# Analysis Of Factors Affecting Cocoa Bean Exports In Indonesia

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## ABSTRACT

This study aims to analyze the factors affecting cocoa bean exports in Indonesia and examine the market conditions for cocoa bean exports. The dependent variable in this study is the value of cocoa bean exports in Indonesia (Y), while the independent variables include the area of cocoa plantations in Indonesia (X1), global cocoa bean demand (X2), domestic cocoa bean price in Indonesia (X3), international cocoa bean price (X4), and the exchange rate of Indonesian Rupiah to the US Dollar (X5). The scope of this research focuses on cocoa bean exports in Indonesia using time series data. The data used in this study consists of primary and secondary data from the years 2001 to 2021. Data sources were obtained from UN Comtrade, World Bank, Badan Pusat Statistik (BPS), Ministry of Agriculture, Ministry of Trade, Directorate of Plantation, The International Cocoa Organization (ICCO), relevant websites, and several previous studies from 2016 to 2021.

The analysis method used in this study is the Error Correction Model (ECM) processed using the statistical analysis software Eviews. This research will analyze the partial effects of the independent variables on the value of cocoa bean exports in Indonesia in the short and long term.

The results of this study are expected to provide a better understanding of the factors affecting cocoa bean exports in Indonesia and the market conditions for cocoa bean exports. These findings can serve as an important basis for the government, industry players, and other stakeholders in developing policies that support the growth and increase of cocoa bean exports in Indonesia.

Based on the conducted stationarity tests, all independent variables are stationary, validating the relationships in the equation model. The stationarity test results show a Probability Value of 0.0183 with a significance level of .000, which is less than 0.05. The Engle-Granger Cointegration test indicates that the International Price (X4) variable has a significant long-term effect with a coefficient value of 289575.9 and a significance level of 0.0490. The Exchange Rate (X5) variable has a positive effect with a coefficient value of -71814.49 and a significance level of 0.0282. Furthermore, the Error Correction Model (ECM) test reveals that the International Price (X4) variable has a significant short-term effect with a coefficient value of 393942.2 and a significance level of 0.0221.

**Keywords:** Cocoa Bean, Export, Indonesia

**1. Introduction**

Economic development is one of the methods employed by the government to enhance the growth of per capita income and fulfill the demand for goods and services, ultimately leading to an increase in national income. One of the economic development approaches is the import-export of goods and services produced by a country. The import-export activities can boost the economic growth rate of exporting countries since each nation requires collaboration to enhance their economies (Batubara and Saskara, 2015).

In terms of exports in the world market, Indonesia plays an important role, because Indonesia produces various export products from various sectors. One of them is Indonesia's export products from the plantation sector, the plantation sector is one that is very important given its significant contribution to macroeconomic stability, economic growth, foreign exchange earnings from exports, and sources of raw materials for downstream agricultural industries (Susila & Drajat, 2001).

In Indonesia's plantation development policy, cocoa is one of the leading commodities in the plantation sub-sector of the 15 national leading plantation commodities that are planned to be developed on a large scale in Indonesia (Ministry of Agriculture, 2018). Cocoa is one of Indonesia's primary plantation commodities which is also a leading export commodity for plantations, cocoa ranks third after oil palm and rubber commodities (Directorate General of Plantation, 2012).

Based on the data from the International Cocoa Organization (ICCO) for the year 2021/2022, Indonesia ranks third globally as a cocoa product processor. Additionally, Indonesia is the sixth-largest producer of cocoa beans in the world. The cocoa processing industry has contributed to foreign exchange earnings of over USD 1 billion in 2020 and 2021. Meanwhile, approximately 85 percent or 319,431 tons of the total cocoa processing industry production volume have been exported to 96 countries, including the United States, India, China, Estonia, and Malaysia. As a result, the cocoa bean production in Indonesia continues to increase. This, of course, brings benefits as a source of foreign exchange and improves the income of Indonesian cocoa farmers.

In exporting goods to the world (international) market, of course, it is influenced by various factors, the export of cocoa beans in Indonesia is influenced by various factors, including the amount of production, domestic prices, international prices, and the exchange rate (Putri & Prihtanti, 2020). The same thing is shown in the research of Al Ghozy et al (2017) that cocoa production, international prices, exchange rates have a significant influence on cocoa bean exports, and a different thing is shown by research conducted by Albaningrum (2021) that the exchange rate and domestic prices do not have positive influence on cocoa bean export activities.

Based on the known phenomena and findings, it is known that The land area, global cocoa bean demand, domestic cocoa bean price in Indonesia, international cocoa bean price, and the exchange rate of Indonesian Rupiah to the US Dollar have a relationship with cocoa bean exports. So the purpose of this research is to determine the relationship of total production, exchange rate, domestic prices, and world (international) prices to cocoa bean exports. So that they can contribute to science both online and offline and to policymaking in order to achieve economic growth and

balance, especially in alleviating poverty in Indonesia (Milla et al 2021; Efendi et al 2019).

### *1.1 Cocoa Commodity Development in Indonesia*

Cocoa is one of the main plantation commodities in the world. This commodity is much sought after because it is the raw material for making chocolate. Cocoa beans have undergone a series of processing processes so that their shape and aroma are like those on the market today. There are so many products with chocolate raw materials that are very familiar with today's modern life, such as chocolate-flavored cakes, chocolate ice cream, or chocolate drinks (Jauhari Budisantoso, 2010).

Cocoa is one of the mainstay commodities of plantations whose role is quite important for the national economy, especially as a provider of employment, a source of income, and foreign exchange. Besides that, cocoa also plays a role in encouraging regional development and agro-industry development. In 2002, cocoa plantations provided employment and a source of income for around 900 thousand heads of farming families, most of whom were in Eastern Indonesia (KTI) and contributed the third largest foreign exchange contribution to the plantation sub-sector after palm oil and rubber (Agricultural Research & Development Agency, 2005).

In the current era of the industrial revolution, almost everyone knows chocolate which is a favorite food ingredient, especially for children and teenagers. One of the uniqueness and advantages of food from chocolate because of the nature of chocolate can melt and melt at the temperature of the surface of the tongue. Food ingredients from chocolate also contain high nutrition because it contains protein and fat as well as other important elements. The main limiting factor for daily chocolate consumption by the community is the relatively high price compared to other food ingredients (Agricultural Research & Development Agency, 2005).

From year to year world cocoa consumption continues to increase. Apart from the increase in the world's population, the effect of improving the economy or the level of community welfare also plays a role in increasing the consumption of cocoa and its products. World cocoa consumption is dominated by European countries and the United States or industrial countries with per capita incomes well above US$ 1,000 (Wahyudi & Panggabean, 2008).

Based on field identification, it is known that approximately 70,000 ha of cocoa plantations are old, damaged, unproductive, and affected by pests and diseases with a high level of attack so that they need to be replanted, 235,000 ha of cocoa plantations with plants that are less productive and affected by pests and diseases. with a moderate attack level so that it is necessary to carry out rehabilitation and 145,000 ha of cocoa plantations with plants that are not maintained and lack of maintenance so that it is necessary to carry out intensification (Directorate General of Plantation, 2012).

Meanwhile, according to Business Competition Supervisory Commission (2009), the development of cocoa commodities in Indonesia faces several problems, including the low productivity of cocoa commodities caused by the following: 1). The use of random seeds, not yet widely used superior seeds, 2). The attack of PBK pests (cocoa pod borer) is still high, so far no cocoa clones that are resistant to CPB pests have been found, 3). most of the plantations are

people's plantations which are still managed in the traditional way, 3). Most of the cocoa plants are old, over 25 years, far above the most productive age of 13-19 years.

In the regional economy, the cocoa economic sector has linkages with other economic sectors. Cocoa plantations in the production process require a number of inputs and at the same time produce a number of outputs that can be used to meet the needs of final demand in the form of household consumption, exports, and others as well as production inputs for other economic sectors (Hutagaol et al, 2007). Currently, the downstream cocoa industry in Indonesia is still not developing and operating optimally. This is because most of the cocoa exported is still in the form of primary commodities. Cocoa in the form of primary commodities will be subject to price discounts which will then be inputted as losses (Dradjat & Wahyudi, 2008).

## 2. Literature Review

1. *Cocoa*
   Cocoa plants belong to the Sterculiaceae family and are of the species Theobroma cacao. Cocoa trees grow in tropical regions, especially in South America, and produce cocoa beans used to make chocolate.
   Cocoa flowers actually grow directly from the main stem or larger branches, and they typically appear in the leaf axils. The flowers are small and inconspicuous, ranging in color from white to pink. After pollination, these flowers develop into cocoa fruits shaped like pods or capsules.

2. *Benefits of Cocoa for Health*
   Chocolate has the ability to inhibit the oxidation of LDL cholesterol (bad cholesterol) and improve immune function, thus reducing the risk of coronary heart disease and cancer. Studies conducted at Harvard University have shown that if someone balances their consumption of chocolate candy with sufficient physical activity and a balanced diet, the negative effects of chocolate candy need not be a major concern.(Rahman, 2018)

3. *Benefits of Cocoa for the Indonesian Economy*
   As one of Indonesia's main commodities, cocoa plays a strategic role in the country's economy, particularly as a contributor to foreign exchange earnings, ranking third in the plantation sector. In 2012, cocoa commodities contributed USD 1,053,446,947 (1.053 billion) in foreign exchange from the export of cocoa beans and processed cocoa products. The average cocoa consumption per capita in Indonesia is around 0.4 kg per year. In contrast, cocoa consumption in ASEAN countries such as Singapore and Malaysia has reached 1 kg per capita per year, while some European countries have a consumption rate of over 8 kg per capita per year. The increasing cocoa consumption drives the improvement of cocoa farmers' welfare and contributes to the national economy and employment. The higher the domestic chocolate consumption, the greater the demand for cocoa by chocolate manufacturing companies (Rahman, 2018).

4. *Demand Theory*

   In economic terms, demand is further defined as not just what consumers want, but the demand for a certain quantity of goods and services. It means that if consumers insist on having their desires fulfilled or even reaching the level of needs (which are desires that require immediate fulfillment), it needs to be supported by purchasing power or the ability of consumers to afford the agreed-upon price (Arwin, 2020).

5. *Supply Theory*

   The existence of public demand for a certain good does not meet the requirements for transactions to occur in the market. Therefore, there needs to be a supply from producers or sellers. In the field of economics, supply refers to the availability of a quantity of goods or services for sale or delivery to consumers at various prices within a specific period. If defined, supply is the quantity of goods offered by producers to consumers at a specific price, at a specific time, and in a specific place (Syafii et al., 2020).

6. *International Trade*

   Trade is defined as the exchange of goods and services or money that mutually benefits or provides advantages and is based on the voluntary will of each party. Meanwhile, international trade can be defined as business transactions between parties from more than one country (Diphayana, 2018).

7. *Export Theory*

   Export, in simple terms, can be defined as the activity of selling our products/services to other nations or foreign countries in exchange for payment in foreign currency. To carry out this sales activity, communication involving the foreign party is necessary. For smooth communication, it is important to use the foreign language corresponding to the target export country's language or to use international languages that are easily understood. In other words, export-import is essentially a straightforward transaction of selling and buying goods between businesses located in different countries. Export is a trade activity involving the removal of goods from within the customs territory of Indonesia while complying with the applicable regulations (Sidabutar, 2021).

8. *Theory of Comparative Advantage*

   The theory of comparative advantage, developed by economist David Ricardo in the 19th century, explains why countries can mutually benefit from international trade, even if one country has an absolute advantage in all products. This theory states that countries should specialize in producing goods and services in which they have a comparative advantage or lower relative costs compared to other countries, and acquire other goods and services through trade.

9. *Inventory Theory*

   Inventory theory, also known as inventory management or inventory control theory, is a conceptual framework used to optimize decisions on how much stock or materials should be held in inventory by a company. The main objective of inventory theory is to achieve a balance between storage costs and inventory shortage costs. (Arjang A. Assad, 1986).

## 3. Research Methodology

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 the area of cocoa plantations in Indonesia (X1), global cocoa bean demand (X2), domestic cocoa bean price in Indonesia (X3), international cocoa bean price (X4), and the exchange rate of Indonesian Rupiah to the US Dollar (X5). The difference with previous research lies in the method used, namely the Error Correction Model (ECM. 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.
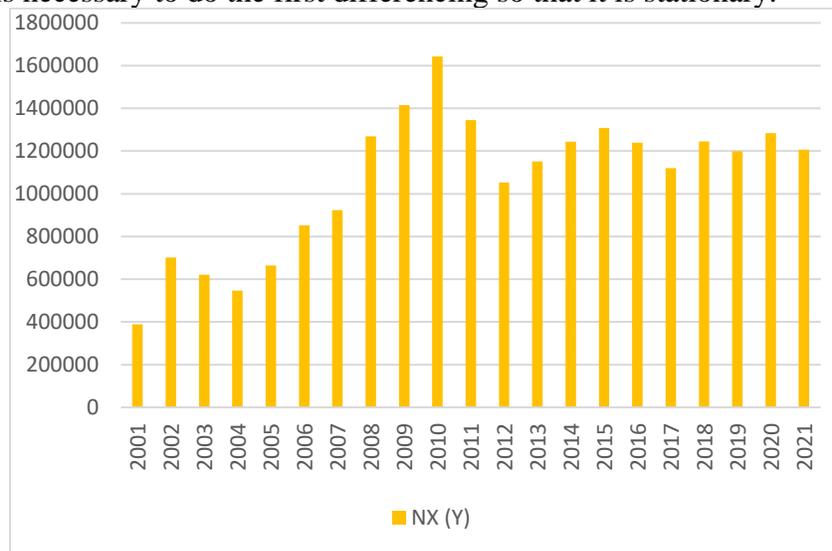


Figure 1. Value of Cocoa Bean Exports from Indonesia, 2001-2021 (in Million USD).

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 Cocoa Bean Exports in Indonesia and formulate policy recommendations related to Indonesian cocoa exports. The analysis used to examine the variables that affect the Value of Cocoa Bean Exports from Indonesia in this study is time series regression. The analytical tool used is Eviews 10. The dependent variable is the Export Value measured in USD. The independent variables include Land Area, Global Cocoa Demand, Domestic Cocoa Price, International Cocoa Price, and Exchange Rate.

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 Cocoa Bean

Exports in Indonesia. 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 Cocoa Bean Exports in Indonesia, in the long run, is generally formulated as follows:

$$EXV_t = \alpha_0 + \alpha_1\, LA_t + \alpha_2\, WD_t + \alpha_3\, DP_t + \alpha_4\, IP_t + \alpha_5\, KURS_t + e_t$$

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 value of Cocoa Bean Exports in Indonesia in the short term is formulated as follows:

$$EXV_t = b_0 + b_1\, \Delta LA_t + b_2\, \Delta WD_t + b_3\, \Delta DP_t + b_4\, \Delta IP_t + b_5\, \Delta KURS_t + \gamma u_t + e_t$$

Description: $EXV_t$ (Export value of Indonesia cocoa beans in t year (USD)); $LA_t$ (Land Area of cocoa plantation in t year (Ha)); $WD_t$ (World demand of cocoa bean in t year (ton)); $DP_t$ (Domestic price of Indonesia cocoa beans in t year (Rp/Kg)); $IP_t$ (International price of cocoa bean in t year (USD)); $KURS_t$ (The rupiah exchange rate against the dollar in t year (Rp/USD)); $DBK_t$ (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)); $\alpha_0$ (Constant of the long-term equation); $\alpha_i$ (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).

## 4. Results
   a. *Stationarity Test*

Results of the Dependent Variable (Y) "Export Value of Indonesian Cocoa Beans" and Independent Variables Land Area (X1), World Cocoa Demand (X2), Domestic Cocoa Price (X3), International Cocoa Price (X4), Exchange Rate (X5), show that the data passed the stationarity test, as evidenced by the probability in the Lin Levin & Chu method being less than 0.5. Additionally, the graph shows a changing trend, indicating that it does not require a stationarity test at the first difference level.
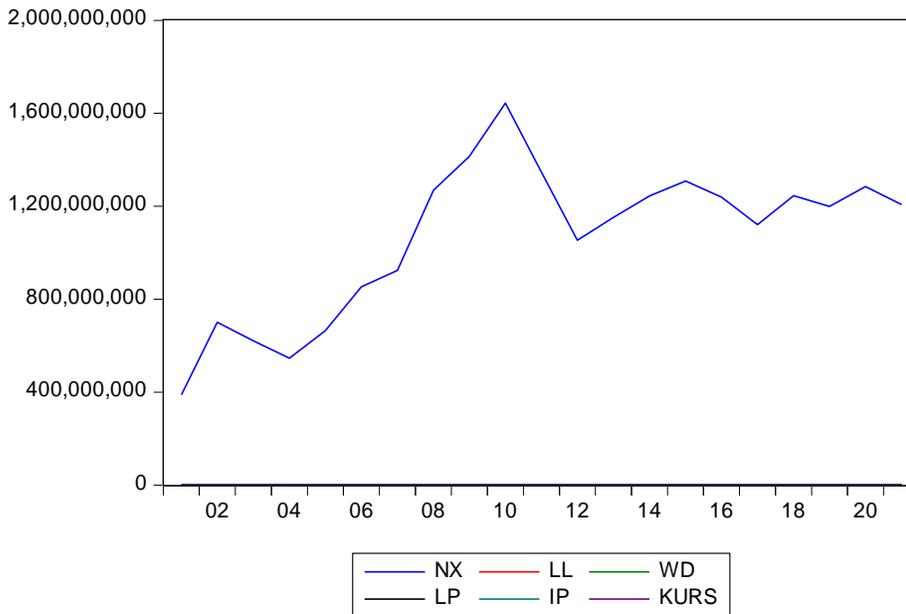


Figure 2. Stationarity Test Graph

   b. *Cointegration Test*

In the cointegration test, the Error Correction Terms (ECT) obtained from the equation
NX = (LL + WD + LP + IP + Exchange Rate) x C
were tested for stationarity at the level condition. The probability of ECT, which is 0.0582, slightly exceeds the criteria of 0.05, indicating the presence of both long-term and short-term relationships.

| Variable | Koefisien | Std. Error | t-Statistik | Prob |
|----------|-----------|------------|-------------|---------|
| ECT | -0.649 | 0.220 | -2.941 | 0.00087 |
| NX(Y) | 411356.1 | 29717231 | 0.013 | 0.098 |

Table 1. Cointegration Test Result.

   c. *Error-Correction Model (ECM)*

In the long-term regression equation or ECT, only the International Price (IP) variable and the Exchange Rate (Kurs) variable have a long-term influence on the dependent variable (Y) Export Value.

Table 2. Results of ECT Test

| Variabel | Koefisien | t-statistik | Prob. |
|---|---|---|---|
| LL | 116.7595 | 0.358362 | 0.7251 |
| WD | 213291.6 | 1.509107 | 0.1520 |
| LP | -13676.68 | -0.501956 | 0.6230 |
| IP | 289575.9 | 1.958517 | 0.0490 |
| KURS | -71814.49 | -2.427806 | 0.0282 |
| NX | 4.00E+08 | 1.353370 | 0.1960 |

In the short-term regression equation or ECM, only the International Price (IP) variable has a short-term influence on the dependent variable (Y) Export Value.

Table 2. Results of ECM Test.

| Variabel | Koefisien | t-statistik | Prob. |
|---|---|---|---|
| D(LL) | 140.0244 | 0.227930 | 0.8232 |
| D(WD) | 231653.2 | 1.740119 | 0.1054 |
| D(LP) | -19966.79 | -0.761260 | 0.4601 |
| D(IP) | 393942.2 | 2.598405 | 0.0221 |
| D(KURS) | -48744.21 | -0.949416 | 0.3597 |
| ECT(-1) | -0.649940 | -1.768060 | 0.1005 |
| C | -13708351 | -0.278259 | 0.7852 |

d. *Normality Test*

Based on the estimation results, the Jarque-Bera probability value is obtained as 1.083399, which is greater than $\alpha$ (0.05). This result indicates that the data follows a normal distribution, and there are no issues of non-normality in the model.



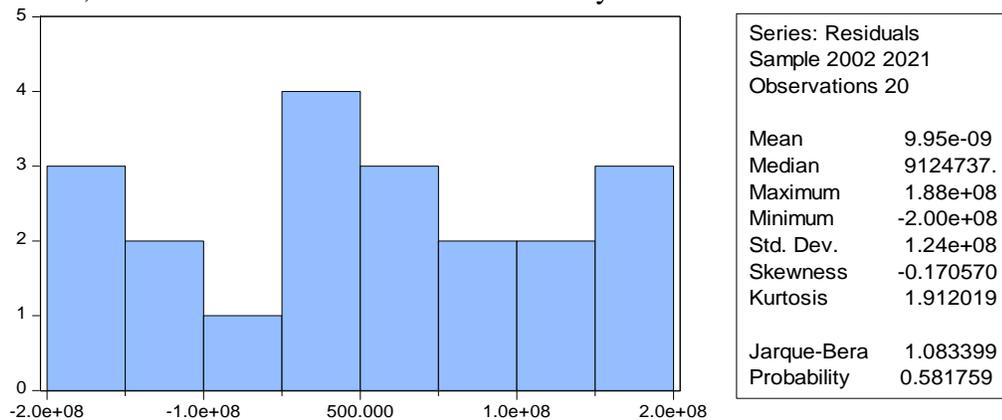| Series: Residuals | |
|---|---|
| Sample 2002 2021 | |
| Observations 20 | |
| | |
| Mean | 9.95e-09 |
| Median | 9124737. |
| Maximum | 1.88e+08 |
| Minimum | -2.00e+08 |
| Std. Dev. | 1.24e+08 |
| Skewness | -0.170570 |
| Kurtosis | 1.912019 |
| | |
| Jarque-Bera | 1.083399 |
| Probability | 0.581759 |

Figure 3. Normality Test Results

e. *Multicollinearity Test*

This test is intended to determine whether there is correlation among the independent variables in the regression model. The independent variables do not have multicollinearity issues if their VIF values and tolerance values are not greater than 10 (Ghozali, 2016).

The multicollinearity test results show that the VIF (Variance Inflation Factor) values for both independent variables are not greater than 10, indicating the absence of multicollinearity. This suggests that the regression model test can proceed.

Table 4. Multicollinearity Test Results

| Variabel | Koefisien | VIF |
|---|---|---|
| D(LL) | 377402.5 | 1.422345 |
| D(WD) | 1.77E+10 | 1.094555 |
| D(LP) | 6.88E+08 | 2.265666 |
| D(IP) | 2.30E+10 | 2.671997 |
| D(KURS) | 2.64E+09 | 2.160400 |
| ECT(-1) | 0.135130 | 2.188587 |
| NX | 2.43E+15 | 2.169274 |

f. *Heteroscedasticity Test*

To detect the presence of heteroscedasticity, the rank correlation of Spearman (Gujarati, 1997, as cited in R. Gunawan, 2005) is used. The criteria used with a significance level of 5% (alpha = 0.05) are as follows: if the significance coefficient < 0.05, heteroscedasticity is present, and vice versa, if the significance coefficient > 0.05, heteroscedasticity is not present. The results of the heteroscedasticity test are shown in the table below:

Table 5. Heteroscedasticity Test Result

| Variabel | Koefisien | t-statistik | Prob. |
|---|---|---|---|
| NX | 1.12E+16 | 2.589491 | 0.0224 |
| D(LL) | 6.88E+10 | 1.279402 | 0.2231 |
| D(WD) | -1.20E+13 | -1.029082 | 0.3222 |
| D(LP) | 2.45E+12 | 1.064520 | 0.3065 |
| D(IP) | -7.37E+12 | -0.554952 | 0.5883 |
| D(KURS) | 6.66E+12 | 1.481712 | 0.1622 |
| ECT(-1) | 70168204 | 2.179567 | 0.0483 |

Based on the data above, the correlation values of variable X1 with the residuals of variables X2, X3, X4, and X5 are all > 0.05. This means that there is no heteroscedasticity, and therefore, the regression model testing can proceed.

g. *Autocorrelation Test*

Table 6. Autocorrelation Test Result

| Model | R | *R Square* | *Adjusted R Square* | *Std. Error of the Estimate* | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.963[a] | 0.0018 | -0.72 | 18.733 | 1.969115 |

In this study, the sample size is n = 20, α = 0.05, and the number of independent variables is k = 5, resulting in critical values of dL = 0.664 and dU = 3.336 for the Durbin-Watson test. The

autocorrelation test results can be seen in Table 10 above, which presents a Durbin-Watson value of 1.969115. This means that the dW value falls between dL (0.664) and dU (3.336), indicating that dL < dW < dU. Therefore, it is concluded that in this study, the issue of autocorrelation is inconclusive or remains uncertain (Ghozali, 2011). Additionally, another way to detect autocorrelation is by examining the significance using a run test. If the significance value from the run test is greater than 0.05 then there is no issue of autocorrelation.

| F-statistic | 0.010225 | Prob. F(2,11) | 0.9898 |
|---|---|---|---|
| Obs*R-squared | 0.037113 | Prob. Chi-Square(2) | 0.9816 |

The test results above indicate that the Prob. Chi-Square value is 0.9816, and the resulting significance value is greater than 0.05. This implies that there is no autocorrelation issue in this study, and it can be concluded that the independent variable is not disturbed or influenced by any intervening variables.

## 5. Discussion

The aim of this paper was to analyze the factors that influence the export value of Indonesian cocoa beans. The findings of the study provide insights into the key determinants of cocoa bean exports from Indonesia and shed light on the factors that contribute to the growth and success of the cocoa industry in the country.

One of the significant factors identified in this analysis is the international price of cocoa. The results indicate that changes in the international price have a substantial impact on the export value of Indonesian cocoa beans. As the international price increases, it creates a favorable environment for cocoa exporters, leading to higher export values. This finding emphasizes the importance of global market conditions and price fluctuations in determining the performance of the cocoa export industry.

Furthermore, the exchange rate was found to be another influential factor. The exchange rate plays a crucial role in shaping the competitiveness of Indonesian cocoa beans in the international market. A favorable exchange rate enhances the affordability and attractiveness of Indonesian cocoa beans for foreign buyers, resulting in increased export values. The findings highlight the significance of exchange rate stability and competitiveness in driving cocoa bean exports.

It is also worth noting that land area, as an indicator of production capacity, emerged as a contributing factor to the export value of Indonesian cocoa beans. A larger land area dedicated to cocoa cultivation allows for increased production and subsequently higher export volumes. This implies that investment in expanding cocoa farming areas can have a positive impact on export values.

The analysis did not find a significant impact of domestic cocoa prices and global cocoa demand on the export value of Indonesian cocoa beans. This suggests that while these factors may influence the domestic cocoa market and industry dynamics, they do not exert a direct influence on the export performance.

Overall, the findings of this study provide valuable insights for policymakers, cocoa industry stakeholders, and exporters in understanding the factors that drive the export value of Indonesian cocoa beans. The identified factors, such as international prices, exchange rates, and land area, can serve as important considerations for formulating strategies to promote and support the growth of the cocoa export industry.

However, it is important to note that this study has certain limitations. The analysis is based on a specific time period and may not capture the dynamics of long-term trends. Additionally, other potential factors that were not included in the analysis, such as government policies and market competition, could also influence the export value of Indonesian cocoa beans. Future research could explore these aspects to provide a more comprehensive understanding of the factors affecting cocoa exports in Indonesia.

In conclusion, this analysis contributes to the existing knowledge on the factors influencing the export value of Indonesian cocoa beans. The findings highlight the significance of international prices, exchange rates, and land area as key determinants. The study provides valuable insights for industry stakeholders and policymakers, enabling them to make informed decisions and develop strategies to enhance the competitiveness and growth of the cocoa export industry in Indonesia.

## 6. Conclusion

In conclusion, this study aimed to analyze the factors influencing the export value of Indonesian cocoa beans. The findings of the analysis shed light on the key determinants of cocoa bean exports and provide valuable insights for the cocoa industry in Indonesia.

The results indicate that the international price of cocoa is a significant factor influencing the export value of Indonesian cocoa beans. Changes in the international price have a notable impact on export values, emphasizing the importance of global market conditions in driving the performance of the cocoa export industry.

Additionally, the exchange rate was found to be a crucial factor affecting the export value of Indonesian cocoa beans. A favorable exchange rate enhances the competitiveness of Indonesian cocoa beans in the international market and contributes to increased export values.

The analysis also revealed that land area dedicated to cocoa cultivation has a positive influence on export values. A larger land area allows for higher production and subsequently boosts export volumes. This highlights the importance of investing in expanding cocoa farming areas to support the growth of cocoa bean exports.

However, the study did not find significant impacts of domestic cocoa prices and global cocoa demand on the export value of Indonesian cocoa beans. These factors may have indirect effects on the domestic cocoa market but do not directly influence export performance.

Overall, the findings of this study provide valuable insights for policymakers and industry stakeholders in understanding the factors driving the export value of Indonesian cocoa beans. The identified factors, such as international prices, exchange rates, and land area, can guide strategic decision-making and policy formulation to support the growth and competitiveness of the cocoa export industry in Indonesia.

It is important to acknowledge the limitations of this study. The analysis is based on a specific time period and may not capture long-term trends. Additionally, other factors such as government policies and market competition, which were not included in the analysis, could also influence cocoa exports.

Future research could expand on these findings by considering a longer time frame and exploring additional factors that may impact cocoa bean exports. Such studies could provide a more comprehensive understanding of the dynamics and drivers of the cocoa export industry in Indonesia.

In conclusion, this analysis contributes to the existing knowledge on the factors influencing the export value of Indonesian cocoa beans. The study provides valuable insights for stakeholders and policymakers to develop strategies that enhance the competitiveness and growth of the cocoa export industry in Indonesia. By considering the identified factors and addressing the limitations, stakeholders can work towards maximizing the potential of the cocoa sector and promoting sustainable cocoa bean exports.

Based on the regression results and discussions in this study, the following conclusions can be drawn:

In the long run, cointegration and unit root tests have shown that the selected five variables are well-integrated and meet the stationarity requirements. The estimation results using the Error Correction Model (ECM) indicate that the equilibrium error coefficient is negative and significant. With a correction rate of 48% for adjustment, it indicates that the current influence of independent variables is below their long-run equilibrium value, and each year it will be corrected by an average of 48% to return to the equilibrium point. The following are the findings for each variable:

a. Land area per capita variable has a positive but insignificant partial effect on the export value of Indonesian cocoa beans.
b. World cocoa demand variable has a positive but insignificant partial effect on the export value of Indonesian cocoa beans.
c. Domestic cocoa price variable has a positive but insignificant partial effect on the export value of Indonesian cocoa beans.
d. International cocoa price variable has a positive and significant partial effect on the export value of Indonesian cocoa beans.
e. Exchange rate variable has a positive and significant partial effect on the export value of Indonesian cocoa beans.

Variables that have an impact in both the short and long run are:

a. Variables that have a long-run impact are international price and exchange rate.
b. The variable that has a short-run impact is the exchange rate.

These findings provide insights into the factors influencing the export value of Indonesian cocoa beans. It suggests that international price, exchange rate, and other variables that are not significant in the short run but have a long-run impact should be considered in policy-making and strategic decision-making to support the growth and competitiveness of the cocoa export industry in Indonesia.

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