Analysis of Indonesia Coffee Seed Export Competitiveness

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Abstract: Indonesia is rich in agricultural production sources, one of which is coffee commodity which is exported to various countries. So the purpose of this study is to find out the competitiveness of Indonesian coffee in the international market. The analysis tools used are Revealed Comparative Advantage (RCA) and Export Product Dynamic (EPD) to see the competitiveness of exports of coffee bean commodities (HS 1801) to destination countries. The results of the analysis by the RCA method show that Indonesian coffee beans have an average value of RCA greater than one in the export destination country. Based on the results of the EPD analysis showed that Indonesia's coffee beans export destination countries occupy the position of rising star only Japan, Germany, Belgium and India which are not included. Japan and Belgium are in the falling star position, India has lost opportunity and in the meantime Germany is in a retreat position.

Keywords: Competitiveness, Export, Coffee Beans

INTRODUCTION

Indonesia as one of the countries that adheres to an open economic system has done a lot of international trade activities both exports and imports with other countries from various parts of the world. Some Indonesian export commodities and products are also well known in foreign countries both processed products and raw products that have not yet been processed.

The agricultural sector is one of the sectors that has long been the backbone and the driving force of the national economy, so agricultural products have also become a support in Indonesia's export activities to trading partner countries. One of the commodities from the agricultural sector that has a significant role in driving the Indonesian economy is coffee beans which have long been recognized by the public at large.

Coffee is a commodity from Indonesian plantations which is the second largest contributor to exports after oil palm (Raginum, 2012), this is indicated by the contribution of coffee to national economic growth as a source of state income. Meanwhile, the development of Indonesia's coffee exports actually experienced fluctuations.
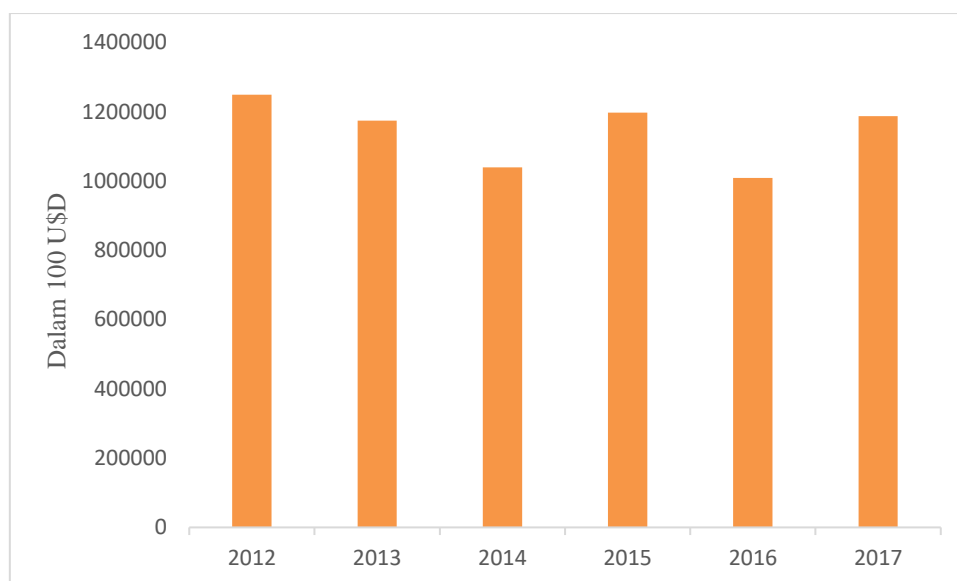
Figure 1.

In Figure 1, it can be seen that the export value of coffee has fluctuated and has experienced a drastic decline in several years, such as in 2016. However, the decline in the export value of coffee still reached 1,008,549.10. Such a figure is a high export value.

Market competition that is growing and getting tougher due to other countries having the opportunity to export coffee products from their respective countries is a big challenge for Indonesia, the open market conditions make it difficult to control the market so that it cannot prevent the entry of new competitors in the coffee trade in the international market. The high supply of coffee in the international market is ultimately able to make prices fluctuate. Because of this, an analysis of the development of coffee exports is very important as initial information to explain the competitiveness of Indonesian coffee commodities in the international market.

Based on the description above, the coffee commodity needs to get attention from both the government and the private sector in order to be able to innovate and take strategic steps to overcome these problems so that in the future the prospects for coffee can be better and more promising. Based on this, the formulation of the problem raised in this study is what is the general description of the competitiveness of Indonesian coffee beans in the main destination countries?

Based on the background and problem formulations above, the objectives of this study are as follows to analyze the export competitiveness of Indonesian coffee beans in the main destination countries.

International trade is a process of exchanging both in the form of goods or services from each country which is based on the voluntary will of each party to reach an agreement where the profit and loss resulting from the trade is determined by the national interests of each country (Prasetia, 2012).

Steve Suranovic (2010) states that there are several reasons for countries to carry out international trade activities, including the following:
1. Difference in resources
2. Technological differences
3. Difference in demand
4. There is an economical scale of production
5. The existence of government policies

Perdagangan internasional terjadi oleh karena setiap pihak yang terlibat dalam kegiatan perdagangan akan mendapatkan manfaat melalui adanya kegiatan perdagangan tersebut. Kegiatan perdagangan internasional memakai mesin dalam jumlah yang banyak sehingga menuntut adanya inovasi dalam bidang penemuan dan berbagai bidang dalam ekonomi, kegiatan ini juga menaikkan produktivitas buruh, menekan biaya produksi, hal ini akan memperluas pasar, meningkatkan investasi, pendapatan dan tabungan dengan alokasi yang efisien (Wahyuni dan Irdayani, 2014).

In Indonesia's involvement in international trade activities, it is necessary to have a strong level of competitiveness from Indonesia's own export products in order to remain competitive with the export products of other countries. Basically, competitiveness is described as the superiority of an industry over certain products that are better than products from other industries, this is shown by the positive profits that the industry or companies that process these products earn (Wardhani and Agustina, 2012).

The concept of competitiveness is closely related to productivity, where according to Porter (1990), the competitiveness of a product can be seen from the large level of output produced at each use of input. Approaches commonly used to measure competitiveness are the theory of comparative advantage and competitive advantage

The theory of comparative advantage was developed by David Ricardo, who states that even though a country is not absolutely superior to other countries in producing two types of commodities, mutually beneficial trade can still take place as long as the price ratio between countries is different when compared to no trade (Salvatore , 1997).

Apart from comparative advantage, another approach that can be used to measure competitiveness is the theory of competitive advantage. Competitive advantage will be achieved by a country if the companies in it are able to create an innovation for certain products that are different from other companies so that they can increase added value in order to strengthen the competitiveness of companies in the market (Porter, 1990).

METHODOLOGY

The research used quantitative methods with Revealed Comparative Advantage (RCA) and Export Product Dynamic (EPD) analysis tools to see the export competitiveness of the coffee bean commodity (HS 1801) to the destination country. The application used in processing data in this study is Microsoft Excel 2010.

Revealed Comparative Advantage (RCA)

The Revealed Comparative Advantages (RCA) method is a concept that states the ratio between the share of exports in a country to the share of exports of these commodities in the international market. This concept was first developed by Ballasa in 1965, which assumes that a good export performance reflects a country's level of comparative advantage. The method of analysis in RCA is used to see the comparison between the market share that exists in a sector in a country against the export share that is the export destination country or panngsa in the international market. The RCA analysis is based on the following calculations.

$$RCA = \frac{Xi/Xt}{Wi / Wt}$$

Information:
Xi: The export value of Indonesian commodities to country j
Xt: The total value of Indonesia's exports to country j
Wi: The value of world commodity exports

Wt: The total value of world exports

Based on the above calculations, if the RCA value of an export commodity in the destination country or on the international market is more than one, it means that the commodity has a comparative advantage or has high competitiveness in the destination country and in the international market. Conversely, if the resulting RCA value is less than one, the export commodity is considered to have weak competitiveness or does not have a comparative advantage in the export destination country or in the international market.

Export Product Dynamic (EPD)

Export Product Dynamic (EPD) analysis is an analysis method used to measure or show the position of the competitiveness of a country's export products and commodities in the largest importing country. This method has the advantage of comparing the export performance of a product by a country with the export of the same product from other exporting countries in the world. The EPD approach can also be used for determine whether or not the performance of a product or export commodity is dynamic or not. This dynamic specifically identifies the growth rate of Indonesia's coffee exports.

The analysis using EPD is based on four categories, each of which shows the growth rate of the export market share (X axis) and the growth rate of the product market share (Y axis). The four criteria of the analysis are rising star, falling star, retreat and lost opportunity. The ranking star is the highest position of the quadrant which is considered the best position because it gains additional market share in the fast and positive product growth in the importing country market. Lost opportunity is a condition where the supply of a product or commodity exported from a country is less than the export of products from other exporting countries in the world so that the market share of the country's products has decreased.

Falling star is almost the same as "Lost opportunity" except that the position is still better because the share of the product is still increasing even though the product or commodity does not experience a dynamic increase. Meanwhile, Retreat is a position that indicates that certain export products or commodities from a country are no longer in demand by the market in the export destination country.

Figure 2. Quadrant of Product Dynamic Export Market Position

Axis X: Growth of the share of the Indonesian coffee export market in the destination country.

$$\text{Axis X} = \frac{\sum_{t=1}^{T}\left(\frac{Xia}{Xta}\right)t \times 100\% - \sum_{t-1}^{T}\left(\frac{Xia}{Xta}\right)t\text{-}1 \times 100\%}{T}$$

Axis Y: Growth in the share of coffee in the destination country

$$\text{Axis Y} = \frac{\sum_{t=1}^{T} \left(\left(\frac{Wi}{Wt}\right) t \times 100\% - \sum_{t-1}^{T} \left(\frac{Wi}{Wt}\right) t\text{-}1 \times 100\% \right)}{T}$$

Information:

Xia: The export value of Indonesian coffee beans to export destination countries (US $)

Wi: World coffee bean export value to export destination countries (US $)

Xta: The total value of Indonesia's exports to export destination countries (US $)

Wt: Value total world exports to export destination countries (US $)

t: Year t

t-1: Previous year

Q: Number of years of analysis

RESULTS AND DISCUSSION

Analysis of Revealed Comparative Advantage of Indonesian Coffee Beans

The method used to analyze export performance and the comparative advantage or competitiveness of Indonesian coffee beans in the largest export destination country is Revealed Comparative Advantege (RCA) where the variable that becomes the benchmark is the export value of the coffee beans to Indonesia's total exports to the destination country. The criteria used through the RCA calculation results, namely if the results of the RCA have a value of more than one (RCA> 1), it can be concluded that the Indonesian coffee bean commodity has a strong competitiveness, conversely if the resulting RCA value is less than one (RCA < 1) means that the Indonesian coffee bean commodity has weak competitiveness compared to the same commodity from other exporting countries in the export destination country.

The results of the analysis using the RCA calculation can be seen in Table 2, which shows that Indonesia's coffee commodity exports have an RCA value that fluctuates every year in each destination country with a high average RCA value. The value of the RCA per country Indonesia's coffee export destination is more than one. This proves that Indonesian coffee beans have comparative value in the world market.

Table 1. RCA Results for Indonesian coffee beans to export destination countries.

Exporting Country	RCA						
	2012	2013	2014	2015	2016	2017	2018
USA	7.733	5.599	7.166	6.626	6.528	5.485	6.273
Japan	2.523	1.996	2.468	2.304	2.304	2.172	2.570
Germany	9.555	13.859	9.081	10.303	10.756	12.950	6.204
Italy	7.311	10.532	7.360	10.363	10.265	10.387	8.043
UK	18.824	25.101	17.839	20.322	16.067	22.328	10.367
Malaysia	6.782	7.438	6.212	7.475	8.182	8.130	6.544
Belgium	9.379	15.219	11.599	4.840	9.145	8.979	7.968
Egypt	31.989	28.433	27.412	29.620	29.373	27.423	37.549
Russia	31.294	32.112	19.711	19.662	12.619	22.018	0.600
India	12.120	9.317	7.008	8.863	5.338	3.431	1.724

Source: WITS, 2019 (processed)

The highest RCA value in the analysis results is in the country of Egypt, this can be seen from the average RCA value of the country which is 30.25. In 2012 to 2018 the RCA value of the country of Egypt was the country that had the highest RCA value among other

countries but in 2013 it was the second best after Russia. Russia is a country that has a high RCA value but in 2018 it decreased to reach a value of 0.6 and is a weak RCA value. For countries around Indonesia, such as Malaysia, it has an average RCA value of 7.25. The RCA value is a high value so it is a good potential for Indonesian exporters. This condition shows that in general the export commodity of Indonesian coffee beans has competitiveness in the main export destination countries with the high average RCA value in all export destination countries.

Analysis of Export Product Dynamic Competitiveness of Indonesian Coffee Beans
        The next analysis method used in this research is EPD (Export Product Dynamic) to analyze competitiveness or to find out the competitive advantage of export coffee beans in destination countries analyzed by using the EPD (Export Product Dynamic) method. With the EPD analysis, it will be known the performance of the commodity under study as well as the market position of export commodities in the destination country. In Table 5, it can be seen that the competitiveness of Indonesian coffee beans is in the position of Rising Star, Lost Opportunity, Falling Star and Retreat.

Table 2. of EPD Estimation Results for Indonesian coffee to export destination countries

Negara	Sumbu X	Sumbu Y	Posisi Pasar
UAS	0.0480	0.0060	*Rising Star*
Japan	0.0055	-0.0048	*Falling Star*
German	-0.0155	-0.0246	*Rereat*
Italia	0.1069	0.0437	*Rising Star*
UK	0.0136	0.0580	*Rising Star*
Malaysia	0.1090	0.0778	*Rising Star*
Belgium	0.0317	-0.0081	*Falling Star*
Egypt	0.1902	0.1071	*Rising Star*
Russia	0.0452	0.0792	*Rising Star*
India	-0.0258	0.0698	*Lost Opportunity*

Source: WITS, 2019 (processed)

        From the results of the EPD analysis, the average export destination country for Indonesian coffee beans occupies a rising star position. Only Japan, Germany, Belgium and India did not occupy this position. Countries in a rising star position which is the most ideal position and shows that there is an increase in demand for Indonesian coffee beans and shows strong competitiveness competitively. The Lost Opportunity condition is in India, which shows that the export of Indonesian coffee beans has increased, but the number of commodities exported is not in accordance with the large increase in demand from the destination country so that the share of coffee bean exports from Indonesia has decreased in that country. The position of Falling Star is occupied by Belgium and Japan, which indicates that the share of Indonesia's coffee bean exports in this country is still growing but demand for export commodities increases. in fact, it has decreased so that this is not profitable for Indonesia.
        Meanwhile, Germany is in the Retreat position where conditions indicate that there is a decline in the market share of Indonesia's coffee export commodities in that country which is also followed by a decrease in demand for exported commodities so that it can be said that these commodities are no longer in demand by the destination country.
        The growth rate of the export market share in the analyzed country can be seen through the X-axis and the growth rate for the commodity market share is depicted by the Y-axis in the table of EPD analysis results. From the analysis, it can be seen that the export destination countries for Indonesian coffee beans have a good export market share growth

rate, especially for Germany and India. This is indicated by the positive value of the X axis in these countries. The largest export market share growth rate was in the United States with a growth rate of 1.9 percent. The countries of Germany and India get negative scores in the analysis results, this illustrates the low growth rate of the export market share in these countries and is not good enough compared to other destination countries.

The results of the EPD analysis also show that the export destination countries for coffee beans are the destination countries with a good export share for the Indonesian coffee bean commodity, except for Japan, Germany, and Belgium. This is indicated by a positive value on the Y axis.Meanwhile, the growth in the share of Indonesian coffee beans in destination countries such as Japan, Germany and Belgium is still low due to the decreasing demand for Indonesian coffee beans in these countries, this is illustrated by the negative results. on the Y axis.

Analysis of Factors Affecting Indonesian Coffee Exports to Export Destination Countries

This study uses the gravity model method which is used to analyze the factors that influence Indonesia's coffee exports. The gravity model is used to analyze the effect of independent variables on the volume of Indonesian coffee in the export destination country. Independent variable used in this model are economic distance (Ecodistijt), exchange rate against (NTjt), GDP per capita of the destination country (GDPCAPjt), and population (Popjt).

Differentiating the chow test (Appendix 5) which has a probability value of 0.000 smaller than alpha (α) at the 5 percent real level, it can be concluded that to reject H0 or to determine the fixed effect model (FEM) model is the best model used for this study. The use of fixed effects models (FEM) is because individual effects and time effects have a correlation and have a pattern that is not random. The results of the Hausman test (Appendix 6) also show the same thing to reject H0, which has a probability of 0.0000 smaller than the real level of 0.05 (α). So it is sufficient evidence to choose the best model in the fixed effects model (FEM).

The results of the Chow and Hausman tests conclude that the fixed effect model (FEM) is the best model so that this model is used in analyzing the factors that influence Indonesia's coffee exports to export destination countries. Statistical criteria test or hypothesis testing is also carried out to obtain the best model. The tests carried out include the F test and the t test. The F test aims to see the effect of the independent variable on the dependent variable as a whole. The F test can be seen from the magnitude of the probability of F statistics, in Table 7 it shows that the probability value of F statistics is 0.000 less than 0.05 (α), so it can be concluded that the independent variables as a whole have a significant effect on the dependent variable. The t test aims to see the significance of each independent variable. Based on Table 7, it can be seen that the variables of GDP per capita of the destination country, population and economic distance are significant at the five percent real level. Meanwhile, the exchange rate variable is not significant to the volume of Indonesian coffee exports.

Table 3. The estimation results of the gravity model for the volume of Indonesian coffee exports using a fixed effect model with a weighted cross section (cross-section weighted)

Variabel	Coefficient	Prob.
LN_POP	7.70873	0.00040*
LN_GDPCAP	-5.353402	0.00000*
LN_ER	-0.273768	0.32350

LN_ECODIST	1.909538	0.02020*
C	-84.05886	0.01780*
Weighted Statistics		
R-squared		0.82521
Prob(F-statistic)		0.00000
Sum squared resid		16.03322
Durbin-Watson stat		1.467644
Unweighted Statistics		
R-squared		0.558716
Sum squared resid		22.51225
Durbin-Watson stat		1.172771

Note: * significant at the 5 percent

The model above needs to be tested for classical assumptions in order to get a model that meets BLUE (Best Linear Un] Estimator). The first test carried out is the heteroscedasticity test, it can be seen in the results of Table 4 that the sum square resid value on weighted statistics is 16.03322 smaller than the sum square resid value on unweighted statistics of 22.51225. Autocoleration test by looking at the Durbin-Watson number. In Table 6, it can be seen that the Durbin-Watson value is 1.467. Heteroscedasticity test and autocoleration test are not suitable, but according to Baltagi (2005) this problem can be overcome by weighting it using General Least Square (GLS). In the model that has used cross section weighting, the problem of heteroscedasticity and autocoleration can be overcome.

Multicollinearity test by looking at the comparison between the probability value and the correlation matrix between variables. The Indonesian coffee export volume model has an R-squared value of 0.82521 and all independent variables are significant. These results indicate that the model is free from multicollinearity problems. The last assumption test is the normality test. The normality test (Appendix 4) shows that the Jarque – Bera value of 30.09675 is greater than 0.05, so it can be concluded that the model already has error terms that spread normally.

The model used in this analysis shows that the GDP per capita of the destination country is significant at the five percent level and has a negative relationship with the volume of Indonesian coffee exports to the export destination country. GDP per capita destination country has a probability value of 0.0000 on the volume of Indonesian coffee exports. The estimation results show that when there is an increase in GDP per capita of the destination country by 1 percent, there will be a decrease in the export volume of Indonesian coffee commodities to the ten export destination countries by 5.353402 percent (cateris paribus).

This is because the increasing level of income will reduce coffee consumption.

The economic distance variable has a positive and significant relationship at the five percent level of the export volume of Indonesian coffee to ten export destination countries. Economic distance has a probability value of 0.02020 on the export volume of the Indonesian coffee commodity. The economic distance between the country of Indonesia and the ten export destination countries shows the cost of transportation, so when transportation costs increase by 1 percent, the volume of Indonesian coffee exports will increase by 1.909538 percent (cateris paribus). The estimation results can be seen from the export volume data for each year of this study. Countries that have a large economic distance each year have increased while countries that are closer to each have decreased.

The population has a positive and significant relationship to the export volume of Indonesia's coffee commodity to ten export destination countries. The probability value of the export price on the export volume of the Indonesian coffee commodity is 0.00040. The

estimation results show that if the population has increased by 1 percent, the export volume of the coffee commodity will increase by 7.70873 percent. An increasing population will increase Indonesia's coffee exports, especially in countries with high populations.

The exchange rate variable analyzed in this model has a negative and insignificant relationship at the five percent level. The probability value of the exchange rate on the export volume of the Indonesian coffee commodity is 0.32350. The estimation results show that if the exchange rate increases by 1 percent, the export volume of the coffee commodity will decrease by 0.273768 percent.

CONCLUSIONS

Based on the results of the analysis to determine the level of competitiveness and the factors that influence the export of Indonesian coffee beans using the RCA, EPD and panel data regression methods, the following conclusions are obtained:

1. The results of the analysis using the RCA method show that Indonesian coffee beans have an average RCA value that is greater than one in the export destination country. This indicates that the Indonesian coffee bean commodity has strong comparative competitiveness in the destination country.
2. Based on the results of the EPD analysis, it shows that Indonesia's coffee bean commodity as export destination countries occupy a rising star position, only Japan, Germany, Belgium and India are not included. Japan and Belgium are in a falling star position, India is in a lost opportunity position and meanwhile Germany is in a retreat position.
3. The estimation results using the Gravity Model, namely the GDP per capita of the export destination country has a negative and significant relationship to the volume of exports. Population variables and economic distance have a positive and significant relationship to the export volume of Indonesia's coffee commodity. The exchange rate variable does not have a significant effect on the volume of Indonesian coffee exports

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