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COMPETITIVENESS ANALYSIS OF INDONESIAN COFFEE IN THE GERMANY AND JAPAN

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Abstract
Coffee farming commodities are one of Indonesia's leading export commodities to various coffee-importing countries in the world and contribute to the country's foreign exchange. Indonesia is the fourth largest coffee producer in the world after Brazil, Vietnam and Colombia. The five countries that are the main export destinations for Indonesian coffee beans (HS code 090111) are the United States, Germany, Japan, Italy, and Malaysia, however, the average export of Indonesian coffee to Germany and Japan shows an expected decline due to the low competitiveness of Indonesian coffee exports. The purpose of the study was to analyze Indonesian coffee exports to Germany and Japan. The data used by the value panel (US Dollar) is from the Central Statistics Agency (BPS), Trade MAP and UN Comtrade for the 2014-2023 period. The analysis method uses Revealed Competitive Advantage (RCA) which has a value of > 1 and the method is refined with Revealed Symmetric Comparative Advantage (RSCA) which has < values of 0 and > 0. The results of the study found that Indonesian coffee exports in Germany and Japan have strong competitiveness in the German market, but compared to Brazil, Vietnam, Colombia, Guatemala, Indonesia's RSCA value in the German and Japanese markets is far behind. Therefore, it is necessary to increase the volume of coffee exports to the German and Japanese markets in a sustainable manner.

Keywords: Competitiveness, Export, Coffee, RSCA

1. Introduction

In supporting a country's economy, one of the important elements is international trade. With the difference in natural resource factors, human resources as well as climatic conditions and geographical location, there are differences in the goods produced, the cost and quality are different between countries. The benefits in international trade are not only limited to trade in goods or services, but also to labor services or capital flows (Purba Bonaraja, 2021). In the era of globalization, countries in the world are expanding the scope of their economic activities, one of which is through international trade with the openness of trade and finance which is characterized by a reduction in tariff and non-tariff barriers in trade between countries and the flow of capital in and out between countries which is one of the characteristics of cooperation between countries in order to increase international trade activities (Sukarniati et al., 2024).

In driving a country's economy, it is necessary to support people who are members of micro and medium enterprises in driving a resilient economy and identifying superior sectors that will have a strategic role in tackling poverty and unemployment. So far, people's products often face marketing obstacles and the competitiveness of product quality, so it is very important to get good support in terms of increasing knowledge about the market, product quality and market sustainability. Coffee is one of the leading commodities in the plantation sector that contributes to the country's foreign exchange

through international trade. Coffee commodity is the third plantation subsector that contributes to the country's foreign exchange. The existence of international trade can produce comparative advantages so that international trade is ideal for increasing foreign exchange receipts for a country and expanding and strengthening its economic growth through international capital inflows (Abasimi et al., 2019).

The development of coffee plantation land area in Indonesia has increased, in 2023 it will increase by 918 ha from 1,265.93 thousand ha in 2022 to 1,266.85 thousand ha in 2023, an increase of 0.05 percent compared to the previous year. Meanwhile, the development of coffee plantation area according to the business status in 2021-2023 comes from people's plantations or around 99.56 percent, then land from PBN is 0.36 percent and PBS land is 0.07 percent (Indonesia, 2024). We can see Indonesia's coffee production from 2014-2023 in Figure 1. It shows that production has increased until 2023.

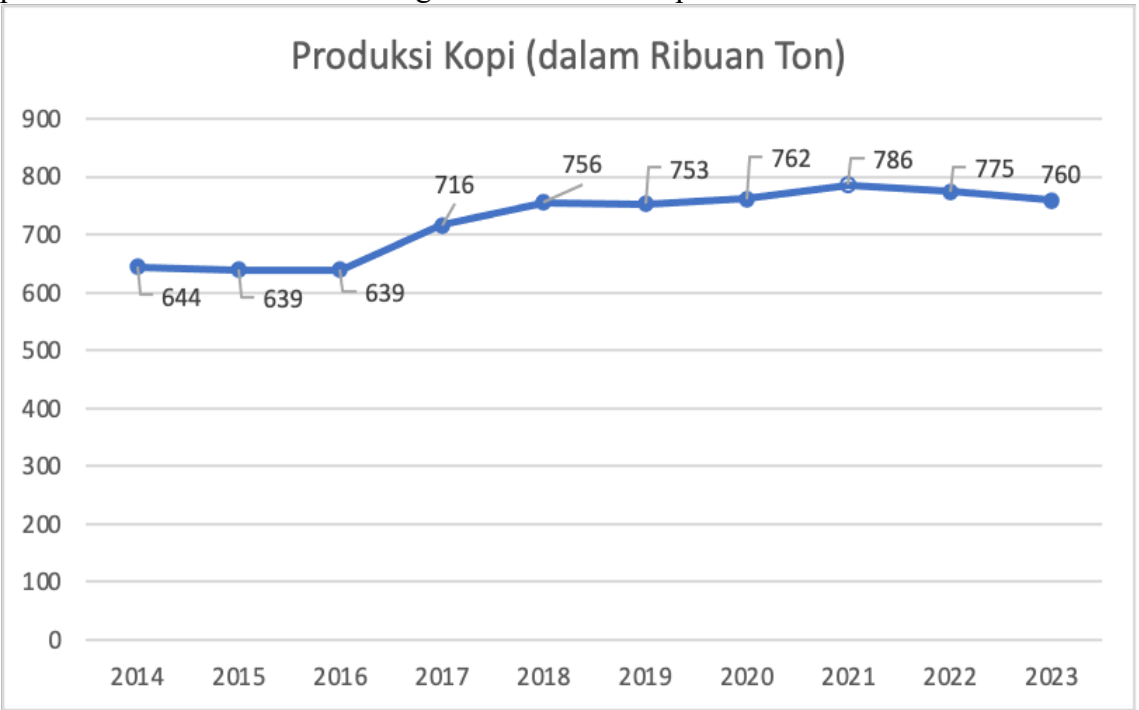

Figure 1. Indonesian Coffee Production Volume (Thousand Tons)

Meanwhile, the development of the value of coffee exports over the last ten years has tended to decrease, especially to Germany and Japan. In 2014 the export value to Germany was USD103903 and the lowest in 2021 was USD41415, as well as the value of exports to Japan, in 2014 reached USD101673 and experienced a continuous decline until 2023 Figure 2. Indonesia's coffee exports are dominated in the form of coffee beans whose prices are very volatile in the world market and coffee beans produced by Indonesia are dominated by robusta varieties which are considered second-class coffee in the international market (Maulani & Wahyuningsih, 2021).

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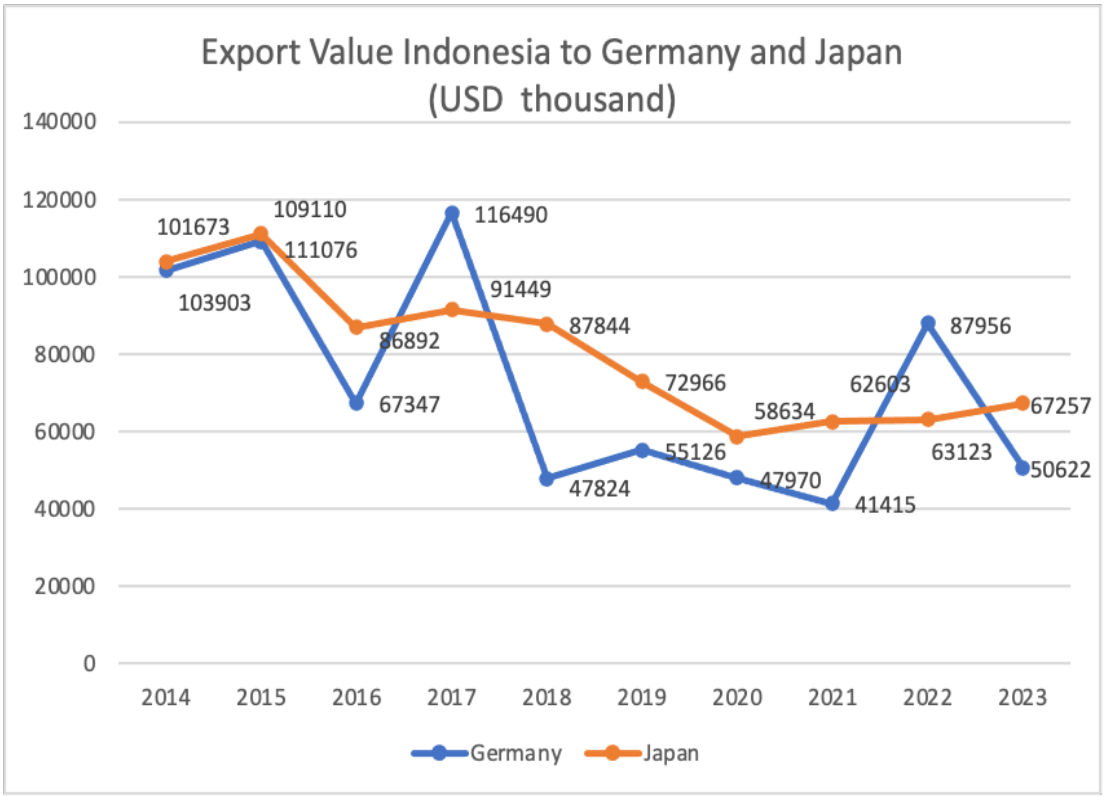

Figure 2. Export Value Indonesia to Germany and Japan (USD thousand)

2. Theoretical Background

2.1 Theory of Absolute Excellence

This research is based on the Theory of Absolute Excellence put forward by Adam Smith, a prominent economist from Scotland in the 18th century. A country will benefit from international trade and increase prosperity if there is free trade and specialization based on absolute superiority The theory of absolute superiority states that a country is said to have absolute superiority over other countries, when the country is able to produce more goods and services than other countries. In the theory of absolute excellence, the important factors emphasized are efficiency in producing goods and services. If a country is able to produce a good or service at a lower cost, then it has an absolute advantage (Nurhidayati, n.d.)

2.2 Theory of Comparative Advantage

David Ricardo's Theory of Comparative Advantage in his book Principles of Political Economy and Taxation (1817). Even if a country is less efficient than (or has an absolute disadvantage to) another country in producing both types of commodities, it still has a basis for international trade that benefits both parties. The theory of absolute superiority cannot be used as a basis in international trade if one of the countries has absolute superiority over both types of commodities, if one of the countries has absolute superiority over both types of commodities, then trade will not take place. With the theory of comparative advantage, international trade between two countries can still be carried out even if one country has an absolute advantage over both types of commodities. (Rahman, 2023). Coffee commodity is a leading commodity in Indonesia which is ranked 4th as a coffee producer in the world which is expected to be active to increase the economy, especially in coffee-producing regions in Indonesia.

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2.3 Comparative Advantage

The core of this analysis rests on the concept of Comparative Advantage, a fundamental principle in international trade theory originally developed by David Ricardo. This principle suggests that countries benefit from specializing in producing and exporting goods where they have a lower opportunity cost. In the modern context, this theoretical advantage is measured not by pre-trade relative prices but by observed post-trade outcomes. This leads to the empirical method of Revealed Comparative Advantage (RCA), introduced by Béla Balassa in 1965.

2.4 Revealed Comparative Advantage (RCA)

The Revealed Comparative Advantage (RCA) index is a foundational metric for assessing a country's export competitiveness in a specific product. It measures whether a country export more of a particular product relative to its total exports, compared to the same product's share in global exports. An RCA value greater than 1 (>1) reveals that the country has a comparative advantage in that product, indicating specialization and potential competitiveness. Conversely, a value less than 1 (<1) suggests a comparative disadvantage.

While the RCA index is immensely popular, it possesses a well-documented limitation: its asymmetric distribution. The index has a lower bound of 0 but no upper bound, making the interpretation of values above 1 (advantage) and below 1 (disadvantage) asymmetrical. For instance, the difference between an RCA of 0.1 and 1.0 is not directly comparable to the difference between 1.0 and 10.0. This asymmetry can skew analysis, especially when ranking countries or measuring the intensity of advantage.

3. Methods

This study uses the RCA Index method, known as the Balassa index, defined using export values (Saboniene, 2009).

$$RCAij \quad \frac{Xij/Xj}{Xiw/Xw}$$

Information:

Xij = Value of Indonesian coffee exports to the Germany and Japan
Xj = Total export value of all Indonesian products to the Germany and Japan
Xiw = Worldwide coffee export value to the Germany and Japan
Xw = Total export value of all products from countries in the world to the Germany and Japan

The RCA index, known as the Balassa index, is defined using only export data, to overcome the problem of bias upwards of the value of the RCA index, Laursen (1998) adjusted the RCA index to be symmetrical, i.e., the adjusted index value is between –1 and +1. Laursen (1998) identified this index as the RSCA which is defined as follows:

$$RSCAij = (RCAij - 1) / (RCAij + 1)$$

Information:

1) Ratio between –1 to +1
2) Shows comparative loss when the value is between –1
3) Its value between 0 and +1 illustrates comparative advantage
4) If the number = 0 indicates that the export and import of a particular product are the same.

4. Results And Discussion

4.1 Analysis of the RCA of the Importing Countries of Germany

The comparative advantage of Indonesian coffee products can be known through the analysis of the RCA which is enhanced by the Revealed Symmetric Comparative Advantage (RSCA) benefits shown. The competing countries used as a comparison in this study are Brazil, Vietnam, Colombia, and Guatemala.

Table 1. Calculation of the RCA Value of Coffee Exporting Countries to Germany 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Ave
Brazil	63.95	45.59	47.48	50.01	62.25	64.98	81.06	91.62	107.63	86.81	70.14
Vietnam	41.02	21.30	24.94	24.11	28.86	23.18	19.69	20.09	20.99	19.87	24.40
Colombia	70.45	55.37	65.64	67.54	118.18	154.42	148.72	122.40	52.95	71.58	92.72
Guatemala	165.61	105.62	84.70	129.05	203.58	138.19	153.90	148.79	120.03	97.08	134.65
Indonesia	7.06	9.49	6.15	10.88	4.90	6.72	5.08	3.77	4.83	4.17	6.31

Based on the results of the calculations shown in Table 1, the results of the RCA of the value of coffee exports to Germany show fluctuating values. On average, the order of the highest to lowest RCA values is Guatemala 134.65, Colombia 92.72, Brazil 70.14, Vietnam 24.40, and Indonesia 6.31, in the sense that this coffee exporting country has more than one RCA value, the five coffee exporting countries have a comparative advantage in coffee trade in the German market, but the average RCA figure of Indonesia lags far behind during the period of 2014-2023 when compared to Brazil, Vietnam, Colombia, and Guatemala.

4.2 Analysis of RSCA (Revealed Symmetric Comparative Advantage) of the Importing Countries of Germany

As for the RSCA value in each of the five coffee exporting countries to Germany in the period of 2014-2023 (10 years) has an average positive value. In the sense that the five coffee exporters to Germany have a significant comparative advantage in the German market.

Table 2. Calculation of RSCA Value of Coffee Exporting Countries to Germany 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Ave
Brazil	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Vietnam	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Colombia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Guatemala	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Indonesia	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.6	0.7	0.6	0.7

Table 2 shows the results of the RSCA calculation of coffee exporting countries in 2013-2023 to Germany. Although Indonesia's RSCA score is positive, it has the lowest average rate compared to Brazil, Vietnam, Colombia, and Guatemala. The trend of declining competitiveness growth from 2014 and 2021 and 2022 has the lowest comparative advantage of Indonesian coffee exports to Germany with the lowest value of 0.6. The downward trend in the value of coffee exports to Germany can be caused by the low quality and productivity of Indonesian coffee.

4.3 Analysis of the RCA (Revealed Comparative Advantage) of Japan's Importing Countries

The comparative advantages of Indonesian coffee products can be found through the analysis of RCA Based on the results of the calculations shown in Table 3, the results of the RCA value of coffee exports to Japan show fluctuating values.

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Table 3. Calculation of the RCA Value of Coffee Exporting Countries to Japan 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Ave
Brazil	27.53	29.52	29.82	26.92	30.45	31.26	24.29	26.72	21.66	23.88	27.21
Vietnam	6.53	4.52	5.11	5.44	5.75	3.98	4.49	5	4.72	5.15	5.07
Colombia	179.71	133.76	163.25	155.27	183.56	190.09	269.05	263.5	163.98	118.62	182.08
Guatemala	342.72	255.02	319.66	332.29	360.13	399.35	347.31	346.67	380.21	389.46	347.28
Indonesia	2.47	2.46	2.21	2.34	2.66	2.55	2.3	2.09	1.22	1.53	2.18

On average, the order of the highest to lowest RCA values is Guatemala 347.28, Colombia 182.08, Brazil 27.21, Vietnam 5.07, and Indonesia 2.18, in this case this coffee exporting country has more than one RCA value, the five coffee exporting countries have a comparative advantage in coffee trade in the Japanese market, but Indonesia's average RCA figure lags far behind during the period of 2014-2023 when compared to Brazil, Vietnam, Colombia, and Guatemala.

4.4 Analysis of RSCA (Revealed Symmetric Comparative Advantage) of Japan's Importing Countries

Meanwhile, the RSCA value in each of the five coffee exporting countries to Japan in the period of 2014-2023 (10 years) has a positive average value. In the sense that the five coffee exporters to Japan have a significant comparative advantage in the Japanese market.

Table 4. Calculation of RSCA Value of Coffee Exporting Countries to Japan 2014-2023

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Ave
Brazil	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Vietnam	0.7	0.6	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7
Colombia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Guatemala	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Indonesia	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.1	0.2	0.4

Table 4 shows the results of the RSCA calculation of coffee exporting countries in 2013-2023 to Japan. Although Indonesia's RSCA score is positive, it has the lowest average compared to Brazil, Vietnam, Colombia, and Guatemala. The decline in the competitiveness of coffee commodities in Japan is in line with research by (Stanini et al., 2020) and research conducted by (Fikri Aldi Dwi Putro et al., 2024), the quality of Indonesian coffee which causes the competitiveness of Indonesian coffee in Japan to continue to decline. The results of the study show that the trend of comparative competitiveness of Indonesian coffee exports has decreased and weakened competitiveness, this can also be caused by changes in world coffee prices and low productivity and quality of Indonesian coffee so that it causes a decrease in export value (Nasution et al., 2024).

5. Conclusion

The conclusions that can be drawn from the results of this study are:

1) Based on the RCA and RSCA methods, Indonesian coffee exports to Germany and Japan have high competitiveness which is shown with positive values but when compared to Brazil, Vietnam, Guatemala, and Colombia, the competitiveness of Indonesian coffee is the lowest and the trend is declining, so there is a need for further research on the main factors that affect the competitiveness of Indonesian coffee in Germany and Japan continue to decline.
2) The need to improve the quality and quantity of Indonesian coffee commodities with the aim of increasing the competitiveness of Indonesian coffee commodities in the international market

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