Determinant of Cocoa Export in Indonesia

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Info Artikel	Abstract
	_____ *International Trade is one of the activities that plays an important role for the economy. Indonesia is one of the countries whose depends on exports. One of the agricultural commodities that become the leading commodity is cocoa. Although it is a main flag export commodity, cocoa farming still has many challenges. The export volume of cocoa beans in the period 1987-2016 increase slightly, but in the last six years the export tend to decrease. The purpose of this study is to analyze the factors that affect the export of cocoa beans. The analytical method used is Multiple Linear Regression with the ordinary least squares rank method (OLS). The results showed that the variables of production have a positive and significant effect with coefficient value of 0.642607. Domestic cocoa price does not affect the export volume of cocoa beans. The international cocoa price variable has a negative and significant effect on export volume of Indonesian cocoa beans with coefficient value of -7,073793. The rupiah exchange rate variable to US Dollar has a positive and significant effect on the export volume of Indonesian cocoa beans with coefficient value of 15.22362. While simultaneously, production variables, domestic cocoa prices, international cocoa prices, and Rupiah exchange rate against US Dollar together affect the export volume of Indonesian cocoa beans.*

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INTRODUCTION

International Trade is one of the activities that plays an important role for the economy. Export activity is currently of particular concern to most countries, as it can contribute substantial foreign exchange to a country. Indonesia is one of the countries whose depend on exports. Exports in Indonesia are divided into two types, oil and gas exports and non oil and gas exports. For non-oil and gas exports, there are three sectors that play an important role, industrial, mining, and agricultural. The agricultural sector still plays an important role for the economy considering Indonesia is an agrarian country. In addition to, the agricultural sector also contributes to the country's income from export activities of agricultural commodities. One of the agricultural commodities that become the leading export commodity is cocoa. Cocoa is one of the leading export commodities. Cocoa commodities consistently play a role as a source of foreign exchange which contributes to the structure of the Indonesian economy. Cocoa Commodity contributes the third largest foreign exchange after palm oil and rubber (Hasibuan et al., 2012a).

Indonesia is the third largest exporter of cocoa after Ivory Coast and Ghana. The amount of cocoa exports in Indonesia is due to the large of cocoa plantation spread throughout Indonesia. Cocoa plantations have grown quite rapidly over the last 20 years, with 2015 of cocoa plantation area being 1.72 million ha. Most of them (88.48%) are managed by smallholders, 5.53% are managed by large state plantations and 5.59% of large private estates with main production centers are Central Sulawesi, South Sulawesi, Southeast Sulawesi, West Sulawesi, Lampung and North Sumatra (Ministry of Agriculture, 2015).

The rapid growth of cocoa plantations has had an impact on the large of cocoa production so that exports also increase. Almost 80% of cocoa production is exported to the international market. This is due to the low consumption of local communities to cocoa and the absorption capacity of the domestic cocoa processing industry is still low compared to other countries. Although it is a main flag export commodity. Generally, cocoa farming still has many obstacles as most farmers are poor farmers so that their human resource capacity is still low resulting in low post-harvest processing innovation.

In addition, the productivity and quality of cocoa is also low. This is because the development of downstream products that are still not optimal and the quality of plantations is still low, one of which comes from cacao pests and the depletion of soil nutrients. Cocoa Fruit Snoring (PBK) and Vascular Streak Dieback (VSD) causes weak cocoa beans taste, high levels of dirt, and a lot of bacteria contamination The constraints that cause poor quality of cocoa are still not fully overcome, either at the production level, post harvest, and downstream industries (Kementan, 2012).

Cocoa exports are still dominated by cocoa beans. This is because the cocoa processing industry is still undeveloped and human resources are still low. As a result farmers' produce is sold directly to exporters in the form of seeds. The development of cocoa exports in Indonesia is actually very good. This can be seen from the amount of export volume of cocoa beans in the period 1987-2016. The volume of exports in that period tended to increase. But within six years it has decreased.

Graph 1 above shows that the export volume of cocoa beans in the period 1987-2016 fluctuated and tended to increase. The significant increase in export volume of cocoa beans occurred between 2005 and 2010. In 2005, export volume of cocoa beans reached 463,632 tons. Even in 2006 it increased to 609,035 tons. Then in 2007 until the year 2010 stabilized in the range of 500,500 tons. However, in 2011 the export volume of cocoa beans decreased to 410,257 tons and continued to decline until the year 2016 amounted to 240,569 tons.
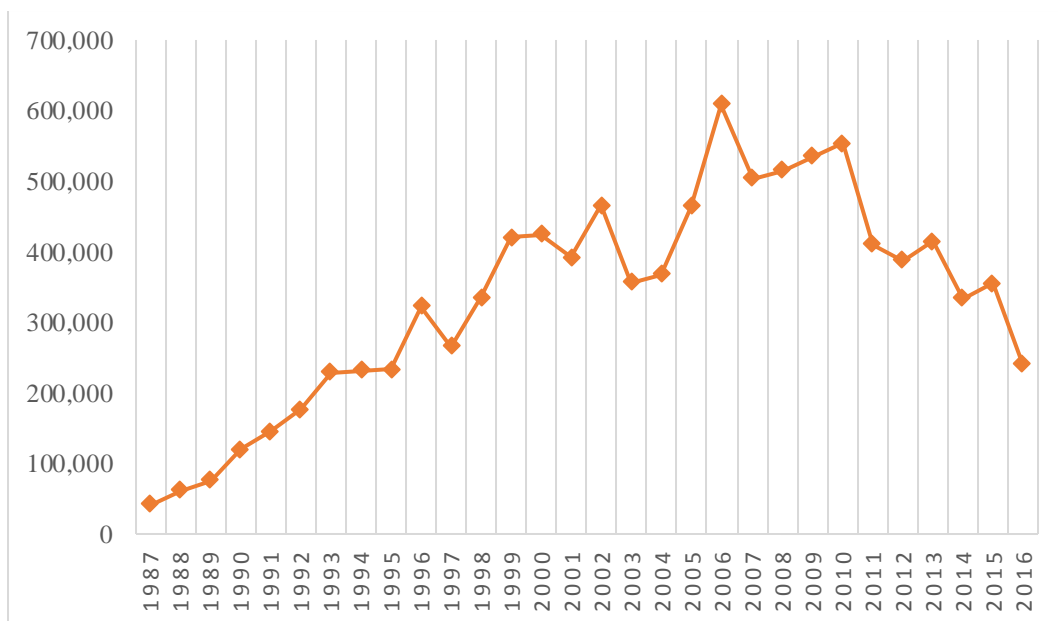
Figure 1. Cocoa export volume from 1987-2016
Source: Central Statistic Agency, 2018

The decline was due to the decrease in cocoa production in the period so that the export decline. The decrease of cocoa production itself is caused by about 70,000 ha of cocoa plantation due to old, damaged, unproductive, and pest and disease conditions with severe attack level so it needs rejuvenation, 235,000 ha of cocoa plantation with less productive plants and pests and diseases with moderate levels of rehabilitation so that rehabilitation needs to be done, and 145,000 ha of cocoa plantations with untreated plants and lack of maintenance so that intensification is necessary (Ditjenbun, 2016). Based on the above background, the purpose of this study is to analyze the factors that affect the export volume of cocoa beans in Indonesia in the period 1987-2016.

RESEARCH METHOD

This type of research is a quantitative descriptive research, which in this study uses quantitative methods with a scientific approach to managerial and economic decisions. This approach departs from data which then this data is processed and manipulated into valuable information for decision making (Kuncoro, 2007).

Data used in this research is secondary data sourced from Central Bureau of Statistics (BPS), Bank Indonesia (BI), and Directorate General of Plantation Indonesia. Secondary data is data obtained through other parties, not directly obtained by researchers from research subjects (Azwar, 2013). The type of data used in this study is the time series data (time series) with the period of 1986 to 2016.

Variables of research is anything in the form of what is determined by the researcher to be studied so that obtained information about it, then drawn conclusion (Sugiyono, 2007).

The variables in this study consist of dependent and independent variables. The dependent variable (Y) in this research is the export volume of cocoa beans, whereas the independent variables are production, domestic cocoa price, international cocoa price and Rupiah / US Dollar.Data analysis method used in this research is Multiple Linear Regression with Ordinary Least Square (OLS) method using Eviews software.

Multiple linear regression analysis is used when the independent variable is two or more. This analysis aims to determine the factors that affectthe export volume of cocoa beans in Indonesia. The core method of Ordinary Least Square (OLS) is to estimate a regression line by minimizing the sum of the squares of errors of each observation on the line (Kuncoro 2007: 79). While the model used in this study are as follows:

$$Y = \beta o + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + ei$$
………….……….……….……….……...….…. (1)

Where :

Y : Export Volume of Indonesian Cocoa Beans
Bo : Intercepts / constants
X1 : Cocoa Production in Indonesia
X2 : Domestic Cocoa Prices
X3 : International Cocoa Prices
X4 : Rupiah / US Dollar Rate.
$\beta 1$ …, $\beta 3$: The slope or direction of the regression line expressing the value of Y as a result of change one unit of variable X,
ei : The residual error representing other factors affects Y but is not included in the model.

RESULTS AND DISCUSSION

Cocoa is a plantation commodity in Indonesia that contributes foreign exchange for the largest countries other than oil palm and rubber. Cocoa production is very abundant in Indonesia makes this commodity not only marketed domestically but also marketed to international markets or exports. Most of Indonesia's cocoa exports come from Sulawesi such as Central Sulawesi, Southeast Sulawesi and South Sulawesi. Cocoa production from the area is very abundant because of the natural contours and areas that are very supportive for cocoa plantations. But now the government has also developed cocoa production in other areas spread in Indonesia. Indonesian cocoa exports are conducted in the form of cocoa beans, cocoa fruits, cocoa paste, butter paste, cocoa flour and cocoa food.

The structure of cocoa exports in Indonesia is still dominated by cocoa beans compared to other processed cocoa products. This is because the cocoa processing industry in Indonesia is still not developed. In addition, most farmers are smallholder farmers who sell cocoa farmers more often to direct exporters because they feel faster to get results. The development of cocoa beans exports in Indonesia has not been so fast. This can be seen from the export growth of cocoa beans that are still very volatile each year (Anonymous, 2010). The following is a graph of export growth of Indonesian cocoa beans in the period 1987-2016:
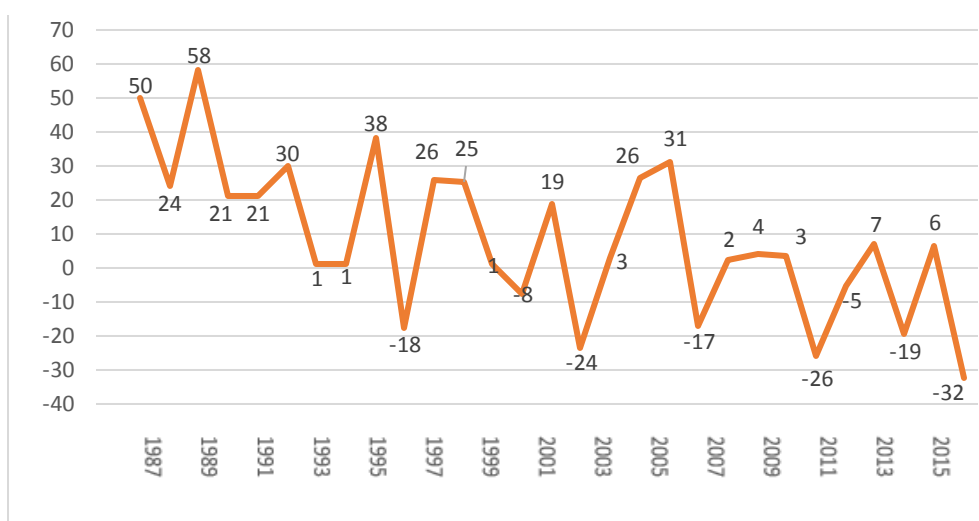

Figure 2. Cocoa xport growth from 1987 to 2016
Source: Central Statistic Agency, 2018

From the chart above can be seen that the export volume of cocoa beans in Indonesia period 1987-2016 experiencing a very volatile growth. Although more often experienced an increase, but that needs to be in the spotlight is the increase is actually happening in the period 1987-1996. In that period, even the export volume of Indonesian cocoa beans tended to be in the range of over 20% and even reached 58% growth in 1990. However, after this period until now the export volume of cocoa beans is often decreased. Even within the last 10 years that is in the period 2006-2010 growth is only a range below 10% and tends to decline. From the results if multiple linear regression data with software eviews 9 obtained the following results:

Table 1. Regression Analysis Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Significance
C	28643.49	28943.28	0.989642	0.3318	-
Cocoa Production	0.642607	0.101851	6.309301	0.0000	Significant
Domestic Cocoa Prices	-2.400769	6.161242	-0.389657	0.7001	Not significant
International Cocoa Prices	-7.073793	3.823667	-1.850002	0.0762	Significant
Rupiah / US Dollar Rate	15.22362	7.474707	2.036684	0.0524	Significant

Source: Data processed (2017)

T test is done to know how far one independent variable individually or partially to dependent variable. The t test can be done by comparing the probability value of each variable with the alpha used. If the probability value is smaller than alpha, it means that the variable has a significant influence. Based on t test that has been done show that the probability value of production variable equal to 0.0000 <0,10 which means that production variable have significant effect to export volume of cocoa beans. The value of the domestic price variable probability is 0.7001> 0.10, which means that domestic cocoa price variables do not significantly affect the export volume of cocoa beans. Furthermore, the probability value of the international cocoa price variable is 0.0762 <0.10, which means that the international cocoa price significantly affects the export volume of cocoa beans. While the probability value of rupiah exchange rate variable is 0.0524 <0.10 which means that the rupiah exchange rate has a significant influence on export volume of cocoa beans.

F test is performed to find out whether the independent variables included in the model have a mutual influence on the dependent variable. From the results of regression estimation in this study obtained F-statistical probability value of 0.000000. That means production, domestic cocoa prices, international cocoa prices and the rupiah exchange rate against the US dollar simultaneously affect the export volume of cocoa beans in Indonesia

From the estimation results on the model, it is known that the production has a positive and significant effect on the export volume of cocoa beans in Indonesia. It explains that any increase in cocoa production will increase the export volume of cocoa beans in Indonesia. The results are in line with the study of puspita (2015) which shows that the production has a positive effect on the export volume of cocoa beans. The value of production coefficient of 0.642607 shows that the production positively affects the export volume of cocoa beans in Indonesia. That is, if there is a production increase of 1 unit, it will cause an increase in export volume of cocoa beans of

0.642607 with the assumption that other variables are constant.

Production is a variable that directly and significantly influence the export of cocoa beans. As cocoa production in Indonesia increases, it will be followed by increased export volume of cocoa beans. This is due to the abundance of cocoa available so that it is not only sold domestically but also exported abroad and vice versa. Cocoa production in Indonesia itself in the period 1987-2016 tended to increase. This is also followed by the increasing trend of cocoa export volume. However, over the past five years, cocoa production has tended to decline so that the export volume of cocoa beans in the last five years also decreased. Increasing cocoa production will increase exports rather than cocoa. However, increased production should also be offset by improvements in quality and quality. Because the quality and quality of cocoa greatly influences the interest of other countries to import cocoa from Indonesia.

The estimation result from multiple linear regression shows that domestic cocoa price is negatively and insignificant to the export volume of cocoa beans in Indonesia. From the estimation result, the coefficient variable of domestic cocoa price is -2,400769. This figure explains that the relationship or influence of domestic cocoa price on export volume of cocoa beans is negative. When the domestic price increases by 1 unit, the export volume of cocoa beans in Indonesia will decrease by -2,400769 with the assumption that other variables are constant.

The results are in line with the results of Komalasari's (2009) study which states that domestic cocoa prices are negatively and insignificantly related to the export volume of cocoa beans. The negative effect of the domestic cocoa price on the export volume of cocoa beans in Indonesia is due to the fact that when domestic cocoa prices increase, domestic producers will tend to market their cocoa products to the domestic market rather than to overseas markets as they expect greater profits by increasing domestic prices cocoa exports will decline. On the contrary, when domestic cocoa prices decline, domestic producers will switch to selling their goods abroad rather than to the domestic market as they expect greater profits so that the export volume of cocoa beans will increase.

The development of domestic cocoa price in Indonesia during the period of 1987-2016 fluctuated and more often increased. However, the development of domestic cocoa prices is often not in line with the export volume of cocoa beans. When the price of domestic cocoa decreases, cocoa beans export volume should increase. However, on the contrary, when there is a decline in domestic cocoa prices, cocoa exports in Indonesia also decreased. This is because the export volume of cocoa is not so affected by the price of domestic cocoa but also influenced by the quality and taste and fermentation process of cocoa beans. When quality and taste are not maintained, even though the price of domestic cocoa decreases, the export volume of cocoa beans will not increase.

Based on the model estimation in this research, international cocoa price has negative and significant effect to export volume of cocoa beans in Indonesia. The coefficient value of the international cocoa price variable shows the number -7,073793. The value explains that when international cocoa price increases by 1 unit, the export volume of cocoa beans will decrease by -7,073793. Vice versa, if international cocoa price decreased by 1 unit, the export volume of cocoa beans will increase by -7,073793 assuming other variable remain. International cocoa prices have a great influence on the export volume of cocoa beans in Indonesia because the cocoa trade in the international market uses the cocoa price standard in the international market. The results of this study in accordance with the theory of demand, where when the price of an item increases, then the amount of goods demanded will go down.

In the period 1987-2016, international cocoa prices have grown and tend to increase. This is certainly very influential on the volume of Indonesian exports, especially within the last five years. In the past five years, international cocoa prices have continued to increase. This affects the export volume of cocoa beans in Indonesia which actually decreased. The decline was triggered by

the rise in international cocoa prices that caused importing countries of cocoa beans from Indonesia to reduce the volume of imports so that the direct impact on the export volume of cocoa beans in Indonesia.

The rupiah exchange rate against US Dollar has a positive and significant effect on export volume of cocoa beans. The coefficient value of the exchange variable is 15.22362. That is, when the rupiah exchange rate against US Dollar increased by 1 unit, the export volume of cocoa beans in Indonesia will increase by 15.22362.

The results of this study fit the theory. According to Sadono Sukirno (2010) that export transactions from one country to another require a foreign exchange market, ie a market that exchanges between a currency with various other currencies. To make the exchange required foreign exchange rate. When the exchange rate appreciates against the US Dollar, it will cause the price of Indonesian cocoa to be expensive so that there will be a decrease in the export volume of Indonesian cocoa beans because the domestic price is considered more expensive than the price of cocoa abroad. On the contrary, when the exchange rate of rupiah against US Dollar depreciates, the domestic price of cocoa is cheaper than the foreign price, so that the competitiveness increases and the profit that can be obtained also increases. This will cause the export volume of Indonesian cocoa beans to increase.

CONCLUSION

Based on the results of research and discussion above, it can be concluded that the partial production has a positive and significant impact on the export volume of Indonesian cocoa beans. As the prooduction increases by 1 unit, the export volume of cocoa beans will increase by 0.642607. Domestic cocoa price does not affect the export volume of cocoa beans. This is because the export volume of cocoa is not so affected by the price of domestic cocoa but also influenced by the quality and taste and fermentation process of cocoa beans is correct.

The international cocoa price variable has a negative and significant effect on the export volume of Indonesian cocoa beans. When international cocoa prices increase by 1 unit, the export volume of cocoa beans will decrease by -7.073793 and vice versa, when international cocoa price decreases by 1 unit, the export volume of cocoa beans will increase by -7,073793. The rupiah exchange rate variable to US Dollar has a positive and significant effect on the export volume of Indonesian cocoa beans. The value of the exchange rate coefficient is 15.22362. That is, if the exchange rate against the US Dollar depreciated by 1 unit, the export volume of Indonesian cocoa beans will increase by 15.22362. This is because when the exchange rate depreciates it means that the price of domestic cocoa is cheaper than the foreign price, so that the competitiveness increases so it will increase the export of cocoa beans. While simultaneously, production variables, domestic cocoa prices, international cocoa prices, and Rupiah exchange rate against US Dollar together affect the export volume of Indonesian cocoa beans..

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