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Analysis for the Export Competitiveness of Food and Agricultural Commodities in Central Java Province, Indonesia

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In the last 10 years, the export performance of Central Java province has been relying on the commodity of textile products and processed wood, each of which has a market share of approximately 45 percent and 23 percent which is considered to be experiencing burnout characterized by a slowdown in growth. The aim of this study was to identify the main export commodity of food industry and agriculture in Central Java province and analyze the level of their competitiveness. The focus of the research was to analyze the level of competitiveness of the food industry and agricultural industry in Central Java using the Revealed Comparative Advantage (RCA) and the Trade Specialization Index (TSI). The study was conducted by observing food and agricultural industry in the period 2007–2015. The results showed that the RCA of most commodities index is greater than one, which indicates strong competitiveness in the international market. However, the trade specialization index is still a commodity with an index of less than 0 or negative. This means that some products the food industry and agriculture industry in Central Java still import oriented.

Keywords: Competitiveness, Strategy, Food Industry, Agriculture Industry, RCA, TSI.

1. INTRODUCTION

Regional free markets lead to more open economy and increase competition. In the domestic sphere, a marketing of agricultural commodities caused by the different levels of supply and demand affects the price of commodities in each region. Commodity flow will occur from center manufacturers who lower price to the consumer price is higher. Trade performance in Central Java, indicated by a positive indicator that the increase in exports and decline in imports. Export growth of 4.92 percent per year and the growth in imports (–11.7 percent) in the period 2010–2015. Non-oil export in Central Java Province is largely the result of the processing industry (88.16 percent). The Central Java export contribution towards the national overall by 2.66 percent, and imports amounted to 7.76 percent contribution.

Contribution of the agriculture sector in economic activities in Central Java Province can be seen from its contribution to the Gross Domestic Regional Product (GDRP) is quite large at around 14.44 percent. The agricultural sector is the third in contributing GDRB. The first is the manufacturing sector and the trade sector. However, the agriculture sector is still the sector that absorbs the largest number of workers, more than 35 percent.

Trade in agricultural commodities, including sub sectors of food crops, horticulture, plantations and farms still spacious enough to continue to be developed. The agricultural sector also proved to be a reliable sector in the recovery of the national economy, because the agricultural sector can make a significant contribution to the national economy during a crisis. The agricultural sector provides employment and foreign exchange contribution in times of crisis. This study aims to identify the main export commodity food industry and agriculture of Central Java province and analyze the level of competitiveness.

2. RESEARCH METHODS

2.1. Trade Specialization Index (TSI)

Trade specialization index (TSI) is a tool for analyzing the position and or developmentally commodity. TSI is used to illustrate whether domestic agricultural commodities tend to be commodity exports or imports. Analysis of TSP also gives an idea, whether the position of Indonesia tends to be the exporting country or importing agricultural commodities. In general, the TSP is formulated as follows:

$$TSI = \frac{Xia - Mia}{Xia + Mia}$$

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X_{ia} : volume or value of exports of Central Java for commodity i ,
 M_{ia} : volume or value of import of Central Java for commodity i .

TSP value is defined as follows:

- 0.1 up to -0.5 , it means these commodities in the introduction stage in world trade. The products have low competitiveness, and the country concerned is a commodity importer.
- -0.4 up to 0.0 , it means these commodities at this stage of import substitution in world trade.
- up to 0.7 , it means the commodity in the stage of export expansion in world trade and has strong competitiveness.
- 0.8 s/d 1.0 : It means the commodity in the maturation phase in world trade and competitiveness is very strong.

2.2. Import Dependency Ratio (IDR)

Import Dependency Ratio (IDR) is a formula that provides information of a country's dependence on imports of a commodity. Value Import Dependency Ratio is calculated based on the definition established by the FAO (Food and Agriculture Organization of the United Nations). The calculation of this value does not include changes in the stock due to the large stock (both imports and domestic production) is unknown.

$$IDR = \frac{\text{Import}}{\text{Total Production} + \text{Import} - \text{Export}} \times 100$$

2.3. Self Sufficiency Ratio (SSR)

SSR value indicates the amount of production in relation to domestic needs. SSR is formulated as follows

$$SSR = \frac{\text{Production}}{\text{Production} + \text{Import} - \text{Export}} \times 100$$

2.4. Revealed Comparative Advantage (RCA)

The concept of comparative advantage initiated by the thought of David Ricardo observed that the two countries would benefit from trade if it specializes to produce products that have a comparative advantage in a state of autarky (no trade). Balassa³ found a measure of the comparative advantages of a country empirically by performing a mathematical calculation of the value of a country's exports compared with the value of world exports. The calculation of this so-called Balassa Revealed Comparative Advantage (RCA), which became known as the Balassa RCA Index:

$$RCA_{ij} = \frac{X_{ij}/X_{it}}{W_j/W_t}$$

X_{ij} = Export value of commodity i by country j , X_{it} = Total export of country j , W_j = The world export value for commodity i , W_t = Total export value of the world.

Table I. Trade specialization index (TSI) agricultural commodities central java province.

Commodity	Trade specialization index (TSI)				
	2011	2012	2013	2014	2015
Rice	-0.98	-0.96	-0.99	-0.99	-0.99
Corn	-0.65	-0.69	-0.95	-0.97	-0.88
Onion	-0.84	-0.74	-0.9	-0.84	-0.72
Sugar cane	-0.69	-0.79	-0.87	-0.92	-0.69
Red chili	-0.68	-0.78	-0.87	-0.82	-0.68

Source: Data center, ministry of agriculture Indonesia.

Table II. Import dependency ratio (IDR) agricultural commodities central java province.

Commodity	Import dependency ratio (%)				
	2011	2012	2013	2014	2015
Rice	0.5	0.4	1.0	4.0	2.7
Corn	2.4	2.4	8.9	15.8	9.4
Onion	6.5	15.43	11.45	8.72	5.74
Sugar cane	40.2	46.4	52.8	61.2	19.4
Red chili	0.26	0.96	0.38	0.03	0.00

Source: Data center, ministry of agriculture Indonesia.

When an RCA index for a commodity is higher than 1, then the commodity has a relatively good competitive power. Conversely, when an RCA index for a commodity is less than 1, then the commodity has less competitive power.

3. RESULTS AND DISCUSSION

TSI value of rice commodity in total had a negative value in the range of -0.99 to -0.96 , which meant that the competitiveness of Indonesian rice commodities was very low. Other commodities such as corn, onion, sugar cane, and red pepper were fairly large with negative value. This suggests that the agricultural trade food crops are still in introduction phase.

Ratio of dependence on imports of some agricultural commodities Indonesia was fluctuated in the period observed. Indonesia's rice supply level of was dependence on imported rice ranged from 0.4 to 4.01 percent. Dependence on imported rice, although in small quantities, this was primarily on the type of fresh rice. For corn, onions, and sugar cane, the level of dependence on imports is greater than the rice. Last year on red pepper its dependence 0 percent.

SSR value of commodity rice is greater than 90 percent, this means that most of the domestic demand for rice in Central Java Province can be met by domestic production. SSR also be positive value indicating that domestic demand for rice has been insufficient in a considerable proportion.

SSR value exceeding 100% for commodities indicate that the production of red chili in Central Java is surplus to meet their own needs. Surplus so that production is exported to the international market, it can be seen from the SSR which indicates a positive number and a sizeable percentage.

RCA indicates that Indonesian agricultural commodities have a low comparative advantage in world markets. Indonesian rice commodities in general do not have competitiveness in the world market. This is indicated by a negative value of RCA that even up to -0.99% . For corn, onion, sugar and red pepper also showed

Table III. Self sufficiency ratio agricultural commodities central java province (%).

Commodity	Self sufficiency ratio (%)				
	2011	2012	2013	2014	2015
Rice	99.5	99.6	99.0	96.0	97.3
Corn	98.3	98.1	91.3	84.3	90.9
Onion	88.1	94.7	93.8	85.9	90.3
Sugar cane	93.2	70.4	59.9	51.1	95.9
Red chili	99.9	99.2	99.6	100.1	100.1

Source: Data center, ministry of agriculture Indonesia.

Table IV. Revealed comparative advantage (RCA) agricultural commodities central java province (%).

Commodity	Revealed comparative advantage (RCA)				
	2011	2012	2013	2014	2015
Rice	-0.98	-0.97	-0.99	-0.99	-0.98
Corn	-0.95	-0.96	-0.94	-0.59	-0.95
Onion	-0.56	-0.61	-0.88	-0.64	-0.56
Sugar cane	-0.25	-0.35	-0.51	-0.65	-0.25
Red chili	-0.93	-0.92	-0.96	-0.94	-0.98

Source: Data center, ministry of agriculture Indonesia.

that the commodity does not have a comparative advantage in world trade.

4. CONCLUSION

Free trade is based on the concept of comparative advantage would be beneficial for Indonesia as an agricultural country which most of the populations are farmers, faced with increasingly fierce competition with countries of the region and the world due to their free-trade agreement.

The analysis showed carry though the agricultural sector trade balance surplus growth performance, but apparently of some performance indicators of competitiveness of trade in food commodities have low competitiveness. Some policies recommended include, first, the diversification of products that can increase added value and competitiveness of Indonesian agricultural commodities in the International Market. Second, improved quality

control and standardization problems associated with agricultural commodities Indonesia to more easily enter the international market.

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