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PROTECTIONISM OR SUSTAINABILITY? QUESTIONING EUROPEAN INTENTION ON PALM OIL BAN USING TIME SERIES DATA

Jean Richard Jokhu
President University
Email: Jean.Richard@president.ac.id

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ABSTRACT

Palm oil is Indonesia's competitive advantage in the international commodity market. Various derivative products are produced by palm oil. However, the European policy banning palm oil exports has become an obstacle to Indonesia's palm oil export performance. Environmental issues are the reason for the ban on imports of Indonesian palm oil. However, in this research, we try to extend the view of sustainable issues. This study uses Indonesian palm oil exports and the European rapeseed oil trade to explain this issue. In this study, we try to explain a pure European policy of sustainability or protectionism. Based on the analysis results, it was found that this policy was strongly influenced by exports and production of European rapeseed oil. The effect of rapeseed oil production on palm oil imports proves that this policy has an element of protectionism to protect European rapeseed plants

Keyword: Palm Oil, Rapeseed Oil, Oil Crops Export

INTRODUCTION

Palm oil has become a significant commodity in the last two decades. This commodity is the most consumed vegetable oil globally (Alii, Karimi, and Febriamansyah 2021; Rahayu and Sugianto 2020; Tyson and Meganingtyas 2020). Palm oil has many derivative products that are quickly processed into various household needs (Oosterveer 2020). In addition, the renewable energy policy is an opportunity for palm oil to be used as an environmentally friendly fuel. The world is currently hit by climate change and forcing every country to pay attention to fuels with the smallest carbon footprint. Palm oil can be the answer to the needs of this world, with low plant costs and relatively more efficient land usage compared to other plants to be processed into various products ranging from food, cooking oil, cosmetics to biofuels (Bentivoglio, Finco, and Bucci 2018).

On the other hand, Palm oil is widely exported to the European Union (EU) from the food industry to biofuel. On the other hand, Europe has rapeseed oil which has been campaigned as a substitute for palm oil in its derivatives, especially biofuels, in the last decade (David et al. 2021; Khatiwada, Palmén, and Silveira 2021; Khatun et al. 2017; Tan et al. 2009). The European Union is one of the world's largest palm oil importers. According to Indonesian statistic institution (Central Bureau of Statistics), Indonesia's exports to Europe data in 2017 reached 5 million tons while Rapeseed oil in 2017 only reached 3 million tons according to Food and Agriculture Organization (FAO) data. Although not the largest, the European Union is a reference market for other countries for palm oil commodities (Tyson and Meganingtyas 2020).

Indonesia is a country that is highly dependent on palm oil for its economic growth (Purnomo et al. 2020). During the pandemic in 2019-2020, palm oil commodities set a new record growth of almost 14% from 2019 (Timorria 2019; Yustinus 2021). However, because of deforestation, forest burning, and wildlife slaughter in the area of oil palm plantations, European countries have begun to limit their imports of palm oil from Indonesia and Malaysia (Khatiwada, Palmén, and Silveira 2021; Khatun et al. 2017; Oosterveer 2020; Purnomo et al. 2020). Because of this European pressure, the supply chain for palm oil derivative products is restricted to domestic use. As a result, oil palm nations will not meet the global population and demand for palm oil goods.

However, European policy limiting palm oil import is caused by the sustainable agenda of the world. This policy is difficult for Indonesian oil palm farmers to follow. The condition of farmers who lack capital makes it difficult to manage a sustainable planting model. These restrictive policies affect the economies of countries that rely on palm oil to avoid poverty in countries such as Indonesia and Malaysia (Afriyanti, Kroeze, and Saad 2016; Kushairi et al. 2018; Tampubolon and Pasaribu 2017).

Studies on the influence of European policies on oil palm are mostly viewed from the side of palm oil derivatives (Alam, Choy Er, and Begum 2005; Purba et al. 2018). Other studies, such as Yanita, Napitupulu, and Rahmah (2020), that adopted EU policy used the competitiveness model. No research uses rapeseed export and production as determinants that affect oil palm exports. This proves whether the European campaign on a sustainable agenda is purely for the environment or political protectionism for their rapeseed oil.

As a response, the primary purpose of this study is to see how European oil crop trading affects Indonesian palm oil export volumes. Second, we looked for any link between palm oil imports in the European Union and rapeseed oil output in the European Union to see if there was a short-term causal influence between European rapeseed oil and European palm oil import. We should broaden our perspective on the European Union's behavior in terms of sustainability and protectionist as a result of this study. The following section provides a brief review of preview studies, while section 3 describes the methods. Section 4 provides the estimation results, and section 5 concludes and presents several suggestions and policy implications.

METHODS

From extensive literature, it has been synthesized to analyze time-series data to find out the relationship between each variable (Bentivoglio, Finco, and Bucci 2018). The main objective of this study is to determine the relationship between Indonesian palm oil and its determinants by using the regression and granger causality test. The variables in this study are factors that can affect palm oil exports in Indonesia. In this study, we use annual data from 1961 to 2018, from Food and Agriculture Organization (FAO), United States Department of Agriculture (USDA), and the Central Bureau of Statistics (BPS), with the following variables: total palm oil exports Indonesian Palm oil Export per Tonnes (INDOPOEXTON), European Rapeseed oil Export (EEXRO), Europe Palm oil Import (EIMPO), Europe Sunflower oil Production (EUROP) The choice of these determinant variables cause the vegetable oils is European largest commodities in the oil crops industry. Although the growth of rapeseed oil commodities continues to increase, both exports and imports of palm oil growth are still much higher. Indonesia and Europe compete in the oil crops industry. Compared to the palm oil production process, Indonesia has a low cost of production compared to rapeseed oil. Low-wage labor and a high production rate were helping Indonesia beat the rapeseed production from Europe (Oosterveer 2020; Rahayu and Sugianto 2020; Tyson and Meganingtyas 2020). On the other hand, European organizations continue to press the Indonesian palm oil industry to limit its exports to Europe. Sunflower and rapeseed are two oil crops grown in the European Union. According Parsons, Raikova, and Chuck (2020) rapeseed are one alternatives currently advocated to replace palm oil in both household use and renewable energy production. The level of world palm oil consumption continues to increase with the biodiesel policy. Vegetable oil is not only used for food consumption but can also be used for renewable energy. World vegetable oils are still dominated by palm oil derivatives more than 40% than other oils (States 2018). The regression model can be processed as follows:

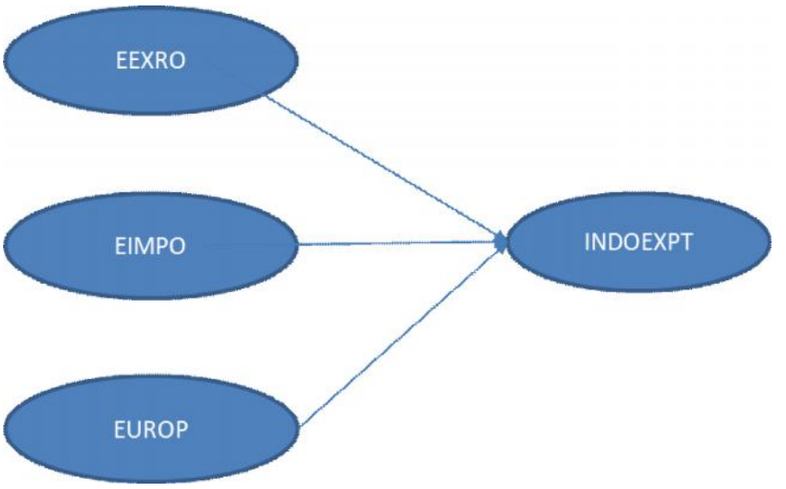


Figure 1 Research Framework



Figure 2 Causality Model

Figure 1 explained the research model utilized to conduct a regression analysis of the relationship between European oil crops export-import activities and Indonesian palm oil export performance (export quantity in Tonnes). In Figure 2, this study tried to prove the existence of causal effect of palm oil import and rapeseed oil production. The impact of trade in oil crops in Europe, both exports and imports, on the export performance of palm oil per ton should explained European Union trade policy, according to the direction of the regression analysis and granger causal effect.

Regression analysis was used to find out the significant impact of EU Rapeseed export and import on Indonesia Palm Oil Export. Since we used time series data we conduct the research using E-views version11 software for regression analysis (Ali, Sheikh Ali, and Dalmar 2017). According to Prajanti et al. (2020) multiple regression can help to explain the factors influencing dependent variable like export volume.

To scrutinize the effect of rapeseed and palm oil export. We add rapeseed production for causality test hence juxtaposed the causal relationship between the rapeseed production in EU and Indonesian export volume. Granger causality test is utilized to look for the causality relationship between variables. The direction is determined by granger test and used to decide influence direction between variables (Bentivoglio, Finco, and Bucci 2018; Chalil 2016)

RESULTS AND DISCUSSION

The conclusions of the regression model study in the previous section will be explained using the results of multiple regression on the factors of Indonesian palm oil performance. Descriptive statistics and regression analysis were employed to describe the relationship between the variables. Table 1 reveals that Indonesian palm oil exports average 5 million tons per year, with European rapeseed shipments (which account for less than half of Indonesia's exports) coming in second. European oil crop exports and imports continue to lag behind Indonesian palm oil exports. Similarly, palm oil imports in Europe are still severely regulated by the pace of

Table 1 Descriptive Statistic of Research Variable

	Mean	Median	Maximum	Minimum	Std. Dev.
Indonesian Palm oil Export (INDPOEXTON)	5531105	1004842	27893676	100100	8234136
Europe Sunflower oil Production (EUROP)	3800402	3208952	11400274	337480	3319707
Europe Palm oil Import (EIMPO)	3218405	1748670	10499701	370173	3314068
European Rapeseed oil Export (EEXRO)	1471546	1524057	4202581	17605	1216256

rapeseed oil production in Europe. Based on the descriptive statistical findings, it is clear that Indonesian palm oil has a competitive edge over European rapeseed oil. Furthermore, the purpose of this research is to determine the magnitude of the impact of European oil crop trade operations on Indonesian palm oil exports.

The first stage in this study is the regression model. The dependent variable is Indonesia's palm oil export in tonnes. In Table 2, the regression test results show that all determinants have a significant influence on Indonesian palm oil exports per tonnes. The regression results show that all determinants have a significant relationship to the performance of Indonesian palm oil exports.

In this stage, time series regression is utilized to examine the relationships between rapeseed export and import activity in the European Union. The models feasibility test is qualified to explain the dependent variable using p-value testing (0.000.05) based on the results of the analysis in Table 2. The R-square value can be characterized as high, with a score of 96 percent, according to the analysis' findings.

Based on the regression analysis of European Union Rapeseed export (EEXRO), it significantly affects towards Indonesian palm oil exports. The regression results show the negative influence of rapeseed exports on the number of Indonesian palm oil exports. Rapeseed oil substitutes palm oil (Kanchymalay et al. 2017; Parsons, Raikova, and Chuck 2020). According to Chalil (2016) rapeseed is an alternative used to replace oil palm. The difference in processing that is more expensive makes rapeseed exports not as big as palm oil. In addition, according to Bentivoglio, Finco, and Bucci (2018) rapeseed is widely used as an alternative to diesel fuel. This is what causes this commodity to have a negative influence.

Furthermore, import palm oil (EIMPO) has a significant effect on Indonesian palm oil export performance. Based on the t value (6.56>1.97), it can be concluded that there is a positive relationship between the number of European palm oil imports and Indonesian palm oil exports. This is in line with many theories which say that the European market is one of the markets that plays an active role in increasing the number of Indonesian palm oil exports (Rahayu and Sugianto

Table 2 The impact of European oil crops trade on Indonesia palm oil export performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constanta	-2037885	352322.7	-5.784142	0.00000
European Rapeseed oil Export (EEXRO)	-2.694503	0.882619	-3.052851	0.00350
Europe Palm oil Import (EIMPO)	2.256302	0.343812	6.562609	0.00000
Europe Sunflower oil Production (EUROP)	1.124192	0.556335	2.020712	0.04830
R-squared	0.965249			
Adjusted R-squared	0.963318			
F-Statistic	499.969			
Prob (F-Statistic)	0.00000			

2020). According to Oosterveer (2020) the role of Europe in palm oil policy is a determinant of world palm oil demand which directly affects the performance of Indonesian palm oil exports. In numbers, Europe is not the biggest importer of Indonesian palm oil, but in political policy on the image of Indonesian palm oil, Europe has a strong influence.

Finally, the European rapeseed oil production regression (EUROP) results affect the number of Indonesian palm oil exports. This relationship is quite interesting because there is a positive influence between rapeseed production and palm oil exports. According to Tyson and Meganingtyas (2020) Rapeseed is an alternative raw material for palm oil, but both encourage the growth of biodiesel demand. The existence of palm oil as a cheap raw material causes an increase in demand for palm oil as a renewable energy.

Table 3 describes the p-values (significant <5% level) for the Granger causality tests. The result of the Granger test is that European palm oil imports (EIMPO) do not affect European rapeseed oil production (EUROP). On the other hand, EUROP affects EIMPO, so it can be concluded that European palm oil imports are influenced by rapeseed oil production in Europe. This finding aligns with Parsons, Raikova, and Chuck (2020) research who explain a substitution relationship between oil palm and rapeseed oil production.

The results of these two analyzes state that exports of Indonesian palm oil and rapeseed oil in Europe influence each other. According to the results of this regression analysis, the export-import of rapeseed greatly affected Indonesia's palm oil exports. The European Union's palm oil policy has also changed the world's perception of Indonesian palm oil. There are many European interests in the vegetable oil and renewable energy markets. The second analysis through causality explains the influence of rapeseed oil production on the import of palm oil in the European Union. The production of rapeseed oil directly affects palm oil imports but not vice versa.

CONCLUSIONS

Palm oil export is still Indonesia's competitive advantage. Our result shows that Indonesia palm oil export significantly affected by the EU import activity and Rapeseed oil export. I With the EU's 'protectionism' policy that nestles in the duvet of environmental challenges, the market will be swamped with palm oil alternatives in this scenario run wild. Compared to EU rapeseed oil commodities, Indonesia's Palm oil has the most significant market share globally. The EU's decision to ban trade in palm oil in Europe is the cause of increasing rapeseed oil exports. This is their strategy to support local vegetable oil on European market. Based on our research shows that EU farmers highly influence the palm oil export volume in this case

Tabel 3 Granger Causal Test

Null Hypothesis:	Obs	F-Statistic	Prob.
EIMPO does not Granger Cause EUROP	56	4.62708	0.0142
EUROP does not Granger Cause EIMPO		0.5798	0.5637

*trace indicates no cointergration at 0.05 level

**all variable are stationary (2nd difference)

Indonesia. Using protectionism policy EU has managed to improve their local farmers while improving their image as global sustainability advocate. According to Tyson a, nd Meganingtyas (2020) EU has trying to imposed ban, tariff and campaign against palm oil in the last 5 years. Although Europe is not the primary market for Indonesian palm oil exports, this policy also affects the number of Indonesian palm oil exports from the number of rapeseed oil exports, palm oil imports, and European rapeseed oil production. The image of Europe as a reference for the world's sustainable agenda affects the world's palm oil market. The export of rapeseed as a substitute for oil palm continues to be campaigned by Europe. It creates a considerable impact on the number of Indonesian palm oil exports. The production of rapeseed oil also affects the amount of palm oil imports in Europe. The policy of using renewable energy raw materials such as biodiesel seems to require rapeseed oil. On the other hand, if viewed from the amount of production and labor costs, palm oil is still cheaper.

The recommendations is that subsequent research needs to look at the dimensions of the influence of European Union policies apart from the level of exports and imports of rapeseed oil. Future research can focus on workers in Europe and Indonesia to compare the effects on vegetable oil production. To have a better understanding of the vegetable oil sector, meta-analysis on palm oil determinants and qualitative study are required. Furthermore, in terms of a sustainable agenda, it is vital to analyze the land utilization of the two vegetable oils to determine which the ideal oil crop for becoming renewable energy is. The future research needs to further explained the relationship of climate change and sustainability on palm oil industries. The needs to look on the stakeholder, like farmers, perspective on vegetable oil industries to better understand how deep this industries rooted in.

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