce their allocations to import requests from ACFTA member countries.

Trade diversion according to Park (2007) adversely affects citizens welfare because the products purchased become more expensive. The existence of trade diversion indicates protectionism and a form of rejection of free trade. In ACFTA economic cooperation, trade diversion causes CPO imports from Indonesia to likely cause a large deficit for China as a consequence of the price of Indonesia's CPO imported more expensive than Japan as Japan as a country that is not included as a member state.

International Trade

International trade is the interaction of buyer (importer) and seller (exporter) between countries represented by individuals, communities, and governments. International trade is an export-import activity of the country a which is calculated to be a component of GDP in terms of expenditure (Oktaviani and Novianti 2009). According to Tambunan (2001), the influence factor of international trade is reviewed through the theory of supply and demand, which occurs due to over production and excess demand between countries. The production of a country that is greater than its consumption will cause excess supply while a country that has a smaller production than its consumption causes excess demand. Over production causes domestic prices to be cheaper than prices in other countries (importers).

Krugman and Obstfeld (2003) stated exports occur because the country has more production factors and the price is cheaper while the imports carried out are caused the production factors used are limited in quantity and the price is relatively expensive. Based on Heckscher-Ohlin's theory, in general, developed countries have production factors that are capital abundance while developing countries have production factors that are labor abundance. Specialization between developed and developing countries indicates that the occurrence of international trade has a positive impact on each country.

According to Salvatore (2007), international trade can spur the full use of all factors of production so as to lead to an increasingly efficient production process. International trade can spur the development of market size so as to achieve economies of scale that benefit the country. In addition, international trade also encourages the transmission of new ideas to the use of new technologies and their expertise, thereby spurring the inflow of funds from developed countries to developing countries.

If a country has abundant production factors and the price tends to be cheaper, the country can export to other countries (importers), while a country with production factors with limited quantities and prices tends to be more expensive because the production costs produced become large, so the country can import from the exporter country. Referring to the Heckscher-Ohlin theory, developed countries are countries with ownership of capital abundance factors of production while developing countries are countries with ownership of labor abundance factors of production. The occurrence of international trade is indicated by the socialization of developed and developing countries so as to make a positive contribution to each country involved.

From Salvatore (2007), international trade encourages the full utilization of all production factors owned so that the production process becomes efficient and effective. The development of market size on an international scale can be stimulated so that the country's mutually beneficial economies of scale can be achieved. The admission of new ideas towards the use of new technologies in the production process is increasingly efficiently related to trade cooperation between countries that prioritize green economies (Nandy *et al* 2022) during the production process can stimulate the flow of capital from developed countries to developing countries (Tulebayeva *et al* 2020).

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RESEARCH METHOD

The secondary data in this study was taken from Badan Pusat Statistik (2018) and World Bank (2015). The analysis was carried out using quantitative methods using the calculation of the RCA index as dependent variable. The independent variables in the model are explained based on descriptive analysis, one of which is by conducting a literature review. The model specifications in this study are formulated as follows:

$$RCA_{i,t} = \beta_0 + \beta_1 \ln Ve_{i,t} + \beta_2 \ln Hj_{i,t} + \beta_3 \ln GDP_{i,t} + \beta_4 \ln kurs_{i,t} + \beta_5 \ln inf_{i,t} + \varepsilon_{i,t}$$

Note:
$RCA_{i,t}$ = RCA index or competitiveness of Indonesia's CPO exports to countries (*i*) year (*t*)
$\ln Ve_{i,t}$ = Natural logarithm of Indonesia's CPO export volume to countries (*i*) year (*t*)
$\ln Hj_{i,t}$ = Natural logarithm of Indonesia's CPO selling price to countries (*i*) year (*t*)
$\ln GDP_{i,t}$ = Natural logarithm of GDP of countries (*i*) trading partners export CPO Indonesia in the year (*t*)
$\ln kurs_{i,t}$ = Natural logarithm real exchange rate of countries (*i*) CPO export trading partner Indonesia in the year (*t*)
$\ln inf_{i,t}$ = Natural logarithm of inflation of countries (*i*) CPO export trading partners Indonesia in the year (*t*)

RESULTS

A Revealed Comparative Advantage (RCA) analysis is needed to review the growth of Indonesia's CPO competitiveness, as in Table 1 it is known that each country has a different growth in RCA value. From the average value of the Netherlands, Spain, Italy, and Malaysia have negative RCA values because the growth of Indonesia's CPO commodity competitiveness has decreased in the country. Malaysia is one of the world's largest CPO producing countries so Indonesia's CPO in Malaysia is not competitive because Malaysia's demand for CPO is more supplied directly from its domestic production. From 2011 to 2017, Indonesia's CPO competitiveness in Malaysia tended to decline, namely .03 (in 2011) and - .29 (in 2017). In other countries such as China, Denmark, Germany, Singapore and Morocco, Indonesia's CPO export commodity still has a positive average growth. From 2011 to 2017, the competitiveness of Indonesian CPO in Germany is indicated to be increasing, namely - .09 (in 2011) and .23 (in 2017).

Table 1. Revealed Comparative Advantages (RCA) of Indonesia's CPO Commodities to 9 Countries Importers in 2011-2017

Countries	Year							
	2011	2012	2013	2014	2015	2016	2017	Mean
China	- .31	.32	- .29	- .57	3.62	- .28	.04	.36
Netherlands	- .12	.11	- .02	- .08	.17	- .10	- .25	- .04
Spain	.05	- .17	.04	- .22	.19	- .35	- .17	- .09
Italy	.01	.06	- .17	- .15	.05	- .36	.20	- .05
Denmark	- .16	- .15	- .07	1.78	.73	- .72	- .36	.15
Germany	- .09	- .25	.29	- .23	.24	.07	.23	.04
Singapore	- .48	- .29	.72	1.72	.56	- .47	- .16	.23
Morocco	- .02	- .47	1.30	- .52	- .19	1.45	- .36	.17
Malaysia	.03	- .11	- .16	.01	.15	- .14	- .29	- .07

Source: United Nations Commodity Trade Statistics Database 2018, processed

Table 2. Estimation Results Using the Fixed Effect Model

Variable	Coefficient	Prob. (*significant at a real level of 5 %)
ln Ve	.1684	.0017*
ln Hj	- .3729	.0417*
ln GDP	.7313	.1475
ln kurs	.0445	.9618
ln inf	-2.0743	.0435*
C	-13.557	.2417
R-squared	.7794	
Adjusted R-Squared	.7300	
F-Statistics	15.7674	
Prob (F-Statistics)	.0000	

Source: Eviews 9

Based on Table 3, the probability value of the Jarque Berra normality test is greater than real level of 5 percent, so the residual model has spread normally. The value of the correlation between the analyzed variables does not exceed the absolute mark of .8 hence it is concluded that there is no violation of the classical assumption of multicholinearity. Sum squared residual weighted statistic value < sum squared residual unweighted statistics thus the selected model is already free of heteroskedasticity problems. The Durbin Watson Statistic (DW) value indicates the existence of an autocorrelation problem, but the model already uses Generalized Least Square (GLS) cross section weights thus the problem has been resolved (Juanda 2009).

Table 3. Results from Testing of Classical Assumptions

Details	Value
Prob *Jarque Berra*	.4704
Durbin Watson	1.4681
Sum square resid (*Weighted Statistics*)	7.6709
Sum square resid (*Unweighted Statistics*)	9.1160

Source: Eviews 9

DISCUSSION

Non-tariff barriers by the European Union are very high with 11 TBT barriers and 8 SPS barriers that cause competitiveness values in some EU countries to average negative values. The average value of Malaysia's RCA is negative because Malaysia is one of Indonesia's competitors for CPO export commodities so that Indonesia's CPO competitiveness in Malaysia has decreased. Based on the Fixed Effect Model estimates, the volume of CPO exports affects the CPO competitiveness index which reaches .16 percent. The volume of CPO exports affects its competitiveness because it is in line with the increase in its quality to compete with other producers thus the destination country imports CPO from Indonesia with more volume. The increase in export volume affects the calculation of the RCA index which is also increasing so that the competitiveness of Indonesia CPO increases.

The selling price affects Indonesia CPO competitiveness index reaching - .37 percent which is in accordance with the supply-demand law, when the price increases, the number of goods requested decreases, and when the price of Indonesia's CPO increasing will reduce purchasing power so that the volume of CPO imports requested by the destination country is reduced thus the RCA index also becomes low. The inflation variable affects the competitiveness of CPO by 2.07 percent. When export destination countries experience inflation, prices tend to be expensive, thus reducing purchasing power and people will reduce consumption which has implications for a decrease in the volume of CPO imports.

CONCLUSION

Indonesia's competitiveness has decreased growth on average to the Netherlands, Spain, Italy, and Malaysia due to barriers imposed by several countries in international trade. The growth of export volume has a positive and significant effect on the competitiveness of Indonesia CPO, selling prices and inflation in the main export destination countries have a negative and significant effect on the competitiveness of Indonesia CPO while the GDP of the destination country and the real exchange rate have no significant effect on the competitiveness of Indonesia CPO. Policy that can be taken to continue to be able to improve the competitiveness of Indonesia's CPO by developing technology so that the quality and efficiency of Indonesia's CPO production will increase. Increasing production efficiency accompanied by improving CPO quality has the opportunity to reduce Indonesia CPO price, thereby increasing export volumes and increasing the competitiveness of CPO itself. If the competitiveness of Indonesia CPO continues to increase, the world market tends to increase the demand for CPO imports from Indonesia, so that in the long run it has implications for the positiveness of Indonesia trade balance and increased growth Indonesia's economy.

LIMITATION

Quantitative analysis to determine competitiveness with the Revealed Comparative Advantage (RCA) index and analyze factors affecting CPO competitiveness using the tools of Microsoft excel 2013 and Eviews 9 software. Crude Palm Oil (CPO) analyzed using HS1992 with code 151110. China, Netherlands, Spain, Italy, Denmark, Germany, Singapore, Morocco, and Malaysia are Indonesia's export destination countries with 7 years namely 2011 until 2017.

ACKNOWLEDGMENT

Thank you for your cooperation and participation to all participants involved in writing this paper. This paper can be used as a reference in making policies, especially in the field of international trade so as to contribute to Indonesia's sustainable economic growth and based on green economy.

DECLARATION OF CONFLICTING INTERESTS

This paper is intended to be a reference material for policy makers in formulating policies in the field of international trade. This paper is written from the point of view of an academic without including political interests in it in order to provide more relevant and objective input.

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