Market Share Analysis and Export Performance of Indonesian Crude Palm Oil in the EU Market

Jamilah Jamilah[1]*, Hafni Zahara[1], Emmia Tambarta Kembaren[1], Setia Budi[1], Nurmala Nurmala[2]

[1]Department of Agribusiness, Malikussaleh University, Indonesia. [2]Department of Economics, Malikussaleh University, Indonesia.
*Email: jamilah@unimal.ac.id

ABSTRACT

This study aims to analyze the market share and export performance of Indonesian Crude Palm Oil (CPO) to the European Union Market, using time series data (2000–2020). The Market Share Index is used to assess the condition of the Indonesian CPO market in export destination countries when compared to its competitors (Malaysia). Analysis of the performance of CPO products in the European Union market using the constant market share (CMS) approach. The results show that the average growth of Indonesia's export standards to Europe is 0.1526, indicating that Indonesia is able to take advantage of CPO export opportunities. Indonesia has been able to meet CPO product specification standards in importing countries, including the Roundtable Sustainable Palm Oil (RSPO) and Hazard Analysis and Critical Control Points (HACCP) certifications as standards for safety and consumer protection. Indonesian CPO is well positioned in Spain (0.000244) and Italy (0.00014), and less well positioned in the Netherlands and Germany. Indonesia does not have good competitiveness against CPO exports in the European Union market, which causes Indonesia to shift the Asian market as the target market for Indonesian CPO.

Keywords: Market Share, Export Performance, Crude Palm Oil, EU Market
JEL Classifications: F15

1. INTRODUCTION

Indonesia is the largest producer and exporter of crude palm oil (CPO) in the world. CPO also known as an important component for food security in Indonesia and the other countries (Lee and Goh, 2010; Fauzi et al., 2012). Since 2008, the European Union has become the main market for Indonesian CPO exports. The main export destinations of Indonesian CPO in the European Union market are the Netherlands, Italy and Spain. The largest CPO importing countries are the Netherlands and Italy. In 2008–2009, Indonesia's CPO export performance was quite good with an RCA index value above 1 and an increase compared to 2005-2006 due to a significant increase in CPO demand from Pakistan, Singapore, India, Malaysia, and the Netherlands so that the value of CPO exports Indonesia will increase(Ermawati and Saptia, 2013).

The growth of Indonesian CPO exports in the European Union market has fluctuated from 2008 to 2020, along with the imposition of high taxes on Indonesian CPO, anti-dumping, black campaign issues in 2007, the recession in the European Union region, the implementation of the renewable energy directive (RED) policy. And the COVID-19 pandemic, which resulted in a decrease in demand of CPO imports by European Union countries, especially the Netherlands and Italy. Since 2012, the implementation of a high tax on Indonesian CPO in the European Union in 2012 prompted Indonesia to shift its focus on CPO exports to India, China, and Pakistan. On the other hand, the development of the black campaign issue in 2007, and the recession in the European Union region which resulted in a decrease in demand for CPO imports by European Union countries, namely the Netherlands and Italy (Tampubolon, 2017).

In 2014, the total value of Dutch CPO imports reached US$ 1,898,704 thousand and the total value of Italian CPO imports reached 711,986,739 US$ (Un Comtrade, 2014). In 2015 CPO exports to the European Union increased to 4.23 million tons or an increase of 2.6% compared to the previous year. In 2018, the demand for CPO in the European Union showed a significant increase as a raw material for making cosmetics, oleochemicals, and biofuels. The rapid growth of EU biodiesel production is due to high production growth in the largest biodiesel producing countries, namely Germany, France and Italy. On the other hand, the high population increases the demand for edible oil. Several EU CPO import policies include progressive taxes, anti-dumping, and the Renewable Energy Directive (RED). The EU's RED policy received a response with the implementation of Indonesian Sustainable Palm Oil (ISPO). These two policies interact with each other. The existence of ISPO proves to the international community that Indonesia's CPO production is in accordance with environmental protection principles (Kartika, 2016). The market share and competitiveness of CPO will determine the sustainability of Indonesia's CPO exports in the European Union market and other major export destination countries.

2. LITERATURE REVIEW

2.1. Indonesian Palm Oil Industry

Before 1978, Indonesian palm oil industry was focused on export market (export orientation), then changed to domestic market (domestic market orientation) which caused the fluctuation of the domestic market downstream (Susila and Antara, 2001; Sipayung, 2012). To accelerate the national downstream of palm oil, the government issued several policies such as: (1) Reduction of income tax (tax allowance) for the downstream palm oil industry which refers to PP 52 of 2011 in conjunction with PP 62 of 2008 in conjunction with PP 1 of 2007; (2) tax incentives (tax holiday) for the pioneering downstream palm oil industry by referring to the Regulation of the Minister of Finance Number 130/PMK.011/2011 concerning the Provision of Corporate Income Tax Exemption Facilities; (3) Exemption of import duties on the import of machinery and goods and materials for development or industrial development in the context of investment (PMK 76 of 2012), and (4) Development of Industrial Estates for the Integration of Downstream Palm Oil Industry with port facilities/services such as Sei Mangkei (North Sumatra), Dumai-Kuala Enok (Riau), Tanjung Api-api (South Sematera) and Maloy (East Kalimantan).

Indonesian palm oil exports have increased along with the increasing demand of palm oil in international market, especially India, China and the European Union. In domestic market, consumption of palm-based biofuels is higher than the composition of export biofuels, due to the government's mandatory policy regarding the use of biodiesel from B-5(2010), B-10(2012), B-15(2014), B-20(2016), and B-30(2020).

2.2. Trading Policy of Indonesian CPO

Export tariff policy of Indonesian CPO has been implemented by the government which shows the inconsistency of government's policy in plantation sub-sector and national development. In 21st century, the government reduce the CPO export tax and implemented various policies, such as a food security credit policy, which gave priority to agriculture/plantation businesses (Susila, 2004). The result showed that CPO exports have increased since 1993 and hampered domestic industry supply. To overcome this, starting on August 31, 1994, the government set a policy on export tariffs (SK Menkeu No. 439/KMK.017/1994). Through the policy of the Minister of Finance No. 300/KMK.01/1997 dated July 4, 1997, then the government lowered the CPO export tariff to 5 percent. The higher the level of processing, the lower the export tax imposed, as an incentive for entrepreneurs to invest in the processing of palm oil derivative products (Nuryanti, 2008).

In 2011, the government changed the export tariff policy to an export duty policy for CPO and its derivative products based on PMK No. 128/2011 and PMK No. 75/2012 which aims to: (1) ensure the availability of palm oil raw materials for the domestic industry; (2) securing domestic supply and price of cooking oil; and (3) support the National Palm Oil Industry Downstream Program. Since the price of crude palm oil fell below the Government's cap of US$750 per metric ton in September 2014, the Government implemented a 0% export tariff to increase demand for palm oil. If the CPO price exceeds 750 US dollars per tonne, then the CPO export tax (up to 22.5%) is used, while a fixed tax of 50 US dollars per tonne is no longer used (Ministry of Trade, 2015). The Rupiah depression also determines export performance. Chen and Rogoff (2003) and Cashin et al. (2004) prove that there is a relationship between the exchange rate and export commodities.

3. DATA AND METHOD

The study uses time series data (2000–2020) sourced from the World Bank, UN Comtrade, the Ministry of Trade of the Republic of Indonesia, the Central Statistics Agency, and the Ministry of Plantations of the Republic of Indonesia. Analysis of the performance of CPO products in the European Union market using a market share approach (CMS). This analysis provides a set of statistical indicators of whether a country is able to manage the contribution of its exports to the importing market within a certain time span. The CMS analysis is expected to be able to provide clear indicators and a broad picture of the performance and contribution of Indonesian CPO exports in the European Union market, namely the Netherlands, Denmark, England, Italy, Germany, Spain, and Greece. The use of the CMS (constant market share) dilator model is the reason for the difference between export growth in constant conditions and the actual diversity of exports originating from various sources of standard growth, the effect of commodity composition, the influence of market distribution, and the effect of competition (Saptana, 2010; Muslim and Nurasa, 2011; Sarwono and Pratama 2014) as shown by the following formula:

Standart Growth:

$$g = \frac{E(t) - E(t-1)}{E(t-1)}$$

Product composition effect:

$$\frac{\sum i(g1-g)\ E(t-1)i}{E(t-1)}$$

Market distribution effect:

$$\frac{\sum i \sum j(gij-g)\ E(t-1)ij}{E(t-1)}$$

Competitive effect

$$\frac{\sum i \sum j(E(t)ij\ -\ E(t-1)gij\ E(t-1)ij}{E(t-1)}$$

where:

$$g\ =\frac{w(t)-w(t-1)}{w(t-1)}$$

$$gi\ =\frac{w(t)-w(t-1)i}{w(t-1)i}$$

$$gij\ =\frac{üü(ü)-\ (\ -\ )}{w(t-1)ij}$$

Explanation:
E(t) = total exports of all Indonesian products in year (t) (US$)
E(t-1) = total exports of all Indonesian products in (t-1) (US$)
E(t)i = total Indonesian CPO exports in year (t) (US$)
E(i)j = total exports of all products to country j in year (t) (US$)
E(i)ij = total Indonesian CPO exports to country j in year (t) (US$)
W(t) = total exports of all world products in year (t) (US$)
W(t)i = total world CPO exports in year (t) (US$)
W(i)j = total exports of all world products to country j in year (t) (US$)
W(i)ij = total world CPO exports to country j in year (t) (US$)
W(t–1) = total exports of all world products in the previous year (t–1) (US$).

The Market Share Index is used to find out how the Indonesian CPO market condition in export destination countries is compared to its competitors. The market share index (MSI) value is formulated as follows:
MSI = X ia/M ib
Explanation:
X_{ia} = Exports of country a for product I (US$)
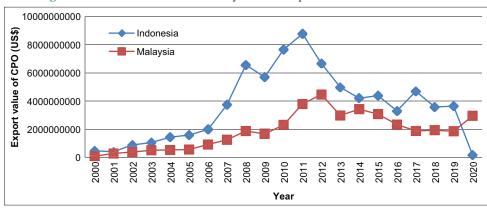M_{ib} = Total imports of product i in destination country (US$)

MSI is a relative percentage of imports from several countries with values ranging from 0-100. The higher MSI number reflects the wider market share controlled by the country. The calculation of MSI in this study focused on two European countries importing CPO commodities from Indonesia, namely the Netherlands, Germany, Spain, and Italy.

4. RESULTS AND DISCUSSION

4.1. Market Share of Indonesian CPO in European Union

Based on Figure 1, throughout 2000-2019 the value of CPO exports in the international market was dominated by Indonesian CPO except in 2020. This shows that Malaysia as one of the main exporting countries is more oriented towards refined palm oil. The ability to process Indonesian CPO is still far below Malaysia. Indonesia is only able to process CPO into derivative products by 59.66% and export 40.34%. CPO.Malaysia exports only 17.5% of crude CPO and 82.5% of CPO which has been processed into various products (Rifai, 2014, Peñarandaa et al., 2015). Since 2012, there has been a decline in CPO exports as a result of the implementation of downstream policies that encourage exports of Indonesian processed palm oil. In 2020, the decline in demand for Indonesian CPO occurred due to the COVID-19 pandemic and the lockdown as well as the decline in economic growth in Indonesia and several other countries, including countries that are the main export destinations of palm oil. In this regard, Li and Gan (2014) predict that Malaysian CPO exports and other CPO producing countries in the world are expected to continue to increase until 20235, although domestic consumption will increase due to population growth and the need for CPO derivative products.

Figure 1: Value of Indonesian and Malaysian CPO exports in the international market

The results of the market share index analysis show that the share of Indonesia's CPO exports in the European Union market ranges from 5% to 25.12%, higher than other CPO importing countries in Italy, Spain, and Germany. The high percentage of CPO exports shows that Indonesia is a major exporting country in the EU market to meet the EU industry's vegetable oil needs (Figure 2). This data shows that there has been a decline in demand for CPO exports since 2012 after a negative campaign with the label "Palm Oil free" and propaganda to switch to local vegetable oils, namely sunflower oil, soybean oil, and rapeseed to reduce GHG emissions, reduce trade problems. -off fuel-food, minimizing embodied deforestation. However, in reality, the European Union has not been able to meet the demand for vegetable oil from local oil and still needs CPO exports.

Market Share of Indonesian CPO in the Netherlands only ranges from 2.46% to 6.21% of the total Dutch CPO imports. The results of this study are supported by the research of Prasetya et al. (2017) that the competitiveness of Indonesia and Malaysia is not good at the world's main CPO ports (Netherlands) due to policies from countries in the European Union to protect vegetable oil producers and the application of progressive taxes for CPO so that it makes CPO prices are no longer competitive. The market share of Indonesian and Malaysian CPO exports in the European Union Market is shown in the following Figures 3-6.

Figures 3-6 shows that Indonesia's CPO exports in the EU market are dominated by Indonesia. Malaysia's highest CPO exports were only 0.83%. In the Spanish and Italian markets, Indonesia's CPO export market share reached 30%, higher than other exporters, especially Malaysia. The high export of Indonesian CPO shows that the European Union still relies on palm oil to meet the needs of vegetable oil for the community and industry.

4.2. Indonesian Crude Palm Oil (CPO) Export Performance in the European Union Market
Based on destination countries, China's largest CPO export volume was 2.1 million tons, then the European Union countries took second place with a volume of 2 million tons, while India took third place with a total export volume of 1.8 million

tons (UN Comtrade, 2020). Indonesia's palm oil exports to various destination countries are in various forms, starting from CPO which contributes 20%, processed and derivative products reaching 69%, oleochemicals at 8% and 3% in the form of biodiesel. The results showed that Indonesian CPO has a comparative advantage with RCA values > 1. Indonesia, Malaysia, Colombia, and Thailand can be said to have been optimal in utilizing the advantages of land area, labor costs, and input costs in achieving comparative advantage (Astrini, 2013, Turnip et al., 2016).

In the European market, since 2012 there has been a decline in the value of Indonesian CPO exports to the Netherlands, Germany and Spain, except for the value of CPO exports to Italy, which tends to fluctuate. This happened due to the implementation of a downstream policy in the domestic market (Indonesia) which proclaimed to increase exports of processed palm products and reduce exports of CPO, on the other hand due to a negative CPO campaign from Europe which prohibited the use of palm oil-based biofuels and included palm oil as a high-risk commodity. caused deforestation, followed by the impact of the Covid-19 pandemic from 2012 to 2020, there was a decline in Indonesian CPO exports to the UK by 22% and the Netherlands by 39% (Figure 7). Many factors affect Indonesian palm oil exports, namely domestic palm oil production, domestic palm oil prices, Indonesian palm oil export prices, the rupiah exchange rate ratio, import tariffs for palm oil from importing countries, and Indonesia's CPO export lag (Rauf, 2005, Huchet and Korinek, 2012, Carmen and Nicolae, 2011, Chen and Rogoff, 2003, and Ginting, 2013).

4.3. Performance of Indonesian Palm Oil Exports by Main Destination Countries
In the European market, since 2012 there has been a decline in the value of Indonesian CPO exports to the Netherlands, Germany and Spain, except for the value of CPO exports to Italy, which tends to fluctuate. This happened due to the implementation of a downstream policy in the domestic market (Indonesia) which proclaimed to increase exports of processed palm products and reduce exports of CPO, on the other hand due to a negative CPO campaign from Europe which prohibit
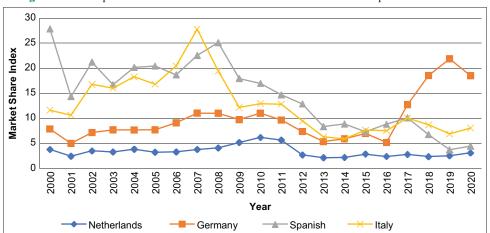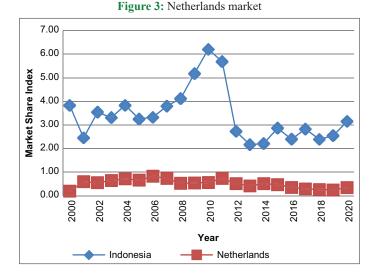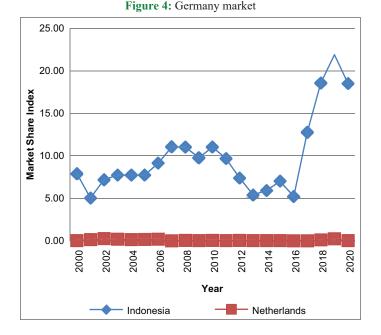
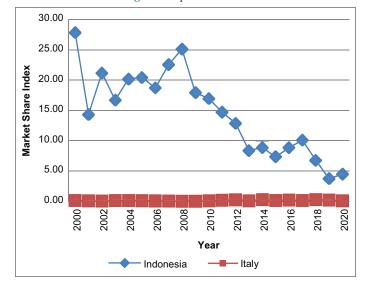**Figure 2:** Development of Indonesian CPO market share index in the European Union Market

Figure 3: Netherlands market
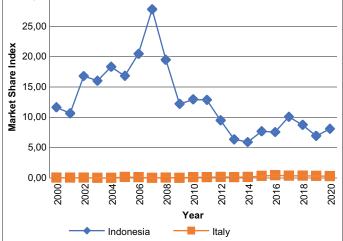

Figure 4: Germany market

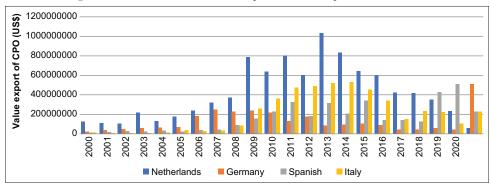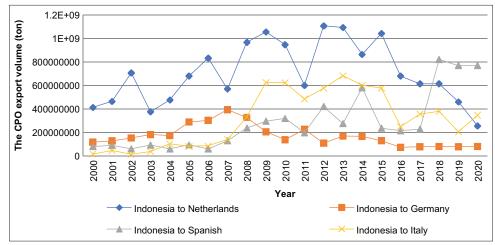**Figure 5:** Spanish market

Figure 6: Italian Market

the use of palm oil-based biofuels and included palm oil as a high-risk commodity. Caused deforestation, followed by the impact of the Covid-19 pandemic from 2012 to 2020, there was a decline in Indonesian CPO exports to the UK by 22% and the Netherlands by 39% (Figure 7). Many factors affect Indonesian palm oil exports, namely domestic palm oil production, domestic palm oil prices, Indonesian palm oil export prices, the rupiah exchange rate ratio, import tariffs for palm oil from importing countries, and Indonesia's CPO export lag (Rauf, 2005, Huchet and Korinek, 2012, Carmen and Nicolae, 2011, Chen and Rogoff, 2003, and Ginting, 2013).
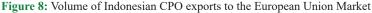
Italy imports a lot of palm oil; flat rolled stainless steel products; stainless steel in ingots, footwear, polyacetals, coffee, prepared or preserved fish, live and prepared and preserved molluscs, natural rubber, paper and paperboard. In 2015 to 2017 there was a decline in CPO exports due to the impact of the weakening world economy and the low development of the Italian economy. –19, changes to the provisions of the EU trade regulations and negative campaigns against palm oil, which are considered damaging to the environment and not good for health. Jamilah et al. (2020) stated that in 2019, the export value of Indonesian palm oil decreased by 14.7 percent (reaching US$19.24 billion) compared to 2018 (US$22.08 billion) although export volumes increased, due to the the implementation of RED II in the European Union which abolished the use of palm oil as a raw material for biodiesel, the difference in tariffs on imports of Indonesian palm oil to India, a prolonged drought, the trade war between the USA and China and the continued decline in CPO prices.

Despite the decline in export value, the volume of CPO exports to several European Union countries tends to fluctuate, so there are indications that the decline in CPO export volume to the European Union Market is also due to a decline in CPO export prices (Figure 8). It is known that the price of Indonesian CPO is also influenced by world CPO prices, demand for CPO, and import tariffs. There has been an increase in the volume of Indonesian CPO exports to Italy since 2009 because Italy is the country with

Figure 7: Value of Indonesian CPO exports to the European Union Market

Figure 8: Volume of Indonesian CPO exports to the European Union Market

the second largest manufacturing industry in Europe after Germany and Italy. However, from 2015 to 2020, demand for CPO from Indonesia has fluctuated due to the decline in economic growth in 2015, the black "free palm oil" campaign and the lockdown policy due to the COVID-19 pandemic. Indonesia is the largest producer of greenhouse gases after China and the United States. The European Union is committed to maintaining its vegetable oil crops in certain proportions, obtaining cheaper vegetable oils and compositions of vegetable oil types that contain local oil (local content) and are not a trigger for greater deforestation in parts of the world.

Analysis of Indonesia's export performance in the European market can also be studied based on the growth of export standards, the effect of the composition of the CPO market, the effect of market distribution, and the effect of CPO competitiveness. During the period 2001 to 2021, the average growth of Indonesian CPO standards was 0.207468, higher than the growth of world CPO export standards (Figure 9). The high export of Indonesian CPO to Europe is also shown based on the average growth of Indonesia's export standards to Europe, which is 0.1526. Export fluctuations show that world CPO export performance is in line with Indonesia's CPO export performance. This shows that Indonesia's CPO export share dominates the international market. In 2020, although there is a decline in the structure of world CPO exports, Indonesia's CPO exports are still increasing.

Figure 9: Development of Indonesian and World CPO export standards

Figure 10 shows that the growth of Indonesia's CPO export standard of 0.2075 is higher than the growth of Indonesia's export standard of 0.0692. From 2000 to 2021, Indonesia's CPO demand from the European Union market ranges from US$ 172 million to US$ 2,380 million. The highest value of CPO exports to the European Union market occurred in 2013 because Indonesia's CPO stock at the end of 2012 was quite high so that sales retreated to early 2013. The volume reached 21.2 million tons, an increase of 16% compared to 18.2 million tons in 2013. 2012.

The positive value in product composition explains that Indonesia is able to take advantage of CPO export opportunities (Figure 11). In this case, Indonesia has been able to meet CPO product

Figure 10: Development of Indonesian CPO export standards

Figure 11: Developments in the composition effect of Indonesia's CPO exports

Table 1: Distribution Effects of Indonesia's CPO Export Market in the European Union Market, 2000–2020

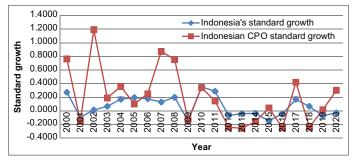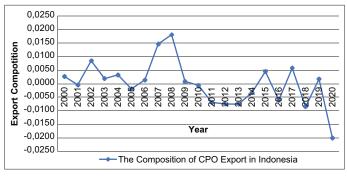| Year	Netherlands	German	Spanish	Italy
2000	−0.00261	−0.00019	−0.00021	−0.00023
2001	0.00083	0.00028	0.00022	0.00001
2002	−0.00122	−0.00056	−0.00037	−0.00013
2003	0.00031	−0.00009	0.00012	0.00001
2004	−0.00039	0.00000	−0.00012	−0.00004
2005	0.00049	0.00000	0.00000	0.00005
2006	−0.00007	−0.00040	0.00005	−0.00008
2007	−0.00074	−0.00080	−0.00013	−0.00016
2008	−0.00045	0.00001	−0.00014	0.00055
2009	−0.00102	0.00020	0.00039	0.00099
2010	−0.00121	−0.00029	0.00015	−0.00024
2011	0.00054	0.00013	0.00037	0.00002
2012	0.00243	0.00020	0.00010	0.00064
2013	0.00107	0.00012	0.00067	0.00102
2014	−0.00010	−0.00004	−0.00006	0.00018
2015	−0.00085	−0.00010	0.00042	−0.00063
2016	0.00059	0.00016	−0.00012	0.00003
2017	−0.00064	−0.00026	−0.00017	−0.00037
2018	0.00034	−0.00006	0.00028	0.00016
2019	−0.00012	−0.00005	0.00196	0.00033
2020	0.00018	0.00157	0.00171	0.00085
Average	−0.00013	−0.00001	0.00024	0.00014

Table 2: Effects of competitiveness of Indonesian CPO Exports in the European Union Market, 2000–2020

Year	Netherlands	German	Spanish	Italy
2000	0.00028	0.00007	0.00018	−0.00010
2001	−0.00066	−0.00001	0.00002	0.00008
2002	0.00111	−0.00026	−0.00039	−0.00014
2003	−0.00260	−0.00004	−0.00003	0.00012
2004	0.00044	−0.00029	−0.00022	0.00038
2005	0.00008	0.00146	0.00020	−0.00023
2006	0.00035	0.00066	−0.00011	0.00003
2007	−0.00159	−0.00154	0.00022	0.00039
2008	0.00165	−0.00141	0.00015	0.00043
2009	0.00069	−0.00014	0.00031	0.00000
2010	0.00074	−0.00108	0.00000	0.00015
2011	−0.00254	0.00004	−0.00158	−0.00038
2012	0.00039	−0.00045	0.00077	0.00008
2013	−0.00073	0.00005	−0.00081	−0.00027
2014	−0.00024	0.00017	0.00095	−0.00014
2015	0.00046	−0.00001	−0.00163	−0.00014
2016	−0.00077	−0.00032	0.00034	−0.00073
2017	−0.00066	0.00010	−0.00031	0.00049
2018	−0.00014	0.00021	0.00169	0.00011
2019	−0.00056	−0.00004	−0.00154	−0.00099
2020	0.00079	0.00148	−0.00047	0.00050
Average	−0.00017	−0.00006	−0.00011	−0.00002

specification standards in importing countries, including the Roundtable Sustainable Palm Oil (RSPO) and Hazard Analysis and Critical Control Points (HACCP) certifications as standards for safety and consumer protection.

The following presents the distribution value of the Indonesian CPO market in the main importing countries in the European Union Market (Table 1). The market distribution value shows the market position and competitiveness of Indonesian CPO in the importing country. Indonesian CPO is well positioned in Spain (0.000244) and Italy (0.00014), and less well positioned in the Netherlands and Germany.

Although the value of Indonesian CPO exports to the Netherlands is higher than the value of Indonesian CPO exports to Germany and Spain. This shows that the performance of CPO exports to the Netherlands fluctuated greatly during 2000–2020. The unsatisfactory export performance of a product can mean that the product's competitive ability in international markets is problematic (Suprihartini, 2005, Dradjat et al., 2007).

Indonesia does not have good competitiveness against CPO exports in the European Union market (Table 2). This is in line with research by Prasetyo et al. (2017) that the competitiveness of Indonesian CPO is not good in the Netherlands, which is the main port of European Union countries due to policies to develop sunflower seed oil and canola seed oil and prohibit the use of palm oil in the domestic industry, which causes Indonesia to shift the Asian market as the target market for Indonesian CPO, including India, China, and Pakistan.

5. CONCLUSION

Indonesia's CPO export share in the European Union market is quite fluctuating but reaches 25 percent of the total CPO imports of European Union countries, namely Italy, Germany and Spain. The decline in the value of CPO exports to European countries was due to the European Union's efforts to develop and utilize local vegetable oils sourced from soybean oil, rapeseed, and sunflower oil. The market share index shows that Indonesia's CPO export share in the European Union market ranges from 5% to 30%,

higher than Malaysia's in the Dutch, Italian, Spanish and German markets. The high percentage of CPO exports shows that Indonesia is a major exporting country in the European Union market to meet the needs of vegetable oil for the EU industry. In order to increase EU market opportunities, Indonesia puts forward ISCC standards starting from upstream and downstream handling in accordance with European Union export standards.

The high export of Indonesian CPO to Europe is also shown based on the average growth of Indonesia's export standards to Europe, which is 0.1526. The positive value in product composition explains that Indonesia is able to take advantage of CPO export opportunities. In this case, Indonesia has been able to meet CPO product specification standards in importing countries, including the Roundtable Sustainable Palm Oil (RSPO) and Hazard Analysis and Critical Control Points (HACCP) certifications as standards for safety and consumer protection. Indonesian CPO is well positioned in Spain (0.000244) and Italy (0.00014), and less well positioned in the Netherlands and Germany. Indonesia does not have good competitiveness against CPO exports in the European Union market, which causes Indonesia to shift the Asian market as the target market for Indonesian CPO.

REFERENCES

Astrini, N.N.A. (2013), Analysis of the competitiveness of Indonesian crude palm oil (CPO) commodities in 2001-2012. E-Jurnal EP Unud, 4(1), 12-20.

Carmen, S., Nicolae, G. (2011), The relationship between exchange rate and exports in romania using a vector autoregressive model. Anales Universitatis Apulensis Series Oeconomica, 13(2), 29.

Cashin, P., Luis, F.C., Ratna, S. (2004), Commodity currencies and the real exchange rate. Journal of Development Economics, 75(1), 239-268.

Chen, Y.C., Kenneth, R. (2003), Commodity currencies. Journal of International Economics, 60(1), 133-160.

Dradjat, B., Agustian, A., Supriatna, A. (2007), Export and competitiveness of indonesian coffee beans in international markets: Strategic implications for the development of organic coffee beans. Journal Pelita Perkebunan, 23(2), 159-179.

Ermawati, T., Saptia, Y. (2013), Export performance of Indonesian palm oil. Trade Research and Development Scientific Bulletin, 7(2), 129-147.

Fauzi, Y., Widyastuti, Y.E., Wibawa, I.S., Paeru, R.H. (2012), Palm Oil. Jakarta: Self-Help Spreader. p236.

Ginting, A.M. (2013), The effect of exchange rate on Indonesian exports. Trade Research and Development Scientific Bulletin, 7(1), 1-18.

Huchet, B.M., Korinek, J. (2012), Trade Effects of Exchange Rate and their Volatility, Chilie and New Zeland, OECD Trade Policy Papers No. 136.

Jamilah, J., Mawardati, M., Syamni, G. (2020), The impact of indonesia-india trade cooperation and rupiah depreciation on indonesian palm oil export performance. Journal of Agricultural and Agribusiness Economics, 4(3), 593-603.

Kartika, I.T. (2016), Interaction of Renewable Energy Directive (RED) Policy and Indonesian Sustainable Palm Oil Policy on Indonesian Palm Oil Exports to the European Union, Essay, Hasanuddin University, Makassar.

Lee, K.T., Goh, S.C. (2010), Will biofuel project in Southeast Asia become white elephant? Energy Policy, 38, 3847-3848.

Li, Z.D., Gan, P.Y. (2014), Econometric study on Malaysia's palm oil position in the world market to 2035. Journal of Renewable and Sustainable Energy Reviews, 39, 740-747.

Muslim, C., Nurasa, T. (2011), Competitiveness of the mangosteen export promotion commodity, marketing system and its domestic stability (case study in purwakarta regency, West Java province. Journal of Agricultural Economics, 29(1), 87-111.

Nuryanti, S.R. (2008), Strategic value of the palm industry. Agriculture Policy Analysis, 6(4), 43-56.

Peñarandaa, R.M., Gasparatosb, A., Strombergc, P., Suwad, A., Pandyaswargoe, A.H., Oliveira, JAP. (2015), Sustainable production and consumption of palm oil in Indonesia: What can stakeholder perceptions offer to the debate? Sustainable Production and Consumption, 4, 16-35.

Prasetyo, A., Marwanti, S., Darsono, D. (2017), The comparative advantage and performance of indonesian crude palm oil exports in the international market. Journal of Agro-Economics, 35(2), 89-103.

Rauf, R.A. (2005), The effect of export tax policy on domestic availability of crude palm oil (CPO): Producer and consumer surplus approach. The Journal of Agricultural Science, 6(3), 143-148.

Rifai, N. (2014), Evaluation of the Economic Policy on the Export of Palm Oil and Its Derivative Products to the United States Market, Distraction. Bogor: Bogor Agricultural University.

Saptana, S. (2010), Conceptual review of micro-macro competitiveness and agricultural development strategies. Agro Eco Panel Forum, 28(1), 1-18.

Sarwono, S., Pratama, W. (2014), Analysis of Indonesian soybean competitiveness. Journal Policy Icons, 7(2), 100-202.

Sipayung, T., Purba, J.H. (2015), The Economy of Palm Oil Agribusiness, PhD Diss. Bogor: Palm Oil Agribusiness Strategic Policy Institute.

Suprihartini, R. (2005), Competitiveness of Indonesian tea exports in the world tea market. Journal Agro Eco, 23(1), 1-29.

Susila, W.R. (2004), Competitiveness of Indonesian palm oil commodities. Agribusiness Journal, 2(2), 16-30.

Susila, W.R., Antara, M. (2001), The efficiency and impact of trade liberalization in the plantation subsector. SOC A, 4(1), 27-33.

Tampubolon, B.D.A. (2017), Analysis of Import Behavior of Indonesia's Major CPO (Crude Palm Oil) Importing Countries in the International Vegetable Oil Market, Essay, Faculty of Economics and Management. Indonesia: Bogor Agricultural Institute.

Turnip, S.M.L., Suharyono S., Mawardi, M.K. (2016), Analysis of the competitiveness of Indonesian crude palm oil (CPO) in the international market. Business Administration, 39(1), 185-194.

UN Comtrade. (2021), The United Nations Commodity Trade Statistics Database. Available from: https://www.comtrade.un.org/data