

THE EFFECT OF PRODUCTION, PRICE, AND USD EXCHANGE RATE ON THE CPO EXPORTS VOLUME IN THE PERIOD OF 1990-2019 IN INDONESIA

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ABSTRACT: International trade is important for a country to drive economic growth. Export is one of the international trade activities carried out by Indonesia, namely the export of CPO commodities. The development of CPO production and exports every year increases, so that the cultivation of oil palm plantations increases but has a negative impact on the environment and decreases the total production of other plantations because most farmers choose to cultivate oil palm. The development of oil palm plantation cultivation also has a positive impact that is the absorption of labor. CPO provides benefits to the country in the form of foreign exchange through exports. The purpose of this research is to find out how the production, price, and USD exchange rate affect the volume of Indonesian CPO export. Data collection was carried out using non-participant techniques in the form of studying the descriptions of books, theses, articles and websites. Data were analyzed using multiple linear regression. The results of this study found that simultaneously the production variable X_1 , price X_2 , and the USD exchange rate X_3 had a significant effect on Indonesia's CPO export volume. The production X_1 partially has a positive and significant effect on the CPO exports volume. Price X_2 and USD Exchange Rate X_3 partially have a positive but not significant effect on the CPO exports volume.

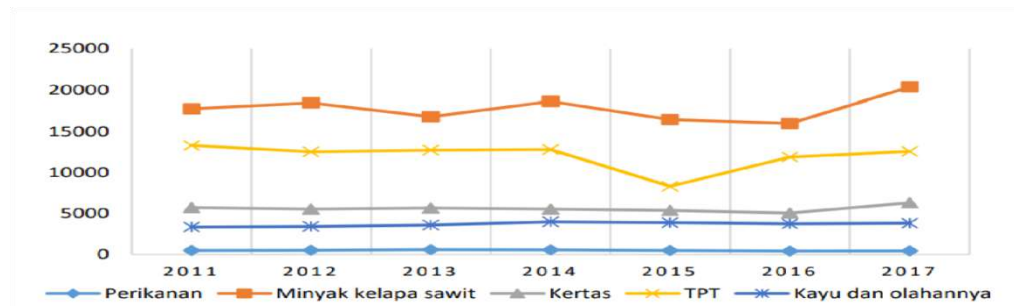
KEYWORDS: CPO Export, Production, Price, USD Exchange Rate, Environment

I. INTRODUCTION

Schumcher (2013) said "Economic growth is one measure of the economic achievement of a country. One of the drivers of economic growth is international trade. It is important that international trade is carried out by developing countries to improve living standards". Export-import is an international trade activity that has benefits or advantages such as being able to meet the needs of a country (Wellyanti, 2015). In line with what was stated by (Dewi and Indrajaya, 2020) exports and imports are carried out by the community to meet their daily needs. The focus of international trade goals is to help develop countries' products through promotion in foreign markets, the statement refers to one of the goals of export activities. The purpose of export activities is to expand the production market, encourage the economy, and generate income for a country in the form of foreign exchange. Foreign exchange generated from export activities is used to finance import activities and to pay off state debt (Dewi and Sudirman, 2017).

One of the exports made by Indonesia is a commodity from oil palm plantations, namely Crude Palm Oil (CPO). According to Indonesia Investment (2018), the cultivation of oil palm plantations has increased significantly but this has a negative impact on the environment and the decline in other agricultural products, because farmers choose to cultivate oil palm plantations. The rapid development of oil palm cultivation has caused oil palm plantations to require a large number of workers (Amzul, 2010), employing more than two million people and reducing poverty (Casson, 1999). This certainly has a positive impact on Indonesia. One of the commodities from oil palm plantations is CPO; is one of a number of profitable products (Tyson and Meganingtyas 2020), the most widely produced and consumed in the world because it has benefits and is resistant to high-pressure oxidation and can dissolve chemicals that cannot be dissolved with other materials. Indonesia is the largest producer and exporter of CPO in the world (Aprina, 2014).

Graph 1.1 Exports of Indonesia's Leading Commodities for the Period of 2011-2017



Source: Central Bureau of Statistics

Graph 1.1 explains that the largest contribution of CPO is CPO commodity. Ermawa and Saptia (2013) say that the contribution of CPO is still superior to other commodities. The benefits of CPO can be used in various purposes such as biodiesel as an alternative energy raw material (Azwar, 2015), as a food raw material (cooking oil), non-food needs that is cosmetics and pharmaceuticals (Aisyah and Kuswantoro, 2017). Indonesia's CPO production continue to be increasing each year and is the largest production in the world, but Indonesia does not control the world CPO market price and the appreciation of the Dollar against the rupiah because Indonesia applies a free floating exchange rate system.

II. THEORETICAL FOUNDATION

International trade

1. Absolute Advantage Theory

Free trade mechanisms could increase prosperity, so that a country was directed to move specialization in increasing efficiency. Countries will specialize in producing goods in a more efficient manner or absolute advantage according to Smith is the specialization of a country in producing a commodity with the aim of being traded with other countries. This is based on the assumption that using labor as a factor of production, the state has the same conditions and trade is carried out by means of burter.

2. TeoriHeckscher-Ohlin

According to Heckscher-Ohlin in international trade activities the most important thing is the abundance of a country's factors of production. The advantages of trade in goods carried out between countries are not based on natural profits but are based on the proportion and intensity of the factors of production used in producing goods to be traded between countries.

Production

Production is an activity that is carried out by input workers whose goal is to create output (Risandawi, 2013). SukirnoSadono (2006) said that the activities of producing and consuming (using) goods and services, with the aim that existing natural resources are used as efficiently as possible. Producers who are careful when producing goods and or services to be sold, where producers are able to measure the quantity of production that provides the most profit (SukirnoSadono, 2006).

Price

Price is a payment made by consumers or buyers with a certain amount of money for the product obtained from the product offered by the seller (Swastha 2003). Price is seen as an important factor in determining the supply of an item. The law of supply states that the higher the price of an item, the more goods producers can sell, and vice versa (SadanoSukirno, 2009).

III. RESEACH METHODS

This study uses a quantitative approach, the research location is in Indonesia, the object of research is production, price, also USD exchange rate CPO exports for period 1990-2019. The dependent variable of this research is the export volume of CPO Y which is the amount or quantity of CPO sold by Indonesia to other countries in tons. The indicators of the export volume of CPO Y are Production X_1 , Price X_2 , and USD exchange rate X_3 . The independent variables of this research are Production X_1 , Price X_2 , and USD exchange rate X_3 . Production X_1 is the result of production or output from palm oil that is CPO in tons. Price X_2 is the price of CPO in USD/ton units set in the international market as a reference price for exporters and importers. USD exchange rate X_3 is the rupiah exchange rate for the USD (United State Dollar) rate in USD/Rupiah units. The

types of data is quantitative and data sources is secondary data and the number of observations is thirty observations. Methods of data collection using non-participant methods. This study uses multiple linear regression analysis.

IV. RESULTS AND DISCUSSION

The results obtained from the multiple linear regression analysis are described :

Table1. Multiple Linear Regression Analysis

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | T | Sig. |
| 1 | (Constant) | -1.765 | 1.048 | | -1.685 | .104 |
| | Production | .645 | .052 | .873 | 12.487 | .000 |
| | Price | 6.923E-05 | .002 | .002 | .042 | .967 |
| | USD Exchange Rate | .293 | .157 | .127 | 1.869 | .073 |

The multiple linear equations in this study based on table 1 are as follows.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

$$Y = -1.765 + 0.645 + 6.923E-05 + 0.293$$

Information:

Y = CPO Export Volume

X_1 = Production

X_2 = Price

X_3 = USD Exchange Rate

- α value = -1.765, meaning that if the value of the independent variable Production X_1 , Price X_2 , and the USD exchange rate X_3 is zero, the export volume Y = -1.765. This means that if Indonesia does not produce CPO, then Indonesia will import -1,765 tons of CPO, on the other hand, if Indonesia produces CPO, Indonesia will export 1,765 tons of CPO.
- $\beta_1 = 0.645$, when Production X_1 increase a ton, then the CPO export volume Y increases by 0.645 tons, assuming the variable Price X_2 and the USD exchange rate X_3 are fixed. This means that if Indonesia produces 0.645 tons of CPO, Indonesia's CPO export volume will increase by 0.645 tons.
- $\beta_2 = 6.923E-05$, when Price X_2 increase a USD, it does not significantly increase the export volume of CPO Y by 6.923E-05 or 0.00000692 tons with the assumption that the production variable X_1 and the USD exchange rate X_3 are fixed.
- $\beta_3 = 0.293$, when USD Exchange rate X_3 increase by one USD/Rupiah, it does not significantly increase the CPO export volume Y by 0.293 with the assumption that the variable Production X_1 and the Price X_2 are fixed.
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The Results of Classic Assumption Test

Normality Test

The purpose of the normality test is to determine whether or not the residual value is normally distributed from the regression model made in this study, using the Kolmogorov-Smirnov test. The results showed the value of Asymp. Sig. (2-tailed) of 2.00 means that model distributed normally

Multicollinearity Test

This test aims to determine whether in the model there is a relationship between the independent variables or not. This is measured from tolerance or VIF. Results show, model was has no multicollinearity symptoms. This means that in this study the tolerance value of each variable is > 0.10 and $VIF < 10$.

Heteroscedasticity Test

This test aims to see whether there is a residual variation of one observation with other observations that are known through the Glejser test. Result of heteroscedasticity test show the significance value of the production variable is 0.866, the price variable is 0.538, and the USD exchange rate variable is 0.155. This means that the significance value of the production variable, price, and USD exchange rate > 0.05 , meaning regression model in this study did not contain signs of heteroscedasticity.

Autocorrelation Test

The autocorrelation test is to detect or see the occurrence of autocorrelation in a regression equation. The results showed that the Durbin Watson (DW) value was 1.997, indicating that the DW value was greater than d_u , the d_u value was 1.6498. Decision making in the autocorrelation test $d_u (1.6498) < DW (1.997) < 4 - d_u (2.3502)$. This means that the DW value lies between the values of d_u and $4 - d_u$, meaning that there is no autocorrelation

F Statistical Test Results

The F statistical test can be described using the significant value of ANOVA, if ≤ 0.05 , it means that the model is suitable to be used to describe the dependent variable. The results showed that the significant value was $0.000 < 0.05$. This means that the multiple linear regression model is suitable for use as a tool in testing the effect of the independent variable on the dependent variable.

The Results of Coefficient Determination R² Test

The result show that R² obtained at 0.966, the variable Production, price, and USD exchange rate can explain the variable volume of CPO exports by 96.6 percent while the remaining 3.4 percent can be explained by other factors not included in the model.

Hypothesis Test Results (t Test)

The t-test is used to test the effect of the production variable X_1 , price X_2 , also USD exchange rate X_3 partially on the CPO export volume variable Y.

1) The Effect of Production X_1 on CPO Export Volume

The results of the t test according to table 1.1 show the t_{count} value is 12,487 and t_{table} is 2,056.

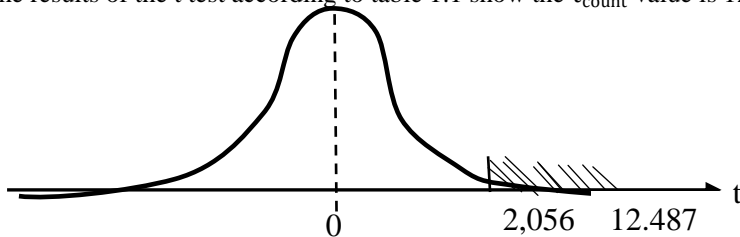


Figure 1.1 Areas of Acceptance and Rejection H_0 Production variable

The results of the t-test indicate that H_0 is rejected, meaning that production partially has positive with significant correlation on CPO exports volume.

2) The Effect of Price on CPO Export Volume

The results of the t-test according to table 1.1 show that the value of t_{count} is 0.042 and t_{table} is 2.056.

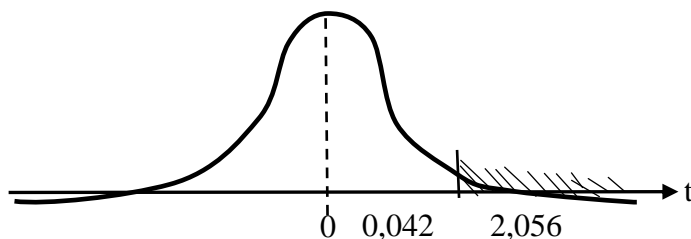


Figure 1.2 Areas of Acceptance and Rejection H_0 Price variable

Result indicates H_0 is accepted, so the price independently has a positive and insignificant correlation on the CPO exports volume.

3) The Effect of USD Exchange Rate on CPO Export Volume

Result according to table 1.1 shows the value of t_{count} is 1.869 and t_{table} is 2,056.

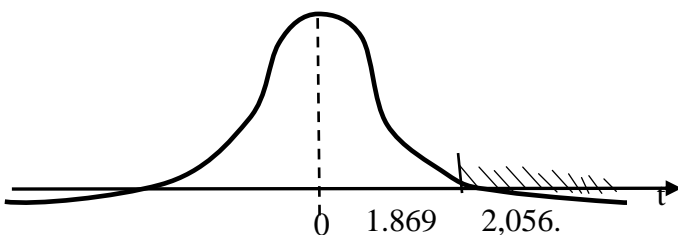


Figure 1.3 Areas of Acceptance and Rejection H_0 USD Exchange Rate variable

The results of t-test indicate that H_0 is accepted. This means that the USD exchange rate partially has a positive and insignificant correlation on the CPO exports volume.

Discussion of Research Results

Based on the results of the study showed that simultaneously the significant value of 0.000 was smaller than the value of $\alpha = 0.05$. This means that simultaneously the independent variables of production, price, and the USD exchange rate affect the dependent variable of Indonesia's CPO export volume. The results of the partial test are as follows.

➤ The Effect of Production on CPO Export Volume

Based on the regression analysis results, production has positive with significant impact on CPO exports volumes. These results support the results of previous research. Wibowo (2019) shows, "Indonesia's palm oil production independently has a positive and significant correlation" Dewi and Indrajaya's (2020) states, "the production variable has a positive and significant effect on Indonesian paper exports." The Hecher-Ohlin theory states that the important thing in international trade is the abundance of production factor so that trade can be profitable. The correlation of this study results with the Hecher-Ohlin theory is that Indonesia has abundant production factors such as natural resources (land) and human resources (labor). CPO production is inseparable from the availability of land in this case using land to plant oil palm. The government in increasing the production of CPO, the thing to do is to expand the land. Risandewi (2013) states that the production of input resources with the aim of producing output. This is a process of creating added value for an item. Production activities produce outputs for consumption with the aim of using natural resources as efficiently as possible and the producers studied when producing goods to be sold are able to measure the quantity of production that provides the greatest profit for their business (SukirnoSadono, 2006). This is in line with what was conveyed by Maryah, et al (2018) which said that in order to maximize profits, it is necessary to pay attention to the input of the use of labor. The resources that have been produced are able to meet human needs (Gilarso, 2001). CPO is the output of palm oil production that is exported. Exports are carried out because other countries need goods that are produced domestically, cannot produce their own goods that are exported can generate income for a country (SukirnoSadano, 2002). The four-sector economy Sukirno (2002) states that a country can earn income from export activities.

➤ The Effect of Price on CPO Export Volume

Based on the result of 6.923E-05, shows that price has positive with not significant effects on CPO export volume of 0.000692. This means that if the price increases by 1 USD, the CPO Export Volume will increase by 0.0000692. The results obtained are in accordance with the concept of supply, where the higher the price of the goods, the more quantity will be peddled by producers, and vice versa (SadanoSukirno, 2006). This result is in line with Azwar's research (2015) which states that the variable price of CPO in the world market has a positive impact on the export volume of the export commodity of palm oil. The results of the same study conducted by Zainal Abidin (2008) state, "international price of Indonesian palm oil (CPO) has a positive effect on the export volume of palm oil (CPO) in Indonesia."

➤ The Effect of USD Exchange Rate on CPO Export Volume

Based on the results of the regression analysis obtained research results which say the USD exchange rate partially has a positive and insignificant correlation on the volume of CPO exports. The results of this study are in line with the results of research by Nanang (2010) which explains that the exchange rate has a positive correlation with the demand for wood exports in Ghana. Radifan, (2014) stated that the Rupiah exchange rate against the US Dollar for the short term had a positive and insignificant correlation with Indonesian crude palm oil exports.

Implications of Research Results

Production contributes positively and significantly to the CPO exports volume. The government in several references in this study states that it is necessary to expand oil palm plantations so that CPO production increases so that export volumes also increase. Increased production because producers are able to use production factors and are careful in determining the quantity of production that can benefit producers. Indonesia as the world's largest producer of palm oil must be more effective and efficient in the use of production factors in this case is land. In addition to land that must be used properly is labor, efficient use of labor can encourage increasing the amount of output obtained, moreover Indonesia is a country that is rich in population and CPO production is a capital-intensive industry meaning that it requires more labor than machines. The government needs to pay attention to policies that can support exports through price indicators. The price of CPO in the world market has a positive impact on the CPO exports volume. Azwar (2015) stated that the world price of CPO is currently controlled by Rotterdam, the Netherlands. Based on this, the researcher hopes that Indonesia can become a benchmark for world CPO prices. Transactions using the USD exchange rate has a positive and insignificant correlation with an increase in export volume. So, Indonesia

must be able to maintain the stability of the rupiah in order to benefit from CPO export activities in the form of foreign exchange.

III. CONCLUSION

- 1) Production, price and USD exchange rate simultaneously affect the CPO exports volume.
- 2) Production independently has a positive and significant impact on the CPO exports volume.
- 3) Price independently has a positive but insignificant effect on the CPO exports volume.
- 4) The USD exchange rate independently has a positive and insignificant effect on the CPO exports volume.

Suggestion

The government's policy in improving the performance of CPO exports must really be looked at from various points of view. The policy of expanding oil palm land is one indicator to increase CPO production, so the government must pay attention to the area of oil palm plantations so that CPO production increases. Another indicator to determine increased production is the use of effective and efficient production factors such as labor. The palm oil industry is a labor-intensive industry, meaning that it requires more labor than machines, so it is necessary to pay attention to labor productivity in producing CPO. Suggestions from researchers for future researchers is hopefully examine the impact of government policies and labor productivity on increasing CPO exports.

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