Export of Indonesian cinnamon in international market: competitiveness and performance

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ABSTRACT

The high level of competition in the world cinnamon market causes a downturn in Indonesian cinnamon exports in international market. In 2019-2020, sales of Indonesian cinnamon in international market have experienced a downward trend. This study aimed to analyse the trend of Indonesian cinnamon's export value in international market in 2001-2020 compared to Sri Lanka, Vietnam, and China, as the main exporting countries, then analyse the factors influencing the export value of Indonesian cinnamon in the United States, the Netherlands, Brazil, Germany, and Thailand, as main destination countries in international market by adding spatial and competitiveness variables. This study utilized secondary data and time-series data. The data obtained in this study were collected from various data sources such as International Trade Centre, World Bank, WTO, UN Comtrade, Artnet, UNESCAP, Pacific Exchange Rate Service, and other publications related to this research. Data on the performance of Indonesian cinnamon in international market utilized HS 1996 with HS code 0906 (Cinnamon and cinnamon-tree flower) in the 2001-2020 range. The results showed that the exports of Indonesia's cinnamon in international market had a positive trend. Indonesia had a very strong comparative advantage, so the potential to increase Indonesia's market share was very open in international market. The model estimation results showed that trade costs had an insignificant effect on Indonesian cinnamon exports in international market, while other variables, namely the GDP of the importing countries, the GDP of the exporting countries, the exchange rate, population, and competitiveness had a significant influence.

Keywords: cinnamon, competitiveness, panel data, revealed comparative advantage

INTRODUCTION

Indonesia is a major cinnamon exporter in international market (Nur et al., 2021). The average contribution of Indonesian cinnamon from 2015 to 2016 reached 19.1%. This contribution has placed Indonesia as the 4th largest cinnamon exporting country in international market after China, Sri Lanka, and Vietnam. The market share of these four countries in international market reaches 82.7%. This illustrates that these four countries have an important role in international market.

Competition between cinnamon-producing countries in international market can be said to be very tight. This is revealed by the market share of each country, ranging in the amount of 19-22% (UNCOMTRADE, 2022). Each producer strives to continuously improve product competitiveness, product quality, and marketing policies that can become a stimulus instrument to increase export value. The export performance of a product has always been an interesting topic for policymakers. This is because product exports are one of the important foreign exchange earnings (Suresh and Mathur, 2016).

In an effort to win international market, Indonesian cinnamon producers continue to increase their cinnamon production. The growth of Indonesia's cinnamon land area had a positive trend over the period of 10 years

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(2011-2020). Indonesia's cinnamon land area grew by 8.38% with a land area of 107,622 Ha in 2020 (FAOSTAT, 2022). This positions Indonesia as the country with the largest cinnamon area in international market (Sa'diyah and Darwanto, 2020).

The availability of this cinnamon land will provide a relatively high cinnamon production for Indonesia. In 2020, Indonesia's cinnamon production reached 91,242 tons. Indonesian cinnamon production is in line with its land area having a positive trend from 2011-2020. Indonesia's cinnamon production growth reaches 3.56% (FAOSTAT, 2022). In the context of demand, the demand for cinnamon in international market continues to experience a positive trend. Cinnamon export growth from exporting countries increased by 37% in 2019-2020 (UNCOMTRADE, 2022). This indicates that international cinnamon market is very wide open. Consequently, the level of competition in the market is relatively high. Demand condition continues to increase, providing equal opportunities for every major producing country to be able to export cinnamon. One of the efforts in gaining a large market share in international market is by increasing product competitiveness and specializing in products (Bustami and Hidayat, 2013).

The high level of competition in the cinnamon market in the world has caused a downturn in the value of Indonesian cinnamon exports in international market. In the last two years (2019-2020), Indonesian cinnamon sales in international market have experienced a downward trend. Indonesia's market share in 2018 was 27%, then it fell to 18% in 2019, and in 2020 it decreased to 15%. This trend indicates that there is no competitive ability or comparative advantage possessed by Indonesian cinnamon (Soh and Lim, 2020). This will have an impact on the stability of the country since it is unable to maximize the potential of the developing international market (Soh et al., 2021).

Competitiveness in international market is one of the efforts that can be made by each producing country in solving their problems in international trade (Khaliqi et al., 2020). Many studies related to the competitiveness

of agricultural products have been found (Ashari et al., 2016; Fadli et al., 2016; Jamil, 2019; Suprihatini, 2005), but research examining the competitiveness of cinnamon in international market is still limited or few found (Sa'diyah and Darwanto, 2020; Sari and Divinagracia, 2021). Research conducted by Sa'diyah and Darwanto (2020) analyses Indonesian cinnamon's competitiveness compared to other exporting countries, namely China, Vietnam, Sri Lanka, and Madagascar by looking for comparative advantages and competitive advantages possessed by each country. The competitiveness of Indonesian cinnamon was analysed using the Export Competitive Index (XCI) and the Trade Specialization Index (TSI). Furthermore, the factors influencing the competitiveness of cinnamon were analysed using panel data analysis. The range of years used was the period of 2000 - 2017. The results revealed that Indonesia had a comparative advantage. Therefore, it could compete in international market. Factors affecting the performance of cinnamon export competitiveness were productivity, market share, export prices, and domestic consumption.

In a study conducted by Sari and Divinagracia (2021), the competitiveness of Indonesian cinnamon in international market was analysed using Constant Market Share Analysis (CMSA) and Revealed Comparative Advantage (RCA). The data used were data from 1987-2017 from UN Comtrade. The results showed that the RCA value of Indonesian cinnamon was greater than 1, meaning that Indonesian cinnamon had a comparative advantage in international market. In line with the results of the RCA analysis, the results of the CMSA analysis revealed that competitiveness was a positive factor in increasing cinnamon trade in international market.

The difference in this study from previous studies is that in addition to conducting an assessment of the competitiveness and performance of Indonesian cinnamon trade in international market, this study discussed the effect of the distance between exporting countries and importing countries on the competitiveness of Indonesian cinnamon exports. The purpose of this study was to analyse the trend of Indonesian cinnamon's export

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value in international market compared to the 3 main exporting countries, which are Sri Lanka, Vietnam, and China, and then analyse the factors affecting the export value of Indonesian cinnamon in the 5 main destination countries in international market, which are the United States, the Netherlands, Brazil, Germany, and Thailand, by adding spatial and competitiveness variables.

MATERIALS AND METHODS

This study used data in the form of secondary and time-series data. The data obtained in this study were collected from various information sources and databases such as International Trade Center, Artnet, WTO, World Bank, UN Comtrade, UNESCAP, Pacific Exchange Rate Service, and other publications related to this research (Table 1). Data on the performance of Indonesian cinnamon in international market used HS 1996 with HS code 0906 (Cinnamon and cinnamon-tree flower) in the period 2001-2020.

Table 1. Data resources

No.	Variable	Data Resources
1	Cinnamon's Export Value	UNCOMTRADE
2	PDB	Worldbank
3	Cinnamon's Export Price	UNCOMTRADE
4	Population Number	Worldbank
5	Exchange Rate	Pacific Exchange Rate Service
6	Trading Cost	UNESCAP

This study utilized three analytical tools to answer the objectives of the study. Firstly, trend analysis was used to predict the value of Indonesian cinnamon exports in international market from 2001-2020. The second step was to measure the level of comparative competitiveness of Indonesian cinnamon compared to the 3 main exporting countries (China, Sri Lanka, Vietnam) using Revealed Comparative Advantage (RCA) (Majkovic et al., 2006; Nursodik et al., 2021). This was due to the fact that the 4 main cinnamon exporting countries in the world market had a market share of 82.7%. The last step was to analyse the factors affecting the value of Indonesian cinnamon

exports in the 5 main export destination countries, using panel data analysis. The five countries were the United States, the Netherlands, Brazil, Germany, and Thailand. They were chosen since Indonesia's exports to these 5 countries reached 67%.

Trend analysis

Trend analysis was often used as an analytical tool to analyse time-series data forecasting (Nurfadila et al., 2019). The results of this data forecasting were expected to become a basis for policymakers to determine the direction of policies that would be prepared to stimulate the export value of Indonesian cinnamon. The forecasting method would pay attention to 3 aspects, namely property, accuracy, and cost (Astuti et al., 2021). Trend analysis used was linear and exponential trend analysis techniques. This technique provided straight and exponential trendlines description using an ordinary least square approach.

Competitiveness analysis

Many studies related to the competitiveness of an agricultural commodity have been carried out using various analytical tools. Almost the majority of research related to competitiveness uses RCA (Bojnec and Ferto, 2016; Huda et al., 2021; Khaliqi et al., 2020; Majkovic et al., 2006; Sukpanich and Wang, 2022). Meanwhile, there are other additional analyses, such as the Trade Specialization Ratio (Nursodik et al., 2021; Van Hoang et al., 2017), Revealed Symmetric Comparative Advantage (Munir and Sultan, 2019), Relative Trade Advantage (Van Hoang, 2020), Trade Competitiveness Index (TC) (Kang et al., 2021).

This study used RCA as an analysis method to measure the level of competitiveness of Indonesian cinnamon in international market. RCA shows the comparative advantage of agricultural products, and the most important thing is that RCA is able to show the competitive advantage of cinnamon products through the value of Indonesian cinnamon exports.

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RCA was developed by Balassa (1977). RCA is an index of the comparative competitiveness level of commodities in a country. The RCA concept is the ratio between the exporting country's market share to the total world exports. Mathematically, RCA can be calculated as in equation 1 (Balassa, 1977).

$$RCA_{ij} = \frac{x_{ij}/x_i}{X_{wj}/X_w} \quad (1)$$

where x_{ij} is the export value of the j product in the i country or region; x_i is the total export volume of all products in the i country or region; x_{wj} is the total output of the j product in the world, and x_w is the total export value of all products in the world. The interpretation of the RCA index was as the following: if the RCA value was <0.8 then it could be concluded that Indonesian cinnamon had no competitiveness; if the RCA value was at 0.8<RCA<1.25 then it could be said that the competitiveness of Indonesian cinnamon was in a moderate position; if the RCA value was at a value of 1.25<RCA<2.5 then it could be said that Indonesian cinnamon had strong competitiveness; and if the RCA value was >2.5 then it could be said that Indonesian cinnamon had very strong competitiveness (Wang, 2015).

Regression of panel data

Panel data regression is a causal analysis of cross-section and time-series data types. Regression analysis of panel data will produce a more efficient estimate (Gujarati, 2011). Regression analysis of panel data would be used to analyse the factors influencing the value of Indonesian cinnamon exports in international market, which were represented by 5 main export destination countries, namely the United States, the Netherlands, Brazil, Germany, and Thailand in the period 2001-2020. The panel data model compiled was as in equation 2.

$$\text{Ln}EX_{ijt}=\beta_0+\beta_1\ln GDPE_i+\beta_2\ln GDPI_j+\beta_3\ln ER_{ijt}+\beta_4\ln COT_{ij}+\beta_5\ln POP_j+\beta_6\,RCA_{ij}+\varepsilon$$

where:

$GDPE_i$: GDP per capita of exporting countries (million US$) in natural log (ln),

$GDPI_j$: GDP per capita of importing countries (million US$) in natural log (ln),

ER_{ijt}: The real exchange rate of the exporting countries against the currency of the importing countries (IDR/LCU) in the natural log (ln),

COT_{ij}: Cost on Trade is the cost that must be paid by the importing countries to carry out trade activities between countries (US$) in the natural log (ln),

POP_j: Importing country population (people) in natural log (ln),

RCA_{ij}: Competitiveness index of Indonesian cinnamon in international market.

RESULTS AND DISCUSSION

In 2020, Indonesian cinnamon exports in international market reached US$ 151,295,000 with a market share of 15%. This position was below Sri Lanka, China, and Vietnam. On average, the market share of Indonesian cinnamon in international market from 2001 to 2020 was 17% (Table 2). This market share value can still be increased due to the opportunity for the cinnamon market in international market, which has quite a lot of potential.

The growth in export value occurring from year to year revealed that international cinnamon market was very promising for exporting countries, especially the 4 largest exporting countries. The market share of the 4 main cinnamon exporting countries in international market reached 87%. This fairly large market share value could result in lower competition in international market. This is because these four countries had competitive advantages in international cinnamon market.

Trend analysis

The results of the trend analysis (Figure 1 and Figure 2) showed that the four cinnamon exporting countries in international market had positive trends. The growth of export value from the main cinnamon exporter countries indicated an increase from year to year. From this trend analysis, it can be said that each country had the same opportunity to develop its respective market shares. This is because the future forecasting for each country had a positive value.

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Table 2. The development of the export value and market share of cinnamon in the main exporting countries in international market (Source: Processed Trade Map, 2022)

Year	Indonesia	Sri Lanka	Vietnam	China
	Market Share	Market Share	Market Share	Market Share
2001	14%	39%	6%	23%
2002	14%	37%	5%	24%
2003	15%	41%	5%	19%
2004	18%	36%	6%	22%
2005	14%	42%	6%	19%
2006	15%	39%	8%	19%
2007	18%	37%	8%	18%
2008	18%	41%	8%	15%
2009	14%	35%	11%	19%
2010	20%	33%	12%	19%
2011	18%	36%	11%	20%
2012	15%	40%	10%	18%
2013	19%	35%	13%	17%
2014	23%	28%	17%	17%
2015	21%	27%	14%	21%
2016	19%	31%	15%	18%
2017	22%	31%	16%	17%
2018	19%	24%	18%	19%
2019	18%	23%	23%	22%
2020	15%	21%	23%	28%

Although China and Vietnam had positive trends (Figure 1), the trend patterns could be differentiated from those of Indonesia and Sri Lanka. China and Vietnam had exponential trends due to a relatively high increase in the growth of export value from 2016 to 2020. On the other hand, the increase in export value from Indonesia and Sri Lanka tended to be constant so that they had linear trends. This result must also be followed by the improvement of cinnamon quality standards that had been set by the importing countries. The requirements applied to international market will later become one of the obstacles for Indonesian cinnamon if they cannot be met by farmers (Menggala and Damme, 2018).

Competitiveness analysis of Indonesian cinnamon

The competitiveness of Indonesian cinnamon in international market was analysed using the RCA Method. Based on the results of RCA index analysis, Indonesia had increased competitiveness from 2001 to 2020. RCA index showed that Indonesian cinnamon products had very strong competitiveness in international market. This is in line with the value of Indonesian cinnamon exports in international market having a positive trend (Figure 2).

The RCA index from Indonesia had a positive trend from year to year (Table 3). In contrast to Indonesia, Sri Lanka as the main exporting country for cinnamon in

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international market experienced a significant decline in competitiveness. In 2001-2005, Sri Lanka's RCA index reached 587.51 points, but this value decreased in 2016-2020 to 374.10. This resulted in the loss of Sri Lanka's market share in international market. This condition should be used by Indonesia to increase the value of cinnamon exports in international market. Compared to other major exporting countries, only Indonesia had an increasing RCA index every year.
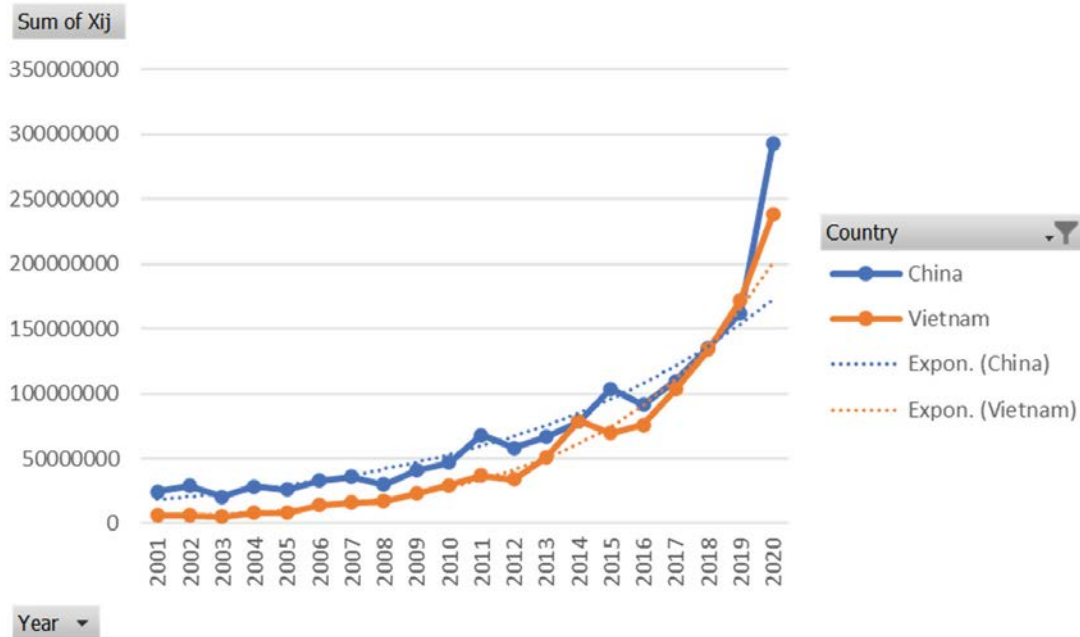

Figure 1. Trend analysis of China and Vietnam cinnamon exports in international market (Source: Processed Trade Map, 2022)
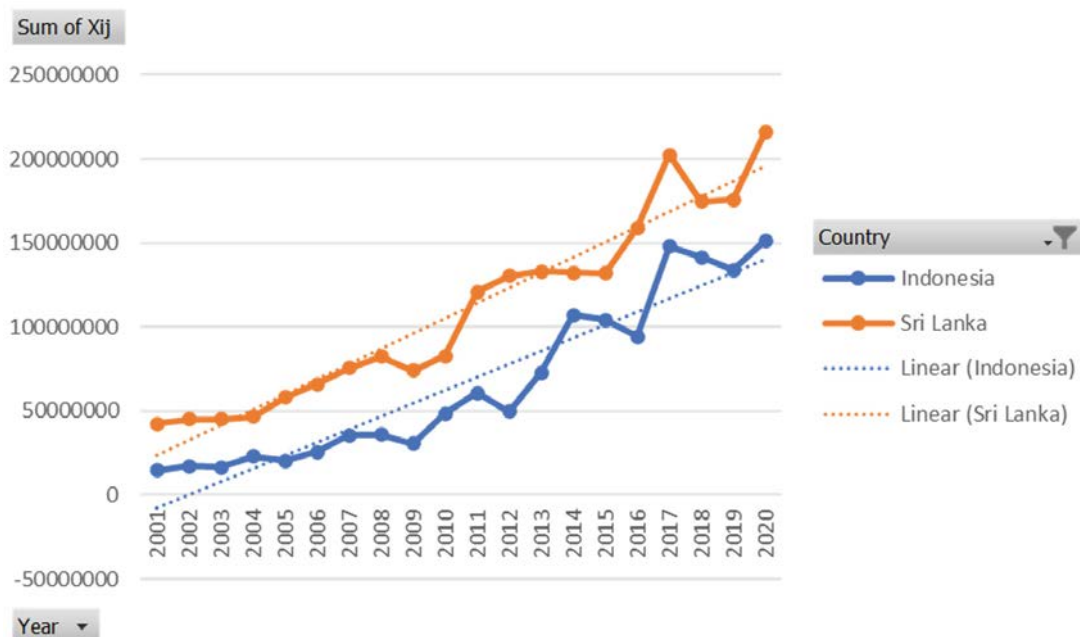

Figure 2. Trend analysis of Indonesia and Sri Lanka cinnamon exports in international market (Source: Processed Trade Map, 2022)

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Table 3. RCA index of cinnamon of Indonesia and competing countries in international market (Source: Processed Trade Map, 2022)

Year	Cinnamon Exporters Countries			
	China	Indonesia	Sri Lanka	Vietnam
2001-2005	3.81	17.85	587.51	20.28
2006-2010	1.96	18.74	674.67	23.54
2011-2015	1.57	19.59	595.49	18.26
2016-2020	1.52	20.03	374.10	14.29

Factors affecting Indonesian cinnamon exports in international markets

This study used panel data regression analysis. Before explaining the estimation results of panel data regression analysis, a test was needed to determine which model was the best to explain the estimation results. In panel data regression, there were three types of models, namely pooled effect model/common effect model (CEM), fixed effect model (FEM) and random effect model (REM). The process of determining the best model required 3 tests, namely the Chow test, Hausman test, and the Lagrange Multiplier test. The results of the tests revealed that the best model chosen was the fixed effect model.

Table 4 shows the best model used in this study was the fixed effect model. The results of the estimation using the fixed effect model indicated that only the cost of trade variable had no effect on Indonesian cinnamon exports in international market. The value of the determination coefficient produced was 0.92, meaning that the variables contained in this model had been able to explain well the factors affecting Indonesian cinnamon exports in international market.

Table 4. Determination of the best model

Test	p-value	Decision
Chow	0.0023	H0 rejected, selected FEM
Hausman	0.0000	H0 rejected, selected FEM

The GDP variable of the exporting country had a significant effect on Indonesia's cinnamon exports in international market. This is because GDP per capita is an economic measure that can describe the economic condition of a country. If there is an increase in GDP in an exporting country, automatically, the economy of that country will be boosted (Khaliqi et al., 2018). The coefficient of GDP per capita of the exporting country was 0.955 (Table 5), meaning that for every 1% increase in GDP per capita, the value of Indonesian cinnamon exports would increase by 0.955% in international market.

The country's GDP per capita variable had a significant negative effect on Indonesian cinnamon exports in international market. GDP per capita becomes an instrument to determine the welfare of society. In this case, if there is an increase in people's income in importing country, then there will be a decrease in the entry of imported products (Nursodik et al., 2021). The GDP coefficient of the importing country showed a value of -1.022 (Table 5), meaning that every 1% increase in the importing country's GDP would have a negative impact of 1.022% on Indonesian cinnamon exports in international market.

The exchange rate variable had a positive influence on the value of Indonesian cinnamon exports in international market. This is because if there is an increase in the exchange rate, then it means that Indonesian cinnamon products have a cheaper value, due to the devaluation of the rupiah when compared to foreign currencies (Hayat and Khatoon, 2021; Wattanakul et al., 2021).

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Table 5. Estimated result of panel data regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-153.6271	30.62863	-5.015800	0.0000
LOG(GDPEX)	0.955034*	0.166094	5.749947	0.0000
LOG(GDPIM)	-1.022353*	0.242960	-4.207904	0.0001
LOG(EXRATE)	0.874477*	0.293771	2.976732	0.0038
LOG(COT)	-0.453408	0.658896	-0.688134	0.4932
LOG(POP)	9.040963*	1.734342	5.212907	0.0000
RCA	0.043475*	0.013340	3.259041	0.0016

Note: *significant at the level of 1%

The exchange rate coefficient value was 0.874 (Table 5), meaning that if there was a devaluation of the rupiah by 1%, then it would increase Indonesian cinnamon exports to international market by 0.874%.

This study could not prove the effect of trade costs on Indonesian cinnamon exports in international market. Cinnamon products that were specifically produced by major cinnamon exporting countries caused importing countries to have no other choice in importing cinnamon products. This can be seen from the market share of the four cinnamon exporting countries in international market, which reached 82.7%.

The population variable showed a positive result. This can give an indication that population growth would increase consumption in importing countries (Khaliqi et al., 2018). The estimation results showed that the population variable coefficient was 9.04 (Table 5), meaning that if there was an increase in the population in the importing country, the value of Indonesian cinnamon exports in international market would increase.

The RCA variable which is a variable that describes the competitiveness of a cinnamon-exporting country had a positive influence. This is because the higher the competitiveness of a country in international market, the greater the opportunity for that country to be able to penetrate the market and increase market share. Indonesia needs to take advantage of the wide-open market share potential. The coefficient value of the RCA variable was 0.043 (Table 5), meaning that if there was an increase in competitiveness, it would increase Indonesian cinnamon exports in international market by 0.043%.

CONCLUSIONS AND IMPLICATIONS

Based on research results, Indonesia's cinnamon exports to international market have a positive trend. This means that the development of the Indonesian cinnamon industry is very appropriate to be done in order to meet the cinnamon market demand in international market which has a positive trend as well. Indonesia has a very strong comparative advantage, so the potential to increase Indonesia's market share in international market is very open. This is also because the market share of other major exporting countries has a downward trend, especially in Sri Lanka.

The model estimation results show that trade costs have an insignificant effect on Indonesian cinnamon exports in international market. While other variables, namely the GDP of the exporting country, the GDP of the importing country, the exchange rate, population, and competitiveness had a significant influence on the value of Indonesian cinnamon exports. This could indicate a tendency that the production centre of cinnamon in international market was only produced by a few major exporting countries. Of the 4 main cinnamon exporting countries in international market, the market share of cinnamon reached 82.7%.

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This research has succeeded in showing the potential for the development of the Indonesian cinnamon industry which was still open. Therefore, it is necessary to intensify the processing of cinnamon products produced by Indonesian farmers, so that Indonesian cinnamon products can comply with the standards set by importing countries in international market.

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