



## The Analysis of Factors Affecting Indonesian Cocoa Bean Exports 1981-2019

Rita Feni<sup>1</sup>; Edy Marwan<sup>1</sup>; Neti Kesumawati<sup>2</sup>; Riyanto Efendi<sup>3</sup>

<sup>1</sup> Agribusiness, Muhammadiyah University of Bengkulu, Indonesia

<sup>2</sup> Agrotechnology, Muhammadiyah University of Bengkulu, Indonesia

<sup>3</sup> Graduate Economic Education, Yogyakarta State University, Indonesia

<http://dx.doi.org/10.18415/ijmmu.v9i1.3349>

### **Abstract**

Cocoa beans are one of the export commodities from plantations in Indonesia. The export of cocoa beans is influenced by various factors of total production, exchange rates, domestic prices, and international prices. So the purpose of this research is to determine the relationship between total production, exchange rate, domestic prices, and world prices in influencing exports of cocoa beans in 1981-2019. The methodology of this research is causal-comparative with a quantitative approach using secondary data from Badan Pusat Statistik (BPS) Indonesia and International Cocoa Organization (ICO). The data analysis method in this research used Ordinary Least Squares (OLS). The results of the research are as follows: 1). Total cocoa bean production has a positive and significant impact on Indonesian cocoa bean exports, 2). The cocoa bean exchange rate has a positive and significant impact on Indonesian cocoa bean exports, 3). Domestic prices of cocoa beans have a positive and significant impact on Indonesian cocoa bean exports, 4). World prices have a negative and insignificant effect on Indonesian cocoa bean exports, 5). Total production, exchange rate, the domestic price of cocoa beans, and world prices together affect Indonesia's cocoa bean exports by 53.1% and 46.9% influenced by variables outside the research.

**Keywords:** *Cocoa Bean Exports; Total Production; Exchange Rates; Domestic Prices; World Prices*

### **1. Introduction**

Export activities in terms of the world market are important in Indonesia's income and the income received from export activities is a source for development financing and is one of the countries whose economy depends on the role of exports, several things determine a country's exporting, one of which is its ability as a country of production and its ability to compete in the world market (Sadono, 2002).

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 results of data from the International Cocoa Organization (ICO, 2013), it is one of the third largest cocoa producers in the world, the world's largest cocoa production is the Ivory Coast and Ghana. Indonesia is the largest cocoa bean-producing country in the world. Therefore, the amount of cocoa bean production in Indonesia is increasing every year and it makes exports of cocoa beans to the world market also increase. With the increasing export of cocoa beans, profits will come as a source of foreign exchange and increase 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 total production, exchange rate, domestic prices, world (international) prices 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).

### **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).

Tracing the history of the cocoa plant through available publications shows that the cocoa plant originated in tropical forests in Central America and northern South America. Cocoa plants were first cultivated and used as food and chocolate drinks by the Mayans and Aztecs. The Spanish introduced cocoa to Indonesia in 1560 in Sulawesi (Wahyudi & Panggabean, 2008).

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 (Direktorat Jenderal Perkebunan, 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. Research Framework and Hypothesis**

### **The Relationship of Total Production to Cocoa Bean Exports**

Research conducted by Komalasari (2009) found that total production had a significant effect on cocoa bean exports. Research conducted by Al Ghozy et al (2017) that total production has a significant effect on cocoa bean exports. The same thing also shows that total production has a significant effect on cocoa bean exports (Lubis 2017; Nickyta & Alfisyahr 2017). Putri and Prihtanti (2020) found different things that total production had no effect on cocoa bean exports. So it can be concluded that total production has a significant effect on cocoa bean exports

H<sub>1</sub>: Total production has a significant effect on cocoa bean exports

### **The Relationship of Exchange Rate to Cocoa Bean Exports**

Research conducted by Al Ghozy et al (2017) found that the exchange rate had a significant effect on cocoa bean exports. Research conducted by Putri and Osmet (2013) found that the exchange rate had a significant effect on cocoa bean exports. The same thing was also found by Lubis (2017) that the

exchange rate had a positive and significant effect on cocoa bean exports. So it can be concluded that the exchange rate has a significant effect on cocoa bean exports.

H<sub>2</sub>: Exchange rate has a significant effect on cocoa bean exports

### **The Relationship of Domestic Prices to Cocoa Bean Exports**

Research conducted by Al Ghozy et al (2017) found that domestic prices had a significant effect on cocoa bean exports. The research found by Nickyta and Alfisyahr (2017) that domestic prices have a significant effect on cocoa bean exports. Subsequent research conducted by Lubis (2017) found that domestic prices had a significant effect on cocoa bean exports. So it can be concluded that domestic prices have a significant effect on cocoa bean exports

H<sub>3</sub>: Domestic prices have a significant effect on cocoa bean exports

### **The Relationship of World (International) Prices to Cocoa Bean Exports**

Research conducted by Albaningrum (2021) found that world (international) prices have a positive and significant influence on cocoa bean exports. Research conducted by Lubis (2017) international prices has a positive influence on cocoa bean exports. Puspita (2015) also found the same thing that international prices have a significant influence on cocoa bean exports. So it can be concluded that world (international) prices have a significant effect on cocoa bean exports.

H<sub>4</sub>: World (international) prices have a significant effect on cocoa bean exports

Based on various theoretical explanations, research findings, and developing hypotheses regarding total production, exchange rates, domestic prices, world prices on cocoa bean exports. Then the research framework in (Figure 1) is as follows:

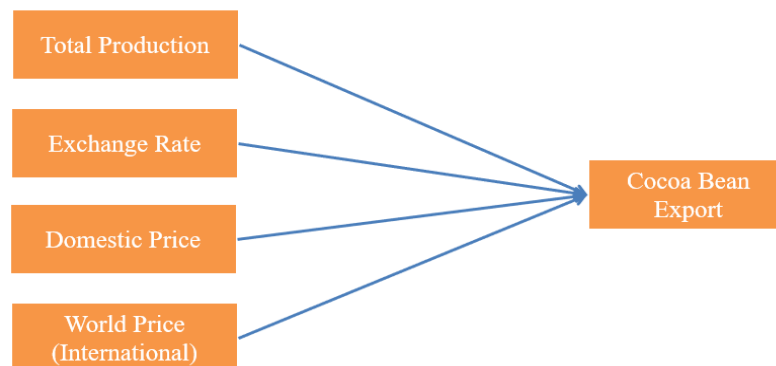


Figure 1. Research Framework

### **3. Methodology**

This research is comparative causal research with a quantitative approach. Comparative causal research is a type of research with the characteristics of the problem in the form of a causal relationship between two or more variables. The purpose of comparative causal research is to investigate possible cause-and-effect relationships based on observations of existing effects and look for facts that may be the cause through certain data. The type of data in this research is quantitative, namely data in the form of numbers or qualitative data that is numbered (Sugiyono, 2015: 7). In this research, the type of secondary data sourced from the Badan Pusat Statistik (BPS) Indonesia and the International Cocoa Organization (ICO) from 1981-2019 was used. The data analysis method in this research used Ordinary Least Squares (OLS).

#### 4. Findings

Table 1 below is the results of the regression analysis of the research data, with the results of the research as follows:

**Table 1. Results of Regression Analysis**

Variable	Koef. Regression (B)	T Statistic	Sig
Total Production	0.303	4.599	0.000
Exchange Rate	0.459	3.146	0.003
Domestic Price	0.232	1.449	0.156
World Price	-0.078	-0.477	0.636
Constant	13.776		
R	0.729		
R <sup>2</sup>	0.531		
F Statistic	9.624		
Sig	0.000		

Source: Processed Secondary Data

#### The Relationship of Total Production to Cocoa Bean Exports

Based on the results of the regression analysis of the total production partially in influencing the export of cocoa beans, the regression coefficient value is 0.303. At the 5% significance level, it is known that the t-count value is 4.599 with a significance of 0.000. With these results, the first hypothesis is accepted that total production significantly affects cocoa bean exports.

#### The Relationship of Exchange Rate to Cocoa Bean Exports

Based on the results of the part exchange rate regression analysis in influencing the export of cocoa beans, the regression coefficient value was shown to be 0.459. At the 5% significance level, it is known that the t-count value is 3.146 with a significance of 0.003. With these results, the second hypothesis is accepted that the exchange rate positively and significantly affects cocoa bean exports.

#### The Relationship of Domestic Prices to Cocoa Bean Exports

Based on the results of the domestic price regression analysis partially in influencing the export of cocoa beans, the regression coefficient value is 0.232. At the 5% significance level, it is known that the t-count value is 1.449 with a significance of 0.156. With these results, the third hypothesis is accepted that domestic prices significantly affect cocoa bean exports.

#### The Relationship of World (International) Prices to Cocoa Bean Exports

Based on the results of the regression analysis of world (international) prices partially in influencing cocoa bean exports, the regression coefficient value is -0.078. At the 5% significance level, it is known that the t-count value is -0.477 with a significance of 0.636. With this result, the third hypothesis is rejected that world (international) prices do not significantly affect cocoa bean exports.

## **Coefficient of Determination R Square ( $R^2$ )**

The coefficient of determination R Square is used to show how big the percentage of the total production variable, exchange rate, domestic price, and world price together influence cocoa bean exports. The results of the analysis show that the coefficient of determination  $R^2$  has a value of 0.531 or it can be said that 53.1% of cocoa bean exports are influenced by the variables of total production, exchange rates, domestic prices, and world prices. While the remaining 46.9% is influenced by other variables not included in this research.

## ***Discussion***

### **The Relationship of Total Production to Cocoa Bean Exports**

Based on the results of the research that has been analyzed there is a positive effect that the total production on the export of cocoa beans. This is indicated by the regression coefficient value of 0.303. At the 5% significance level, it is known that the t-count value is 4.599 with a significance of 0.000. So it can be concluded that the higher the total production, the higher the export of cocoa beans. On the other hand, the lower the total production, the lower the export of cocoa beans.

Based on the results of this research, it is supported by the results of research conducted by Al Ghozy et al (2017) who found that total production had a positive and significant influence on cocoa bean exports in Indonesia. The same thing shows that total production has a positive and significant impact on cocoa bean exports (Komalasari 2009; Lubis 2017; Nickyta & Alfisyahr 2017). Meanwhile, research conducted by Putri and Prihtanti (2020) shows that total production has no effect on cocoa bean exports.

### **The Relationship of Exchange Rate to Cocoa Bean Exports**

Based on the results of the research that has been analyzed, there is a positive and significant effect that the exchange rate has on cocoa bean exports. This is indicated by the regression coefficient value of 0.459. At the 5% significance level, it is known that the t-count value is 3.146 with a significance of 0.003. So it can be concluded that the higher the exchange rate, the higher the attitude of cocoa bean exports. On the other hand, the lower the exchange rate, the lower the export of cocoa beans.

Based on the results of this research supported by the results of research conducted by Putri and Osmet (2013) found the exchange rate has a positive and significant influence on cocoa bean exports. The same thing shows that the exchange rate has a positive and significant influence on cocoa bean exports in Indonesia (Al Ghozy et al 2017; Lubis 2017).

### **The Relationship of Domestic Prices to Cocoa Bean Exports**

Based on the results of the research that has been analyzed there is a positive and significant effect that domestic prices on cocoa bean exports. This is indicated by the regression coefficient value of 0.232. At the 5% significance level, it is known that the t-count value is 1.449 with a significance of 0.156. So it can be concluded that the higher the domestic price, the higher the export of cocoa beans. On the other hand, the lower the domestic price, the lower the export of cocoa beans.

Based on the results of this research, it supports the research conducted by Nickyta and Alfisyahr (2017) that domestic prices have a positive and significant effect on cocoa bean exports. Research conducted by Lubis (2017) shows that domestic prices have a positive and significant influence on cocoa bean exports, and the same thing is shown by research conducted by Al Ghozy et al (2017) finding that domestic prices have a positive and significant influence on cocoa bean exports.

## The Relationship of World (International) Prices to Cocoa Bean Exports

Based on the results of research that has been analyzed there is a negative and insignificant effect that world (international) prices on cocoa bean exports. This is indicated by the regression coefficient value of -0.078. At the 5% significance level, it is known that the t-count value is -0.477 with a significance of 0.636. It can be concluded that world (international) prices do not positively and significantly affect cocoa bean exports.

The results of this research do not support the results of research conducted by Albaningrum (2021) which found that world (international) prices have a positive and significant influence on cocoa bean exports. Research conducted by Lubis (2017) international prices has a positive influence on cocoa bean exports. Puspita (2015) also found the same thing that international prices have a significant influence on cocoa bean exports.

### Coefficient of Determination R Square ( $R^2$ )

The results showed that there was a significant effect of cocoa bean exports in Indonesia, influenced by total production, exchange rates, domestic prices, and world prices. This is indicated by the results of the test results with F test which obtained a calculated F value of 9.624 with a significance value of 0.000 or  $F < 0.05$ . The coefficient of determination R Square is used to show how big the percentage of the total production variable, exchange rate, domestic price, and world price together in influencing cocoa bean exports. The results of the analysis show that the coefficient of determination  $R^2$  has a value of 0.531 or it can be said that 53.1% of cocoa bean exports are influenced by total production, exchange rates, domestic prices, and world prices. While the remaining 46.9% is influenced by other factor variables that have not been included in this research.

Based on the results of this research, it can be concluded that the export of cocoa beans in Indonesia plays an important role for economic growth. Where in this cocoa bean export activity, it can also alleviate poverty problems in Indonesia by increasing the number of export commodities which will increase the value of economic growth and reduce poverty rates (Efendi et al, 2019).

### Conclusion

Based on the results and discussion in the research, we can conclude that; 1). Total cocoa bean production has a positive and significant impact on Indonesian cocoa bean exports, 2). The cocoa bean exchange rate has a positive and significant impact on Indonesian cocoa bean exports, 3). Domestic prices of cocoa beans have a positive and significant impact on Indonesian cocoa bean exports, 4). World prices have a negative and insignificant effect on Indonesian cocoa bean exports, 5). Total production, exchange rate, the domestic price of cocoa beans, and world prices together affect Indonesia's cocoa bean exports by 53.1% and 46.9% influenced by variables outside the research. Together with the limitations in this research, it can be used as a reference for further research in the future.

### References

- Agricultural Research and Development Agency, Ministry of Agriculture (2005) Prospects and Directions of Cocoa Agribusiness Development in Indonesia. Jakarta.
- Al Ghozy, M. R., Soelistiyo, A., & Kusuma, H. (2017). Analisis ekspor kakao Indonesia di pasar internasional. *Jurnal Ilmu Ekonomi JIE*, 1(4), 453-473.
- Albaningrum, M. (2021). Analisis Faktor-Faktor Yang Mempengaruhi Ekspor Biji Kakao Indonesia Ke Pasar Dunia Periode 1981-2018.
- Commission for the Supervision of Business Competition (2009) Background Paper for the research of Cocoa Industry and Trade. KPPU. Jakarta.

- Directorate General of Plantations (2012) General Guidelines for the National Movement to Increase Cocoa Production and Quality in 2013. Directorate General of Plantations, Jakarta.
- Dradjat, B & Wahyudi, T (2008) Prospek dan Strategi Pengembangan Industri Hilir. Panduan Lengkap Kakao, Manajemen Agribisnis dari Hulu hingga Hilir. Penebar Swadaya. Jakarta.
- Efendi, R., Indartono, S., & Sukidjo, S. (2019). The Relationship of Indonesia's Poverty Rate Based on Economic Growth, Health, and Education. *International Journal of Multicultural and Multireligious Understanding*, 6(2), 323-330.
- International Cocoa Organization (ICO), (2013) ICCO Monthly Averages of Daily Prices. London. [http://www.icco.org/statistics/cocoa-prices/monthly\\_averages.html?currency=usd&startmonth=01&startyear=2005&endmonth=12&endyear=2012&show=table&option=com\\_statistics&view=statistics&Itemid=114&mode=custom&type=1](http://www.icco.org/statistics/cocoa-prices/monthly_averages.html?currency=usd&startmonth=01&startyear=2005&endmonth=12&endyear=2012&show=table&option=com_statistics&view=statistics&Itemid=114&mode=custom&type=1). London. diakses 20 Desember 2021
- Hutagaol, M. P., Rauf, A., & Priyarsono, D. S. Dampak Pesatnya Pengembangan Perkebunan Kakao Terhadap Serangan Hama PBK, Lingkungan dan Perekonomian Regional Sulawesi Selatan
- Jauhari, A., & Budisantoso, W. (2010). Analisis Kebijakan Kakao Nasional dalam Meningkatkan Perolehan Petani Kakao dan Peranan Kakao Nasional di Pasaran Dunia (Sebuah Pendekatan Sistem Dinamik). *Public/ITS-Undergraduate*.
- Lubis, N. A. R. (2017). Analisis Faktor yang Mempengaruhi Ekspor Kakao Indonesia ke Singapura (Tahun 2001–2015).
- Ministry of Agriculture (2010) Outlook for Plantation Agricultural Commodities. Center for Agricultural Data and Information, Ministry of Agriculture. Jakarta.
- Milla, H., Yusuf, E., Suharmi, S., Zufiyardi, Z., Efendi, R., & Annisa, A. (2021). Analysis of the Implementation of Online Learning During Covid-19. *International Journal of Multicultural and Multireligious Understanding*, 8(4), 538-544.
- Nickyta, G., & Alfisyahr, R. (2017). Pengaruh Nilai Tukar Harga Kakao Internasional dan Produksi Kakao Domestik terhadap Total Volume Ekspor Kakao di Indonesia (Studi pada Total Volume Ekspor Kakao Periode 2005-2015). *Jurnal Administrasi Bisnis*, 52(1), 41-50.
- Puspita, R. (2015). Pengaruh Produksi Kakao Domestik, Harga Kakao Internasional, Dan Nilai Tukar Terhadap Ekspor Kakao Indonesia Ke Amerika Serikat (Studi pada Ekspor Kakao Periode Tahun 2010-2013). *Jurnal Administrasi Bisnis*, 27(1).
- Putri, A., & Osmet, R. K. (2013). Analisis Pengaruh Pajak Ekspor (Bea Keluar) Terhadap Volume Ekspor, Ketersediaan Domestik dan Harga Domestik Biji Kakao Indonesia. *Padang (ID): Universitas Andalas*.
- Putri, R. K., & Prihtanti, T. M. (2020). Faktor-Faktor yang Mempengaruhi Volume Ekspor Kakao Indonesia Tahun 2007-2017. *Jurnal Ekonomi Pertanian dan Agribisnis*, 4(3), 528-536.
- Sadono, S. (2002). Pengantar Teori Mikro Ekonomi. Penerbit PT. Raja Grafindo Persada. Jakarta.
- Sugiyono, P. (2015). Metode penelitian kombinasi (mixed methods). Bandung: Alfabeta.
- Susila, W. R., & Dradjat, B. (2001). Agribisnis Perkebunan Memasuki Awal Abad 21: Beberapa Agenda Penting. *SOCA: Jurnal Sosial Ekonomi Pertanian*, 1(1), 43831.
- Wahyudi, T., & Panggabean, T. R. (2008). Panduan Lengkap Kakao. Penebar Swadaya, Jakarta, 363.

## Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).