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FACTORS AFFECTING EXPORT OF INDONESIAN COCOA BEANS TO MALAYSIA

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Abstract: Indonesia is an agricultural country with many superior export products, including cocoa beans. Indonesia was once the third-largest cocoa producer in the world. However, there has been a significant decline in the export quantities of cocoa beans in recent years. This research aims to analyze the factors affecting the export quantities of Indonesian cocoa beans to Malaysia using the Error Correction Model (ECM) method. The cocoa bean commodities recorded in this research are whole or broken, raw or roasted with HS code 1801. The estimation results show that the factors that significantly affect the export quantities of Indonesian cocoa beans to Malaysia in the long term include Indonesia cocoa beans production, the export price of palm oil, and the dummy export duty policy. On the other hand, factors that significantly affect the export quantities of Indonesian cocoa beans to Malaysia in the short term include Indonesia cocoa beans production and the dummy export duty policy. Policy recommendations that can be developed include increasing cocoa production and productivity by simultaneously carrying out intensification and extensification programs, reducing exports of cocoa in the form of beans, and rising exports of cocoa in processed form.

Keywords: cocoa beans, ECM, export quantities, long-term, short-term

Abstrak: *Indonesia merupakan negara agraris yang memiliki banyak produk ekspor unggulan, salah satunya yaitu biji kakao. Indonesia pernah menjadi produsen kakao terbesar ketiga di dunia. Namun, pada beberapa tahun belakangan ini terjadi penurunan volume ekspor biji kakao yang cukup signifikan. Tujuan dari penelitian ini untuk menganalisis faktor-faktor yang memengaruhi volume ekspor biji kakao Indonesia ke Malaysia dengan menggunakan metode Error Correction Model (ECM). Komoditas biji kakao yang tercatat dalam penelitian ini yaitu kelompok biji kakao utuh atau pecah, mentah atau dipanggang dengan kode HS 1801. Hasil estimasi menunjukkan bahwa faktor-faktor yang berpengaruh signifikan terhadap volume ekspor biji kakao Indonesia ke Malaysia dalam jangka panjang diantaranya produksi biji kakao Indonesia, harga ekspor minyak sawit, dan dummy kebijakan bea keluar. Di sisi lain, faktor-faktor yang berpengaruh signifikan terhadap volume ekspor biji kakao Indonesia ke Malaysia dalam jangka pendek diantarnya produksi biji kakao Indonesia dan dummy kebijakan bea keluar. Rekomendasi kebijakan yang dapat disusun diantaranya dengan meningkatkan produksi dan produktivitas kakao dengan melakukan program intensifikasi dan ekstensifikasi secara bersamaan serta mengurangi ekspor kakao dalam bentuk biji dan meningkatkan ekspor kakao dalam bentuk olahan.*

Kata kunci: *biji kakao, ECM, jangka panjang, jangka pendek, volume ekspor*

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INTRODUCTION

Indonesia is blessed with fertile soil and vast land with abundant biodiversity. The agricultural sector has an essential role in building the national economy. The agricultural sector provides employment, provides national food needs, and is one of the largest sources of foreign exchange for Indonesia through international trade activities.

Setiawan and Lestari (2011) argue that international trade is a trading activity or transaction carried out based on a mutual agreement between two parties, either between two or more individuals from different countries, between individuals who are in a country and another country, or between a country and other countries. Based on BPS (2020), in 2019, the agricultural sector ranked third in the business sector's contribution to the value of the national GDP according to the business sector, with a value of 1,354,970.30 billion rupiahs. This contribution is, of course, inseparable from the role of the agricultural sub-sectors, including the sub-sectors of food crops, plantation crops, horticultural crops, livestock, fisheries, forestry and logging, as well as agricultural and hunting services.

The plantation sub-sector is the highest contributor to national GDP compared to other sub-sectors. This figure increased by 4.3% from 2018 (BPS, 2020). It shows that the plantation sub-sector has enormous potential to make Indonesia the largest plantation commodity exporting country in the world—one of the plantation sub-sector export commodities that play an important role in cocoa beans. In 2011, Indonesia produced 15% of the world's cocoa beans and became the third largest producer in the world after Ivory Coast (34%) and Ghana (18%) (ICCO, 2012). In 2019, cocoa bean production reached 784.1 thousand tons. 98% of this production is dominated by smallholder plantations (768.8 thousand tons) with a land area of 1,574,300 hectares (BPS, 2020).

Cocoa beans are a commodity in great demand by the world community. Based on ITC (2020), world demand for cocoa beans reached 3.9 million tons. The high demand for cocoa beans is because chocolate is one of the foods most in demand by various groups of people around the world. All food and beverages cannot be separated from chocolate as a raw material or in processed form. In addition, increasing public awareness of the importance of health in food ingredients supports the increasing demand for chocolate which has many health benefits. Many studies have shown chocolate's contents and benefits, including flavonoid compounds that can increase coronary circulation (Ebaditabar et al. 2020). Flavonoid compounds are also valuable for reducing radiation exposure from electronic objects to the eyes and lightening the work of the eyes, so they are not too heavy (Gunawan et al. 2016; Pramita et al. 2014). In addition, chocolate also contains vitamins and minerals that can stimulate the brain to release endorphins. This hormone functions as a natural analgesic and sedative, reducing pain intensity, such as pain during menstruation (Adri, 2020; Arfailasufandi and Andiarna, 2018). It creates enormous opportunities for Indonesia to increase the production and export of cocoa beans to the international market. In 2019, Indonesia became the eighth largest cocoa bean exporting country globally, with total export quantities of 30,834.8 tonnes and a contribution to the national GDP of US$ 74,778,756 (UNCTAD, 2020). Indonesia's largest cocoa bean importing countries include Malaysia, Canada, India, Belgium, the Netherlands, etc.

Malaysia is the fourth largest importer of cocoa beans in the world, with a total import of 351,493 tonnes and is the largest importer in Indonesia, with a total import of 28,392.88 tonnes or 92% of Indonesia's total cocoa bean exports. This is because the downstream cocoa industry in Malaysia is developing very rapidly. Based on UNCTAD data (2020), Malaysia is the world's second-largest cocoa powder exporter and the world's third-largest cocoa butter exporter. Over the past five years, Malaysia has become the leading export destination country for Indonesia cocoa beans compared to other countries, with an average export of 83.8% of the total export quantities of Indonesia cocoa beans, even in the last three years, more than 90% of Indonesia cocoa beans have been sent to Malaysia. (UNCTAD, 2020). Based on this, this research is focused on Malaysia, which is considered to have represented the Indonesian cocoa bean market.

Based on Figure 1, it can be seen that the export quantities of Indonesian cocoa beans to Malaysia have fluctuated with an up-and-down trend. An upward trend occurred between 1991 and 2010, while a downward trend occurred between 2011 and 2019. Several factors influence this decline. One of the causes is the government's policy to develop the downstream cocoa industry by imposing an export duty on cocoa beans

of up to 15% through Minister of Finance Regulation No. 67/PMK.011/2010, enforced in April 2010. This is expected to reduce the export quantities of Indonesian cocoa beans. In addition, the development of Indonesia's export quantities of cocoa beans is thought to be influenced by several factors, including the international price of cocoa beans, the price of substitute products (palm oil), cocoa bean production, and the real exchange rate (exchange rate) of the rupiah against the dollar.

International prices are one of the important aspects of conducting international trade. The international price of cocoa beans is a benchmark and influences the export price and the domestic price of cocoa beans, so it is necessary to pay attention to the influence of international price developments on the export quantities of Indonesian cocoa beans. In addition, the price of palm oil as a substitute product is also thought to affect the export quantities of Indonesian cocoa beans. This is because palm oil is a plantation export commodity that ranks first compared to other plantation commodities. Palm oil is exported in the form of palm oil. Palm oil is the largest export product exported to Malaysia besides cocoa beans compared to other plantation commodities.

On the other hand, cocoa bean production is a factor that is no less important in influencing Indonesia's cocoa bean export quantities. The greater the production of Indonesian cocoa beans, the higher the export potential and vice versa. In addition, the real exchange rate (exchange rate) of the rupiah against the dollar is a factor that must be considered. In conducting international trade, there are differences in currency values between countries, so developments in the exchange rate of the rupiah against the dollar will affect the export quantities of Indonesian cocoa beans.

The significant decline in the quantities of exports of Indonesian cocoa beans indicates that Indonesia has yet to be able to fully utilize its existing potential, considering that Indonesia was once the third-largest producer of cocoa beans in the world (ICCO, 2012). Based on this, it is necessary to analyze the factors that influence the quantities of Indonesian cocoa beans exported to Malaysia so that Indonesia can increase exports of cocoa beans in the international market.

Previous research on Indonesia cocoa exports has been conducted in the study of Komalasari (2009), Rosita et al. (2019), Prameswita et al. (2014), and Puspita et al. (2015) with multiple linear regression analysis using the Ordinary Least Square (OLS) method. The independent variables used include production, export prices, domestic prices, international prices, loan interest rates, previous year's export quantities, quantities of imports of Malaysian cocoa beans, the real exchange rate of the rupiah against the dollar, and dummy export rates. The difference with previous research lies in the method used, namely the Error Correction Model (ECM), the period, and the export price of palm oil as an independent variable that previous researchers have never analyzed. Time series data must be stationary when processed. Based on the results of the data analysis, the data is not stationary at the level, so it is necessary to do the first differencing so that it is stationary.

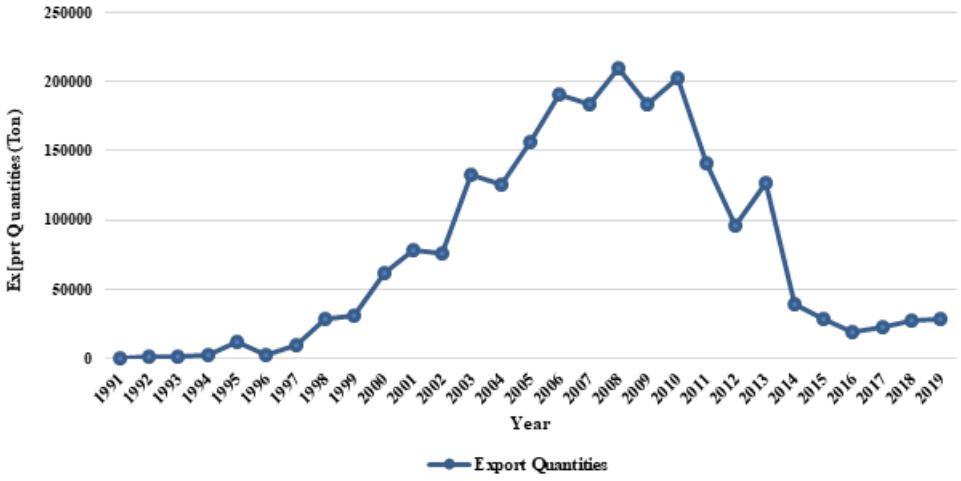

Figure. 1 Development of export quantities of Indonesia cocoa beans in Malaysia (UNCTAD, 2020)

For this reason, the Error Correction Model (ECM) method has several advantages, including analyzing variables that are not stationary at the level and have cointegration. This cannot be done using the Ordinary Least Square (OLS) method due to the nature of the data, which must be stationary at the level. In addition, the Error Correction Model (ECM) method is used to analyze data that is known between endogenous variables (influenced variables) and exogenous variables (influenced variables). On the other hand, the Error Correction Model (ECM) method can describe results from a long-term and short-term perspective so that better policies can be formulated in the future by comparing the long-term and short-term suitability. This research aims to analyze the factors that influence the export quantities of Indonesian cocoa beans to Malaysia and formulate policy recommendations related to Indonesian cocoa exports.

METHODS

This research uses secondary data in the form of annual time series data from 1991 to 2019 obtained from the Directorate General of Plantations, the Central Bureau of Statistics, UN Comtrade, World Bank, ITC, ICCO, and other supporting data sources. The selection of annual data is since these data can provide the best estimation results compared to other data. The cocoa bean commodity studied was based on HS code 1801 (cocoa beans, whole or broken, raw or roasted).

Qualitative analysis is used to formulate policy recommendations related to Indonesian cocoa exports. In contrast, quantitative analysis is used to analyze the factors that influence the quantities of Indonesian cocoa beans exported to Malaysia. This research uses multiple linear regression analysis with the Error Correction Model (ECM) method, processed in Eviews 11 and Microsoft Office Excel 2019 software. The ECM method was chosen to look at the factors that influence the export quantities of Indonesian cocoa beans to Malaysia in the short and long term. Gujarati (2007) states that if there is a relationship (cointegration) between the long and short-term, the relationship between the two can be expressed by an ECM (Error correction model).

Variables in the economy do not respond if there is a change in other variables. Therefore, the short-term view is a picture of the temporary consequences of this change. When production increases or decreases, export demand usually stays the same because the availability of old stock can still be sufficient. But after some time, importers will realize this phenomenon and its impact on the export quantities. Based on this, knowledge of long-term and short-term relationships is needed to explain temporary and final responses so that problems that impact export quantities can be prevented and resolved.

The econometric model for analyzing the factors that affect the volume of exports of Indonesian cocoa beans to Malaysia, in the long run, is generally formulated as follows:

$$VEKt = \alpha_0 + \alpha_1 PWDt + \alpha_2 PSWt + \alpha_3 PRODt + \alpha_4 KURSt + \alpha_5 DBKt + et$$

Widarjono (2009) argues that the long term is a period that allows full adjustment to any changes that occur. This can show the extent to which changes in the independent variable fully adjust the dependent variable. In the long-term equation model, a cointegration test is carried out to see whether the Error Correction Model (ECM) method can be continued by looking at the residual stationarity of the long-term equation. It can be called the Error Correction Term (ECT). The ECM model is valid if the coefficient on the Error Correction Term (ECT) is negative and statistically significant (Widarjono, 2009).

On the other hand, the short term is a period where it is impossible to adjust due to the short period fully. Banerjee et al. (1993) explained that the long term is usually defined over one year, while the short term is generally defined over six to twelve months. In the short-term equation, first differencing is carried out because the data is not stationary at the level, so the econometric model to analyze the factors that affect the volume of Indonesian cocoa bean exports to Malaysia in the short term is formulated as follows:

$$VEKt = b_0 + b_1 \Delta PWDt + b_2 \Delta PSWt + b_3 \Delta PRODt + b_4 \Delta KURSt + b_5 \Delta DBKt + \gamma ut + et$$

Description: VEKt (Export quantities of Indonesia cocoa beans in Malaysia in t year (kg)); PWDt (International cocoa price in t year (USD/kg)); PSWt (Export prices of palm oil in t year (USD/kg)); PRODt (Production of Indonesia cocoa beans in t year (ton)); KURSt (The rupiah exchange rate against the dollar in

t year (Rp/USD)); DBKt (*Dummy* export duty policy in t year (0 = before the implementation of the export duty policy, 1 = after the implementation of the export duty policy)); α_0 (Constant of the long-term equation); αi (The regression coefficient of i independent variable (i = 1,2,3,...) in the long-term equation); b_0(Constant of the short-term equation); *b*i (The regression coefficient of i independent variable (i = 1,2,3,...) in a short-term equation); γ (Coefficient of the error term); ut−1 (Error Correction Term); et (Error of short-term equation); Δ (First Differencing).

RESULTS

Factors That Affect The Export Quantities of Indonesia Cocoa Beans in Malaysia

Several conditions must be met for the ECM method to be used, including the stationarity test, cointegration test, classical assumption test, F test, and T-test. The stationarity test is carried out on all variables, including cocoa bean export quantities, international prices, palm oil export prices, production, and the real exchange rate. The stationarity test estimation results can be seen in Table 1. Based on the stationarity test, only the real exchange rate variable is stationary at the level of α=10%. Based on these results, a 1-time difference was made, so all variables were stationary. In the first decrease, all variables are stationary at the level of α=1%.

After that, a cointegration test was carried out to see if there was cointegration between the long-term and short-term equations by looking at the stationarity of the residual value of the long-term equation. In this cointegration test, the residual value is stationary at a significant level of 1% (0.0058 <0.01), so it can be concluded that there is cointegration between the variables in the model. This shows that the ECM model can be continued. Furthermore, the classic assumption test was carried out, which included multicollinearity, autocorrelation, normality, heteroscedasticity and normality tests. The four tests were carried out on the residual value of the ECM short-term model.

A multicollinearity test examined the relationship between independent variables using Variance Inflation Factors. Based on the multicollinearity test, each variable has a centered VIF value <10, so it can be concluded that there is no multicollinearity problem.

The heteroscedasticity test was carried out to test the level of homogeneity in a regression model (Gujarati, 2007). This test was carried out using the Breusch-Pagan-Godfrey test. The result is a probability value of 0.2519> 0.05, so it can be concluded that there is no heteroscedasticity problem.

The autocorrelation test is carried out to determine whether an equation's error is independent or dependent (Gujarati, 2007). The test was carried out with the Breusch-Godfrey Serial Correlation LM Test. Based on the autocorrelation test, a probability value of 0.0814> 0.05 was obtained, so it can be concluded that there is no autocorrelation problem.

The normality test is carried out on residual values to see the normal distribution of the data (Gujarati, 2007). The normality test was carried out by the Jarque-Berra test. The result is a probability value of 0.6562> 0.05, so it can be concluded that the data is normally distributed.In addition, statistical tests were carried out to see whether the model used was good in the long and short term. Statistical tests are seen from the T, F, and R-squared values.

Table 1. Stationarity test estimation results

Variable	Stationarity	
	Level	Diff 1
Export quantities	0.4907	0.0012
International prices	0.5383	0.0010
Export prices of palm oil	0.3278	0.0009
Productions	0.4113	0.0000
Real exchange rates	0.0715	0.0000

The T-test was conducted to assess the significance of each independent variable in the model. In the long-term equation, the production variable and the export duty policy dummy significantly affect the 1% significance level. Meanwhile, the variable export price of palm oil has a significant effect at the 5% level. On the other hand, the variables of international prices and real exchange rates have no significant effect on the export quantities of Indonesian cocoa beans to Malaysia. In the short-term equation, the production variable has a significant effect on the 5% level, while the dummy variable of export duty policy significantly affects the 10% level. In addition, the international price variable, the export price of palm oil, and the real exchange rate have no significant effect on the export quantities of Indonesian cocoa beans to Malaysia.

The F test in the long term and short term gives a probability value that is smaller than α = 1% so that it can be concluded that the model used is suitable.

The R-square test on the long-term equation shows a probability value of 0.83. This means that independent variables of 83% can explain the variation in the quantities of Indonesian cocoa bean exports to Malaysia. The rest is explained by other variables outside the model (error). On the other hand, in the short-term equation, the probability value is 0.58. Therefore, the diversity can be explained by the model by 58%, and the rest is explained by other variables outside the model (error).

Long-Term Model

Based on the results of long-term estimation, the variables that have a significant effect on the real level α = 1% include production variables and export duty policy dummy. In contrast, the export price variable of palm oil has a significant effect on the real level α = 5%. On the other hand, international price variables and real exchange rates have no significant effect. The long-term estimation results can be seen in Table 2.

Based on Table 2, the international price variable does not significantly affect the export quantities of Indonesian cocoa beans to Malaysia in the long run. This is indicated by the probability value (0.6190), greater than the 10% real level. The international price variable has a negative sign coefficient. This is not in accordance with the initial hypothesis that international prices have a positive relationship with the export quantities of Indonesian cocoa beans. If the international price increases, the export quantities of Indonesian cocoa beans will increase (ceteris paribus). These results align with research conducted by Komalasari (2009), which states that international prices have a negative and insignificant effect because there is a system of price cuts by export destination countries for low-quality Indonesian cocoa beans. If the international price increases, the tendency to increase exports will be greater, but when there is an oversupply condition, the high international price will increase the value of the discount to select good quality cocoa beans. Indonesian production that is exported abroad has yet to be able to provide good quality, so when international prices increase, Indonesia reduces its exports. It is due to the discount obtained being smaller, and producers get a bigger profit if they reduce the number of exports compared to increasing the number of exports. Thus international prices that tend to fluctuate do not affect the export quantities of Indonesian cocoa beans to the international market.

Table 2. ECM Long-Term Estimation Results

Variable	Coefficient	P-value
International prices	-9731.498	0.6190
Productions	0.337977***	0.0000
Export prices of palm oil	110452.7**	0.0408
Real exchange rates	-2.235277	0.3754
Dummy of export duty policy	-99727.82***	0.0000
C	-97637.15**	0.0195
R-square	0.831682	
F (Prob)	0.000000	

*** (significant at the real level of 1%); ** (significant at the real level of 5%);*(significant at the real level of 10%)

Based on the estimation results, the production variable significantly affects the export quantities of Indonesian cocoa beans to Malaysia in the long run. This is indicated by the probability value (0.0000), which is smaller than the 1% significance level. The production variable has a coefficient of 0.337977. Therefore, with an increase in Indonesia cocoa bean production by 10 tons, the export quantities of Indonesia cocoa beans to Malaysia will increase by 3.37977 tons (ceteris paribus). This is consistent with the initial hypothesis, which states that Indonesia's cocoa bean production has a positive relationship with Indonesia's cocoa bean export quantities. If cocoa bean production increases, the export quantities of Indonesian cocoa beans will increase (ceteris paribus). These results are in line with research conducted by Puspita et al. (2015), Komalasari (2009), Budiman (2016), and Prameswita et al. (2014), which state that cocoa bean production has a positive and significant effect on the export quantities of Indonesia cocoa beans.

Based on the estimation results, the variable export price of palm oil significantly affects the export quantities of Indonesian cocoa beans to Malaysia in the long term. This is indicated by the probability value (0.0408), which is smaller than the 5% significance level. The export price variable for palm oil has a coefficient of 110452.7. With an increase in the export price of palm oil by 1 USD, the export quantities of Indonesian cocoa beans to Malaysia will increase by 110,452.7 tons (ceteris paribus). This is consistent with the initial hypothesis, which states that the export price of palm oil has a positive relationship with the export quantities of Indonesian cocoa beans. If the export price of palm oil increases, the export quantities of Indonesian cocoa beans will increase (ceteris paribus). These results align with Anggraini (2006) regarding the export of other products (coffee), indicating that the substitute price of a product has a significant and positive effect on the export quantities of that product.

Based on the estimation results, the real exchange rate variable does not significantly affect the export quantities of Indonesian cocoa beans to Malaysia in the long term. This is indicated by the probability value (0.3754), greater than the 10% significance level. These results are in line with research conducted by Puspita et al. (2015), Komalasari (2009), and Rosita et al. (2019). The real exchange rate variable has a negative sign coefficient. This is different from the initial hypothesis, which states that the real exchange rate of the rupiah against the dollar has a positive relationship with the export quantities of Indonesian cocoa beans. Suppose there is an increase in the real exchange rate (depreciation). In that case, it will increase export speculation by exporters to gain higher profits so that the export quantities of Indonesian cocoa beans will also increase (ceteris paribus). The insignificant real exchange rate variable is due to Indonesia's high dependence on exports of cocoa beans to Malaysia. This is evidenced by the average export of Indonesia cocoa beans to Malaysia for the last 10 years of 72.03%, even in the last three years more than 90% (UNCTAD, 2020). This indicates that changes in the real exchange rate do not significantly affect the export quantities of Indonesian cocoa beans because other variables are more influential.

Based on the estimation results, the export duty policy's dummy variable significantly affects the export quantities of Indonesian cocoa beans in the long run. This is indicated by the probability value of the t-statistic (0.0000), which is smaller than the 1% significance level. The export duty policy's dummy variable has a coefficient value of -99727.82. This means that when the export duty policy is implemented, it will reduce the export quantities of Indonesian cocoa beans by 99,727.82 tons. This aligns with the initial hypothesis that when the export duty policy is implemented, it will reduce the demand for exports of Indonesian cocoa beans (ceteris paribus). This is also supported by Yamarik and Ghosh (2005), who state that increasing trade barriers such as quotas, tariffs and other restrictions will reduce exports. In addition, these results align with research conducted by Suryana et al. (2014) and Tresliyana et al. (2015), which stated that the export duty policy was proven to reduce the export quantities of cocoa beans.

Short-Term Model

All variables in the long term are different so that they are stationary in the short term. In addition, an additional variable in the form of error is included in the equation. Short-term estimation results can be seen in Table 3.

Banerjee et al. (1993) suggested that the short-term equation is in first differencing form, so the coefficient values cannot be interpreted and can only be seen from the positive or negative relationship. In the short-term model, the Error Correction Term coefficient is

produced with a coefficient of -0.591845, which is negative and significant at the 1% significance level, indicating that the ECM model is valid and can be used for long-term as well as short-term equations. The ECT value is less than 1. The ECT value in the model is the speed of adjustment, namely the coefficient that determines the speed of adjustment in response to changes (Zaretta & Yovita, 2019). On the other hand, Rahmawati and Hidayat (2017) added that the speed of adjustment is used to measure the regressive response for each period that deviates from balance. In this case, it explains the speed of a model in correcting errors that occur in the short term to achieve balance in the long term.

Based on the estimation results, the international price variable has no significant effect on the export quantities of Indonesian cocoa beans to Malaysia in the short term. This is indicated by the probability value (0.1648), greater than the 10% significance level. The international price variable has a negative sign coefficient. This is not in accordance with the initial hypothesis that international prices have a positive relationship with the export quantities of Indonesian cocoa beans. On the other hand, in the long and short term, international price variables have no significant effect on the export quantities of Indonesian cocoa beans to Malaysia.

Based on the estimation results, the variable export price of palm oil has no significant effect on the export quantities of Indonesian cocoa beans to Malaysia in the short term. This is indicated by the probability value (0.1107), greater than the 10% real level. The price of palm oil export variable has a positive coefficient. This is consistent with the initial hypothesis that the export price of palm oil has a positive relationship with the export quantities of Indonesian cocoa beans. On the other hand, although in the long term, the variable export price of palm oil influences the export quantities of Indonesian cocoa beans to Malaysia, in the short term, it is not significant.

Based on the estimation results, the production variable significantly affects the export quantities of Indonesian cocoa beans to Malaysia in the short term. This is indicated by the probability value (0.0121), which is smaller than the 5% significance level. The production variable has a positive coefficient. This is consistent with the initial hypothesis that production has a positive relationship with the export quantities of Indonesian cocoa beans. On the other hand, the production variable significantly affects the export quantities of Indonesian cocoa beans to Malaysia in the long and short term.

Based on the estimation results, the real exchange rate variable has no significant effect on the export quantities of Indonesian cocoa beans to Malaysia in the short term. This is indicated by the probability value (0.3243), greater than the 10% real level. The real exchange rate variable has a negative sign coefficient. This is not in accordance with the initial hypothesis that the real exchange rate has a positive relationship with the export quantities of Indonesian cocoa beans. On the other hand, the real exchange rate variable has no significant effect on the export quantities of Indonesian cocoa beans to Malaysia in the long and short term.

Table 3. ECM Short-Term Estimation Results

Variable	Coefficient	P-value
International prices	-18442.03	0.1648
Export prices of palm oil	59970.90	0.1107
Productions	0.179147**	0.0121
Real exchange rates	-1.598958	0.3243
Dummy of export duty policy	-17943.95*	0.0606
ECT (-1)	-0.591845***	0.0015
R-square	0.583353	
F (Prob)	0.002816	

*** (significant at the real level of 1%); ** (significant at the real level of 5%);*(significant at the real level of 10%)

Based on the estimation results, the export duty policy's dummy variable significantly affects the export quantities of Indonesian cocoa beans in the short term. This is indicated by the probability value of the t-statistic (0.0606), which is smaller than the 10% significance level. The export duty policy's dummy variable is negative. This is consistent with the initial hypothesis that the export duty policy dummy has a negative relationship with the export quantities of Indonesian cocoa beans. On the other hand, it can be seen that both in the long and short term, the export duty policy's dummy variable significantly affects the export quantities of Indonesian cocoa beans to Malaysia.

Based on these statements, the international price variable, the export price of palm oil, and the real exchange rate do not significantly affect the export volume of Indonesian cocoa beans to Malaysia in the short term. In contrast, the production and export duty policy dummy has a significant effect. This is because economic variables do not directly respond if changes occur in other variables. Therefore, the short-term view is a picture of the temporary consequences of this change. The production variable and export duty policy dummy have greater sensitivity and influence on the volume of Indonesian cocoa bean exports to Malaysia in the short term than other variables. This is also supported because the quality of Indonesian cocoa beans is still low, which results in Indonesia's weak position in the world market. This indicates that the increase in international prices and the export price of palm oil will not affect the increase in the export volume of Indonesian cocoa beans in the short term. In addition, the high dependence on exports of Indonesian cocoa beans to Malaysia also means that the real exchange rate only significantly affects the export volume of cocoa beans in the short term.

Based on Figure 2, it can be seen that the export quantities development of Indonesian cocoa beans showed an increasing trend from 1991 to 2010. This increasing trend was followed by developments in production in the same period. This indicates that an increase in cocoa bean production will affect an increase in the export quantities of Indonesian cocoa beans to Malaysia both in the short and long term, and vice versa can be seen after the 2010 period.

On the other hand, after the implementation of the export duty policy in April 2010, there was a very significant decrease in the export quantities of cocoa beans until 2019. This indicates that in the short term, the export duty policy was felt to effectively reduce the export quantities of Indonesian cocoa beans to Malaysia. Implementing the export duty policy will certainly impact increasing the availability of domestic cocoa beans to encourage cocoa downstream in Indonesia. Syadullah (2012) argues that after the implementation of the export duty policy, there has been a structural change in processed cocoa production in Indonesia. In that year, the role of processed cocoa production in Indonesia reached 41% of the total cocoa bean production as a whole. In 2013, that figure had increased to 43%. Compared to previous years, this figure has increased rapidly, where processed cocoa production only accounts for around 25% of Indonesia's total cocoa bean production.

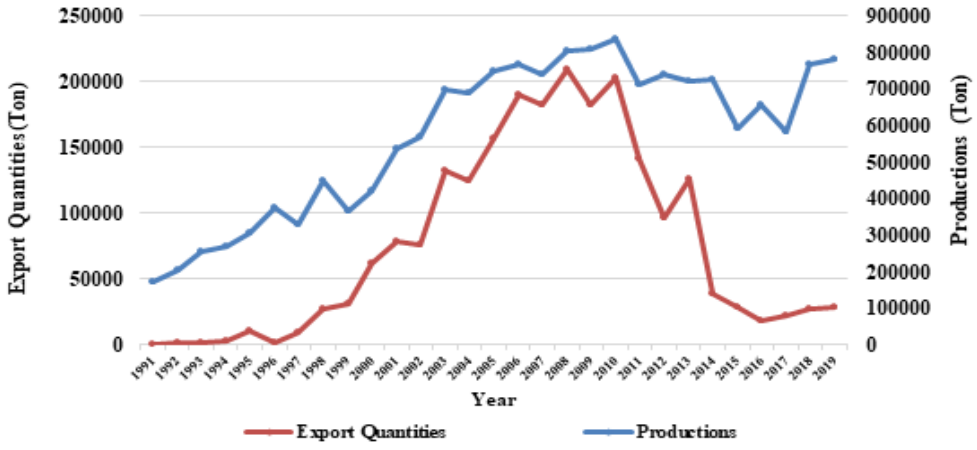

Figure 2. Development of production and export quantities of Indonesia cocoa beans in Malaysia in 1991-2019 (UNCTAD, 2020)

Demand for processed cocoa products comes from various industries, such as the food, beverage and pharmaceutical industries. The increase in the production of the food, beverage and pharmaceutical industries in Indonesia and the world has contributed to the demand for processed cocoa.

Managerial Implications

Based on the results of this research, it has been explained that the variables that influence the quantities of exports of Indonesian cocoa beans to Malaysia in the long and short term are production and export duty policy dummies. Therefore, two variables that have a significant effect can be considered in determining the design of policy implications. Policy recommendations that can be prepared include the following. The first is to increase cocoa production and productivity by simultaneously carrying out intensification and extensification programs. Simultaneous intensification and extensification programs can provide better results (Nurmalina, 2008). This intensification program can be carried out by providing assistance in providing fertilizers, pesticides, technology, and superior seeds. Atman (2017) states that using superior varieties with high resistance to biotic and abiotic threats can increase productivity. The extensification program can be carried out by increasing the cocoa planting area.

Based on BPS data (2021), over the last ten years, the area under cocoa cultivation in Indonesia has continued to decline, so the extensification program is expected to increase cocoa productivity in Indonesia. In addition, increased productivity can be done by revitalizing old cocoa trees. The chairman of the Indonesian Employers' Association (Apindo) free trade agreement committee, Wahyuni Bahar, believes that the decline in cocoa productivity in Indonesia is caused by the absence of revitalization of old trees, which makes them vulnerable to pests and diseases. Second, the government needs to reduce cocoa exports in the form of beans and increase cocoa exports in processed form. The reduction in cocoa bean exports is intended to ensure the availability of domestic raw materials to encourage the downstream cocoa industry in Indonesia to develop. Exports in processed cocoa will also generate higher added value and incentives than in the form of beans. This will increase the country's foreign exchange and the welfare of cocoa farmers in Indonesia.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The development of the export quantities of Indonesian cocoa beans to Malaysia from 1991 to 2019 experienced fluctuations and showed a downward trend after 2010. On the other hand, Indonesia's processed cocoa production increased from 25% to 43%. Factors that significantly affect the quantities of Indonesian cocoa bean exports to Malaysia in the long term include Indonesia cocoa bean production, the export price of palm oil, and the dummy export duty policy. Meanwhile, the factors that significantly affect the export quantities of Indonesian cocoa beans to Malaysia in the short term include Indonesia cocoa bean production and a dummy export duty policy. Based on this, the implications proposed include increasing cocoa production and productivity by simultaneously carrying out intensification and extensification programs and revitalizing old cocoa trees. In addition, the government needs to reduce cocoa exports in the form of beans and increase cocoa exports in processed form.

Recommendations

Cooperation from all parties and supervision is required. In addition, the government needs to issue policies that can maintain production stability to ensure the availability of domestically processed cocoa raw materials. In addition, the government needs to issue policies to guarantee the stability of domestic cocoa bean prices so as not to harm producers.

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